Med-X Pty Ltd

Clinical Waste Management Facility, Arndell Park

Response to Submissions and Amended Project Report for State Significant Development 6761

Issue | 26 June 2020

Job number 274648-00

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Terms and abbreviations

Abbreviation	Term
APR	Amended Project Report
AQA	Ait Quality Assessment
Arup	Arup Pty Ltd
Blacktown LEP	Blacktown Local Environmental Plan 2015
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry, and Environment
EIS	Environmental Impact Statement
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPL	Environmental Protection Licence
GMOs	Genetically Modified Organisms
GPR	Ground Penetrating Radar
HIPAP	Hazardous Industry Planning Advisory Paper
LPG	Liquified Petroleum Gas
Med-X / the Applicant	Med-X Pty Ltd
MRV	Medium Rigid Vehicle
NATA	National Association of Testing Authorities, Australia
NICS	National Integrated Creative Solutions
PHA	Preliminary Hazard Assessment
PLC	Programmable logic controller
POEO Act	Protection of the Environment Operations Act 1997
RMS	Roads & Maritime Services
RtS	Response to Submissions
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development

1 Introduction

1.1 Overview and purpose of this report

This Response to Submissions (RtS) and Amended Project Report (APR) has been prepared by Arup Australia Pty Ltd (Arup) on behalf of Med-X Pty Ltd (Med-X or the Applicant) in relation to submissions received on the Environmental Impact Statement (EIS) prepared for State Significant Development (SSD) Application 6761 and to fulfil the requirements of clause 82 of the *Environmental Planning and Assessment Regulation 2000* (the EP&A Regulation).

A Request for Secretary's Environmental Assessment Requirements (SEARs) was submitted to the NSW Department of Planning and Environment (DPE) (now the Department of Planning, Industry, and Environment (DPIE)) in September 2014 for the proposed expansion of an existing Clinical Waste Management Facility at 9 Kenoma Place, Arndell Park (the project).

Following extension of the SEARs in October 2016 and once more in January 2018, the EIS for the project, prepared by National Integrated Creative Solutions (NICS), was placed on public exhibition between 24 January and 22 February 2019.

During the display period, a total of 11 submissions were received. This RtS and APR identifies and responds to the issues and comments from the submissions received on the EIS. It also sets out the final project to be determined by DPIE staff as delegates of the Minister for Planning and Public Spaces.

The report comprises the following:

- Amended project description which outlines the final project, including the proposed changes since display of the EIS in response to issues raised in submissions;
- Response to the submissions received on the EIS and how these have been addressed in the amended project; and
- Additional assessment where required in response to issues raised in submissions and to address the amended aspects of the project.

1.2 Summary of consultation process

Consultation was carried out with a range of authorities during preparation of the EIS, including:

- DPIE (and the former DP&E);
- NSW Environment Protection Authority (EPA);
- NSW Roads & Maritime Services (RMS); and
- Blacktown City Council.

Consultation was also carried out with nearby commercial and industrial facilities as well as potentially sensitive residential receivers, as detailed in Section 8 of the EIS.

The EIS was placed on public exhibition from 24 January to 22 February 2019. During this time, the EIS was made publicly available on the DPIE Major Projects website, where copies of all plans and technical reports could be and remain available to be viewed and downloaded. The EIS was also advertised in the Blacktown Advocate on 23 January 2019 (see Appendix A).

Following the exhibition period, DPIE issued correspondence dated 6 March 2019 requesting that the Applicant respond to the issues raised in the submissions received during the public exhibition period.

A total of 11 submissions were received, including five submissions from government agencies (DPIE, EPA, RMS, Blacktown Council and NSW Health), five submissions from local businesses, and one submission from a member of the community. The submissions received are further detailed in Section 3 of this report and included in Appendix B.

Following the exhibition period and in light of the submissions received, the project team has continued to engage with DPIE and the EPA to resolve the issues raised.

1.3 Report structure

This RtS and APR has been prepared in accordance with clause 82 of the EP&A Regulation. It documents and considers issues raised in the submissions made to DPIE during the public exhibition of the EIS and presents the amended project for assessment. The report is structured as follows:

- **Section 1 – Introduction:** Provides an overview of the project history and consultation carried out to-date, as well as the purpose of this report.
- **Section 2 – Amended project description:** Provides a description of the project and details the proposed changes since display of the EIS. This section also includes a detailed description of the current and proposed site operations and waste management processes.
- **Section 3 – Summary of submissions:** Provides an overview of the issues raised during public exhibition of the EIS and the response methodology.
- **Section 4 – Activities since the EIS:** Provides an overview of the key activities carried out for the project since display of the EIS, including additional technical assessments carried out in response to issues raised and to address the amended aspects of the project.
- **Section 5 – Waste management:** Provides a summary of the key issues raised in relation to waste management and a detailed response to each, identifying additional or amended technical information as appropriate.

- **Section 6 - Air quality:** Provides a summary of the key issues raised in relation to air quality and a detailed response to each, identifying additional or amended technical information as appropriate.
- **Section 7 - Traffic:** Provides a summary of the key issues raised in relation to traffic and a detailed response to each, identifying additional or amended technical information as appropriate.
- **Section 8 - Surface water:** Provides a summary of the key issues raised in relation to surface water and a detailed response to each, identifying additional or amended technical information as appropriate.
- **Section 9 – Noise:** Provides a summary of the key issues raised in relation to noise and a detailed response to each, identifying additional or amended technical information as appropriate.
- **Section 10: Hazards and risk:** Provides a summary of the key issues raised in relation to hazard and risk and a detailed response to each, identifying additional or amended technical information as appropriate.
- **Section 11 – Updated management and mitigation measures:** Provides an updated summary of all proposed management and mitigation measures.
- **Section 12 – Conclusion.**

1.4 Supporting documentation

A number of technical reports and plans have been prepared to support this RtS and APR. These reports and plans are outlined in Table 1 below.

Table 1 Supporting documentation

Document Title	Prepared by	Section reference
Site Plans[1]	Arup	Appendix C
Traffic Impact Assessment[2]	Stanbury Traffic Planning	Appendix D
Facility Procedures and Guidelines	Med-X	Appendix E
Validation of Autoclave	Eurofins | AMS	Appendix F
Air Quality (Odour) Assessment	Todoroski Air Services	Appendix G
Preliminary Hazard Assessment	Arup	Appendix H

[1] This includes an updated surface water management plan
[2] This includes vehicle swept path diagrams

2 Amended project description

2.1 Overview

Population growth and aging and the continued demand for medical services has resulted in steady expansion of the health-care industry over the past 10 years. This has been supported by increased hospital and medical funding from the government and has resulted in the increase of a range of clinical wastes produced by medical and health service organisations.

The Applicant is seeking consent to immediately increase the processing capacity of clinical waste at the existing Clinical Waste Management Facility at Arndell Park (the facility). This would support the processing and treatment of the current volume of clinical waste in NSW, as well as the on-going demand for this service.

The facility is currently subject to the material approvals and licences outlined in Table 2.

Table 2 Current licences and approvals

Relevant legislation and regulating authority	Licence / approval	Date of issue	Licence / approval details
Environmental Planning and Assessment Act 1979 – Blacktown City Council	Development Consent, determination number 11-1642 (as modified by determination number S96-12-1451 on 2 October 2012)	23 April 2012	Use of the industrial premises for the following purposes: • Operation of a "waste management facility" for the handling and processing of clinical and quarantine waste[3] • The maximum storage of 0.5 tonnes (i.e 23 bins) of unprocessed waste on site at any one time • The processing of a maximum of 96 sulo bins of untreated waste each day • The processing of a maximum of 650 tonnes of untreated waste per year. Approved hours of operation: 7am to 7pm, Monday to Saturday.
Protection of the Environment Operations Act 1997 (POEO Act) - EPA	Environmental Protection Licence (EPL) 20233	3 September 2013 (licence transferred to Med-X on 11 October 2017)	Licence for the following activities: • storage of clinical and related wastes as defined in Schedule 1 of the POEO Act • waste processing (non-thermal treatment) of clinical and related wastes as defined in Schedule 1 of the POEO Act, excluding cytotoxic waste, pharmaceutical waste, radiological waste and volatile and semi-volatile

[3] Note that the Applicant does not currently, and if the project is approved does not intend to, handle or process any quarantine waste at the facility.

			organic compounds (including formaldehyde, phenol and mercury) The maximum quantity of clinical and related waste, treated and/or untreated, at the premises must not exceed 5000 kilograms at any one time.
Protection of the Environment Operations Act 1997 (POEO Act) - EPA	Environmental Protection Licence (EPL) 12609	27 November 2006 (licence transferred to Med-X on 30 October 2017)	Licence for the following activities: • Transport of category 1 trackable waste • Transport of category 2 trackable waste.
Protection of the Environment Operations Act 1997 (POEO Act) - NSW Ministry of Health	Certificate of Approval – Clinical Waste Treatment Method	12 March 2019	Approval for the treatment of clinical waste by autoclave at 140ºC for a minimum of 50 minutes at a pressure of 310 Kpa, followed by shredding and disposal at landfill, subject to the condition in Schedule 1 of the POEO Act.

2.2 Project scope

Since exhibition of the EIS, the project has been refined in response to submissions received and to ensure efficient and compliant operation of the facility. As such, the project is seeking approval for the following activities. Key changes since the EIS have been marked in **bold** and are further described:

- **Processing of up to 2,300tpa of clinical waste and related waste**. The facility is currently permitted to process up to 650tpa of clinical and related waste between the hours of 7.00am and 7.00pm, Monday-Saturday. The EIS proposed the increase of processing capacity at the facility of up to 3,000tpa. This has since been refined to a proposed processing capacity of up to 2,300tpa to ensure all treatment takes place within the approved operating hours.
- **An increase in the maximum quantity of waste on site at any one time to 8,000kg.** EPL 20233 states that a maximum quantity of clinical and related wastes on the site, treated or untreated, must not exceed 5,000kg at any one time. It is proposed to increase the allowable maximum quantity of waste on site at any one time from 5,000kg to 8,000kg, to allow for the maximum treatment and storage of clinical waste and storage of related waste. Subject to approval, the Applicant will seek a variation to Limit condition L2.2 of EPL 20233 in accordance with section 58 of the *Protection of the Environment Operations Act 1997* (POEO Act).
- The current conditions of approval for the facility prescribe a maximum processing capacity of 96 sulo bins of untreated waste each day. The project proposes a maximum annual processing capacity of 2,300t with a maximum quantity of waste on site at any one time of 8,000kg. The current condition relating the daily waste processing volume to number of sulo bins is no longer relevant.

- **A daily start time of 5am for 3 MRVs departing the Vangeli Street parking depot.** The remainder of the collection fleet (5 MRVs and 8 vans) will depart the parking depot between 7-8am to start daily collection. The EIS suggests that all waste collection vehicles would operate between the hours of 7am and 5pm. However, in order for the first delivery to arrive in time for commencement of processing by 7.00am, it is proposed that some vehicles depart from 5am to commence daily collection.
- **Proposed core operating[4] hours of 7am – 7pm Monday to Saturday with the core operating hours extended to include any public holiday that fall on a Saturday.** The EIS stated that the proposed core operating hours would be 7am to 7pm Monday to Saturday with no core operations to be undertaken on Sundays or public holidays. However, the applicant seeks that public holidays that fall on a Saturday are permissible to operate to allow for efficient collection and processing of waste accumulated at hospitals and other medical facilities during the week.

A description of how the facility would accommodate the proposed increased processing capacity in its daily operations is detailed in Section 2.4 below. Key departures from the EIS, include:

- Operation of the facility on public holidays that fall on a Saturday
- The addition of three processing staff, as detailed in Section 2.4.3. The EIS noted there would be no change to staff numbers.
- The addition of 2 MRVs to the current vehicle fleet, as detailed in Section 2.4.4 The EIS specified an addition of 2 vans.
- An additional 10 waste deliveries per day, the daily collection of treated clinical waste on Mon-Fri, the daily collection of related wastes and clinical sharps on Mon-Fri (all as described in Section 2.4.4), and the weekly delivery of clean sharps containers to the Vangeli Street parking depot (as described in Section 2.5.4). The EIS specifies an additional 22 daily vehicle movements, with an increase in bulk bin collection to once per day. Further clarity around vehicle movements has been provided in this report and the Traffic Impact Assessment (see Appendix D).

2.3 Project location

The Med-X Clinical Waste Management Facility is located within the Arndell Park Industrial Precinct at 9 Kenoma Place, Arndell Park (being Lot 14, DP 786328) (the site). The location of the facility is shown in Figure 1 below.

[4] Core operating hours include waste delivery, waste processing, waste treatment and any machinery operation. Please refer to Section 2.4.2 for more information.

Figure 1 Site location

The site is zoned 'IN1 General Industrial' under the Blacktown Local Environmental Plan 2015 (Blacktown LEP) and is surrounded by other industrial and commercial businesses. The properties directly adjacent to the site include a construction material wholesaler to the west, heavy vehicle repairs to the south, and metal production and sales to the east, with Kenoma Place to the north.

The nearest residences to the site are located on Mariko Place, Blacktown, approximately 400 metres away. Access to the site is via Kenoma Place, off Vangeli Street.

The site is mainly clear of vegetation besides some formal landscaping within the front setbacks. The closest waterway is Bungarribbe Creek, located 335m to the north-east of the site.

The associated site at 7 Vangeli Street, Arndell Park (from this point on referred to as the parking depot), used for the storage of fleet vehicles and clean sharps containers, is shown in Figure 2. This site comprises Lot 1005, DP 78815.

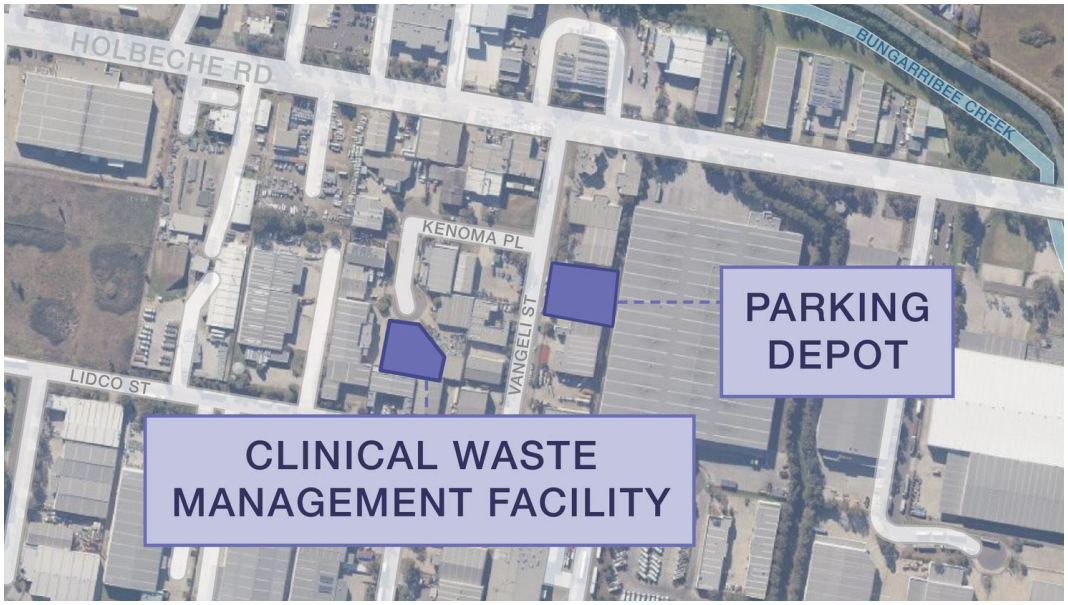


Figure 2 Parking depot location

The parking depot site is also located within the Arndell Park Industrial Precinct and zoned 'IN1 General Industrial' under the Blacktown LEP. Within the IN1 zone, 'depots' are a type of development that is permitted with consent (Blacktown LEP, Land Use Table, Zone IN1). 'Depot' is defined to mean "a building or place used for the storage (but not sale or hire) of plant, machinery or other goods (that support the operations of an existing undertaking) when not required for use, but does not include a farm building" (Blacktown LEP, Dictionary, definition of 'Depot').

On that basis, the proposed use of the premises at 7 Vangeli Street for the purposes of storing fleet vehicles and clean sharps containers to support the operations of the facility at Kenoma Place is permissible with consent under the Blacktown LEP.

The nearest residences to the parking depot are located at Mariko Place, Blacktown, around 300m away.

2.4 Site operations – the facility

The facility is currently permitted to store clinical and related wastes and undertake non-thermal treatment of clinical waste. These wastes are defined in Section 2.4.1 below. Related waste[5] is not permitted to be treated on site and must be identified, separated and stored in a defined location, and then transported to an appropriate facility for disposal.

In line with current practices at the facility, site operations would consist of the following activities:

- Receipt of clinical and related wastes;

[5] In the context of this report related waste includes anatomical, cytotoxic, parametrical and clinical sharps waste

- Identification and separation of related waste;
- Non-thermal treatment and shredding of clinical waste;
- Storage of treated clinical waste and untreated related waste;
- Contractor collection and transportation of treated clinical waste to an appropriate disposal facility;
- Contractor collection and transportation of related waste to an appropriate disposal facility;
- Washing and storage of waste bins; and
- Storage of clean, unused bins.

2.4.1 Waste streams

As outlined in Schedule 1, clause 50 of the POEO Act, **'clinical waste and related waste'** is defined as any waste resulting from medical, nursing, dental, pharmaceutical, skin penetration or other related clinical activity, being waste that has the potential to cause injury, infection or offence. The NSW Health *Clinical and Related Waste Management for Health Services*[6] definitions for 'clinical and related waste streams' is summarised in Table 3 below.

In the context of this report **related wastes** include:

- Anatomical waste;
- Cytotoxic waste;
- Pharmaceutical waste; and
- Clinical sharps waste.

Table 3 Waste stream definitions

Waste Stream	Definition
Clinical Waste	Clinical waste with the potential to cause injury, infection or offence: • Unrecognisable human tissue (excluding hair, teeth, nails and anatomical waste) • Bulk blood or other body fluids (or body substances) • Material and equipment visibly stained by blood or body fluids (includes incontinence pads and disposable nappies that come from an infectious patient) • Lab specimens, cultures or other waste from lab investigations • Waste from medical or veterinary research • Genetically Modified Organisms (GMOs)

[6] NSW Health (2017), *Clinical and Related Waste Management for Health Services*, https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2017_026.pdf

Waste Stream	Definition
Anatomical waste	Identifiable human body parts such as limbs, organs, placenta and recognisable or large pathological specimens resulting from investigation or treatment of a patient. It does not include deceased bodies.
Clinical sharps	Any clinical object capable of inflicting a penetrating injury which may or may not be contaminated with blood and or body substance. This includes needles, ampoules and any other sharp objects or instruments designed to perform penetrating procedures. May contain clinical material or GMO waste.
Cytotoxic Waste	Material contaminated with residues or preparations containing materials toxic or otherwise harmful to cells. This includes any residual cytotoxic drug or laboratory chemical and any discarded material or clinical waste associated with the preparation or administration or excretion of cytotoxic drugs. May include GMOs or tissues containing GMOs.
Pharmaceutical Waste	Pharmaceuticals or other chemical substances specified as regulated goods in the Poisons and Therapeutic Goods Act 2008. Includes any substance specified in a Schedule of the Poisons List under the Act, as well as any therapeutic good which is unscheduled. Includes expired or discarded pharmaceuticals, filters or other material contaminated by pharmaceutical products.

All of the waste streams must be stored in receptacles that adhere to the NSW Clinical and Related Waste Management for Health Services requirements (the NSW Health Requirements). The waste receptacles expected to be received on site are summarised in Table 4.

Table 4 Waste receptacles expected to be received at the facility

Waste stream	Expected bin sizes (L)	Bin colour	Bin lid colour	Plastic bin liners
Clinical	1,100L 660L 240L 120L 60L	Yellow	Yellow	Yellow
Anatomical	240L 120L 60L	Yellow	Orange	Orange
Cytotoxic	240L 120L 60L	Purple	Purple	Purple
Pharmaceutical	240L 120L 60L	Yellow	Orange	N/A
Sharps	Various 1.4L to 60L	Yellow	Yellow	N/A

Waste stream	Expected bin sizes (L)	Bin colour	Bin lid colour	Plastic bin liners
	Largest 72L			

All receptacles are expected to be compliant with NSW Health Requirements. On collection, waste bins are inspected by the driver prior to loading. If a bin is found to be non-compliant it will not be collected for processing at the facility.

General waste and comingled recyclables generated within the office will be stored and collected within the office building as per the current arrangements. It is not expected that there will be a significant difference in waste generation for general waste and comingled recyclables under the proposed operations. General waste and comingled recyclables streams will be collected by the nominated waste contractor as required.

2.4.2 Operating hours

The facility is currently permitted to operate from 7am – 7pm Monday to Saturday, except on public holidays. In order to increase the processing capacity of the facility, it is proposed that the current actual operational hours be increased. This is summarised in Table 5 below.

Table 5 Current and proposed actual operating hours

	Current operation	Proposed operation
Operating hours	7.00am and 3.00pm, Monday-Friday	7.00am and 7.00pm, Monday-Saturday (within current approvals)
Days in operation per year	285	302[7]

The proposed actual operating hours are based on the following activities:

- The first delivery of waste will arrive at 7:00am;
- On typical day of operation, the first treatment cycle will begin at 7:30am;
- In the event where untreated clinical waste needs to be stored overnight due to a late delivery[8], the first treatment cycle will begin at 7:00am on the next operational working day;
- The last waste delivery vehicle will arrive no later than 5:00pm;
- The last treatment cycle will begin no later than 6:00pm;

[7] The number of days in operation is based on the facility being open for 52 weeks of the year and the assumption that there are 10 public holidays a year that fall within the working week.
[8] When the last delivery of the day arrives late and there is not enough time to treat the waste before 7.00pm. Therefore, the likely maximum volume of waste to be stored overnight would be 450kg, equivalent to one MRVs worth of waste. Related waste streams would be sorted and stored in the appropriate locations within the treatment facility. Based on current operations, late deliveries are only anticipated to occur around 3-5 times per month, due to unique traffic conditions.

- The autoclave will be switched off no later than 6:55pm;
- All operations involving machinery will have ceased at 7:00pm; and
- A scheduled annual shutdown period as required for significant maintenance or repairs of equipment. This would occur during the core operational hours.

Accordingly, no change is required to the existing permitted operating hours for the purposes of the core activities to be carried out onsite. However, it is proposed that the permitted operating hours include any public holiday that falls on a Saturday.

In addition, in order to maximise the capacity of the site:

- The first staff member will arrive at approximately 6:15am to turn on the boiler; and
- Scheduled or emergency basic maintenance or repairs (refer to Section 2.4.12) that may take place outside of the core operating hours.

Accordingly, the following activities are proposed to be excluded from the meaning of "operation":

- Staff arriving onsite to undertake preparatory activities, including turning on the boiler;
- Scheduled or emergency basic maintenance and repairs; and
- Any office-related tasks.

2.4.3 Staffing

The project will result in the hiring of an additional 3 processing staff at the facility as shown in Table 6 below.

Table 6 Full time staffing for current and proposed operation

Role	Current operations	Proposed operation
Processing Staff	3	6
Office/Administration Staff	5	5

Currently processing staff work to one-shift arrangement. Under the proposed operations, the following shift are proposed:

- Shift 1: 7:00am – 3:00pm
- Shift 2: 11:00am-7:00pm.

2.4.4 Vehicle movements

Med-X currently has its own collection vehicle fleet that collects clinical and related wastes. The current collection fleet servicing the facility includes MRVs/LRVs and vans. The collection fleet is summarised in Table 7 below:

Table 7 Vehicles in current and proposed collection fleet

Vehicle type	Vehicles in collection fleet		
	Current operation	Proposed operation	Increase
MRV	6	8	2
Vans	8	8	0
Total	14	16	2

The proposed increase in treatment capacity will result in an increase in the total number of waste deliveries. Table 8 below summarises the increases in waste deliveries.

Table 8 Current and proposed waste deliveries

Vehicle type	Waste deliveries per day		
	Current operation	Proposed operation	Increase
MRV	10	16	6
Vans	12	16	4
Total	22	32	10

An indicative delivery schedule showing the anticipated delivery times is provided in Appendix I. The average time to unload and service a vehicle is 12.5 minutes. Should additional delivery vehicles arrive at site, a vehicle would depart the site promptly after being serviced to avoid congestion. However, if there are no other vehicles, the driver may take a short reprieve before the next delivery. Time has been allowed in the schedule with this in mind. Swept path diagrams are provided in Appendix D, illustrating the proposed vehicle movements for the event where two or more vehicles arrive at site at the same time.

It is proposed that all fleet vehicles be stored at the parking depot when not in use[9]. The fleet vehicles will collect and deliver waste to the treatment facility until their schedule is complete. After the last waste delivery for the day is complete, the clean bins required for the following day's first delivery will be loaded into the vehicle. The vehicle will then be driven to the parking depot where it will be stored until its first scheduled delivery the following day. Please refer to Section 2.4.7 of this report and Appendix C for the parking location of each fleet vehicle at the parking depot.

[9] It should be noted that not all waste delivery vehicles will originate from the parking depot. One fleet vehicle (van) currently departs and is stored overnight at a private residence

It should be noted that vehicles are not cleaned at the facility or at the parking depot and only bins that have been cleaned are restocked into vehicles All fleet vehicles will be cleaned at a licensed facility, as per current operations. There is no requirement to clean the delivery vehicles on a daily basis. Vehicles will be cleaned once every two weeks or as required. The vehicles will be cleaned once the deliveries for the day are complete.

Drivers are required to clean the inside of their vehicles and sweep and/or mop the floor weekly. If a spill occurs, vehicles are cleaned immediately following the appropriate spill procedure. All vehicles carry a spill kit and the floors of the MRVs are bunded with spill drain tanks. Spills which occur within a van are handled by the spill kit and moped into a lockable canister, the van is then cleaned at the end of the day within the bunded area at the facility.

Due to the increase in treatment capacity, the collection of the treated clinical waste from the facility by a nominated contractor to a licensed disposal facility will **increase from 3-4 days per week to daily, Monday-Friday.** The collection of related wastes by a nominated contractor from the facility to an appropriate disposal facility will also **increase from 3 days a week to daily, Monday-Friday**. Any related wastes received on Saturday, Sunday or a public holiday that falls on a weekday will be stored appropriately until collection by the nominated contractor on Monday.

2.4.5 Waste delivery

The maximum number of vehicles expected to arrive at the facility at once is two. In order to keep the maximum number of vehicles arriving to the site at two or below and avoid vehicles idling or parking in the street, the following processes are in place:

- Med-X own and manage all fleet vehicles that deliver clinical and related waste to the site and there are no third party or concession deliveries of waste to the facility;
- All Med-X fleet vehicles are fit with a tracking system and their exact location is always able to be monitored; and
- This software is used to control deliveries and communicate to drivers if they need to slow down their collection route to ensure they do not arrive to the site when it is congested.

Only one vehicle will unload into the bunded area inside the building at any one time[10]. If a second vehicle arrives on site while a vehicle is already in the process of unloading it will park adjacent to the on-site car park while waiting to be serviced. This process is further described in the Traffic Impact Assessment in Appendix D. The temporary parking areas for trucks waiting to be serviced are shown on the swept path diagrams as part of the Traffic Impact Assessment in Appendix D.

[10] Please refer to section 2.4.8 for more detail regarding the waste receival process.

2.4.6 Waste quantities

Waste arrival

The quantity and density of the waste generated from medical facilities can be highly variable day to day. The maximum quantity of waste expected in each vehicle is shown in Table 9.

Table 9 Maximum quantity of waste expected per vehicle type

Vehicle Type	Maximum quantity expected (kg)
MRV	450
Van	100

It has been the Applicant's experience during current operations that waste delivery vehicles are not always at full capacity. In the scenario that an MRV does arrive full, the maximum quantity of waste expected to be unloaded into the bin staging area at any one time is less than the current approved limit of 0.5 tonnes (approximately 23 bins).

With additional MRVs added to the delivery fleet (see Section 2.4.4) and the volume of waste per delivery expected to increase, an additional 10 waste deliveries per day (see Section 2.4.4) would support 3.4 times the current daily processing capacity.

Waste processed and treated

All clinical and related wastes that are received at the facility are processed. Processing includes:

- Unloading from the collection vehicle;
- Inspection of the waste;
- Manually recording the weight, waste type and source (facility where the waste was generated); and
- Separating clinical and related wastes.

All clinical waste is treated on-site via the autoclave system. Related waste is not permitted to be treated on-site and is instead separately stored until it is collected for disposal at an appropriate facility. Related waste storage areas are shown in Figure 3.

The proposed operations would see an increase in the overall processing capacity on the site from 650tpa to 2,300tpa. The amount of waste expected to be processed on average per day and the amount to be processed per year is summarised in Table 10.

Table 10 Waste quantity processed during current and proposed operations

Waste streams	Average kg/day		Tonnes per annum (tpa)	
	Current operations	Proposed operations	Current operations	Proposed operations
Clinical Waste	1,800	6,600	513	Approx. 1,990
Anatomical	45	90	13	28
Cytotoxic	250	500	72	151
Pharmaceutical	40	80	12	24
Total	**2,135**	**7,270**	**Approx. 610**	**Approx. 2,200**

The proposed operations expect that approximately **2,200tpa of clinical and related wastes will be processed** at the facility. Approximately **2,000tpa of clinical waste is expected to be treated** via the autoclave system and approximately **200tpa of related waste is expected to be processed** at the facility. The quantity and density of the waste generated from medical facilities can be highly variable day to day, therefore the tonnage expected to be processed at the facility per year is based on the average tonnage of waste expected per day. Accordingly, the Applicant is seeking an increase to the **total proposed processing capacity to 2,300tpa** in order to allow for a 100tpa contingency to account for the variability in daily waste quantities produced by medical facilities.

The tonnage of clinical waste treated per day will vary. Therefore, the average and maximum amount of clinical waste treated per day and per year for the current and proposed operations is summarised in Table 11 below.

Table 11 Average and maximum clinical waste treated per day for the current and proposed operations

	Current operations	Proposed operations
Average clinical waste treated at any one time (kg)	450kg	600kg
Maximum clinical waste treated at any one time (kg)	600kg	600kg
Average cycles per day	4	11
Maximum cycles per day	7	13[11]
Average clinical waste treated per day (tpd)	1,800kg/day[12]	6,600kg/day[13]
Maximum clinical waste treated per day (kg/day)	4,200kg/day[14]	7,800kg/day[15]

[11] Calculation: Average of 55 minutes assumed for each treatment cycle (with a 50 minute run time and 5 minutes for loading and unloading). 12 hours per day / (55 mins per cycle /60) = 13 cycles
[12] Calculation: 450 kg x 4 cycles
[13] Calculation: 600kg x 11 cycles
[14] Calculation: 600 kg x 7 cycles
[15] Calculation: 600kg x 13 cycles

Number of days in operation per year	285	302
Clinical waste treated per year (tpa)	513tpa[16]	Approx. 1,990tpa[17]

It is expected that an average of 11 cycles will be completed each day. This equates to a cycle being undertaken every hour from 7:30am with the last cycle being completed at 6:30pm.

A maximum number of waste treatment cycles (13) would occur on days where the maximum volume of waste needs to be processed and would be largely based on the volume and timing of deliveries throughout the day.

Based on the NSW Health Approval, the treatment of clinical waste by autoclave must be at 140 degrees Celsius for 50 minutes at a pressure of 310Kpa. Unloading and reloading of the autoclave is performed quickly to retain as much heat within the autoclave as possible and increase efficiency. Unloading and reloading of the autoclave can be performed in around 5 minutes. This combined with a minimum run time of 50 minutes, a total of 13 cycles can be achieved between the operating hours of 7am to 7pm when required.

2.4.7 Site plans

The site plans for the internal and external areas within the facility are provided in Figures 3-5. Full size versions of these plans are also included in Appendix C.

[16] Calculation: 1800kg x 285 days x 0.001kg/tonne
[17] Calculation: 6,600kg x 302 days x 0.001kg/tonne

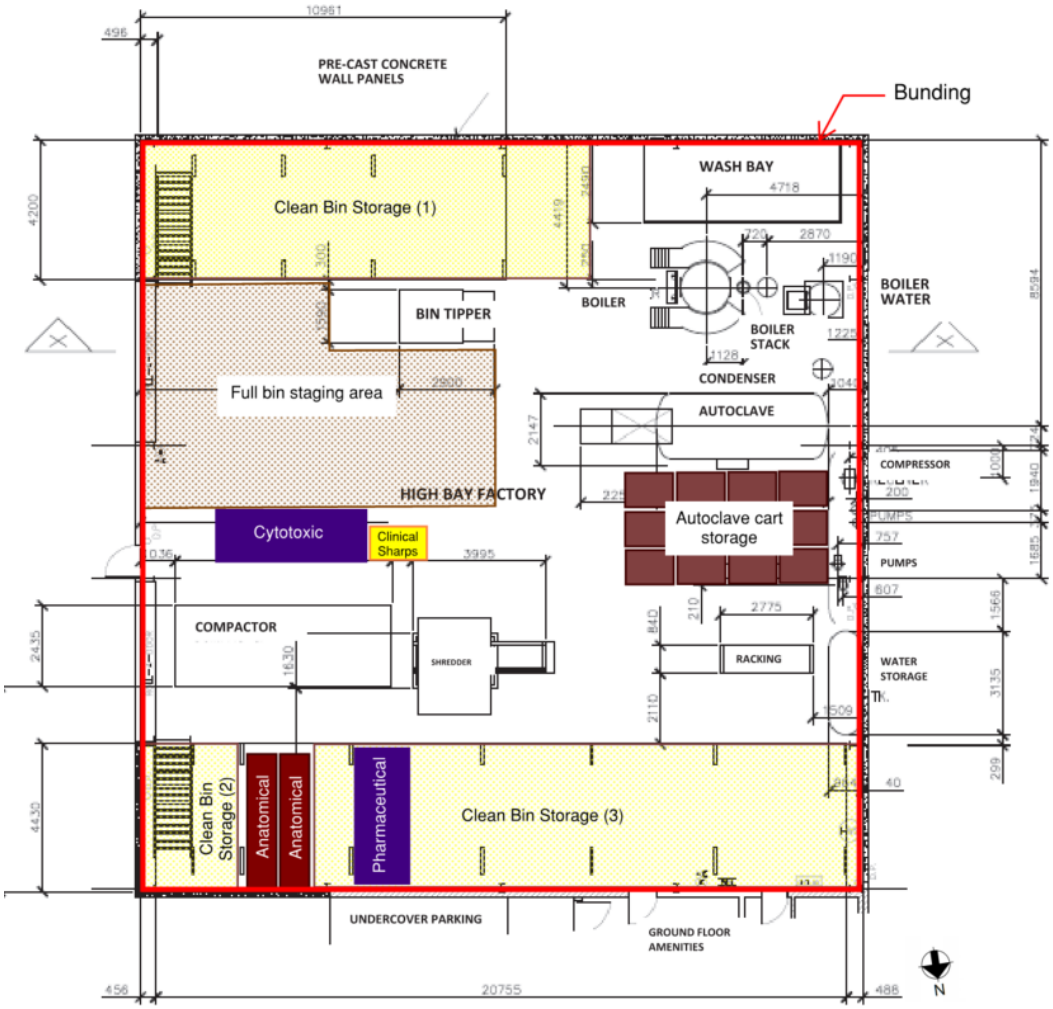


Figure 3 Internal site layout – ground floor storage areas

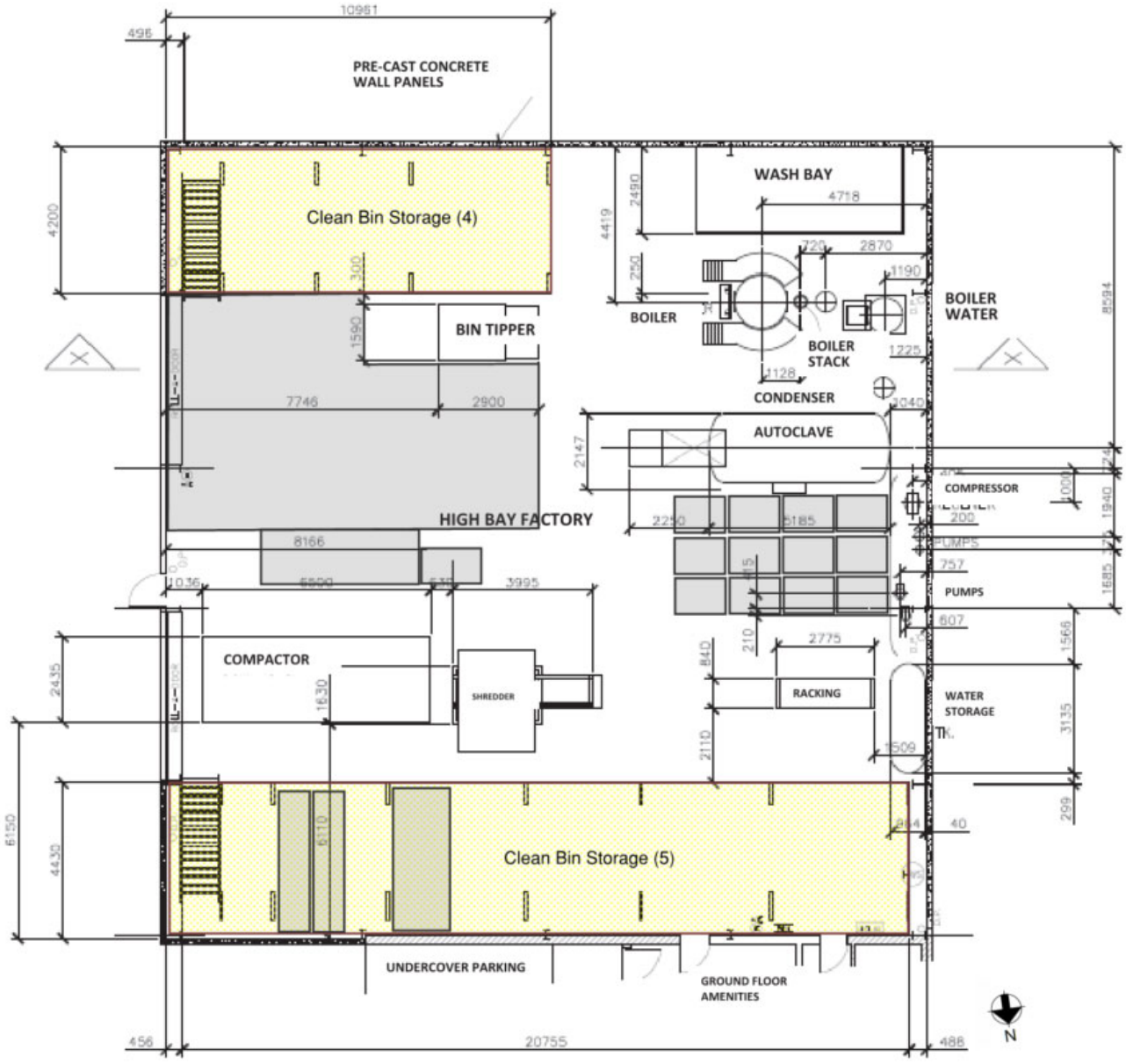


Figure 4 Internal site layout – racking storage areas

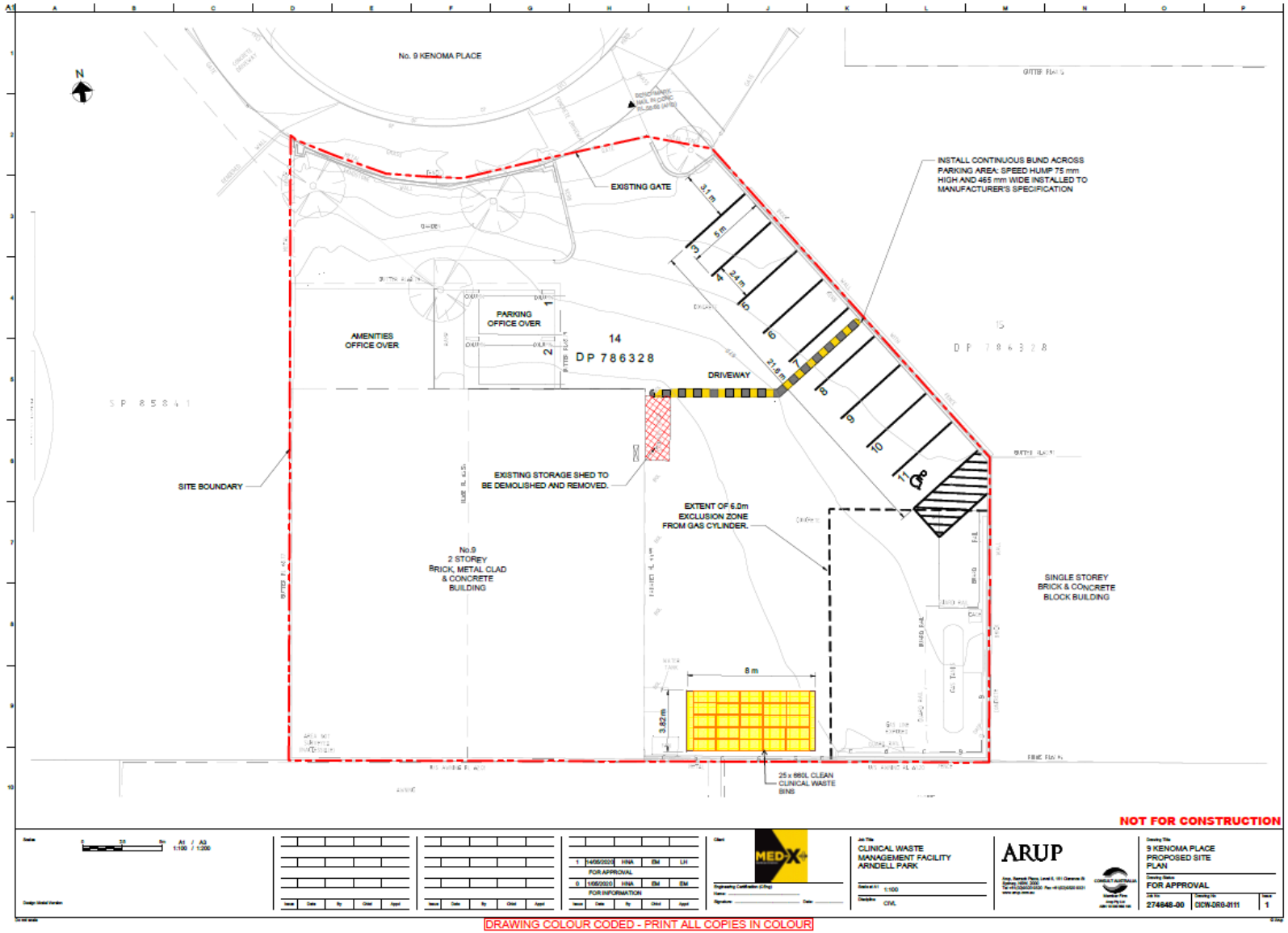


Figure 5 External site layout

2.4.8 Waste receival and treatment process

The waste receival process consists of the following activities:

- A waste delivery vehicle arrives and reverses into the building through the door located at the back of the building;
- Full bins are unloaded directly into the full bin staging area inside the building[18] and inspected;
- Bins are weighed;
- Clinical waste is transferred via bin lift or manually into autoclave carts;
- Related waste bins are transferred to their allocated storage areas;
- Empty bins are transferred to the wash bay to be cleaned; and
- Cleaned bins are transferred to their allocated storage locations.

The waste receival and treatment process is continual and efficient with the above process steps occurring simultaneously. The staging area does not reach capacity as multiple staff members move bins quickly through the process as they are delivered. The fast pace and continual processing ensures that there is adequate manoeuvring space to move clean bins from their storage locations to be loaded into the vehicle before it leaves for its next collection.

All waste will be handled according to the requirements stated in the NSW Health Requirements which are reflected in the Med-X's procedure documents[19].

It should be noted that waste is not currently collected from public hospitals and clinical and related waste for treatment at the facility is only collected from private hospitals and other medical facilities. If waste from public hospitals is treated onsite in the future, a radioactive waste detection system would be installed in the off-chance that radioactive waste was contained within the clinical and related wastes. This would enable radioactive waste to be separated, stored appropriately, and transferred off-site for treatment at an appropriate facility. The likely location of the radioactive waste detection system is shown on Figure 6.

[18] The building is completely bunded.
[19] For the relevant Med-x procedure refer to Appendix E MXNATQPR305 Med-X Handling Clinical and Quarantine Waste Procedure.

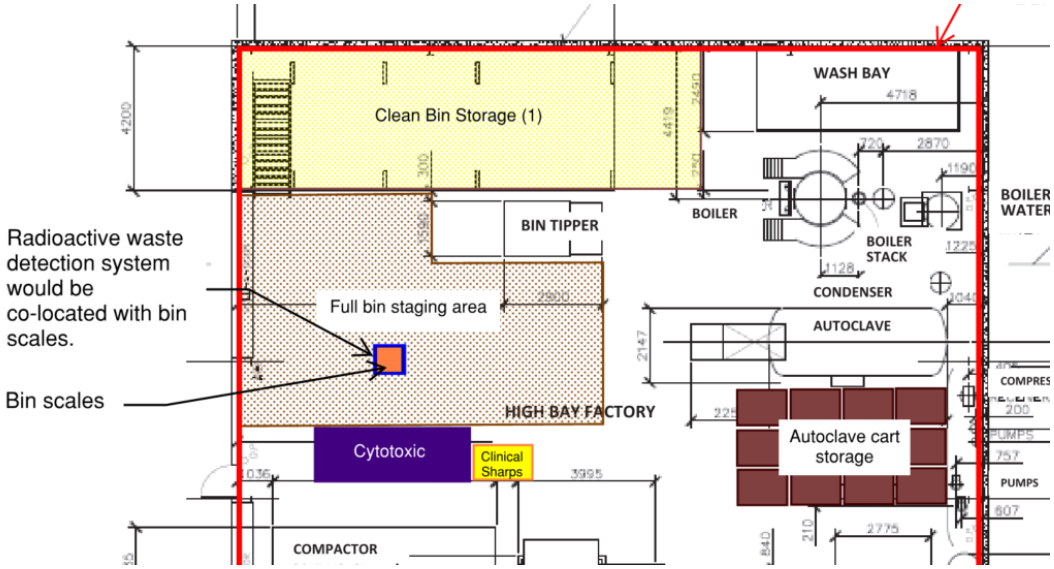


Figure 6 Indicative location of radioactive waste detection system

The waste receival and waste treatment process is summarised in Figure 7 and described in more detail in Table 12. Also refer to MXNATQPR305 Med-X Handling Clinical and Quarantine Waste Procedures and MXNATQPR306 Med-X Handling Cytotoxic Anatomical and Pharmaceutical Waste Procedures in Appendix E for additional detail for handling and use of the forklift and shredder.

All related wastes will be removed from the premises and disposed of at an appropriate facility within 48 hours.

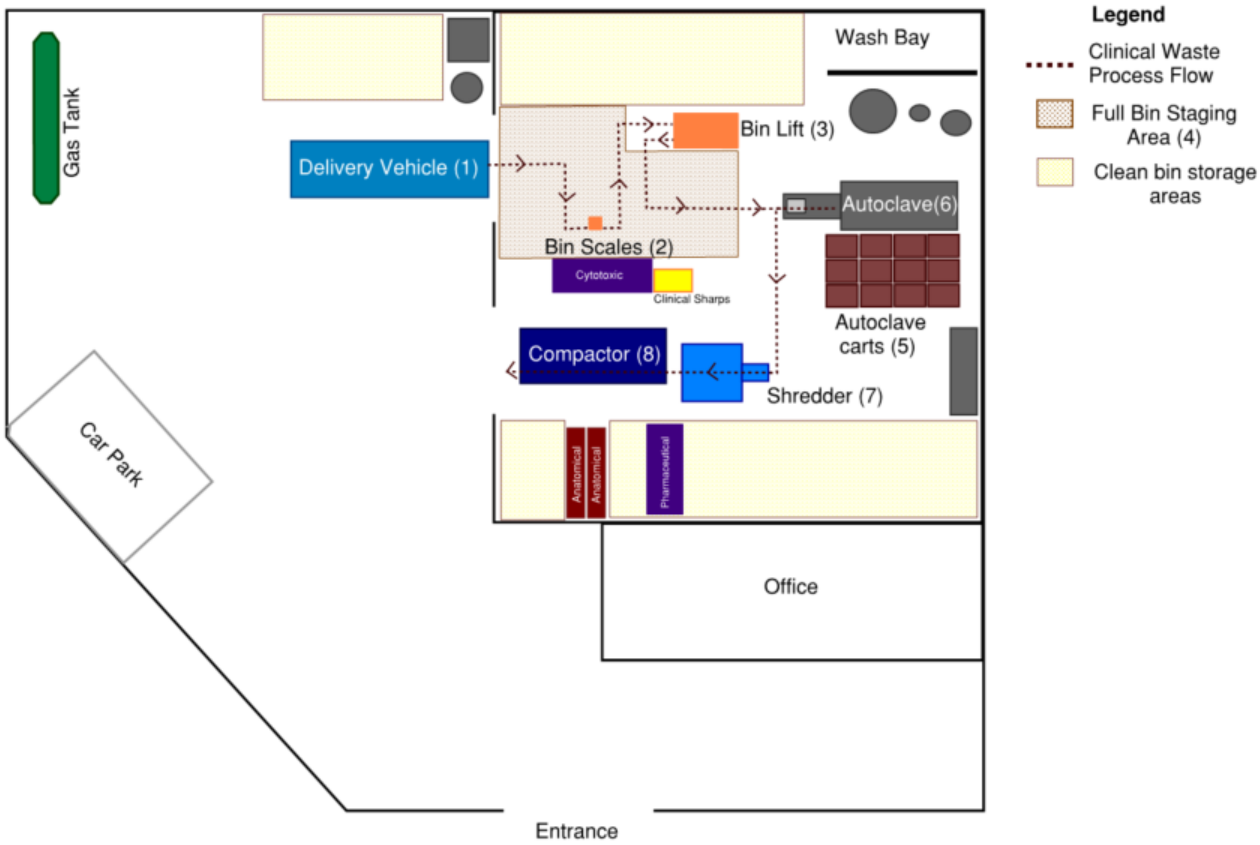


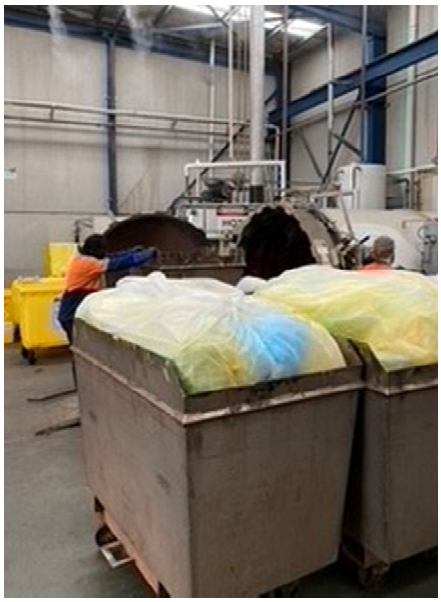
Figure 7 Waste receival and treatment process

Table 12 Waste receival and treatment process description

Reference no.	Name	Description	Image
(1)	Waste vehicle	The vehicle enters through the front gate and reverses so that the back of the vehicle is positioned for unloading within the facility's internal bunded area. The vehicle does not impede the bin staging area and bins are quickly moved from the vehicles to the staging area. Refer to the Traffic Impact Assessment in Appendix D for vehicle swept path diagrams. For the MRVs, the bins are placed on a hydraulic lift on the tailgate of the vehicle which is lowered to the ground inside the buildings internal bunded area. For vans containing smaller bins which are typically lighter, specially designed ramps are used to wheel the bins directly from the van into the building's internal bunded area. Once a vehicle has been unloaded it needs to be re-loaded with clean, lined empty	

Reference no.	Name	Description	Image
		containers according to the driver's route manifest for the following day.	
(2)	Bin scales	All bins are lined and contain bagged clinical and related wastes[20]. Before weighing the bins are visually inspected. If anatomical, cytotoxic or pharmaceutical bags of waste are found to be incorrectly deposited into the clinical waste bins, the entire contents of the bin will be treated as anatomical, cytotoxic or pharmaceutical waste and therefore cannot be treated at the facility. The contaminated bins are weighed and then stored separately. After inspection the uncontaminated clinical and related waste bins are weighed on electric scales. The weight is recorded, and the information stored. After weighing the clinical waste bin is moved directly to the bin lift to consolidate the waste into the autoclave carts or it is moved to the full bin staging area. This process takes approximately 15 minutes. Related waste bins are transferred to their appropriate storage area. Please also refer to MXNATQPR307 Med-X Weighing Waste Procedures in Appendix E for more information.	
(3)	Bin lift	If required, a mechanised bin lifter that can lift 120L, 240L, 660L and 1100L containers is used to safely transfer the clinical waste into the autoclave carts. Bags can also be manually removed from partially full bins and disposed into an autoclave cart, if this process can be done safely. No waste material is ever exposed during these processes and all material is double bagged.	

[20] Please note that pharmaceutical and sharps waste is not bagged.

Reference no.	Name	Description	Image
(4)	Full bin staging area	The full bin staging area is used to temporarily store bins as they are unloaded from a vehicle. The full bin staging area is 68 m^2 which will be adequate to contain the maximum numbers of bins expected at arrive at any one time: • 12 x 120L • 54 x 240L • 8 x 660L	
(5)	Autoclave carts (untreated waste)	There are four autoclave carts which have a capacity of approximately 150kg each. Each autoclave cart is lined. The waste is either manually deposited into the autoclave cart or it is filled using the bin lift. Once the autoclave cart is full, the bin liner is tied off to seal all contents within the bin.	

Reference no.	Name	Description	Image
(6)	Autoclave	Once the four autoclave carts are full they are manually wheeled onto the autoclave lifter. The lifter automatically lifts the cart and electrically moves it into the autoclave. Once all carts are in the autoclave the door is locked and the treatment commences. It takes 55 minutes to complete the treatment cycle, including 5 minutes for loading and unloading. Please refer to Autoclave Process Details for more information.	
N/A	Autoclave carts (treated waste)	Once the treatment process is complete the autoclave carts are unloaded from the autoclave and left to cool. Once cooled, the autoclave carts are moved to the shredder using a forklift. The forklift lifts the autoclave cart and empties it into the shredder. Please refer to MXNATQPR311 Med-X Forklift Operations Appendix E for more detail on the forklift operations.	

Reference no.	Name	Description	Image
(7)	Shredder	The forklift lifts the autoclave carts and tips the contents into the shredder. The process of cooling the four autoclave carts, tipping them intro the shredder and shredding the material takes approximately 1 hour. There is a bin at the bottom of the shredder that collects all of the shredded waste. Once all the waste is shredded, the shredder bin is moved via forklift to the compactor. The forklift lifts the bin and empties the shredded material into the compactor. Please refer to MXNATQPR310 Med-X Shredder Operation for more details on the shredder start-up and shut-down procedures, operation & maintenance and servicing.	
(8)	Compactor	The shredded material is transported by forklift and tipped into a compactor with a 12 tonne capacity. This process takes approximately 30 minutes.	

Please refer to MXNATQPR305 Med-X Handling Clinical and Quarantine Waste Procedures and MXNATQPR306 Med-X Handling Cytotoxic Anatomical and Pharmaceutical Waste Procedures in Appendix E for additional details around handling, segregation, use of the bin lift and loading vehicles.

MXNATQPR320 Med-X National – Backlog Contingency (see Appendix E) provides procedures to prevent a backlog of untreated waste accumulating on site beyond safe storage limits and to ensure compliance with EPA licence conditions. For the Arndell Park facility, excess waste will be transferred to either the Med-X treatment facility at Newcastle or Weston Aluminium at Kurri Kurri.

2.4.9 Storage of related wastes and clinical sharps

Small quantities of cytotoxic, anatomical, pharmaceutical waste and clinical sharps are delivered to the facility. The bins are weighed, the quantities and source of the waste generated is recorded and the bins are relocated from the bin staging area to a storage area specific to each related waste stream.

There are also small quantities of related wastes that have been incorrectly disposed of in clinical waste bins before delivery to the facility. Related wastes are contained in coloured bags[21] so can be easily identified by staff. If related wastes are found to have contaminated clinical waste bins, the entire contents of the bin will be treated as anatomical, cytotoxic waste or pharmaceutical waste and are stored accordingly.

A small quantity of full sharps containers are delivered to the facility. Sharps containers range in size from 8L to 72L. When the locked and secure sharps containers are delivered they are weighed and then immediately placed in a 900L clinical sharps tubs for bulk storage. The small sharps containers are never opened by staff and remain securely closed.

The proposed storage arrangements for related waste at the facility are summarised in Table 13 and shown on Figure 8.

Table 13 Proposed storage of related waste and clinical sharps

Waste stream	**Area (m^2)**	**Waste expected on site per day – proposed operations**		**Approximate number of bins required - proposed operations**
		kg	Litres[22]	
Anatomical waste	7[23]	90kg	N/A	All anatomical waste is stored in a commercial grade freezer with a 90kg capacity. An additional freezer will be purchased to provide storage contingency for the proposed operations.
Cytotoxic waste	6.0	500kg	2,500L	6 x 660L
Pharmaceutical waste	6.4	80kg	400L	5 x 240L
Clinical Sharps	1.7	N/A	10 x 900L containers collected each day	12 x 900L

[21] Yellow for clinical, orange for anatomical and purple for cytotoxic
[22] It is assumed that related waste has a density of 200kg /m3 or 5L/kg
[23] One freezer requires an area of 3.5m^2.

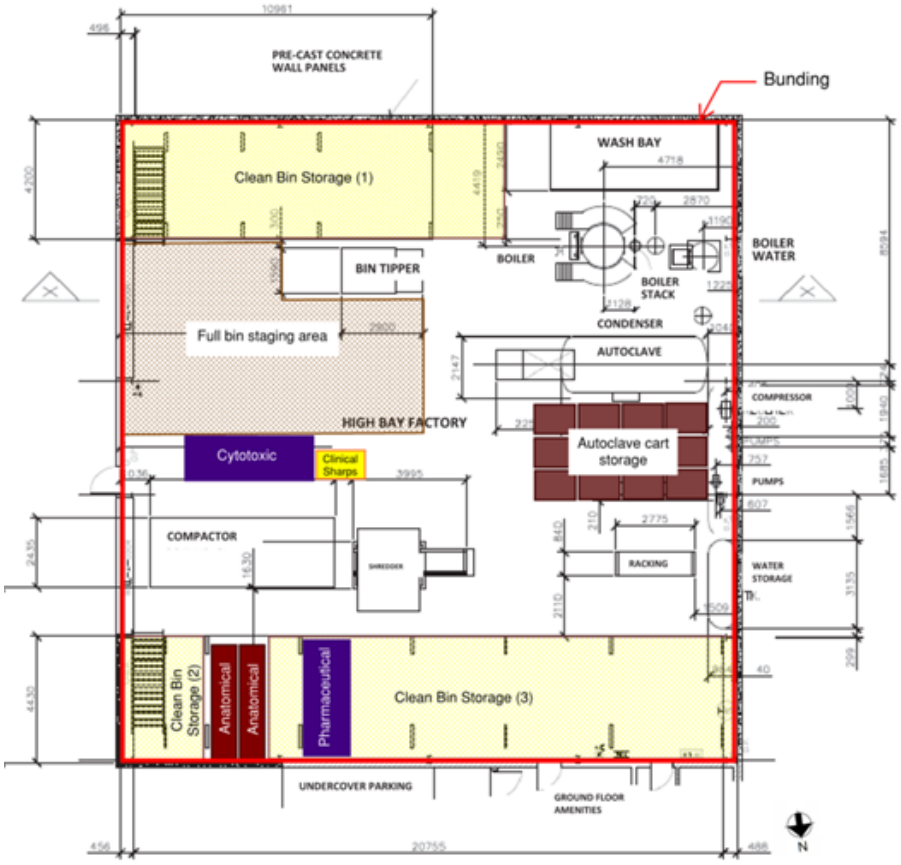


Figure 8 Storage of related wastes

Based on the maximum quantity of related waste expected per day and the daily collection of related wastes, the storage areas provided on site are adequate for the proposed operations. However the build-up of related wastes will be closely monitored and the appropriate actions taken if and as required to meet licence conditions and ensure there are adequate storage areas on-site for the storage of related wastes prior to transfer off-site.

2.4.10 Autoclave process details

Sterilisation process

Autoclaving sterilises by subjecting waste to high temperature and pressurised steam conditions. The principle of the autoclave process is to denature proteins through saturation of heat and moisture. This process destroys microbial flora and fauna existing in the clinical waste. The treatment of clinical waste by autoclaving, followed by shredding, is an approved treatment method by NSW Department of Health.

The treatment process takes approximately 50 minutes to complete to ensure compliance with the NSW Department of Health approved Clinical Waste Treatment Method. The temperature in the autoclave will rise to approximately 140 degrees Celsius to ensure that the processed waste materials are subjected to complete destruction of all potentially infectious materials and rendered safe for disposal as inert General Solid Waste.

The autoclave control cycle parameters have been set up and the efficacy of the system is proven using validation testing. The program is internal to the programmable logic controller (PLC) and is password protected. Biological Indicator tests are performed twice weekly within the facility, as well as yearly by the National Association of Testing Authorities (NATA) approved Laboratory, to validate the autoclave sterilisation process. For more detail refer to the MXNATQPR314 Med-X Monitoring Treatment Facility Procedure Appendix E and Appendix F Validation of Autoclave Test Results.

For more detail regarding the start-up, loading, operation, unloading and shut down of the autoclave, refer to MXNATQPR308 – Med-x Autoclave Operations Appendix E.

Autoclave water cycle

Autoclaving sterilises by subjecting waste to high temperature and pressurised steam conditions. The autoclave water system is a closed loop process during autoclave operation and is summarised below. Please also refer to Figure 9 below.

Water filters are disposed of at a licenced facility.

For additional information on the boiler start up and shut down procedure and maintenance and servicing please refer to MXNATQPR309 Med-X Boiler Operations Appendix E.

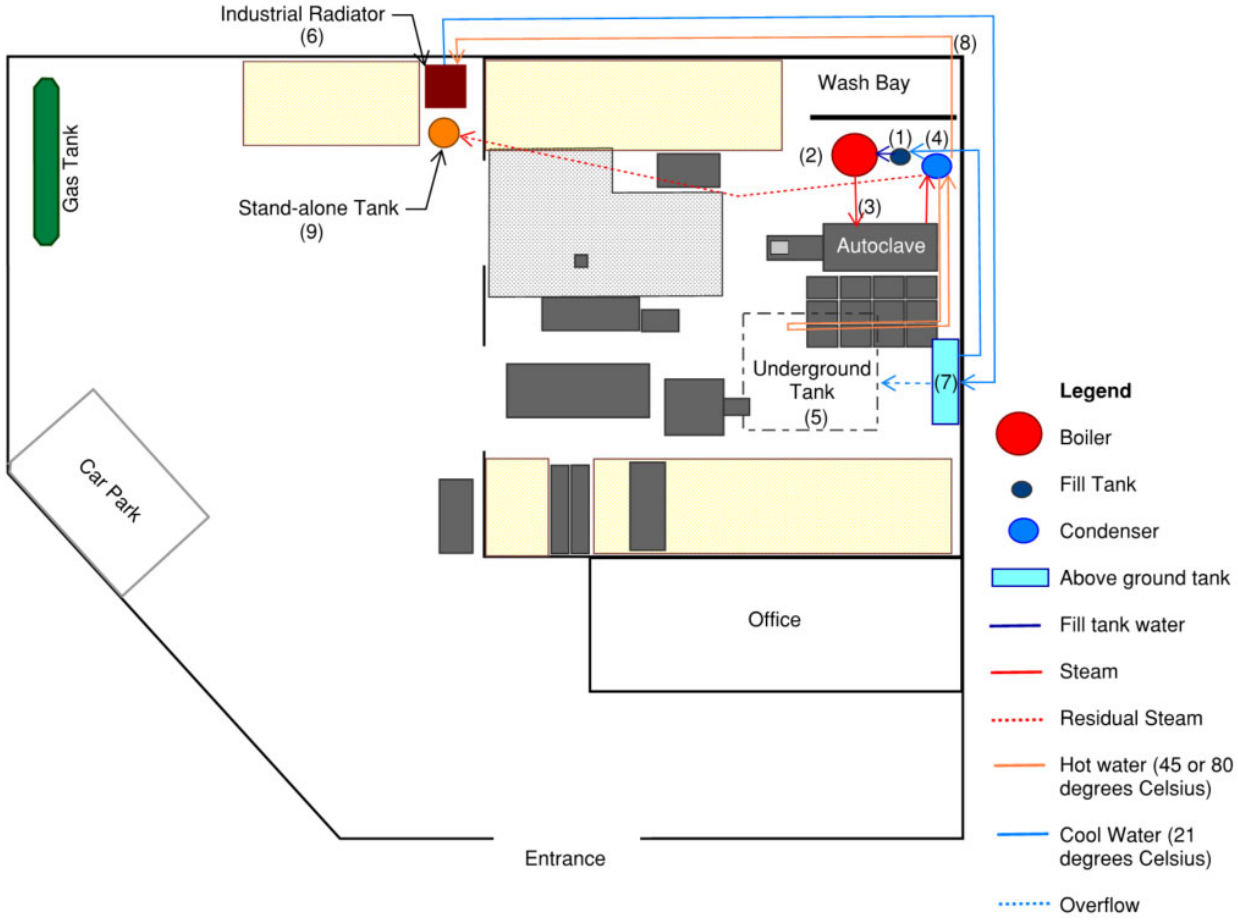
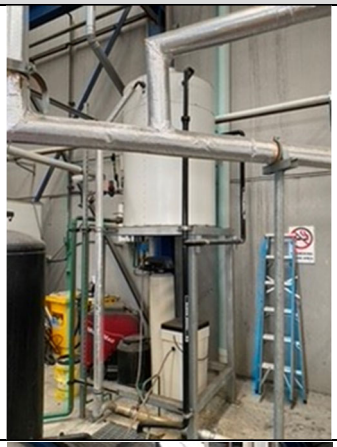
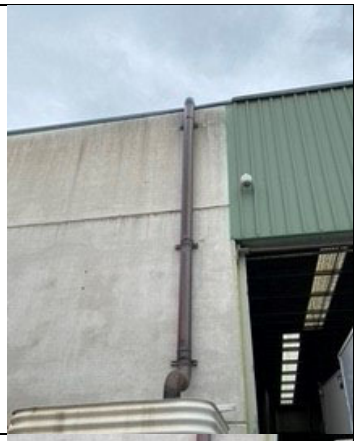


Figure 9 Autoclave water cycle

Table 14 Autoclave water cycle process description

Reference no.	Name	Description	Image
(1)	Fill Tank	The fill tank is connected to the Sydney Water supply. When the boiler and autoclave are turned on at the start of the day, water from the Sydney Water supply fills this tank. Approximately 400L of water is used in the autoclave per day, which is approximately 55% of the total water used on site per day. The water in the fill tank is chemically treated to remove any impurities before being pumped to the boiler.	
(2)	Boiler	The fill tank water transferred to the boiler is converted to steam.	
(3)	Autoclave	The boiler is connected to the autoclave and the steam is transferred to the autoclave. The pressure is increased to allow the autoclave to reach the required temperature of 140 degree Celsius. Once the sterilisation process is complete, the steam is discharged to the condenser.	

(4)	Condenser	This condensed steam (hot water approximately 80 degrees Celsius) is then pumped to an underground storage tank;	
(5)	Underground storage tank	The hot water in the underground storage tank is then pumped through a cooling fan and filtering process into the condenser (4) where the water is cooled to approximately 45 degrees Celsius. Some steam is produced during this cooling process. The 45 degrees Celsius warm water is then pumped to an industrial radiator	N/A
(6)	Industrial Radiator	The radiator cools the water further to approximately 21 degrees Celsius.	
(7)	Above ground tank	This cooled water is pumped to an above ground tank. If there is any overflow it is directed to the underground tank (5).	

(8)	Roof pipes	The steam produced during the cooling process in the condenser (4) exits via pipes on the roof that vent to a standalone tank.	
(9)	Standalone tank	Any residues remaining in this steam are captured by the standalone tank when the steam condenses. A minimal amount of residual steam is discharged via a vent. Please refer to the Air Quality Assessment (AQA) in Appendix G for more information. The water in the standalone tank is filtered and discharged to sewer; The water in the above ground tank is circulated back to the fill tank to be filtered and used again for additional treatment cycles during the day; and	
(2)	Discharge to sewer	Once the autoclave and boiler are shut down, any water remaining in the boiler is discharged to the sewer with a regulated mix of cold water to reduce the temperature. Approximately 380 L of water is discharged to the sewer per day.	N/A

2.4.11 Equipment maintenance and repair

The basic equipment maintenance schedule for current and proposed operations is summarised in Table 15. Please refer to MXNATQPR315 Med-X Treatment Facility Maintenance and MXNATQPR308 – Med-X Autoclave Operations in Appendix E for more information.

Table 15 Proposed facility maintenance schedule

Item	Daily	Weekly	Monthly	As Required
Autoclave		✓		
Filter check	✓			
Filter change				✓
Autoclave Seals				✓
Blow down tank – Autoclave			✓	
Autoclave Loading Bridge			✓	
Boiler		✓		
Blow down tank – Boiler			✓	
Shredder		✓		
Compressor Tank			✓	
Bin lifter	✓			
Inspect electrical connections			✓	
WP-N Platform	✓			

In addition to the proposed facility maintenance schedule above, the autoclave manufacturers from the U.S. inspect the autoclave and boiler every two years to confirm its integrity.

These regular maintenance checks are proposed to occur outside of the core operational hours or during start-up of the boiler and autoclave, as appropriate. A designated annual shutdown period will be scheduled as required to allow for any major repairs or maintenance. This would occur during core operating hours and any waste scheduled to be delivered to the facility during this period will be diverted to another Med-X treatment facility until treatment can re-commence at the facility. No waste will be stored at the facility during this period.

2.4.12 Disposal of treated clinical waste

The process of disposing of the treated clinical waste is summarised below:

- A hook lift MRV drives through the entrance and reverses into the building to collect the compactor. Refer to the Traffic Impact Assessment in Appendix D for the swept path diagrams. It takes approximately 3 minutes to load the compactor onto the collection vehicle;
- For the majority of the collections, the collection vehicle drives directly to the Kemps Creek landfill to dispose of the waste and no clean compactor is left to replace the full compactor. It takes approximately 20 – 25 minutes to transport the full compactor to the Kemps Creek landfill. Kemps Creek landfill is a lawfully licensed facility (EPL 4068) which is licensed to accept General Solid Waste.

- An empty compactor is typically returned within an hour after the full compactor has been collected.
- The site currently has capacity to store 12 treated, autoclave carts. This is equal to three treatment cycles and would take approximately three hours. Therefore, there are currently no operational issues associated with the site missing a compactor for one hour.
- With the proposed increase in treatment volumes, it is expected that the collection of the compacted waste from the facility will increase from 3 times a week to daily, Monday- Friday.

2.4.13 Disposal of related wastes and clinical sharps

For the proposed operations, the collection of related wastes will occur daily, Monday-Friday. The related wastes and clinical sharps will be transferred by a waste contractor to a licenced incineration facility for thermal treatment. Currently related wastes are transferred to either Weston Thermal Solutions at 129 Mitchell Avenue, Kurri Kurri or Cleanaway Medical Waste Services, 2 Wiblin Street, Silverwater.

2.4.14 Bin washing process

Once bins containing untreated clinical waste have been emptied, they are transferred to the wash bay (refer to Figure 10) where the bins are manually cleaned and sanitised as per the requirements in the NSW Health Requirements.

Figure 10 Wash bay area

All containers are washed with an industrial strength bleach solution. Containers stained with blood or containing a foul odour are cleaned with a hospital grade bleach solution as well as industrial strength neutral detergent solution. Once the container is dry, the appropriate bin liner is inserted (yellow for clinical and anatomical waste bins and purple for cytotoxic).

The bin is inspected and if it is considered compliant it is transferred to the appropriate clean bin storage area. If the bin is deemed faulty or below standard it will be removed from the work area and stored at a designated location for faulty product.

Approximately 300L of water is used per day in the bin washing process and is discharged to the sewer. This is approximately 40% of the total water used on site.

Refer to MXNATQPR313 – Med-X Cleaning procedure in Appendix E for more detail.

2.4.15 Clean bin storage and collection

An increase in the treatment capacity for the facility will result in an increase in storage space required for clean bins for all waste streams. Table 16 below details the number of clean bins requiring storage for the proposed operations and the storage space available at the facility. Figure 11 and Figure 12 show the location of each bin storage area.

Table 16 Clean bin storage space required for proposed operations

Site Plan Reference	Location	Area (m^2)	Waste type	Bins stored
Clean bin storage (1)	Internal - Ground floor	57	Clinical	1 x 660L 200 x 240L 56 x 120L
Total Clean bin storage (2) and (3)	Internal - Ground floor	77	Clinical	15 x 660L 118 x 240L 64 x 120L 40 x 72L 20 x 60L 60 x 50L 32 x 25L
			Cytotoxic	60 x 240L 20 x 120L
			Pharmaceutical	4 x 240L 4 x 120L
Clean bin storage (4)	Internal - Racking	43	Additional storage space if required	
Clean bin storage (5)	Internal - Racking	84	Additional storage space if required	
Clean bin storage (6)	External	30.5	Clinical	25 x 660L

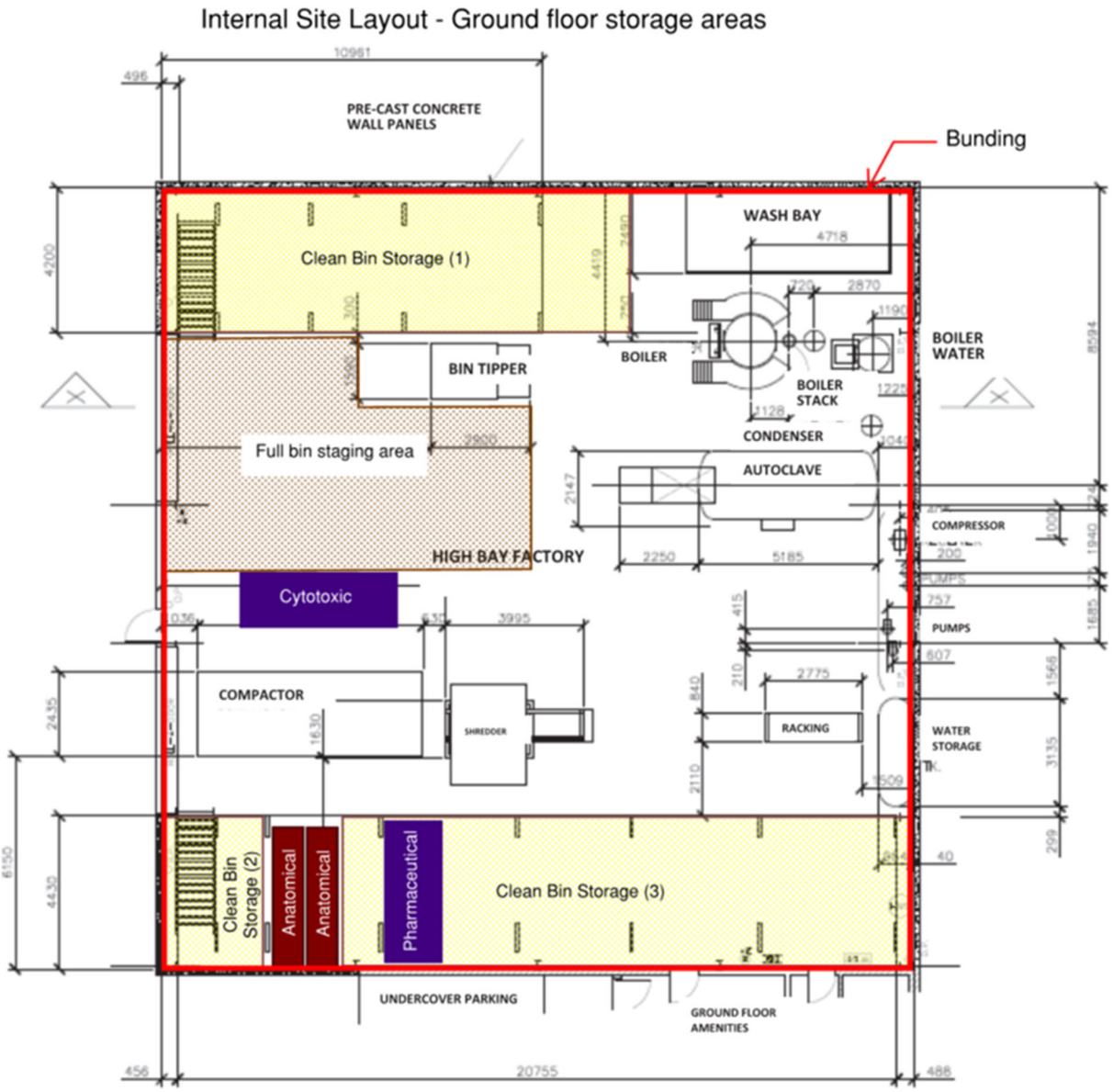


Figure 11 Clean bin storage locations – ground floor

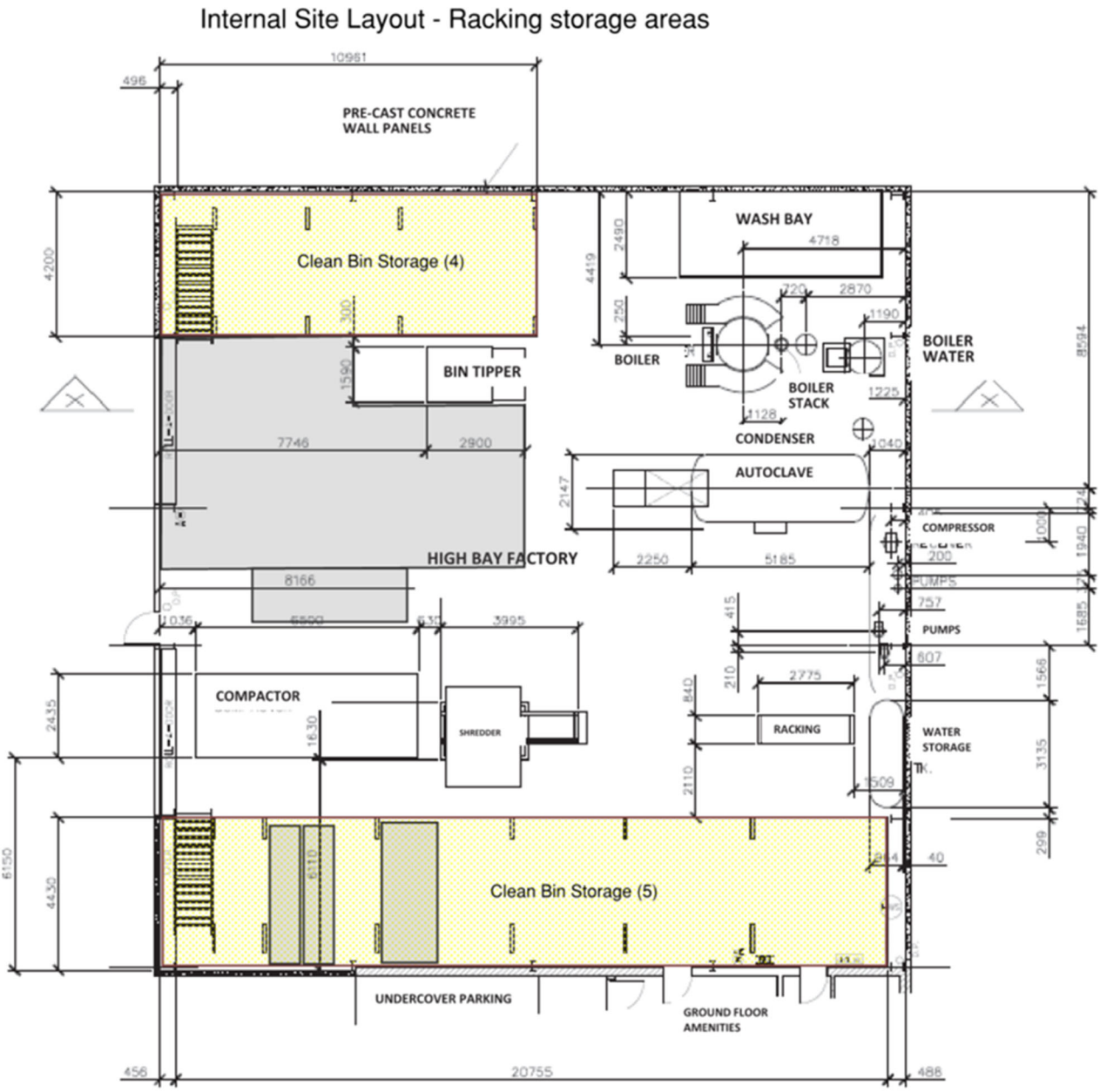


Figure 12 Clean bin storage locations – internal racking

The total space available for clean bin storage on the ground floor of the facility (inside and outside the building) is approximately 188m^2. 120L and 240L bins can be double stacked (two high) and bins smaller than 120L can be stacked up to six high. With stacking when required, the ground floor storage area is adequate to store the additional clean bins required to increase the facility's processing capacity to 2,300tpa.

There is also approximately 127m^2 of additional storage space provided in the internal racking spaces. The bins stored in the racking are transported via forklift four at a time (for 120L and 240L bins).

Once a waste delivery vehicle (MRV or van) has been unloaded it is re-loaded with clean, lined empty containers according to the driver's route manifest for the following day. The driver determines the type of bins to load based on the route

manifest provided. If it is the last delivery of the day for the vehicle, clean bins will still be loaded to be used for the first delivery the following day. After loading the clean bins, the delivery vehicle will park at 7 Vangeli Street, the parking depot, until its next delivery. All vehicles are loaded with clean bins for the next delivery, whether the delivery be that same day or the next working day. After completing its last delivery for the day, all vehicles return to the parking depot, loaded with the clean bins required for the next delivery.

Please note that all clean clinical sharps storage containers are stored at the parking depot, refer to Section 2.5.4 for more information.

2.4.16 Water usage

The two main activities that use water at the facility are bin washing and the autoclave process. Other onsite water usage, for example in the office kitchen or bathrooms, is considered negligible. Table 17 below summarises the water usage at the facility during current operations and the estimated usage during the proposed operations.

Table 17 Facility water usage

Activity	Water usage (L/day)	
	Current operations	Proposed operations
Bin washing	300[24]	550[25]
Autoclave process[26]	400[27]	1,100[28]

2.5 Site operations - parking depot

The parking depot is currently used to:

- Store clean fleet vehicles when they are not in use; and
- Store clean, unused sharps containers.

No waste, unclean bins, previously used bins or unclean fleet vehicles will enter the parking depot. Currently, all clean fleet vehicles are stored overnight at the parking depot. This arrangement will continue under the proposed operations. Changes to the vehicle numbers and parking layout at the parking depot are detailed in the following sections.

[24] Bin washing typically occurs between 8am – 2pm during current operations using approximately 50L per hour.
[25] Assuming bin washing will occur between 8am – 6pm (11 hours). Calculation: 11 hours of bin washing per day x 50L used per hour for bin washing = 550L
[26] Approximately 100L per cycle is used.
[27] Approximately 380L of the 400L used is discharged to the sewer per day.
[28] Calculation: 11 cycles per day on average x 100L per cycle = 1,100L / day

The current lease for the site expires on 30 April 2021 with an Option to Renew the Lease for a further two years to 30 April 2023. The consent of the landowner to continue the current operations at the site is provided in Appendix J.

Should the site at 7 Vangeli Street become unavailable for lease, an equivalent site in terms of size, function and proximity to Kenoma Place would be sought and secured to support the proposed operations.

2.5.1 Vehicle parking

The number of vehicles currently stored at the parking depot and the proposed number of vehicles to be stored at the parking depot are summarised in Table 18 below.

Table 18 Vehicles to be parked at the parking depot for current and proposed operations

Vehicle type	Vehicles in collection fleet		
	Current operation	Proposed operation	Increase
MRV	6	9	3
Vans	8	9	1
Total	14	18	4

The site plan shown in Figure 13 and the swept path diagrams in the Traffic Impact Assessment (Appendix D) demonstrates that the increase in vehicles can be accommodated in the parking depot.

2.5.2 Operating hours

During current operations the first fleet vehicle departs the parking depot at 7:00am. For the proposed increase in operations, a departure time of 5:00am for 3 MRVs is proposed. The remainder of the collection fleet (5 MRVs and 8 vans) will depart the parking depot between 7:00-8:00am to start daily collection.

2.5.3 Site plans

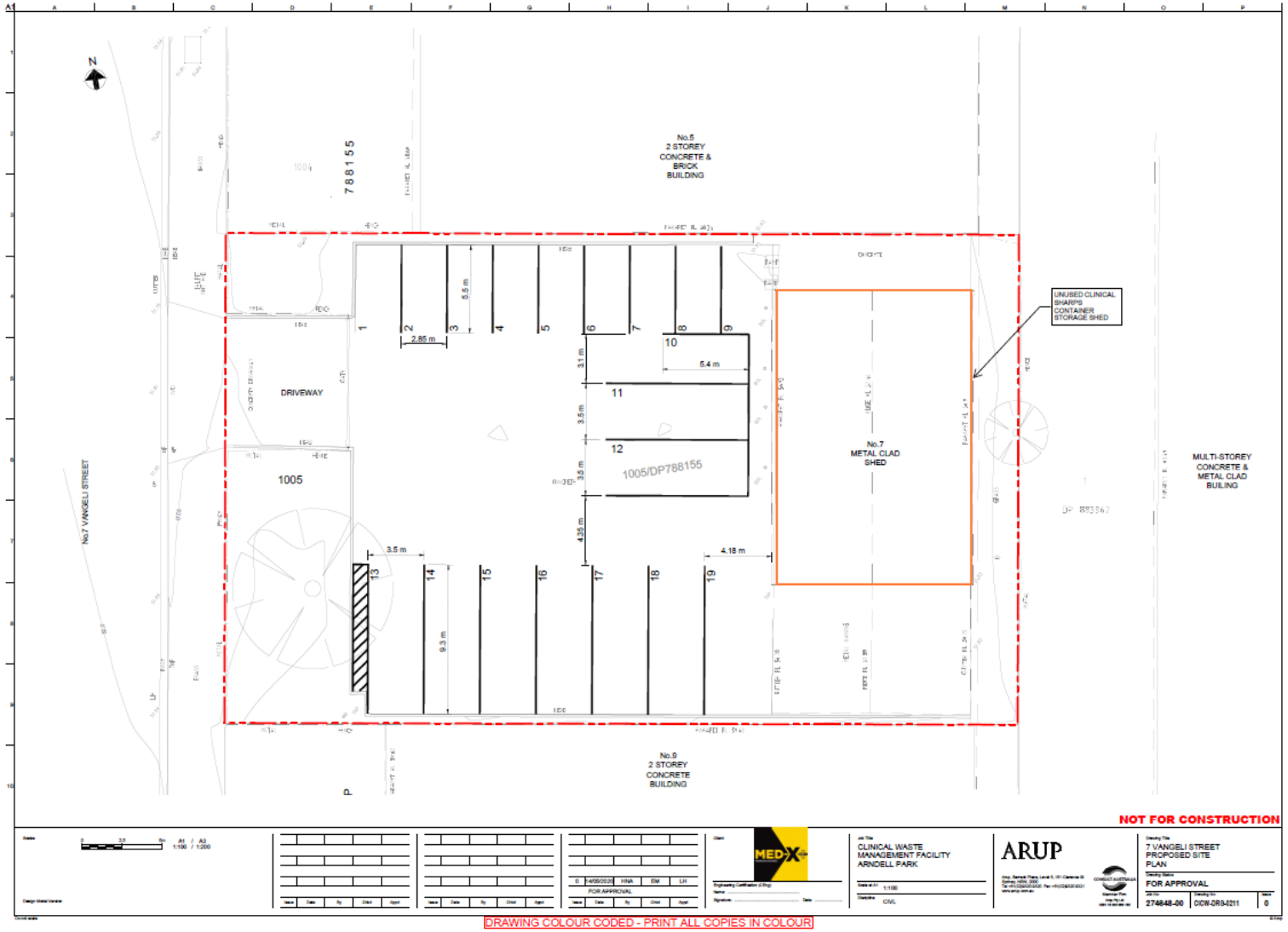
Figure 13 below shows the site plan for the parking depot, including the storage shed used to store unused and clean clinical sharps containers. Full size versions of these plans are also included in Appendix C.

2.5.4 Clinical sharps container storage

Only clean, unused sharps containers are stored at the parking depot in a storage shed as marked on the site plan. The storage shed is approximately 175m^2 and contains three-tiered racking to store the unused clinical sharps containers. This space is sufficient to house the required supply and delivery of sharps containers. Before a vehicle departs the parking depot to start the daily collection, all clean sharps containers required that day as per the delivery route manifest are loaded into the vehicle. No clean sharps containers are stored at the treatment facility.

Under current operations, clinical sharps containers are replaced and delivered to the parking depot by a supplier every 2 to 3 weeks during operating hours. Under the proposed operation this delivery will increase to once a week with delivery occurring during operation hours.

Figure 13 Site plan for parking



3 Summary of submissions

3.1 Overview of submissions received

Exhibition of the EIS resulted in a total of 11 submissions, comprising 5 submissions from Government agencies, five submissions from businesses, and one submission from a community member. The five businesses each submitted the same letter. Table 19 lists the respondents and their allocated submission number. The table also indicates where the issues from each submission have been addressed in this report.

Table 19 Respondents

Respondent	Type of Respondent	Submission No.	Section number where issues are addressed
NSW Department of Planning, Industry and Environment (DPIE)	Government Agency	1	5.2, 5.3, 5.5, 5.6, 5.7, 6.1, 6.2, 6.3, 6.4, 6.5, 7.2, 7.3, 7.4, 8.1, 8.2, 8.3, 8.4, 10.1, 10.2
Environmental Protection Authority (EPA)	Government Agency	2	5.1, 5.4, 5.5, 5.6, 5.7, 6.1, 6.2, 6.3, 6.4, 6.5, 7.1, 7.2, 7.3, 7.4, 8.2, 8.3, 8.4, 9.1, 10.2
NSW Health – Western Sydney Local Health District	Government Agency	3	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 6.1, 6.2, 6.5, 10.1, 10.2,
Blacktown City Council	Government Agency	4	5.4, 7.2
Roads and Maritime Services	Government Agency	5	Roads and Maritime had no comment
Bada Pty Ltd ATF Simali Investments Unit Trust	Business	6	7.5
Baden Superannuation Fund	Business	7	7.5
ENDO-TECHNIK-NORD PTY LTD – 39 Holbeche Road, Arndell Park	Business	8	7.5
ENDO-TECHNIK-NORD PTY LTD – 33 Holbeche Road, Arndell Park	Business	9	7.5
Schottlander Pty Ltd as trustee for Baden Family Trust	Business	10	7.5
Kerryn Goddard	Community member	11	6.1, 7.5

3.2 Response methodology

Each submission has been considered individually to understand the issues being raised. Where similar issues have been raised in different submissions, only one response has been provided. This approach is consistent with the Draft

Environmental Impact Assessment Guidance Series, Guideline 5 Responding to Submissions (DPE, June 2017).

The issues raised have been grouped into the following categories:

- Waste management
- Air quality
- Traffic
- Surface water
- Noise
- Hazard and risk.

Responses to the issues raised in the submissions have been provided in the following sections of this report. For each category, issues have been further broken down into sub-categories and a summary of the issues raised is provided. In some instances, additional specialist assessment has been carried out to support the responses. This has been described in Section 4.

4 Activities since EIS

Additional work has been carried out for the project since exhibition of the EIS. This has been in response to the submissions received and to support the amended project description in this RtS and APR. The key activities undertaken to support the preparation of this RtS and APR are summarised in the sections below.

4.1 Survey

LTS Lockley were engaged to carry out a survey of the site at 9 Kenoma Place, Arndell Park and the parking depot site at 7 Vangeli Street, Arndell Park to inform preparation of the required site plans and diagrams for this RtS and APR. The survey was carried out between 9-14 April 2020 and comprised a detailed land survey for both locations and Ground Penetrating Radar (GPR) detection of underground services for 9 Kenoma Place.

4.2 Additional specialist assessment

To support the amended project and response to issues raised in the submissions, a number of additional environmental assessments have also been carried out. These assessments supersede those carried out for the EIS.

4.2.1 Air quality

Air quality and odour was addressed in Section 6.12 of the EIS and an accompanying Air Quality Assessment (AQA) prepared by NICS was provided in Appendix B.

In response to the submissions received from government agencies (the EPA in particular), Todoroski Air Services was engaged to prepare a supplementary air quality (odour) assessment for the project.

As discussed and agreed with the EPA on 7 April 2020, the scope of the assessment was limited to a quantitative odour assessment, as it was agreed that odour was the only emission of concern at the facility. The supplementary air quality (odour) assessment is based on the proposed maximum quantity of waste permitted on site at any one time of 8,000 kg. The scenario modelled is based on a distribution of 60% as received waste for processing, 30% final processed waste and 10% as received waste with a broken bag. The concentration of odour within the building was calculated proportionally on the basis of this distribution (i.e. 0.6 x received waste odour + 0.3 x processed waste odour and 0.1 x received waste with broken bag odour = average odour in building).

The supplementary report prepared by Todoroski Air Services is contained in Appendix G, with a summary responding to the issues raised is provided in Section 6 of this report.

4.2.2 Hazards and risk

A Preliminary Hazard Analysis (PHA) was prepared for the EIS by NICS and Benbow Environmental, and hazards and risks were addressed in Section 6.18 of the EIS.

In response to the submissions received from the EPA, Arup has prepared an updated PHA to provide a comprehensive understanding of the hazards and risks associated with the project. The PHA is based on the project as described in Section 2 of this report and the proposed maximum quantity of waste permitted on site at any one time and the maximum processing capacity of the autoclave.

The PHA was prepared in accordance with Hazardous Industry Planning Advisory Paper (HIPAP) No 6 and is contained in Appendix H. A summary responding to the issues raised is provided in Section 10 of this report.

4.2.3 Traffic and transport

Access, Traffic and Transport was addressed in Section 6.4 of the EIS and a Traffic Impact Assessment prepared by Stanbury Traffic Planning was provided in Appendix C.

In response to the submissions received, Stanbury Traffic Planning has prepared an updated Traffic Impact Assessment for the project. The updated Traffic Impact Assessment also includes an assessment of the parking depot site at 7 Vangeli Street, Arndell Park. The Traffic Impact Assessment is based on the projected peak hourly and daily traffic generation associated with the project as described in Section 2 of this report, including all site operations, deliveries and servicing for the proposed maximum quantity of waste.

The updated Traffic Impact Assessment is contained in Appendix D and a summary responding to the issues raised is provided in Section 7 of this report.

5 Waste management

5.1 Approvals and guidelines

Submission No.

2, 3

Issue description

The following issues were raised with regard to approvals and guidelines:

- The NSW Health approval of the treatment process for clinical waste at the facility expired on the 30th June 2018. A re-application has been received for approval and is currently being considered by NSW Health.
- The NSW Health Waste Management Guidelines for Health Facilities 1998 has been replaced by the Clinical and Related Waste Management for Health Services Policy Directive 2017. The updated guidelines should be reviewed and appropriately referenced.

Response

An updated NSW Health Approval was obtained in 12 March 2019, this has been provided in Appendix G of the PHA (see Appendix H). The 2017 *Clinical and Related Waste Management for Health Services* guidelines have been reviewed and are referenced in this report, where appropriate.

5.2 Waste quantities

Submission No.

1, 3

Issue description

Clarity was requested with regard to the quantities of all waste streams processed at the site, including the maximum quantity processed at any one time, the quantity processed each day, and the quantities processed each year.

Response

Details regarding waste quantities can be found in the amended project description presented in Section 0 of this report.

5.3 Vehicle movements

Submission No.

1, 3

Issue description

Clarity was requested with regard to the number of vehicle movements at the site and the expected quantities of waste to be delivered.

Response

Details regarding vehicle movements and waste quantities to be delivered can be found in the amended project description presented in Section 2.4.4 of this report.

5.4 Activity descriptions

Submission No.

2, 3, 4

Issue description

The following information was requested in relation to activities at the facility:

- Clear description of all actual and proposed activities at the facility and the parking depot;
- Clear description of all waste streams to be processed;
- Proposed operating hours;
- Handling of waste during all stages of processing;
- Waste receptacles expected to be received at the facility; and
- Cleaning and disinfecting process.

Response

The amended project description includes details regarding the current and proposed processing of waste in response to the issues listed above. This information is included in Section 2.4.

5.5 Autoclave

Submission No.

1, 2, 3

Issue description

The following information was requested in relation to the operation of the autoclave:

- Clarification on the number of autoclave cycles per year and the total quantity of clinical waste treated by the autoclave;
- Clarification regarding the autoclave's water system and steam discharge;
- Additional information for the efficacy of the autoclave; and

- Concerns regarding the monitoring, testing, safety requirements and maintenance.

Response

The amended project description includes additional details regarding the autoclave in response to the issues listed above. This information can be found in Section 2.4.

5.6 Storage

Submission No.

1, 2, 3

Issue description

The following information was requested in relation to storage:

- Clarity was requested for the number, size and location for the storage of all clinical and related wastes including clean bin storage. Justification that the areas allocated are sufficient was also requested.
- Describe the size of the storage areas and their capacity. Show what would be stored in each area and justify the storage area is sufficiently sized.
- Provide a detailed justification that the storage areas are capable of handling the proposed amount of waste to be processed, as well as related waste and empty bins. In particular provide a visual representation of the amount of waste containers / bins which can be stored in the designated locations.
- Describe the trigger for offsite bin storage.

Response

The amended project description provides details regarding the waste and bin storage areas, including updated site plans showing these areas. This information can be found in the following sections:

- See Section 2.4.16 and Table 16 for detailed description of clean bin storage areas
- See Figures 3 and 4 for site plans showing the internal storage areas (ground floor and racking)
- See Figure 5 for the site plan showing the outdoor storage area, including a visual representation of the number of bins to be stored
- See Figure 13 for the site plan showing the storage shed used to store unused clinical sharps containers at the parking depot.

Clean bins are stored outside the facility for efficiency when reloading into waste collection vehicles. This will be particularly effective during the proposed operations to allow for a quicker turnaround of vehicle servicing. It is proposed that up to 25 x 660L bins be stored outside the facility, in storage area 6 as marked on Figure 5. These are bins that are typically stored outside at the facilities they are collected from. No bins that are normally located inside a medical facility are

proposed to be stored outside. If necessary, additional 'outside bins' may be stored within the facility in the designated storage areas.

As described in Section 2.4.16, the ground floor storage area of the facility is adequate to store the additional clean bins required to increase the facility's processing capacity to 2,300tpa, with stacking when required. Alternatively, there is also approximately 127m^2 of additional storage space within the internal racking spaces for storage of 120L and 240L bins).

Unused clinical sharps containers are stored at the parking depot separate to the facility to allow for the efficient bulk storage of the containers.

5.7 Site plans

Submission No.

1, 2, 3

Issue description

The following information was requested to be added to the site plans:

- All waste stream storage areas;
- All clean bin storage areas;
- All equipment; and
- The bunded area.

The site plan and all areas marked should be to scale.

Response

Internal and external plans of the facility have been provided in Section 2.4.7. These include the clean bin storage areas and the storage areas for all related wastes.

6 Air quality

6.1 Odour

Submission No.

1, 2, 3, 11

Issue description

The following comments were received in relation to odour:

- The criteria used to assess odour was incorrectly applied in the AQA and requires reassessment;
- The sources of odour must be complete and clearly described with any assumptions clearly stated;
- Increase in odour concentrations due to increase operations should be considered;
- The worst case should be considered for the odour assessment with the worst case clearly defined; and
- Concerns that the odour is creating poor working conditions to the surrounding premises.

Response

A new AQA has been undertaken, which addresses the comments above. The full report can be found in Appendix G.

The odour criteria applied in the new AQA includes OU7 for the 6 identified industrial receptors and an OU2 for 3 urban receptors identified.

The four sources of odour identified in the new AQA include the standalone tank, processed waste, waste received for processing and waste received in a broken bag. The worst case considered is as follows:

- The distribution of waste types is assumed to be 60% as received waste for processing, 30% final processed waste and 10% as received waste with a broken bag. The concentration of odour within the building was calculated on the basis of this mix of odour;
- The odour from the main building was modelled as a fugitive source emitted from the two doors of the building; and
- It was assumed the doors are open and releasing odorous air.

An increase in odour concentrations due to an increase in operations was considered and assessed in the new AQA. The odour criteria applicable to the project is discussed in Section 6.1 of the AQA and found to be 6 OU, based on the current EPA approach to criteria setting and three potentially affected receptors. The assessment indicates that odour levels would be below the 6 OU applicable project criteria. The predicted odour levels at adjacent industrial receptors were

found to be low, generally 1 to 3 OU, which is a low level of odour within an industrial area. The results indicate there would be no discernible level of odour likely to arise in any residential area.

6.2 Emissions

Submission No.

1, 2, 3

Issue description

It was requested that the emissions inventory be revised to ensure all sources of emissions are included and that the descriptions, assumptions and site boundaries of each source are clearly stated. If additional sources are identified the dispersion model should be updated as appropriate. Any exceedances should be clearly highlighted.

Response

A new AQA has been undertaken, which addresses the issues above. The full report can be found in Appendix G.

The emission sources identified included the standalone tank, processed waste, waste received for processing and waste received in a broken bag.

The updated dispersion modelling for the worst case scenario found that there were no exceedances for any of the 6 industrial receptors or for the 3 urban receptors.

6.3 Pollutants

Submission No.

1, 2

Issue description

Concerns were raised that not all pollutants of concern were covered in the original AQA assessment. It was also requested that all pollution control strategies are within accordance with approved methods.

Response

A meeting with the EPA on 7 April 2020 confirmed that odour is considered to be the major pollutant of concern at the facility. Therefore, no additional pollutants were explored in the revised AQA based on the agreed methodology that the assessment would be limited to a quantitative odour assessment.

6.5 Dispersion modelling

Submission No.

1, 2

Issue description

The following issues comments were received with regard to modelling for the original AQA:

- All modelling scenarios are required to be clearly described with all assumptions stated;
- Dispersion modelling requires updating to ensure all emission sources are accounted for; and
- Modelling should be undertaken for the worst-case scenario.

Response

A new AQA has been undertaken, which addresses the issues above. The full report can be found in Appendix G.

The emission sources identified included the standalone tank, processed waste, waste received for processing and waste received in a broken bag.

The dispersion modelling was updated to model all emission sources identified and the worst case scenario which is described as follows:

- The distribution of waste types is assumed to be 60% as received waste for processing, 30% final processed waste and 10% as received waste with a broken bag. The concentration of odour within the building was calculated on the basis of this mix of odour;
- The odour from the main building was modelled as a fugitive source emitted from the two doors of the building; and
- it was assumed the doors are open and releasing odorous air.

The revised odour impact assessment indicates odour impacts due to the Project are low, within criteria for an industrial area, and would not lead to any discernible level of odour at any residential locations.

6.6 Mitigation measures

Submission No.

1, 2, 3

Issue description

The following comments were recieved with regard to the air quality mitigation measures:

- Descriptions of mitigation measures require clarification;

- Monitoring of mitigation measures should be specified and described; and
- Consideration of residual impacts and any resulting mitigation measures should be provided.

Response

A new AQA has been undertaken, which addresses the issues above. This can be found in Appendix G.

The mitigation measures to be implemented include the development of an odour management plan and the addition of a new vent pipe on the stand-alone tank to be installed extending above the top of the building to improve air dispersion and reduce impacts to receptors.

Please also refer to Section 11 of this report for more detail regarding the revised air quality management and mitigation measures.

7 Traffic

7.1 Delivery management

Submission No.

2

Issue description

Clarity has been requested in relation to following:

- If and how the deliveries of waste will be managed and controlled so that they are evenly spread between the permitted hours of operation 7am to 7pm; and
- The number of vehicles that can be managed on site at any one time including any operations that would be required for each vehicle.

Response

A revised Traffic Impact Assessment has been undertaken, which addresses the issues above. This can be found in Appendix D.

The capacity analysis contained within the revised Traffic Impact Assessment (refer to Appendix D) is based on fleet vehicles arriving at the facility at a consistent rate throughout the vehicle receipt periods of 7:00am – 5:00pm, Monday to Saturday. The consistent arrival nature of fleet vehicles is managed via a vehicle scheduling roster formulated by Med-X, whereby the fleet is distributed throughout the greater Sydney metropolitan areas and surrounds with the intention of ensuring that fleet arrival times at the treatment facility are appropriately staggered. This is actively monitored and governed on a daily basis by Med-X through an electronic fleet tracker system. This facilitates real time knowledge of fleet vehicle locations, thereby allowing analysis, modelling and adjustment of expected time of vehicle arrivals throughout any given day.

The average number of vehicles waiting to be serviced on approach to the unloading position for the proposed operations was found to be between one and two vehicles. Although it is unlikely, the swept path diagrams have included a worse-case scenario for a maximum of three MRVs queued on site at any one time, while an additional MRV unloads into the full bin staging area before manoeuvring for reloading with clean bins and exiting the facility. The swept path diagrams in Appendix D illustrate the holding positions for the queued vehicles and manoeuvres of the vehicle being serviced.

7.2 Available space

Submission No.

1, 2, 4

Issue description

Concerns were raised regarding the available space on site for manoeuvring, parking and safely and efficiently performing the required vehicle operations including entering the site, parking, loading and unloading, and exiting the site.

Evidence was requested to demonstrate that the trucks can easily manoeuvre into the facility to unload waste within the bunded area, even if the proposed external storage areas are full.

It was also noted that on street parking is discouraged and any additional parking required during proposed operations must be made available on the site.

Response

The external clean bin storage areas have been updated to ensure all required vehicle movements and queuing can occur. The revised Traffic Impact Assessment (refer to Appendix D) concluded that the treatment facility is expected to continue to be able to wholly accommodate all internal vehicle queuing, servicing and manoeuvring in a safe and efficient manner.

7.3 Vehicle movements

Submission No.

1, 2

Issue description

It was requested that the traffic impact assessment include consideration of vehicle movements associated with the receipt and/or removal of:

- Clinical and related waste types that cannot be processed at the facility; and
- Other non-medical / clinical and related wastes received and processed at the facility.

Response

The Traffic Impact Assessment has been updated to consider the above vehicle movements. Please refer to Sections 3.6 and 6.1.3 of Appendix D.

7.4 Swept paths

Submission No.

1, 2

Issue description

It was requested that swept path plans that demonstrate trucks are able to reverse into the building to ensure loading and unloading occurs inside the bunded area be provided, and that the swept path plans include all storage areas and plant and equipment.

Response

The swept path plans have been updated and include all proposed storage areas and equipment. Please refer to Appendix D. The swept path plans demonstrate that the MRVs are able to safely reverse into the facility for unloading within the full bin staging area (within the bunded area).

7.5 Traffic impacts

Submission No.

6, 7, 8, 9, 10, 11

Issue description

The five business submissions all raised concerns about the traffic impacts at a nearby intersection.

The community submission raised concerns that there would be traffic impacts to the Kenoma Place cul-de-sac due to the proposed increase in operations which would impact the surrounding properties.

Response

The revised Traffic Impact Assessment (refer to Appendix D) concluded that the minimal level of additional traffic projected as a result of the project is not anticipated to result in any noticeable impacts on the surrounding road network.

7.6 Parking depot

The project would require an additional 2 MRVs to be stored overnight at 7 Vangeli Street, Arndell Park. It is proposed that 3 MRVs depart the parking depot at 5:00am (Monday- Saturday) to start the daily start waste collection. All other activities at the parking depot would be carried out between the hours of 7am and 7pm, Monday to Saturday.

The revised Traffic Impact Assessment (refer to Appendix D) concluded that the minimal level of additional traffic projected as a result of the project, including at the parking depot, is not anticipated to result in any noticeable impacts on the surrounding road network.

8 Surface water

8.1 Water usage

Submission No.

1

Issue description

The following additional information was requested around water usage at the site:

- Calculations of the proposed water usage at the site, including for washing of the larger bins
- Details of the water requirements for the project (i.e to support the increase in waste processing capacity).

Response

The two main activities on site that use water at the facility are bin washing and the autoclave process. Other onsite water usage, for example in the office kitchen or bathrooms, are considered negligible. The water usage for the project is outlined in Section 2.4.15, which includes 550 L/d for bin washing and 1,100 L/d for the autoclave process.

8.2 Risks to stormwater

Submission No.

1, 2

Issue description

Concerns were raised around additional risks to stormwater as a result of the project and the measures proposed to address these risks. The comments received can be summarised as follows:

- Outside the building the concrete hardstand slopes towards a stormwater drain which is not isolated. There is a risk of pollution to stormwater if any spill of waste is not immediately and effectively contained
- Request for details of the stormwater drains on site including those outside the building which could be impacted by the proposed increase in operations, including potential for hydrocarbons from vehicles.

Response

The stormwater network, including the existing stormwater drains, is shown in Figure 14 below.

As described in Section 2.4.8, all waste is unloaded from the delivery vehicles within the full bin staging area inside the facility, which is fully bunded (see Figure 3 for location of full bin staging area). It is proposed that some empty bins

be stored outside the facility (see Section 2.4.16). These bins will be cleaned and sanitised in the designated wash bay as per the requirements in the NSW Health Requirements prior to being moved to the outdoor storage areas. There will be no unloading of waste or storage of full waste bins outside the facility (refer for to Section 2 for waste delivery, receival, and handling processes).

The risks of waste spills and contamination was considered in the updated PHA prepared for the project (see Appendix H), and assessed to have a 'very low' likelihood.

However, in order to manage stormwater runoff from the outdoor clean bin storage area and mitigate the risks of pollution in the event of a spill, the following features are proposed to be added to the site drainage network:

- Two Oceanguard 450mm x 450mm x 300mm pit insert baskets will be installed in the inlet pits under the car parking spaces. The baskets will capture any gross pollutants that runoff from the outdoor waste storage area, such as dust/dirt, litter, etc. These baskets will be regularly inspected and emptied.
- A 75mm high bund/speed hump is proposed to be constructed across the car park. This bund will contain runoff from the outdoor waste storage and upper parking area.
- A remote control gate valve is proposed to be installed on the stormwater pipe running from the bunded car parking area. This could be closed in the event of any spills which would prevent any liquid from being discharged to the Council stormwater network.
- The estimated storage volume behind this bund/speed hump and in the upstream pipe network when the gate valves are closed is 2000L.

As all waste vehicles are unloaded within the facility (within the internal bunded area), it is unlikely that a spill would occur outside the facility and the gate is only provided as an extra fail-safe measure. However, in the unlikely event that a spill occurs, the 2000L capacity of the bund is considered adequate to contain the maximum volume of waste within a delivery vehicle (450L - one MRV).

In addition to this, there is a bund around the perimeter of the building which will prevent any spills inside the building from draining into the stormwater network. A gate valve can also be closed in the event of a spill.

Controls for the gate valves will be located within the facility as shown on the stormwater management plan (Figure 14). In the event of a major spill, the controls will be swiftly operated to close the gate to the stormwater drain. Spills will be managed in accordance with MXNATQPR304 – Med- X Spill Control Management Procedures (see Appendix E). Once the spill has been cleaned to the satisfaction of the procedure, the gate valve will be reopened.

The project would result in an additional 10 vehicle movements per day (see Section 2.4.4). Given there will be no increase in the site hardstand area and the increase in vehicles movements is relatively small, additional treatment measures are not considered necessary.

8.3 Stormwater management measures

Submission No.

1, 2

Issue description

Further details around stormwater management at the site were requested, as follows:

- Request for details of any installed stormwater treatment devices.
- Describe the proposed stormwater devices and demonstrate they are adequate to contain any runoff.

Response

The existing stormwater drainage network at the site consists of a network of PVC pipes, grated inlet pits, grated drains and downpipes which collect and convey stormwater runoff from the site. Stormwater from the car park area is collected in three grated inlet pits. Stormwater from this line runs to the north under the car park to the site boundary where it joins a pit that collects runoff via a grated drain across the site entrance. From this pit, stormwater is conveyed to the west of the site where stormwater pipes collecting roof drainage also connect into this line. Based on site investigations, it is understood that the site stormwater drain exits the site at its north-west corner from which point it runs along the easements in the front of neighbouring properties to the kerb inlet pit in Kenoma Place approximately 65m north of the site.

As per the response in Section 8.2, the existing stormwater drainage network will be maintained with the addition of a bund, two Oceanguard 450mm x 450mm x 300mm pit insert baskets in the two inlet pits in the parking area, and two gate valves, which will improve stormwater runoff and enable the containment of any spills. The stormwater network, with the proposed additional management measures, is provided in Figure 14 below.

8.4 Site stormwater plans

Submission No.

1, 2

Issue description

The following requests were raised in the submissions:

- Request for a plan of stormwater and related water management infrastructure at the site.
- Request for a plan that clearly shows the existing site bunding.

Response

A site stormwater plan has been prepared and is provided in Figure 14.

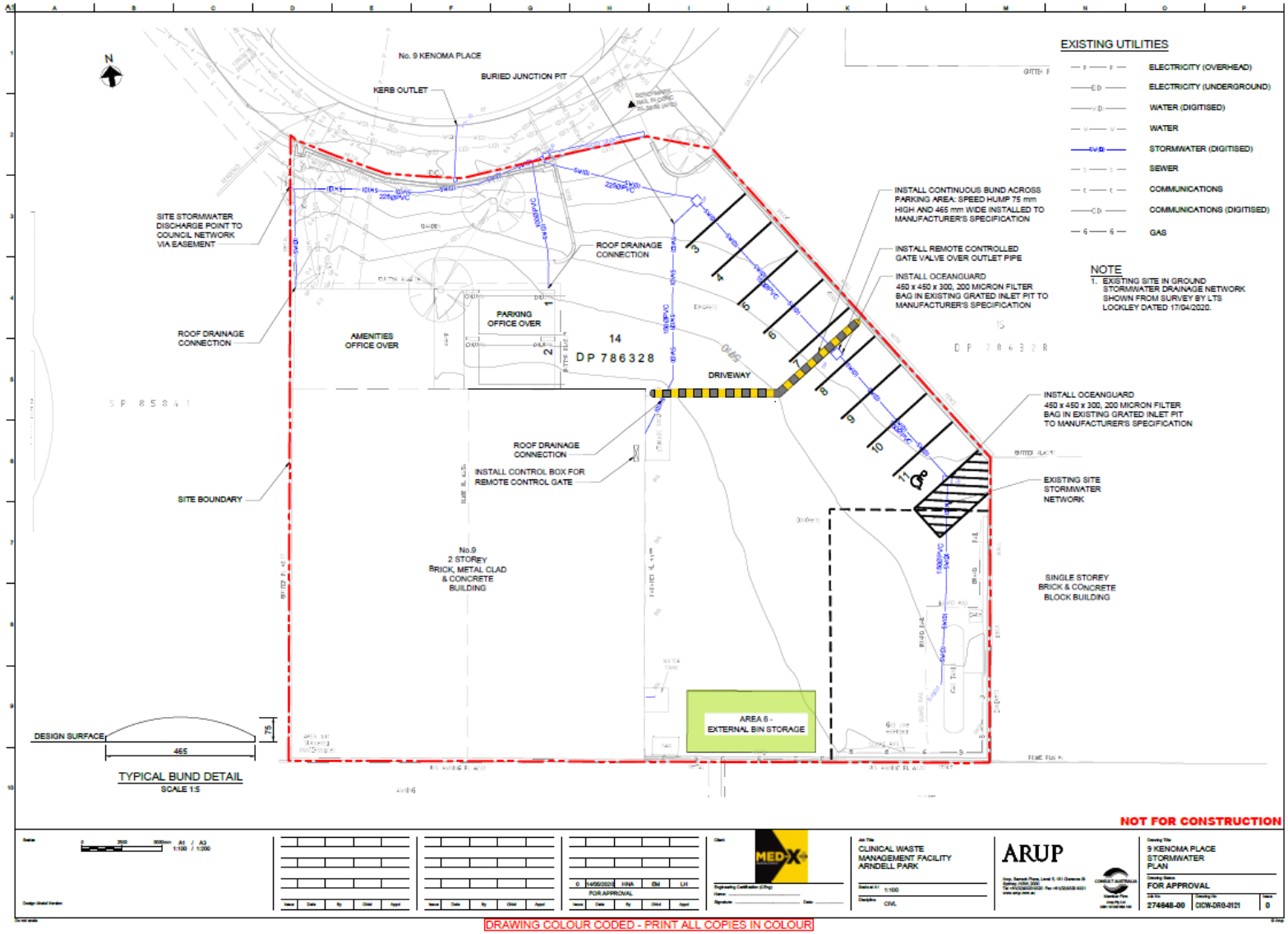


Figure 14 Site stormwater plan

9 Noise

9.1 Noise impacts

Submission No.

2

Issue description

The EPA noted that a Noise Impact Assessment for the project was not prepared in accordance with the SEARs for the project. The EPA considered that the proposed extended hours of operation would be low risk in respect to noise impacts and that a Noise Impact Assessment would not be required on the basis that:

- The premises is located within an established industrial area, with the majority of operations occur within a building;
- Industrial premises are located between the subject premises and the nearest residential receivers;
- The proposal will operate mostly during daytime hours; and
- The surrounding area includes the significant noise sources such as the Great Western Highway, the M4 motorway and Eastern Creek Motorsport Park to the south.

To confirm the above, clarification that activities would be undertaken between 10pm and 7am was requested.

Response

As outlined in Section 2.4.2, it is proposed that the first staff member arrives at the facility around 6:15am to turn on the boiler in preparation for the first treatment cycle at 7.30am. This activity would be carried out between the hours of 10pm and 7am, Monday to Saturday, however is not expected to result in any adverse noise impacts to neighbouring properties or the surrounding locality. Some scheduled or emergency basic maintenance or repairs (as described in Section 2.4.12) may also take place outside of the core operating hours.

9.2 Parking depot

The project would require an additional 2 MRVs to be stored overnight at the parking depot at 7 Vangeli Street, Arndell Park. It is proposed that the 3 MRVs depart the parking depot at 5:00am (Monday- Saturday) to the start the daily waste collection.

The 3 MRVs departing the site at 5am would follow a route through the industrial area to main arterial roads, avoiding traversing through residential areas in order to minimise any noise impacts. This is likely to include a route from Vangeli Street to Holbeche Road (Major Collector), Doonside Road (Sub-Arterial) or Walters Road (Major Collector), to the Great Western Highway (Arterial Road).

The nearest noise sensitive receivers to the parking depot are residential receivers at a distance of around 290 metres. Noise impacts from the three MRVs idling for around two minutes and then leaving the site are anticipated to comply with the most stringent criteria according to the NSW EPA Noise Policy for Industry (2017) at these locations. Therefore, no significant disturbance to the community as a result of this activity is anticipated.

All other activities at the parking depot would be carried out between the hours of 7am and 7pm, Monday to Saturday.

10 Hazards and risk

10.1 Revision of Preliminary Hazard Analysis

Submission No.

1, 3

Issue description

The following issues were raised regarding the PHA:

- It was considered that the PHA prepared for the EIS was not completed in accordance with HIPAP No. 6 and did not appropriately assess the risks.
- A copy of the existing Emergency Response Plan and Pollution Incident Response Management Plan was requested.
- Additional supporting evidence was requested to allow further assessment of the proposal and the management of impacts and risks due to the proposed increase in the operating capacity at the site.

Response

Arup has prepared an updated the PHA in accordance with HIPAP No. 6 to provide a comprehensive understanding of the hazards and risks associated with the project. A revised Emergency Response Plan and Pollution Incident Response Management Plan for the facility is attached in Appendix H of the PHA (see Appendix H).

Twenty-seven risks and potential hazards were identified and assessed in the PHA. It was found that all risks had a very low likelihood of occurring and that the consequence of these risks ranged from trivial to moderate. Therefore, all risks identified were considered to be low.

No additional control measures were considered necessary for the proposed operations, although some recommendations were made to enhance safety and reduce risk at the facility, including:

- Installation of an automatic fire detection system in the facility, with the alarm being signalled to a third-party central monitoring station
- A marked 6m buffer to ensure a clear area around the LPG storage tank.

10.2 Additional risks

Submission No.

1, 2, 3

Issue description

Risks not identified in the previous PHA were noted as:

- The quantities and hazards for cytotoxic waste and anatomic waste have not been described nor assessed in the PHA;

- The impacts and risks associated with the staging of trucks containing waste at either on- or off-site locations should be considered in more detail; and
- The risks associated with venting of pathogens in steam from the autoclave; and
- It was requested that some further context be provided about the likelihood of pathogens escaping due to leakage/rupture of the autoclave. In addition, more information was required about the proposed evacuation plan if the modelled scenario (or similar) was to eventuate.

Response

The above-mentioned risks have been addressed in Section 6 of the updated PHA (see Appendix H), with the waste quantities summarised in Section 2.3 of the PHA.

11 Management and mitigation measures

After consideration of the issues raised in the submissions and changes to the project description, the management and mitigation measures for the project have been revised (see Table 20).

A number of management and mitigation measures have been identified in order to minimise adverse environmental impacts and mitigate risks which could potentially arise as a result of the project. Should the project proceed, these management measures would be incorporated into Med-X's procedures for the facility and/or parking depot. Other risks associated with the facility would be managed in line with the current operational procedures.

Table 20 Summary of management and mitigation measures

Aspect	Potential impact	Management and mitigation measure	Timing
Air quality	Generation of odour and other emissions	An odour management plan is to be developed to include the following measures: • Keep building doors closed when not in use; • Avoid opening the doors after 5pm as much as practical, especially in the cooler times of the year; • 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; • 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; • Any waste requiring overnight storage is stored within a closed container inside the facility; • Additional controls to be implemented, if and as required. In addition, the odour management plan must include: • Key performance indicator(s) for emissions controls; • Monitoring method(s); • Location, frequency and duration of monitoring; • Record keeping; • Response mechanisms; and • Compliance reporting.	Operation
Air quality	Generation of odour and other emissions	• New vent pipe on the stand-alone tank to be installed extending at least 1 m above the roofline of the building to improve air dispersion and reduce impacts to receptors. The pipe must have a	Prior to Operation

		sampling plane that has been constructed with consideration of AS4323.1 1995.	
Air quality	Generation of odour and other emissions	• The air quality (odour) model 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 the odour management plan.	Post-operation
Noise	Noise emissions to nearby residential receivers	• Vehicles departing the Vangeli Street Parking Depot between 5am and 7am are to follow the designated route to the Great Western Highway, avoiding driving through residential areas	Operation
Surface water	Stormwater contamination	• The proposed stormwater management measures are to be installed prior to increase of the processing capacity at the site	Prior to operation
Hazards and risks	Fire	• An automatic fire detection system is the be installed inside the facility, with the alarm being signalled to a third-party central monitoring station	Prior to operation
Hazards and risks	Fire	• A 6m exclusion zone around the LPG tank is to be marked out in yellow paint prior to increase of the processing capacity at the site	Prior to operation
Hazards and risks	Fire	• The yellow lines defining the 6m exclusion zone around the LPG tank are to be regularly cleaned and repainted, as necessary	Operation
Hazards and risks	Fire and land and water contamination	• All bins stored outside the facility are to be kept within the defined outdoor storage area, as shown on the site plan	Operation
Traffic	General traffic management	• A traffic management plan is to be developed and implemented and is to include measures relevant to the management of traffic, as described in this report and supporting information.	Operation
Traffic	Traffic congestion at Kenoma Place	• Vehicle arrivals at the facility are to be closely monitored, to limit congestion and ensure waste delivery is evenly spaced across the daily operating hours. This includes use of the existing real-time vehicle tracking system, combined with additional monitoring of daily trends in arrivals.	Operation
Traffic	Traffic congestion at Kenoma Place	• Waste delivery and collection vehicles are to avoid idling in Kenoma Place and utilise the area on-site adjacent to the staff carpark where possible when waiting to unload.	Operation
Waste management	General waste management	• A waste management plan is to be developed and implemented and is to include measures relevant to the management of waste derived at the site.	Operation
Surface water	Stormwater management	• A stormwater management plan is to be developed and implemented and is to include measures relevant to the management of water and stormwater at the site.	Operation

General	Community concerns	• The Med-X Communication, Consultation & Participation procedure is to be implemented to ensure any concerns raised by the community are appropriately recorded, reviewed and responded to.	Operation

12 Conclusion

This RtS and APR has been prepared by Arup Australia Pty Ltd (Arup) on behalf of Med-X Pty Ltd (Med-X or the Applicant) in relation to submissions received on the EIS prepared for SSD Application 6761 and to fulfil the requirements of clause 82 of the EP&A Regulation.

The project description has been amended to include additional activities, with the key changes since the EIS marked in **bold** and further described:

- **Processing of up to 2,300tpa of clinical waste and related waste**. The facility is currently permitted to process up to 650tpa of clinical and related waste between the hours of 7.00am and 7.00pm, Monday-Saturday. The EIS proposed the increase of processing capacity at the facility of up to 3,000tpa. This has since been refined to a proposed processing capacity of up to 2,300tpa to ensure all treatment takes place within the approved operating hours.
- **An increase in the maximum quantity of waste on site at any one time to 8,000kg.** EPL 20233 states that a maximum quantity of clinical and related wastes on the site, treated or untreated, must not exceed 5,000kg at any one time. It is proposed to increase the allowable maximum quantity of waste on site at any one time from 5,000kg to 8,000kg, to allow for the maximum treatment and storage of clinical waste and storage of related waste. Subject to approval, the Applicant will seek a variation to Limit condition L2.2 of EPL 20233 in accordance with section 58 of the *Protection of the Environment Operations Act 1997* (POEO Act).
- The current conditions of approval for the facility prescribe a maximum processing capacity of 96 sulo bins of untreated waste each day. The project proposes a maximum annual processing capacity of 2,300t with a maximum quantity of waste on site at any one time of 8,000kg. The current condition relating the daily waste processing volume to number of sulo bins is no longer relevant.
- **A daily start time of 5am for 3 MRVs departing the Vangeli Street parking depot.** The remainder of the collection fleet (5 MRVs and 8 vans) will depart the parking depot between 7-8am to start daily collection. The EIS suggests that all waste collection vehicles would operate between the hours of 7am and 5pm. However, in order for the first delivery to arrive in time for commencement of processing by 7.00am, it is proposed that some vehicles depart from 5am to commence daily collection.
- **Proposed core operating[29] hours of 7am – 7pm Monday to Saturday with the core operating hours extended to include any public holiday that fall on a Saturday.** The EIS stated that the proposed core operating hours would be 7am to 7pm Monday to Saturday with no core operations to be undertaken on Sundays or public holidays. However, the applicant seeks that public holidays that fall on a Saturday are permissible to operate

[29] Core operating hours include waste delivery, waste processing, waste treatment and any machinery operation. Please refer to Section 2.4.2 for more information.

to allow for efficient collection and processing of waste accumulated at hospitals and other medical facilities during the week.

In response to submissions received and to support the amended project the following additional work was undertaken:

- **Site Survey:** LTS Lockley were engaged to carry out a survey of the site at 9 Kenoma Street and the parking depot site at 7 Vangeli Street.
- **Supplementary AQA:** Todoroski Air Services was engaged to prepare a supplementary air quality (odour) assessment for the project.
- **Updated PHA**: Arup has prepared an updated PHA to provide a comprehensive understanding of the hazards and risks associated with the project.
- **Traffic Impact Assessment**: Stanbury Traffic Planning has prepared an updated Traffic Impact Assessment for the project. The updated Traffic Impact Assessment also includes an assessment of the Parking Depot site at 7 Vangeli Street, Arndell Park.

Each submission received on the EIS was considered individually to understand the issues being raised. The issues raised were grouped into categories and the key updates and findings for each are summarised below.

Waste management

The project description has been amended to ensure that all operations and activities to be undertaken at the facility and at the parking depot are clearly explained. Waste quantities expected for the proposed operations were updated as well as the storage requirements for all waste streams and clean bins. The site plans have been updated to reflect these changes since the EIS. The number of vehicle movements and the autoclave process have been described in detail, and the most current guidelines referenced throughout.

Air quality

A meeting with the EPA on 7 April 2020 confirmed that odour is considered to be the major pollutant of concern at the facility. Therefore, no additional pollutants were explored in the revised AQA based on the agreed methodology that the assessment would be limited to a quantitative odour assessment.

The revised odour impact assessment indicates odour impacts due to the project are low, within criteria for an industrial area, and would not lead to any discernible level of odour at any residential locations.

Traffic

The revised Traffic Impact Assessment concluded that the project is not anticipated to result in any noticeable impacts to the surrounding road network. It also found that the parking provisions at the facility and the parking depot are adequate for the proposed operations. The internal circulation and servicing arrangements within both the treatment facility and parking depot are projected to provide the fleet vehicles with satisfactory manoeuvring arrangements and the treatment facility is able to accommodate all internal vehicle queuing, servicing and manoeuvring in a safe and efficient manner for the proposed operations.

Surface water

The water usage, stormwater risks, stormwater management measures and site stormwater plans have been updated. The existing stormwater drainage network will be maintained with the addition of a bund, two Oceanguard 450mm x 450mm x 300mm pit insert baskets in the two inlet pits in the parking area, and two gate valves, which will improve stormwater runoff and enable the containment of any spills.

Noise

It was concluded that the facility and the parking depot would be low risk in respect to noise impacts due to the location of the facility and parking depot in an industrial area, and the operations mostly occurring inside a building and during daylight hours.

Hazard and risk

The updated PHA identified 27 risks and potential hazards and found that all were of a low risk. No additional control measures were considered necessary for the proposed operations, although to further enhance safety and reduce risk it is recommended that an automatic fire detection system in the facility be installed and a 6m buffer zone around the LPG gas tank is marked to create a clear area around the tank.

Management and mitigation

After consideration of the issues raised in the submissions and changes to the project description, the management and mitigation measures for the project have been revised.

A number of management and mitigation measures have been identified in order to minimise adverse environmental impacts and mitigate risks which could potentially arise as a result of the project. Should the project proceed, these management measures will be implemented and where applicable, incorporated into Med-X's procedures for the facility and/or parking depot. Other risks associated with the facility will continue to be managed in line with the current operational procedures.

Appendix A

Blacktown Advocate
Advertisement

NSW GOVERNMENT

Department of Planning and Environment

Exhibition of State Significant Development Application
Clinical Waste Management Facility

Application No	SSD 6761
Location	9 Kenoma Place Arndell Park, 2148
Applicant	State Waste Services
Council Area	Blacktown
Consent Authority	Minister for Planning

Description of proposal
State Waste Services (NSW) Pty Ltd is seeking approval to expand its existing clinical waste management facility at Arndell Park to allow the acceptance and processing, via autoclave, of up to 3,000 tonnes of clinical waste per year.

Exhibition Details
The State Significant Development (**SSD**) Application, Environmental Impact Statement (**EIS**) and accompanying documents may be inspected at the following locations from **Thursday 24 January 2019** until **Friday 22 February 2019** during the ordinary office or opening hours of the agency concerned:

- An electronic copy may be viewed free of charge at Department of Planning and Environment at 320 Pitt Street, Sydney;
- An electronic copy may be viewed free of charge at a Service NSW Centre located near you (see www.service.nsw.gov.au/service-centre/service-nsw for locations);
- A hard copy may be inspected at the location listed below:
  - **Blacktown City Council:** 62 Flushcombe Road, Blacktown.

You may also view the application, EIS and accompanying documents electronically on the Department's website (www.majorprojects.planning.nsw.gov.au/page/on-exhibition).

At the time of publishing this advertisement, the Minister for Planning has not directed that a public hearing should be held.

Have your say
Anyone can make a written submission about the Development Application during the exhibition period from **Thursday 24 January 2019** until **Friday 22 February 2019.** If a submission is made by way of objection, the grounds of objection must be specified in the submission.

Your submission must reach the Department by Friday 22 February 2019.
Before making your submission, please read our Privacy Statement at www.planning.nsw.gov.au/privacy or telephone the number below for a copy. The Department will publish your submission on its website in accordance with our Privacy Statement.

To make a submission, use the online form if possible. This is available at www.majorprojects.planning.nsw.gov.au/page/on-exhibition

If you cannot lodge online, you can write to the address below. If you want the Department to delete your personal information before publication, please make this clear at the top of your letter. You need to include:

- Your name and address, at the top of the letter only;
- The name of the application and the application number;
- A statement on whether you support or object to the proposal;
- The reasons why you support or object to the proposal; and
- A declaration of any reportable political donations made in the previous two years.

To find out what is reportable, and for a disclosure form, go to www.planning.nsw.gov.au/DonationsandGiftDisclosure or telephone the number below for a copy. Note the disclosure requirements apply however a submission is made.

For more information: 1300 305 695
Planning Services, Department of Planning and Environment,
GPO Box 39 SYDNEY NSW 2001
(Your submission should be marked, Attention: Director - Industry Assessments)

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Appendix B

Submissions

DOC19/220806; EF19/4415

Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Emma Barnet
By email: emma.barnet@planning.nsw.gov.au

Date: 1 April 2019

Dear Ms Barnet

EPA comments on the EIS on exhibition for State Waste Services Arndell Park – Clinical Waste Management Facility (SSD 6761)

I refer to your invitation for the Environment Protection Authority (EPA) to comment on a proposal for the expansion of the Clinical Waste Management Facility owned by State Waste Services Pty Ltd, at 9 Kenoma Place Arndell Park (SSD 6761).

The EPA has reviewed the Environmental Impact Statement (EIS) for the proposal and provides the comments below in the attachments to this letter. The comments highlight areas where the EPA recommends State Waste Services Pty Ltd (the proponent, SWS) provide more information and clarification to assist the Department of Planning and Environment (DPO) in the assessment and determination of this proposal.

The EPA recommends that further information be sought from the proponent in the following areas:

Air Quality
The EIS does not provide sufficient information to demonstrate the proposal will not have any adverse air quality, including odour, impacts.

The EPA considers the AQIA to be inadequate. A detailed review of the AQIA, including identification and discussion of issues that require additional information is provided in **Attachment A**.

Waste
The EIS does not adequately address the Secretary's Environmental Assessment Requirements with respect to waste management.

The EPA considers the information provided on management of waste associated with the proposal to be inadequate. A detailed review of the waste management assessment, including identification and discussion of issues that require additional information is provided in **Attachment B**.

Other issues
The EPA has noted other issues that require clarification or addressing in **Attachment C**.

If you have any queries regarding this matter, please contact John Klepetko on 9995 6091 or john.klepetko@epa.nsw.gov.au.

Yours sincerely

ERWIN BENKER
Manager Hazardous Materials
Environment Protection Authority

Attachment A

EPA comments on the air impact assessment for the expansion of the State Waste Services Clinical Waste Management Facility (SSD 6761)

The EPA considers the project Air Quality Impact Assessment (AQIA) inadequate, and inconsistent with the requirements of the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (the Approved Methods)[1].

Specific issues with the AQIA are detailed below. The EPA recommends these issues be addressed via the provision of a revised assessment.

Discussion of issues

1. Only odour was assessed. Other pollutants were not assessed.

The SEARs include an air quality assessment of all potential air quality and odour impacts from the development. Thus emissions of pollutants other than odour should have been considered. These pollutants may include, but not be limited to, benzene, toluene, ethyl benzene and xylene. If emissions were considered negligible, this assumption should have been justified.

EPA recommendation: The proponent should identify all pollutants of concern (other than odour) for the proposal. If these pollutants are considered non-negligible, they should be included in the AQIA.

2. Inadequate information regarding the meteorology of the site is provided.
   a. No information was provided on how the meteorology files used in Aermet were developed. For example, there was no information regarding what upper air data was used, and how the mixing height was calculated. According to the AQIA, the meteorology data files (SFC and PFL files) were provided by the client. Section 9.4.2 of the Approved Methods requires that "a description of the techniques used to prepare the meteorological data into a format for use in the dispersion modelling" be provided.
   b. The assessment did not provide a quantification of calms, and therefore did not assess whether the use of Aermet/Aermod is valid. The AQIA claimed that very stable conditions occurred less than 10% of the time, however, the frequency of calms was not specified. Since odour is problematic during very low windspeeds and calms, there should have been more details provided about how Aermod could accurately model dispersion at the site.
   c. The AQIA states that the year 2015 was chosen for analysis since it was the "most complete and recent dataset available from the monitoring station". No justification that the year 2015 is a representative year is provided. Section 4.1 of the Approved Methods specifies that the meteorology data used in the assessment should be correlated against a longer duration data set of at least five years to show the data is representative.

EPA recommendation: The proponent should revise the AQIA to include details of how the meteorology data files were developed, details of calms and justification of the use of Aermet/Aermod, and justification that 2015 is representative of meteorology over a longer timeframe.

3. Two odour criteria were used.

The assessment uses two different odour criteria: 2 OU for residences, and 6 OU for industrial sites. A single odour assessment criterion is to be applied at all sensitive receptors surrounding the proposed activity. There is no separate odour assessment criterion for industrial/commercial premises. According to Table 7-5 of the Approved Methods, the appropriate criterion is 2 OU because of the urban location and population.

[1] *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*, NSW EPA, January 2017

EPA recommendation: The proponent should revise the AQIA to compare odour impacts against a single odour criterion of 2 OU.

4. Odour impacts exceed the odour impact criterion, however no additional mitigation measures are proposed.

The AQIA assesses odour from the proposed expansion, and results indicate significant odour impacts (> 7 OU) at the neighbouring commercial/industrial properties, which is in exceedance of the odour criterion. Additional mitigation methods were not implemented, and the modelling was not revised until compliance was achieved.

EPA recommendation: The proponent should revise the AQIA to include pollution control strategies until compliance is achieved in accordance with Section 7.7 of the Approved Methods.

5. Emissions from the neighbouring commercial properties not considered.

There is no discussion about the neighbouring commercial properties and whether these could also be sources of odour and other air pollutants, which could contribute to cumulative impacts.

EPA recommendation: The proponent should revise the AQIA to consider whether the other commercial/industrial properties could also be emissions sources that contribute to cumulative impacts in the surrounding air environment. If so, these should be included in the dispersion model.

6. Odour from the air space in water tank incorrectly calculated.

Odour from the air space in the water tank assumed a "wafting" discharge 24 hours per day. TAA expects the discharge will be much larger when steam and condensate are returned to the water tank, displacing the airspace. This was not considered in the AQIA. Further, the odour emission rate was based on monitoring data taken during the existing operations. There is no discussion how the odour concentration in the air space will change due to the expanded operations.

EPA recommendation: The proponent should revise the AQIA to consider odour emissions from the water tank vents when steam and condensate are returned. The odour concentration in the airspace may increase due to the expanded operations, and this needs to be considered when calculating emission rates from the water tank.

7. Emissions inventory questionable.

It appears that odour emission rates from the broken bag and the process waste bin have been calculated assuming the entire building has these levels of odour concentrations. If so, this is highly conservative and a gross overestimation, and would explain why the odour impacts are dominated by the broken bag and the waste processing bin. The proponent should clarify how the odour emission rates from these sources were calculated. Further, odour emissions from the raw waste processing bin were not included in the model.

EPA recommendation: The proponent should revise the AQIA to:

- ***a. review and consider the appropriateness of the emissions inventory. Where necessary the emissions inventory should be revised and clarified.***
- ***b. include more detail clarifying how odour emissions from broken bags and processing bins were derived.***
- ***c. include odour emissions from the raw waste processing bin in the model.***

8. Other sources of air emissions not considered.

The AQIA only assesses odour sources at the site. There is a small boiler on site that was not included in the assessment. Emissions from the boiler will increase as a result of the proposal.

EPA recommendation: The AQIA should be revised to include all air emissions sources.

Attachment B

EPA comments on matters relevant to waste management for the expansion of the State Waste Services Clinical Waste Management Facility (SSD 6761)

The EPA considers the information provided to assess waste management related impacts inadequate and inconsistent with the requirements of the Secretary's Environmental Assessment Requirements (SEARS).

The SEARs include an assessment of waste management associated with the proposal. The requirements for consideration include:

- details of how the material will be collected, managed and disposed of;
- details of the quantities and classification of waste to be generated on site;
- demonstration that the proposed handling, labelling, storage and disposal of clinical and related waste is consistent with NSW Health's Waste Management Guidelines for Health Care Facilities, August 1998;
- evidence that the expansion of the existing clinical and medical waste facility fulfils the objectives of the NSW Waste Avoidance and Resource Recovery Strategy 2014-21; and
- evidence that NSW Health supports the method of treatment of the clinical waste.

Specific issues with the EIS are detailed below. The EPA recommends these issues be addressed via the provision of a revised EIS.

Discussion of issues

1. It is unclear how the proposed increase in capacity can be achieved.

The proposal consists of an increase in processing capacity from 650 tonnes per annum (tpa) to 3000 tpa. No new infrastructure, plant or equipment are proposed. The proposed increase in waste will be achieved through the extended use of existing plant.

Consent and proposed waste volumes.

The current consent for the site includes:

- the maximum storage of 0.5 tonnes (ie. 23 bins) of unprocessed waste on site any one time;
- the processing of a maximum of 96 sulo bins of untreated waste each day; and
- the processing of 650 tonnes of untreated waste per year.

The EPS states (Section 4.7) the autoclave is capable of processing 1 tonne per hour, and therefore 11 tonnes per day. However currently only 2.5 tonnes of waste per day of clinical waste is received and processed.

The current consent for the site was based on processing 8 sulo bins per hour, or 96 bins during a 12 hour workday. Information that was provided with the development application for the site stated that 23 full bins equate to 0.5 tonnes of waste. Consequently operation of the plant 6 days a week would be equivalent to 576 full sulo bins of 12.5 tonnes of waste each week. The maximum amount of waste that could be treated each year would therefore be 650 tonnes.

An increase in capacity to 3000 tpa would require the site to process approximately 58 tonnes per week, equivalent to around 10 tonnes of waste per day. The autoclave process is 1 hour per load, and consequently the autoclave would need to run continuously every day, with each load equivalent to 1 tonne.

The EPA notes that each processing bin loaded into the autoclave contains much less than 1 tonne of waste. The amount of waste in each processing bin is limited due to the nature of the waste, the volume of the bags received, and the volume of the processing bins.

The EPA notes that it is unclear how a greater volume (and thus weight) of waste can be added to each processing bin, so each bin will carry around 1 tonne of waste, which is required to achieve a capacity of 3000 tpa consistent with the proposal.

It is unclear how much waste the site can manage at any one time.
The EIS states (Section 4.6.2) delivery vehicles would have a maximum capacity to carry waste materials up to 12,000 kg for medium rigid vehicles (two in operation), and 2,000 kg for small rigid vehicles (one in operation).

The EPA notes it is unclear what volume of waste the site can appropriately manage at any one time.

Processing and storage space is lacking. The management of current waste volumes already appears to be problematic at the site.
The EPA notes there is a current lack or appropriate storage space at the facility to conduct current operations in accordance with the current consent and licence conditions. In particular, a large amount of waste bins (clean and empty) are routinely stored outside the building, as also evident in some of photos of the site included in the EIS, for example see Figure 4-4.

Though the EIS refers to the approved outside "warehouse bin storage area" for the storage of clean bins (also not included or clearly depicted in the site plans in Section 4.3 of the EIS), in practice this area is insufficient for the effective and efficient operation of the facility, as observed by EPA officers who conducted recent site inspections at the premises.

EPA recommendation: The proponent should provide further information to clarify and justify how the facility can achieve, in an environmentally sound manner, the proposed 4.5 times increase in capacity to 3000 tpa.

2. Current operations include storage clinical and related wastes over several days contrary to information provided in the EIS.

The EIS states (Section 4.6.3) states there is no overnight storage of any clinical and related waste material on site. The EIS also states that waste material received at the site will be treated immediately after arrival each day, to ensure any potential impacts are prevented as a result of overnight storage (Section 4.2).

However the EPA notes that storage of clinical and related waste overnight does occur. For example SWS have advised the EPA that collection of cytotoxic waste received at the site occur only 2-3 times per week. Cytotoxic waste is not permitted to be processed at the site and as a consequence this waste may be stored on site for several days before being taken offsite for treatment.

Storage of clinical and related waste must be done in an appropriate manner to manage the specific risks associated with the relevant waste type.

As the EIS does not consider storage of clinical and related wastes, such as cytotoxic waste, which currently occurs at the facility and may increase with the proposal, the EIS fails to address a significant aspect required to ensure site impacts and risks are appropriately assessed and managed.

EPA recommendation: The proponent should revise the EIS to include actual current and proposed operations with respect to the management of clinical and related waste.

3. The EIS does not consider or assess the receipt and management of types of medical / clinical and related waste that may be received at the facility.

The EIS states (Executive Summary) the proposal is to increase the processing of medical waste from 650tpa of medical waste to 3,000tpa. However the EPA notes only clinical waste can be processed on site, by autoclaving.

The EPA notes with respect to the autoclaving process (Section 4.3.2) the EIS states the scope of collected waste would be limited to sharps, dressing and disposable linen, microbiological and pathological waste, human and animal tissue and body fluids.

Despite the fact the site is permitted to receive and store 'clinical and related waste' types other than 'clinical waste', such as 'cytotoxic waste' and 'pharmaceutical waste', the EIS does not consider or assess the impacts of the proposal associated with these wastes.

The EPA notes there are specific storage and handling requirements for cytotoxic and pharmaceutical wastes which are required to ensure risks to human health and the environment and prevented. Consequently such aspects must be considered and included in the EIS.

EPA recommendation: The proponent:

- **a. clarify and describe in detail what types of waste are intended to be received at the facility;**
- **b. clarify and describe in detail the management of each type of waste intended to be received at the facility; and**
- **c. consider and assess, where appropriate, potential impacts associated with the receipt of each type of medical / clinical and related waste types that may potentially be received, stored and/or processed at the facility, and that are associated with the project.**

4. <u>The EIS states that no physical works are necessary as a part of the application.</u>

The EIS states the proposal is to increase the processing of medical waste from 650tpa of medical waste to 3,000tpa. The proposed increase is proposed to be achieved through the extended use of existing plant.

The EPA notes during recent EPA site inspections at the facility the proponent referred to additional storage capacity, namely a new storage facility, being included with the proposal. However the EPA notes the EIS does not contain any reference to or information on additional storage to be included as a part of the proposal.

Also see comments under point 1. above.

EPA recommendation: The proponent should:

- **a. *clarify if the EIS contains all relevant works and activities associated with the proposal, such as an additional storage facility; and***
- **b. *where needed, revise the EIS to include all works and activities associated with the proposal.***

5. <u>Relevant activities to the project that are undertaken onsite are not included in the EIS.</u>

The EIS (Section 1.2) states "only clinical and related wastes are processed" at the facility and "No other wastes are processed by SWS". The EPA notes however contrary to these statements, other activities are performed on site that are not included the project description, such as the receipt, collection, sorting and consolidation of plastic and other wastes, for offsite disposal.

The EPA also notes it is unclear what impact, if any, the project may have on these other ancillary activities.

Due to the limited space available onsite the EPA recommends the EIS contain detailed information on all relevant and potentially relevant activities to the proposal and site operations.

EPA recommendation: The proponent should revise the EIS to describe, consider and assess all activities performed on site that are relevant or potentially relevant to the proposal, such as the receipt and processing of other wastes at the facility.

6. Information on the handling and management of bins containing waste is required.

The EIS (Section 1.2) states "on occasions, very small amounts of other materials … are found in the collected bins". However the EPA notes the EIS, including the project waste treatment process described in the EIS (Appendix J), does not include a detail description of waste bin as handling and management (processing), including any activity that would enable waste received to be inspected and reclassified to another waste type.

EPA recommendation: The proponent should revise the EIS to include details of the handling and management of bins containing waste, and reclassification of waste received.

7. NSW Health approval

The EIS refers to the NSW Health approval for treatment of clinical waste using the existing plant in Appendix J and R. The EPA notes Appendix J does not include any approval, and it is unclear if the NSW Health correspondence in Appendix R refers to the plant currently in operation at the facility.

The EPA notes that SWS must maintain a valid approval of the method of treatment of clinical waste at all times.

EPA recommendation: The proponent should revise the EIS to clarify a the facility holds a current approval from NSW Health for the treatment of clinical waste, using the current treatment plant at the site.

8. It is unclear if all waste bins received are suitable for use and appropriately managed

The EIS states (Section 1.2) "SWS clinical waste bins and sharps collectors meet relevant standards, and SWS clinical waste treatment facility, including its processes, is approved by NSW Health and the Environment Protection Authority". The EPA notes however the EIS does not contain any information to verify, or demonstrate and confirm all the bins received on site are compliant with relevant standards, such as those:

a. SWS clinical waste bins and sharps collectors;
b. other company's clinical waste, sharps collectors; and
c. bins and receptacles for cytotoxic and other specific types of clinical and related waste.

The EPA also notes the EIS does not contain information on aspects and contingencies where waste bins, receptacles, and other requirements do not comply with relevant standards and guidelines.

In addition, the EPA does not approve facilities, rather licenses and regulates the operation of facilities.

EPA recommendation: The proponent should revise the EIS to:

a. ***provide information on the waste receptacles and containers that are and may be received, and the management strategies and contingencies that will be used where non-compliant containers are found to be in use; and***
b. **clarify the EPA's role is not to approve the facility.**

9. Details of the handling of waste following autoclaving are not provided.

The EIS states (Figure 4-2) provides the approved and proposed waste treatment process. The EPA notes details of the process in Figure 4-2 are lacking, such as how bins are emptied into the shredder, and following this into the large bin for transport to landfill.

The EIS (Section 4.3.1) states waste from the autoclave is mechanically transferred to a conveyor system, where the waste is fed to a shredder, after which it drops into a waste compactor. However the EPA notes that the EIS description of transfer operations is not consistent with those observed by the EPA, and a conveyor system is not currently used at the facility.

Details of the actual shredding and compaction process, management of spills and residual or generated liquids are not included in the information on the existing approved process in the EIS (Section 4.2). These are required to demonstrate hazards and impacts associated with such

operations have been considered and appropriately assessed with respect to the proposal, which will significantly increase the total amount of waste treated at the site through the same process.

EPA recommendation: The proponent should revise the EIS to include correct and detailed information on the handling of waste, especially following autoclaving.

10. Details of the cleaning and disinfecting process are unclear.
The EIS states (Section 4.3.1) bins are segregated and hand cleaned using hospital grade disinfectant, deodorised and transferred to the warehouse bin storage area ready for re-use. However elsewhere the EIS (Section 6.10) states domestic grade disinfectants are use to disinfect the bins.

EPA recommendation: The proponent should revise the EIS to clarify the cleaning and disinfecting process, including the type of disinfectant to be used to clean bins.

11. The recommendations in the EIS refer to out of date guidelines.
The EIS provides (Section 6.18.8, and elsewhere, such as PHA Section 9) recommendations which include reference to four guidelines for the transport and handling of clinical and related waste.

The EPA notes three of the guidelines provided (AS/NZ 3816:1998; the Waste Management Guidelines for Health Care Facilities, and the National Guidelines for Waste Management in the Health Care Industry (NHMRC March 1999) are now out of date.

EPA recommendation: The proponent should revise the EIS to ensure current standards and guidelines are referred to.

9. The autoclave steam appears to be discharged into the environment from the water tank.
The EIS (Section 4.6.3) states there is no discharge of autoclave steam to the environment. However the EPA has observed steam discharging in a vigorous manner, though briefly, into the environment from the water tank vents (Figure 6-10). The steam appeared to be from the autoclave.

EPA recommendation: The EIS should be revised to:

- ***a. clarify whether autoclave steam is discharged into the environment from the water tank;***
- ***b. consider risks associated with the venting of pathogens in the steam; and***
- ***c. include a process and/or water flow diagram to show and clarify the movement, use, cooling, filtering and discharge of water associated with the autoclave system.***

Attachment C

EPA comments on other issues identified in the EIS for the expansion of the State Waste Services Clinical Waste Management Facility (SSD 6761)

Traffic

The EIS (Section 6.4) states the Traffic Impact Assessment prepared for the proposal assesses changes in traffic related to the project due to:

- an increase in operating hours from 37.5 per week (7:30am to 3pm Monday to Friday) to 72 (7am to 7pm Monday to Saturday), associated with daily movements spread into 12 hours rather than the current 6-7 hours in a working day;
- an increase in daily traffic movement from 36 to 58;
- an increase from 11 to 13 vehicle movements during morning peak times; and
- an increase from 5 to 11 vehicle movements during the evening peak hour.

The EIS also states with respect to the management of vehicles relevant to the proposal:

- all vehicles will continue to be stored off site overnight and when not operated (Section 4.6.2);
- the storage location for business related vehicles is a site in close proximity to the facility (also referred to as the 'works depot' – Section 4.7) rather than the car park of the facility (Section 1.2); and
- no alterations to the existing site access, internal circulation, servicing and built form arrangement are proposed.

The EPA notes:

a. it is unclear if and how vehicle deliveries of waste will be managed and controlled so they are evenly spread between the permitted hours of operation of 7am and 7pm;
b. it is unclear if the traffic impact assessment included consideration of vehicle movements associated with the receipt and/or removal of:
    a. clinical and related waste types that cannot be processed at the facility; and
    b. other non-medical / clinical and related wastes (eg plastic waste) received and processed at the facility.
c. the available space for van, small and medium rigid vehicle manoeuvring and parking is very limited at the site and is generally not conducive to safe and efficient vehicle operations (access, parking, loading/unloading and exit);
d. details of the vehicle storage site, as well as of traffic and other potential impact associated with the use of this site should be provided in the EIS. Contingency measures should also be provided where the use of the storage site no longer becomes available; and
e. it is unclear what operations and how many vehicles can be managed on the site at any one time.

EPA recommendation: The proponent should revise the EIS to consider, address and/or clarify the above issues, as necessary.

Water

The EIS (Table 1-1) states surface water is managed inside the building. However, the EIS states (Section 4.3) and SWS have advised the EPA:

- empty bins are routinely temporarily stored outside the building, and
- on occasion storage of a limited number of full waste bins, and unloading of waste (see EIS Figure 4-2), may occur outside the building.

The EPA notes that outside the building the concrete hardstand slopes towards a stormwater drain which is not isolated. Consequently, there is a risk of pollution to stormwater if any spill of waste is not immediately and effectively contained.

EPA recommendation: The proponent should revise the EIS to consider and address risks to stormwater.

The EPA also notes the EIS does not contain a diagram, schematic or plan of stormwater and related water management infrastructure at the site. The EIS states (Section 4.6.3) that "no drawings or plans associated with the stormwater arrangements on the outside concreted area were found".

EPA recommendation: The proponent should revise the EIS to include a stormwater and related water management infrastructure diagram or plan, to demonstrate this aspect is satisfactorily understood.

Emergency response and Preliminary Hazard Analysis

1. The EPA does not approve pollution incident response management plans.

The EIS (Section 6.1) states SWS has an EPA approved pollution incident response management plan (PIRMP).

The EPA notes that PIRMP's are required under NSW legislation however they are not approved by the EPA.

EPA recommendation: The proponent should revise the EIS to clarify the site PIRMP is not approved by the EPA.

2. It is unclear what the potential impacts associated with loaded trucks parking in the staging area for up to 6 hours might be.

The Preliminary Hazard Assessment (PHA) component of the EIS states (PHA, Section 4.4.5.3) loaded trucks may be parked in the staging area for up to 6 hours in the event of a major plant breakdown. The EIS does not consider storage of clinical waste for up to 6 hours due to:

- infectious wastes are 'generally' stored in plastic lined bins for a number of days before collection;
- the staging area for trucks storing the waste would be locked when the area is unattended; and
- security cameras are in place, limiting chance for vandalism.

The EPA notes it is unclear where the staging area referred to in the PHA is located. If offsite, the staging area would potentially require licensing, which is not referred to in the EIS or PHA.

The EPA also notes the storage of clinical waste containing pathogenic and infectious microorganisms may result in (under favourable conditions) a significant increase in these organisms in the waste. This aspect does not appear to have been considered or assessed in the project PHA.

EPA recommendation: The proponent should revise the EIS to consider in more detail potential aspects, impacts and risk associated with the staging of trucks containing waste at either on- or off-site locations.

3. Information of the validation testing performed on the autoclave is not clearly presented in the EIS.

The PHA refers to aspects relevant to the operation of autoclave. However the PHA or body of the EIS does not include information, including a summary, of validation testing performed on the autoclave to demonstrate it will effectively and efficiently treat all (waste case) wastes that will be loaded into it at the facility.

EPA recommendation: The proponent should revise the EIS to clarify autoclave validation has been undertaken and that it clearly demonstrates the autoclave will properly sterilise all the materials requiring treatment in a reliable, effective and efficient manner.

Noise and vibration

The EIS does not contain a Noise Impact Assessment for the proposal as required by the Secretary's Environmental Assessment Requirements issued by the NSW Department of Planning and Environment.

The EPA notes:

- the premises is located within an established industrial area, with the majority of operations occur within a building;
- industrial premises are located between the subject premises and the nearest residential receivers;
- the proposal will operate mostly during daytime hours; and
- the surrounding area includes the significant noise sources such as the Great Western Highway, the M4 motorway and Eastern Creek Motorsport Park to the south.

The EPA considers the proposal for the extended hours of operation at the site to be low risk with respect to noise impacts.

1. Clarification of operating times is required.

However the EPA notes the EIS (Table 1-2) states no activities will be undertaken between 10pm and 7am.

EPA recommendation: the EIS clarify that activities will not be undertaken between 7pm and 7am – consistent with the current and proposed operating hours.

Planning Services
Industry Assessments
Contact: Emma Barnet
Phone: 9274 6412
Email: Emma.barnet@planning.nsw.gov.au

Our Ref: SSD 6761

Mr Chris Linley
State Waste Services
PO Box7363
Baulkham Hills NSW 2153

chris@statewaste.com.au

CC: 20nicolas15@gmail.com

Dear Mr Liney

Response to Submissions
Clinical Waste Management Facility, Arndell Park (SSD 6761)

The exhibition of the Development Application (DA), including the environmental impact statement (EIS), for the above project ended on Friday 22 February 2019. All submissions received by the Department during the exhibition of the project are available on the Department's website at http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6761

The Department requires that you provide a response to the issues raised in those submissions, in accordance with clause 85A(2) of the Environment Planning and Assessment Regulations 2000. Please provide a response to the issues raised in these submissions by Thursday 27 March 2019. In addition, it is also requested you address the issues raise by the Department at **Attachment 1**.

The Department is still awaiting a further submission from the Environment Protection Authority which will be forwarded to you once received

Note that under clause 113(7) of the *Environmental Planning and Assessment Regulation 2000*, the days occurring between the date of this letter and the date on which your response to submissions is received by the Planning Secretary are not included in the deemed refusal period.

If you have any questions, please contact Emma Barnet on the details listed above.

Yours sincerely

C. Ritchie 6/3/19

Chris Ritchie
Director, Industry Assessments
Planning Services

ATTACHMENT 1

Waste Management

The current consent allows for up to 96 silo bins (approx. 2.1 tonnes) per day. The EIS states that "currently, an average of 2.5 tonnes per day of clinical waste is received and processed on site" (p.77 pf the EIS). The current vehicle movements per day (as set out in Table 1, p.10 of Appendix C to the EIS) would suggest that there are a large number of vehicle movements (SRV and MRV) for approximately 2 tonnes of waste.

1. **Please provide an indication of how much waste is received and processed on site i.e. how much waste is delivered on a typical day. Provide details of vehicle loading.**
2. **Please provide details of how much unprocessed waste would be on site at any one time.**

All waste is treated on the same day (p.61 of the EIS) and no untreated waste is stored overnight. However, it has been raised previously that aerial imagery has shown bins stored in areas which are designated for manoeuvring of vehicles. Given that the proposed increase in waste management capacity from 650 tpa to 3,000 tpa would mean that approximately 9.8 tonnes of waste would be processed per day.

3. **Please provide a detailed justification that the storage areas are capable of handling the proposed amount of waste to be processed, as well as treated waste and empty bins. In particular provide a visual representation of the amount of waste containers/bins which can be stored in the designated locations.**

The treatment process is stated as being compliant with the NSW Department of Health (s4.2, p56 of the EIS). Appendix R includes a NSW health approval for the Medivac Technology and not the Bondtech autoclave which is included in the specification in Appendix M. As noted in the letter to Stimpson Consultant Services Pty Ltd dated 2 October 2012 from Blacktown City Council in Appendix G, a change was agreed to replace the technology from a Medivac Metamizer to an alternative autoclave, boiler and shredder. An approval for the technology used in the current process is not provided.

4. **Please provide a copy of an approval for the current technology. Describe how the autoclave and waste processing in general meet the NSW Health's *Approved Methods to Treat Clinical Waste***

Odour

The odour performance criteria (OU) that have been used for the assessment are not adequate. The 2 OU criteria for urban population (≥ 2000) applies for all receptors, including industrial receptors.

5. **Please update the odour assessment to include the relevant odour performance criteria (OU). Provide site boundaries and emission sources on all figures.**
6. **Describe the operating conditions assumed for each modelled scenario, what is typical operations, are the doors open or shut?**
7. **Undertake additional modelling to account for a scenario where the maximum volume of treated and untreated waste is stored onsite.**

The odour assessment states that all scenarios including worst case scenario demonstrated clear compliance with the relevant OU criteria (p.137 of the EIS). All scenarios, including typical operations (Scenario 1), show that the odour performance criteria are exceeded at R15.

8. **Please update the odour assessment to clearly identify any exceedances. Provide an analysis of how impacts will be avoided, minimised or offset.**
9. **Provide a discussion of the acceptability of any residual impacts with reference to relevant standards or guidelines.**

Management and Mitigation

The EIS states that the mitigation measures listed in section 7.1 (pp.161 – 162 of the EIS) are already in place. It is unclear if these are implemented or will be implemented.

10. **Please update the list of management and mitigation measures that will be undertaken during the operation of the proposal. This table must only include measures to be undertaken during operation of the proposed development, not a discussion of the assessment or the existing management measures. The table must not include words such as should.**

The EIS states that a Pollution Incident Response Management Plan (PIRMP) has been prepared for the current EPL (p.110 of the EIS).

11. **Provide a copy of the existing Emergency Response Plan and Pollution Incident Response Management Plan.**

Water

The EIS states that there will be an increase in water usage from the extended hours of operating the autoclave (p.109 of the EIS).

12. **Please provide details of water requirements for the proposed development (i.e. the increase in waste processing capacity).**

The building is sealed and bunded and is not connected to any stormwater drain (p.111 of the EIS). Paragraph 7.1.4 of Determination no. 11-1642 (p.7 of 17) states that the bin wash bay is to bunded/graded so as to direct water/waste to a collection put, which then discharges to the Sydney Water sewer system in accordance with the requirements of Sydney water. Site Plan 2 of 7 (Set out and excavation plan) notes that there are additional drainage layout details to accompany this plan.

Clause (18) of Building Permit BA-98-3251 requires that a complete hydraulics layout plan, indicating surface and roof drainage, pipe sizes, levels and points of discharge, shall be submitted to and approved by Council prior to the commencement of construction.

13. **Please provide details of stormwater drains on site including those outside the building which could be impacted by the proposed increase in operations including potential for hydrocarbons from vehicles. Provide details of any installed stormwater treatment deceives.**

The EIS states that the building is sealed and bunded and is not connected to any stormwater drain (p.111 of the EIS).

14. **Please provide a plan that clearly shows the existing site bunding.**

Health
Western Sydney
Local Health District

WSLHD HPRM Ref No: 19/12063-4
Your Ref. No: SSD 6761

Ms Kelly McNicol
Acting Director
Industry Assessments
NSW Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms McNicol

RE: Clinical Waste Management Facility – Arndell Park (SSD 6761)

I write to you in response to your correspondence received on the 15th February 2019 concerning the Clinical Waste Management Facility, Arndell Park, Notice of Exhibition.

The Western Sydney Local Health District, Centre for Population Health has reviewed the Environmental Impact Statement prepared for the proposed development.

The proposal is to increase the capacity of the current approval for treating clinical waste on site from 650 tonnes to 3000 tonnes per annum. This is an increased processing capacity of 2,350 tonnes per annum or 3.6 times the current approved capacity.

The proposal does not include any increase to plant or equipment on site. It states that the proposed increased processing capacity will be achieved through the extended use of existing plant and equipment over the existing approved operating hours.

A calculation of the operating requirements based on a 3000 tonne per annum capacity over a 6 day per week / 12 hours per day for 52 weeks per annum (current approved operating hours) would mean that approximately 10 tonnes of clinical waste could be required to be processed in every one of these days. It is stated in Appendix B (page 7) that existing hours may be extended to 7 days a week however this option does not appear to be included in the main EIS document.

The above calculations are based on a statement in Appendix B - Air quality Assessment (page 7) that the processing capacity of the autoclave is at 1 tonne load per hour. The proposed increased per annum capacity will, it could be assumed, result in an increase in the wear and tear on existing equipment and maintenance requirements to ensure continual safe operation of the autoclave and other equipment on site.

Centre for Population Health
5 Fleet Street North Parramatta BC NSW 2151
Locked Bag 7118 NSW 2124
Tel 02 9840 3603 Fax 02 9840 3608
Website www.wslhd.health.nsw.gov.au

It is noted that, based on service reports provided, maintenance checks of the autoclave are scheduled once every 2 years with the last occurring on the 21st April 2018. It was further noted on the April 2018 service report that the safety valves checked on this date were at the time non-compliant with AS3788 *Pressure equipment—In-service inspection*. No detail of any increased maintenance checks or servicing requirements appeared to be included in the supporting documentation to the proposal.

Further, it is unclear whether the breakdown of, or scheduled equipment shut down for servicing and/or maintenance has been considered in relation to the potential build-up of untreated waste required to be stored onsite. If this was to occur there would be a subsequent risk of increased odours occurring due to storage of untreated waste on site.

Although the proposal states that no increased untreated waste will be stored on site overnight it is unclear how this waste will be managed offsite if existing contracts to remove waste are in place. Some additional information on how this potential back log of waste may be coordinated with the waste generator would be helpful in assessing the risk of inappropriate waste storage occurring.

The odour/air quality assessment in Section 6 of the EIS does not appear to accurately reflect the results of the modelling of odour impacts on the neighbouring industrial sites. An assessment criterion of 6.0 OU was selected as the appropriate criterion for the commercial/industrial premises. On page 137 of the EIS it states that compliance with the 6.0 OU was achieved at nearby industrial/commercial premises. However, for scenarios 1 through to 6 at receptors R11 and R15 the assessment criterion of 6.0 OU was often exceeded. It is noted however that all residential receptors modelled for each scenario were below the assessment criterion of 2.0 OU which is suitable for assessment of residential impacts. The application does not provide additional monitoring of mitigation measures consistent with the increased processing capacity of the autoclave detailed in the proposal.

In Appendix R a laboratory analysis conducted in February 2018 is provided which shows a 4 log 10 reduction in the indicator organism has been confirmed by a NATA accredited laboratory. Evidence of the efficiency of each autoclave cycle using bio-indicator strips and a temperature pressure check should be conducted prior to the treated waste from each cycle leaving the site to ensure inappropriately treated waste is not disposed of as general waste.

In relation to the Appendix D Preliminary Hazard Risk Assessment, Release of Pathogens (page 34) it is requested that some further context be provided about the likelihood of pathogens escaping due to leakage/rupture of the autoclave. In addition more information is required about the proposed evacuation plan if the modelled scenario (or similar) was to eventuate.

The EIS states that the NSW Health approval of the treatment process for clinical waste is current, however the approval expired on the 30th June 2018. A re-application has been received for approval and is currently being considered by NSW Health.

The NSW Health Waste Management Guidelines for Health Facilities 1998 has been replaced by the Clinical and Related Waste Management for Health Services Policy Directive 2017. The updated guidelines should be reviewed and appropriately referenced throughout the EIS and supporting documentation.

It is recommended that additional supportive evidence be provided to allow further assessment of the proposal and the management of impacts and risks due to the proposed increase in the operating capacity at the site.

If you wish to discuss further please contact Helen Noonan, on Tel: (02) 9840 3603 or Email: helen.noonan@health.nsw.gov.au

Yours sincerely

Dr Stephen Corbett
Director, Centre for Population Health
Western Sydney Local Health District

Date: 6th March 2019

Blacktown
City Council

PCU077953

File no: MC-14-2285
SSD_6761

22 February 2019

Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Attention: Kelly McNicol

Dear Ms McNicol,

Request for Council's comments regarding a State significant development application for increased processing capacity of the existing Clinical Waste Management Facility located at 9 Kenoma Place, Arndell Park

Thank you for advising us of the above State Significant Development.

A review of the Environmental Impact Statement and supporting documentation has been undertaken and we raise no objection to the proposal subject to the following additional conditions:

1. The hours of operation are to be what was originally approved under JRPP-11-1642 being 7am to 7pm, Monday to Saturday.

2. On street parking is discouraged. If parking for any additional contract drivers is required, it must be made available on site in addition to the existing parking spaces provided on site.

It is expected that the Environmental Protection Authority will require the existing Environment Protection Licences to be modified to include this expanded operation for its continued monitoring.

We trust that any issues raised by any adjoining owner or occupier will be addressed prior to any determination of the application.

Should you require any further information regarding this matter, please contact our Senior Planner – Jared Spies, on 9839 6000.

Yours sincerely,

Judith Portelli
MANAGER DEVELOPMENT SERVICES

30 January 2019

Roads and Maritime Reference: SYD14/01331/03 (A25601423)
DP&E Reference: SSD 6761

Director
Key Sites and Industry Assessments
Department of Planning & Environment
320 Pitt Street Sydney NSW 2001

Attention: Emma Barnett

Dear Sir/Madam

EXHIBITION OF EIS FOR CLINICAL WASTE MANAGEMENT FACILITY - 9 KENOMA PLACE, ARNDELL PARK

Reference is made to your correspondence letter dated 23 January 2019, regarding the abovementioned Application which was referred to Roads and Maritime Services (Roads and Maritime) for comment.

Roads and Maritime has no comment for the Department's consideration in the determination of the application.

Any inquiries in relation to this Application can be directed to Amanda Broderick on 8849 2391 or development.sydney@rms.nsw.gov.au

Yours sincerely,

Zhaleh Alamouti
A/Senior Land Use Planner
North West Precinct

BADA PTY LTD
ATF
Simali Investments Unit Trust
ABN 29 718 564 380
35 Holbeche Road, Arndell Park NSW 2148
Ph (02) 9679 8333 Fax (02) 9679 8355

RE: SSD 6761 Clinical Waste Management Facility

We would like to register our objection to the proposed application, solely due to the increase in traffic at the already seriously congested and dangerous intersection at Holbeche rd and Vangeli St.

The Arndell Park industrial area, more specifically Holbeche rd, has undergone huge increases in development over the past 25 years causing a massive increase in traffic. This is compounded by several large freight companies running pan tech's and taut liners (increasing traffic) in addition to several smash repair businesses all within close proximity to one another (increasing roadside parking).

We own the facility at 35 Holbeche rd which is directly opposite the Vangeli / Holbeche "T" intersection and I can state that having been here for the past 25 years that this intersection has become a magnet for accidents and it is only a matter of time before there is a serious accident or potential fatality.

Several of my employees have written to council in the past regarding this intersection as several of them have had accidents/near misses departing our premises.

Furthermore, there is a bus stop recently installed at 45 Holbeche rd and an express post box at 36 Holbeche rd, both within 20m of this intersection which has increase the foot traffic near this intersection, making it even more congested and dangerous.

We feel that the solution to this problem is not complicated and could be solved in one of either two ways

1) Erect traffic lights at this intersection

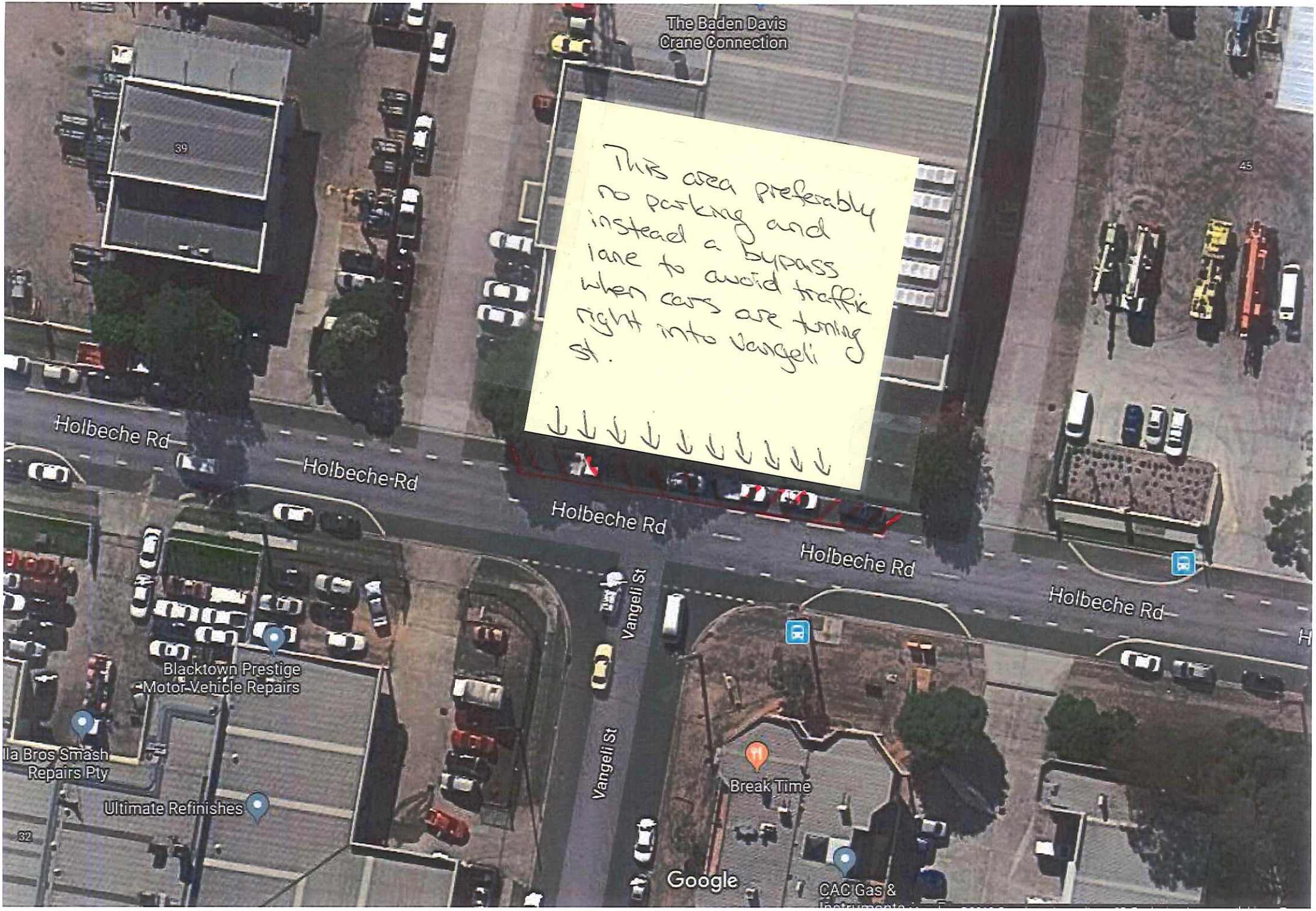
2) Remove parking from directly opposite this intersection and have this previous kerbside parking area as a passing lane for cars continuing down Holbeche rd in an Easterly direction so that they do not build up waiting for cars trying to turn right into Vangeli, hurrying these drivers up and encouraging the drivers turning right to take unnecessary risks.

The second suggestion would improve traffic flow significantly at least easing the problem, if traffic lights are too difficult to install.

Should one of the above suggestions be adopted then I would have no issue withdrawing my objection.

Many Thanks

Anthony Davis


The Baden Davis Crane Connection
This area preferably no parking and instead a bypass lane to avoid traffic when cars are turning right into Vangeli St.
Holbeche Rd
Holbeche Rd
Holbeche Rd
Holbeche Rd
Holbeche Rd
Vangeli St
Vangeli St
Blacktown Prestige Motor Vehicle Repairs
lla Bros Smash Repairs Pty
Ultimate Refinishes
Break Time
CAC Gas &
Google
39
45
32

BADEN SUPERANNUATION FUND

ABN 94 001 563 719

43 HOLBECHE ROAD, ARNDELL PARK NSW 2148

Phone: (02) 9679 8333 Fax: (02) 9679 8355

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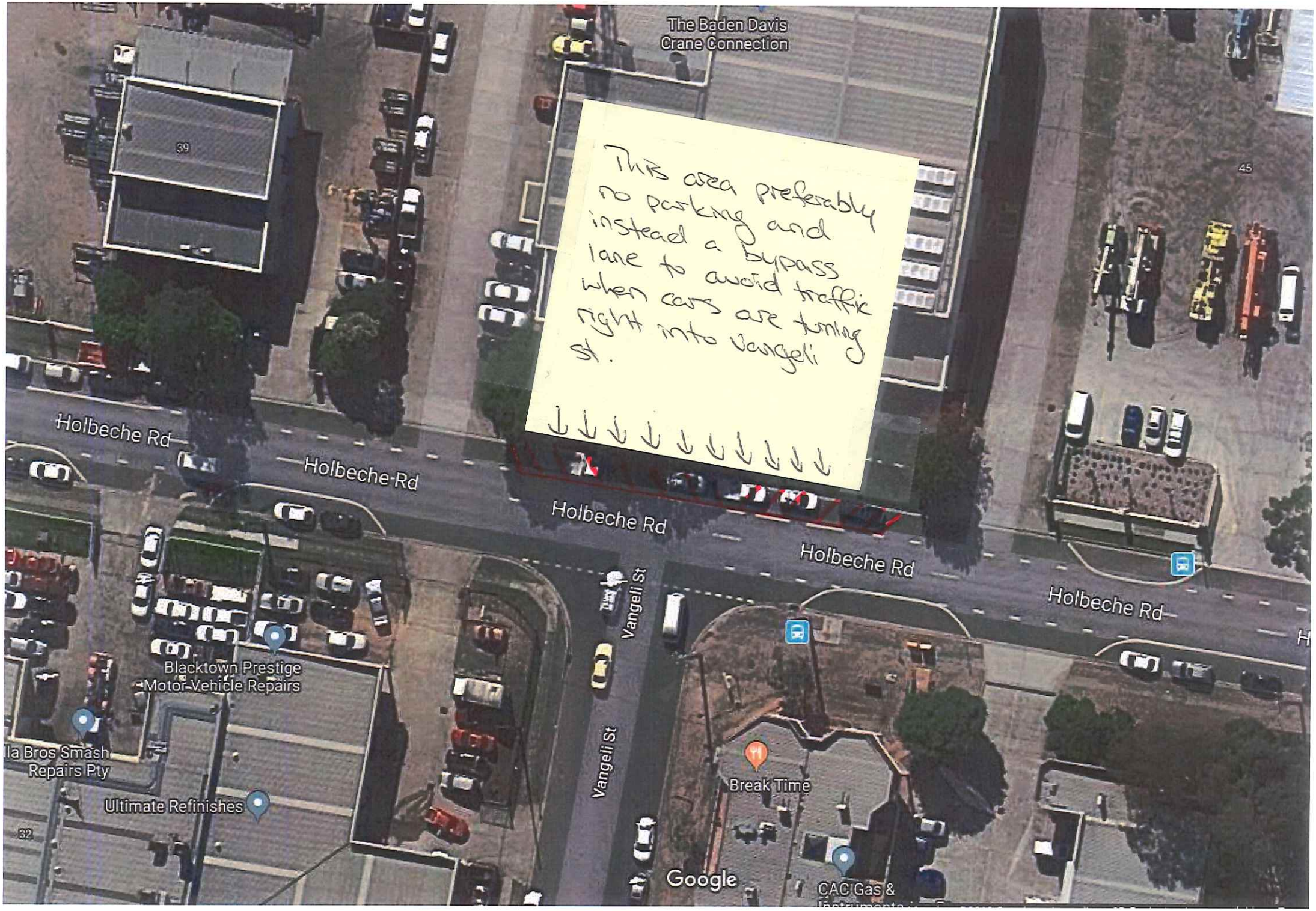
The second suggestion would improve traffic flow significantly at least easing the problem, if traffic lights are too difficult to install.

Should one of the above suggestions be adopted then I would have no issue withdrawing my objection.

Many Thanks

Simone Davis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ENDO-TECHNIK-NORD PTY LTD

Unit 9, 15, 18, 22, 25 / 33 Holbeche Road ARNDELL PARK, NSW 2148
Phone: 9672 1551 Fax: 9672 8355
A.B.N 13 003 868 826

RE: SSD 6761 Clinical Waste Management Facility

We would like to register our objection to the proposed application, solely due to the increase in traffic at the already seriously congested and dangerous intersection at Holbeche rd and Vangeli St.

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We own the facility at 35 Holbeche rd which is directly opposite the Vangeli / Holbeche "T" intersection and I can state that having been here for the past 25 years that this intersection has become a magnet for accidents and it is only a matter of time before there is a serious accident or potential fatality.

Several of my employees have written to council in the past regarding this intersection as several of them have had accidents/near misses departing our premises. Furthermore, there is a bus stop recently installed at 45 Holbeche rd and an express post box at 36 Holbeche rd, both within 20m of this intersection which has increase the foot traffic near this intersection, making it even more congested and dangerous.

We feel that the solution to this problem is not complicated and could be solved in one of either two ways

1) Erect traffic lights at this intersection

2) Remove parking from directly opposite this intersection and have this previous kerbside parking area as a passing lane for cars continuing down Holbeche rd in an Easterly direction so that they do not build up waiting for cars trying to turn right into Vangeli, hurrying these drivers up and encouraging the drivers turning right to take unnecessary risks.

The second suggestion would improve traffic flow significantly at least easing the problem, if traffic lights are too difficult to install.

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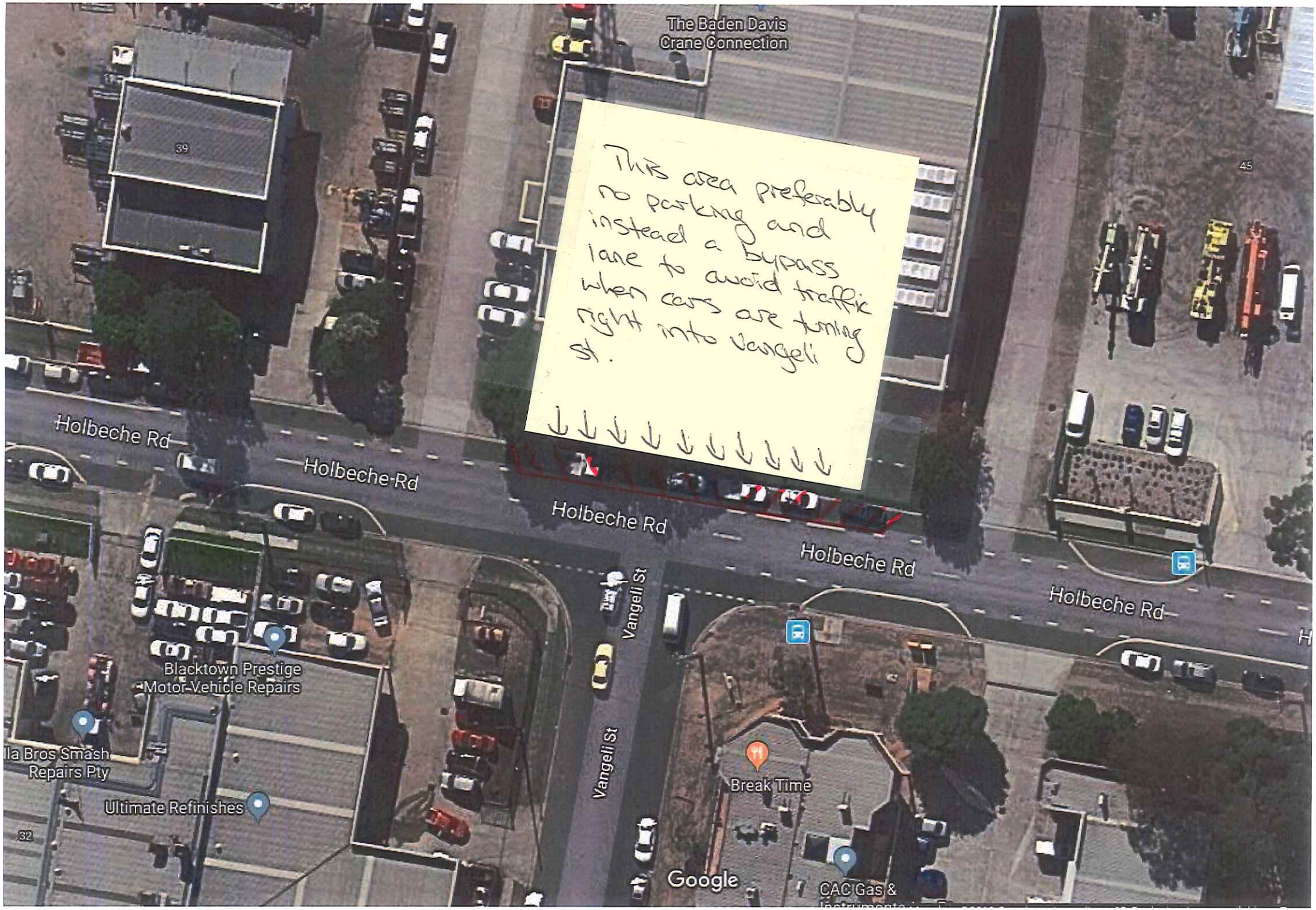
Many Thanks

Maria Baden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Schottlander Pty Ltd
as trustee for
Baden Family Trust
ACN 135 425 044
45 Holbeche Rd
Arndell Park NSW 2148

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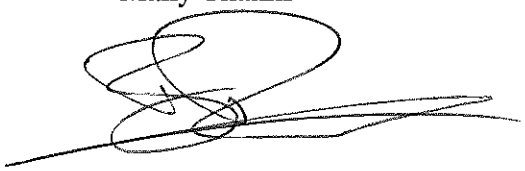
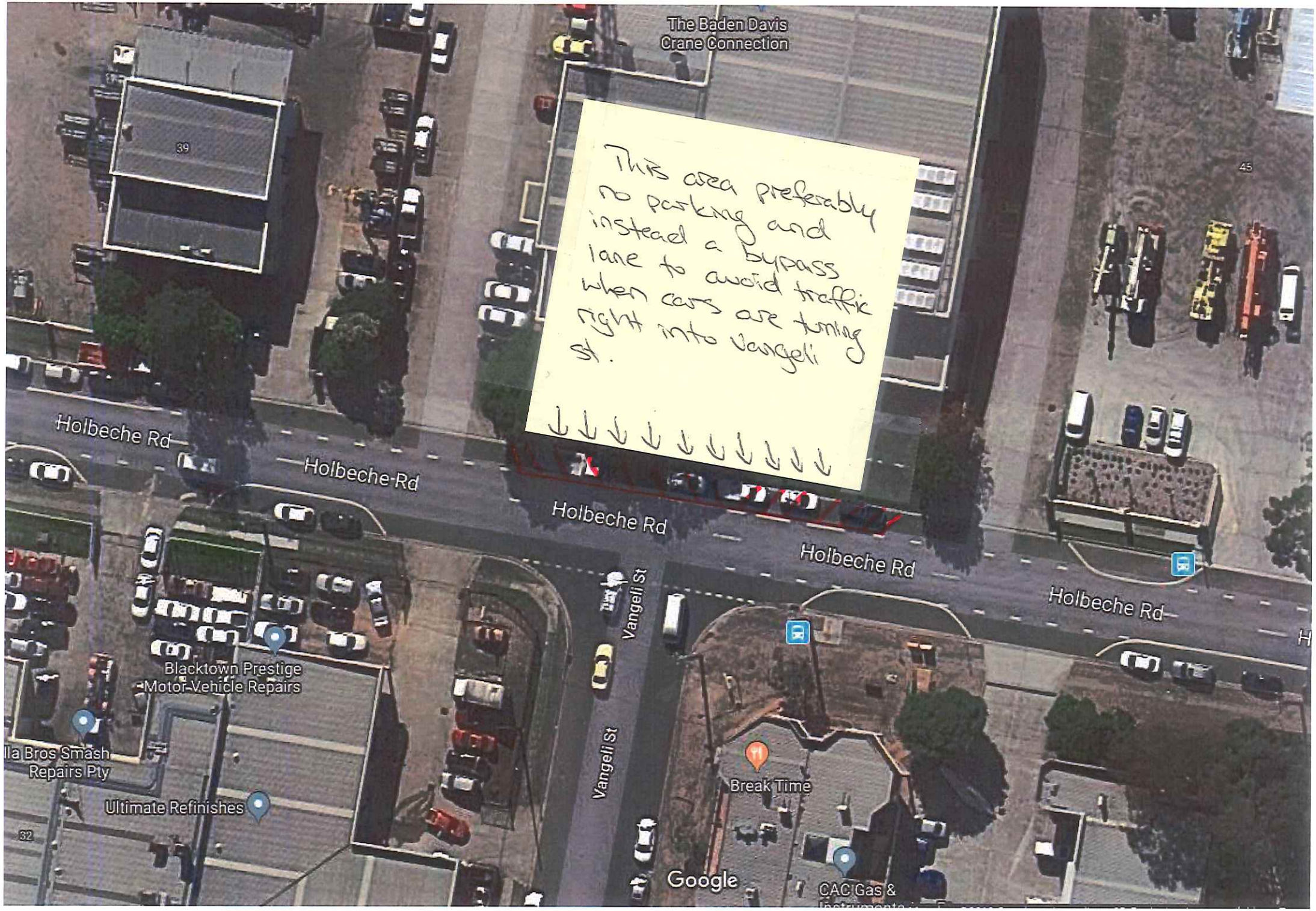


Benjamin Baden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Phone: 9672 1551 Fax: 9672 8355
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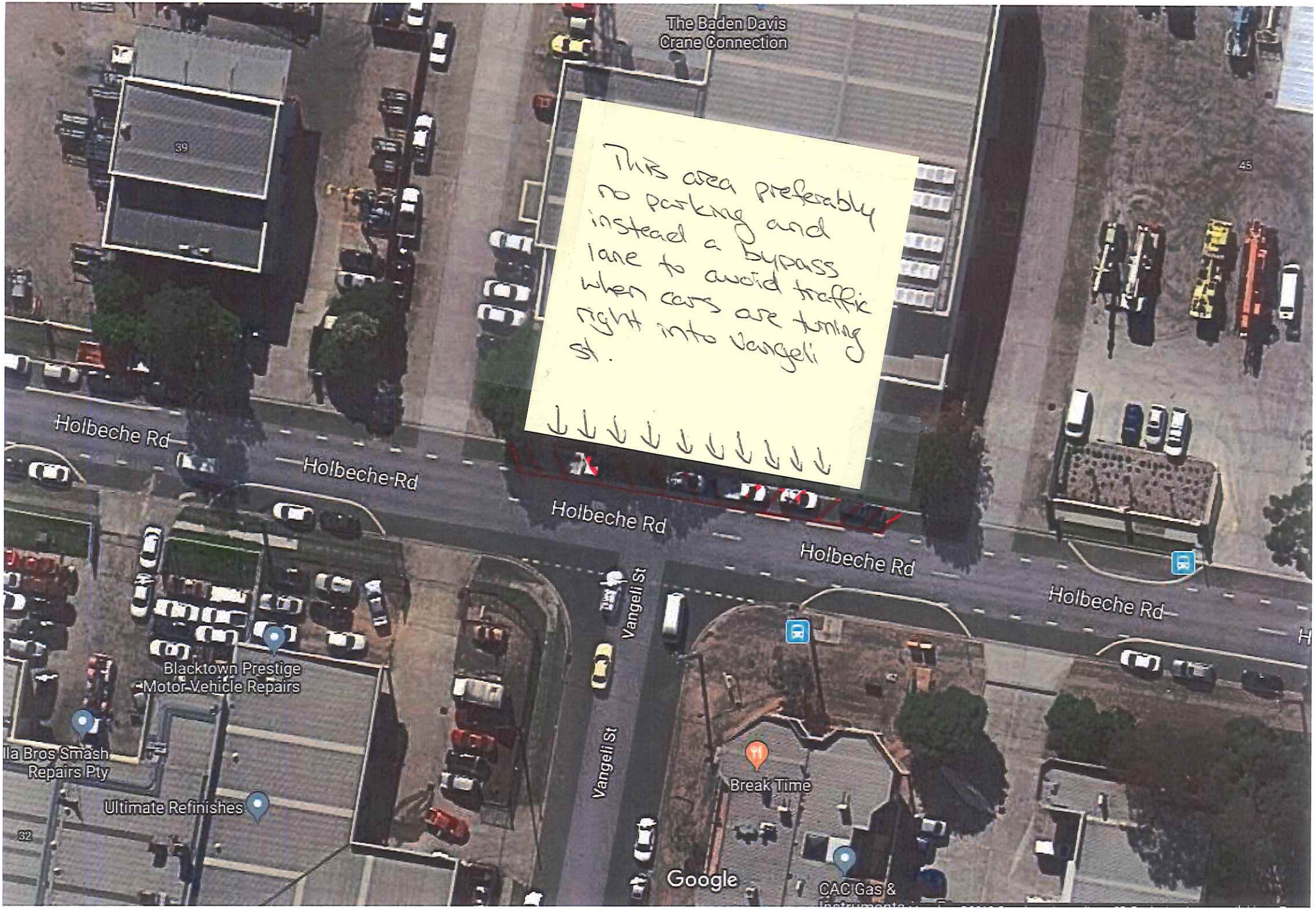
Many Thanks

Gerhard Baden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Submission for: Clinical Waste Management Facility, Arndell Park

Objects

Kerryn Goddard

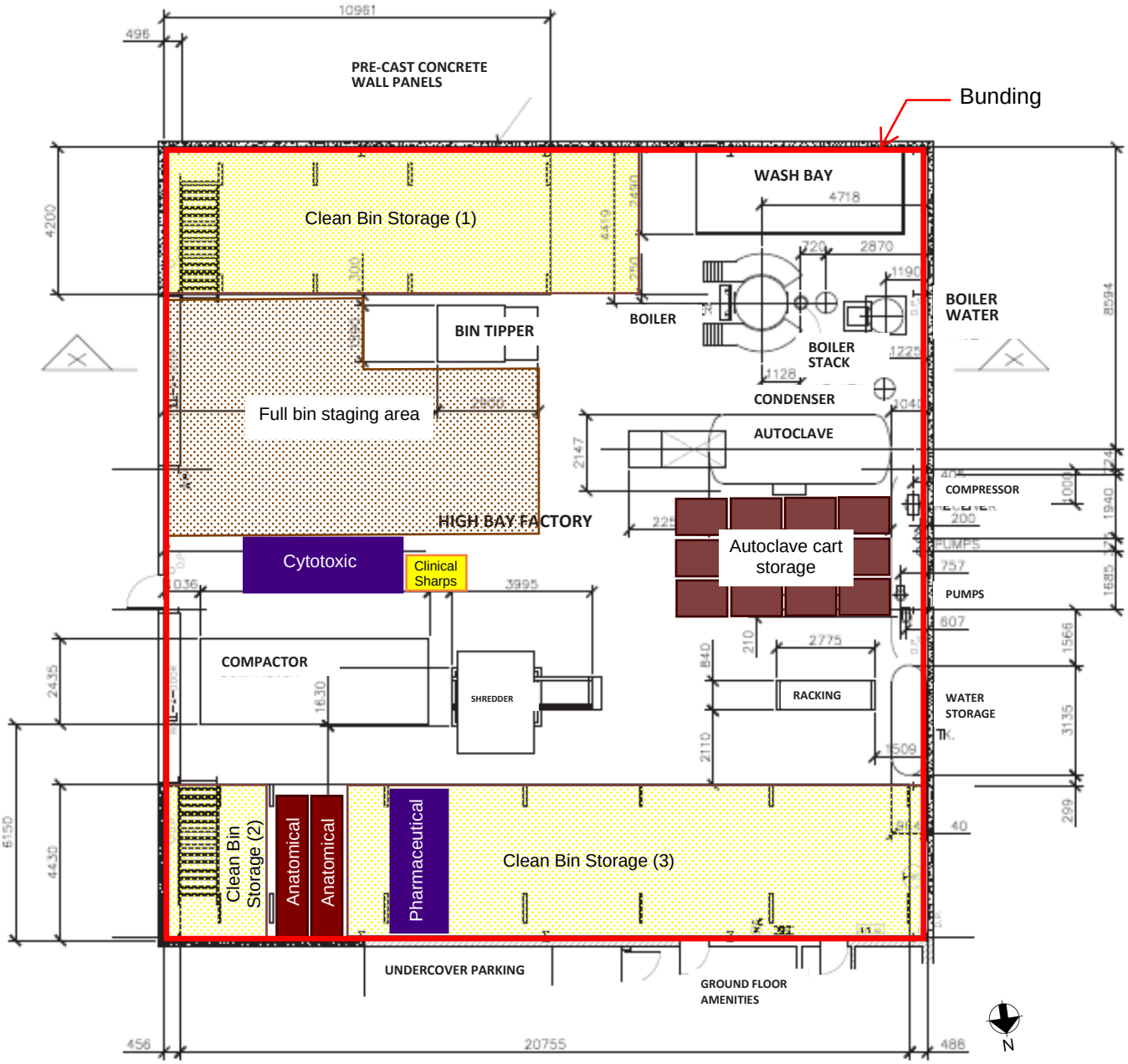
west pennant hills, New South Wales

Message

I object to the proposal to increase the waste capacity at the property at 9 Kenoma Place Arndell Park
The current smell from the wastage is foul and definitely has a significant detrimental impact on the tennants of the surrounding premises. It is embarassing inviting visitors to your premises when the foul smelll from the incinerator pollutes the air. Also workers at the surrounding premises refuse to go outside when the smell is noticable. This currently has a negative effect on local business and creates a poor workplace environment I did not purchase a property 7 years ago that was "adjoining a waste disposal (tip) like air pollution" The smell has been likened to "burnt nappies" by our tennants of our property which adjoins number 9 Kenoma Place..
The streetscape of Kenoma place does not support the increase in traffic that would be attributable to a 500% increase in the use of the incinerator. Kenoma Place is a culdesac and therefore the traffic does effect all premises.

Appendix C

Site Plans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PRE-CAST CONCRETE WALL PANELS
Clean Bin Storage (1)
WASH BAY
BOILER
BOILER WATER
BOILER STACK
CONDENSER
BIN TIPPER
Full bin staging area
AUTOCLAVE
COMPRESSOR
PUMPS
HIGH BAY FACTORY
Cytotoxic
Clinical Sharps
Autoclave cart storage
COMPACTOR
SHREDDER
RACKING
WATER STORAGE
Clean Bin Storage (2)
Anatomical
Anatomical
Pharmaceutical
Clean Bin Storage (3)
UNDERCOVER PARKING
GROUND FLOOR AMENITIES
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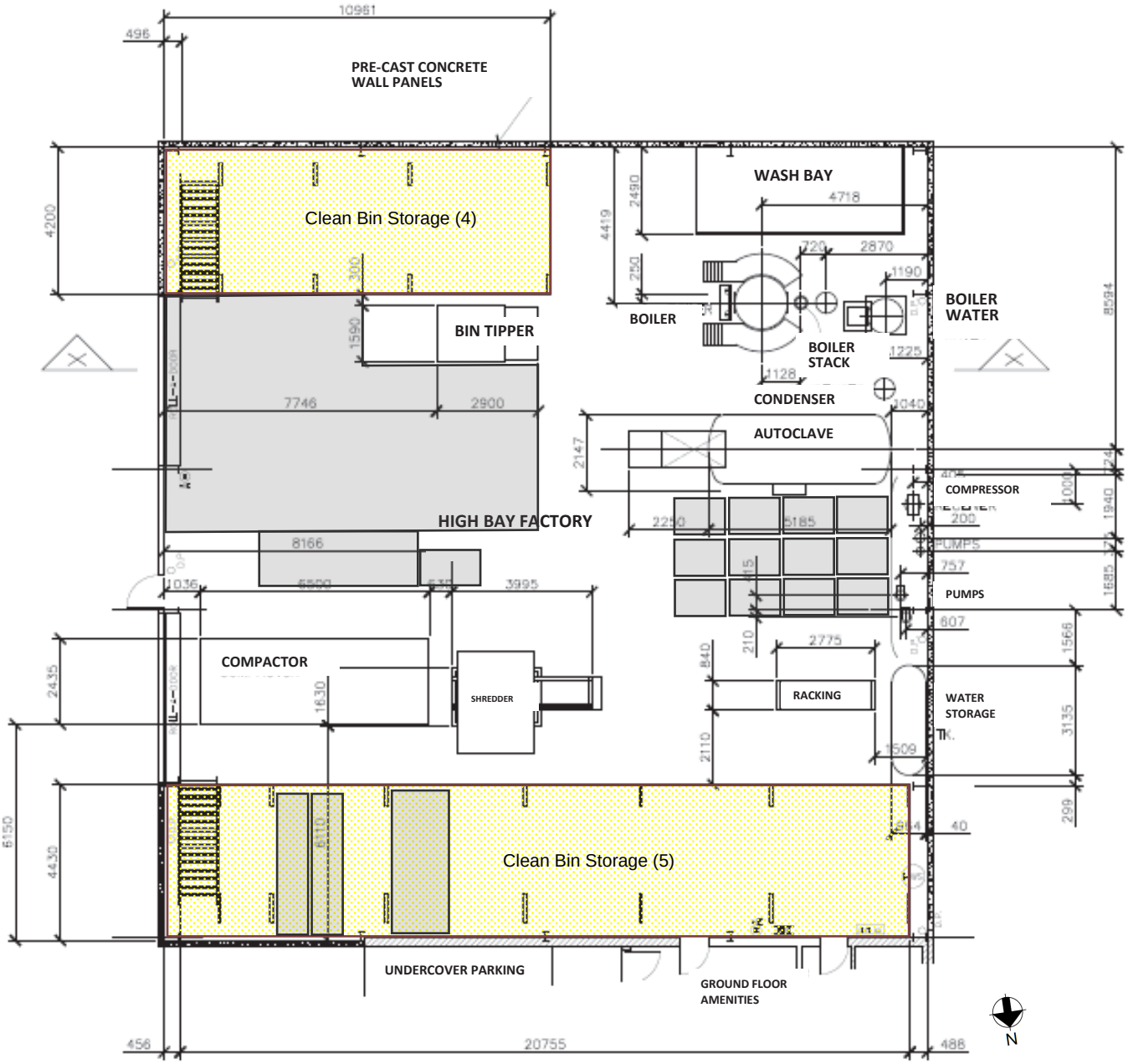
PRE-CAST CONCRETE WALL PANELS
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BIN TIPPER
CONDENSER
AUTOCLAVE
COMPRESSOR
PUMPS
HIGH BAY FACTORY
COMPACTOR
SHREDDER
RACKING
WATER STORAGE TK.
Clean Bin Storage (5)
UNDERCOVER PARKING
GROUND FLOOR AMENITIES
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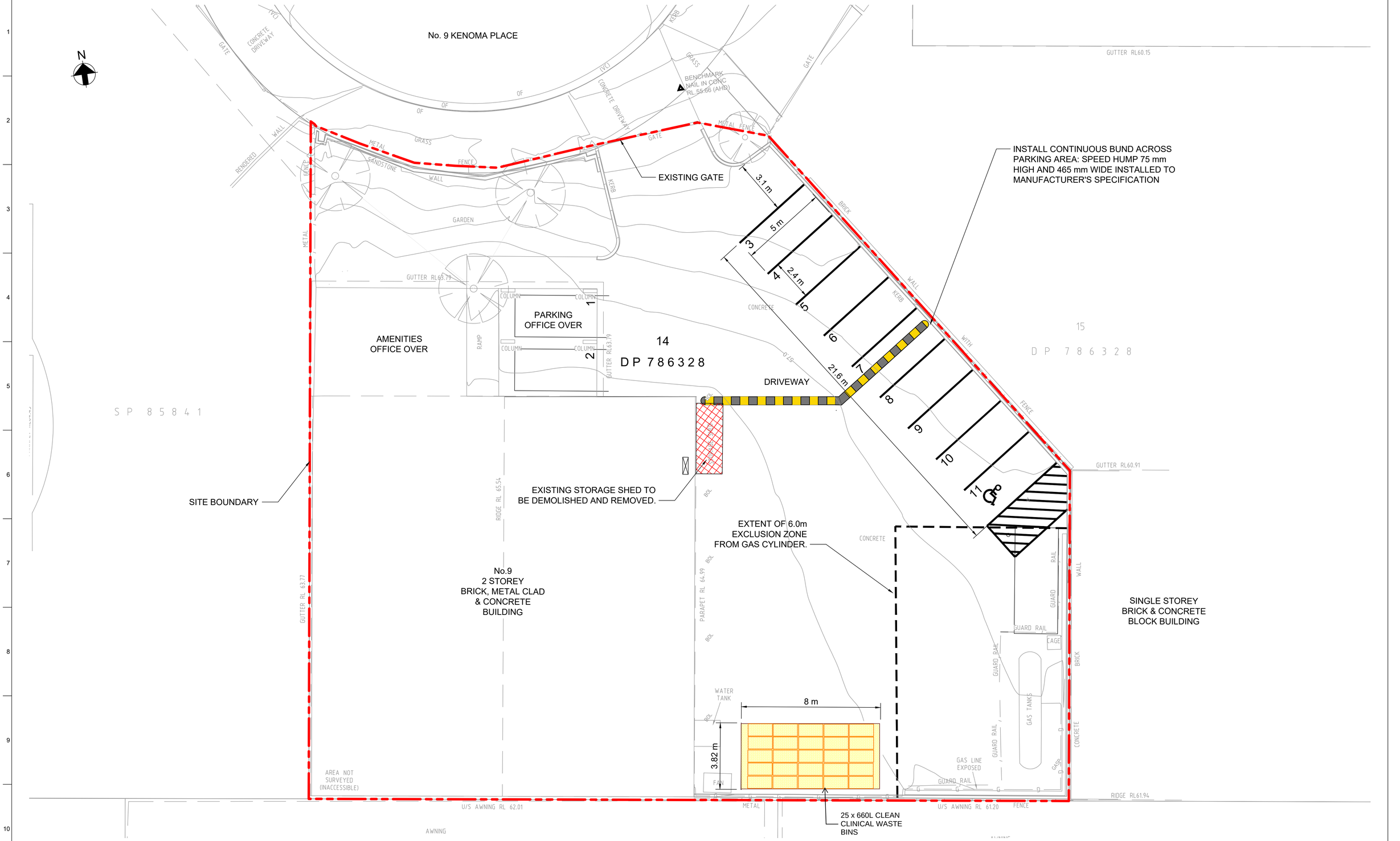

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Scales

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	FOR INFORMATION			

Client

MED-X Healthcare Solutions

Engineering Certification (CEng)

Name: .....

Signature: ..... Date: .....

Job Title

CLINICAL WASTE
MANAGEMENT FACILITY
ARNDELL PARK

Scale at A1 1:100

Discipline CIVL

ARUP

Arup, Barrack Place, Level 5, 151 Clarence St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

CONSULT AUSTRALIA
Member Firm
Arup Pty Ltd
ABN 18 000 966 165

Drawing Title

9 KENOMA PLACE
PROPOSED SITE
PLAN

Drawing Status

FOR APPROVAL

Job No	Drawing No	Issue
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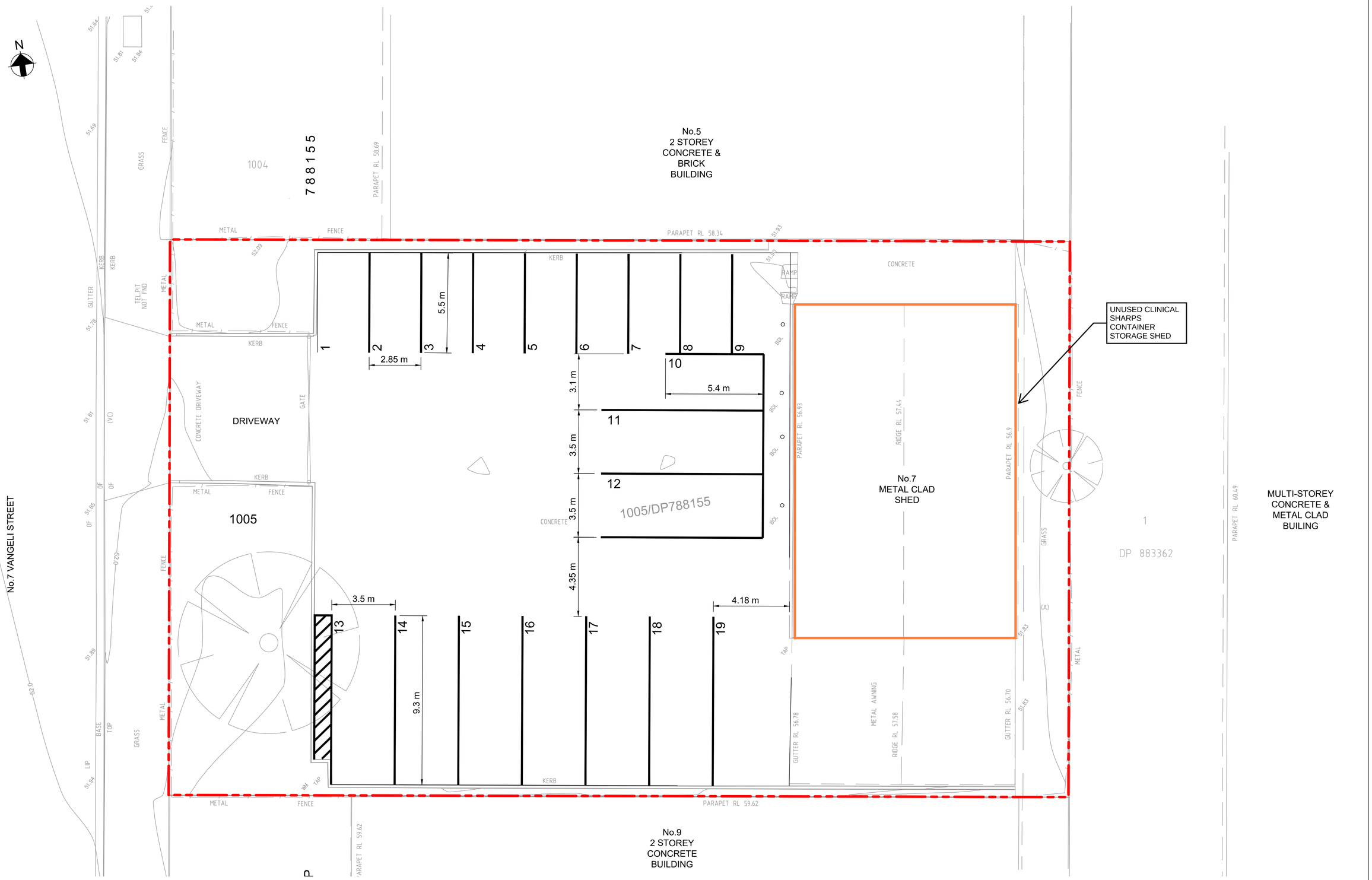

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FOR APPROVAL

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Signature: ..... Date: .....

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ARUP
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CONSULT AUSTRALIA
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Drawing Title
7 VANGELI STREET
PROPOSED SITE
PLAN

Drawing Status
FOR APPROVAL

Job No	Drawing No	Issue
274648-00	CICW-DRG-0211	0

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Appendix D

Traffic Assessment

STANBURY
TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

UPDATED TRAFFIC IMPACT ASSESSMENT

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY
9 KENOMA PLACE, ARNDELL PARK

PREPARED FOR MED-X PTY. LTD.
OUR REF: 16-031-7

JULY 2020

302/166 glebe point road
glebe nsw 2037
morgan@stanburytraffic.com.au
www.stanburytraffic.com.au
ph : 0410 561 848
abn : 23 613 111 916

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APPENDICES

1. **Site Plans**
2. **Traffic Surveys**
3. **SIDRA Output (Pre Development Conditions)**
4. **SIDRA Output (Post Development Conditions)**
5. **Treatment Facility Swept Path Plans**
6. **Parking Depot Swept Path Plans**

1. INTRODUCTION

1.1 Scope of Assessment

Stanbury Traffic Planning has been commissioned by MED-X to prepare a Traffic Impact Assessment to accompany an Application for the expansion of an existing Clinical and Quarantine Waste Management Facility at No. 9 Kenoma Place, Arndell Park. The existing treatment facility is licenced and approved to process up to 650 tonnes of clinical waste per year. Approval is now sought to increase this capacity to up to 2,300 tonnes of clinical and related waste per year.

Whilst all receipt and processing of waste occurs within No. 9 Kenoma Place, some passenger / heavy vehicle parking and storage associated with the treatment facility also occurs within a nearby parking depot at No. 7 Vangeli Street, which is subject to a long-term lease by MED-X.

The existing treatment facility at No. 9 Kenoma Place operates significantly below capacity, generally only being operational between approximately 7:00am – 3:00pm Monday to Friday. The expanded treatment facility operations at 9 Kenoma Place are proposed through an extension of the existing operational hours to accord with the current approval and licence to operate between 7:00am – 7:00pm Monday to Saturday, the adoption of improved operational efficiencies and the provision of additional transport vehicles and staff. Further, it is proposed that operations associated with the parking depot are proposed to commence from 5:00am Monday to Saturday associated with the transport of clean empty waste receptacles from No. 7 Vangeli Street.

This aim of this assessment is to investigate and report upon the potential traffic consequences of the proposal and to recommend appropriate ameliorative measures where required. This assessment also aims to address comments raised in the submissions received on the Environmental Impact Statement for the project related to traffic and parking. To this end, this report provides the following scope of assessment:

- Section 1 provides a summary of the site location, details, existing and surrounding land-uses;
- Section 2 describes the existing operational characteristics of the treatment facilities and parking depot;
- Section 3 describes the proposed operational characteristics of the treatment facilities and parking depot;
- Section 4 assesses the existing traffic, parking and transport conditions surrounding and servicing the treatment facility and parking depot including a description of the surrounding road network, traffic demands, operational performance and available public transport infrastructure;
- Section 5 estimates the projected traffic generating ability of the proposed expanded facility and assesses the ability or otherwise of the surrounding

road network to be capable of accommodating the altered demand in a safe and efficient manner;

- Section 6 assess the adequacy of the existing and proposed access arrangements, parking provision, internal circulation and servicing arrangements servicing both the treatment facility and parking depot, with reference to relevant Council, Transport for NSW (formally Roads & Maritime Services) and Australian Standard specifications; and

- Section 7 assess the capacity of the treatment facility to accommodate expected peak operational demands of the on-site loading / unloading arrangements.

The report has been prepared pursuant to State Environmental Planning Policy (Infrastructure) 2007.

1.2 Reference Documents

Reference is made to the following documents throughout this report:

- Transport for New South Wales' (TfNSW) *Guide to Traffic Generating Developments*;

- Blacktown City Council's Blacktown Development Control Plan 2015 (DCP 2015);

- Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1:2004);

- Australian Standard for Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities (AS2890.2:2018); and

- Australian Standard for *Parking Facilities Part 6: Off-Street Parking for People with Disabilities* (AS2890.6:2009).

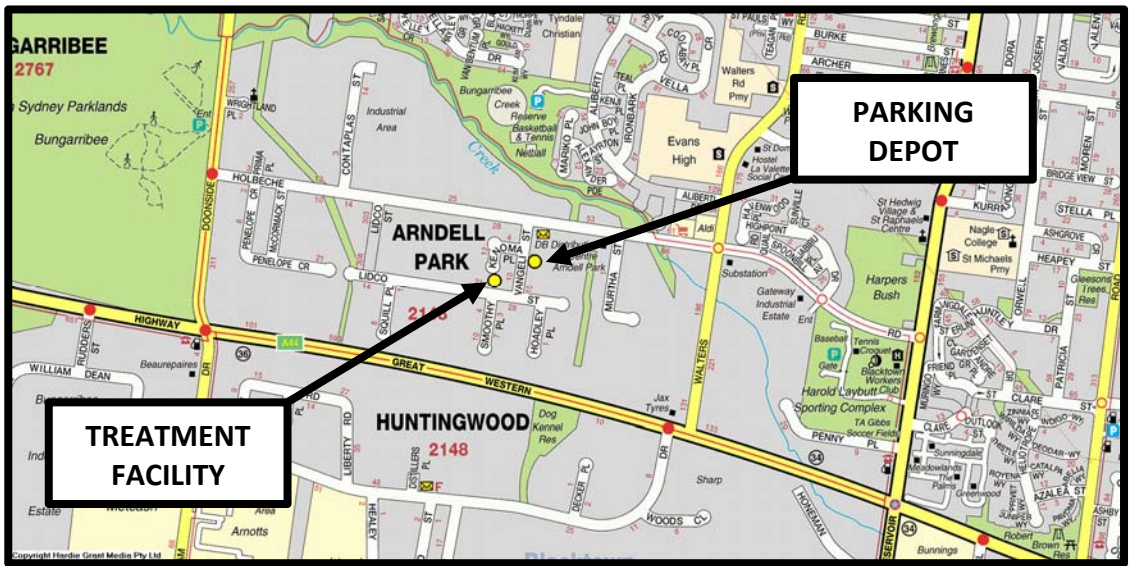
Existing and proposed site plans for both the treatment facility and parking depot have been prepared by Arup. Reduced copies of a selection of these plans are included as **Appendix 1** for reference.

1.3 Site Details

1.3.1 Site Location

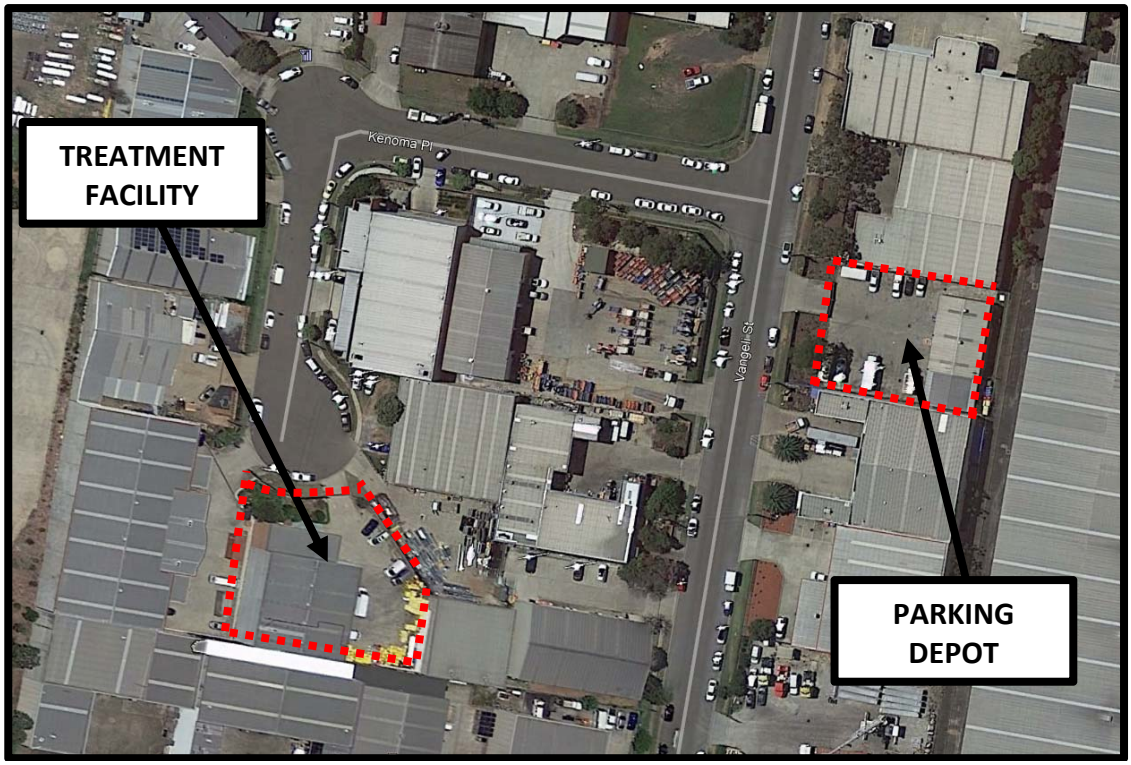
The treatment facility adjoins the southern Kenoma Place terminating cul-de-sac, Arndell Park. The parking depot is situated on the eastern side of Vangeli Street, immediately to the south of its junction with Kenoma Place. The treatment facility and parking depot locations are illustrated overleaf within a local and aerial context by **Figure 1** and **Figure 2**, respectively.

FIGURE 1
SITE LOCATION WITHIN A LOCAL CONTEXT



Source: UBD's Australian City Streets – Version 4

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Google Earth (accessed 28/04/20)

1.3.2 Site Description

The site within which the treatment facility is situated provides a real property description of Lot 14 DP 786328 and a street address of No. 9 Kenoma Place, Arndell Park. This lot forms an irregularly shaped parcel of land providing a curved frontage of approximately 26m to the southern terminating cul-de-sac of Kenoma Place. The lot provides an area of 1,492m^2.

The parking depot site provides a real property description of Lot 1005 DP 788155 and a street address of No. 7 Vangeli Street, Arndell Park. This lot forms a rectangular shaped parcel of land providing an approximate frontage of 31m to Vangeli Street. The lot extends to the east away from Vangeli Street approximately 45m, resulting in an area in the order of 1,395m^2.

1.3.3 Existing Site Use

1.3.3.1 Treatment Facility

No. 9 Kenoma Place currently accommodates a Clinical and Quarantine Waste Management Facility operated by MED-X. The treatment facility is approved and licenced to process up to 650 tonnes of clinical waste generally associated with the medical industry.

The existing treatment facility operations are contained within a single building providing a warehouse floor space of 505m^2 and an ancillary office space of 151m^2, located within the western portion of the lot.

The existing warehouse is serviced by two roller doors within the eastern building wall, which connect to a large hardstand area located within the eastern portion of the site, which accommodates an ancillary external storage area, heavy vehicle servicing / manoeuvring area in conjunction with formalised passenger vehicle parking spaces, comprising 11 spaces including one disabled space.

The subject lot is currently serviced by an existing 6m wide combined ingress / egress driveway linking the on-site hardstand area and the southern terminating Kenoma Place cul-de-sac.

1.3.3.2 Parking Depot

MED-X leases an existing industrial property at No. 7 Vangeli Street, utilising the property for a parking depot and storage function ancillary to the treatment facility situated at No. 9 Kenoma Place.

The parking depot lot contains a single building situated within the eastern portion of the site, providing approximate warehouse, ancillary office and covered awning spaces of 175m^2, 50m^2 and 100m^2, respectively.

The existing warehouse is serviced by two roller doors within the western building wall, which connect to a large hardstand area located within the central and western portions of the site, which accommodates a heavy vehicle servicing / manoeuvring area in conjunction with formal parking areas adjoining the

northern and southern boundaries and the western warehouse building wall, capable of accommodating up to 18 vehicles.

The subject lot is currently serviced by an existing 8m wide combined ingress / egress driveway linking the on-site hardstand area and Vangeli Street situated approximately within the north-western corner of the site.

The current lease is due to expire on 30 April 2021, however MED-X has a two year option on the property, which it intends to enact / extend. In the event that this property was to become unavailable for any reason, MED-X would seek another similarly sized or larger property to accommodate the necessary parking depot function.

1.3.3 Surrounding Uses

The treatment facility and parking depot are surrounded by similar industrial developments of varying scales to that contained within the subject site, consistent with the general industrial zoning of the surrounding Arndell Park Industrial Estate.

2. EXISTING OPERATIONAL CHARACTERISITCS

2.1 Summary of Use

MED-X currently operate a Clinical and Quarantine Waste Management Facility, whereby a treatment facility is situated within No. 9 Kenoma Place and a parking depot is situated within No. 7 Vangeli Street.

The operations of the two lots collectively provide a waste collection and disposal service to health and allied services industries and any other business that requires clinical and related waste disposal. The clinical waste is treated by a stem sterilisation process to ensure that the processed waste materials are subject to completed destruction of all potential infectious materials and the material is rendered safe for disposal as inert General Solid Waste.

The following provides a brief summary of the process, whilst full details are provided by others under separate cover:

1. MED-X provide specially marked wheelie bins (SMBs), complete with a heavy duty liner/s, to various places of business (primarily medical centres and hospitals).

2. When full, the SMBs are picked up by a series of vehicles operated by MED-X ranging from vans to Medium Rigid Vehicles (MRVs) with the operator providing a replacement bin for the client.

3. The collection vehicle then transports the SMBs to the treatment facility at No. 9 Kenoma Place for processing.

4. The SMBs are removed from the collection vehicle on-site, weighed and aligned for processing (which occurs on the same day as delivery to the treatment facility).

5. The contents of the SMBs are consolidated into autoclave within the treatment facility. The treated waste is then shredded and the shredded product is transferred into a compactor for storage.

6. Once the compactor is at or near capacity, the bin is loaded onto a medium rigid collection vehicle and transported from the treatment facility for disposal at a separate waste facility located at 1725 Elizabeth Drive, Kemps Creek. Following disposal of the waste, the empty compactor is returned to the treatment facility.

7. The SMBs are washed and stored for collection by the abovementioned transport vehicles referred to in Steps 1 – 3.

8. The clean empty SMBs are then loaded onto vehicles which are stored within the transport depot at No. 7 Vangeli Street ready for transportation or transported directly to clients in accordance with Step 1 above.

The facility is currently approved to process up to 650 tonnes of clinical waste per year.

2.2 Hours of Operation

The treatment facility is currently approved and licenced to operate between 7:00am – 7:00pm Monday to Saturday.

The current operational demands however result in the current operation being generally limited to approximately 7:00am – 3:00pm Monday to Friday. Notwithstanding the above, at times, some limited site operations occasionally occur outside these periods, largely associated with the movement of staff to and from the facility.

2.3 Staffing & Vehicle Fleet Details

2.3.1 Treatment Facility

The existing treatment facility operations results in the following staffing levels:

- Five administration staff; and
- Three process / floor staff.

Staff typically arrive between 6:15am – 9:00am and depart between 3:00pm – 7:00pm.

2.3.2 Parking Depot

MED-X owns and operates the following SMB transportation vehicles:

- Eight vans; and
- Six MRVs.

These vehicles are driven by employee drivers. The vehicles are stored within the parking depot at No. 7 Vangeli Street when not in use (overnight). This facility is currently leased by MED-X. Whilst the current lease is due to expire on 30 April 2021, MED-X has a two year option on the property, which it intends to enact / extend. In the event that this property was to become unavailable for any reason, MED-X would seek another similarly sized or larger property to accommodate the necessary parking depot function.

MED-X currently employs 12 drivers associated with the transportation activities of the vehicle fleet.

These staff drive their own passenger vehicles to the parking depot, park their vehicle within the depot prior to driving one of the MED-X fleet vehicles from the depot at the commencement of their shift. At the completion of their shift, the drivers return the fleet vehicle back to the depot prior to driving their own vehicle home.

Drivers typically arrive between 7:00am – 9:00am and depart between 3:00pm – 7:00pm.

The warehouse within the parking depot also accommodates an ancillary storage function for yet to be utilised sharps containers.

2.4 Daily Fleet Operation

The daily routine of the MED-X owned transportation vehicle fleet is as follows:

1. The vehicles, filled with empty specially marked bins (SMBs) loaded on the day before, are parked overnight at the parking depot at No. 7 Vangeli Street;

2. The vehicles exit the parking depot from approximately 7:00am – 9:00am and deliver the empty SMBs to various places of business and thence collect full SMBs;

3. The full SMBs are transported to the treatment facility at No. 9 Kenoma Place between 7:00am and 5:00pm, where the waste is unloaded into the treatment facility; and

4. The vehicles are then loaded with empty SMBs and then driven back to various places of business in accordance with Step 2 above either directly or via the parking depot.

This Practice has been advised that the average servicing time (and thus length of stay) of transport vehicles within the treatment facility (comprising unloading of full bins and reloading of empty bins) is 25 minutes for MRVs and 20 minutes for vans.

2.5 Clinical Waste Collection

Upon the on-site compactor being filled, the compactor is loaded onto a special contractor MRV and transported to a separate waste facility for disposal located at 1725 Elizabeth Drive, Kemps Creek. The empty compactor is then returned to the site by the same MRV.

The compactor removal and delivery typically occurs during the morning (between 10:30am – 12:00pm) approximately three times per week.

2.6 Other Servicing

Deliveries / servicing to / of the treatment facility includes:

- Gas is delivered to the site by MRVs approximately once per fortnight (typically between 2:00pm – 4:00pm); and

- Related (Cytotoxic, anatomical and pharmaceutical) waste is collected three times per week by a MRV and transported to separate waste facilities for disposal located at 129 Mitchell Avenue, Kurri Kurri and 2 Wiblin Street, Silverwater.

Deliveries to the parking depot includes:

- Unused sharps containers are delivered to the site by vans approximately once per fortnight (typically between 2:00pm – 4:00pm).

2.7 Traffic Generation Summary

Table 1 below provides a summary of the peak hourly and daily traffic generation associated with the previously described current operational characteristics, being obtained from MED-X, including all previously described site operations, deliveries and servicing.

TABLE 1
EXISTING TRAFFIC GENERATION

	Passenger Vehicles	Vans	MRVs	TOTAL
TREATMENT FACILITY – No. 9 KENOMA PLACE				
Per Day				
In	8	12	10	30
Out	8	12	10	30
Total	16	24	20	60
Per AM Peak Hour				
In	8	2	1	11
Out	0	2	1	3
Total	8	4	2	14
Per PM Peak Hour				
In	0	2	1	3
Out	8	2	1	11
Total	8	4	2	14
PARKING DEPOT – No. 7 VANGELI STREET				
Per Day				
In	12	8	6	26
Out	12	8	6	26
Total	24	16	12	52
Per AM Peak Hour				
In	12	0	0	12
Out	0	8	6	14
Total	12	8	6	26
Per PM Peak Hour				
In	0	8	6	14
Out	12	0	0	12
Total	12	8	6	26

The traffic generation summary contained within **Table 1** assumes the following in order to generate an absolute worst case scenario:

- All treatment facility staff drive to and from the No. 9 Kenoma Place site within single hourly periods;

- All driver staff arrive and depart the No. 7 Vangeli Street parking depot within single hourly periods; and

- All fleet vehicles arrive and depart the No. 7 Vangeli Street parking depot within single hourly periods.

Table 1 indicates that the existing site operation generates the following:

Treatment Facility

- 60 daily vehicle movements; and
- 14 vehicle movements during the morning and evening peak hour.

Parking Depot

- 52 daily vehicle movements; and
- 26 vehicle movements during the morning and evening peak hours.

The above operational characteristics result in approximately 650 tonnes of clinical waste being treated annually.

3. PROPOSED OPERATIONAL CHARACTERISITCS

3.1 Extent of Expansion

The proposal involves expanding the existing operation to increase the approved and licenced capacity from processing 650 tonnes of clinical waste per year to treating 2,100 tonnes of clinical waste and processing 200 tonnes of related waste per year.

The expanded operations are largely proposed through the expansion of the existing operational hours, increasing efficiency of certain processes through automation, the provision of additional staff and the expansion of the existing vehicle fleet.

3.2 Hours of Operation

The expanded operations are proposed to be partially facilitated through extending the existing operational hours of the treatment facility from approximately 7:00am – 3:00pm Monday to Friday to 7:00am – 7:00pm Monday to Saturday to accord with the current approved hours of operation.

Notwithstanding the above, transport vehicles are proposed to depart the parking depot from 5:00am associated with the delivery of clean empty bins to customers.

3.3 Staffing & Vehicle Fleet Details

3.3.1 Treatment Facility

The proposed expanded treatment facility operations are expected to result in the number of process / floor staff being increased from three to up to six employees. The process / floor staff are proposed to be split into two separate shifts, whereby three staff are to generally operate between 7:00am – 3:00pm and the remaining three staff are to generally operate between 11:00am – 7:00pm.

The existing administration staffing levels (five employees) are proposed to be retained, generally operating between 8:00am – 5:00pm.

Notwithstanding the above, it is acknowledged that staff may arrive from 6:15am as required.

3.3.2 Parking Depot

The proposed expanded operations are expected to be accompanied by an increase in the transportation fleet as follows:

- The existing number of vans is proposed to increase from eight to nine; and
- The existing number of MRVs is proposed to increase from six to nine.

Four additional drivers are proposed to be employed to sustain the expanded fleet operations.

Similarly to the existing site operations, all transportation vehicles are to be stored within the parking depot at No. 7 Vangeli Street when not in use (overnight).

3.4 Daily Fleet Operation

The existing fleet operation will remain as existing, however transportation movements are more likely to be spread throughout the entire approved operational periods.

3.5 Clinical Waste Collection

The compactor is to be transported to and from the site as existing however the compactor loading / unloading frequency is to increase to occur up to four times per week.

3.6 Other Servicing

Gas deliveries and waste deliveries to the treatment facility are to occur as existing however the frequency of servicing is to be increased as follows:

- Gas is to be delivered to the site once per week; and
- Related waste is collected daily.

Deliveries of unused sharps containers to the parking depot are also proposed to continue, with the frequency increasing to once per week.

3.7 Traffic Generation Summary

Table 2 overleaf provides a summary of the projected peak hourly and daily traffic generation associated with the previously described proposed expanded site operational characteristics, including all previously described site operations, deliveries and servicing.

TABLE 2 PROJECTED TRAFFIC GENERATION				
	Passenger Vehicles	**Vans**	**MRVs**	**TOTAL**
TREATMENT FACILITY – No. 9 KENOMA PLACE				
Per Day				
In	11	16	16	43
Out	11	16	16	43
Total	22	32	32	83
Per AM Peak Hour				
In	11	2	2	15
Out	0	2	2	4
Total	11	4	4	19
Per PM Peak Hour				
In	0	2	2	4
Out	11	2	2	15
Total	11	4	4	19
PARKING DEPOT – No. 7 VANGELI STREET				
Per Day				
In	16	9	9	34
Out	16	9	9	34
Total	32	18	18	68
Per AM Peak Hour				
In	16	0	0	16
Out	0	9	9	18
Total	16	9	9	34
Per PM Peak Hour				
In	0	9	9	18
Out	16	0	0	16
Total	16	9	9	34

Similarly to the stated with respect to the existing operations, the traffic generation summary contained within **Table 2** assumes the following in order to generate an absolute worst case scenario:

- All treatment facility staff drive to and from the No. 9 Kenoma Place site within single hourly periods, even though process / floor staff are proposed to work two separate daily shifts;

- All driver staff arrive and depart the No. 7 Vangeli Street parking depot within single hourly periods; and

- All fleet vehicles arrive and depart the No. 7 Vangeli Street parking depot within single hourly periods.

Table 2 indicates that the proposed expanded site operation generates the following:

Treatment Facility

- 83 daily vehicle movements; and

- 19 vehicle movements during the morning and evening peak hours.

Parking Depot

- 68 daily vehicle movements; and
- 34 vehicle movements during the morning and evening peak hours.

The above operational characteristics are projected to be capable of processing up to 2,300 tonnes of clinical and related waste.

4. EXISTING TRAFFIC CONDITIONS

4.1 Surrounding Road Network

The following provides a description of the local road network surrounding the subject site:

- **Kenoma Place** performs a local access function between abutting industrial development and Vangeli Street to the north-east, under the care and control of Blacktown City Council. It provides a 13m wide pavement providing one through lane of traffic in each direction in conjunction with parallel parking along both kerb alignments. Traffic flow is governed by a continuation of the sign posted speed limit of 50km/h, governing the Arndell Park industrial precinct.

  Kenoma Place forms a terminating cul-de-sac providing a bulb diameter of 28m immediately adjoining the site. It extends to the north away from the site approximately 80m before curving to the east for approximately 100m, where it forms a T-junction with Vangeli Street. The junction of Vangeli Street and Kenoma Place is governed by major / minor priority control with Vangeli Street performing the priority route.

- **Vangeli Street** performs a minor collector function within the context of the Arndell Park industrial precinct, providing connectivity between a series of lower order industrial access roads and Holbeche Road to the north. Vangeli Street provides a 13m wide pavement providing one through lane of traffic in each direction in conjunction with parallel parking along both kerb alignments.

  Vangeli Street forms a T-junction with Holbeche Road approximately 100m to the north of Kenoma Place, operating under sign posted Give Way conditions with Holbeche Road performing the priority route. Kerb-side parking restrictions facility the informal provision of two northbound lanes within Vangeli Street on immediate approach to Holbeche Road.

- **Holbeche Road** performs a major collector function between the Arndell Park industrial precinct and the surrounding regional road network. It provides an east-west connection between Reservoir Road in the east and Doonside Road in the west in this regard.

  Holbeche Road, in the vicinity of Vangeli Street, provides a 13m wide pavement providing one through lane of traffic in each direction in conjunction with parallel parking along both kerb alignments.

  Holbeche Road intersects with Doonside Road to the west operating under traffic signal control. To the east, Holbeche Road intersects with Walters Road and thence Reservoir Road under two lane circulating roundabout control.

  The section of Holbeche Road between Walters Road and Reservoir Road forms a four lane divided carriageway, being governed by a sign posted speed limit of 60km/h.

- **Doonside Road** performs a sub-arterial function under the care and control of Blacktown City Council. It provides a north-south connection between the Doonside residential precinct in the north to the Huntingwood and Eastern Creek industrial precinct to the south (via Brabham Drive).

  Doonside Road, in the vicinity of Holbeche Road, forms a four lane divided carriageway, being governed by a sign posted speed limit of 70km/h. It intersect with Great Western Highway and Brabham Drive to the south of Holbeche Road under traffic signal control.

- **Reservoir Road** performs a State Road function under the care and control of the Roads & Maritime Services. It provides an important north-south arterial road between the Blacktown city centre (via Balmoral Road) in the north and Pemulwuy in the south-east.

  Reservoir Road, in the immediate vicinity of Holbeche Road, forms a four lane divided carriageway and is governed by a sign posted speed limit of 60km/h. It intersects with Great West Highway to the south under traffic signal control to the south, and thence provides on and off ramps to / from the east and westbound carriageways of the M4 Motorway.

4.2 Existing Traffic Volumes

Staff of Stanbury Traffic Planning undertook surveys of the junction of Holbeche Road and Vangeli Street in order to accurately ascertain the traffic demands in association with a previous assessment of the subject use. Surveys were undertaken between 7:00am – 9:00am and 4:00pm – 6:00pm on Thursday the 3rd of November 2016.

As the previously presented surveys are now a number of years old and current traffic flows are not considered to be representative of normal operational demands due to the COVID-19 situation, this Practice has obtained traffic signal detector data at the intersection of Doonside Road and Holbeche Road to verify the validity of the 2016 surveys. Her detector data was obtained for Wednesday the 19th of February 2020, being prior to the COVID-19 situation impacting traffic demands within the Sydney region. The detector data indicates that westbound traffic flows within Holbeche Road on approach to Doonside Road were surveyed to be approximately 300 and 700 vehicles during the morning and evening commuter peak hour, whilst full details are available upon request. The comparable nature of the recent detector data with the 2016 survey data indicates that the 2016 traffic survey results remain valid, taking into consideration expected minor variations associated with losses and gains associated with the intersecting roads between Vangeli Street and Doonside Road.

Figure 3 overleaf provides a summary of the surveyed commuter peak hour (8:00am – 9:00am and 5:00pm – 6:00pm) traffic flows at the surveyed junction Full details are contained within **Appendix 2** for reference.

FIGURE 3
EXISTING WEEKDAY COMMUTER PEAK HOUR TRAFFIC VOLUMES
JUNCTION OF HOLBECHE ROAD & VANGELI STREET

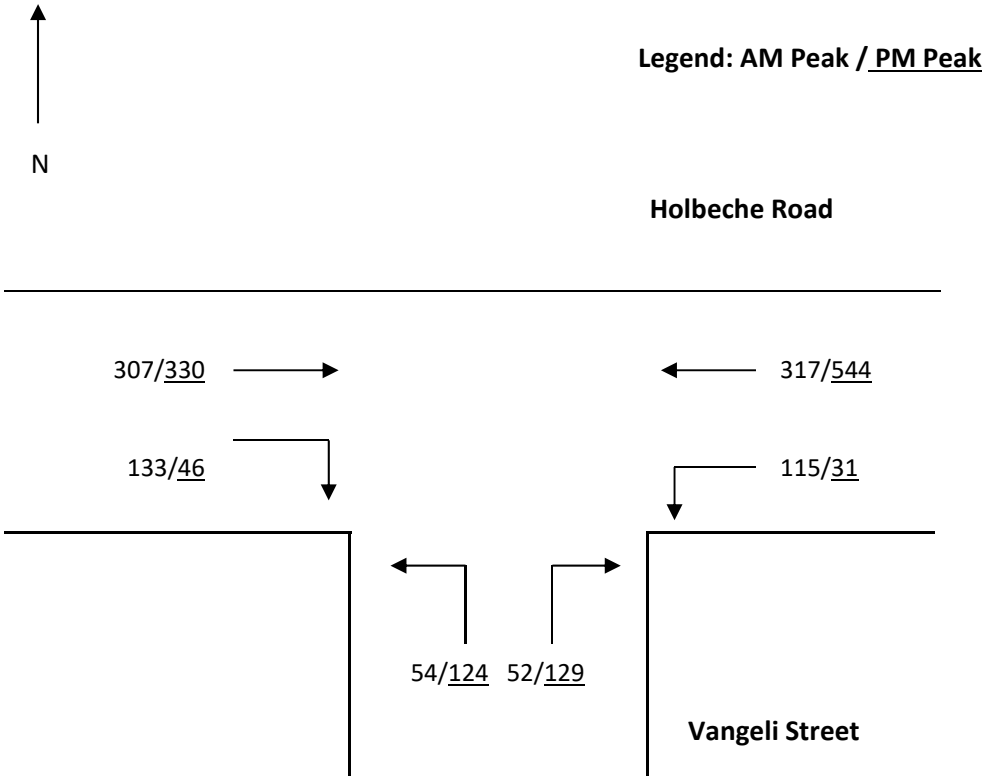


Figure 3 indicates the following:

- Holbeche Road accommodates directional traffic demands in the order of 300 – 550 vehicles per hour during peak periods;
- Vangeli Street accommodates directional traffic demands of between 100 – 250 vehicles per hour during peak periods;
- Vangeli Street traffic flow is tidal during commuter peak periods with southbound traffic dominating during the morning peak and northbound traffic dominating during the evening peak; and
- Turning movements to / from Vangeli Street are approximately evenly distributed from / to the east and west along Holbeche Road.

4.3 2030 Traffic Volumes

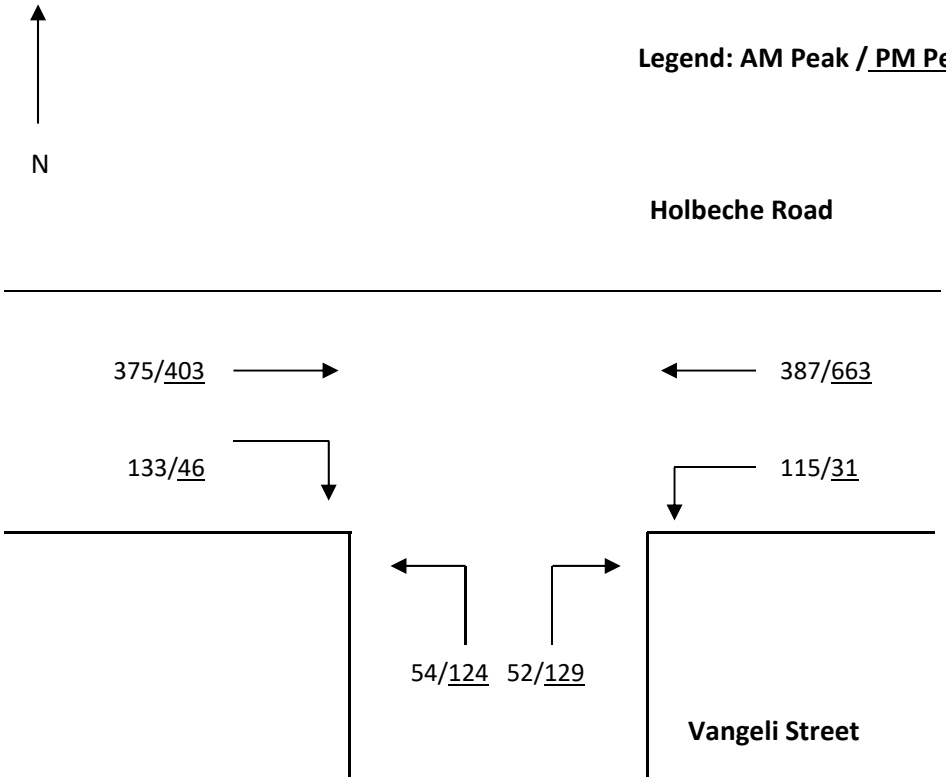
Observations have indicated that there are very few undeveloped parcels of land within the Arndell Park industrial precinct. It is accordingly expected that the traffic generating capability of the industrial precinct is unlikely to alter significantly in the next 10 years.

Notwithstanding the above, Holbeche Road provides through connectivity between Reservoir Road in the east and Doonside Road in the west, in conjunction with the primary access function to the Arndell Park industrial

precinct. A portion of traffic within Holbeche Road is accordingly envisaged to comprise through traffic between Reservoir Road and Doonside Road, not associated with the industrial precinct, and therefore being influenced by development trends external to the subject precinct. This component of existing Holbeche Road traffic flow could accordingly be subject to increase in demands, being generated by an increase in surrounding precinct development density.

In order to account for the above potential increase in traffic flows, through traffic demands within Holbeche Road have been estimated to experience an average growth rate of 2% per annum between 2020 and 2030. Such a growth rate equates to an increase in existing through Holbeche Road traffic demands of approximately 22% over and above that presented within **Figure 3**. **Figure 4** below provides a graphical representation of the estimated 2030 traffic volumes at the junction of Holbeche Road and Vangeli Street.

FIGURE 4
ESTIMATED 2030 WEEKDAY COMMUTER PEAK HOUR TRAFFIC VOLUMES
JUNCTION OF HOLBECHE ROAD & VANGELI STREET



4.4 Road Network Operation

4.4.1 Intersection Operation

The junction of Holbeche Road and Vangeli Street has been analysed utilising the SIDRA computer intersection analysis program in order to objectively assess the operation of the primary access junction servicing the subject site. SIDRA is a computerised traffic arrangement program which, when volume and geometrical configurations of an intersection are imputed, provides an objective assessment of the operation efficiency under varying types of control (i.e. signs, signal and

roundabouts). Key indicators of SIDRA include level of service where results are placed on a continuum from A to F, with A providing the greatest intersection efficiency and therefore being the most desirable by the Roads and Maritime Services.

SIDRA uses detailed analytical traffic models coupled with an iterative approximation method to provide estimates of the abovementioned key indicators of capacity and performance statistics. Other key indicators provided by SIDRA are average vehicle delay, the number of stops per hour and the degree of saturation. Degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Degree of saturation is a useful and professionally accepted measure of intersection performance.

SIDRA provides analysis of the operating conditions that can be compared to the performance criteria set out in **Table 3** below (being the TfNSW method of calculation of Level of Service).

TABLE 3
LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS
GIVE WAY & STOP SIGNS

Level of Service	Average Delay per Vehicle (secs/veh)	Expected Delay
A	Less than 14	Good
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity and requires other control mode
F	> 70	Unsatisfactory and requires other control mode

The existing and estimated 2030 conditions have been modelled utilising the peak hour traffic volumes presented within **Figure 3**. **Table 4** overleaf provides a summary of the SIDRA output data whilst more detailed summaries are included as **Appendix 3**.

TABLE 4 SIDRA OUTPUT – WEEKDAY PEAK HOUR PERFORMANCE				
	Existing Demands		Estimated 2030 Demands	
	AM	PM	AM	PM
Vangeli Street Approach				
Delay	13.9	20.9	17.0	35.0
Degree of Saturation	0.14	0.43	0.17	0.62
Level of Service	A	B	B	C
Eastern Holbeche Road Approach				
Delay	5.6	5.6	5.6	5.6
Degree of Saturation	0.17	0.29	0.21	0.35
Level of Service	A	A	A	A
Western Holbeche Road Approach				
Delay	8.7	10.0	9.8	12.2
Degree of Saturation	0.32	0.24	0.37	0.29
Level of Service	A	A	A	A
Total Intersection				
Delay	13.9	20.9	17.0	35.0
Degree of Saturation	0.32	0.43	0.37	0.62
Level of Service	A	B	B	C

Table 4 indicates that the following:

- The junction of Holbeche Road and Vangeli Street currently operates with a level of service 'A' and 'B' during the morning and evening commuter peak periods, representing good operation and acceptable delays with spare capacity, respectively; and

- The junction level of service is expected to reduce from 'A' to 'B' during the morning peak and from 'B' to 'C' during the afternoon peak, incorporating estimated 2030 traffic demands, representing satisfactory operation.

4.4.2 Primary Access Route Levels of Service

Reference is made to TfNSW's *Guide to Traffic Generating Developments* in order to undertake an assessment of the operational performance of the routes immediately servicing the subject site. The following existing operational levels of service apply in the immediate vicinity of the site, based on this publication:

- Vangeli Street (accommodating directional traffic demands less than 300 vehicles per hour) provides a level of service 'A' / 'B' during peak periods, representing free flow where drivers are largely unaffected by others in the traffic stream; and

- Holbeche Road (accommodating directional traffic demands up to 600 vehicles per hour) provides a level of service of 'B' / 'C' during peak periods, representing stable flow where some drivers are restricted to some degree to select their desired speed and to manoeuvre within the traffic stream.

4.4.3 Site Access Assessment

Traffic demands within Kenoma Place have been observed to be low (less than 100 vehicles), commensurate with its lower order industrial access cul-de-sac function. Motorists are accordingly provided with a good level of service. These low traffic demands in conjunction with the consistent vertical and horizontal alignment of Kenoma Place in the vicinity of the treatment facility site access location off the southern terminating cul-de-sac results in motorists being able to enter and exit the site with a good level of safety and efficiency.

Whilst traffic demands within Vangeli Street are higher, gap conditions predominate and the prevalence of good sight distance between the parking depot access driveway and the frontage road combined to ensure that motorists are able to enter and exit the site with a reasonable level of safety and efficiency.

4.5 Public Transport

4.5.1 Heavy Rail

The treatment facility and parking depot sites are located approximately 3.2km to the south-east of Doonside Railway Station and 3.8km to the south-west of Blacktown Railway Station. Both stations provides access to train services which operate along the T1 (North Shore, Northern & Western) Line whilst Blacktown Railway Station also provides access to services along the T5 (Cumberland) Line.

4.5.2 Buses

Busways operate Route 724 between Blacktown Railway Station and the Arndell Park industrial precinct. The closest stop is located within Holbeche Road, immediately to the east of Vangeli Street. Route 724 provides a 20 minute frequency during weekday commuter peaks extending to approximately 40 minutes during weekday periods and 60 minutes during Saturdays and Sundays.

5. PROJECTED TRAFFIC CONDITIONS

5.1 Traffic Generation

The existing and projected traffic generating characteristics of the uses of both the No. 9 Kenoma Place and No. 7 Vangeli Street sites have previously been described within Sections 2.1.8 and 2.2.8 of this report. **Table 5** below provides a summary of the exiting and projected cumulative peak hourly site based traffic generation.

TABLE 5
EXISTING & PROJECTED WEEKDAY PEAK HOURLY TRAFFIC GENERATION

	Inbound Movements	Outbound Movements	Total Movements
AM PEAK HOUR			
Existing	23	17	40
Projected	31	22	53
Increase	7	5	12
PM PEAK HOUR			
Existing	17	23	40
Projected	22	31	53
Increase	5	8	13

Table 5 indicates that the expanded site use is projected to generate 12 and 13 additional vehicle movements to and from the site during weekday morning and evening commuter peak hours respectively.

5.2 Trip Distribution

Trips generated to and from the development are projected to be distributed in accordance with current distributions presented within **Figure 3**, i.e. evenly to / from the east along Holbeche Road.

5.3 Projected Traffic Volumes

The projected peak hour traffic volumes at the junction of Holbeche Road and Vangeli Street have been formulated by adding the trip assignment presented within Section 5.2 of this report to the existing and estimated 2030 volumes illustrated within **Figures 3** and **4**. **Figures 5** and **6** overleaf provides an estimation of the future traffic volumes associated with and on approach to the subject development site.

FIGURE 5
PROJECTED 2020 WEEKDAY COMMUTER PEAK HOUR TRAFFIC VOLUMES
INCORPORATING THE SUBJECT DEVELOPMENT
JUNCTION OF HOLBECHE ROAD & VANGELI STREET

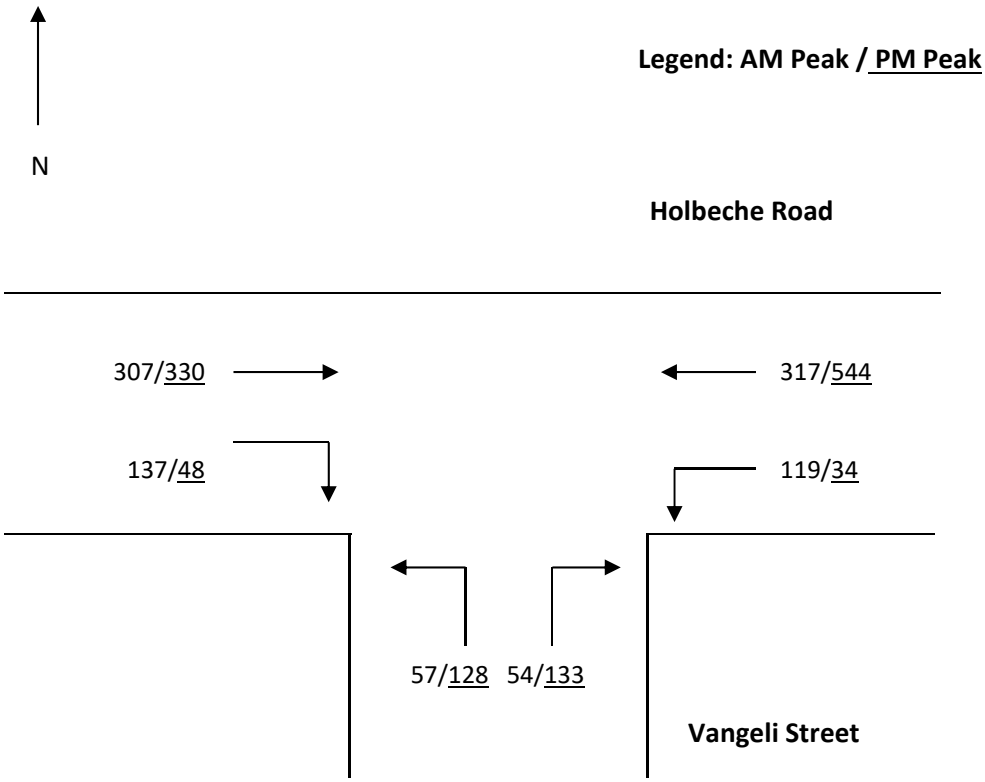
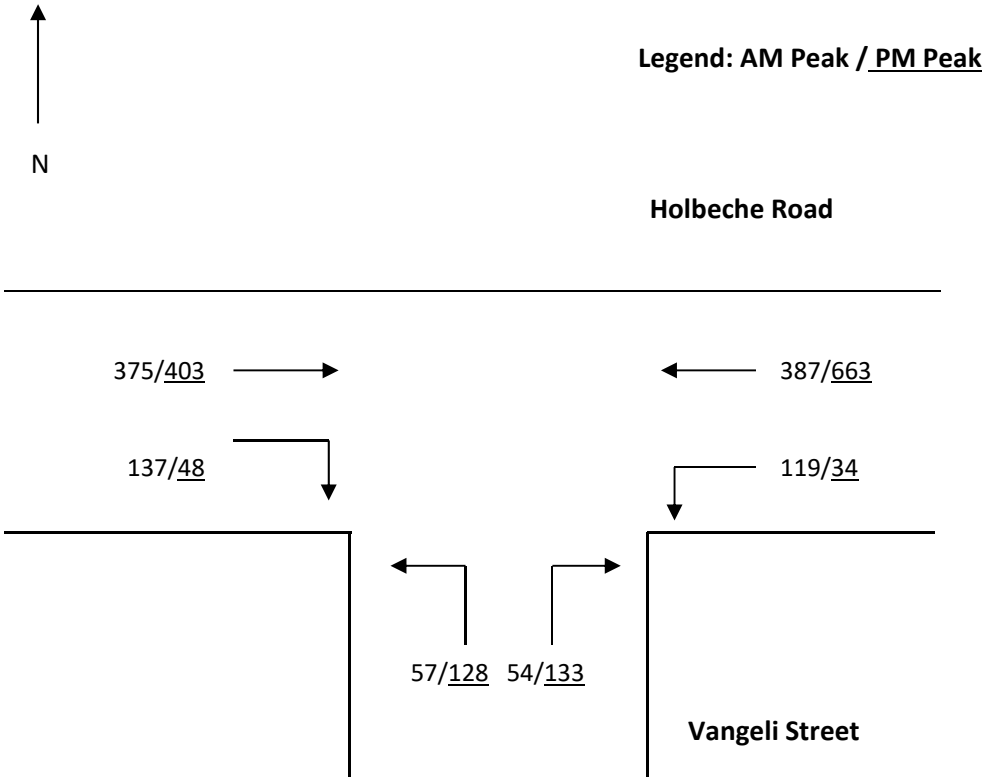


FIGURE 6
PROJECTED 2030 WEEKDAY COMMUTER PEAK HOUR TRAFFIC VOLUMES
INCORPORATING THE SUBJECT DEVELOPMENT
JUNCTION OF HOLBECHE ROAD & VANGELI STREET



5.4 Traffic Impacts

5.4.1 Projected Intersection Performance

The primary site access junction of Holbeche Road and Vangeli Street has been modelled in order to estimate that likely impact on traffic safety and efficiency utilising the projected traffic volumes illustrated within **Figures 5** and **6**. A summary of the most pertinent results are indicated within **Table 6** whilst more detailed summaries are provided within **Appendix 4**.

TABLE 6
SIDRA OUTPUT – PROJECTED WEEKDAY PEAK HOUR PERFORMANCE INCORPORATING THE SUBJECT DEVELOPMENT

	2020 Demands		2030 Demands	
	AM	PM	AM	PM
Vangeli Street Approach				
Delay	14.1	21.3	17.2	36.1
Degree of Saturation	0.14	0.44	0.18	0.64
Level of Service	A	B	B	C
Eastern Holbeche Road Approach				
Delay	5.6	5.6	5.6	5.6
Degree of Saturation	0.17	0.29	0.21	0.35
Level of Service	A	A	A	A
Western Holbeche Road Approach				
Delay	8.8	10.0	9.9	12.2
Degree of Saturation	0.32	0.24	0.37	0.30
Level of Service	A	A	A	A
Total Intersection				
Delay	14.1	21.3	17.2	36.1
Degree of Saturation	0.32	0.44	0.37	0.64
Level of Service	A	B	B	C

Table 6 indicates that the additional traffic generated by the development is not projected to have noticeable impacts on 2020 and 2030 operation of the junction of Holbeche Road and Vangeli Street with only minor alterations projected with respect to delay and degree of saturation. In this regard, the existing intersection level of service is projected to remain unaltered, representing satisfactory conditions.

5.4.2 Site Access Assessment

The development has been projected to generate up to 13 peak hour vehicle movements to and from the site during weekday commuter peak periods. Such a level of traffic, comprising approximately one vehicle movement every four to five minutes, is most unlikely to result in any unreasonable or measurable impacts on the overall level of performance of the road network.

In consideration of the above and on the basis of acceptable sight distance provisions prevailing to / from both the No. 9 Kenoma Place and No. 7 Vangeli Street site driveways, vehicles are accordingly projected to continue to be capable of entering the exiting the treatment facility and parking depot sites in a safe and efficient manner.

6. SITE ACCESS & INTERNAL CIRCULATION

6.1 Treatment Facility

No alterations are proposed to the existing access, internal parking, circulation and servicing arrangements are proposed with respect to the treatment facility. The following sub-sections provide an assessment of the suitability or otherwise of the existing arrangements to accommodate the existing and projected operational requirements of the treatment facility use.

6.1.1 Vehicular Access

Access between the southern terminating Kenoma Place cul-de-sac and the treatment facility is currently provided by a 6m wide combined ingress / egress driveway.

The existing treatment facility access arrangements are proposed to be retained. As the maximum sized vehicle proposed to service the treatment facility is also to be retained as existing (MRV), the suitability of the existing site access arrangements are not proposed to be altered. Notwithstanding this, swept path plans have been prepared in order to demonstrate the ability of MRVs vehicles to enter and exit the treatment facility in a safe and efficient manner, copies of which are included as **Appendix 5**.

The straight alignment of the treatment facility access driveway with the alignment of the southern section of Kenoma Place, results in good sight distance between the frontage road and the existing treatment facility access driveway.

6.1.2 Parking Provision

The existing treatment facility passenger vehicle parking provision of 11 spaces (including one disabled space) is proposed to be retained.

Blacktown City Council provides locally sensitive minimum parking requirements within DCP 2015. This document however doesn't provide specific parking requirements for waste management facilities thereby indicating that assessment should be based on the operational characteristics of the proposed treatment facility operations.

Parking demand associated with the subject use is considered to be limited to that generated by staff and any potential visitors. It has previously been presented that the proposed expanded treatment facility operations will generate a demand for up to 11 employees on-site at any one time. The number of visitors is expected to be negligible. Assuming a worst case scenario that all staff drive themselves to and from the treatment facility, a peak passenger vehicle parking demand of 11 spaces is anticipated. The existing and proposed parking provision of 11 spaces is therefore expected to readily accommodate operational demands and accordingly, is considered to be satisfactory.

6.1.3 Internal Circulation and Manoeuvrability

6.1.3.1 Passenger Vehicle Parking

Upon entry into the access driveway, passenger vehicles will continue to proceed in a forward direction to connect with the existing parking spaces located adjacent to the north-eastern boundary and the office component of the building. The parking areas comprise standard 90 degree angled parking rows being serviced by adjoining circulation areas. The parking and circulation areas have been designed in accordance with AS2890.1-2004 and AS2890.6-2009 providing the following minimum dimensions:

- Standard passenger vehicle parking space width = 2.4m;
- Additional standard passenger space width where parking space adjoins an obstruction = 0.3m;
- Disabled passenger vehicle parking space width = 2.4m (with adjoining 2.4m wide shared area, where not provided within an adjoining circulation aisle);
- Passenger vehicle parking space length = 5.4m;
- Passenger vehicle parking aisle width = 6.5m;
- Two-way straight roadway = 6m; and
- Maximum ramp grade for the first 6m inside the site = 1 in 20.

In consideration of the above compliance with the relevant specifications of AS2890.1-2004 and AS2890.6-2009, the existing passenger vehicle parking layout as it relates to internal manoeuvrability is considered to be satisfactory.

6.1.3.2 Site Servicing

It has previously been presented that treatment facility is proposed to continue to be serviced by a range of vehicles up to and including MRVs, primarily comprising waste transportation vehicles.

These vehicles enter the site from Kenoma Place in a forward direction and queue along the western edge of the passenger vehicle parking spaces adjoining the eastern site boundary on approach to the manoeuvring and loading area to the east of the warehouse building. The vehicles then utilise the manoeuvring area to reverse towards the southern warehouse roller door, where unloading activity occurs.

Following the completion of the unloading activity, the vehicles are repositioned to be aligned parallel to the eastern warehouse building wall, to the north of the unloading location, whereby loading activity occurs. This repositioning allows a trailing vehicle to undertake the required manoeuvring and thence commence loading simultaneously.

Following the completion of the loading activity, the vehicles exit the site in a forward direction from the loading position to Kenoma Place.

The northern warehouse roller door is only accessed by compactor collection vehicles up to twice per day. This involves MRVs entering the site from Kenoma Place in a forward direction in a similar manner to the bin transportation vehicles and thence utilising the manoeuvring area to the east of the warehouse to reverse towards the northern warehouse roller door. Whilst this manoeuvring can be undertaken when unloading activities are occurring at the southern warehouse roller door, it cannot be undertaken simultaneously with collection activities. Following the completion of the compactor loading / unloading activity, the vehicles exit the site in a forward directional from the northern warehouse roller door to Kenoma Place.

In order to demonstrate the above described internal queuing and manoeuvring of vehicles within the treatment facility external handstand area adjacent to the warehouse, this Practice has prepared swept path plans, copies of which are included as **Appendix 5**. The swept paths plans have been prepared utilising Autoturn software incorporating MRV vehicle turning specifications provided by AS2890.2-2002. The swept paths plans illustrate that the facility is capable of accommodating internal queuing for up to three vehicles prior to the undertaking of the necessary loading / unloading activities. Whilst it is acknowledged that some of the internal manoeuvring is somewhat complex (particularly the movement of bin transport vehicles from the unloading to the loading position), it should be acknowledged that the manoeuvring is to be undertaken by employee drivers whom are regular site users and accordingly have a detailed knowledge of the site dimensions and thus, the internal manoeuvring requirements.

Whilst it is acknowledged that the abovementioned queuing and manoeuvring of vehicles has the potential to impede passenger vehicle manoeuvring to and from the internal parking spaces, such impedance will be temporary in nature. In this regard, there will be opportunities for passenger vehicles to manoeuvre to and from parking spaces as required through minor adjustments of queued vehicle positions. Section 7 of this report presents that the average time for the unloading / loading of service vehicles is 12.5 minutes, thereby indicating that queued vehicles will progress in the queue at this rate, thereby allowing the movement of passenger vehicles to / from parking spaces as required.

Analysis of the arrival and service rates of transport vehicles is such that service vehicles are expected to be positioned in the potential queuing area adjacent to the passenger vehicle parking less than 50% of the time, thereby suggesting that unobstructed access to / from the passenger vehicle parking spaces will be likely. In any case, it should also be acknowledged that the passenger vehicle parking spaces are to be occupied by staff whom will be everyday parking space users and therefore be aware of the manoeuvring requirements / limitations. These staff will work shifts thereby arriving and departing the time during concentrated periods, during which heavy vehicle servicing of the site will be minimised as much as is practicable. In consideration of this and the above discussion, the internal heavy vehicle manoeuvring arrangements are accordingly considered to be satisfactory.

Please note a site capacity analysis has been undertaken separately and is contained within Section 7 of this report.

6.2 Parking Depot

The following sub-sections provide an assessment of the suitability or otherwise of the existing arrangements to accommodate the existing and projected operational requirements of the parking depot use.

6.2.1 Vehicular Access

Access between Vangeli Street and the parking depot is currently provided by an 8m wide combined ingress / egress driveway.

The existing parking depot access arrangements are proposed to be retained. As the maximum sized vehicle proposed to service the parking depot is also to be retained as existing (MRV), the suitability of the existing site access arrangements are not proposed to be altered. Notwithstanding this, swept path plans have been prepared in order to demonstrate the ability of MRVs vehicles to enter and exit the parking depot in a safe and efficient manner, copies of which are included as **Appendix 6**.

The consistent vertical and horizontal alignment of Vangeli Street within the subject vicinity results in good sight distance between the frontage road and the existing parking depot access driveway.

6.2.2 Parking Provision

The parking depot provides an informal vehicle storage / parking function within the external hardstand area to the west of the warehouse building. The site plans contained within **Appendix 1** indicate that the depot is capable of accommodating up to 18 vehicles at any one time, up to nine of which can be MRVs.

The abovementioned parking is to accommodate a passenger vehicle parking function during the day for the transport fleet driver's vehicles and a storage function during the evening for the transport fleet. In this regard, the intention is that drivers will park their personal passenger vehicles in place of the transport vehicles upon at the commencement of their shift and thence replace the transport vehicle with their personal vehicle at the completion of their shift.

The following sub-sections of this report provide an assessment of the suitability of the abovementioned vehicle accommodation capacity.

6.2.2.1 Passenger Vehicle Parking

DCP 2015 doesn't provide specific parking requirements for parking depots thereby indicating that assessment should be based on the operational characteristics of the proposed parking depot operations.

Passenger vehicle parking demand associated with the subject use is considered to be limited to that generated by drivers and any potential visitors. It has previously been presented that the proposed expanded parking depot operations will generate a demand for up to 16 drivers on-site at any one time. The number of visitors is expected to be negligible. Assuming a worst case scenario that all drivers drive themselves to and from the parking depot, a peak passenger vehicle parking demand of 16 spaces is anticipated. The site capacity to accommodate up to 18 vehicles is therefore expected to readily accommodate operational demands and accordingly, is considered to be satisfactory.

6.2.2.2 Fleet Vehicle Parking

It has previously been presented that the proposed expanded operational characteristics of the parking depot are such that the vehicle fleet will comprise up to nine vans and nine MRVs.

The existing parking provision of 18 spaces, 9 of which are capable of accommodating vehicles up to and including MRVs is therefore considered to be satisfactory.

6.2.3 Internal Circulation and Manoeuvrability

6.2.3.1 Passenger Vehicle Parking

Upon entry into the access driveway, passenger vehicles will continue proceed in a forward direction to connect with the parking spaces located adjacent to the northern and southern boundaries as well as the western warehouse wall. The parking areas comprise standard 90 degree angled parking rows being serviced by a central circulation / manoeuvring area. The parking and circulation areas have been designed in accordance with AS2890.1-2004 providing the following minimum dimensions:

- Standard passenger vehicle parking space width = 2.4m;
- Passenger vehicle parking space length = 5.4m;
- Passenger vehicle parking aisle width = 8m; and
- Two-way straight roadway = 8m.

In consideration of the above compliance with the relevant specifications of AS2890.1-2004, the existing passenger vehicle parking layout as it relates to internal manoeuvrability is considered to be satisfactory.

6.2.3.2 Site Servicing

It has previously been presented that the parking depot is proposed to continue to be serviced by a range of vehicles up to and including MRVs.

Upon entry into the access driveway, heavy vehicles up to and including MRVs will continue proceed in a forward direction to connect with the storage / parking

spaces located adjacent to the northern and southern boundaries as well as the western warehouse wall. The storage / parking areas comprise standard 90 degree angled parking rows being serviced by a central circulation / manoeuvring area. The parking and circulation areas have been designed in accordance with AS2890.2-2018 providing the following minimum dimensions:

- Heavy vehicle storage / parking space width = 3.5m;
- Van storage / parking space width = 3m;
- Heavy vehicle storage / parking space length = 8.8m;
- Van storage / parking space length = 5.4m;
- Parking aisle width = 8m; and
- Two-way straight roadway = 8m.

In consideration of the above compliance with the relevant specifications of AS2890.2-2018, the existing vehicle storage / parking layout as it relates to internal manoeuvrability is considered to be satisfactory.

In order to further demonstrate the ability of the existing and proposed internal handstand area external to the warehouse to accommodate the required manoeuvring throughout the site, this Practice has prepared swept path plans, copies of which are included as **Appendix 6**. The swept paths plans have been prepared utilising Autoturn software incorporating MRV vehicle turning specifications provided by AS2890.2-2018. The swept paths plans illustrate that the vehicles servicing the parking depot are capable of manoeuvring within the parking depot in a safe and efficient manner. Accordingly, the internal heavy vehicle manoeuvring arrangements are considered to be satisfactory.

7. TREATMENT FACILITY CAPACITY ANALYSIS

7.1 Treatment Facility Servicing Procedure

The treatment facility servicing procedure is as follows:

1. MED-X fleet vehicles carrying SMBs enter the treatment facility in a forward direction from Kenoma Place.

2. If able, these vehicles continue in a forward direction towards the south-eastern corner of the site prior to reversing towards the southern warehouse roller door, from where vehicle unloading occurs. This unloading procedure typically takes approximately 10 minutes.

3. Upon completion of the unloading activity, the fleet vehicle is to be repositioned adjacent to the northern warehouse roller door, where the vehicle will be loaded with clean empty bins. This loading procedure typically takes approximately 15 minutes.

4. Upon completion of the loading activity, the fleet vehicle is to exit the site in a forward direction.

Assuming there is no need to wait for other vehicles to be unloaded / loaded, the abovementioned servicing of the site by fleet vehicles typically accordingly takes 25 minutes.

In the event of the southern warehouse roller door being occupied upon arrival of a fleet vehicle, the entering fleet vehicle is required to queue between the site access driveway and the south-eastern portion of the site, until the southern warehouse roller door becomes available.

It has previously been presented that the treatment facility site is capable of accommodating up to three queued MRVs on-site waiting to be unloaded / loaded.

7.2 Capacity Analysis

In order to assessment the ability or otherwise of the treatment facility to provide adequate capacity to accommodate existing and project demands, a queuing analysis has been undertaken in accordance with standard Markov (M/M/1) procedures, whereby:

$$a = arrival\ rate$$

$$s = service\ rate$$

$$p = utilisation\ rate\ (\frac{a}{s})$$

$$E(m) = Mean\ number\ of\ vehicle\ in\ queue\ (\frac{p2}{1-p})$$

7.2.1 Existing Situation

The following provides the queuing analysis procedure for the existing operational characteristics of the treatment facility:

- The treatment facility services 22 vehicles per day, with vehicles generally arriving between 7:00am and 3:00pm;
- The average arrival rate of vehicles is accordingly 1 vehicle every 21.82 minutes (a = 0.0458);
- The average time to unload a vehicle is 12.5 minutes (being the average of the previously presented unload and load times);
- The average service rate is accordingly 1 vehicle every 12.5 minutes (s = 0.08);
- The utilisation rate is the arrival rate divided by the service rate (p = 0.5729).
- The average vehicles is the queue is 0.8 vehicles [$E(m) = \frac{\mathrm{p2}}{1-\mathrm{p}}$].

The average number of vehicles waiting to be serviced on approach to the unloading position is accordingly between zero and one vehicle.

7.2.2 Proposed Situation

The following provides the queuing analysis procedure for the proposed operational characteristics of the treatment facility:

- The treatment facility is to service 32 vehicles per day, with vehicles arriving between 7:00am and 5:00pm;
- The average arrival rate of vehicles is accordingly 1 vehicle every 18.75 minutes (a = 0.0533);
- The average time to unload a vehicle is 12.5 minutes;
- The average service rate is accordingly 1 vehicle every 12.5 minutes (s = 0.08);
- The utilisation rate is the arrival rate divided by the service rate (p = 0.6663).
- The average vehicles is the queue is 1.3 vehicles [$E(m) = \frac{\mathrm{p2}}{1-\mathrm{p}}$].

The average number of vehicles waiting to be serviced on approach to the unloading position is accordingly between one and two vehicles.

7.2.3 Discussion

The treatment facility is capable of accommodating up to three queued MRVs on approach to the vehicle servicing areas. The previous analysis indicates that the existing operational characteristics require an average of less than one vehicle to be queued within the site on approach to the service areas. The proposed increased operational characteristics of the facility are expected to result in the average number of queued vehicles being between one and two vehicles. The internal queuing capacity of the treatment facility is accordingly expected to be readily capable of accommodating the envisaged operational requirements, indeed, providing in excess of double the expected average capacity to accommodate short periods of peak influxes of vehicles if so required.

It is acknowledged that the capacity analysis contained within this report is predicated on transport fleet vehicles arriving at the treatment facility at a consistent rate throughout the expected vehicle receipt periods of 7:00am – 5:00pm, Monday to Saturday. The consistent arrival nature of transport fleet is to be strictly governed by a vehicle scheduling roster formulated by MED-X, whereby the fleet is distributed throughout the greater Sydney metropolitan areas and surrounds with the intention of ensuring that fleet arrival times at the treatment facility are appropriately staggered. This is monitored and governed on a daily basis by MED-X through an electronic fleet tracker system. This facilitates real time knowledge of fleet vehicle locations, thereby allowing analysis, modelling and adjustment of expected time of vehicle arrivals throughout any given day.

Notwithstanding the above, it is acknowledged that there are a number of factors outside of the operators control with respect to vehicle arrival periods such as alterations in traffic demands and / or unexpected delays during customer servicing. The abovementioned ability of the site to accommodate a 100% increase in the expected average queuing demand at any given time is however envisaged to facilitate capacity to accommodate unexpected alterations in vehicle arrival rates. It should further be acknowledged, in this regard, that the real time nature of the electronic fleet vehicle tracker is such that peak influxes of fleet vehicles will be known prior to occurring thereby allowing the on-site floor staff to commit additional resources to unloading / loading activities to improve operational efficiencies for short periods as required. Having regard to this and the abovementioned discussion, the on-site queuing capacity of the site is expected to be readily capable of accommodating the anticipated characteristics of the expanded operational demands.

8. CONCLUSION

This report assesses the potential traffic and parking implications associated with a proposal to expand the existing approved and licensed operations of a Clinical and Quarantine Waste Management Facility at No. 9 Kenoma Place, Arndell Park. Based on this assessment, the following conclusions are now made:

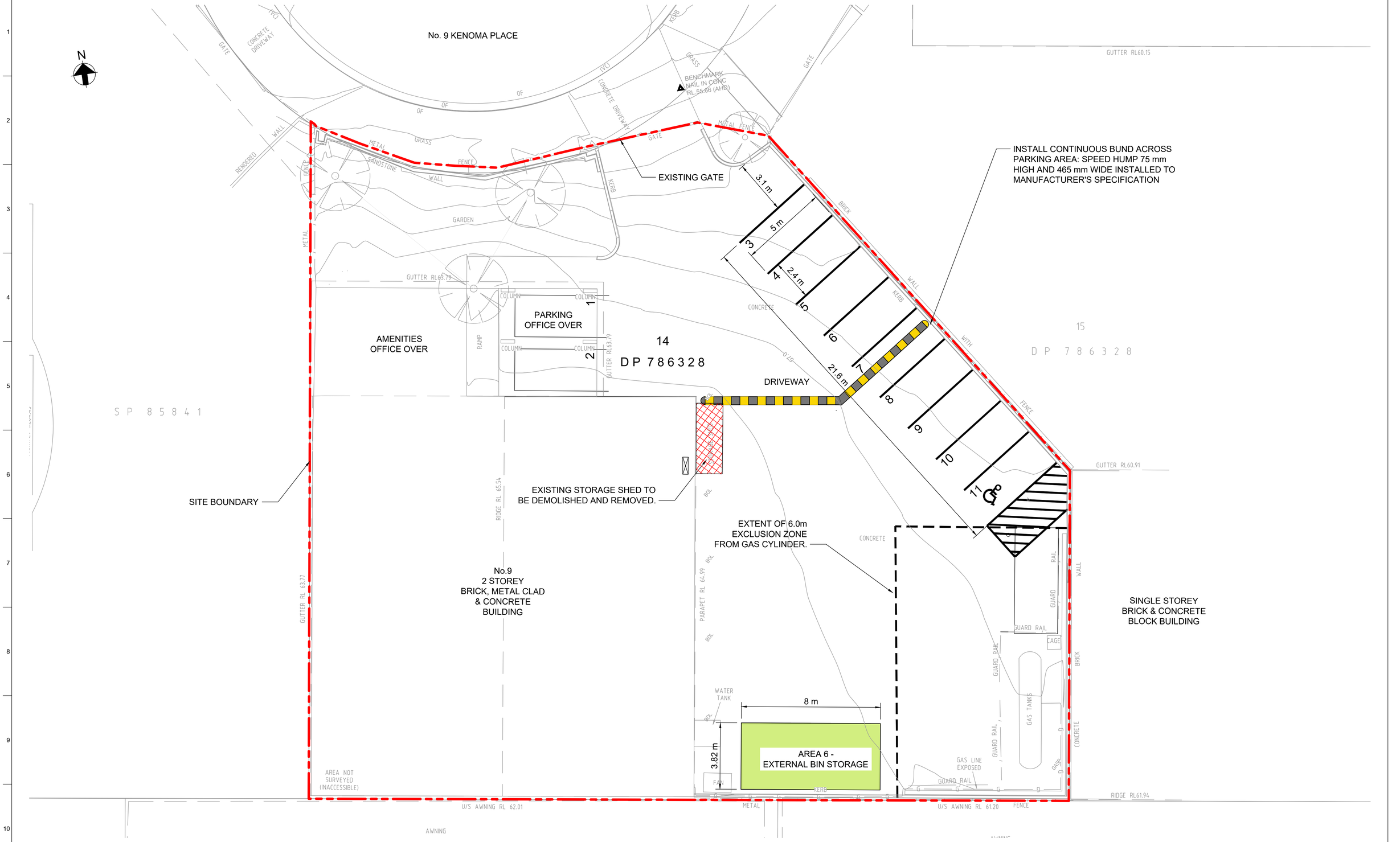
- The existing facility is licenced and approved to process up to 650 tonnes of clinical waste per year;
- Approval is now sought to increase this process up to 2,300 tonnes of clinical and related per year;
- The existing facility operates significantly below capacity, generally only being operational between approximately 7:00am – 3:00pm Monday to Friday;
- The expanded facility operations are proposed through an extension of the existing operational hours to accord with the current approval and licence to operate between 7:00am – 7:00pm Monday to Saturday, the implementation of operational efficiencies through automation, additional staff and transportation vehicle fleet;
- The treatment facility at No. 9 Kenoma Place is supplemented by an ancillary parking depot located at No. 7 Vangeli Street, which is capable of accommodating up to 18 vehicles associated with inactive transportation vehicle fleet and driver passenger vehicles;
- The existing treatment facility and parking depot operational characteristics generate up to 40 peak hour vehicle movements to and from the sites;
- The surrounding road network currently provides motorists with a reasonable level of service;
- The projected increased operational characteristics are envisaged to generate up to an additional 13 peak hour vehicle movements to and from the subject precinct;
- The minimal level of additional traffic projected as a result of the proposed expanded site operations is not anticipated to result in any noticeable impacts on the surrounding road network;
- The existing treatment facility and parking depot access arrangements are projected to continue to provide vehicles up to and including MRVs with satisfactory conditions with which to access and vacate the sites;
- The off-street passenger vehicle parking provision within both the treatment facility and parking depot are projected to continue to satisfactorily accommodate the maximum instantaneous parking demand of the expanded operations;

- The off-street internal circulation and servicing arrangements within both the treatment facility and parking depot are projected to continue to provide vehicles up to and including MRVs with satisfactory manoeuvring arrangements; and

- The treatment facility is expected to continue to be able to wholly accommodate all internal vehicle queuing, servicing and manoeuvring in a safe and efficient manner.

It is considered there are no traffic related issues that should prevent approval of the subject application. This action is therefore recommended.

APPENDIX 1



NOT FOR CONSTRUCTION

Scales

0 2.5 5m

A1 / A3
1:100 / 1:200

Design Model Version

Issue	Date	By	Chkd	Appd

Issue	Date	By	Chkd	Appd

Issue	Date	By	Chkd	Appd
1	14/05/2020	HNA	EM	LH
	FOR APPROVAL			
0	1/05/2020	HNA	EM	EM
	FOR INFORMATION			

Client

MED-X healthcare solutions

Engineering Certification (CEng)

Name: .....

Signature: ..... Date: .....

Job Title

CLINICAL WASTE
MANAGEMENT FACILITY
ARNDELL PARK

Scale at A1 1:100

Discipline CIVL

ARUP

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ABN 18 000 966 165

Drawing Title

9 KENOMA PLACE
PROPOSED SITE
PLAN

Drawing Status

FOR APPROVAL

Job No	Drawing No	Issue
274648-00	**CICW-DRG-0111**	**1**

Do not scale

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A1

N

No.7 VANGELI STREET

1004

788155

1005

1005/DP788155

DRIVEWAY

No.5
2 STOREY
CONCRETE &
BRICK
BUILDING

No.7
METAL CLAD
SHED

No.9
2 STOREY
CONCRETE
BUILDING

MULTI-STOREY
CONCRETE &
METAL CLAD
BUILING

DP 883362

PARAPET RL 58.34
PARAPET RL 58.69
PARAPET RL 59.62
PARAPET RL 56.93
PARAPET RL 56.9
PARAPET RL 60.49
RIDGE RL 57.44
RIDGE RL 57.58
GUTTER RL 56.78
GUTTER RL 56.70
METAL AWNING

2.85 m
5.5 m
3.1 m
5.4 m
3.5 m
3.5 m
4.35 m
3.5 m
4.18 m
9.3 m

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

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Plot Date: 12 May 2020 16:25:16

	Initial Check SIGNED/DATE	Back Check SIGNED/DATE
CHECKER		
TECHNICIAN		
ENGINEER		
SENIOR TECHNICIAN		
SENIOR ENGINEER/APPROVER		

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DRAWING IN PROGRESS

Scales
0 2.5 5m
A1 / A3
1:100 / 1:200

Design Model Version

Issue	Date	By	Chkd	Appd
0	7/05/2020	HNA	EM	EM
	FOR INFORMATION			

Client: MED-X healthcare solutions

Engineering Certification (CEng)
Name: .....
Signature: ..... Date: .....

Job Title
CLINICAL WASTE
MANAGEMENT FACILITY
ARNDELL PARK

Scale at A1 1:100

Discipline CIVL

ARUP
Arup, Barrack Place, Level 5, 151 Clarence St
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www.arup.com.au

Drawing Title
7 VANGELI STREET
PROPOSED SITE
PLAN

Drawing Status
FOR INFORMATION ONLY

Job No	Drawing No	Issue
274648-00	CICW-DRG-0211	0

Do not scale

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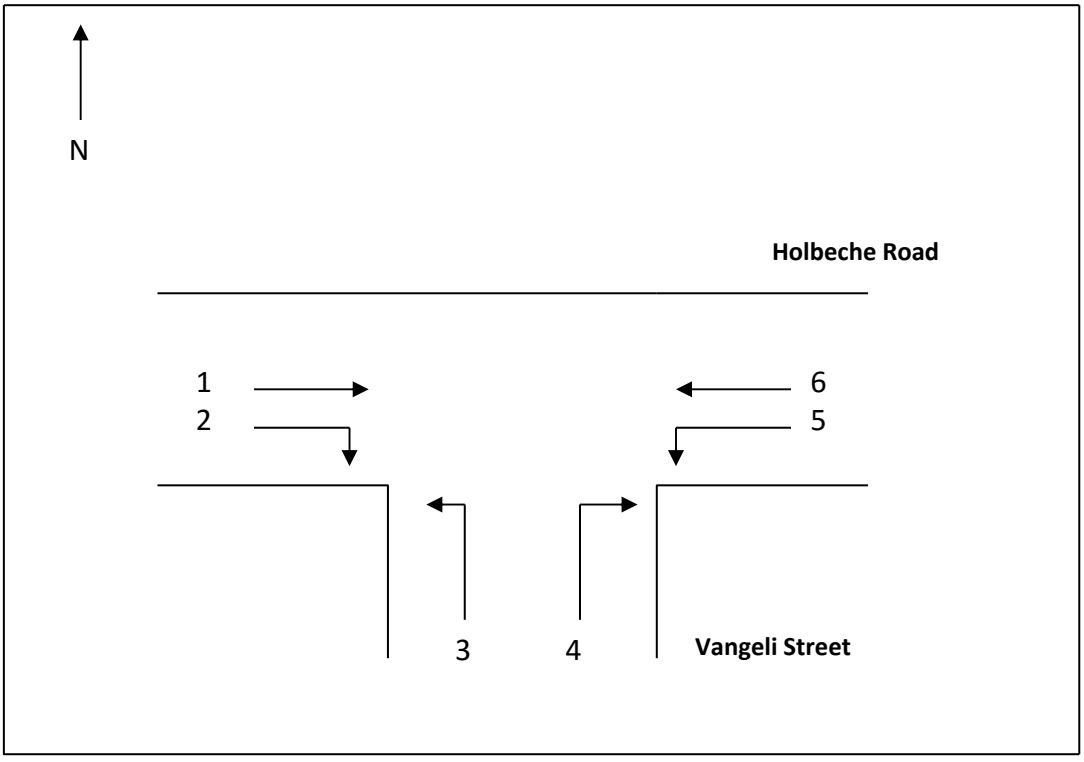
APPENDIX 2

STANBURY TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

TRAFFIC COUNTS AT: Holbeche Road & Vangeli Street, Arndell Park
DATE: 3rd November 2016
TIME: Fine

Time	Direction of Vehicular Traffic					
	1	**2**	**3**	**4**	**5**	**6**
7.00 – 7.15am	69	21	8	6	31	68
7.15 – 7.30am	71	20	9	8	25	71
7.30 – 7.45am	76	25	11	9	31	74
7.45 – 8.00am	70	37	10	7	49	84
TOTAL	**286**	**103**	**38**	**30**	**136**	**297**
8.00 – 8.15am	78	31	8	14	23	75
8.15 – 8.30am	81	39	20	14	29	73
8.30 – 8.45am	73	31	11	13	32	88
8.45 – 9.00am	75	32	15	11	31	81
TOTAL	**307**	**133**	**54**	**52**	**115**	**317**
4.00 – 4.15pm	88	10	30	25	6	107
4.15 – 4.30pm	85	11	31	27	5	115
4.30 – 4.45pm	91	12	30	25	9	119
4.45 – 5.00pm	95	10	35	32	7	118
TOTAL	**359**	**43**	**126**	**109**	**27**	**459**
5.00 – 5.15pm	95	10	48	42	6	152
5.15 – 5.30pm	76	12	20	28	8	135
5.30 – 5.45pm	80	11	31	31	9	129
5.45 – 6.00pm	79	13	25	28	8	128
TOTAL	**330**	**46**	**124**	**129**	**31**	**544**



APPENDIX 3

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street]

Existing AM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Vangeli Street											
1	L2	54	5.0	0.046	6.7	LOS A	0.2	1.3	0.38	0.60	52.2
3	R2	52	5.0	0.136	13.9	LOS A	0.5	3.5	0.70	0.88	47.4
Approach		106	5.0	0.136	10.3	LOS A	0.5	3.5	0.54	0.74	49.8
East: Holbeche Road East											
4	L2	115	5.0	0.064	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	317	5.0	0.168	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		432	5.0	0.168	1.5	NA	0.0	0.0	0.00	0.15	58.1
West: Holbeche Road West											
11	T1	307	5.0	0.317	1.8	LOS A	1.8	13.1	0.40	0.22	56.4
12	R2	133	5.0	0.317	8.7	LOS A	1.8	13.1	0.40	0.22	54.5
Approach		440	5.0	0.317	3.9	NA	1.8	13.1	0.40	0.22	55.8
All Vehicles		978	5.0	0.317	3.5	NA	1.8	13.1	0.24	0.25	56.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street]

Existing PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Vangeli Street											
1	L2	124	5.0	0.139	8.2	LOS A	0.5	3.9	0.53	0.75	51.5
3	R2	129	5.0	0.425	20.9	LOS B	1.9	13.6	0.83	1.01	43.5
Approach		253	5.0	0.425	14.7	LOS B	1.9	13.6	0.68	0.88	47.1
East: Holbeche Road East											
4	L2	31	5.0	0.017	5.6	LOS A	0.0	0.0	0.00	0.58	53.4
5	T1	544	5.0	0.288	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		575	5.0	0.288	0.3	NA	0.0	0.0	0.00	0.03	59.5
West: Holbeche Road West											
11	T1	330	5.0	0.241	1.1	LOS A	0.8	6.0	0.22	0.08	57.9
12	R2	46	5.0	0.241	10.0	LOS A	0.8	6.0	0.22	0.08	55.9
Approach		376	5.0	0.241	2.2	NA	0.8	6.0	0.22	0.08	57.6
All Vehicles		1204	5.0	0.425	3.9	NA	1.9	13.6	0.21	0.23	55.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street (Site Folder: General)]

Projected 10 Year AM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Vangeli Street														
1	L2	54	5.0	54	5.0	0.050	7.1	LOS A	0.2	1.4	0.42	0.63	0.42	52.1
3	R2	52	5.0	52	5.0	0.173	17.0	LOS B	0.6	4.3	0.78	0.91	0.78	45.6
Approach		106	5.0	106	5.0	0.173	11.9	LOS A	0.6	4.3	0.60	0.77	0.60	48.7
East: Holbeche Road East														
4	L2	115	5.0	115	5.0	0.064	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
5	T1	387	5.0	387	5.0	0.205	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		502	5.0	502	5.0	0.205	1.3	NA	0.0	0.0	0.00	0.13	0.00	58.3
West: Holbeche Road West														
11	T1	375	5.0	375	5.0	0.368	2.3	LOS A	2.4	17.2	0.41	0.21	0.51	56.1
12	R2	133	5.0	133	5.0	0.368	9.8	LOS A	2.4	17.2	0.41	0.21	0.51	54.2
Approach		508	5.0	508	5.0	0.368	4.2	NA	2.4	17.2	0.41	0.21	0.51	55.6
All Vehicles		1116	5.0	1116	5.0	0.368	3.7	NA	2.4	17.2	0.24	0.23	0.29	56.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street (Site Folder: General)]

Projected 10 Year PM Peak
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Vangeli Street														
1	L2	124	5.0	124	5.0	0.166	9.2	LOS A	0.6	4.5	0.58	0.82	0.58	50.7
3	R2	129	5.0	129	5.0	0.623	35.0	LOS C	2.9	21.1	0.92	1.12	1.52	37.2
Approach		253	5.0	253	5.0	0.623	22.4	LOS B	2.9	21.1	0.76	0.98	1.06	42.8
East: Holbeche Road East														
4	L2	31	5.0	31	5.0	0.017	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.4
5	T1	664	5.0	664	5.0	0.352	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		695	5.0	695	5.0	0.352	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: Holbeche Road West														
11	T1	403	5.0	403	5.0	0.293	1.7	LOS A	1.2	8.8	0.25	0.07	0.29	57.4
12	R2	46	5.0	46	5.0	0.293	12.2	LOS A	1.2	8.8	0.25	0.07	0.29	55.4
Approach		449	5.0	449	5.0	0.293	2.7	NA	1.2	8.8	0.25	0.07	0.29	57.2
All Vehicles		1397	5.0	1397	5.0	0.623	5.1	NA	2.9	21.1	0.22	0.21	0.29	54.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX 4

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street]

Projected AM Peak
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Vangeli Street												
1	L2	57	5.0	0.048	6.7	LOS A	0.2	1.4	0.38	0.60	0.38	52.2
3	R2	54	5.0	0.143	14.1	LOS A	0.5	3.7	0.71	0.88	0.71	47.3
Approach		111	5.0	0.143	10.3	LOS A	0.5	3.7	0.54	0.74	0.54	49.7
East: Holbeche Road East												
4	L2	119	5.0	0.066	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.4
5	T1	317	5.0	0.168	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		436	5.0	0.168	1.5	NA	0.0	0.0	0.00	0.16	0.00	58.0
West: Holbeche Road West												
11	T1	307	5.0	0.322	1.9	LOS A	1.9	13.7	0.41	0.23	0.45	56.3
12	R2	137	5.0	0.322	8.8	LOS A	1.9	13.7	0.41	0.23	0.45	54.4
Approach		444	5.0	0.322	4.0	NA	1.9	13.7	0.41	0.23	0.45	55.7
All Vehicles		991	5.0	0.322	3.6	NA	1.9	13.7	0.24	0.26	0.26	55.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street]

Projected PM Peak
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Vangeli Street												
1	L2	128	5.0	0.144	8.2	LOS A	0.6	4.0	0.53	0.75	0.53	51.4
3	R2	133	5.0	0.441	21.3	LOS B	2.0	14.3	0.84	1.02	1.16	43.3
Approach		261	5.0	0.441	14.9	LOS B	2.0	14.3	0.69	0.89	0.85	46.9
East: Holbeche Road East												
4	L2	34	5.0	0.019	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.4
5	T1	544	5.0	0.288	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		578	5.0	0.288	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: Holbeche Road West												
11	T1	330	5.0	0.244	1.2	LOS A	0.9	6.3	0.23	0.09	0.24	57.8
12	R2	48	5.0	0.244	10.0	LOS A	0.9	6.3	0.23	0.09	0.24	55.8
Approach		378	5.0	0.244	2.3	NA	0.9	6.3	0.23	0.09	0.24	57.5
All Vehicles		1217	5.0	0.441	4.1	NA	2.0	14.3	0.22	0.23	0.26	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street (Site Folder: General)]

Projected 10 Year AM Peak (With Development)
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Vangeli Street														
1	L2	57	5.0	57	5.0	0.052	7.1	LOS A	0.2	1.5	0.42	0.63	0.42	52.1
3	R2	54	5.0	54	5.0	0.181	17.2	LOS B	0.6	4.6	0.78	0.91	0.79	45.4
Approach		111	5.0	111	5.0	0.181	12.0	LOS A	0.6	4.6	0.60	0.77	0.60	48.6
East: Holbeche Road East														
4	L2	119	5.0	119	5.0	0.066	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
5	T1	387	5.0	387	5.0	0.205	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		506	5.0	506	5.0	0.205	1.4	NA	0.0	0.0	0.00	0.14	0.00	58.2
West: Holbeche Road West														
11	T1	375	5.0	375	5.0	0.374	2.4	LOS A	2.5	17.9	0.42	0.22	0.53	56.0
12	R2	137	5.0	137	5.0	0.374	9.9	LOS A	2.5	17.9	0.42	0.22	0.53	54.1
Approach		512	5.0	512	5.0	0.374	4.4	NA	2.5	17.9	0.42	0.22	0.53	55.5
All Vehicles		1129	5.0	1129	5.0	0.374	3.8	NA	2.5	17.9	0.25	0.23	0.30	55.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Holbeche Road & Vangeli Street (Site Folder: General)]

Projected 10 Year PM Peak (With Development)
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Vangeli Street														
1	L2	128	5.0	128	5.0	0.171	9.2	LOS A	0.6	4.7	0.59	0.82	0.59	50.7
3	R2	133	5.0	133	5.0	0.644	36.1	LOS C	3.1	22.3	0.93	1.14	1.57	36.8
Approach		261	5.0	261	5.0	0.644	22.9	LOS B	3.1	22.3	0.76	0.98	1.09	42.5
East: Holbeche Road East														
4	L2	34	5.0	34	5.0	0.019	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.4
5	T1	663	5.0	663	5.0	0.351	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		697	5.0	697	5.0	0.351	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.4
West: Holbeche Road West														
11	T1	403	5.0	403	5.0	0.297	1.7	LOS A	1.3	9.2	0.26	0.08	0.31	57.3
12	R2	48	5.0	48	5.0	0.297	12.2	LOS A	1.3	9.2	0.26	0.08	0.31	55.3
Approach		451	5.0	451	5.0	0.297	2.9	NA	1.3	9.2	0.26	0.08	0.31	57.1
All Vehicles		1409	5.0	1409	5.0	0.644	5.4	NA	3.1	22.3	0.22	0.22	0.30	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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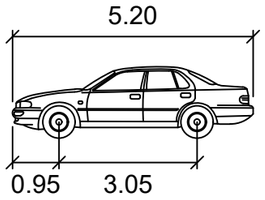
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX 5



B99

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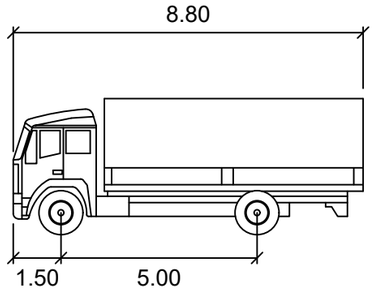
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9



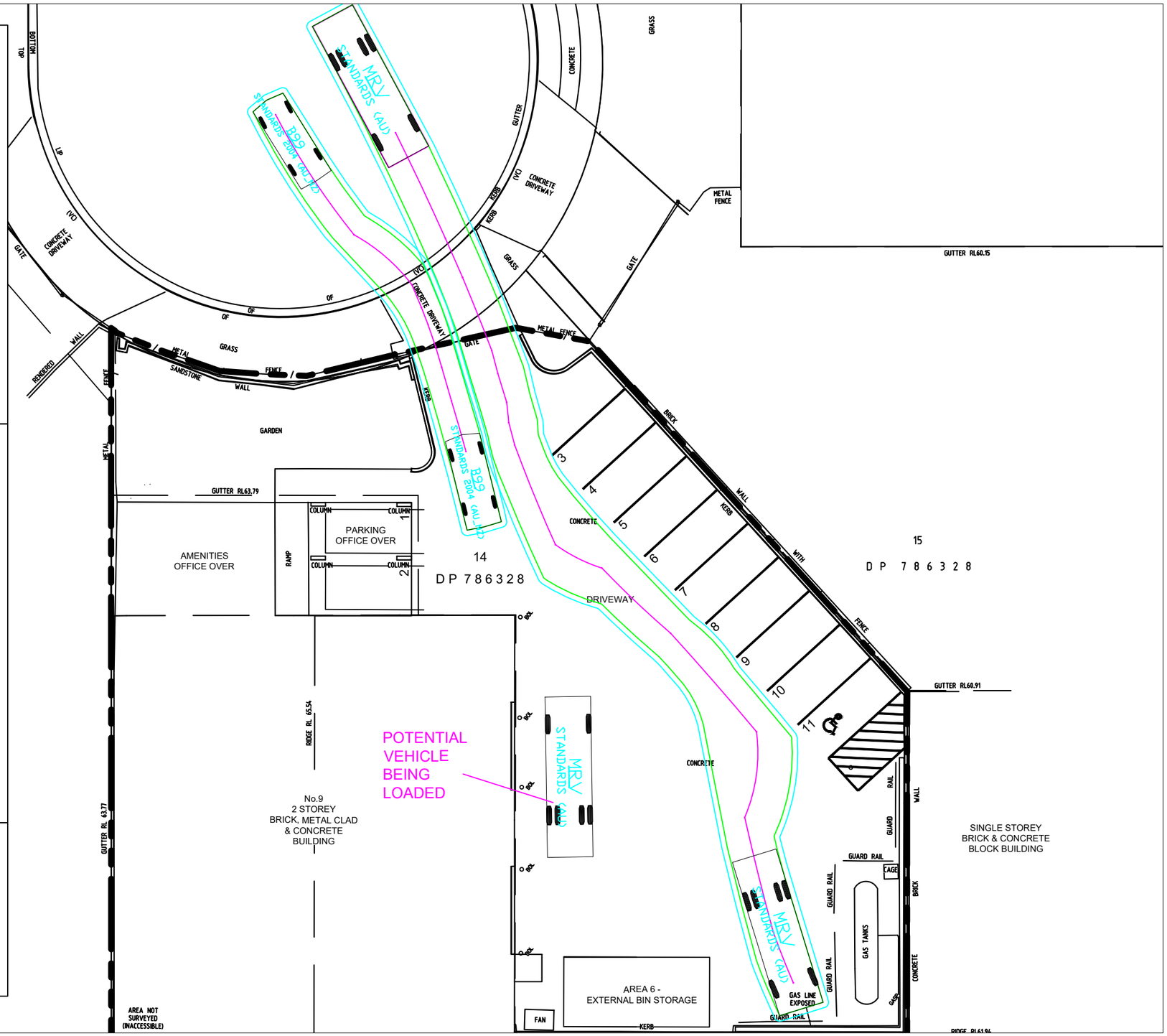
MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)



STANBURY TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

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WEBSITE: www.stanburytraffic.com.au

NOTES:

1. THIS PLAN IS BASED ON ARCHITECTURAL PLANS PREPARED BY ARUP GROUP.

2. THE SWEPT PATHS PROVIDED ON THIS PLAN HAVE BEEN GENERATED UTILISING AUTOTURN PRO VERSION 10 IN CONJUNCTION WITH B99 PASSENGER VEHICLE AND HEAVY RIGID VEHICLE MANOEUVRING SPECIFICATIONS IN ACCORDANCE WITH THE AUSTRALIAN STANDARD FOR PARKING FAICLITIES PART 1: OFF-STREET CAR PARKING (AS2890.1:2004) AND PART2: OFF-STREET COMMERCIAL VEHICLE FACILITIES (AS2890.2:2018), RESPECTIVELY.

STANBURY TRAFFIC PLANNING

PASSENGER VEHICLE AND MEDIUM RIGID VEHICLE SWEPT PATHS

SITE INGRESS / EGRESS MOVEMENTS

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

9 KENOMA PLACE, ARNDELL PARK (TREATMENT FACILITY)

SCALE: 1:250 AT A3

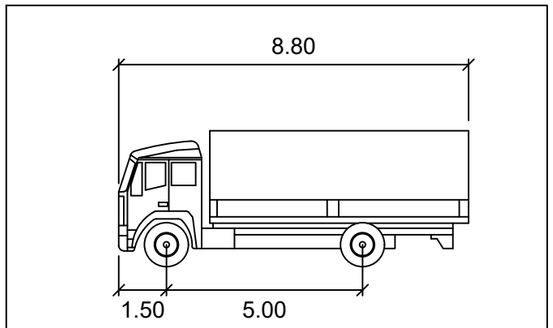
FILE: 16-031

SUPERSEDES SHEET/ISSUE -

DATE: 18/05/2020

ISSUE A

SHEET 1



MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

GRASS
KERB & GUTTER
CONCRETE
CONCRETE DRIVEWAY
METAL FENCE
GUTTER RL60.15
GATE
WALL
RENDERED
METAL FENCE
SANDSTONE WALL
GARDEN
GUTTER RL63.79
COLUMN
PARKING OFFICE OVER
AMENITIES OFFICE OVER
RAMP
14
DP 786328
15
DP 786328
BRICK WALL
CONCRETE
DRIVEWAY
MRV STANDARDS (AU)
POTENTIAL QUEUED VEHICLES
WITH FENCE
GUTTER RL60.91
RIDGE RL 65.54
No.9
2 STOREY
BRICK, METAL CLAD
& CONCRETE
BUILDING
POTENTIAL VEHICLE BEING LOADED
VEHICLE UNLOADING POSITION
SINGLE STOREY
BRICK & CONCRETE
BLOCK BUILDING
GUTTER RL 63.77
AREA NOT SURVEYED (INACCESSIBLE)
AREA 6 - EXTERNAL BIN STORAGE
FAN
GAS LINE EXPOSED
GAS TANKS
GUARD RAIL
CAGE
RIDGE RL 61.94

STANBURY TRAFFIC PLANNING
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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

MANOEUVRING REQUIRED TO ACCESS VEHICLE UNLOADING POSITION

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

9 KENOMA PLACE, ARNDELL PARK (TREATMENT FACILITY)

SCALE: 1:250 AT A3

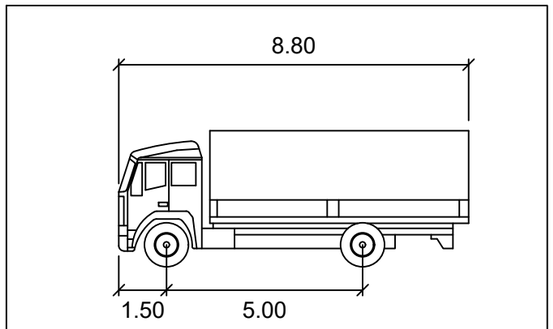
FILE: 16-031

SUPERSEDES SHEET/ISSUE -

DATE: 18/05/2020

ISSUE A

SHEET 2



MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

POTENTIAL QUEUED VEHICLES

VEHICLE LOADING POSITION

VEHICLE UNLOADING POSITION

GUTTER RL60.15

GUTTER RL63.79

GUTTER RL 63.77

RIDGE RL 65.54

GUTTER RL60.91

AMENITIES OFFICE OVER

PARKING OFFICE OVER

No.9 2 STOREY BRICK, METAL CLAD & CONCRETE BUILDING

SINGLE STOREY BRICK & CONCRETE BLOCK BUILDING

AREA 6 - EXTERNAL BIN STORAGE

AREA NOT SURVEYED (INACCESSIBLE)

14 DP 786328

15 DP 786328

GRASS, CONCRETE, CONCRETE DRIVEWAY, METAL FENCE, GATE, RENDERED WALL, METAL SANDSTONE WALL, FENCE, KERB, GUTTER, BOTTOM, TOP, LIP, OF, IVO, BRICK WALL, GARDEN, DRIVEWAY, COLUMN, RAMP, GUARD RAIL, CAGE, GAS TANKS, GAS LINE EXPOSED, FAN, RAIL, WALL

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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

REQUIRED MANOEUVRING TO ACCESS VEHICLE LOADING POSITION

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

9 KENOMA PLACE, ARNDELL PARK

SCALE: 1:250 AT A3

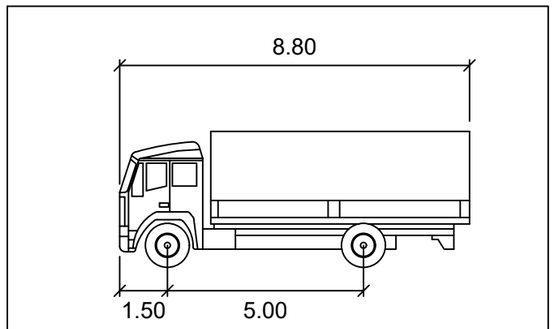
FILE: 16-031

SUPERSEDES SHEET/ISSUE -

DATE: 18/05/2020

ISSUE A

SHEET 3



MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

POTENTIAL QUEUED VEHICLES

VEHICLE LOADING POSITION

POTENTIAL VEHICLE BEING UNLOADED

GUTTER RL60.15

GUTTER RL63.79

GUTTER RL60.91

RIDGE RL61.94

RIDGE RL 65.54

GUTTER RL 63.77

AMENITIES OFFICE OVER

PARKING OFFICE OVER

RAMP

No.9 2 STOREY BRICK, METAL CLAD & CONCRETE BUILDING

SINGLE STOREY BRICK & CONCRETE BLOCK BUILDING

AREA 6 - EXTERNAL BIN STORAGE

AREA NOT SURVEYED (INACCESSIBLE)

DRIVEWAY

CONCRETE DRIVEWAY

GARDEN

GRASS

CONCRETE

GAS TANKS

GAS LINE EXPOSED

FAN

CAGE

GUARD RAIL

METAL FENCE

RENDERED WALL

SANDSTONE WALL

BRICK WALL

KERB

GATE

14 DP 786328

15 DP 786328

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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

SITE EGRESS MOVEMENT

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

9 KENOMA PLACE, ARNDELL PARK

SCALE: 1:250 AT A3

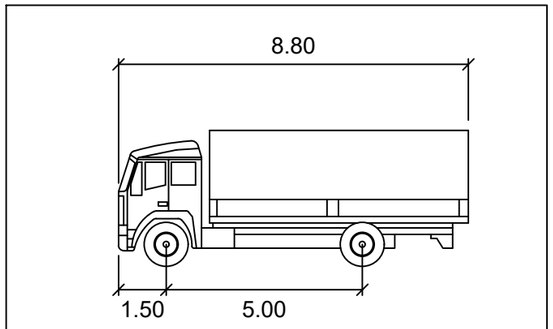
FILE: 16-031

SUPERSEDES SHEET/ISSUE -

DATE: 18/05/2020

ISSUE A

SHEET 4



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Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

POTENTIAL QUEUED VEHICLE

POTENTIAL VEHICLE BEING UNLOADED

POTENTIAL QUEUED VEHICLE

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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

REQUIRED MANOEUVRING TO ACCESS COMPACTOR SERVICING POSITION

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

9 KENOMA PLACE, ARNDELL PARK

SCALE: 1:250 AT A3

FILE: 16-031

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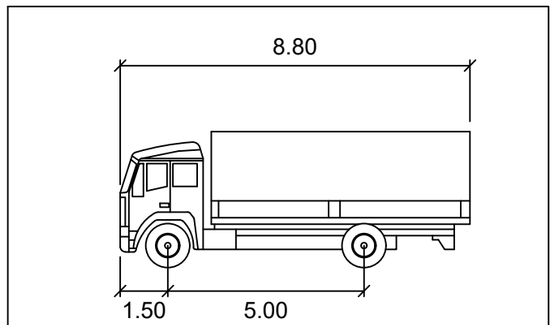
SHEET 5



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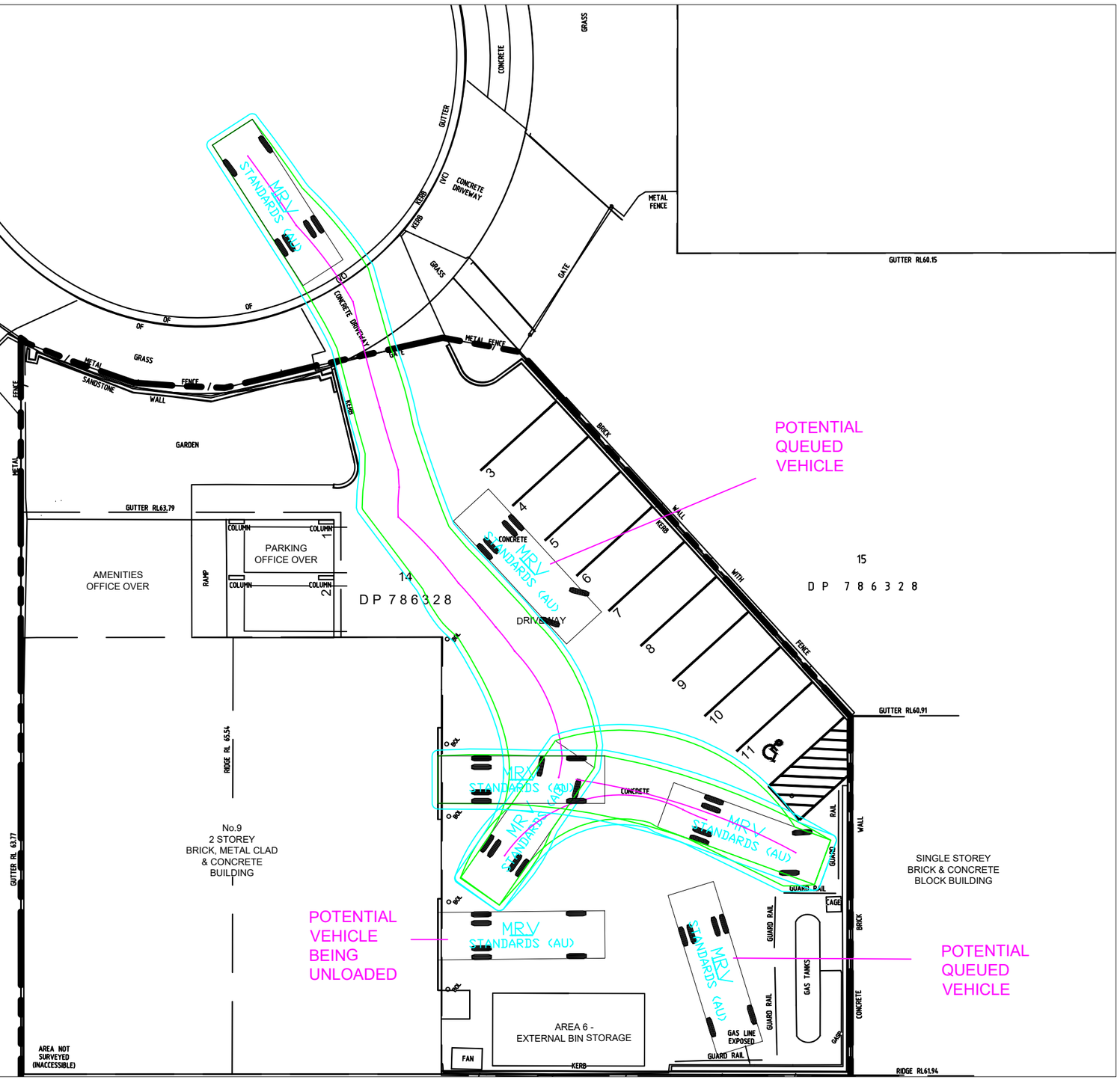
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)



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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

COMPACTOR SERVICING POSITION EGRESS MOVEMENTS

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

9 KENOMA PLACE, ARNDELL PARK

SCALE: 1:250 AT A3

FILE: 16-031

SUPERSEDES SHEET/ISSUE -

DATE: 18/05/2020

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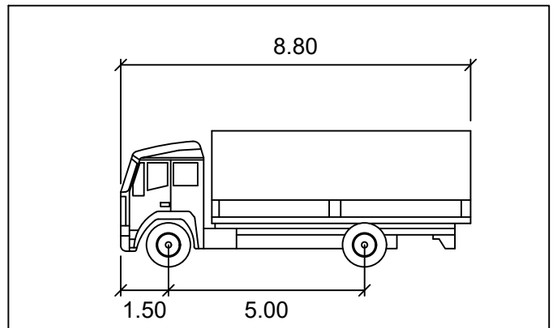
SHEET 6

APPENDIX 6



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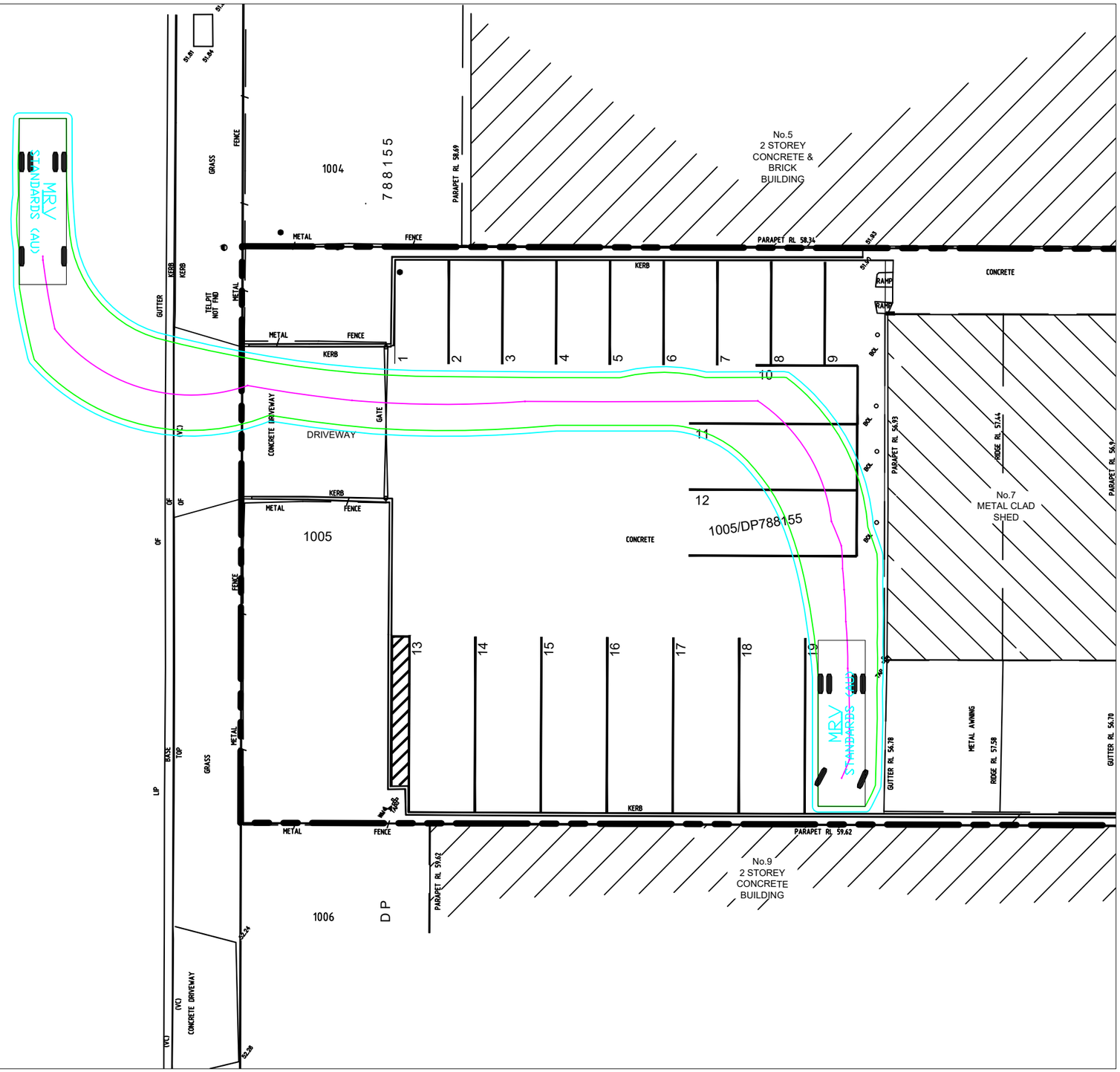
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

VANGELLI STREET



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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

INTERNAL PARKING SPACE MANOEUVRING

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

7 VANGELLI STREET, ARNDELL PARK (PARKING DEPOT)

SCALE: 1:250 AT A3

FILE: 16-031

SUPERSEDES SHEET/ISSUE -

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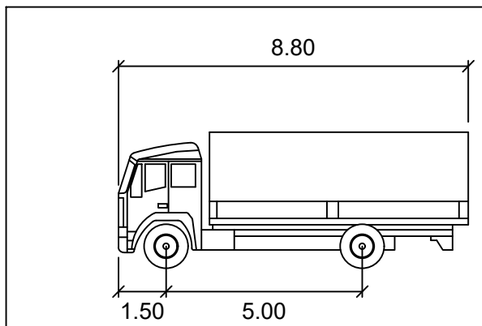
ISSUE A

SHEET 7



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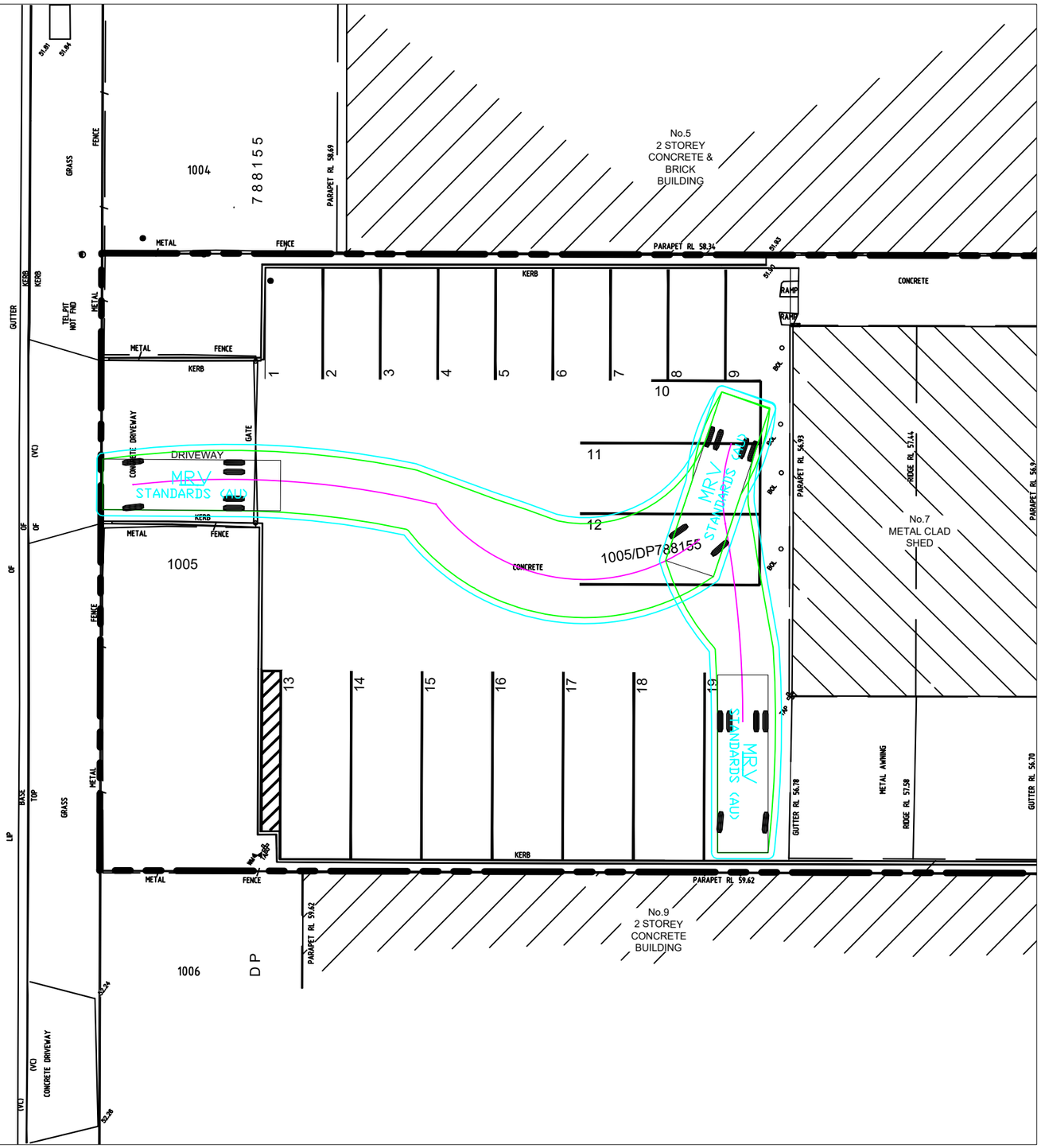
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

VANGELLI STREET



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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

INTERNAL PARKING SPACE MANOEUVRING

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

7 VANGELLI STREET, ARNDELL PARK (PARKING DEPOT)

SCALE: 1:250 AT A3		ISSUE A
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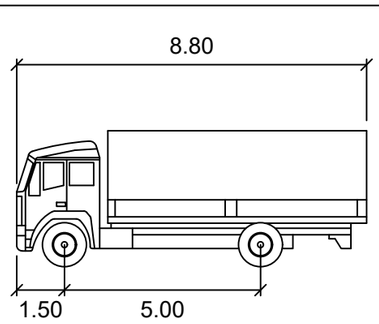
DATE: 18/05/2020		SHEET 8



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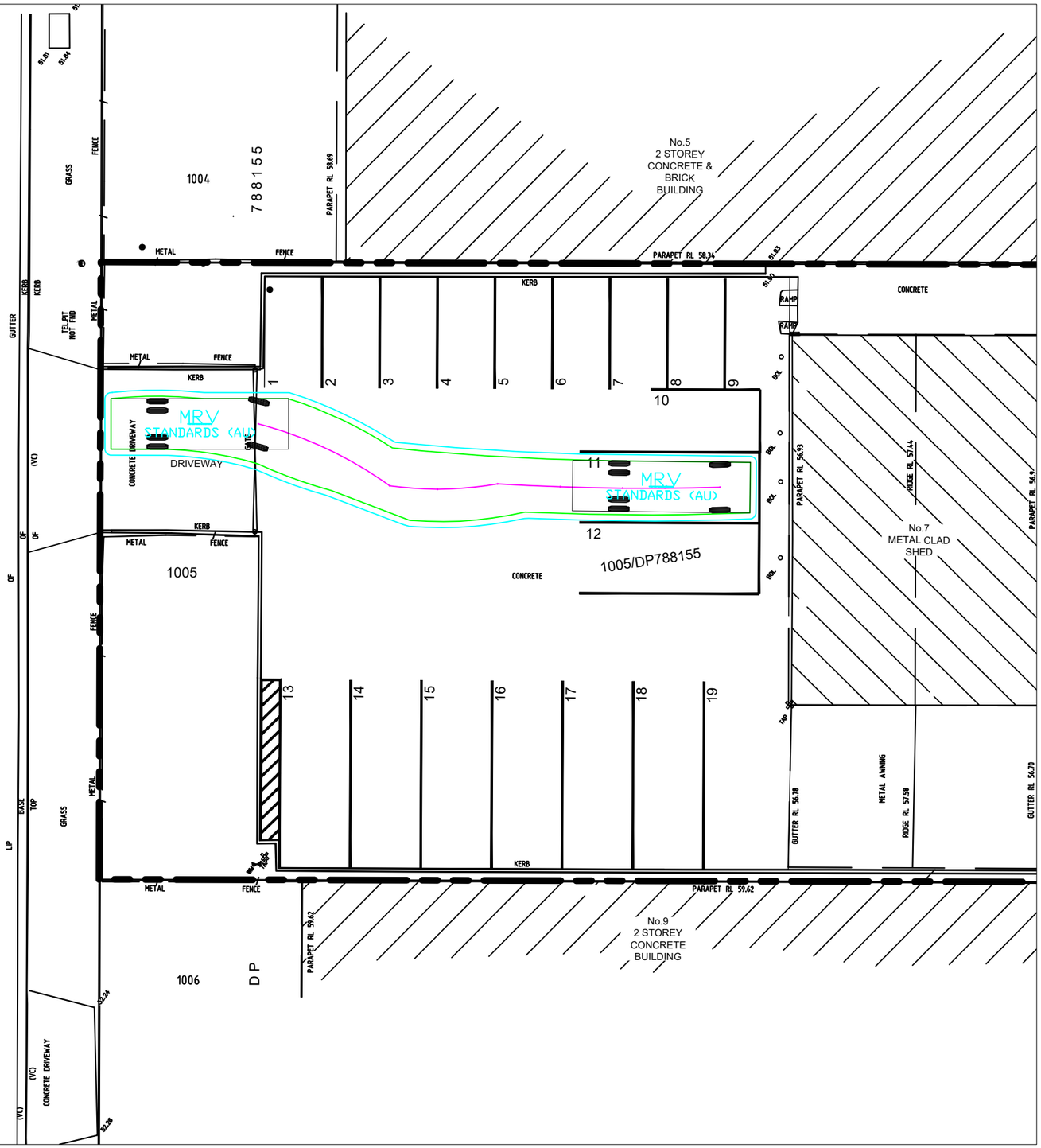
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

7 VANGELLI STREET



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STANBURY TRAFFIC PLANNING

MEDIUM RIGID VEHICLE SWEPT PATHS

INTERNAL PARKING SPACE MANOEUVRING

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

7 VANGELLI STREET, ARNDELL PARK (PARKING DEPOT)

SCALE: 1:250 AT A3

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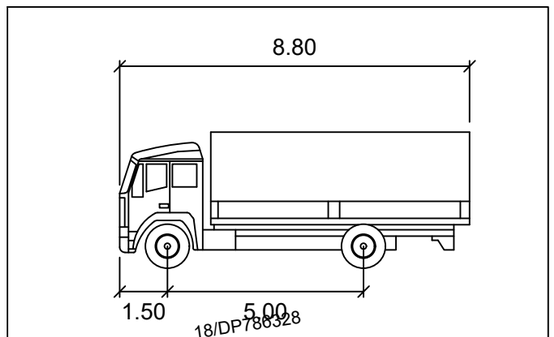
SHEET 9



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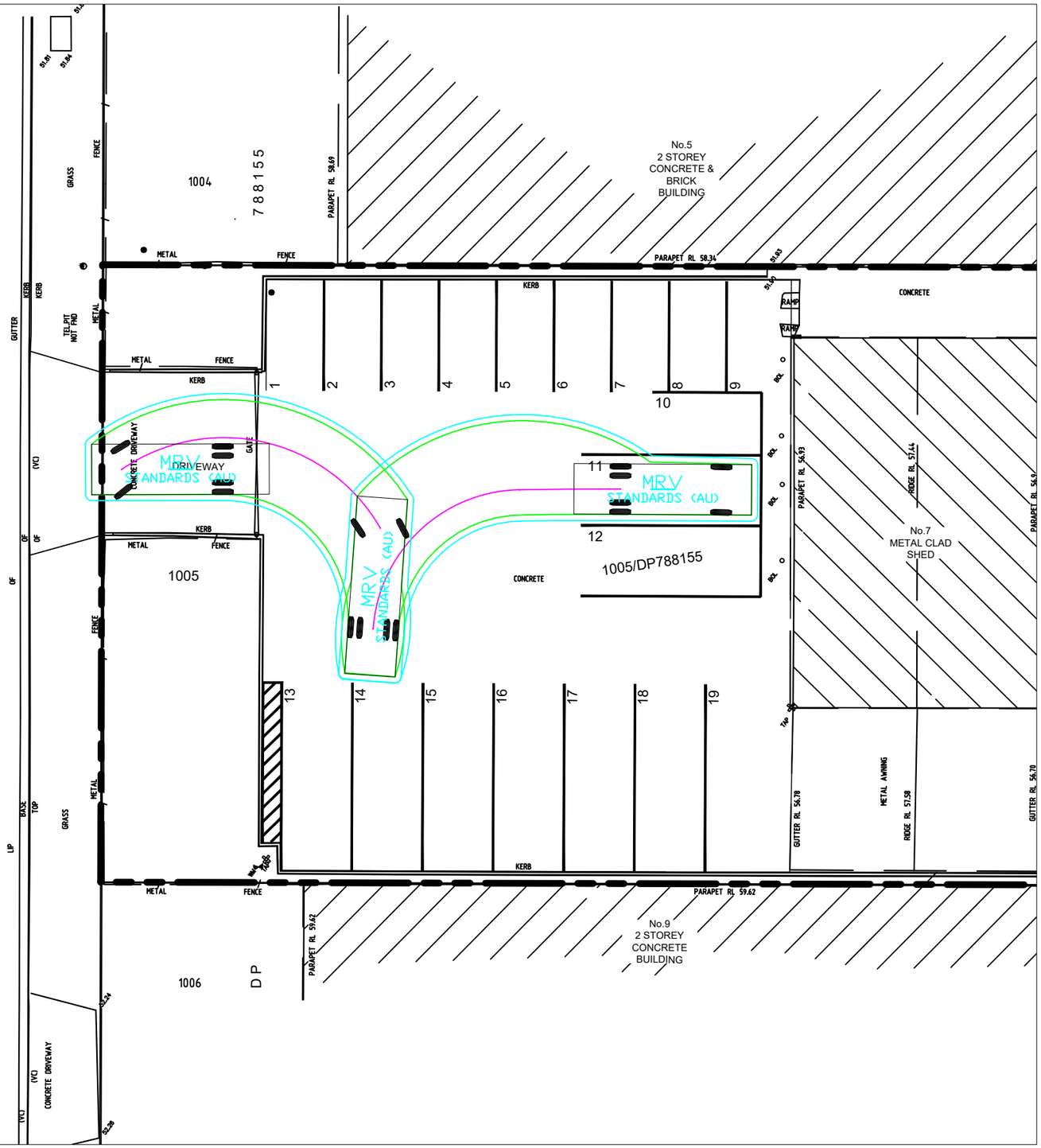
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

VANGELLI STREET



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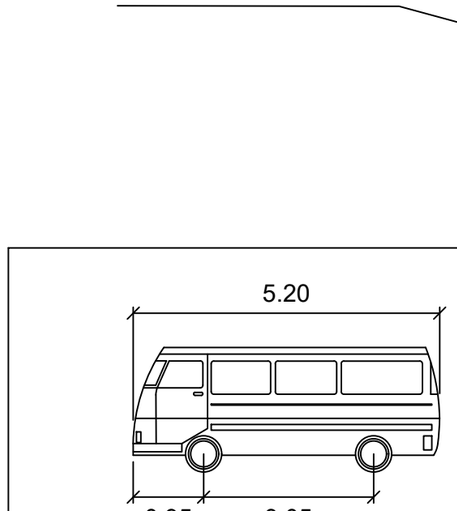

VAN

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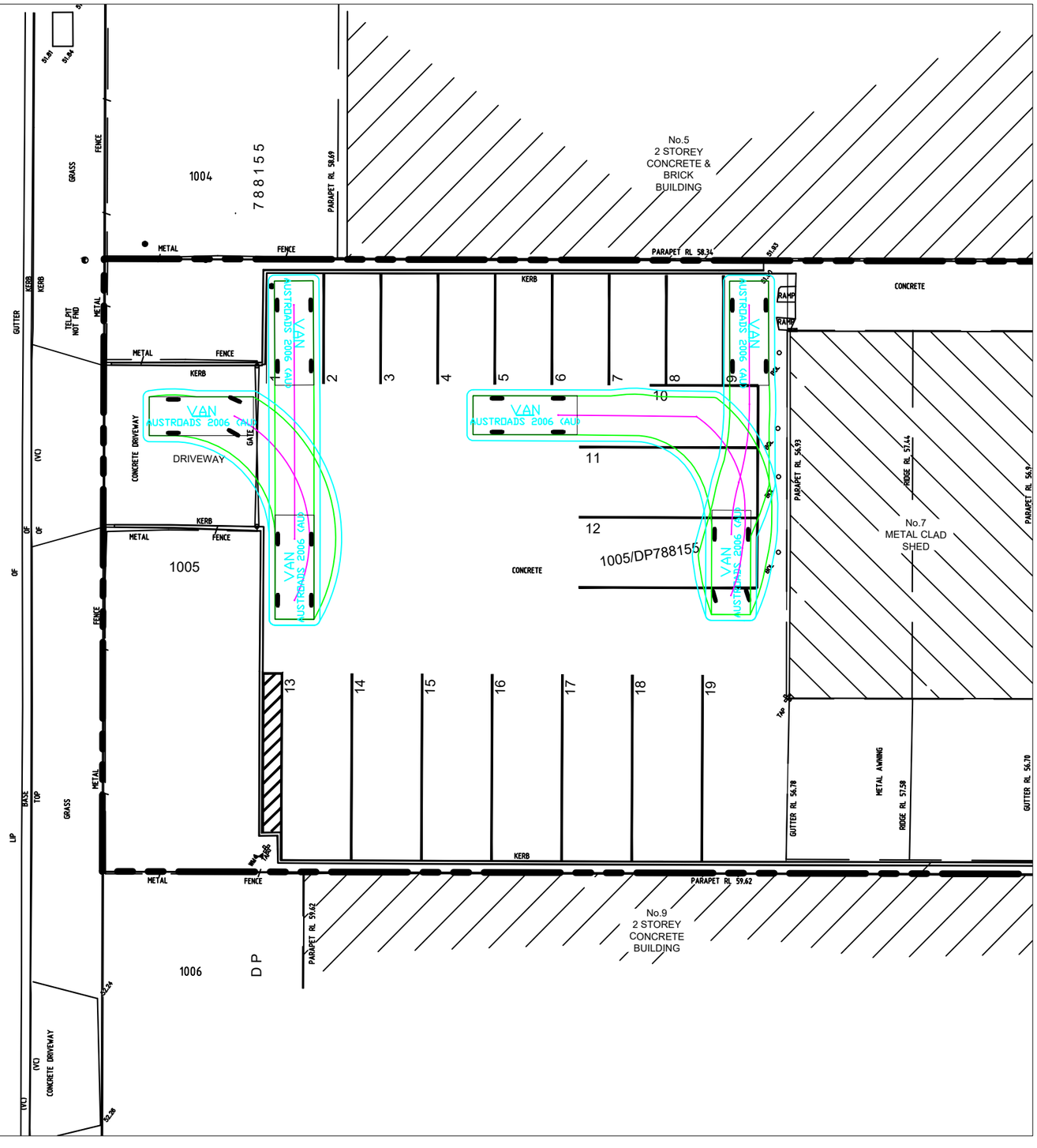
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.5

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

VANGELI STREET



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STANBURY TRAFFIC PLANNING

SERVICE VEHICLE SWEPT PATHS

INTERNAL PARKING SPACE MANOEUVRING

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

7 VANGELLI STREET, ARNDELL PARK (PARKING DEPOT)

SCALE: 1:250 AT A3

FILE: 16-031

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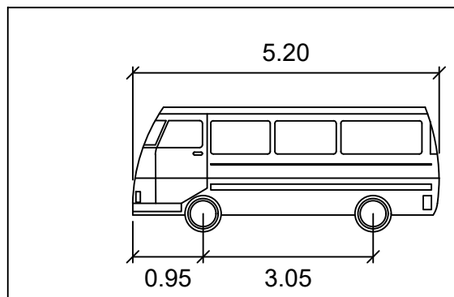
DATE: 18/05/2020

SHEET 11



VAN

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.5

LEGEND

VEHICLE BODY PATH (INCLUDING OVERHANG)

MANOEUVRING CLEARANCE (300mm)

VANGELI STREET

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STANBURY TRAFFIC PLANNING

SERVICE VEHICLE SWEPT PATHS

INTERNAL PARKING SPACE MANOEUVRING

EXPANSION OF CLINICAL AND QUARANTINE WASTE MANAGEMENT FACILITY

7 VANGELLI STREET, ARNDELL PARK (PARKING DEPOT)

SCALE: 1:250 AT A3

FILE: 16-031

SUPERSEDES SHEET/ISSUE -

DATE: 18/05/2020

ISSUE A

SHEET 12

Appendix E

Facility Procedures and Guidelines

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Spill Control Management

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR304	National – Spill Control Management	MDX Management Team	2	06/2020	Update section 4.2 iii

1. PURPOSE

To ensure prompt response and safe handling of any spill occurring within the Treatment facility.

2. SCOPE

This procedure applies to all spills general, but specific attention needs to be given when unloading bins from service vehicles and when utilising the mechanised bin lifter.

NOTE: Never stand in a position where the possibility of a spill may cause you to get splashed – i.e. behind the autoclave cart receiving waste from the mechanised bin lifter.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Make all staff aware of the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the WHS laws.

All employees and contractors of Med-X have the responsibility to:

- It is imperative that all documented procedures are to be followed when handling waste and to do otherwise would increase the risk for possible incidents and/or injuries.

  Non-adherence to these procedures will place the business at risk of a breach under the license obligations.

- All staff has a duty of care when handling quarantine, clinical and related waste and this includes informing staff of any dangers arising by the way they may be handling these waste streams.

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4. PROCEDURES

4.1 Assessing the Situation

a)	**Distancing from area**	The first person to detect the spill or leave should remove themselves from the immediate area in order to evaluate the situation without exposing themselves to any danger. They must advise their direct supervisor of the spill. Obviously, this might not be needed if the nature of the spill is known and is minor. Depending on the size of the spill, the team need to isolate the area to ensure that staff do not walk through the spill and contaminate other parts of the waste facility.
b)	**Identification**	Identify the spill and please do so without placing yourself at any risk. This includes the following steps: a. The type of material spilled, b. The size of the spill and whether the leak has stopped, c. Whether there are two potentially incompatible chemicals, d. Any unusual features such as foaming, odour, fire, etc.
c)	**Is this an Emergency?**	Spillages/leaks that can be cleaned up by staff on the spot or by maintenance personnel are not usually emergencies. Often what determines an emergency has been defined in the Emergency Response Plan and is incorporated into the team's spill response training. If this is not clear, or someone has been seriously injured, please consider it an emergency.
d)	**Get assistance for all Minor Spills.**	Establish a hazard zone which will keep all non-emergency response staff clear of danger. When reporting a spill, do not leave the spill unattended.

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		In emergency situations, the amount of staff training determines the degree of participation in the cleanup.
e)	**Identify the spilled material**	Criteria for identifying spill - is it: • flammable • combustible • toxic and volatile • toxic or corrosive • non-volatile, or an oxidizing agent The label and Safety Data Sheet (SDS) for the product will give guidance on safe cleanup required.
f)	**Plan how to clean up the spill**	Process around common types of spills and leaks forms part of the Emergency Response Plan and staff training. The team must always consider variables such as rain and wind.
g)	**Obtain proper spill control materials**	Clinical and related waste spill kits are always contained around the Treatment facility. Need to be replenished if used.

4.2 Cleaning up the Spillage/Leak

i)	**PPE Requirement**	Personal Protective Equipment (PPE) can include: • face shield, • facemask, • gloves, • disposable clothing, • shoe coverings (cytotoxic).
ii)	**Stop the source of the spill or leak - Actions**	This can include: • turning off the valve, • patching a leaky hose, • draining a tank, • or up righting a knocked over container of liquid or waste.

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iii)	**Stop the spill from spreading**	Shut off gate valves on the stormwater pipes from the bunded areas (around perimeter of building and car parking areas). These should be closed in the event of any spills which would prevent any liquid from being discharged to the Council's stormwater network. Use of appropriate containment materials such as containment socks. Wearing gloves and using forceps, pan and scraper or shovel, pick up any sharps and dispose of them into another container. This includes any glass.
iv)	**Use appropriate sorbents and equipment**	Use available absorbent pads to collect the bulk liquid first. Look out for free liquids, as pads will tend to over-saturate. Dispose of these into the waste appropriate waste container. Be very careful there is no sharp materials present. Mop over the area with standard, domestic grade bleach to complete the cleanup.
v)	**Dispose of contaminated materials properly**	Contaminated spill controls materials and disposable personal protective clothing may have to be disposed of as hazardous waste. Any cleanup of clinical waste spills must be treated as clinical waste and any cleanup of cytotoxic waste spills must be treated as cytotoxic waste.

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4.3 Evaluate

1.	**File an Incident Report**	The Standard MDX/SDX Incident report must be reported in Mango Compliance systems for every spill, including non-emergency (incidental) spills. MDX Management will evaluate the report and determine if any further actions are required. Ensure that you replenish all utilised supplies as a cause of action in this report.

5.0 SAFETY CONTROLS

- Wear appropriate Personal Protective Equipment (PPE) including:
  - face shield
  - face mask
  - gauntlet gloves
  - disposable coveralls
  - shoe coverings
- Keep all MDX staff not involved in the spill containment and moved away from the spillage/leak for their site safety.

6.0 REFERENCES

- MDX WHS safety procedures
- Mango Compliance System

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Handling Clinical and Quarantine Waste

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR305	National – Handling Clinical and Quarantine Waste	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure the correct handling of all waste streams entering into the Med-X Treatment facility.

To ensure all waste streams are separated according to type as specified by various licence treatment restrictions.

2. SCOPE

This procedure applies to all clinical, including sharps and quarantine waste.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Make certain all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.

  Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.

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- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

4. PROCEDURES

4.1 Process

NOTE: The delivery, staging, treatment and disposal of quarantine waste takes priority over all other waste streams entering the facility.

Empty quarantine bins are to be cleaned immediately in the wash bay and the bin lifter must be steam cleaned before processing other waste streams.

Quarantine waste can only be processed by a Quarantine Approved Premises Accredited Person, or by an employee directly supervised by such an accredited person.

If any material is found during the handling of specific waste that cannot be handled within our licence, parameters, the particular waste must be immediately isolated and labeled to ensure safety against unauthorised treatment or disposal.

The Branch Manager must be notified so that the appropriate corrective action can be taken.

4.2 Colour Coding

Clinical waste containers are coloured yellow with a yellow lid and must have a sticker clearly denoting:

- Infectious substance 6.2
- Waste Type – Hazardous
- Waste Code – R100-R120
- UN Number – 3291

4.3 Handling Clinical Waste

NOTE: A completed EPA Transport Certificate must accompany any transport of clinical and related waste into and out of the Med-X Healthcare Solution's site.

The handling of boxes, containers and autoclave carts must be done with extreme care, watching protruding sharps.

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NEVER ASSUME A CLINICAL WASTE BAG OR ANY WASTE RECEPTACLE IS FREE OF SHARPS.

Handling waste in plastic bags should be avoided.

In those restricted situations, where waste in plastic bags must be handled use extreme care, as sharps may always be present where possible.

Any incident that results in injury or damage to equipment must be reported immediately to the Branch Manager.

When handling clinical waste, you must consider the following:

- **Sharps** are the major hazard when handling clinical waste - the main emphasis must be on recognising this danger;
- Always suspect the presence of Sharps – never assume their absence;
- Wear appropriate protective equipment (gloves, steel cap shoes, eye protection and Hi-Viz clothing) when handling clinical waste;
- Do not compress any plastic bags of waste;
- When transferring plastic bags from one receptacle to another please observe the following:
    - Place source and receiving receptacles adjacent to one another;
    - Do not walk whilst holding a clinical waste bag containing waste;
    - Clinical waste bags are only to be picked up at extended arm's length by the knotted or zip tied enclosure;
    - Bags unable to be picked up at arm's length comfortably are too heavy are **not to be handled manually.**
- Use solid collection receptacles at all times;
- Regularly disinfect hands using available dispensers within facility after handling any waste.

NOTE: Emergency eye wash station is located at the entrance of the wash bay.

4.4 Handling Quarantine Waste

All quarantine waste treated by autoclave must be securely contained and appropriately treated to prevent the escape of exotic pests and diseases of quarantine concern.

NOTE: Quarantine waste does not require shredding.

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4.5 Waste Segregation

Due to the specific risks associated with Cytotoxic Waste and the correct handling of Anatomical and Pharmaceutical Waste, a separate procedure for handling this waste is referred too.

These related waste streams must be stored in the designated staging areas in readiness for shipment to the appropriate Treatment Facility.

Quarantine waste must be stored upon receipt in the designated quarantine area in preparation for autoclave steam sterilisation treatment.

4.6 Use of hydraulic lifts on vehicle tailgates

Care must be taken when operating hydraulic lifts on service vehicle tailgates as they can crush anything underneath them.

The hydraulic lifts on tailgates should always be used to load and unload heavy items as they are designed and provided to make the operator's workload safer Including unloading containers from the vehicle to the facility staging area.

Any object placed onto the tailgate tray must be stabilised to prevent its movement during the raising and/or lowering process.

No containers or trollies should run down an inclined tailgate (forming a ramp). The vehicle tailgate must be lowered onto the ground before containers or trollies are unlocked for removal to prevent run-aways. This will prevent damage to the containers, workers and equipment in the factory and vehicles.

Med-X operate two types of hydraulic lifts on vehicle tailgates.

- All have controls that will raise and lower the tailgate, but a couple have a third, tilt function included.
- Pressing and holding the raise or lower buttons on the controller will operate the tailgate up and down.
- To tilt the tailgate up or down the tilt button must be pressed and held and then the raise or lower button pressed.
- Always ensure containers and trollies are stabilized or secured when left standing, especially when on an incline.

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4.7 Use of mechanical bin lifter

The bin lifter must be used when transferring waste from containers into autoclave carts.

Care must be used when operating the mechanised bin lifter.

The mechanised bin lifter can lift 120 litre, 240 litre, 660 litre and 1100 litre container. These containers should be aligned with the front edge of the MGB just slightly back from the lifting comb.

Please ensure a lined autoclave cart is situated at the waste outlet before operating the lifter.

The cage must be closed in order to operate the bin lifter.

- To operate the bin lifter, turn and hold the On/Off key to On and whilst holding the key in this position press the up or down buttons to control the bin lifter movement.

Empty containers are to be taken to the wash bay staging area in readiness for cleansing.

Fully lined autoclave carts are to be taken to the autoclave staging area in readiness for loading into the autoclave and sterilisation.

4.8 Use of forklift and shredder

The forklift must be used when transferring waste:
i) From the autoclave carts after treatment into the shredder; and
ii) From the shredder to the bulk bin.
iii) A forklift must be used when moving pallets of goods and waste within the facility.

4.9 Spills Management

Should a spill occur during the handling of any container of waste, the spill should be immediately isolated and traffic through the area curtailed to minimize the area contaminated by the waste.

The three key actions to be taken are:

1. Assess the situation;
2. Clean up of the spilled waste;
3. Evaluate and review

A clinical and cytotoxic waste spill kit is located in the facility.

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Refer to Procedure MXNATQPR304 – Spill Control Management.

4.10 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

4.11 Loading Vehicles

Once a service vehicle (truck or van) has been unloaded it needs to be re-loaded with clean, lined empty containers according to the driver's route Manifest for the following day.

The driver must determine the type of bins to load based on instructions on the route manifest provided.

5.0 SAFETY CONTROLS

- Wear appropriate Personal Protective Equipment (PPE) including:
  - face shield,
  - face mask,
  - gauntlet gloves,
  - disposable coveralls,
  - shoe coverings.
- Ensure waste is correctly classified and segregated at source;
- Ensure waste bags have been sealed prior to transport and handling;
- Never assume a clinical waste bag or any waste receptacle is free of sharps;
- Avoid direct handling of waste streams, otherwise keep clinical bags at arms-length and away from body;
- Ensure the Bag and/or receptacle is not leaking – engage spill containment procedure if it is;
- Ensure spill kits are available and fully stocked;
- Do not compress plastic bags in a receptacle;
- Practice personal hygiene;
- Keep the treatment facility clean;
- Review under the tailgate before lowering;
- Keep limbs well away from the tailgate footprint when operating.

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6.0 DEFINTIONS

CLINICAL WASTE	• Human blood or body fluids; • Human tissue or anatomical waste; • A sharp discarded object or device capable of cutting or penetrating the skin ("sharps"); • A diagnostic specimen; • A laboratory culture; • Tissue, carcasses or other waste arising from animals used for laboratory investigation or for medical or veterinary research other than psychological testing; • Materials or equipment containing, or reasonably suspected of containing human blood or body fluids other than urine or faeces; • Faecal contaminated materials from hospital patients and nursing home residents (or similar), but excluding nappies from newborn or infant patients; • Sanitary waste except from a domestic premise unless the generator is known to have, or suspected of having a communicable disease; • Waste from patients known to have, or suspected of having a communicable disease; • Waste derived from a prescribed activity.
RELATED WASTE	• Related wastes are defined as wastes within the waste stream that constitute, or are contaminated with: **a)** cytotoxic drugs **b)** chemicals **c)** pharmaceuticals
QUARANTINE WASTE	• Material used to pack and stabilise imported goods; • Cabin and Galley waste and any other waste from overseas vessels; • Human, animal and/or plant waste brought into Australia; • Refuse or sweepings from a hold of an overseas vessel; • Contents of airport amnesty bins; and • Articles seized by DAFF and/or not collected by clients.

7.0 REFERENCES

- MDX WHS safety procedures
- Mango Compliance System
- Procedure MXNATQPR304 – Spill Control Management
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Weighing Waste

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR307	National – Weighing Waste	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure waste entering Med-X Treatment facility is correctly weighed and recorded for waste tracking and invoicing.

2. SCOPE

This procedure applies to all waste entering the facility including all sized containers, sharps containers and pallets.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.

  Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.

- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Weight Recording

- When the vehicles arrive at the Treatment facility, the waste must be unloaded and weighed.
- All waste needs to be weighed using the weighbridge.
- The weighbridge readings will give gross weight (i.e. total weight of the container plus the waste).
- The gross weights for each container must be recorded on Daily Weight sheets against each particular client and/or client business unit.

To determine the net weight of the waste, the tare weight (empty weight of the container) must be subtracted from the gross weight.

The following data needs to be recorded for entry into the Med-X CRM management systems:

a) Client Details
b) Total net weight
c) Number of containers (by size)
d) Drivers route allocation sheet

The Drivers route allocation sheet, service docket, daily weight sheet and EPA Transport Certificate needs to accurately reflect the client details and all relevant data will need to be consolidated back to the Med-X logistics system.

4.2 Labelling

All containers are either labelled with the client name or barcoded to ensure accurate linkage of the waste to the client for invoicing purposes.

This will also ensure identification and traceability back to the client should there any issues relating to the waste i.e. poorly segregated or contained waste such as loose sharps.

4.3 Calibration of weighbridge

As part of start-up arrangements each day, the weighbridge must be zeroed and initialized. This function is built into the device through the press of a button as detailed in the Operator's manual.

On a weekly basis, weighing a 20kg standard weight will check the ongoing accuracy of the weighbridge. This will determine the need to recalibrate when necessary.

Service and maintenance of the weighbridge will be undertaken by an accredited service provider

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to ensure ongoing accuracy of the weighbridge.
Immediately following the service and maintenance is completed the 20kg weight used for calibration checking will be reweighed to confirm that it is still accurate enough for the ongoing monitoring of weights.

4.4 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

5.0 SAFETY CONTROLS

- Wear appropriate Personal Protective Equipment (PPE) including:
  - face shield,
  - face mask,
  - gauntlet gloves,
  - disposable coveralls,
  - shoe coverings.
- Ensure waste is correctly classified and segregated at source;
- Ensure waste bags have been sealed prior to transport and handling;
- Never assume a clinical waste bag or any waste receptacle is free of sharps;
- Avoid direct handling of waste streams, otherwise keep clinical bags at arms-length and away from body;
- Ensure the Bag and/or receptacle is not leaking – engage spill containment procedure if it is;
- Ensure spill kits are available and fully stocked;
- Do not compress plastic bags in a receptacle;
- Practice personal hygiene;
- Keep the treatment facility clean;
- Review under the tailgate before lowering;
- Keep limbs well away from the tailgate footprint when operating.

6.0 REFERENCES

- MDX IMS procedures
- MDX CRM System
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Autoclave Operations

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR308	National – Autoclave Operations	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure the Med-X Treatment Facility Autoclave is started up correctly, is operated efficiently and safely and is shut down correctly.

To ensure the process is under control.

2. SCOPE

This procedure applies to the autoclave plant and equipment operations.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Process

Only qualified personnel are permitted to start up and operate the Autoclave. The autoclave operates to temperatures exceeding 145C.

Safety First must be maintained at all times to ensure effective, safe operation.

4.2 Prior to Start up

- Walk around the Autoclave, Boiler and associated equipment and confirm that no maintenance worker is working on the equipment;
- Check Maintenance logbook prior to operation to ensure all equipment is in working order;
- If there is a 'No Start' tagged in the logbook, check with Identified Hazard Report Form before proceeding further.

4.3 Autoclave start-up procedure

Refer to link: https://vimeo.com/405340951/0afd21763e

- Change chart recorder paper at start of each day (good for 24 hours) and forward to Branch Manager;
- Verify autoclave air pressure @ 100+ psi via control panel;
- Verify 3 gauge pressure settings are at:
  - (top) 20 psi
  - (middle) 100 psi
  - (bottom) 35-40 psi
- Verify steam pressure @ 75 psi minimum;
- Verify water to condenser is functional;
- Open drain valve for steam traps (2) to verify no blockage;
- Verify panel display pressure set to "0" psi;
- Check interior of vessel to verify drain screens are clean;
- Clean all "plastic" debris from interior after each cycle;
- Apply power to the autoclave and wait for system to stabilize; and
- System should read ambient temperature and "0" pressure with door open.

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4.4 Loading Autoclave

CAUTION: HEAT RESISTANT GLOVES MUST ALWAYS BE WORN WHEN MOVING AUTOCLAVE CARTS

- Roll autoclave cart on to lift table;
- Raise lift table using the scissor lift up/down toggle switch;
- Using the guide tracks, roll autoclave cart into autoclave cart;
- Lower lift table using the scissor lift up/down toggle switch;
- Repeat above process until 4 autoclave carts are loaded; and
- Make sure the last autoclave cart is all the way in and sitting on the autoclave guide rails.

4.5 Door closing procedure

- Use door open/close toggle switch to swing door closed. Verify limit switch is “made”;
- Use door lock/unlock toggle switch to close locking ring; and
- When locking ring is fully rotated swing door interlock handle 90 degrees. to face front of autoclave. This will enable safety controls.

4.6 Process Operations

- Check that there is sufficient steam available, pressure is shown on all instrument gauges;
- Check that water is on to the vacuum pump;
- On face of panel, the white light (power) and green (end of Cycle) lights should be illuminated;
- The operator should be reading the atmospheric temperature and pressure within the chamber. Will vary depending on how long it has been since the autoclave was operated;
- To start the process, press the green button marked as “Start”.
- At this time, the blue (Pre vac) light will become illuminated and the vacuum will start. The display will show segment 1 and the operating setpoints required;
- As the program completes each segment, the lights along the bottom of the control panel will tell the operator exactly what is happening in the cycle. The operator should always monitor that each operating condition is met;
- At the end of the last segment, the green light (End of cycle) will become illuminated signifying it is time to open the autoclave door; and
- Check the chart recorder to confirm the autoclave cycle has completed normally – if not, then inform the Branch Manager and reprocess the waste.

4.7 Door opening procedure

- Verify the green (end of cycle) light is on;
- Verify pressure shown on display is “0” psi;

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- Verify the pressure gauge on side of autoclave is at "0" psi;
- Rotate interlock handle to 90 degrees, i.e. outward position from autoclave;
- Check safety tube ball indicator above handle for no movement.
  If the ball rises when the handle is turned, there is still pressure in the autoclave.
  The door should **never** be opened if the ball is lifted;
- Use door lock/unlock toggle switch to open locking ring; and
- Use door open/close toggle switch to swing door fully open.

4.8 Unloading autoclave

CAUTION: HEAT RESISTANT GLOVES MUST ALWAYS BE WORN WHEN MOVING AUTOCLAVE CARTS.

- Raise lift table using scissor lift up/down toggle.
  Hold switch until platform is fully raised;
- Pull autoclave cart onto lift table;
- Lower lift table using scissor lift up/down toggle;
- Move autoclave cart to staging area in preparation for shredding; and
- Repeat the process for all 4 carts.

4.9 Shutdown procedure

Refer to link: https://vimeo.com/405348076/72fcc1345d

Shutdown of the Treatment Facility must be carried out in the following sequence to ensure that the equipment is maintained in a safe manner during and after close down and all components are shutdown:

- Boiler Burn switches to "off';
- Water inlet valve to 'off';
- Purge valve to be manually discharged in four (4) short bursts;
- Place the Honeywell chart system "on hold";
- Shut down the compressed air and turn off the power;
- Ensure the autoclave door is left open;
- Ensure the hydraulic scissor lift platform is down;
- Clear the autoclave drains by draining both valves (front& rear);
- Turn off all power to the autoclave;
- Turn of power source to the shredder;
- Enter control data for maintenance etc.

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4.10 Routine door maintenance

- Make sure the wedges on the door always have lubrication.
  A light film is all that is required.
  Too much could cause debris to stick to wedges and scratch face of wedge;
- After each cycle, check and remove any debris from locking ring;
- Clean all lubricant from wedges and locking ring once per month and re- grease;
- Lubricate "grease fittings" in locking ring once per month;
- Lubricate hinge bearings every 3 months; and
- If door gets out of adjustment, readjust using bolts on top and bottom of hinge "Pin".

4.11 Maintenance and Servicing

Autoclave must be inspected, serviced and maintained on a periodic basis. Any repair work must be carried out having regard to the manufacturer's instructions.

People inspecting, maintaining or repairing the autoclave should hold appropriate trade qualifications.

4.11 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

5.0 SAFETY CONTROLS

- Do not operate machine unless thoroughly trained or under supervision of an instructor;
- Always wear appropriate PPE such as goggles, hearing protection, hi-viz clothing, gloves and safety shoes;
- Do not operate machine if damaged or making unusual sounds;
- Keep all parts of your body away from the working parts of the machine;
- Always keep critical markings, such as warning stickers legible;
- To avoid personal injury or machine damage - properly trained personnel must only perform all maintenance, repair and service activities;
- Never attempt to process material for which the autoclave was not designed;
- Do not put fingers in bolt holes or between other heavy or moving parts;
- Always use extreme caution around electrical components;

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6.0 REFERENCES

- Manufacturers Autoclave Instruction Manual
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting
- Procedure MXNATQPR309 - Boiler Operations

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Boiler Operations

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR309	National – Boilers Operations	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure the Med-X Treatment Facility Boiler is started up correctly, is operated efficiently and safely and is shut down correctly.

To ensure the process is under control.

2. SCOPE

This procedure applies to the boiler plant and equipment operations.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.

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- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

4. PROCEDURES

4.1 Process

Only qualified personnel are permitted to start up and operate the boiler.

Safety First must be maintained at all times to ensure effective, safe operation.

4.2 Prior to Start up

- Walk around the Autoclave, Boiler and associated equipment and confirm that no maintenance worker is working on the equipment;
- Check Maintenance logbook prior to operation to ensure all equipment is in working order;
- If there is a 'No Start' tagged in the logbook, check with Branch Manager before proceeding further.
- Record the water meter reading on the condenser (blow down tank) and water meter reading to the boiler on Meter Reading Worksheet.

4.3 Boiler start-up procedure

Refer to link: https://vimeo.com/405340951/0afd21763e

- Turn on main feed water value to boiler;
- Turn on central water value between pumps;
- Turn on Main power switch (side of console) – note alarm will sound (this is standard alarm check);
- Turn on feed water tank value (blue);
- Check- main computer console (front panel):
  - Pump switch On/Auto;
  - Burner switch is on.
- Reset System – Siemens Main Switch:
  - Press esc button;
  - Normal water fill glass, both sides of boiler – correct water level; and
- Boiler Main Gauge – to 6000KPA.

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4.4 Water Treatment

- No action required – under full-service arrangement.

4.5 Boiler shut down procedure

Refer to link: https://vimeo.com/405348076/72fcc1345d

- Main computer console (front panel):
  - Pump switch off;
  - Burner switch off.
- Turn off Main power switch;
- Turn off water values between pumps;
- Turn off main feed water value to boiler;
- Turn off feed water tank value (Blue);
- Bleed main blow down value back off boiler (three turns On/Off);
- Daily final shut down – water fill glass Values x 3 (both sides of boiler):
  - Close bottom value first;
  - Close top value second;
  - Open middle value third.
- Then – reverse these three steps;
- If the water fill glass is (scored), call for service;
- Record the water meter reading on the condenser (blow down tank) and the water meter reading to the boiler on the Meter Reading Worksheet.

4.6 Maintenance and Servicing

Boiler and Water Treatment plant must be inspected, serviced and maintained on a periodic basis. Any repairs or maintenance work must be carried out having regard to the manufacturer's instructions. Individuals inspecting, maintaining or repairing the boiler should hold appropriate trade qualifications.

4.7 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

5.0 SAFETY CONTROLS

- Do not operate machine unless thoroughly trained or under supervision of an instructor;
- Always wear appropriate PPE such as goggles, hearing protection, hi-viz clothing, gloves

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and safety shoes;

- Do not operate machine if damaged or making unusual sounds;
- Keep all parts of your body away from the working parts of the machine;
- Never touch any pipes or sides of tanks as these may be extremely hot;
- Always keep critical markings, such as warning stickers legible;
- To avoid personal injury or machine damage - properly trained personnel must only perform all maintenance, repair and service activities;
- Use appropriate fall prevention techniques when working on machine platforms;
- Always have shields and guards in place before operating machine;
- Always use extreme caution around electrical components.

6.0 REFERENCES

- Manufacturers Autoclave Instruction Manual
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting
- Procedure MXNATQPR308 – Autoclave Operations

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Shredder Operations

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR310	National – Shredder Operations	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure the Shredder is started up correctly, is operated efficiently and safely and is shut down correctly.

To ensure the process is under control.

2. SCOPE

This procedure applies to the shredder plant and equipment operations.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.

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- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

4. PROCEDURES

4.1 Process

Only qualified personnel are permitted to start up and operate the shredder.
Safety First must be maintained at all times to ensure effective, safe operation.

4.2 Prior to Start up

- Walk around the shredder and confirm that no maintenance worker or personnel are working on the equipment;
- Check Maintenance logbook prior to operation to ensure all equipment is in working order;
- If there is a 'No Start' tagged in the logbook, check with Branch Manager before proceeding further.

4.3 Shredder start-up procedure

- Go to the PLC Cabinet;

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- Turn the control panel key switch to the “on” position;
- Turn the Main Control Switch (Red Dial) left hand of PLC unit, quarter turn clockwise to ON position;
- Press the Start button (white control button), press to switch on;
- The Shredder will start ready for waste;
- Make sure the Ram Hopper works.

4.4 Hopper ram start-up

- Hold the Ram Extend button for five (5) seconds. The pump will pulse on;
- Turn the Ram selector to manual and test the manual function of the ram by pressing the Ram Extend and Ram Extract buttons. Listen for unusual noises.
- If there are unusual noises:
  - Record incident;
  - Report to Branch Manager;
  - Turn Hopper ram off.
- Extend the ram a short distance from the top;
- With the shredder stopped, turn the ram control switch to Auto;
- Make sure the ram retracts and stays in the raised position.

4.5 Lock out power

- If the shredder stops and jams, turn shredder off (black control button) press to switch off
- Turn the main control switch to off
- Tag/Lock out all sources of energy;
- Relieve all stored energy (e.g. hydraulic pressure, suspended objects) making sure all moving parts are in a safe position;
- Verify by trying to start the machine has turned off the energy.

4.6 Operating the Shredder

- Feed the shredder using only the correct loaders, in our case a forklift;
- **DO NOT FEED THE SHREDDER BY HAND;**
- If the shredder is reversing often or jams out, stop feeding it;
- If the shredder jams, the shredder jam light will start to glow meaning the PLC has shut the shredder down;
- If it jams out, lock out power and look for a non-shredding object in the cutting chamber.
- **DO NOT HOP INSIDE HOPPER.**

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4.7 Stopping the Shredder

- Stop feeding the shredder;
- Keep running the shredder until the cutting chamber and discharge chute is empty;
- Press the Stop button on the control panel;
- **NOTE: DO NOT USE EMERGENCY STOP BUTTON FOR A CONTROLLED SHUT DOWN.**
- When the shredder is turned off, and the ram is automatic, the ram will retract fully and stop. Turn the Ram selector switch to Off; and
- Turn the panel key switch to off and remove the key.

4.8 Maintenance and Servicing

Shredder must be inspected, serviced and maintained on a periodic basis. This and any repair work must be carried out having regard to the manufacturer's instructions. People inspecting, maintaining or repairing the shredder should hold appropriate trade qualifications.

4.9 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

5.0 SAFETY CONTROLS

- Do not operate machine unless thoroughly trained or under supervision of an instructor;
- Always wear appropriate PPE such as goggles, hearing protection, Hi-Viz clothing, gloves and safety shoes;
- Do not operate machine if damaged or making unusual sounds;
- Keep all parts of your body away from the working parts of the machine;
- Never touch any pipes or sides of tanks as these may be extremely hot;
- Always keep critical markings, such as warning stickers legible;
- To avoid personal injury or machine damage - properly trained personnel must only perform all maintenance, repair and service activities;
- Use appropriate fall prevention techniques when working on machine platforms;
- Always have shields and guards in place before operating machine;
- Always use extreme caution around electrical components.

6.0 REFERENCES

- Manufacturers Shredder Instruction Manual
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Forklift Operations

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR311	National – Forklift Operations	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure the forklift is started up correctly, is operated efficiently and safely and is shut down correctly.

To ensure the WP-N Work Platform/cage is operated and stored correctly.

To ensure the process is under control.

2. SCOPE

This procedure applies to the shredder plant and equipment operations.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.

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- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.
- To only have licenced operators utilizing the forklifts or staff learning under the guidance of a qualified operator.

4. PROCEDURES

4.1 Process

Only qualified personnel are permitted to start up and operate the forklift.

Safety First must be maintained at all times to ensure effective, safe operation.

4.2 Prior to Start up

Operators need to conduct a pre-start safety check every time they use a different forklift and at the beginning of each shift.

Refer to Attachment A - MXNATQFO301 – Mobile Plant Safety and Prestart checklist

Pre-start safety checks or procedures carried out by the operator or a competent person should include the following:

- Lift and tilt systems including the load engaging means, hydraulics lines (for oil leaks), chains, cables and limits;
- Steering, brakes (including park brakes), controls and lights;
- Each tyre for wear, damage, and inflation (pneumatic types);
- All warning devices;
- Fork arms and attachments (for deformation, damage or wear);
- Liquid levels, e.g. hydraulic oil, brake fluid and water;
- Gas cylinder, where relevant, and its securing system; and
- Seat belts to ensure they work reliably and are free of sand and foreign objects.

4.3 Forklift start-up procedure

- Ensure seat belt is fastened; and
- The forklift on with key start.

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4.4 Forklift shut down procedure

- When leaving a forklift, the operator should ensure:
  - The fork tynes fully lowered, tilted slightly forward so the tips of the fork arms touch the ground;
  - The controls are in neutral;
  - Power is switched off;
  - Park brake is applied; and
  - Unless otherwise instructed, the ignition key or starter witch key is removed to prevent unauthorised people from using the equipment.

4.5 Forklift loads

Loads lifted by the forklift in the Med-X Treatment facility include:

- Autoclave carts from the staging area to the shredder;
- The Shredder cart containing the shredded residual waste to the bulk bin; and
- Secure pallets on and off vehicles and on and off pallet racking.

The following considerations must always be given to loads:

- It is important to limit the load to the rated load capacity of the forklift;
- Operators must visually confirm via the forklift scales to ensure the capacity of the forklift allocated to a given task is not exceeded;
- Always operate forklifts with the load firmly against the carriage or back-rest with the mast tilted back sufficiently to safeguard against the load slipping, falling or rolling off the fork arms.
  All loads that the potential to slip, fall or roll off the fork arms or pallet must be appropriately restrained with straps or similar;
- Loads should always be carried as near to the ground as practicable;
- When raising the autoclave cart to tip waste into the shredder:
  - Ensure no one is near the shredder; and
  - Do not fill the shredder above the edge of the hopper.
- Loads must not be suspended over or travel over a person.

4.6 Forklift operations

Before operating a forklift, operators need to check the forklift they have been allocated (and any attachment) and familiarise themselves with the controls.

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Operators should:

- Wear a seatbelt at all times;
- Wear appropriate PPE including hard hat, face shield, safety boots, hi-viz clothing and gloves when operating a forklift;
- Look in the direction of travel and keep a clear view of the way ahead;
- If vision is obscured, by the load for instance, seek the assistance of others to direct operations, or drive in reverse;
- Where no traffic signs or signals to control forklift operation, give clear indications of intentions to others,
  e.g. sound the horn to alert other vehicles and pedestrians;
- When approaching pedestrian (including doorways and walkways) or traffic areas, slow down and, if vision is obstructed, sound horn and proceed slowly;
- Always drive slowly and without sudden changes in direction on wet or slippery or loose surfaces, because in these conditions, forklifts may slide and/or overturn even at low speeds;
- Whether with or without a load, drive with the fork tynes as close to the ground as practicable, with the tips of the fork arms tilted slightly upwards, away from the ground;
- Consider the:
  - operating surface;
  - weather conditions;
  - physical layout of the operating area; and
  - any other hazards that may exist, such as water;
- Refrain from rapid acceleration or deceleration and quick turns, whether with or without a load, that could shift the load and overturn the forklift;
- Ensure you can bring the forklift to a safe stop at any time, particularly on wet, slippery or loose surfaces; and
- Drive slowly if there is a need to reverse.

4.7 Maintenance and servicing

Forklifts are inspected, serviced and maintained on a periodic basis and aligns to manufacturer's instructions.

Service providers inspecting, maintaining or repairing a forklift must hold appropriate trade qualifications.

Only licensed gas fitters are permitted to repair or replace gas piper on LPG powered forklifts.

4.8 Cleaning

All management and staff need to ensure forklifts are kept clean to facilitate detection of

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loose, worn or defective parts and to prevent fires.

Flammable solvents should not be utilised for cleaning. Liquids considered to be non-flammable, such as water are preferred.

4.9 WP-N Work Platform/Cage Operation

The type of WP-N Work Platform/Cage is designed for forklift operation.

This Work Platform is suitable for a maximum of two (2) people with a safe working load of 250kgs.

Two locking pins are supplied to prevent the Work Platform from moving off the fork tynes. The Work Platform is fitted with an internally swinging spring-loaded door. The door is held in the closed position by a fixed stop and is locked via bow latch.

- Preliminary Safety check:
  - Check the gate and latch on the Work Platform/Cage to ensure damage has not occurred and it swings and latches securely;
  - Inspect the slipper toggle pins to ensure they are in safe working order;
  - The forklift operator must check that the Work Platform has been correctly fitted;
  - The forklift operator must complete preliminary safety check on the forklift.

- Maintenance:
  - Daily, monthly and quarterly maintenance is carried out and monitored by the Branch Manager.

- Operating considerations:
  - The forklift operator must be licenced;
  - Forklift and Work Platform pre-checks must be completed prior to use;
  - Do not exceed the rated capacity of the forklift;
  - Do not operate the platform on soft or unlevelled ground;
  - Erect barriers or warning signs when operating across marked walkways;
  - The forklift travel controls must be in neutral and the park brake engaged when lifting the platform;
  - The forklift mast shall be set to vertical, NOT tilted back;
  - The fork arms must be horizontal;
  - The forklift operator and every person to be elevated shall check the Work Platform is securely attached to the forklift;
  - The forklift operator shall stay with the controls at all times;
  - Before any person is elevated or supported by the work Platform, the forklift operator shall lift the platform to the required working height to confirm that all systems are functioning correctly;
  - The forklift operator shall lift and lower the Work Platform smoothly;

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- Elevated personnel shall stand on the floor of the Work Platform at all times. **Ladders or any other means shall not be used to gain extra height**.

4.10 Maintenance and servicing

Forklifts are inspected, serviced and maintained on a regular periodic basis and aligns to manufacturer's instructions.

4.11 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

5.0 SAFETY CONTROLS

- Only licensed operators are able to drive a forklift when they hold a high-risk work licence or are otherwise authorised to perform the high-risk work;
- Make sure you read and understand the operating instructions before you operate the forklift;
- Comply with the operating instructions;
- Use the forklift truck only for the purpose for which it was designed;
- Carry out a daily safety inspection of the forklift before you operate the forklift;
- Remain seated while the forklift is moving and do not lean outside of the unit;
- Operate the forklift with the load placed fully against the truck carriage or backrest. The mast should be tilted sufficiently backward to safeguard the load;
- Slow down when travelling close to obstacles, other vehicles, or pedestrians;
- When driving, give way to pedestrians. Maintain a clear view ahead and behind (using a correctly adjusted rear view mirror) and give clear indication of your intentions. Maintain a safe distance from other vehicles;
- Drive carefully on wet or slippery surfaces;
- Reduce speed when making a turn;
- Drive in reverse if vision is obscured by a bulky load;
- Slow down on sloping or uneven ground;
- Remove the ignition/starter switch key when you leave the forklift. Ensure the controls are in neutral, the power is shut off, the park brakes are applied and the forks fully lowered.
- Wear high visibility clothing; and
- Do not carry passengers.

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6.0 REFERENCES

- Manufacturers Forklift Instruction Manual
- Med-X Standard Operating Procedures – Forklifts
- Procedure MXNATQPR308 – Autoclave Operations
- Procedure MXNATQPR310 – Shredder Operations
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting
- Form MXNATQFO301 – Mobile Plant Safety and Prestart checklist

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Attachment A – Mobile Plant Safety and Prestart checklist

Mobile Plant Safety And Prestart Checklist

To ensure a safer workplace, perform these checks before operating any mobile plant. If there are any issues found with the equipment, tag it out and alert your supervisor.

Vehicle type: _____ Hours: _____

Service Due: _____

Before starting the machine, please check:

- ☐ Tyres (check for wear, damage and tyre pressure) _____
- ☐ No obvious signs of damage to the body _____
- ☐ No signs of damage to the mast, lifting assembly/arms _____
- ☐ Tynes/bucket and backrest free from cracks and fractures _____
- ☐ Hydraulic lines, connectors, cylinders – no leaks or damage _____
- ☐ Underneath the machine for fuel or oil leaks _____
- ☐ Any damage to ROPS or FOPS _____
- ☐ Attachments are secure and free from damage _____
- ☐ LPG bottle for leaks and security (LPG forklift) _____
- ☐ Battery is in a good, operable condition (no corrosion) _____

Check fluid levels:

- ☐ Hydraulic fluid _____
- ☐ Brake fluid _____
- ☐ Engine oil _____
- ☐ Radiator coolant _____

After starting the forklift, please check:

- ☐ Hand brake is functional _____
- ☐ Horn _____
- ☐ Flashing lights _____
- ☐ Headlights/Tail lights _____
- ☐ Reverse lights and beeper _____
- ☐ Transmission - forward and reverse positive movement _____
- ☐ Brakes and inching pedal _____
- ☐ Full range of steering movement _____
- ☐ Full range of hydraulic motions (Lift, tilt, rotate, etc) _____
- ☐ Instrument display is functioning correctly _____
- ☐ Fuel Level _____
- ☐ No oil or fuel leaks _____

Name: _____

Signature: _____ Date: _ _ / _ _ / _ _

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Cleaning Procedures

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR313	National – Cleaning	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure the correct cleaning and sanitisation processes are carried out at the Med-X Treatment Facility.

This includes cleaning processes for:

- Containers
- Treatment facility
- Plant and Equipment
- Vehicles

2. SCOPE

This procedure applies to all containers emptied and cleaned in the Med-X Treatment Facility.

This also applies to all plant and equipment, vehicles and the Treatment facility.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.

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- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.

- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

4. PROCEDURES

4.1 Process

There is a purpose-built wash bay in the Med-X Treatment facility that drains into a pit before discharging to the sewer.

Containers emptied using the mechanised bin lifter are placed in a staging area for cleaning – empty containers which held quarantine waste will be held in the quarantine area for cleaning.

NOTE: THE WASH BAY IS A DESIGNATED QUARANTINE AREA WITH REQUIRED SIGNAGE.

4.2 Bleaching

For containers stained with blood and containers retaining a foul odour:

- Containers need to first be neutralised using a hospital grade bleach solution;
- Wearing gloves and a face mask, mix 5% bleach to 95% (1 part to 20) in the supplied hand pressure pump bottle being careful to avoid splashing;
- Ensure the solution is mixed in the wash bay and wash away any spillage of the concentrated bleach with water; and then
- Pressurise the diluted bleach solutions and spray over the inside and outside of the bins lined up within the wash bay.

4.3 Cleaning

For all Containers:

- Measure 5ml of industrial strength neutral detergent in a 20 litre bucket of water;
- Using a brush with extended handle, wash the inside and outside of the bins;
- Commence cleaning the bin from the front where the labels are located;
- After removing any dirt or stains, rotate the container one side at a time until the entire container has been cleaned;
- For stubborn stains, bottles of concentrated detergent solutions (50:50 mix) can be used to spray on the areas;
- Rinse and tip out all excess water before removing bin to the drying staging area;

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- Any containers with residual smells should be placed in direct sunlight for a couple of hours allowing the ultraviolet light to remove this smell.

4.4 Insert new bin liners

- Upon the container drying out, insert a new bin liner (yellow for clinical and anatomical containers; purple for cytotoxic) taking care to ensure the correct size liner is utilized; and
- When inserting the liner, take care to ensure all creases and folds are removed to create a clear passage for the waste to enter the container.

4.5 Final Inspection

Final inspection should now take place. Containers should be inspected to determine:

- If It is suitable for release, in which case it will be placed in storage ready for re-issue; and
- If it is broken or too badly stained for release in which case it should be placed in the 'FAULTY' location to await repair or disposal.

Note: No bins that are inferior or below the standards set, accomplished and maintained should ever leave the facility.

When containers are found to be below standard, they shall be removed from the work area (when safe to do so), isolated in the area designated for faulty product and handled according to control of nonconforming product.

4.6 Cleaning Equipment

- The mechanised bin lifter needs to be cleaned by spray with a bleach solution (or steam) and wiped down after a batch of containers waste has been loaded into the autoclave cart;
- Employers need to ensure forklifts are kept clean to facilitate detection of loose, worn or defective parts and to prevent fires;
- Flammable solvents should not be used for cleaning. Liquids considered to be non-flammable, such as water are preferred.

NOTE: Autoclave carts do not need cleaning, as they are steam sterilized to Log Kill 6 every time they go through the autoclave.

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4.7 Cleaning the Treatment facility

- A mechanised floor scrubber is available to clean the floor of the treatment facility;
- Only use cleaning and disinfectant liquids designated as appropriate for the floor scrubber;
- Mops and buckets are provided to clean around areas the floor scrubber cannot reach – use a 1 part in 20 mix for bleach and a 5ml in 20 litre mix for industrial strength cleaning liquids.

4.8 Floor scrubber maintenance

- Remove and clean pads or brushes and never use soiled pads when cleaning;
- Remove and clean debris from the float shut-off screen located inside the recovery tank;
- Drain and rinse tanks thoroughly and inspect vacuum hose for any objects obstructing the air flows;
- Raise squeegee and wipe blades with a clean cloth.
  Always store the floor scrubber with squeegee in the raised position to prevent damage;
- Wipe down machine if needed and only use a non-abrasive, non-solvent cleaner or a clean damp cloth.

4.9 Floor scrubber maintenance

- Safety:
  - Always wear PPE when handling batteries;
  - If acid contacts your skin or eyes, flush with water immediately;
  - Keep flames, sparks and metal objects away from batteries;
  - Charge batteries in well ventilated areas;
  - To avoid short circuits do not lay objects on top of batteries;
  - Check with all cable connections to the terminal are correctly tightened.
- Inspection and Cleaning:
  - Keep batteries clean and dry from residue;
  - Check that all vent caps are tight;
  - Use a solution of baking soda and water to clean if there is acid residue on batteries or corrosion on terminals;
  - Petroleum jelly should be applied to terminals to reduce corrosion.
- Storage:
  - Batteries should be fully charged prior to and during storage;
  - Never store discharged batteries;
  - Store batteries in a cool, dry place;
  - Recharge batteries before putting them back in service.

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- Watering:
  - Add distilled water **(NEVER ACID)** to cells;
  - Only add water before charging and only if the plates are exposed;
  - Add just enough water to cover the plates;
  - Don't over fill, as this will cause the batteries to leak during charging;
  - After watering, secure vent caps back on batteries;
  - Recharge battery.

4.10 Incident and hazard reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

5.0 SAFETY CONTROLS

- Always wear appropriate PPE when handling quarantine, clinical and related waste streams;
- Ensure area is well ventilated when using bleach;
- Immediately wash any spills with water, especially if contact with the skin.

6.0 REFERENCES

- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Monitoring Treatment Facility

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR314	National – Monitoring Treatment Facility	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure monitoring of Med-X Treatment facility is undertaken to the requirements of all regulators and government authorities.

2. SCOPE

This procedure applies to the monitoring requirements under the licencing arrangements for the Med-X Treatment Facility.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Process

Conditions outlined in licensing and approvals require Med-X to undertake specific monitoring activities to determine the ongoing performance of the Med-X Treatment facility operations.

4.2 Microbial reductions

An accredited laboratory in accordance with requirements of licensing and approvals shall test the efficacy of the sterilisation process annually.

The accredited laboratory shall be responsible for ensuring the sampling and testing methods and parameters meet the requirements of the licensing and approvals and their test reports detail or reference the methods of analysis utilised together with the testing results.

Every load must include biological indicator testing and be tested once a month by an accredited laboratory.

At least one biological indicator of each of the following types needs to be added to the monthly surrogate test load:

- Vegetative bacteria;
- Viruses; and
- Bacteria spores.

The Branch Manager shall be responsible for maintaining the scheduled for monitoring with the test authority and retaining all results for records.

4.3 Autoclave calibration

Autoclave operations (including chamber loading and heating), time and temperature recording equipment are to be calibrated by an accredited testing organization.

Calibration and testing are to be carried out at intervals not exceeding six (6) months.

4.4 Trade waste

The methods of sampling, the test methods and parameters used, and the information recorded and reported must be comply with authorities' consent.

The Branch Manager shall be responsible for ensuring monitoring and testing is undertaken

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in accordance with the agreement and all results are retained as records and submitted to authorities when required.

4.5 Non-conformance

Should a result occur, which indicates that the Med-X Treatment facility is operating outside of any of its licences, management shall immediately notify the appropriate authority and commence an investigation into the implications on past and current performance.

Should it be result, waste will be re-diverted to another Med-X Treatment facility for processing as part of the Treatment Facility's contingency plan until the issue has been satisfactorily rectified.

5.0 SAFETY CONTROLS

- Always wear appropriate PPE when handling quarantine, clinical and related waste streams;
- Ensure there is open access (no clutter) impeding the sampling points.

6.0 REFERENCES

- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Treatment Facility Maintenance

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR315	National – Treatment Facility Maintenance	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To ensure planning and scheduled routine maintenance is carried out at the Med-X Treatment Facility.

To record any breakdown of all plant and equipment and remedial action is undertaken.

2. SCOPE

This procedure applies to the Med-X Treatment facility and the plant and equipment is always correctly maintained for efficient processing of all clinical waste.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Process

Only qualified personnel are permitted to start up various pieces of operating equipment and to perform maintenance activities.

'Safety first' must always be maintained to ensure effective and safe operations.

4.2 Maintenance

To ensure adequate, regular, effective maintenance is carried out on the Treatment Facility, the schedule detailed will be maintained.

Trained personnel either Med-X personnel or Licensed Service provider will carry out the maintenance under the control of the Branch Manager.

Item	Daily	Weekly	Monthly	As Required
Autoclave		✓		
Filter check	✓			
Filter change				✓
Autoclave Seals				✓
Blow down tank – Autoclave			✓	
Autoclave Loading Bridge			✓	
Boiler		✓		
Blow down tank – Boiler			✓	
Shredder		✓		
Compressor Tank			✓	
Bin lifter	✓			
Inspect electrical connections			✓	
WP-N Platform	✓			

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4.3 Repairs

Repairs will be carried out on an as needs basis depending on the nature and seriousness of the fault identified. Only trained personnel or accredited subcontractors will carry out repairs to a level sufficient to achieve safe production operations under the responsibility and authority of the Branch Manager.

4.4 Records

Records resulting from this process will be records relating to maintenance to repairs.

All maintenance and repair records must be retained for the standard document retention periods.

5.0 SAFETY CONTROLS

- Do not operate equipment machinery unless thoroughly trained or under supervision;
- Always wear appropriate PPE when handling quarantine, clinical and related waste streams;
- Do not inspect or clean the machine whilst it is running:
- Always ensure the power is locked out and tagged;
- Do not operate machine if damaged or making unusual sounds;
- Never wear loose clothing that can become entangled in the working parts of the machine;
- Keep all parts of your body away from the working parts of the machine;
- Always keep critical makings, such as warning stickers legible;
- To avoid personal injury, or machine damage – properly trained personnel only;
- Never load any flammable or explosive items into any piece of equipment or machinery within the treatment facility;
- Use appropriate fall prevention techniques when working on machine platforms;
- Always have guards and shields in place before operating machinery;
- Do not process material that exceeds the top of the in-feed hopper;
- Never attempt to process material for which the shredder was not designed (e.g. titanium implants);
- Do not put fingers in bolt holes or between other heaving or moving parts;
- Always use extreme caution around electrical components.

6.0 REFERENCES

- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting
- Procedure MXNATQPR308 – Autoclave Operations
- Procedure MXNATQPR309 – Boiler Operations
- Procedure MXNATQPR310 – Shredder Operations
- Procedure MXNATQPR311 – Forklift Operations

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INTEGRATED MANAGEMENT SYSTEMS
Med-X WHS Treatment Facility

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR316	National –WHS Treatment Facility	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To address all Work Health and Safety issues that may arise whilst working with Med-X Healthcare Solutions.

2. SCOPE

This procedure applies to all accident prevention generally and specific issues associated with handling of clinical waste.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 General Hygiene

For general hygiene purposes, Med-X has installed soap dispensers and hand sanitizing gels that are always to be utilised within the Treatment facility.

All staff is responsible for keeping themselves protected. If any cuts or abrasives are evident, pleasure ensure that you cover them with a protective barrier whilst at work i.e. glove or a waterproof dressing.

4.2 Storage and handling of chemicals

Care must be taken when handling all chemicals and particularly when decanting process is utilized. Please ensure no solution is in contact with skin or into the eyes.

It is important to wear gloves and a face shield when using bleach. If bleach does come in contact with the skin or eyes, the affected areas must be washed immediately with large amounts of clean water.

All chemicals stored in the facility must have an associated Safety Data Sheet (SDS) stored in the SDS folder and kept in the Treatment facility. The location of all chemicals needs to be up to date and kept on a sheet in the front of the SDS folder.

4.3 Manual lifting

To prevent injury, the use of correct manual handling techniques must be followed:

- Size up the load and check overall conditions. Don't attempt the lift by yourself if the load appears to be too heavy or awkward. Check that there is enough space for movement, and that the footing is good. "Good housekeeping" ensures that you won't trip or stumble over an obstacle.
- Make certain that your balance is good. Feet should be shoulder width apart, with one foot beside and the other foot behind the object that is to be lifted.
- Bend the knees; don't stoop. Keep the back straight, but not vertical. There is a difference. Tucking in the chin straightens the back.
- Grip the load with the palms of your hands and your fingers. The palm grip is much more secure. Tuck in the chin again to make certain your back is straight before starting to lift.
- Use your body weight to start the load moving, and then lift by pushing up with the legs. This makes full use of the strongest set of muscles.
- Keep the arms and elbows close to the body while lifting.
- Carry the load close to the body. Don't twist your body while carrying the load. To change direction, shift your foot position and turn your whole body.

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- Watch where you are going!
- To lower the object, bend the knees. Don't stoop. To deposit the load on a bench or shelf, place it on the edge and push it into position. Make sure your hands and feet are clear when placing the load.

If helping to unload a van, use the hydraulic tailgate and making sure the area is safe.

Make sure all of the containers on the tailgate are securely locked to prevent them moving when the lift is used. Do not allow the containers to run off an inclined tailgate but lower the tailgate platform on the ground before removing the container.

Never tilt a clinical waste bag if it cannot be easily lifted by one hand at arm's length from the body.

4.4 Ladders and Lifts

Workers must inspect ladders prior to use to ensure that are in good condition for safe operation.

WPN- Work Platform and any other mechanised lifts must be in used in accordance with manufacturer's instructions.

4.5 Incident and Hazard Reporting

Any incident that results in injury or damage to equipment must be reported to branch management for review immediately.

Refer to MXNATSPR004 – WHS Incident and Hazard Reporting Procedure.

4.6 Immunisation requirements

All staff must be immunised against Tetanus, Hepatitis A and B and shown to be immune to antibody testing. This must be recorded in their personnel file. These immunisations are made available and funded by Med-X Healthcare Solutions.

5.0 REFERENCES

- Policy - MXNATQPO001 – QEHS Policy
- Procedure MXNATSPR004 – WHS Incident and Hazard Reporting
- Various MX Safety Operating Procedures
- MX SDS Register

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Outsourced Processes

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR317	National – Outsourced Processes	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

To define critical processes provided by outsourced third parties, and the controls used to ensure the quality of the outputs of such processes.

2. SCOPE

This procedure applies to the process to engage service providers at Med-X Treatment facility to support operations and monitoring activities for legal compliance requirements.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Outsourced Process Framework

OUTSOURCED PROCESS	SERVICE PROVIDERS	CONTROL METHODS
Contract internal auditing	Auditing Provider	Auditors shall have Lead Auditor certificate issue by RABQSA/Exemplar or IRCA
Calibration	Calibration Provider	Inspection and Test Plan
Document Destruction	Confidential Information Destruction Provider	Confidential destruction
Electrical Maintenance	Testing and Tagging Provider	Electrical testing and tagging
Other Waste Stream Processing	Incineration Provider	Incineration of Anatomical, Cytotoxic and Pharmaceutical
Pest Control Management	Pest Control Provider	Pest Control
Verification	Laboratory	Autoclave Operation Testing
General Maintenance	Licenced Provider	Facility General Maintenance
Vehicles	Authorised Motor Mechanic	Service Vehicle Repairs and Maintenance

5.0 REFERENCES

- Policy - MXNATQPO001 – QEHS Policy
- Policy – MXNATQPO085 – Purchasing and Procurement Policy
- MX Integrated Management System Manual and Procedures
- Various MX Safety Operating Procedures

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Equipment Validation

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR318	National – Equipment Validation	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

The purpose of this procedure is to define how Med-X Healthcare Solutions validates critical equipment tools and software programs prior to use.

2. SCOPE

This scope relates to the validation controls, maintenance and ongoing verification within the Med-X Treatment facility to support operations and monitoring activities for legal compliance requirements.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Application

This process applies to all Med-X Treatment facilities.

4.2 Exemptions

Equipment solely used for supporting the Med-X Treatment facility which includes compressors, vehicles, air handling systems and lighting.

All production equipment, tooling and software in use for at least six months prior to the release of the first version of this procedure is to be considered validated by way of previous use and history, and therefore is exempted this procedure, unless otherwise marked as non-conforming.

However, if any significant change is made to legacy equipment, tooling or software, this may trigger a new validation requirement if the change could affect product quality.

4.3 Equipment and Tooling Validation

Where appropriate, it may become necessary to work with the direct manufacturer to assist in making the appropriate adjustment or repairs to get the equipment validated.

Equipment failing validation may not be used and must be marked visibly with appropriate signage indicating **"DO NOT USE"** or **"AWAITING VALIDATION"** or similar language.

Equipment and tooling may be considered to have been validated unless otherwise marked.

4.4 Maintenance and Ongoing Verification

Ongoing assessments of the validity of validated equipment, tooling and programs are completed through scheduled internal audits and ongoing inspections within the Treatment Facility.

Preventative maintenance programs are in place for critical equipment to ensure proper functioning to support ongoing production operations at the Treatment facility.

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5.0 REFERENCES

- Policy - MXNATQPO001 – QEHS Policy
- MX Integrated Management System Manual and procedures

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Calibration of Equipment

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR319	National – Calibration of Equipment	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

The purpose of this procedure is how Med-X Healthcare Solutions define the requirements for calibration or verification of equipment used to determine acceptability of product.

2. SCOPE

This scope relates to inspection or test equipment utilised to check products prior to movement to a subsequent process or prior to final completion.

However, at the discretion of Management, calibration or verification may also be applied to the critical process equipment.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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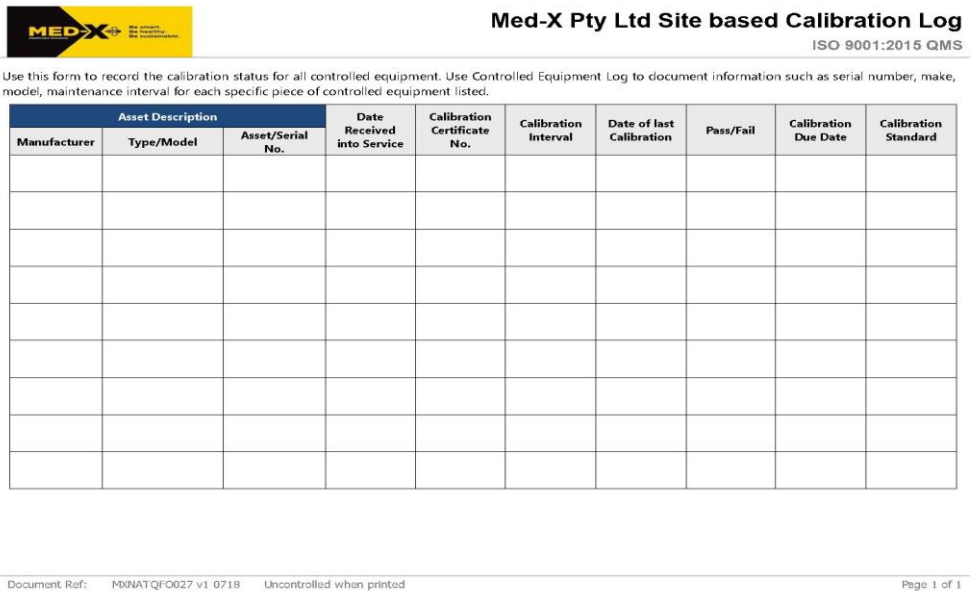
4. PROCEDURES

4.1 Calibration process

- Devices subject to calibration shall be calibrated by an approved outside Service Provider, or by trained personnel.
- Third party calibration laboratories should be accredited to ISO17025 whenever possible, as this provides the best control of calibration activities, and traceability to national standards.
- When employees perform in-house calibration, this shall be performed in accordance with documented procedures for each type of calibration performed.
- Traceability to the national standards will be maintained for all devices were such traceability is possible by the current state of the art.
- Approved calibration service providers must maintain suitable environmental conditions for calibration. For in-house calibration, the Branch Manager will ensure suitable environmental conditions for calibration.
- The Med-X Calibration Log MXNATFO027 will be maintained by the Branch Manager and details all devices, serial numbers, date of last calibration and next calibration date.



Med-X Pty Ltd Site based Calibration Log

ISO 9001:2015 QMS

Use this form to record the calibration status for all controlled equipment. Use Controlled Equipment Log to document information such as serial number, make, model, maintenance interval for each specific piece of controlled equipment listed.

Asset Description			Date Received into Service	Calibration Certificate No.	Calibration Interval	Date of last Calibration	Pass/Fail	Calibration Due Date	Calibration Standard
Manufacturer	Type/Model	Asset/Serial No.							

Document Ref: MXNATQFO027 v1 0718 Uncontrolled when printed Page 1 of 1

- The frequency of calibration for each device shall be adjusted on the history of the device and its impact on product quality.

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- For tools calibrated by third party laboratories, these shall be returned with a certificate of calibration showing the status of calibration, as well as the condition the equipment was found in (i.e. “defective”, “out of tolerance”, “in tolerance”, etc). Such certificates must have the identification of any standards used by the calibration house, and their serial numbers, allowing for traceability.
- For tools calibrated in-house by Med-X Healthcare Solutions staff, the results and standards used shall be recorded on the Calibration Log and shall include any standards and/or procedures utilised.
- Calibrated devices will be identified with a calibration sticker that includes the current calibration status, calibration due date, and device identification number. Where the device cannot accommodate a calibration sticker due to size or frequency of use, the device shall be numbered, and the Branch Manager shall keep a log of those devices and their status. Employees may only use devices for acceptance testing that are current on calibration.
- Employees shall submit expired tools for re-calibration.
- There will be no amnesty window delaying any calibration due date.
- Devices in use for non-critical measurements are to be checked for serviceability.
- Any device failing to meet calibration standards will immediately be taken out of service. The device may then be tagged “out of service”. Repaired devices must be calibrated before being returned to service.
- When a measuring device is found to be out of tolerance, and/or reported on the calibration certificate of having been found as “defective” or “out of tolerance” by the third-party provider, the Branch Manager shall be notified immediately. The Branch Manager shall oversee a study to determine the impact of the out-of-tolerance device on product shipped; if deemed necessary, a recall may be initiated. The customer possessing the material in question is immediately notified of the problem. This study and the results shall be recorded and placed with the Calibration Log.
- Measuring and monitoring devices must be stored and handled in a manner that does not invalidate their calibration or ability to function without error.

4.2 Verification

- Where a device cannot be calibrated against traceable standards. It must be verified against some known good object or method. This may be done by comparing the part against another part or tool which has been evaluated and validated and proven as acceptable.
- Known-good objects must be protected so their status is not altered, either by physical damage or deterioration.
- Known-good methods must be documented in procedures, with a rationale for their acceptability being documented.

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5.0 REFERENCES

- MX QEHS Policy - MXNATQPO001
- MX IMS Manual MXNATQMA110
- MX IMS Procedure – Calibration Equipment Process MXNATQMA110.8
- MX Form – Calibration Log – MXNATQFO027

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INTEGRATED MANAGEMENT SYSTEMS
Med-X Backlog Contingency Procedure

Number	Subject	Approved by	Issue No.	Issue Date:	Reason for Issue
MXNATQPR320	National – Backlog Contingency	MDX Management Team	1	04/2020	New procedure

1. PURPOSE

The purpose of this procedure is how Med-X Healthcare Solutions define the requirements for preventing backlog accumulating on site beyond safe storage limits.

2. SCOPE

This scope relates to each Med-X Healthcare Treatment facilities has a contingency in place to prevent backlog of waste accumulating on the Treatment facility and diverting waste transfer to alternative facilities to complete the treatment process and when plant breakdowns occur.

3. RESPONSIBILITIES

Branch Management has the responsibility to:

- Coordinate that all staff aware and trained in the Med-X procedures, guidelines and systems supporting WHS, which must comply and be consistent with the local statutory authority WHS laws.

All employees and contractors of Med-X have the responsibility to:

- Follow all documented procedures are in place and they have been trained when handling different waste streams and to do otherwise would increase the risk for possible incidents and/or injuries.
- Non-adherence to these procedures could place the business and operations at risk of a breach under the licence obligations.
- All staff has a duty of care when handling quarantine, clinical and related waste to themselves and others including informing colleagues of any dangers arising by the way they may be handling all these waste streams.

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4. PROCEDURES

4.1 Backlog Contingency Process

Volumes of waste transferred to our Med-X Treatment facilities can vary depending on the nature of processing activity that is being undertaken.

To prevent backlog accumulating on site beyond safe storage limits and to conform against conditions of licence of Environment Protection Orders, a risk- based decision is undertaken by the Branch Manager to divert the waste flow where required.

The following areas of risk have been identified:

- To prevent backlog of waste accumulating on site, the Branch Manager will divert waste being transported to the current treatment site to an alternative Treatment facility for processing.
- If Major Plant such as Autoclave, Boiler and Shredder have a breakdown, all waste will be transported to an alternative Treatment facility for processing.
- If backlog of storage has occurred, all waste will be transported to an alternative Treatment facility for processing.

For example - Arndell Park site – NSW will be either transferred to Med-X Treatment facility at Newcastle, NSW or Weston Aluminium at Kurri Kurri, NSW.

For licensed Med-X Treatment facilities, the Branch Manager will ensure that all EPA reporting requirements will be met by reporting on waste flow and storage capacity for EPA's satisfaction that appropriate waste flow management is in place and reported correctly if contingencies were undertaken.

5.0 REFERENCES

- MX QEHS Policy - MXNATQPO001
- MX IMS Manual MXNATQMA110

Appendix F

Autoclave Validation

As of 13-May-2020 15:25 (UTC+10:00) this information pertains to all reports for Eurofins Batch Number: NJ20AA5619.
Testing for this Batch was performed under the following regulatory guidelines: GMP Commercial.

Sample Number	Sample Description	Included In This Reporting Group	Report Version	Report Revision Log
NJ20AA5619-1	66 x Biological indicators; 20 x BI's Labelled A-T (Batch: Load Validation 1), 20 x BI's Labelled A1-T1 (Batch: Load Validation 2), 20 x BI's Labelled A2-T2 (Batch: Load Validation 3), 3 x Positive Control BI's for Growth/No Growth and 3 x Positive Control BI's for Enumeration; 66 Vial(s); BPT Received Date 01-May-2020	✓	1	Original Report - Analytical Report AAH67835

Contracted Testing Facility	Testing Performed
Eurofins ams Laboratories Pty Ltd 8, Rachael Close Silverwater, NSW 2128 AUSTRALIA amslabs@eurofins.com www.eurofins.com.au Questions about this report should be directed to your project manager or the general email listed above.	Client Protocol 20-TVP-023 Protocol or Final Report Writing

Prepared For	Reports Provided To
Med-X Pty Ltd PO Box 1184 Oxenford, QLD 4120 AU **Client Account Number: A00840672GM0** **Eurofins Quote Number: UF8DPH20009101**	John de Smit (Primary Reporting Contact) john.deSmit@med-xsolutions.com.au

Certificate of Analysis

Analytical Report: AAH67835
Eurofins Sample Number: NJ20AA5619-1
Version: 1

Med-X Pty Ltd
PO Box 1184
Oxenford, QLD 4120
AU

Client Account Number: A00840672GM0
Eurofins Quote Number: UF8DPH20009101

Eurofins Sample Number NJ20AA5619-1

Original Received Date:	01-May-2020
Description:	66 x Biological indicators; 20 x BI's Labelled A-T (Batch: Load Validation 1), 20 x BI's Labelled A1-T1 (Batch: Load Validation 2), 20 x BI's Labelled A2-T2 (Batch: Load Validation 3), 3 x Positive Control BI's for Growth/No Growth and 3 x Positive Control BI's for Enumeration
Containers Submitted:	66 Vial(s)

Protocol Reference: Client Protocol 20-TVP-023

Analysis	Result	Unit
Client Protocol 20-TVP-023	See Attached Report for Result	----
Method: Client Protocol 20-TVP-023		
Protocol or Final Report Writing		
Method: N/A		

Supplemental Information

Samples were tested as received. Specifications (if) reported are as provided by the client

Contracted Company: Eurofins ams Laboratories Sydney

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Questions about this report should be directed to your project manager or the general email listed above. This report must not be reproduced except in full.

Reviewed and electronically signed for Data Reviewer Approval by
Eva Rubazewicz, Laboratory Manager, NSPT
for Eurofins ams Laboratories Pty Ltd, on 12-May-2020 18:05:48 UTC+10:00
Reviewed and electronically signed for Laboratory Manager Authorized by
Fergus O'Connell, Head of Quality, AU/NZ
for Eurofins ams Laboratories Pty Ltd, on 12-May-2020 19:12:15 UTC+10:00
Reviewed and electronically signed for Quality Assurance Release by
Fergus O'Connell, Head of Quality, AU/NZ
for Eurofins ams Laboratories Pty Ltd, on 12-May-2020 19:12:55 UTC+10:00

eurofins | ams	Microbiological Validation of Bondtech Sterilization Unit BTT6X13	Document No 20-TVP-023
		CCF 20062 Revision No: 00
		Effective Date

Prepared By (Study Director):	Reviewed and Approved By (Sponsor):
Name: Eva Rubazewicz	Name: Robert Aminde
Position: Department Manager – NSPT	Position: MED-X National Manager
Signature:	Signature: Robert Aminde
Date: 17/04/2020	Date: 20/04/2020

QA Approval to Execute:
Name: FERGUS O'CONNOR
Position: HEAD OF QUALITY – MED/RE
Signature: Fergus O'Connor
Date: 20/04/2020

Training Log

(By signing this training log, you have read and understood the requirements of this protocol).

Name	Position	Signature	Date

1. OBJECTIVE & SCOPE

The studies objective is to validate the claim of reducing the microbial contamination load by a minimum of 4 logs using BONDTECH BTT6X13 located at 9, Kenoma Place, Arndell Park 2148.

Merck Sterikon® plus Bioindicators containing *Geobacillus stearothermophilus* ATCC 7953 spores will be used for the validation. *Geobacillus stearothermophilus* is recognised as the most resistant spore forming micro-organism to chemical and physical sterilisation. It is an obligate thermophile, meaning it requires a high temperature to grow and its spore is one of the most heat-resistant within the aerobic microbiological group of organisms. The genus *Geobacillus* has a growth-temperature range of 37-75°C, with an optimum at 55-65°C.

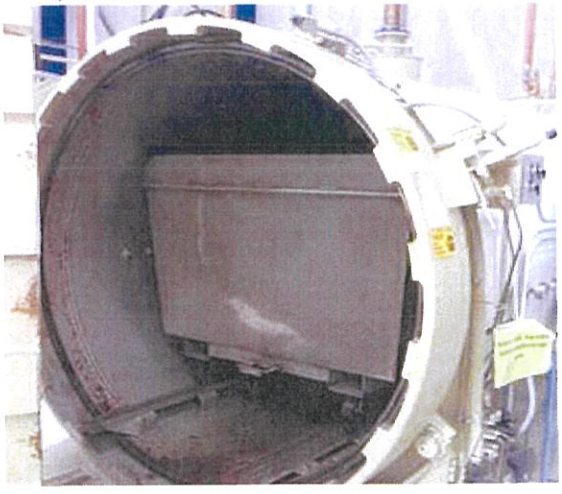
2. PROCEDURE

2.1 EQUIPMENT, MEDIA & REAGENTS

2.1.2 Pipettes & sterile tips
2.1.3 Petri Dishes
2.1.4 Sterikon® Plus Bioindicator (self-contained glass ampoules)
2.1.5 Biological safety cabinet (BSC)
2.1.6 Tryptone Soy Agar (TSA)
2.1.7 55-60°C Incubator
2.1.8 Anaerobic jars
2.1.9 9mL Sterile Deionised Water
2.1.10 Vortex
2.1.11 Autoclave pouches

2.2 TEST ITEMS

2.2.2 BONDTECH BTT6X13 – Refer to Appendix 3 for the specifications and details of the autoclave (sterilizer).



2.3 AUTOCLAVE OPERATION at MED-X PTY LTD

2.3.2 The study will be carried out in triplicate and at the maximum load capacity of the autoclave.

2.3.3 The maximum load capacity of the BONDTECH BTT6X13 is 4 x 700L bins.

2.3.4 Five biological indicator ampoules (BI's) will be placed into pre-labelled autoclave pouches and each pouch will be placed inside each full loaded bin (total 20 BIs) for each autoclave run. Thus, one BI placed in every corner of the bin and one will be placed into the centre of the bin.

2.3.5 At the end of the autoclave run, all 20 BI's will be retrieved (pouches) and transported back to Eurofins | ams Laboratories, Silverwater for further analysis.

2.3.6 A total of six positive control BIs will also be transported to Med-X Pty Ltd along with the BIs used for the autoclave runs. The positive control BIs will not be subjected to any sterilization treatment and will be transported back to Eurofins | ams Laboratories, Silverwater to perform the spore ampoule enumeration to ensure the minimum count of 10^4 Spores/BI was achieved. Transportation of the positive control BI's to Med-X Pty Ltd and back to Eurofins | ams Laboratories, Silverwater will be carried out prior to performing the spore ampoule enumeration to ensure the spore viability during the transit of BIs.

2.4 BIOLOGICAL INDICATOR (BI) TESTING at EUROFINS | ams LABORATORIES

2.4.2 Three positive control BI's which will be transported to Med-X Pty Ltd and back to Eurofins | ams Laboratories, will be subjected to spore ampoule enumeration testing at the Eurofins | ams Laboratories, Silverwater site.

2.4.3 Testing will include, preparation of serial dilutions and plating of the suspension; standard microbiological techniques. TSA will be poured into the plates containing the spore suspension, allowed to set and incubated at 55-60^{0}C for 48hrs.

2.4.4 Post incubation, the plates are removed and colonies counted and results calculated.

2.4.5 Results will be compared to the manufacturer's expected counts/range for the 'Lot' of biological indicators used.

2.4.6 The other three positive control BI ampoules transported to Med-X Pty Ltd and back to Eurofins | ams Laboratories, will be subjected to Growth/No Growth analysis along with the sample test BIs.

2.4.7 A positive control count will also be carried out at Eurofins | ams Laboratories without transporting the BI to Med-X Pty Ltd.

2.4.8 The sample test BIs will be subjected to Growth/No Growth testing and will be incubated at 55-60^{0}C for 2-7 Days. Three positive control BIs will be incubated alongside the test BIs. At the end of the incubation period, the BIs will be examined for any colour change. A yellow colour is defined as positive growth and a purple colour is defined as no growth/negative.

2.5 QUALITY ASSURANCE

2.5.2 A required 'Process Audit' will be scheduled during the study. Eurofins | ams Laboratories Quality Assurance Department is responsible for reviewing protocols, study plans, the final report and monitoring critical phases, processes, facilities, and personnel on a regular basis as well as auditing official reports to ensure that they accurately and completely reflect the raw data and comply with GLP. Audits are performed in accordance with relevant Test Facility Standard Operating Procedures.

2.6 PROTOCOL AMENDMENTS & DEVIATIONS

2.6.2 The 'Study Director' may make written amendments or deviations to this protocol. All amendments and deviations will be signed and dated by the Study Director and Quality Assurance and when necessary by the Sponsor's Representative.

2.6.3 All amendments and deviations will be signed at the time the change is made and stored with the protocol.

2.6.4 Any deviation and/or amendment to this protocol will be reported in the Final Report.

2.6.5 The impact of the amendment on the study will be described.

2.6.6 Amendments must be reviewed by the QA Department. Copies of any amendments and deviations will be sent to the sponsor during the course of the study. A Deviation Log is provided in Appendix 2.

2.7 REPORTING

The Final Report will include - but will not be limited to - the following information:

2.7.2 Name and address of the Sponsor and of the Test Facility

2.7.3 Compliance with Good Laboratory Practice

2.7.4 Statement of Study Director

2.7.5 Statement of Quality Assurance

2.7.6 Identification of the study (title, code, key personnel)

2.7.7 Period of the study (Study initiation, approval of study plan, start of experimental phase, end of experimental phase, date of Final Report)
2.7.8 Summary
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2.7.10 Test Item
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2.7.32 Analytical standard information and Certificate of Analysis
2.7.33 Validation Data

2.8 ARCHIVING

The original data, documentation, protocol and final report will be archived in the GLP archive of Eurofins | ams Laboratories, Silverwater, in accordance with Eurofins | ams SOP No QA-004 'Control of Quality Documentation'.

2.9 STATISTICS

Statistical methods (if any) used during the course of the study will be documented in the study file and summarised in the report.

2.10 DISTRIBUTION LIST

A copy of the signed protocol will be distributed to the following study participants:

2.10.2 Study Director

2.10.3 Sponsor/Study Monitor

2.10.4 Facility Manager

2.10.5 Quality Assurance Manager

2.11 ACCEPTANCE CRITERIA

2.11.2 The positive control counts for all three BI's should be a minimum 10^4 Spores/BI.

2.11.3 For all the test BI's, there should be No Growth detected, therefore no colour change in the self-contained BI at the end of the incubation period (ampoule's remaining the original purple colour).

3. APPENDIX 1

3.1 RESPONSIBILITIES

- The Non-Sterile Product Testing (NSPT) and QA Departments are responsible for the overall adherence to the protocol. Specific duties will include the following:
- Facilitating the timely execution of this protocol by provision of appropriately trained personnel, equipment and materials as required.
- Ensuring compliance with GLP, in house SOP's, and this Protocol.
- Ensuring that the testing equipment to be used is adequately maintained and all monitoring/controlling instruments are calibrated, as appropriate.
- Each step of the process as defined in this protocol must pass the defined acceptance criteria.
- All employees shall be trained for their responsibilities in executing the validation protocol.
- This validation study protocol must be approved by all signatories prior to execution.
- Med-X Pty Ltd to review and approve the protocol.

4. APPENDIX 2

4.1 DEVIATION LOG

The following log sheet is to be filled out in the event that any deviations occurred in this protocol. For each deviation enter the Test Number or activity where the deviation was found, a description of that deviation and whether it was critical or non-critical (C or N respectively).

Sheet ____ of ____

Test Number/ Activity	Deviation	Critical/ Non-Critical	Initials/Date

5. APPENDIX 3

PROPOSAL FOR:

MEDICAL WASTE AUTOCLAVE SYSTEM

BY:
BONDTECH CORPORATION

PROPOSAL INCLUDES:
THE MANUFACTURING/PROCUREMENT, TESTING OF
AUTOCLAVE STERILIZATION EQUIPMENT

May 1, 2012 R1
April 28, 2012

1.1.0 BONDTECH AUTOCLAVE/STERILIZER SYSTEM SPECIFICATIONS

High vacuum/High pressure, Computer controlled, Bondtech autoclave system to treat biomedical waste on-site

1.1.1 AUTOCLAVE DIMENSIONS AND CAPACITY

BTT6X13
6' dia X 13' long
Pressure Grade Carbon Steel
Number of bins: 3 or 4/per load
Capacity: ~ 500 to 600 kg/cycle (@ standard Med Waste density of 5.5 lb/cuft)
~ 750 to 850 kg/cycle (Port Waste)

1.1.2 AUTOCLAVE VESSEL SPECIFICATIONS

Opening Assembly:	Single door/quick opening door/safety pin interlock
Loading Arrangement:	Horizontal
Pressure Vent:	Spray condenser

1.1.3 INSULATION

The exterior of the autoclave will be insulated with 2" of fiberglass, which will be covered with an aluminum jacket to protect the insulation, and to make sure the equipment can be kept clean.

1.1.4 PROCESS VALVES

Complete with the process valves including steam supply, pressure vent and safety relief. The steam inlet valve is a ***high-resolution pneumatic proportional valve for a smooth accurate control of steam pressure.*** For safety, the steam inlet valve is a normally closed valve that closes in the event of any power loss.

1.1.5 AUTOCLAVE VESSEL DESIGN

The autoclave vessel is designed, fabricated, tested and certified in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, for Unfired Pressure Vessels. The vessel is designed for full vacuum. The sterilization unit is formed and welded into a horizontal cylindrical pressure vessel with a hydraulic quick opening door. The vessel includes two rigid support saddles to facilitate a simple installation. The front face of the vessel has a machine groove for the rigid high temperature seal gasket.

1.1.6 VACUUM SYSTEM.

Vacuum: Vacuum: 24-28" Hg.
High Efficiency Vacuum System

Vacuum Capability: 24"-28" Hg, 3 minutes

Pre-vacuum: The pre-vacuum process will evacuate the autoclave 24"-28" Hg. This process will achieve the removal of air from the autoclave to provide a quick and efficient penetration of steam throughout the medical waste load.

Post-vacuum: The post-vacuum process removes excess steam from the vessel and expedites the steam purging process. This process removes excess moisture from waste load resulting in a lighter/drier treated waste product for disposal. Moisture removal effectively controls nuisance odors.

2

1.1.7 STEAM CONDENSER

Independent steam condenser manufactured of pressure-grade steel. The condenser is designed for quick and efficient steam purge from the autoclave vessel. Process steam is fully condensed externally to the autoclave vessel. ***Steam purge process is completed within approx 2-3 minutes.***

1.1.8 DOOR OPERATION, SEALING AND LOCKING MECHANISM

The door is hinged mounted on the autoclave. Mounting arrangements to provide full movement to a full open position. Preferred sealing system to utilize one-piece extruded material O-ring seal type. The door has a positive lock type safety design per the ASME requirements. The locking mechanism is interlocked with the control system to prevent opening the door while under pressure, and to prevent pressurization when the door is unlocked. The door is designed with several safety features that include electric/mechanical interlock switch, PLC interlock, door safety handle interlock, visual site gauge for pressure monitor and analog dial pressure/temperature indicators.

1.1.9 MATERIAL HANDLING

Autoclave tracks will be provided for the autoclave bins.
Optional automatic hydraulic Lift Table for assisting in loading/unloading bins

1.1.10 SYSTEM PIPING.

The autoclave system will completely piped at the factory prior to shipment for simple installation. The system piping will consist of the following:

- Steam condenser piping – steam outlet piping direct to steam condenser. Steam is condensed by controlling water flow through the steam condenser with respect to steam pressure inside the vessel. The water flow control minimizes the consumption of water.
- Condensate Drains Steam traps (2) – front and rear steam traps maintains the vessel free of condensate.
- Vacuum Valve/Piping – autoclave is hard piped to either steam ejector or vacuum pump for integrating vacuum system to vessel.
- Steam Inlet Valve/Strainer – proportionally controlled steam inlet valve for smooth and accurate control of steam pressure inlet. Steam inlet valve is controlled by a PID loop controlled by the PLC.

1.1.11 CONTROL SYSTEM/PROCESS VALVES/CONTROL PANEL & INSTRUMENTATION

The autoclave control panel is package in a NEMA 12 rated panel. The autoclave system is controlled by a state-of-the-art "SuperMicro" Programmable Logic Controller (PLC) with modem hookup capabilities for online support. The PLC performs automatic sterilization control control that includes pre-vacuum, pressurization/heat soak, vent and post-vacuum. The PLC monitors pressure vessel conditions for providing safety interlock for door operation.

1.1.12.1 SUPERMICRO PROGRAMMABLE LOGIC CONTROLLER (PLC).

The FX2N Series PLC provides the function controls that automatically commands the process cycle steps for the autoclave system. Extensive data memory (over 8,000 Data Registers) for capturing real time operating parameters that continuously monitors autoclave system performance.

The FX2N Series PLC support on-line troubleshooting/programming functions, used in system development and commissioning. Remote programming/monitoring capability by modem provides for immediate technician support. This PLC system has the external data link integration capability for communication with other peripheral systems (PC, network, control systems, etc).

Powerful features include:

- Windows Programming - Use Ladder, List or SFC languages.
- Operator Interfaces – Flexible selection to match specific customer application
- Extensive Program Memory – 8,000/16,000 steps
- Extensive Data Memory – 8000 Data Registers
- Enhanced Program Throughput – 80 nanoseconds/step
- Enhanced Process Control – Auto-Tuning, PID loop
- High-Speed Processing–60KHz counters, 10ms timed&50us hardware interrupts
- Embedded Motion Control – 20,000 hz pulse train, Trapezoidal ramp instructions
- High Function Math – 32 bit floating point, Square Root, Trigonometry
- Year 2000 Compliant – Y2K Compliant, 4 digit year
- Real Time Clock/Date – For scheduling date and time stamping
- Flexible Configurations – From 16 to 256 I/O & extensive special function I/O capabilities
- Communications – Built-in 2nd port (RS-232/RS422/RS485) & PLC-PLC networking
- Open Network Connectivity – Modules for Profibus DP, Profibus DP I/O, AS-I & CC Link

1.1.12.2 SYSTEM PROGRAMMING

PLC program application is based on the industry standard ladder logic. Programming can be performed by authorized personnel with access to system entry code.

Simple pushbutton entry pad allows the authorized personnel to enter specific parameters including the following:

- Pre-Vacuum Set Point
- Pre-Vacuum Timer
- Sterilization Temperature/Pressure
- Sterilization Heat Soak Time
- Vent Time Set Control
- Post-Vacuum Set Point
- Post-Vacuum Timer

In addition to the above, specific alarms are setup for triggering equipment shutdown and notifying the operator in the event that temperature and/or pressure parameters are not satisfied.

The startup program will be installed and tested by Bondtech technicians during startup.

1.1.13 CONTROL SYSTEM PRINTER - Honeywell Circular Chart Recorder

The control system printer is a state of the art Honeywell printer. The printer generates continuous data that provides the history of every autoclave cycle.

The Honeywell 4500 series printer will record and generate chart data that includes the following:

- Time and Date of every autoclave cycle.
- Cycle Start and Cycle End Time.
- Continuous Cycle Vacuum & Pressure
- Continuous Cycle Temperature

2.0 BONDTECH SHREDDING SYSTEM . HIGH VOLUME

Feed Material	- General Autoclaved Medical Waste composed of plastic films, plastics containers, plastic tubing, cloth, glass, light gage steel medical sharps (scalpels, scissors, syringes etc)
Feed Method	- By bin tipper. Materials delivered by Bondtech Autoclave Bin
Discharge Method	- To customer supplied compactor or collection container
Throughput Rate	**- BTT/MM-70 - shredder rated to accept 3000 lbs. per hour**
Shred Size	- Approx. 1" wide x 4" to 8" lengths.

2.1 BTT/MM-70E SHREDDER

Cutting Chamber	- 29" x 52"
	– Two hexagonal, counter rotating shafts (5.2")
Knives	- Shaft center distance: 9-7/16"
	– Number of knives: 48 - Approx
	- Knife width: 1.5" (39 mm)
	– Knife diameter: 14.4"
	– # of teeth per knife: Two, offset hex for quick materials capture
	– Knife material: Heat-treated alloy steel
	– Contoured cleaning fingers and hex bore spacers between
knives Drive System	**- 60HP, 3 phase**
	– Planetary Gear Reducer
Fast/Slow Shaft Speed	**- 21 / 17 rpm**
Maximum Tooth Force	**- 54,600 lbs.**
Maximum Torque	**- 32,700 ft-lbs.**
SEAL SYSTEM	**- Special Configured for Medical Waste**

2.2 SUPPORT STAND

- 6" wide flange construction
- 60" discharge height
- Designed to clear customer's compactor/discharge container

2.3 BTT/MM-70E FEED ASSIST HYDRAULIC RAM HOPPER

- A-36 Plate - Reinforced plate construction
- Ram opening 33" x 66" approx.
- **Hydraulic cylinder** clevis mounted to heavy-duty ram platen
- Guide Mechanism – Guide Rollers

2.4 CONTROL PANEL

- NEMA 4 enclosure/Keyed power switch
- Illuminated function buttons for shredder operation
- Circuit Breaker w/lockable door operating mech.
- Full Voltage, across-the-line, magnetic motor starters
- Control power transformer – 24 VDC
- Allen Bradley Programmable logic controller-system op.& monitoring
- Run time hour meter/Emergency Stop Button

2.5 HYDRAULIC CART TIPPER - NO TIPPER
TIPPING WILL BE PERFORMED BY FORK LIFT SYST

STUDY DIRECTORS STATEMENT

The study was conducted according to the procedures indicated by the sponsor. To the best of my knowledge and belief, the study was conducted to Client specifications, and there were no circumstances that may have changed the quality and integrity of the study without prior knowledge of client.

ANALYSTS STATEMENT

The work reported herein is a true and accurate account of the results obtained in carrying out the stated procedures.

LABORATORY CREDENTIALS

Eurofins/ams Laboratories is licensed by the Australian Therapeutic Goods Administration for microbiological analysis and testing (TGA Licence No. 15112007-LI-002191-11 and GMP Certificate No MI-2019-LI-04295-1) & the Australian Pesticide and Veterinary Medicines Authority (APVMA Licence No 6139). The laboratory is registered with the US Food and Drug Administration (DUNS No 754742088 and Facility Establishment Identifier No 3006635869) & NATA Accredited to ISO 17025 (Accreditation Number 15773). The premise is certified by Office of Gene Technology Regulator as a Physical Level 2 (PC2) facility (Certificate No 2649).

QUALITY ASSURANCE PROGRAMME

The Quality Assurance Unit of Eurofins | ams Laboratories has inspected the data contained in this report, and also assisted in the preparation of this final report.

CONFIDENTIALITY

The data and contents of this report are held in confidence by Eurofins | ams Laboratories Pty Limited. They will only be made available to the Sponsor and authorized government inspectors if requested. No further disclosures will be made without seeking and receiving the prior permission of the Sponsor in writing.

STORAGE OF RECORDS

All materials, methods, variations to this protocol and results are recorded on laboratory worksheets. These records will remain archived at Eurofins | ams Laboratories for 5 years.

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STUDY REPORT

1.0 STUDY TITLE: Microbiological Validation of Bondtech Sterilization Unit BTT6X13 as per 20-TVP-023.

2.0 SPONSOR: State Waste Services (NSW) Pty Ltd
Med-X Pty Ltd
9 Kenoma Place
Arndell Park
NSW, 2148

3.0 TEST FACILITY: Eurofins | ams Laboratories Pty Ltd
8 Rachael Close, Silverwater NSW 2128

4.0 TEST SUBSTANCE IDENTIFICATION:

- 3 x 20 Biological indicators after autoclave operation of the maximum load capacity of the BONDTECH BTT6X13.
- 6 x Positive Control Count Biological Indicators transported to Med-X Pty Ltd and returned to Eurofins | ams Laboratories Pty Ltd.
- 1 x Positive Control Biological Indicator that remained at the Eurofins | ams Laboratory facility.

5.0 EXPERIMENTAL START DATE:

1st May 2020

6.0 STUDY COMPLETION DATE:

8th May 2020

6.0 STUDY OBJECTIVE:

To validate the claim of reducing the microbial contamination load by minimum of 4 logs using BONDTECH BTT6X13

7.0 TEST METHOD:

Eurofins | ams Protocol No. 20-TVP-023
TME-155 Spore Strip Counts

8.0 TEST SYSTEM/STRAINS:

Geobacillus stearothermophilus ATCC 7953

9.0 INTRODUCTION:

The studies objective was to validate the claim of reducing the microbial contamination load by a minimum of 4 logs using BONDTECH BTT6X13 autoclave sterilizer, located at 9 Kenoma Place, Arndell Park, NSW 2148. This was completed using Merck Sterikon® plus Bioindicators containing *Geobacillus stearothermophilus* ATCC 7953 spores for the validation.

60 self-contained test biological indicators (hereafter referred to as BI's) were retrieved after autoclave operation from 3 separate and maximum loads. Six positive control BIs were transported to Med-X Pty Ltd and then returned to Eurofins | ams Laboratories Pty Ltd. Three were subject to Growth/No Growth testing to validate their viability as a control and to ensure the same transport conditions as the test sample BI's. The remaining three control BI's along with the BI that remained at the Eurofins | ams site were subjected to spore count enumeration testing to ensure the count of minimum 10^5 Spores/BI was achieved.

10.0 STUDY MATERIALS: MEDIA, REAGENTS & EQUIPMENT

Pipettes & sterile tips
Petri Dishes
Sterikon® Plus Bioindicator (self-contained glass ampoules)
Biological safety cabinet (BSC)
Tryptone Soy Agar (TSA)
55-60°C Incubator
9mL Sterile Deionised Water
Vortex
Autoclave pouches
Cloth - Chux

11.0 TEST METHOD

11.1 Biological Indicators

The evaluation organism was *Geobacillus stearothermophilus* ATCC 7953. The BI's were Sterikon® Plus Bioindicator (self-contained glass ampoules). Each BI contained a minimum of 1.0 x 10^5 spores/unit. The Certificate of Analysis from the manufacturer is attached in Appendix 1.

Materials and Method

11.2 On Site

11.2.1 The autoclave was initiated with a warm up cycle. Four x 700L bins were required for a full load cycle.

11.2.2 Each of the four bins was filled to maximum capacity with waste and BI's were wrapped in distinguishable cloth and within labelled autoclave pouches were placed in five locations in each bin: the four corners and middle. After

autoclaving, the BI's from the cycle were retrieved and placed into an 'esky' for transportation back to the Eurofins | ams Laboratory.

11.2.3 All 60 BI's (20 from each validation cycle) were retrieved after autoclaving.

11.2.4 The BI's autoclave pouches were labelled as follows:

- Load Validation cycle = 1, 2 or 3
- Bin No. = 1,2,3 or 4 – as there are 4 bins per load
- BI Ref letter, each BI was labelled with the corresponding letter based on the load validation run number and its exact location.
  - Load validation 1 BI's labelled as A-T
  - Load validation 2 BI's labelled as A1-T1
  - Load validation 3 BI's labelled as A2-T2
- BI Location within the bin = Top Left, Bottom Left, Top Right, Bottom right and Centre/Middle respectively.

11.3 Laboratory Procedures

11.3.1 The autoclaved BI's were retrieved from each bin for each load validation cycle and returned with all control BI's to Eurofins | ams Laboratories site for processing.

11.3.2 The self-contained BI's were received 1st May 2020 and receipted into the Eurofins | ams eLIMS BPT system and assigned a unique identification number; NJ20AA5619.

11.3.3 Three bags of envelopes were received. One bag per load validation cycle, each bag with 20 envelopes for each BI. Each BI was received within a sealed labelled envelope wrapped in the original supplied cloth with the BI reference sticker still intact. The six control BI's were also received and still clearly labelled.

11.3.4 All BI's received were tested as follows, see section 12.0 for tabulated results:

- Each load validation BI was removed from its envelope, label and ampoule checked and placed into a tube rack and incubated at 55-60°C for 2-7 days for Growth/No Growth. BI's were visually checked for colour change at 2 days and returned to incubation at 55-60°C for another 5 days to complete a total of 7 days incubation and final visual check for growth/no growth.
- The 3 positive control BI's for Growth/No Growth were also incubated at 55-60°C for 7 days and checked for visual colour change.
- The 3 positive control BI's for enumeration were processed, heat shocked and serially diluted and plated in duplicate to ensure there were no significant loss in BI counts during transportation.
- The final positive control, that remained on site and was never transported to Med-X was also processed, heat shocked and serially diluted and plated in duplicate.

11.3.5 For enumerated BI's, all plates were incubated at 55-60°C for 2 days. Plates were counted, results recorded and averages determined.

12.0 STUDY RESULTS

Table 1. BI Test Results post BONDTECH BTT6X13. Growth/No Growth of BI's, all test sample BI's had a purple/pinkish colour at 2 and 7 days incubation, thus resulting in no growth.

Description		Load Validation Cycle		
Bin Reference	Location within Bin	Cycle1	Cycle 2	Cycle 3
Bin 1	Top Left	No Growth (A)	No Growth (A1)	No Growth (A2)
	Bottom Left	No Growth (B)	No Growth (B1)	No Growth (B2)
	Top Right	No Growth (C)	No Growth (C1)	No Growth (C2)
	Bottom Right	No Growth (D)	No Growth (D1)	No Growth (D2)
	Centre/Middle	No Growth (E)	No Growth (E1)	No Growth (E2)
Bin 2	Top Left	No Growth (F)	No Growth (F1)	No Growth (F2)
	Bottom Left	No Growth (G)	No Growth (G1)	No Growth (G2)
	Top Right	No Growth (H)	No Growth (H1)	No Growth (H2)
	Bottom Right	No Growth (I)	No Growth (I1)	No Growth (I2)
	Centre/Middle	No Growth (J)	No Growth (J1)	No Growth (J2)
Bin 3	Top Left	No Growth (K)	No Growth (K1)	No Growth (K2)
	Bottom Left	No Growth (L)	No Growth (L1)	No Growth (L2)
	Top Right	No Growth (M)	No Growth (M1)	No Growth (M2)
	Bottom Right	No Growth (N)	No Growth (N1)	No Growth (N2)
	Centre/Middle	No Growth (O)	No Growth (O1)	No Growth (O2)
Bin 4	Top Left	No Growth (P)	No Growth (P1)	No Growth (P2)
	Bottom Left	No Growth (Q)	No Growth (Q1)	No Growth (Q2)
	Top Right	No Growth (R)	No Growth (R1)	No Growth (R2)
	Bottom Right	No Growth (S)	No Growth (S1)	No Growth (S2)
	Centre/Middle	No Growth (T)	No Growth (T1)	No Growth (T2)

Table 2. Control BIs (not autoclaved) Results. Growth/No Growth of BI's, all three control sample BI's had a yellow colour at 2 and 7 days incubation, thus resulting in growth.

Result	Positive Control BI's ref #4	Positive Control BI's ref #5	Positive Control BI's ref #6
	Growth	Growth	Growth

Table 3. Control BIs (not autoclaved) Results Population Confirmation (Average counts).

Inoculum as per manufacturer's COA Batch Z0570174 Expiry 04/03/21 (CFU/unit)	Positive Control Ref #1 (CFU/unit)	Positive Control Ref #2 (CFU/unit)	Positive Control Ref #3 (CFU/unit)	Positive Control (remained at Eurofins | ams site) (CFU/unit)
1.6×10^{6}*	1.2×10^{6}	6.8×10^{5}	8.8×10^{5}	5.9×10^{5}

** Manufacturer spec values for number of viable spores per amplue = $5.0 \times 10^{5} – 1.0 \times 10^{7}$*

13.0 STUDY CONCLUSION:

The load validation study provides evidence that BONDTECH BTTX13 Waste Sterilizer instrument meets the sponsor confirmed performance criteria of four log ten reduction for autoclave sterilization using the destruction of biological indicators (BI) as the measure of success.

eurofins | ams

14.0 APPENDIX 1.

Certificate of Analysis

1.10274.0002 Sterikon® plus Bioindicator for checks on autoclaving
Batch Z0570174

	Spec. Values		Batch Values	
Appearance	opalescent and reddish violet		passes test	
Number of viable spores per ampule	$5.0 \cdot 10^5$ - $1.0 \cdot 10^7$		$1.6 \cdot 10^6$	
Growth (35 °C)	no growth		passes test	
Growth (60 °C)	growth		passes test	
Performance test (6 min, 121 °C)	Survival time 6 min/121 °C		passes test	
Performance test (15 min, 121 °C)	Kill time 15 min/121 °C		passes test	
D value (121 °C)	1.5 - 2.0	min	1.6	min
Z value	7.0 - 10.0	°C	9.2	°C
Identity	Geobacillus stearo-thermophilus ATCC 7953		passes test	

The determination of the D-value is based on the Stumbo-Murphy-Cochran method.

The identity control is carried out via MicroSeq-System.

Organism: Geobacillus stearothermophilus ATCC 7953 (sporulation optimized).
Ampoules: 2 ml.
Storage temperature: +2° to +8°C.

Date of release (DD.MM.YYYY) 26.09.2019
Expiry date (DD.MM.YYYY) 04.03.2021

Stefanie Fischer
Responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature.

Appendix G

Air Quality (Odour) Assessment

AIR QUALITY ASSESSMENT
CLINICAL WASTE MANAGEMENT FACILITY, ARNDELL PARK

Arup

17 June 2020

Job Number 20031098

Prepared by
Todoroski Air Sciences Pty Ltd
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Air Quality Assessment
Clinical Waste Management Facility, Arndell Park

DOCUMENT CONTROL

Report Version	Date	Prepared by	Reviewed by
DRAFT - 001	07/05/2020	P Henschke & A Todoroski	A Todoroski
FINAL - 001	14/05/2020	P Henschke & A Todoroski	
FINAL – 002	17/06/2020	P Henschke	

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1 INTRODUCTION

Todoroski Air Sciences has prepared this report for Arup on behalf of Med-X Pty Ltd (hereafter referred to as the Proponent). It presents an assessment of the potential air quality impacts associated with the proposed modifications to the Med-X Clinical Waste Management Facility at Arndell Park, New South Wales (NSW) (hereafter referred to as the Project).

The Project involves an increase to the throughput of clinical waste and related waste processed at the facility from 650 tonnes per annum (tpa) to approximately 2,300 tonnes per annum (tpa) and increase the maximum quantity of waste on-site at any one time from 5,000 kilograms (kg) to 8,000kg.

The Project does not involve more processing activity in any hour, thus the maximum hourly emissions from the processing of the waste would not alter, however there would be more hours of activity per annum.

This air quality assessment aims to also address comments raised in the submissions received on the Environmental Impact Statement (EIS) for the Project related to air quality/odour.

This assessment has been prepared in general accordance with the NSW Environment Protection Authority (EPA) document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA, 2017**) using a methodology based on a Level 2 / 3 Odour Impact Assessment as described in the *Technical Framework – Assessment and Management of Odour from Stationary Sources in NSW* (**NSW DEC, 2006**).

This report comprises:

- A background to the Project and description of the site and operations;
- A review of the existing meteorological conditions for the site;
- A description of the dispersion modelling approach and emission estimation used to assess potential air quality impacts; and
- Presentation of the predicted results and discussion of the potential air quality impacts and associated mitigation and management measures.

2 PROJECT BACKGROUND

2.1 Project 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 presents the location of the residential receptors and industrial receptors considered in this assessment.

Figure 2-2 presents a pseudo three-dimensional visualisation of the topography in the general vicinity of the Project location. The general area can be characterised as being relatively flat with gentle undulations. The topography to the south increases in height beyond the Prospect Reservoir.

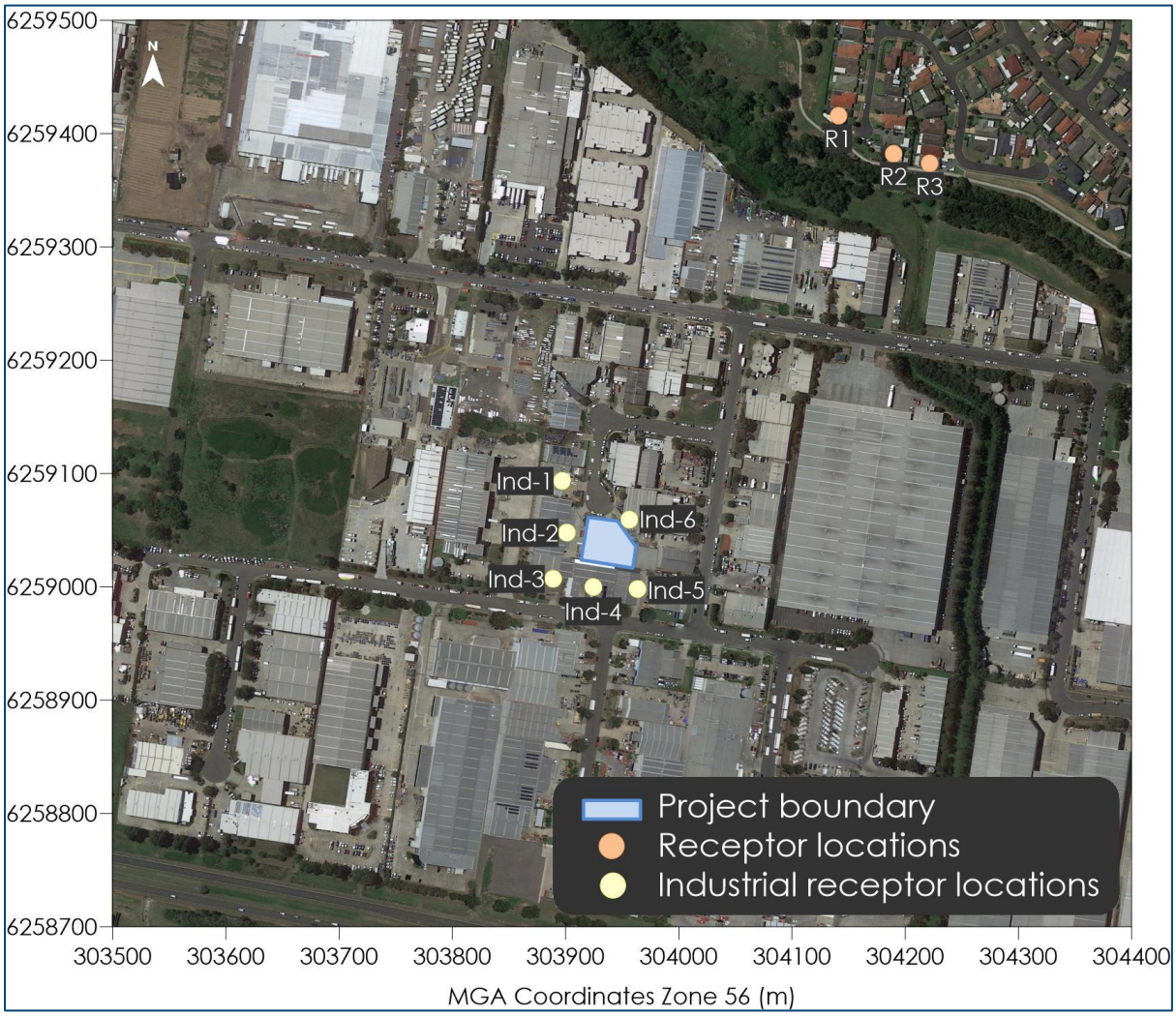

Figure 2-1: Project setting

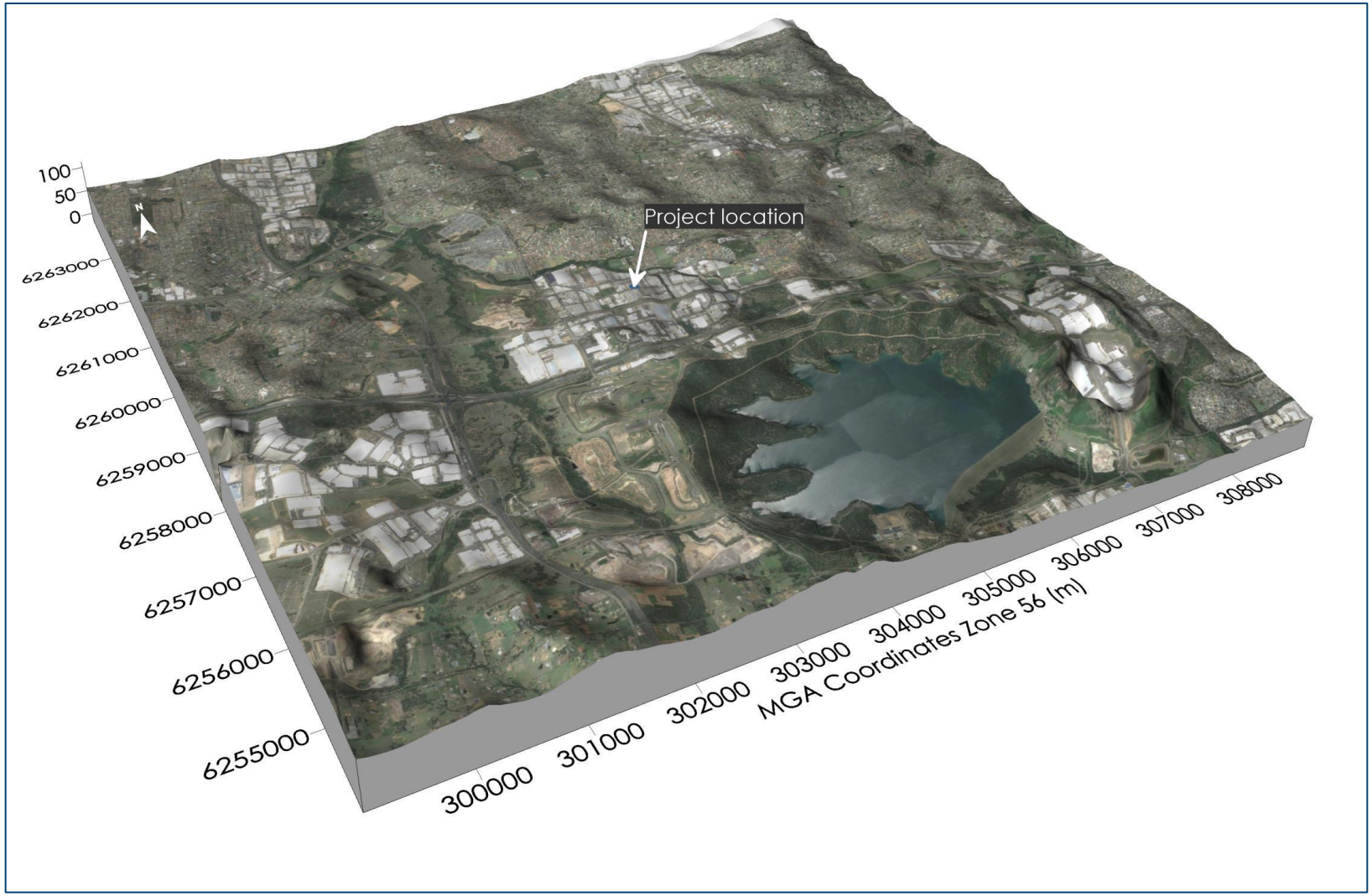

Figure 2-2: Topography of the Project location

2.2 Project description

The existing approved operations are currently permitted to store clinical and related wastes at the site and undertake non-thermal treatment of clinical waste using an autoclave.

All clinical and related wastes that are received at the facility are processed. Processing includes:

- Unloading from the collection vehicle;
- Inspection of the waste;
- Weighing the waste;
- Separating clinical and related wastes;
- Related waste is not permitted to be treated on-site and is stored separately for collection by a selected contractor for disposal at an appropriate facility;
- All clinical waste is treated on-site via the autoclave system; and,
- Following the treatment process, the clinical waste is shredded and compacted for disposal at an appropriate facility.

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 approximately 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 facility. Much of the odour is however captured along with moisture and treated within the internal closed system, the stand-alone tank further cools the air and scrubs out odours.

Presently air exits from within the stand-alone tank as a fugitive emission. It is proposed to install a vent pipe on the stand-alone tank to improve air dispersion.

The approved hours of operation for the facility are 7:00am to 7:00pm, Monday to Saturday, however the current operational hours are generally 7:00am to 3:00pm, Monday to Friday.

The Project involves an increase in throughput of clinical waste and related waste processed at the facility from 650 tonnes per annum (tpa) to approximately 2,300 tonnes per annum (tpa) and an increase in the maximum quantity of waste on-site at any one time from 5,000 kilograms (kg) to 8,000kg.

To allow for the additional waste processed at the facility, the current operational hours would increase, but will remain within the approved hours of 7:00am to 7:00pm, Monday to Saturday.

The approved maximum hourly emissions from the processing of the waste would not alter as the process is a batch process, which limits the hourly throughput.

Improvements are also proposed to assist with the management of odour generated from the process. This includes installing a new stand-alone tank with a vent pipe extending above the top of the building.

This would assist with the dispersion of the odorous air discharged from the autoclave via the treatment system.

An indicative site layout for the Project and the water cycle for the autoclave system is shown in **Figure 2-3**.

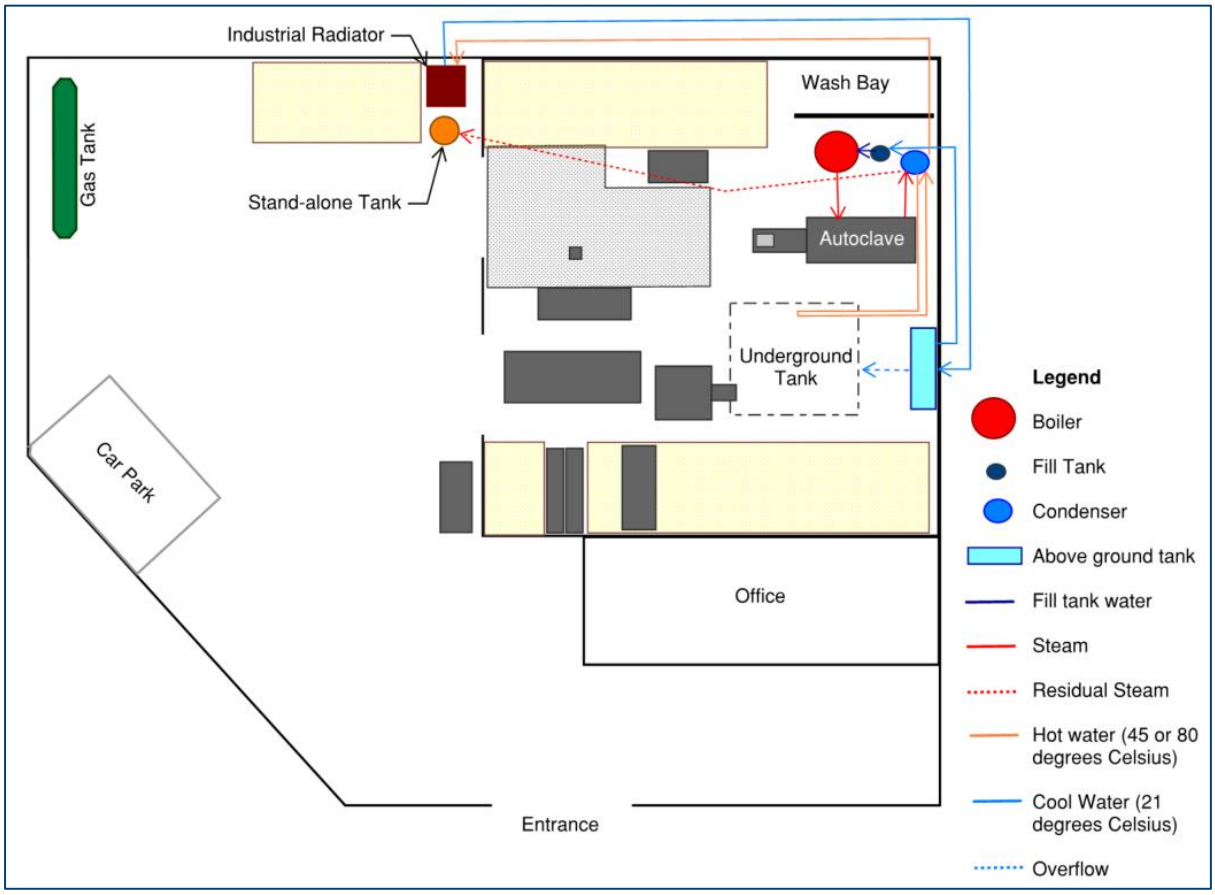

Figure 2-3: Indicative site layout and autoclave water and air flow/ cycle

3 AIR QUALITY CRITERIA

3.1 Introduction

Odour in a regulatory context needs to be considered in two similar, but different ways depending on the situation.

NSW legislation (*Protection of the Environment Operations Act, 1997)* prohibits emissions that cause offensive odour to occur at any off-site receptor. Offensive odour is evaluated in the field by authorised officers, who are obliged to consider the odour in the context of its receiving environment, frequency, duration, character and so on and to determine whether the odour would interfere with the comfort and response of the normal person unreasonably. In this context, the concept of offensive odour is applied to operational facilities and relates to actual emissions in the air.

However, in the approval and planning process for proposed new operations or modifications to existing projects, no actual odour exists and it is necessary to consider hypothetical odour. In this context, odour concentrations are used and are defined in odour units. The number of odour units represents the number of times that the odour would need to be diluted to reach a level that is just detectable to the human nose. Thus by definition, odour less than one odour unit (1 OU), would not be detectable to most people.

The range of a person's ability to detect odour varies greatly in the population, as does their sensitivity to the type of odour. The wide ranging response in how any particular odour is perceived by any individual poses specific challenges in the assessment of odour impacts and the application of specific air quality goals related to odour. The NSW Odour Policy (**NSW DEC, 2006**) sets out a framework specifically to deal with such issues.

It needs to be noted that the term odour refers to complex mixtures of odours, and not "pure" odour arising from a single chemical. Odour from a single, known chemical very rarely occurs (when it does, it is best to consider that specific chemical in terms of its concentration in the air). In most situations odour will be comprised of a cocktail of many substances which is referred to as a complex mixture of odour, or more simply odour.

For activities with potential to release significant odour it may be necessary to predict the likely odour impact that may arise. This is done by using air dispersion modelling which can calculate the level of dilution of odours emitted from the source at the point that such odour reaches surrounding receptors. This approach allows the air dispersion model to produce results in terms of odour units.

The NSW criteria for acceptable levels of odour range from 2 to 7 OU, with the more stringent 2 OU criteria applicable to densely populated urban areas and the 7 OU criteria applicable to sparsely populated rural areas, as outlined below.

3.2 Complex Mixtures of Odorous Air Pollutants

Table 3-1 presents the assessment criteria as outlined in the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (**NSW EPA, 2017**). This criterion has been refined to take into account population densities of specific areas and is based on a 99th percentile of dispersion model predictions calculated as 1-second averages (nose-response time).

Table 3-1: Impact assessment criteria for complex mixtures of odorous air pollutants (nose-response-time average, 99th percentile)

Population of affected community	Impact assessment criteria for complex mixtures of odorous air pollutants (OU)
Urban (≥~2000) and/or schools and hospitals	2.0
~500	3.0
~125	4.0
~30	5.0
~10	6.0
Single rural residence (≤~2)	7.0

Source: NSW EPA, 2017

The NSW odour goals are based on the risk of odour impact within the general population of a given area. In sparsely populated areas the criteria assume there is a lower risk that some individuals within the community would find the odour unacceptable, hence higher criteria apply.

Peak-to-mean factors are applied to account for any odour fluctuation above and below the mean odour level of the 1-hour averaging time. The criteria in **Table 3-1** are compared with modelled results that include peaking factors to account for the time-averaging limitations of air dispersion models. The peak-to-mean factors developed by **Katestone Scientific Pty Ltd (1995, 1998)** for NSW EPA are applied to convert the modelled (1-hour) averaging time to 1-second peak concentrations which are appropriate.

A summary of the peak-to-mean values is provided in **Table 3-2**.

Table 3-2: Peak-to-mean values

Source Type	Pasquill-Gifford stability class	Near field P/M 60*	Far field P/M 60*
Area	A, B, C, D	2.5	2.5
	E, F	2.3	1.9
Line	A-F	6	6
Surface point	A, B, C	12	4
	D, E, F	25	7
Tall wake-free point	A, B, C	17	3
	D, E, F	35	6
Wake-affected point	A-F	2.3	2.3
Volume	A-F	2.3	2.3

*Ratio of peak 1-second average concentrations

4 EXISTING ENVIRONMENT

This section describes the existing environment including the climate and ambient air quality in the area surrounding the Project.

4.1 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 4-1 and **Figure 4-1** 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 4-1: 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

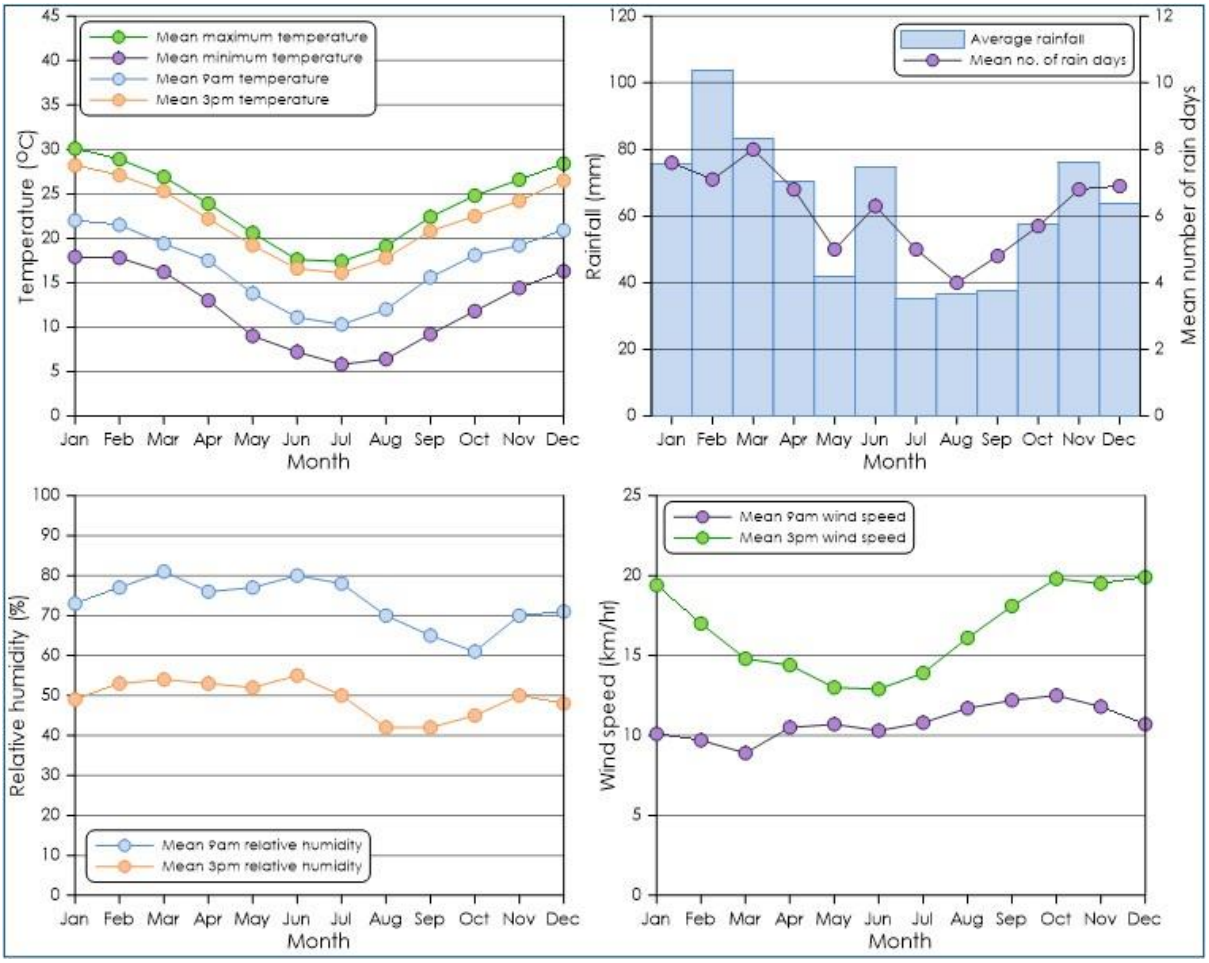

Figure 4-1: Monthly climate statistics summary – Horsley Park Equestrian Centre AWS

4.2 Local meteorological conditions

Annual and seasonal windroses for the Horsley Park Equestrian Centre AWS during the 2015 calendar period are presented in **Figure 4-2**.

The 2015 calendar year was selected as the meteorological year for the dispersion modelling based on an analysis of the long-term data trends in meteorological data recorded for the area as outlined in **Appendix A**.

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 form 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.

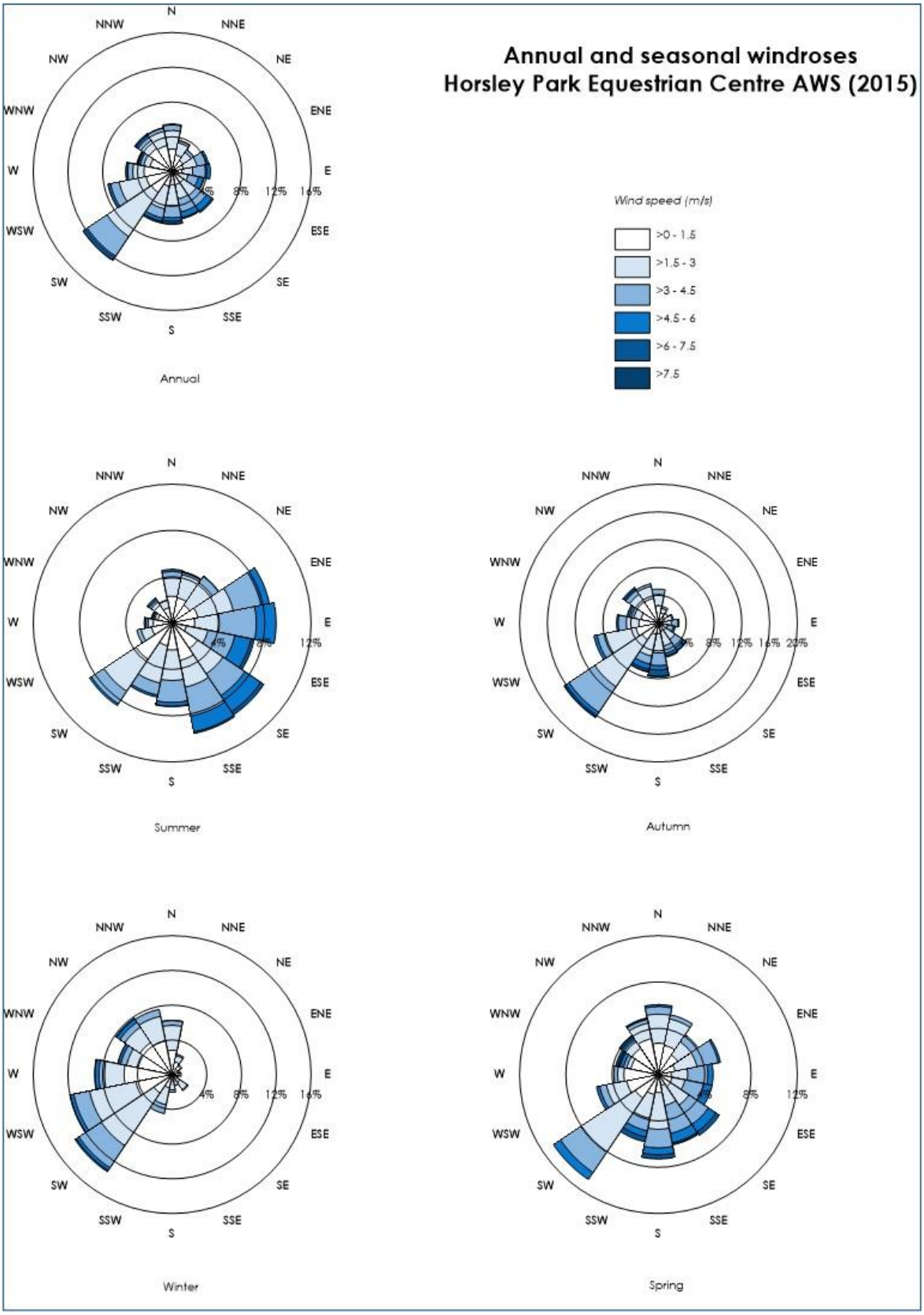

Figure 4-2: Annual and seasonal windroses – Horsley Park Equestrian Centre AWS (2015)

5 DISPERSION MODELLING APPROACH

5.1 Introduction

The following sections are included to provide the reader with an understanding of the model and modelling approach applied for the assessment. CALPUFF is an advanced air dispersion model which can deal with the effects of complex local terrain on the dispersion meteorology over the modelling domain in a three-dimensional, hourly varying time step.

The model was setup in general accordance with the methods provided in the NSW EPA document *Generic Guidance and Optimum Model Setting for the CALPUFF Modeling System for Inclusion into the 'Approved Methods for the Modeling and Assessments of Air Pollutants in NSW, Australia'* (**TRC**, **2011**).

5.2 Modelling methodology

Modelling was undertaken using a combination of the CALPUFF Modelling System and The Air Pollution Model (TAPM). The CALPUFF Modelling System includes three main components: CALMET, CALPUFF and CALPOST and a large set of pre-processing programs designed to interface the model to standard, routinely available meteorological and geophysical datasets.

TAPM is a prognostic air model used to simulate the upper air data for CALMET input. The meteorological component of TAPM is an incompressible, non-hydrostatic, primitive equation model with a terrain-following vertical coordinate for three-dimensional simulations. The model predicts the flows important to local scale air pollution, such as sea breezes and terrain induced flows, against a background of larger scale meteorology provided by synoptic analysis.

The CALMET meteorological model uses the geophysical information and observed/simulated surface and upper air data as inputs to develop wind and temperature fields on a three-dimensional gridded modelling domain. CALPUFF is a transport and dispersion model that advects "puffs" of material emitted from modelled sources, simulating dispersion processes along the way. It uses the three dimensional meteorological field generated by CALMET. CALPOST is a tool used to process the output of the model and produce tabulations that summarise the results of the simulation.

5.2.1 Meteorological modelling

The TAPM model was applied to the available data to generate a three dimensional upper air data file for use in CALMET. The centre of analysis for the TAPM modelling used is 33deg 49.0min south and 150deg 51.0min east. The simulation involved an outer grid of 30km, with three nested grids of 10km, 3km and 1km with 35 vertical grid levels.

The CALMET initial domain was run on a 30 x 30km grid with a 0.6km grid resolution and refined for a final domain of 10 x 10km grid with a 0.1km grid resolution. The available meteorological data for January 2015 to December 2015 from 12 meteorological monitoring sites were included in the simulation. **Table 5-1** outlines the parameters used from each station. Three dimensional upper air data were sourced from TAPM output. Local land use and detailed topographical information was included to produce realistic fine scale flow fields (such as terrain forced flows) in surrounding areas.

Table 5-1: Surface observation stations

Weather Stations	Parameters						
	WS	WD	CH	CC	T	RH	SLP
Horsley Park Equestrian Centre AWS (BoM) (Station No. 067119)	✓	✓			✓	✓	
Badgerys Creek AWS (BoM) (Station No. 067108)	✓	✓			✓	✓	✓
Bankstown Airport AWS (BoM) (Station No. 066137)	✓	✓	✓	✓	✓	✓	✓
Penrith Lakes AWS (BoM) (Station No. 067113)	✓	✓			✓	✓	
Holsworthy Aerodome (BoM) (Station No. 066161)	✓	✓	✓	✓	✓	✓	✓
Sydney Olympic Park AWS (Archery Centre) (BoM) (Station No. 066212)	✓	✓			✓	✓	
Prospect (NSW DPIE)	✓	✓			✓	✓	
St Marys (NSW DPIE)	✓	✓			✓	✓	
Bringelly (NSW DPIE)	✓	✓			✓	✓	
Liverpool (NSW DPIE)	✓	✓			✓	✓	
Chullora (NSW DPIE)	✓	✓			✓	✓	
Vineyard (NSW DPIE)	✓	✓			✓	✓	

WS = wind speed, WD= wind direction, CH = cloud height, CC = cloud cover, T = temperature, RH = relative humidity, SLP = sea level pressure, DPIE =Department of Planning and Environment, stations at air monitoring sites

The outputs from the CALMET modelling are evaluated using visual analysis of the wind fields and extracted data and through a comparison of the CALMET generated data at locations with measured observational meteorological data within the modelling domain.

Figure 5-1 presents a visualisation of the wind field generated by CALMET for a single hour of the modelling period. The wind fields are seen to follow the terrain well and indicate the simulation produces realistic fine scale flow fields (such as terrain forced flows) in surrounding areas.

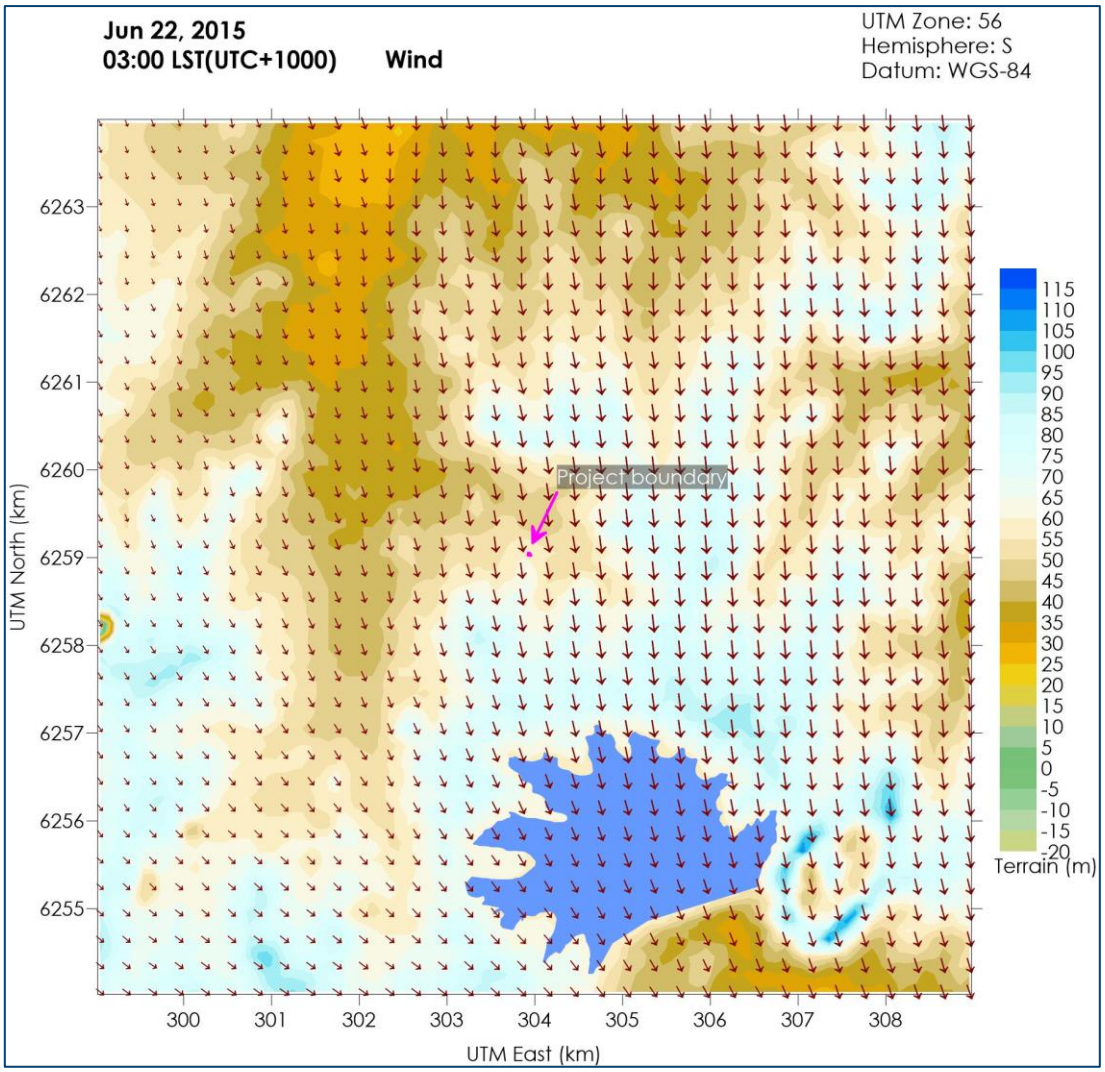

Figure 5-1: Representative 1-hour average snapshot of wind field for the Project (site is centrally located)

CALMET generated meteorological data were extracted from a point within the CALMET domain and are graphically represented in **Figure 5-2** and **Figure 5-3**.

Figure 5-2 presents annual and seasonal windroses extracted from one point in the CALMET domain. On an annual basis, winds from the southwest are most frequent. During summer, winds typically arise from the east-northeast to southwest. The autumn wind distribution is similar to the annual wind distribution pattern, with a high proportion of winds from the southwest. In winter, winds tend to occur from the southwest sector. The spring distribution is typically dominated by winds from the south-southwest with varied winds from the other directions.

Overall, the windroses generated in the CALMET modelling reflect the expected wind distribution patterns of the area as determined based on the available measured data and the expected terrain effects on the prevailing winds

Figure 5-3 includes graphs of the temperature, wind speed, mixing height and stability classification over the modelling period and shows sensible trends considered to be representative of the area.

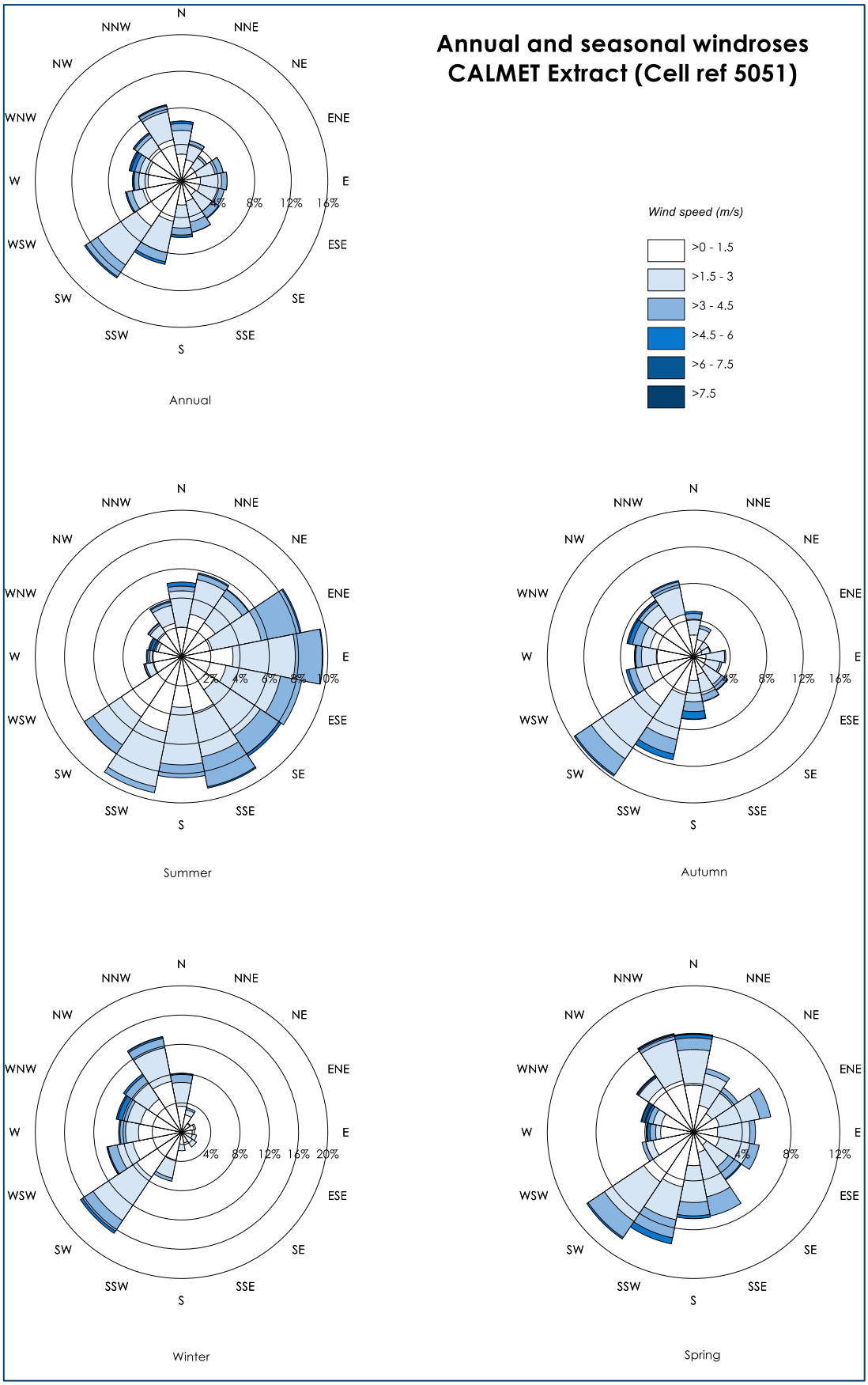

Figure 5-2: Annual and seasonal windroses from CALMET (Cell ref 5051)

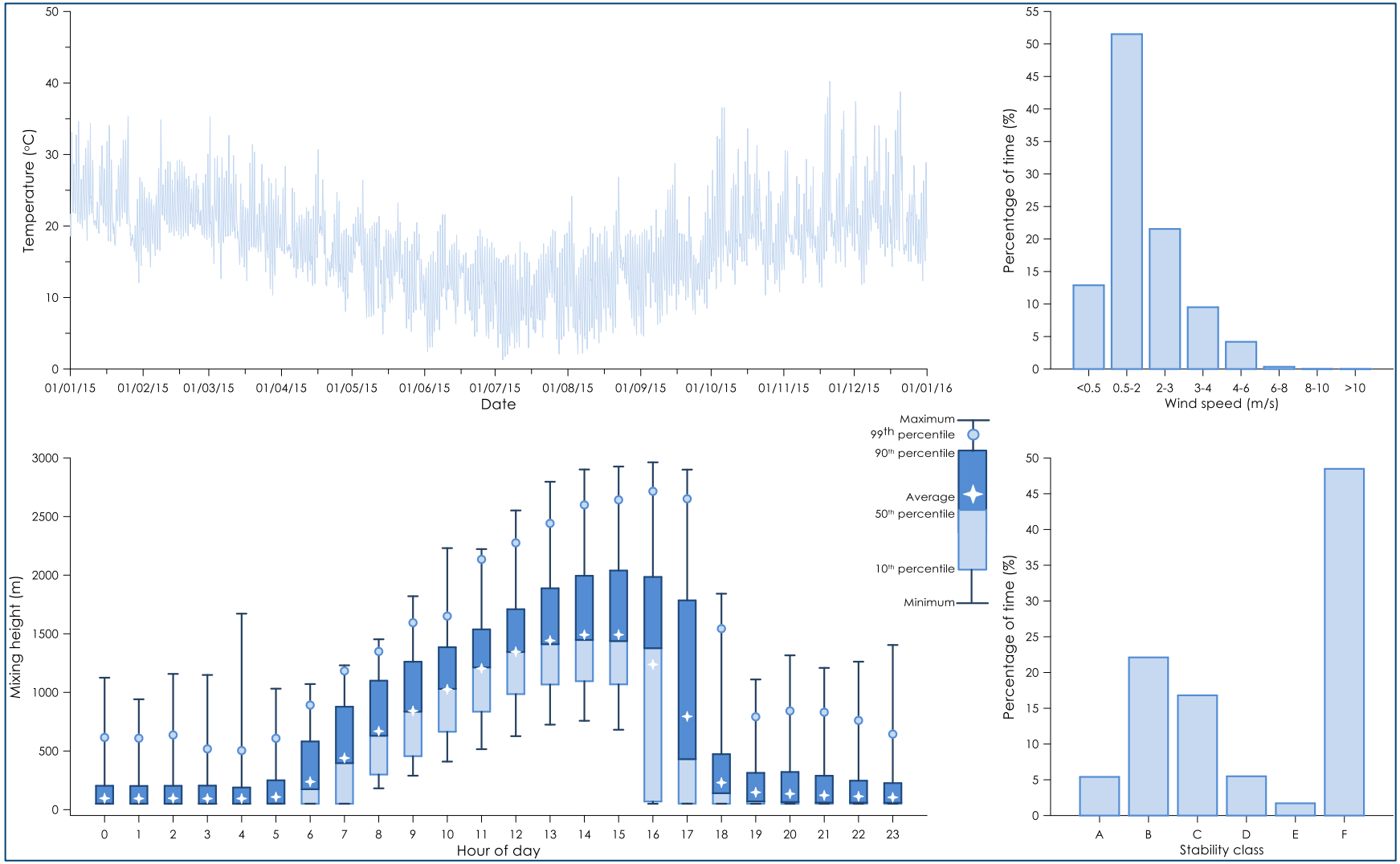

Figure 5-3: Meteorological analysis of CALMET (Cell Ref 5051)

5.2.2 Dispersion modelling

The CALPUFF air dispersion model has been used to predict the potential odour levels in the ambient air in the wider area around the Project.

Modelling of the key odour emission sources was conducted using the emissions rates and parameters outlined in the following section and utilising the meteorological data described in the previous section.

5.3 Emission estimation

Odour emissions from the Project have potential to arise from a range of sources including:

- The vent pipe and some fugitives associated with the stand-alone tank; and,
- Received waste and processed waste stored within the building.

To estimate potential odour emissions associated with the Project, site specific odour measurements of the different sources were collated from a previous study and are summarised in **Table 5-2**.

Table 5-2: Summary of available odour measurements

Source description	Odour concentration (OU)
Stand-alone tank (head-space)	8,200
Processed waste	1,500
Received waste for processing	540
Received waste with broken bag	900

Source: **NICS (2018)**

The most odorous source is identified as the residual airstream released at the end of the autoclaving treatment process. The odour from this source would be intermittent during the operational hours as the autoclave operation takes approximately 55 minutes per cycle and approximately 8 minutes for the air to be released. As mentioned, excess air from the autoclave is sent to the stand-alone tank and currently exits as a fugitive emission.

To estimate the potential air released, the total amount of air in the autoclave has been calculated based on the volume and density of air in the autoclave under pressure. This air is cooled, and moisture is removed, which greatly reduces the volume of the air reaching the stand-alone tank. The flow rate was then calculated based on the volume of air exiting over 8 minutes. This flow rate is used to calculate the odour emissions rate based on the measured odour concentration in the head space of the stand-alone tank in **Table 5-2**.

For the approved operations, fugitive odour from the stand-alone tank is emitted via gaps in the top of the stand-alone tank and has been modelled as a volume source. For the proposed operations, a new vent pipe extending to the top of the building is proposed to disperse the odour and it was conservatively assumed approximately 90% of the odour is released via this vent pipe and the remaining 10% is still released as a fugitive source at the tank (in reality there may be close to no fugitive emissions as a flexible rubber flashing or equivalent would be used). **Table 5-3** presents a summary of the source parameters for the stand-alone tank.

Table 5-3: Summary of source parameters for stand-alone tank

Source parameter	Stand-alone tank vent	Stand-alone tank vent at roof-top
Source type	Volume	Point
Sigma y (m)	1	-
Sigma z (m)	1	-
Release height (m)	2.45	9
Diameter (m)	-	0.06
Temperature (°C)	40	40
Exit velocity (m/s)	-	16.5

Even though the main building would be enclosed, there is potential for some fugitive odour emissions to escape at times when the doors are opened for access into the building. To estimate the potential fugitive odour emissions, the amount of waste stored in the facility with the measured odour concentrations of the different waste types were considered.

The approved and proposed amount of stored waste is 5,000kg and 8,000kg, respectively and would occupy a volume of 200 cubic metres (m^3) and 320m^3, respectively. For the modelled scenario, the distribution of waste types was assumed to be 60% as received waste for processing, 30% final processed waste and 10% as received waste with a broken bag. The concentration of odour within the building was calculated proportionally on the basis of this distribution of waste types (i.e. 0.6 x received waste odour + 0.3 x processed waste odour and 0.1 x received waste with broken bag odour = average odour in building).

The odour from the main building was modelled as a fugitive source emitted from the two doors of the building. It should be noted that these two doors can be closed. There are roof vents on the building, however relative to the size of the doors, and position relative to receivers, the roof vents would be insignificant sources whenever the doors are open. For conservatism, it is assumed the doors are open and releasing odorous air in the modelling scenarios.

The odour emission rate from the building was determined on the basis of five air changes per hour, which is the typical standard for such a facility. The odour concentration of the existing waste was measured very near to the surface of the waste volume, approx. 200m^3. The measured odour concentration ascribable to the total volume of waste was distributed into the total volume of the building of approx. 3,500m^3, giving an estimated dilution factor of approx. 17 between the concentration measured at the waste to that estimated at the release point (roller doors). Five times the building volume of odour at this concentration is assumed to be emitted each hour from two open roller doors.

For the Project, the volume of waste in the building would increase to approx. 320 m^3, increasing the fugitive emissions by a factor of 1.6 times.

Generally, it is better to sample the actual odour emission rate directly, rather than to calculate it as above. However, such sampling data are not available, and due to current COVID_19 risks it is not prudent to take odour samples in order to measure on-site odour emission rates directly.

As a check, the same calculation was made for another quarantine waste autoclaving facility, and the result compared with the direct measurement at the facility. This is shown in **Table 5-5**. The indication is that the calculation produces a comparable average odour concentration at the exit point to that

which was actuallu measured (48.6OU vs. 46.7OU). This odours from this other site also compares well with the calculated Project odour concentrations at the exit point (45.3OU approved and 72.7OU proposed).

The calculated fugitive odour emission rates for Project (240OU/s approved and 384 OU/s proposed) also compare reasonably with those at the other facility (283OU calculated or 272OU measured).

If required, it would be possible to validate the above assumptions via direct measurement at a later time when COVID-19 risks diminish. However, as outlined in the results analysis, the assessment shows that the results are quite low and below criteria, hence this might only be necessary if a valid complaint or other actual issue arising that cannot be addressed by applying controls.

The estimated odour emissions from the modelled sources are outlined in **Table 5-4**. In the modelling, it is assumed the odour emissions would be constant during the operational hours for the approved and proposed scenarios. This is likely to be conservative, noting the autoclaving treatment process (exiting air via the stand-alone tank or tank vent pipe) would only emit odours for approximately 8 minutes in any hour, and the two roller doors would not be open at all times.

Table 5-4: Summary of odour emission rates for Project

Scenario	Source description	OER (OU/s)	Total fugitive emissions (OU/s)	Total pipe Emissions (OU/s)
Approved	Stand-alone tank	289	529	0
	Fugitive emissions from building	240		
Proposed	Stand-alone tank vent pipe	260	413	260
	Stand-alone tank	29		
	Fugitive emissions from building	384		

Table 5-5: Summary of odour emission rates for alternative autoclave facility

Source description	Odour concentration(OU)	Mass emission rate (OU/s)
Fugitive emissions from building - calculated as per Project, based on odour concentration of waste	48.6	283
Fugitive emissions from building based on odour concentration at exit point	46.7	272

6 DISPERSION MODELLING RESULTS

The spatial distribution of the dispersion modelling predictions is presented as an isopleth diagram showing the 99th percentile nose-response ground level odour concentrations in **Figure 6-1**.

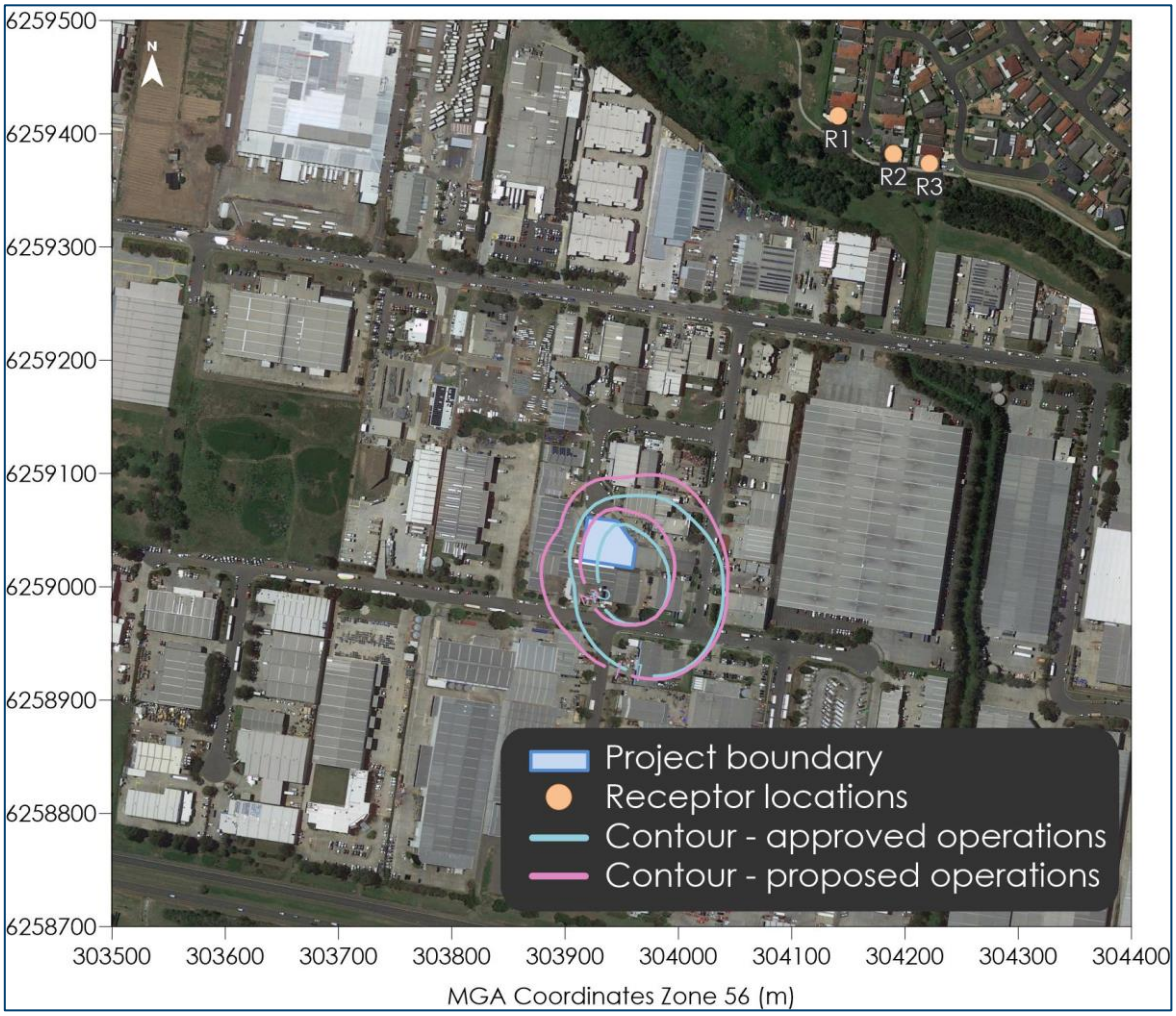

Figure 6-1: Predicted 99th percentile nose-response average ground level odour concentrations – Comparison of approved operations and proposed operations

6.1 Applicable Project criteria

The current EPA approach to criteria setting would identify three potentially affected receptors within the 2 OU contour line. per the EPA approach, this is nominally 7 persons based on a population density of 2.4, and leads to an applicable Project criteria of 6 OU.

It is noted that up to 15 persons could be in the 2ou contour line and the criteria would still remain at 6OU.

Table 6-1 presents the modelling results at each assessed sensitive receiver location. The results indicate Project odour levels will be below applicable criteria.

Table 6-1: 99th percentile nose-response average ground level odour concentrations

Receptor ID	Predicted level – Approved operations	Predicted level – Proposed operations
R1	0	0
R2	0	0
R3	0	0
Ind-1	0	1
Ind-2	1	1
Ind-3	1	1
Ind-4	2	2
Ind-5	3	3
Ind-6	2	2

6.2 Results Analysis

The predicted odour levels at adjacent industrial receptors are low, generally 1 to 3 OU, which is a low level of odour within an industrial area. Generally, odour is tolerable in industrial areas at a level of 7 OU. The predicted levels are less than half this value and are generally close to levels of 2 OU, which would be acceptable within residential areas.

The results indicate no discernible level of odour likely to arise in any residential area.

The changes due to the Project that increase potential impacts include an increased volume of waste stored on-site leading to greater odour released as fugitive emissions, and additional operational hours which increase the likelihood of experiencing odour, also these hours occur in the late evening when air dispersion conditions are poorer.

However, there are also important changes due to the Project which decrease the potential impacts, including a new vent pipe diverting approximately half of the current emissions to be released with significant velocity above the roof height.

It should be noted that the approved maximum hourly emissions generated due to venting the autoclave do not change due to the Project.

Overall, the Proposal would reduce the quantity of potential fugitive emissions released at ground level by approximately 22%, as outlined in **Table 5-4**.

The results (not shown) also indicate that the new vent pipe is only a small contributor to ground level impacts, and that the fugitive emission from the building govern the level of impact nearby. The results show that the fugitive emissions, although decreasing by 22%, lead to a small increase in impacts very near to the facility.

This small increase arises due to poorer air dispersion conditions in the later part of the evening. It is noted that neighbouring sites are unlikely to have staff working outdoors at these times.

It is also important to note that the odour impact for the Project during the approved operating hours would be lower than at present.

The predicted levels for the approved operations and proposed operations are overlaid in **Figure 6-1**. The results show that the spatial extent of impacts for the proposed operations are a little greater (as arising in the late evening when people are unlikely to be present outside in this location) but overall, are generally similar to the approved operations, with for example the 2 OU contour line moving by approx. 5 to 10m spatially.

The small change is reflected in the results presented in **Table 6-1**, which show no change in odour impact (when rounded to whole odour units per the NSW Odour Policy).

Overall, it is concluded that the small predicted change in odour due to the Project would be in the late evening and the difference would not be discernible relative to the approved odour levels (when roller doors are open in each case).

The results also indicate that the total odour levels would be below acceptable odour criteria for an industrial area. The current EPA approach would identify three potentially affected receptors, or nominally 7 persons, leading to a criteria of 6 OU, approximately double the predicted level. Even allowing for up to 15 persons within the 2 OU contour line, the criteria would remain at 6 OU.

It should be noted that odour effects from the Project on neighbours would be avoided by simply closing the roller doors. This is a significant difference relative to the approved case, where emissions from the doors are only approximately half of the cause of the off-site odour levels, and approximately half the impact arises from fugitives released from the stand-alone tank with each cycle of the autoclave. By using a vent pipe for the stand-alone tank, the Project very greatly diminishes (almost removes) this intermittent and hence potentially more noticeable odour.

Other potential odour controls which can be applied are considered in the next section.

7 ODOUR MANAGEMENT

Suggested 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;
- 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).

8 SUMMARY AND CONCLUSIONS

This report outlines an assessment of the potential air quality (odour) impacts associated with the operation of the Project.

Air dispersion modelling using the CALPUFF model was applied to predict the potential for off-site odour impacts in the surrounding area due to the operation of the Project.

The odour impact assessment indicates odour impacts due to the Project are low, within criteria for an industrial area, and would not lead to any discernible level of odour at any residential locations.

A comparison with the approved operations indicates the proposed operations for the Project would not lead to any discernible change in the approved level of odour impact generated from the operations.

Overall, at the adjacent industrial neighbours, there would be slightly less odour during current operating hours and slightly more in the late evening.

The odour can be controlled by closing the roller doors. These doors need only be opened for waste movement in and out of the building.

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Appendix A - *Selection of Meteorological Year*

Selection of meteorological year

A long-term analysis of the last six contiguous years of meteorological data from the nearest BoM weather station with suitable available data, Horsley Park Equestrian Centre (AWS) weather station, is presented in **Table A-1**. The standard deviation of the last six years of meteorological data spanning 2014 to 2019 was analysed against the long-term measured wind speed, temperature and relative humidity spanning an approximate 13 to 22-year period recorded at this station.

The analysis indicates that 2018 is closest to the long-term average for wind speed, 2014 is closest to the long-term average for temperature and 2015 is closest to the long-term average for relative humidity.

For an overall score, wind speed was given a weighting of two and temperature and humidity a weighting of one. Overall, this analysis indicates that 2015 is the most representative year on the basis of long-term measured wind speed, temperature and relative humidity (weighted 2:1:1).

Table A-1: Statistical analysis results for Horsley Park Equestrian Centre AWS

Year	Wind speed	Temperature	Relative humidity	Weighted Score
2014	0.78	0.63	4.04	6.24
2015	0.90	0.73	2.64	**5.17**
2016	0.84	0.88	4.96	7.53
2017	0.71	0.84	5.18	7.45
2018	0.62	0.92	6.98	9.14
2019	0.80	0.86	5.54	7.99

Thus 2015 is to be the most representative year on the basis of long-term measured wind speed, temperature and relative humidity and monitoring data.

Figure A-1 shows the frequency distributions for wind speed, wind direction, temperature and relative humidity for the 2015 year compared with the mean and range of the 2014 to 2018 data set. The 2015 year data does not indicate any significant variation of the last five years of data.

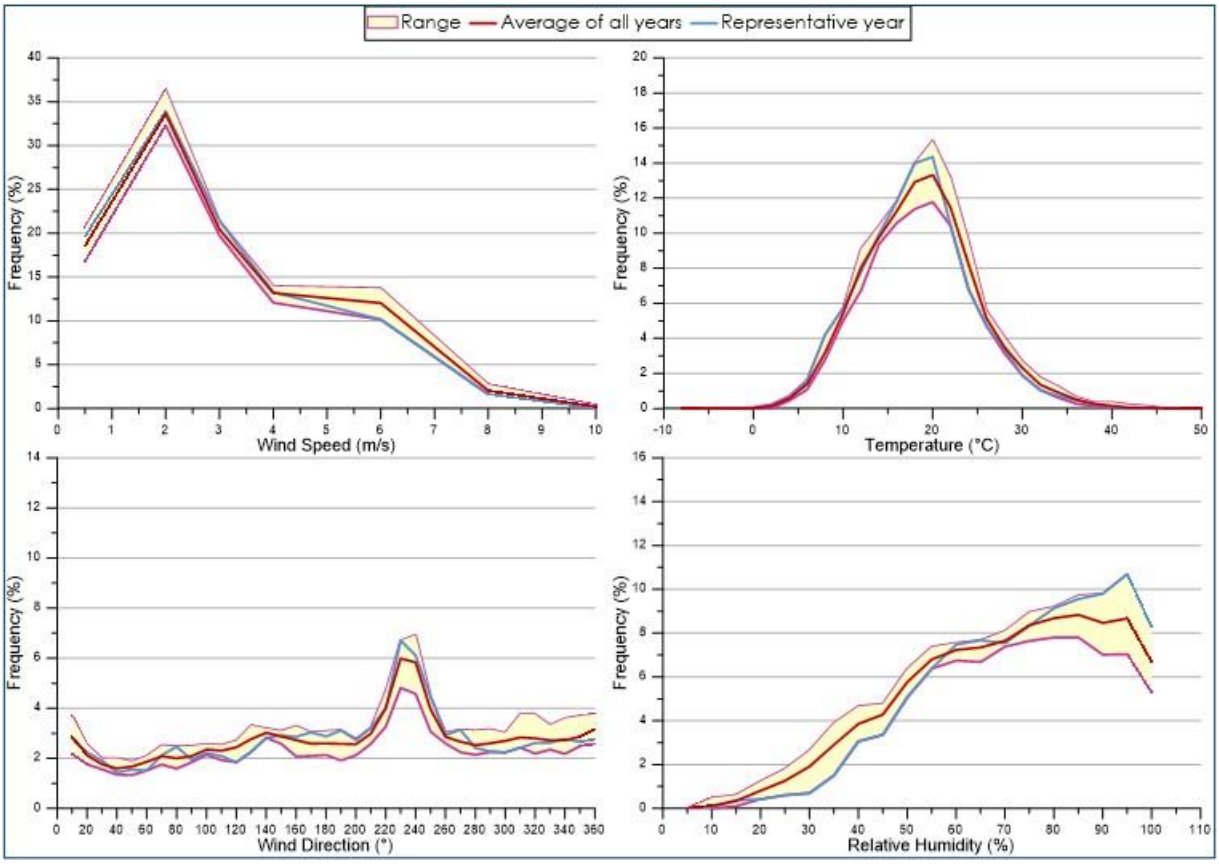

Figure A-1: Frequency distributions for wind speed, wind direction, temperature and relative humidity

Appendix H

Preliminary Hazard Assessment

Med-X Pty Ltd

Clinical Waste Management Facility, Arndell Park

Preliminary Hazard Analysis

Final | 16 June 2020

Job number 274648-03

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Document verification

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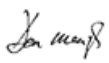
		Signature			
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Executive Summary

The purpose of this Preliminary Hazard Analysis (PHA) is to develop a comprehensive understanding of the hazards and risks associated with the operation of a facility and of the adequacy of safeguards. This PHA has also been prepared to address issues raised in the submissions on the Environmental Impact Statement (EIS) for State Significant Development (SSD) Application 6761.

The PHA describes the Med-X Waste Management Treatment Facility (the facility) at Arndell Park and its operation. The PHA was carried out on a qualitative basis because of the small size and simple processes carried out.

The hazards and risks were identified by inspection of documents provided by Med-X. The PHA estimates the risk as the product of a Consequence Factor and a Likelihood Factor. The basis for assigning these factors is stated.

The incident with the greatest potential off-site impact is a boiling liquid expanding vapor explosion (BLEVE)[1] of the LPG tank, but this is an event with very low likelihood.

Incidents involving the unintentional release of pathogens to the environment are considered unlikely to have material off-site impact. The principal impact is likely to be on site staff.

Although none of the hazards or risks were identified as requiring additional measures, recommendations are made for reducing risk and improving safety.

It is recognised that the site is small and that the need to prevent storage of waste bins, which are plastic, close to the LPG tank will require close attention to scheduling of deliveries of waste to the facility.

[1] A BLEVE is an explosion caused by the rupture of a vessel containing a pressurized liquid that has reached temperatures above its boiling point.

1 Findings and Recommendations

1.1 Findings

The hazards or risks on the site have been identified by inspection of documents provided by Med-X. A site visit was not possible in the circumstances of the restrictions on movement required by the COVID-19 pandemic. However, the identification is considered to be as complete as is reasonably practicable.

Each hazard or risk was assessed in terms of its consequences for humans and for the environment and the likelihood of its occurrence. These aspects were assigned factors or ratings ranging from 1 to 5. The overall risk rating of each incident was calculated by multiplying the consequence factor by the likelihood factor. A risk matrix was prepared showing the consequence and likelihood factors. The hazards or risks that were identified are shown on the risk matrix. The risk matrix is divided into areas where the overall risk is unacceptable, where it may be acceptable, and where it is as low as is reasonably practicable.

The measures taken to minimise risk and improve safety have been evaluated and included in the risk assessment. However, some recommendations are made to further reduce risk. It will be necessary for the site management to update procedures, provide training to all staff and ensure that all procedures are followed.

The potentially congested nature of the site is recognised, in particular the need to ensure a clear area around the LPG storage tank. Close attention will have to be paid to scheduling of deliveries in order to prevent unsustainable accumulations of untreated clinical waste on the site.

1.2 Recommendations

The following recommendation is made to enhance safety and reduce risk:

- Consider installing an automatic fire detection system in the warehouse building, with the alarm being signalled to a third party central monitoring station.

2 Project Description

2.1 Overview

Population growth and the continued demand for medical services has resulted in steady expansion of the health-care industry over the past 10 years. This has been supported by increased hospital and medical funding from the government and has resulted in the increase of a range of clinical wastes produced by medical and health service organisations. Due to the unforeseen circumstances of COVID-19, there is also currently a heightened state and national demand for clinical waste treatment. The project is seeking consent to immediately increase the processing capacity of clinical waste at the existing Clinical Waste Management Facility at Arndell Park (the facility). This would support the processing and treatment of the current volume of clinical waste in NSW, as well as the on-going demand for this service.

The facility is currently subject the approvals and licences outlined in Table 1.

Table 1 Current licences and approvals

Relevant legislation and regulating authority	Licence / approval	Date of issue	Licence / approval details
Environmental Planning and Assessment Act 1979 – Blacktown City Council	Development Consent, determination number 11-1642 (as modified by determination number S96-12-1451 on 2 October 2012)	23 April 2012	Use of the industrial premises for the following purposes: • Operation of a "waste management facility" for the handling and processing of clinical and quarantine waste[2] • The maximum storage of 0.5 tonnes (i.e 23 bins) of unprocessed waste on site at any one time • The processing of a maximum of 96 sulo bins of untreated waste each day • The processing of a maximum of 650 tonnes of untreated waste per year. Approved hours of operation: 7am to 7pm, Monday to Saturday.
Protection of the Environment Operations Act 1997 (POEO Act) - EPA	Environmental Protection Licence (EPL) 20233	3 September 2013 (licence transferred to Med-X on 11 October 2017)	Licence for the following activities: • storage of clinical and related wastes as defined in Schedule 1 of the POEO Act • waste processing (non-thermal treatment) of clinical and related wastes as defined in Schedule 1 of the POEO Act, excluding cytotoxic waste, pharmaceutical waste, radiological waste and volatile and semi-volatile

[2] Note that the Applicant does not currently, and if the project is approved does not intend to, handle or process any quarantine waste at the facility.

			organic compounds (including formaldehyde, phenol and mercury) The maximum quantity of clinical and related waste, treated and/or untreated, at the premises must not exceed 5000 kilograms at any one time.
Protection of the Environment Operations Act 1997 (POEO Act) - EPA	Environmental Protection Licence (EPL) 12609	27 November 2006 (licence transferred to Med-X on 30 October 2017)	Licence for the following activities: • Transport of category 1 trackable waste • Transport of category 2 trackable waste.
Protection of the Environment Operations Act 1997 (POEO Act) - NSW Ministry of Health	Certificate of Approval – Clinical Waste Treatment Method	12 March 2019	Approval for the treatment of clinical waste by autoclave at 140ºC for a minimum of 50 minutes at a pressure of 310 Kpa, followed by shredding and disposal at landfill, subject to the condition in Schedule 1 of the POEO Act.

2.2 Project scope

The project comprises an increase of the current processing capacity at the existing Clinical Waste Management Facility at 9 Kenoma Place, Arndell Park (the facility) from 650 tonnes per annum (tpa) to 2,300 tpa.

While clinical wastes undergo non-thermal treatment, related waste is not permitted to be treated on site and must be identified, separated, stored in a defined location and then transported to an appropriate facility for disposal.

In line with current practices at the facility, site operations would consist of the following activities:

- Processing of clinical and related wastes;
- Identification, separation, receipt, and storage of related wastes[3];
- Non-thermal treatment of clinical waste;
- Transport by a contractor of treated clinical waste to an appropriate disposal facility;
- Transport by a contractor of related wastes to an appropriate disposal facility;
- Washing and storage of waste bins; and
- Storage of clean, unused bins.

No physical works or additional plant or equipment would be required at the site to accommodate the proposed increase in waste processing. This would be achieved through extended hours of operation and additional traffic movements.

[3] Related wastes include Anatomical, Cytotoxic and Pharmaceutical wastes

Current operations at the facility generally occur between 7.00am and 3.00pm, Monday-Friday. The project would result in operation of the facility between the approved hours of 7.00am and 7.00pm, Monday-Saturday.

The waste collection vehicle fleet for the facility includes Medium Rigid Vehicles (MRV) and vans. The project would result in 32 deliveries per day, 16 by MRV and 16 by van. This is an additional 10 deliveries per day in total, 6 additional MRV deliveries and 4 additional van deliveries.

The two key items of equipment in the clinical waste treatment process are an autoclave and a shredder. The autoclave is used to sterilise the incoming clinical waste that is received in double bags. After sterilising, the clinical waste is no longer infectious. The treated waste is emptied into a mechanical shredder. The shredded waste is emptied into a compactor and sent for disposal in an offsite landfill.

The waste to be processed will continue to be clinical and related medical waste collected from hospitals, medical centres and other similar facilities.

Site processes are further described in Section 4.

2.3 Waste quantities

The amount of waste expected to be processed on average per day and the amount to be processed per year is summarised in Table 2 below.

Table 2 Waste quantity processed during current and proposed operations

Waste streams	Average kg/day		Tonnes per annum (tpa)	
	Current operations	Proposed operations	Current operations	Proposed operations
Clinical Waste	1,800	6,600	513	Approx. 1,990
Anatomical	45	90	13	28
Cytotoxic	250	500	72	151
Pharmaceutical	40	80	12	24
Total	2,135	7,270	Approx. 610	Approx. 2,200

The proposed operations expect that approximately 2,200tpa of clinical and related wastes will be processed at the facility. Approximately 200tpa of related waste is expected to be processed at the facility and approximately 2,000tpa of clinical waste is expected to be treated via the autoclave system. This provides a 100tpa contingency to account for the variability in daily waste quantities produced by medical facilities to bring the total proposed processing capacity to 2,300tpa. The tonnage of clinical waste treated per day will vary.

Due to the increase in treatment capacity, the collection of treated clinical waste from the site will increase from 3-4 days per week to daily, Monday-Friday.

The proposed increase in related wastes processed on site will also result in the collection of related wastes from the site increasing from every 2 days to daily, Monday-Friday

3 Project Location

The Med-X Clinical Waste Management Facility is located within the Arndell Park Industrial Precinct at 9 Kenoma Place, Arndell Park (being Lot 14, DP 786328) (the site). The location of the site is shown in Figures 1 and 2.

Figure 1 Location of facility in Arndell Park

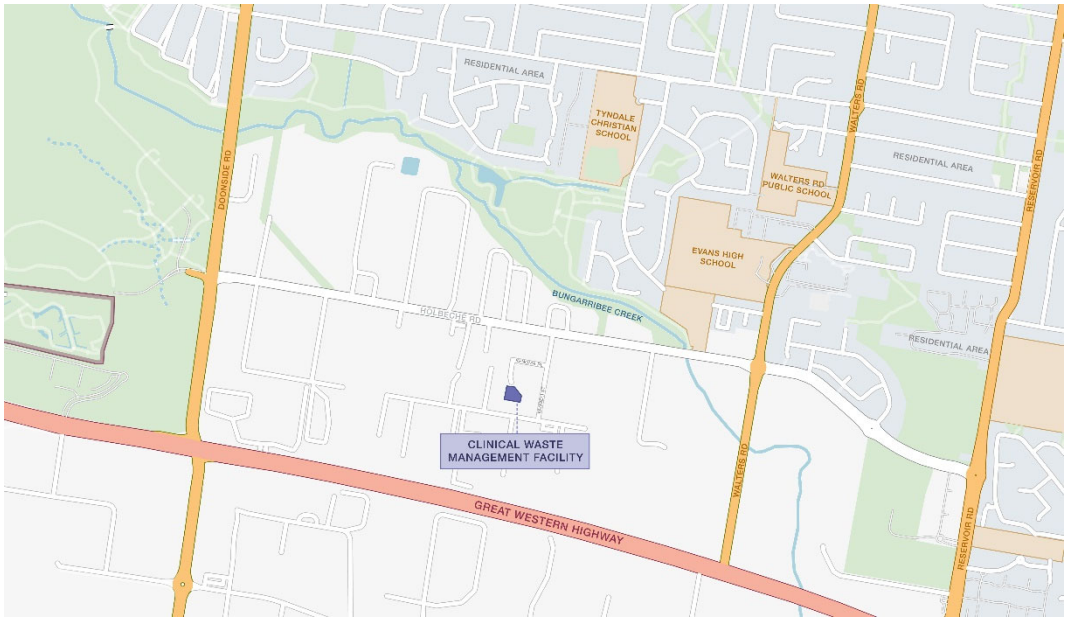

Figure 2 Location of facility in broader locality

The site is zoned 'IN1 General Industrial' under the Blacktown Local Environmental Plan 2015 (Blacktown LEP) and is surrounded by other industrial and commercial businesses. The properties directly adjacent to the site include a

construction material wholesaler to the west, heavy vehicle repairs to the south, and metal production and sales to the east, with Kenoma Place to the north.

The nearest residences to the site are located on Mariko Place, Blacktown, approximately 400 metres away. Access to the site is via Kenoma Place, off Vangeli Street.

The site is mainly clear of vegetation besides some formal landscaping within the front setbacks. The closest waterway is Bungarribbe Creek, located 335m to the north-east of the site.

4 Process

4.1 Waste receival process

The waste receival process consists of the following activities:

- A waste delivery vehicle arrives;
- Full bins are unloaded into the full bin staging area and inspected;
- Bins are weighed;
- Clinical waste is transferred via bin lift or manually into autoclave carts;
- Related waste bins are transferred to their allocated storage areas;
- Empty bins are transferred to the wash bay to be cleaned; and
- Cleaned bins are transferred to their allocated storage locations.

All clinical waste is treated on-site via the autoclave system. Related waste is not permitted to be treated on-site and is instead separately stored until it is collected for disposal at an appropriate facility. All bagged waste materials remain as they are inside the double bags until they are inside the autoclave. None of the waste material is left in the open at any stage of the process.

A site plan showing all equipment and storage areas is provided in Figure 3 and Figure 4. The waste receival process is presented in Figure 5 below.

4.2 Autoclave

There are four autoclave carts which have a capacity of approximately 150kg each, for a total maximum processing capacity of 600 kg. Each autoclave cart is lined. The waste is either manually deposited into the autoclave cart or it is filled using a bin lift. Once the autoclave cart is full, the bin liner is tied off to seal all contents within the bin.

Once the four autoclave carts are full they are manually wheeled onto the autoclave lifter. The lifter automatically lifts the cart and electrically moves it into the autoclave. Once all carts are in the autoclave the door is locked and the treatment commences.

The treatment process takes approximately 55 minutes to complete (including 5 minutes to load and unload) to ensure compliance with the NSW Department of Health's approved Clinical Waste Treatment Method (a copy of NSW Health approval is included in Appendix F).

The temperature in the autoclave will rise to approximately 140°C to ensure that the processed waste materials are subjected to complete destruction of all potentially infectious materials and rendered safe for disposal as General Solid Waste.

All waste materials are processed on the same day to ensure that any potential health and/or environmental implications are prevented as a result of the storage of the waste materials overnight.

4.3 Shredding and Compacting

Once the treatment process is complete the autoclave carts are unloaded from the autoclave and left to cool. Once cooled, the autoclave carts are moved to the shredder using a forklift. The forklift lifts the autoclave cart and empties it into the shredder.

There is a bin at the bottom of the shredder that collects all of the shredded waste. Once all the waste is shredded, the shredder bin is moved via forklift to the compactor. The forklift lifts the bin and empties the shredded material into the compactor.

Due to the increase in treatment capacity, the collection of the compacted waste will increase from 3-4 days per week to daily, Monday-Friday.

The waste treatment process is presented in Figure 5 below.

4.4 Transport

All MRVs used for the transport of clinical and related wastes are equipped with a pneumatic lift which is used to load the bins at the collection points (source). The vans are used for smaller bins and they are collected by the operator who will place them inside the vehicle in a safe manner to ensure that they remain as they are during transport. In most cases and due to the fact that the bins are relatively light, these are wheeled directly from the truck into the bunded area inside the facility using specially designed ramps.

On arrival at the Med-X facility all vehicles reverse into the building to ensure that all bins are removed from the vehicles in a safe manner and inside the building within the bunded area. For the MRVs, the bins are placed on the lift which is lowered to the ground within the bunded area. Similarly to the bin loading process, the unloading process is completed by the use of specially designed ramps which are used to wheel out the bins directly from the van into the bunded area inside the building.

The maximum number of vehicles expected to arrive at the facility at once is two. In order to keep the maximum number of vehicles arriving to the site at two or below to avoid vehicles idling or parking in the street, the following processes are in place:

- All vehicles are fit with a tracking system and their exact location is always able to be monitored;
- This software is used to control deliveries and communicate to drivers if they need to slow down their collection route to ensure they do not arrive to the site when it is congested.

Only one vehicle will unload into the building at any one time. If a second vehicle arrives on site while a vehicle is already in the process of unloading it will park in the allocated holding bay on site until unloading is complete.

It is proposed that all fleet vehicles be stored off-site at a separate parking depot when not in use.

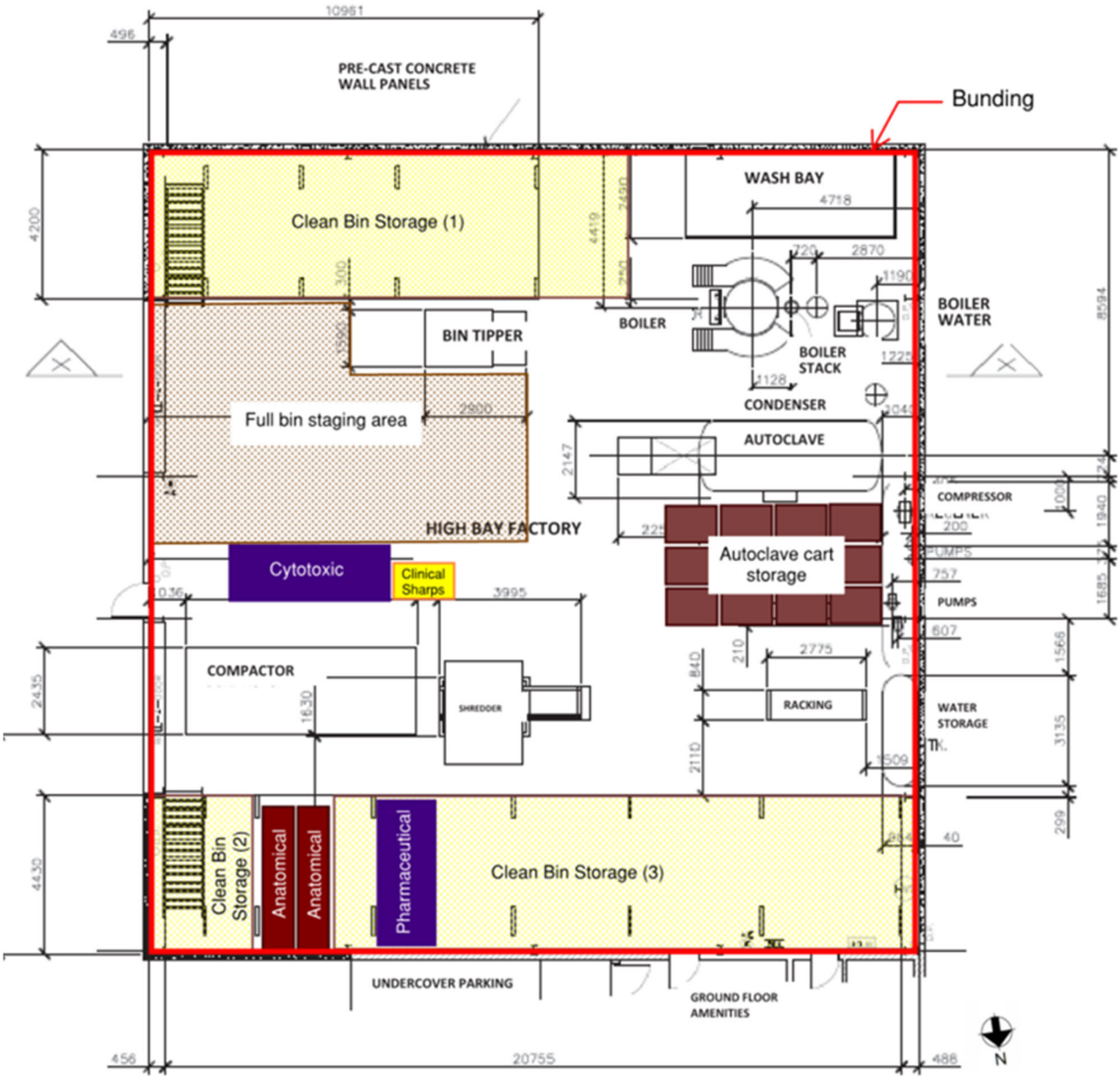

Figure 3 Internal Site Layout

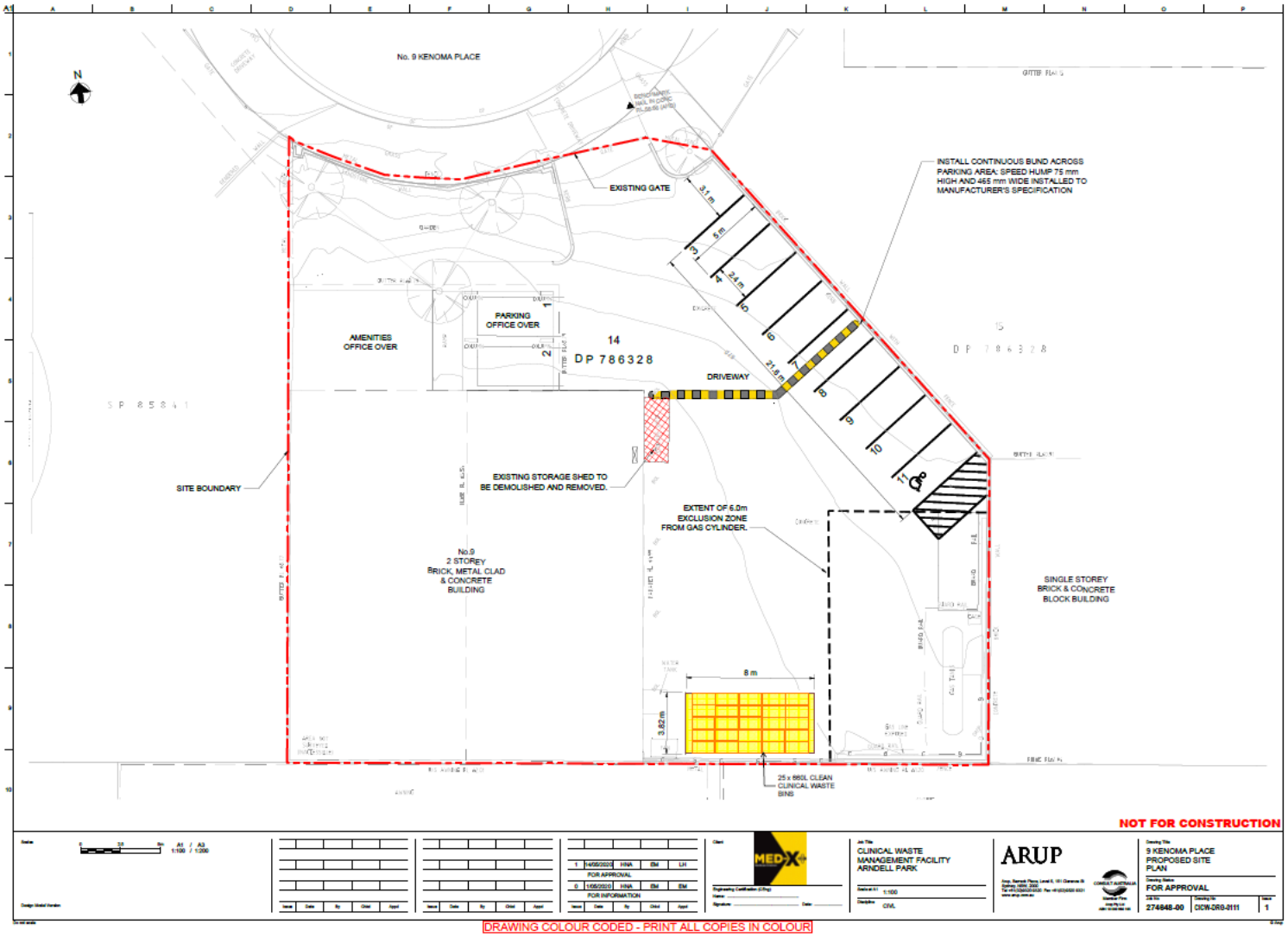

Figure 4 External Site Layout

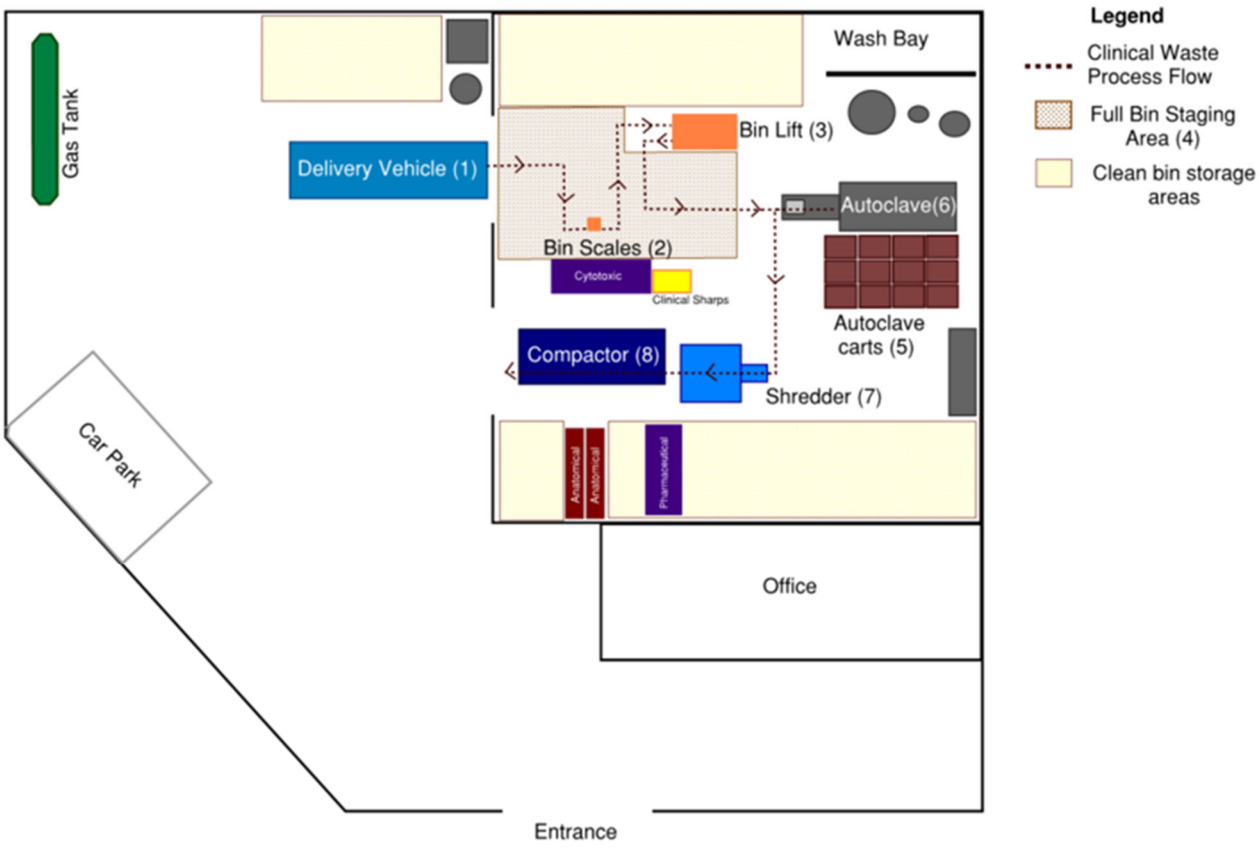

Figure 5 Waste receival and treatment process

4.5 Hazardous Materials

Waste quantities are listed in Table 2 (Section 2.3). Details of the waste receptacles received on-site are provided in Table 3. The maximum quantities of hazardous materials present on the site are shown in Table 4.

Table 3 Waste receptacles expected to be received at the facility

Waste stream	Expected bin sizes (L)	Bin colour	Bin lid colour	Plastic bin liners
Clinical	1,100L 660L 240L 120L 60L	Yellow	Yellow	Yellow
Anatomical	240L 120L 60L	Yellow	Orange	Orange
Cytotoxic	240L 120L 60L	Purple	Purple	Purple
Pharmaceutical	240L	Yellow	Orange	N/A

Waste stream	Expected bin sizes (L)	Bin colour	Bin lid colour	Plastic bin liners
	120L 60L			
Sharps	Various 1.4L to 60L Largest 72L	Yellow	Yellow	N/A

Table 4 Quantities of Hazardous Materials

Description of Material	DG Class	UN Class	Packaging Size	Average Quantity present on Site (kg)	Maximum Quantity present on Site	Annual Throughput (per day)
Liquefied petroleum gas (LPG), propane	DG Class 2.1 Gases	UN 1075 Petroleum gases, liquefied or Liquefied petroleum gas	1 bulk storage tank + 4 portable cylinders (15 kg, 36 L, each) – 2 No in service, 4 in store.	3,750 L (1,850 kg)	7,500 L (3,700 kg)	215 L (approx. 4,500 L per month)
Cytotoxic waste (e.g. cyclophosphamide residues in pouches and on PPE, etc.	DG Class 6.1 Packing Group I, II or Ill Toxic Substances	UN 3464 Organophosphorus compound, toxic, solid, n.o.s.	See Table 3.	500 kg[4]		500 kg[5]
Clinical Waste	DG Class 6.2 Packing Group III Infectious Substances	UN 3291 Clinical waste, unspecified, n.o.s. or (Bio)medical waste, n.o.s. or Regulated medical waste, n.o.s		600 kg[6]	1,200[7] kg	6,600 kg

[4] The amount of cytotoxic waste received per day will vary
[5] It is expected that the amount of cytotoxic waste received and processed on-site per day is 500 kg
[6] Average untreated clinical waste on site at any onetime is expected to be 600 kg
[7] Worst case scenario is 600 kg of untreated clinical waste in the bin staging area, and 600 kg of untreated clinical waste in the 4 x autoclave carts (before treatment)

Figure 3 and Figure 4 shows the storage locations.

LPG is stored in a pressurised tank, capacity 7,500 litres (approximately 3,700 kg). The storage pressure is approximately 6 barG.

Two forklift trucks are used on site. Each is fuelled by LPG from a portable container (bottle). 4 bottles of LPG are stored beside the LPG tank. Each cylinder contains approximately 15kg of propane.

Clinical waste (yellow bins), cytotoxic waste (purple bins) and anatomical waste (yellow bin with orange lid) are stored in the Warehouse.

4.6 Safety Management System

The Med-X Pollution Incident Response and Emergency Management Plan is attached in Appendix G. The Safety Management System for the facility includes the following procedures:

Table 5 Med-X Safety Management Documents

No	Reference	Title	Version & Date
301	MXNATQFO301	Mobile Plant Safety and Prestart Checklist	v1 042020 current
304	MXNATQPR304	Spill Control Management Procedures	v1 042020 current
305	MXNATQPR305	Handling Clinical and Quarantine Waste Procedures	v1 042020 current
306	MXNATQPR306	Handling Cytotoxic Anatomical and Pharmaceutical Waste Procedures	v1 042020 current
307	MXNATQPR307	Weighing Waste Procedures	v1 042020 current
308	MXNATQPR308	Autoclave Operations	v1 042020 current
309	MXNATQPR309	Boiler Operations	v1 042020 current
310	MXNATQPR310	Shredder Operations	v1 042020 current
311	MXNATQPR311	Forklift Operations	v1 042020 current
313	MXNATQPR313	Cleaning Procedures	v1 042020 current
314	MXNATQPR314	Monitoring Treatment Facility Procedures	v1 042020 current
315	MXNATQPR315	Treatment Facility Procedures	v1 042020 current
316	MXNATQPR316	WHS Treatment Facility Procedures	v1 042020 current
317	MXNATQPR317	Outsourced Processes	v1 042020 current
318	MXNATQPR318	Equipment Validation	v1 042020 current
319	MXNATQPR319	Calibration Equipment Treatment Facility	v1 042020 current
320	MXNATQPR320	National – Backlog Contingency	v1 042020 current

4.7 Fire Protection

Fire protection is achieved through:

- Fire prevention
- Fire detection
- Fire suppression.

4.7.1 Fire Prevention

Fire prevention measures include:

- Maintenance of electrical and mechanical equipment in accordance with the manufacturers' recommendations
- Control of hot work for maintenance
- Prohibition of mobile sources of ignition (smoking, etc).
- Provision of fire wall at LPG storage tank
- Training of staff.

4.7.2 Fire Detection

Fire detection relies on the alertness and training of staff. The site is manned at all times that waste treatment operations are carried out.

4.7.3 Fire Suppression

Two fire hoses are installed at the facility, supplied from the mains water.

A hydrant is provided in the street outside the facility for use by the fire brigade.

Portable fire extinguishers (PFE) are provided on site:

- 3 No Powder PFE
- 1 No CO_2 PFE.

5 Hazard Identification

Risks where reviewed and updated on the site through the identification of plausible risks, focusing on abnormal but plausible incidents associated with each of the processes on site. The identification process comprised inspection of the documents provided by Med-X detailing the storage and handling of hazardous substances and by review of the PHA prepared previously by another consultant. This methodology was considered appropriate for a small facility carrying out simple processing in an industrial area.

The following hazards were identified:

- Loss of containment of clinical waste during handling
- Loss of containment of cytotoxic waste
- Loss of containment of anatomical waste
- Partial or total failure of the sterilization process
- Loss of containment of LPG storage tank
- Fire.

The results of the hazard identification are shown in the Appendix E (Word Diagram).

5.1 Loss of containment of clinical waste - Handling

Loss of containment of clinical waste would require tearing of both layers of the bags in which the clinical waste is packed or loosening or untying of closure ties. This could be caused by damaged bags or failure to tie off the bags properly at the source of the waste.

The bags are packed into (yellow) wheelie bins for transfer to the treatment facility. Therefore, it is difficult to envisage a credible scenario in which loss of containment could occur.

The use of double bagging and mobile containers limits the potential for loss of containment.

Med-X employees are trained in the proper handling of clinical waste and on the measures to be taken in the event of loss of containment to sanitise the areas of the facility that might be impacted. All liquid wastes, e.g. water used to wash down bags and the area of loss of containment, would be contained within the building and treated before disposal.

5.2 Loss of containment of cytotoxic waste

Cytotoxic waste includes material, which is, or may be, contaminated with a cytotoxic drug during the preparation, transport or administration of cytotoxic therapy. Cytotoxic waste can only be incinerated.

This waste is stored in an allocated area. None of this waste is treated on site. The site therefore acts as a waste collection and assembly location. The waste is sent for treatment and disposal at another location. Treatment normally comprises incineration.

5.3 Loss of containment of anatomical waste

Anatomical waste comprises identifiable body parts. This waste could include pathological specimens, biopsy specimens and tissues taken during surgery or autopsy and must be incinerated.

This waste is stored on site in a freezer. None of this waste is treated on site. The site therefore acts as a waste collection and assembly location. The waste is sent for treatment and disposal at another location. Treatment normally comprises incineration.

5.4 Partial or total failure of the sterilization process

The Autoclave is used to treat batches of approximately 500-600 tonnes of clinical waste at a time. Each batch must be held at a temperature of 140°C for a specified time. The temperature-time profile has been validated for treating clinical waste.

If the specified temperature is not reached or maintained or if the batch treatment is terminated early, then it is possible that pathogens may remain in the clinical waste.

The measures in place to minimise the risk of this scenario occurring include a validated control system that ensure that the specified temperature and time are attained.

5.5 Loss of containment of LPG storage tank

The location of the LPG storage tank complies with AS/NZS 1596:2014 *The Storage and Handling of LP Gas* in the following respects:

Clause 3.6.4:	The thermal screen (fire wall) to the south and east is at least 1.8m high.
Clause 6.2.1 (c):	The tank is more than 1m from the firewall/boundary.
Table 6.1:	For a tank capacity up to 0 8kL, and because this is a single tank used only for vapour withdrawal: The distance from the tank to a public place, or a railway line exceeds the minimum of 4m. The distance from the tank to a protected place (including the main building) exceeds the minimum of 6m.
Clause 6.2.5:	The tank must be separated from any combustible materials by at least 6m.
Clause 6.3.2:	To allow for free access around and cross-ventilation for the tank, the clearance distance between the tank and firewall is more than the tank diameter.
Clause 6.6.7:	If there is a remote connection for filling the tank, this should be at least 3m from the tank.

The LPG storage tank is leased from Supagas, the supplier of the LPG (propane). The LPG tank supplies the steam boiler. No information is available on the manufacturer of the tank. The tank was inspected externally on 6 March 2020 by

Haines Gas Services Pty Ltd. The tank condition was found to be generally satisfactory. Recommendations included renewal of the Pressure Relief Valve (PRV), attention to or renewal of one of the end plate inspection plugs, and painting of the vapour service line in arctic blue or white with appropriate labelling attached to the pipework.

The consequences of catastrophic quasi-instantaneous failure of the LPG tank containing 3.77 kg (7,500 litres) were modelled using the DNV Technica PHAST Professional package.

The summary printout is included as Appendix H. The results are summarised in Table 6.

Table 6 Summary of Results for LPG Incident

Thermal Radiation Level (kW/m²)		**Observed Effect**	**Source**	**Radiation Effects: Fireball Ellipse**		
				Distance (m)		
Weather				**Category 1.5/F**	**Category 1.5/D**	**Category 5/D**
4		Sufficient to cause pain to personnel if unable to reach cover within 20s; however blistering of the skin (second degree burns) is likely; 0% lethality	World Bank	257	257	257
12.5		Wood ignites on prolonged exposure, in presence of a "pilot" flame	DNV	130	130	130
		Minimum energy required for piloted ignition of wood, melting of plastic tubing	World Bank			
37.5		Sufficient to cause damage to process equipment	World Bank	23	23	23
Concentration (ppm)				**Flash Fire Envelope**		
				Distance (m)		
Weather				**Category 1.5/F**	**Category 1.5/D**	**Category 5/D**
10,000		50% of the Lower Explosive/Flammable Limit		40	40	40
20,000		Lower Explosive/Flammable Limit		27	27	27
Overpressure				**Explosion Effects: Early Explosion**		
bar	**psi**			**Distance (m)**		
Weather				**Category 1.5/F**	**Category 1.5/D**	**Category 5/D**

Thermal Radiation Level (kW/m²)		Observed Effect	Source	Radiation Effects: Fireball Ellipse		
0.02068	0.3	"Safe distance" (probability 0.95 no serious damage beyond this value); projectile limit; some damage to house ceilings; 10% window glass broken	Clancey	511	511	511
0.1379	2	Partial collapse of walls and roofs of houses	Clancey	132	132	132
0.2068	3	Heavy machines (3000 lb) in industrial building suffered little damage; steel frame building distorted and pulled away from foundations	Clancey	102	102	102
Overpressure				**Explosion Effects: Late Ignition**		
bar	**psi**			**Distance (m)**		
Weather				**Category 1.5/F**	**Category 1.5/D**	**Category 5/D**
0.02068	0.3	"Safe distance" (probability 0.95 no serious damage beyond this value); projectile limit; some damage to house ceilings; 10% window glass broken	Clancey	471	454	0.02068
0.1379	2	Partial collapse of walls and roofs of houses	Clancey	144	145	0.1379
0.2068	3	Heavy machines (3000 lb) in industrial building suffered little damage; steel frame building distorted and pulled away from foundations	Clancey	118	122	0.2068

Category 1.5/F = Wind speed 1.5 m/s, Pasquill Stability Category F
Category 1.5/D = Wind speed 1.5 m/s, Pasquill Stability Category D
Category 5/D = Wind speed 5 m/s, Pasquill Stability Category D

Clancey, V. J. 1972, Diagnostic Features of Explosion Damage, 6th International Meeting on Forensic Sciences, Edinburgh, Scotland.

5.6 Fire

A fire could occur in the main building. Such a fire could be started by an electrical fault, by sparks from hot work (maintenance), by smoking, by lightning strike, by a truck fire, by fire inside a waste bin.

5.7 External Hazards

External hazards include:

- Fire at neighbouring premises
- Projectile from neighbouring premises
- Flooding
- Earthquake
- Extreme Weather Event
- Sabotage
- Aircraft impact.

5.7.1 Fire at neighbouring premises

The activities at the adjoining premises are light industrial or wholesale. The materials being handled mainly comprise metals and construction materials. Flammable liquids are not handled nor are any hazardous processes carried out. Therefore the risk of a fire from adjacent premises is extremely low, although such an event cannot be excluded.

A fire in an adjacent premises could spread to the Med-X facility, in which case the consequences would be as set out above.

The bushfire risk map for Blacktown shows that the Med-X facility is not at material risk from bushfires.

5.7.2 Projectile from neighbouring premises

Fires involving portable containers including gas cylinders may result in projectiles. The adjacent premises do not appear to be used for storage of large numbers of portable containers. While small numbers of such containers, e.g. welding gas cylinders, may be present at the adjoining premises, it is considered that a fire resulting in projectiles is not likely to result in projectiles that could impact on the Med-X facility. In any case such projectiles would cause physical damage, although a “domino” effect cannot be ruled out.

5.7.3 Flooding

The flood risk map for Blacktown shows that the Med-X facility is not at material risk from flooding.

5.7.4 Earthquake

In the Sydney area earthquake hazard is classified as very low according to the information that is currently available. This means that there is less than a 2% chance of potentially-damaging earthquake shaking in your project area in the next 50 years. Based on this information, the impact of earthquake I@@? ILJOL=@! considered in different phases of the project, in particular during design and construction.

Current estimates of earthquake risk in the Sydney Basin indicate that on average, there is a 10 per cent chance of ground accelerations exceeding 0.11g in 100 years, or in terms of velocity, a 1000 year return period of approximately 90 mm/s.

5.7.5 Extreme Weather Event

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. The data is provided in Appendix C1.

The facility is located outside of identified cyclone areas as per BoM data[8] and is highly unlikely to experience extreme weather events.

5.7.6 Sabotage

Sabotage can never be ruled out at any site, but no features of the Med-X facility have been identified that would put it at a heightened risk of sabotage, whether internal or external.

5.7.7 Aircraft impact

The Med-X facility is located approximately 30 km (2 miles) to the northwest of Sydney International Airport. It is not in the line of flight to either of the two runways at the airport. Therefore it is not considered to be at material risk from aircraft impact.

[8] BoM (2013), Tropical cyclones tracked across Australia 1970 to 2006, https://www.abc.net.au/news/2013-02-27/tropical-cyclones-tracked-across-australia2c-1906-to-2006/4542568?nw=0

6 Consequence Analysis

The consequences of the following identified hazards were assessed qualitatively:

- Loss of containment of clinical waste during handling
- Loss of containment of cytotoxic waste
- Loss of containment of anatomical waste
- Partial or total failure of the sterilization process
- Loss of containment of LPG storage tank
- Fire.

6.1 Loss of containment of clinical waste - Handling

Two terms are in general use in relation to pathogens (bacteria and viruses): infectious and contagious. Contagious diseases are spread from one person to another, but other diseases may be spread through open wounds or broken skin, by insect bites, animal bites, etc.

The consequences of loss of containment of clinical waste during handling could be the exposure of employees to pathogens. The contagiousness of pathogens varies, but little quantitative information on the relative contagiousness of different pathogens has been published. The Ebola fever virus is generally regarded as one of the most contagious pathogens. The coronavirus leading to COVID-19 is also considered to be highly contagious.

Neither liquid nor dusty (powdered) materials are packed in the clinical waste bags. Therefore the potential for release of pathogens or material containing pathogens to the atmospheric environment is limited.

The consequences of loss of containment of untreated clinical waste could be infection of employees by contact with bags or other material carrying pathogens. Employees could be infected by transfer of pathogens from the skin to mouth, nose, eyes or open wounds or sores. The consequences would in the first instance therefore be confined to the site and in particular employees.

6.2 Loss of containment of cytotoxic waste

The consequences of loss of containment of cytotoxic waste could be the exposure of employees to cytotoxic material.

The toxicity of cyclophosphamide, one of the cytotoxic materials, the residues of which could be present in the waste, is compared that of potassium cyanide in Table 7.

Table 7 Toxicity of Cyclophosphamide

Substance	Acute Toxicity LD_{50} (mg/kg bodyweight) (oral, rat)	Hazard Statements
Cyclophosphamide	100	H301, Acute oral toxicity Category 3 H340, Germ Cell Mutagenicity Category 1B H350, Carcinogenicity Category 1A) H360D, Reproductive Toxicity Category 1B
Cyclophosphamide monohydrate	94	
Potassium cyanide	7.49 – 10	H290, Corrosive to metals (Category 1) H300, Acute toxicity, Oral (Category 2) H330, Acute toxicity, Inhalation (Category 2) H310, Acute toxicity, Dermal (Category 1) H372, Specific target organ toxicity - repeated exposure (Category 1), Thyroid H400, Short-term (acute) aquatic hazard (Category 1) H410, Long-term (chronic) aquatic hazard (Category 1)

The acute toxicity of cyclophosphamide is therefore approximately 10 times lower than potassium cyanide. However, cyclophosphamide presents mutagenic, teratogenic and carcinogenic risks.

This class of waste is double-bagged and packed into plastic wheelie bins, which are not opened. Therefore, intake of cyclotoxins by skin contact is credible but intake by inhalation is not considered likely as dusty or powdered materials are not present.

6.3 Loss of containment of anatomical waste

Anatomical waste is potentially infectious. The infectiousness and the nature of any infection depend on the source and whether the patients from whom the waste derives had a transmissible infection.

This class of waste is double-bagged and packed into plastic wheelie bins, which are not opened. This waste is stored on site in a freezer. Therefore spillage of any liquids that might seep from the bag and wheelie bin is not credible. Further, none of this waste is treated on site.

6.4 Partial or total failure of the sterilization process

If the specified temperature (140°C) is not reached or maintained in the autoclave or if the batch treatment is terminated early, then it is possible that pathogens may remain in the clinical waste when the autoclave is opened. This could put employees at risk during handling of unsterilized or partially sterilized clinical waste.

Persons handling unsterilized or partially sterilized shredded clinical waste would also be at risk, particularly as they would be working on the assumption that the

shredded waste was safe to handle and the PPE being used or worn would not be sufficient to protect against pathogens.

6.5 Loss of containment of LPG storage tank

The most catastrophic scenario for an LPG tank is a Boiling Liquid Expending Vapour Cloud Explosion (BLEVE). A BLEVE results in the almost instantaneous release and ignition of the contents of the tank resulting in thermal radiation and blast overpressure consequences, extending for a considerable distance from the tank. Such an event could be caused by a sustained external fire engulfing the tank or by a sustained jet flame, arising from, from example, fracture of a pipe carrying LPG and ignition of the gas, impinging on the tank.

The risk of fracture of a pipeline carrying LPG is low because the tank is protected against mechanical impact, e.g. by a vehicle, by guard rails on the northern and western side.

Less serious incidents could be caused by the PRV opening other than when the storage tank is over pressurised. Such a release would result in a plume of propane vapour that could be ignited in which case it would burn as a vertical jet flame.

6.6 Fire

The principal consequence from a fire in the main building would be smoke containing products of combustion (SO_X, NO_X, CO_X, C) and products of incomplete combustion. Pathogens in the waste could be rendered airborne if attached to carbon particles or to particles of unburnt material, e.g. plastic. In the event of collapse of the roof of the building, particles from the fire are more likely to be released to the atmosphere and to be dispersed downwind. However, it is likely that in a fire most of the pathogens would be destroyed.

7 Estimation of the Likelihood of Hazardous Events

The likelihood of the following identified hazards was assessed qualitatively:

- Loss of containment of clinical waste during handling
- Loss of containment of cytotoxic waste
- Loss of containment of anatomical waste
- Partial or total failure of the sterilization process
- Loss of containment of LPG storage tank
- Fire.

7.1 Loss of containment of clinical waste - Handling

The use of double bagging and mobile containers limits the potential for loss of containment.

The potential for loss of containment is further reduced because Med-X employees are trained in the proper handling of clinical waste and on the measures to be taken in the event of loss of containment to sanitise the areas of the facility that might be impacted. All liquid wastes, e.g. water used to wash down bags and the area of loss of containment, would be contained within the building and treated before disposal.

7.2 Loss of containment of cytotoxic waste

The use of double bagging and mobile containers limits the potential for loss of containment. Neither the wheelie bins nor the bags are opened on site.

Therefore intake of cyclotoxins by skin contact is credible but intake by inhalation is not considered likely as dusty or powdered materials are not present.

Med-X employees are trained in handling cytotoxic waste and are provided with PPE to minimise the risk of exposure.

7.3 Loss of containment of anatomical waste

The use of double bagging and mobile containers limits the potential for loss of containment. Neither the wheelie bins nor the bags are opened on site.

Further, this waste is stored on site in a freezer. Therefore spillage of any liquids that might seep from the bag and wheelie bin is not credible. Further, none of this waste is treated on site.

7.4 Partial or total failure of the sterilization process

The automatic control system for the autoclave is designed to ensure that if the specified temperature (140°C) is maintained in the autoclave for the specified time. The autoclave was validated by Eurofins | AMS in May 2020, who conducted a study that concluded the autoclave meets the performance criteria of four log ten reduction for autoclave sterilization using the destruction of biological indicators (BI) as the measure of success.

7.5 Loss of containment of LPG storage tank

The risk of an external fire at the LPG storage tank is low because a 2m high fire wall has been constructed on the site boundary to the east and south of the tank. The tank is fitted with a PRV which would relieve pressure build up in the event of an external fire.

The risk of fracture of a pipeline carrying LPG is low because the tank is protected against mechanical impact, e.g. by a vehicle, by guard rails on the northern and western side.

In the event of a fire at the LPG tank, the fire brigade would use hose reels to suppress the fire and to cool the tank to prevent loss of containment.

7.6 Fire

If detected at an early stage, fires would be extinguished using portable fire extinguishers. A more developed fire would be fought on site using one or both hose reels and by the fire brigade using the hydrant in the street as a source of water.

8 Presentation of Risk Results

The Section 5, 6 and 7 above describe respectively the identification of hazards, the consequences of these hazards and the likelihood.

This Section combines this information to generate a risk register.

8.1 Risk Classification-Consequence

The consequences of each hazard were classified on a scale of 1 (least serious) to 5 (most serious) in accordance with Table 8.

The Consequence Rating assumes that all current mitigation measures in place have failed to prevent the environmental discharge to the environment.

Table 8 Risk Classification Table - Consequence

		Onsite				Offsite				Environment		
Factor	**Description**	**Injury Onsite**	**Airborne Onsite**	**Damage to Property**	**Onsite Knock on Potential**	**Injury Offsite**	**Airborne Offsite**	**Damage to Property**	**Other Offsite**	**Terrestrial**	**Freshwater/ Marine**	**Aquifer/ Groundwater**
5	Catastrophic	Many (≥10) fatalities. ≥50 serious injuries.	Major airborne release resulting in the site being shut down.	Damage costing ≥ $40million.	Fire close to flammable material storage area. Risk of rapid spread to sensitive buildings. Emergency response team (ERT) fails to respond.	One or more fatalities. Several injuries. >100 in hospital.	Release of large quantities of toxic materials, serious off-site effects.	Damage costing ≥ $15million.	Dwelling(s) indefinitely unusable as result of an accident. (Persons x evacuation time (hours)) value ≥2500. (Persons x interruption time drinking water, electricity, gas or telephone service (hours)) value ≥5000.	Destruction of protected species and/or habitat. ≥20ha widespread habitat incl. agricultural land indefinitely contaminated.	Significant or long-term damage to: ≥100km river/canal ≥10ha lake/pond ≥20ha delta ≥20ha coastline /open sea	Significant damage to ≥100ha.
4	Major	Single or few fatalities. 6+ serious injuries.	Major on-site concern. Fires, explosions, evacuation.	Damage costing ≥ $2.5million.	Fire close to flammable material storage area. Risk of rapid spread to sensitive buildings. Delay in alerting ERT.	Serious injuries. Tens in hospital.	Serious toxic emission resulting in evacuation, hospitalisation, etc.	Damage costing ≥ $1.5million.	Dwelling(s) unusable as a result of the accident. (Persons x evacuation time (hours)) value ≥500. (Persons x interruption time drinking water, electricity, gas or telephone service (hours)) value ≥1000.	Permanent or long-term damage to: ≥0.5ha habitat protected by legislation and/or ≥10ha widespread habitat incl. agricultural land.	Significant or long-term damage to: ≥10km river/canal ≥1ha lake/pond ≥2ha delta ≥2ha coastline/open sea.	Significant damage to ≥10ha.

		Onsite				Offsite				Environment		
Factor	**Description**	**Injury Onsite**	**Airborne Onsite**	**Damage to Property**	**Onsite Knock on Potential**	**Injury Offsite**	**Airborne Offsite**	**Damage to Property**	**Other Offsite**	**Terrestrial**	**Freshwater/ Marine**	**Aquifer/ Groundwater**
3	Severe	Single or few serious injuries.	Serious on site concern.	Damage costing ≥ $0.4million.	Fire in or near sensitive building. Delay in alerting ERT.	Few people require hospital treatment. Emergency plan in operation.	Fire or smoke effecting off-site area. Radio warning to the public. Off-site emergency plan in operation.	Damage costing ≥ $250,000	Dwelling(s) unusable as a result of the accident (Persons x evacuation time (hours)) value ≥100. (Persons x interruption time drinking water, electricity, gas or telephone service (hours)) value ≥200.	Long-term damage to: ≥ 0.25ha habitat protected by legislation and/or ≥ 5 ha widespread habitat incl. agricultural land.	Significant or long-term damage to: ≥5km river/canal ≥0.25ha lake/pond ≥0.5ha delta ≥0.5ha coastline/open sea.	Significant damage to ≥5ha.
2	Significant	Lost time accident.	Severe nuisance. Noise, smell, dust, etc.	Damage costing ≥ $50,000.	Fire in or near sensitive building. ERT alerted promptly.	Short term, minor effects.	Sustained nuisance levels of atmospheric pollution. One off unusual problems causing complaints.	Damage costing ≥ $15,000.	Short-term evacuation of dwellings.	Short-term damage to: habitat protected by legislation and/or ≥5 ha widespread habitat incl. agricultural land.	Short-term damage to: ≥5km river/canal ≥0.25ha lake/pond ≥0.5ha delta ≥0.5ha coastline/open sea.	Short-term damage to ≥5ha.
1	Minor	Minor injury.	Nuisance only.	Damage costing $1000's.	Incident occurs in isolated area on site. ERT notified immediately.	Nuisance offsite.	Short duration minor problems.	Damage costing $100's.	Dwellings useable but short-term interruption of utilities.	Short-term damage to <5ha widespread land incl. agricultural land.	Short-term, noticeable damage to river/canal, lake/pond, delta, coastline/open sea.	Short-term damage to <1ha.

8.2 Risk Classification-Likelihood

The likelihood of each hazard was classified on a scale of 1 (least probable) to 5 (high probability) as shown in Table 9.

Table 9 Risk Classification Table - Likelihood

Rating/Score	Likelihood		
	Frequency	Description	
0	0	Impossible	Absolutely impossible, or theoretically possible, but incredible
1	$<10^{-6}$ per year	Very low	Extremely Unlikely
2	10^{-6} to 10^{-4} per year	Low	Very Unlikely
3	10^{-4} to 10^{-2} per year	Medium	Unlikely
4	10^{-2} to 1 per year	High	Improbable
5	> 1 per year	Very high	Probable

8.3 Risk Evaluation

The likelihood and consequence ratings are multiplied to form a risk score for risk evaluation. The risk scores can be tabulated in a risk matrix to highlight risks requiring priority, action and continuing awareness and monitoring.

8.4 Risk Treatment

Risk treatment involves the identification and prioritisation of management and mitigation measures to reduce the risks identified in the risk evaluation process.

A risk management programme is prepared which allocates a risk owner for the on-going management of risks and the implementation of risk mitigation measures.

Timeframes are also allocated for the implementation of each risk mitigation measure.

These risks were assessed against the risk classification tables provided and the resulting risk analysis is given in Appendix E.

9 Risk Assessment

The risk results are qualitative. It is considered that qualitative assessment is appropriate for a small facility carrying out simple processes so that the facility does not present a material risk to employees, contractors and visitors on site or to persons at adjacent premises.

The only hazard that presents off-site risk is the storage of LPG and the associated tank filling operation.

The risk matrix provided in Table 10 indicates the critical nature of each of the risks identified, with the risks being present in Appendix E. The table highlights that the risks on site are low level. This is due to the high level of environmental control on site. The controls are monitored and managed by the EHS management system which monitors these risks and ensures they do not increase in likelihood or consequence rating to become critical.

Table 10 Risk Matrix

Likelihood	**V. High**	**5**					
	High	**4**					
	Medium	**3**					
	Low	**2**		28			
	V. Low	**1**	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 16, 17, 19, 20, 22, 24, 25, 26, 27	12. 13, 14, 15, 23	18, 21		
			1	**2**	**3**	**4**	**5**
			Trivial	**Minor**	**Moderate**	**Major**	**Massive**
			Consequence				

Where:

- Red – These are considered to be high-level risks requiring priority attention. These risks have the potential to be catastrophic and as such should be addressed quickly.
- Amber – These are medium-level risks requiring action, but are not as critical as a red coded risk.
- Green (light and dark green) – These are lowest-level risks and indicate a need for continuing awareness and monitoring on a regular basis. Whilst they are currently low or minor risks, some have the potential to increase to medium or even high-level risks and must therefore be regularly monitored and if cost effective mitigation can be carried out to reduce the risk even further this should be pursued

10 Recommendations

The following recommendation is made to enhance safety and reduce risk:

- Consider installing an automatic fire detection system in warehouse building, the alarm being signalled to a third party central monitoring station.

11 Conclusions

The risk analysis and categorisation of the Med-X risk register identified no red or amber zone risk, which require immediate action. All risks were classified within the green zones. Current measures to control these risks are considered adequate and no further control measures, or statement of measures is considered necessary, although some recommendations are made to enhance safety and reduce risk.

These controls should be monitored and managed within the EHS management system to ensure they do not increase in likelihood or consequence rating to become critical.

References

[1] Australian/New Zealand Standard AS/NZS 3816:1998 *Management of clinical and related wastes* Standards Australia/New Zealand

[2] Australian/New Zealand Standard AS/NZS 1596:2014 *The Storage and Handling of LP Gas* Standards Australia/New Zealand

[3] Cole, E., Leese, K. and Hall, R. *Evaluation of Potential Biological Emissions from Alternative Medical Waste Treatment Technologies*, Research Triangle Institute, prepared for Office of Solid Waste, US EPA, July 1993

[4] DPE 2011 Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety Planning Department of Planning and Environment, Sydney 2011

[5] DPE 2011 Hazardous Industry Planning Advisory Paper No 3 –Risk Assessment Department of Planning and Environment, Sydney 2011

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[8] HMPCC 1994 Best Practice Guidelines for Contaminated Water Retention and Treatment Systems Hazardous Materials Policy Co-ordinating Committee, July 1994

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[10] Work Health and Safety Regulation 2011

[11] NSW Legislation Environmental Planning and Assessment Act 1979

[12] NSW Legislation Environmental Planning and Assessment Regulation 2000

[13] NSW Legislation State Environmental Planning Policy No 33 – Hazardous and Offensive Development

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[17] GFDRR Global Facility for Disaster Reduction and Recovery
http://thinkhazard.org/en/report/154637-australia-new-south-wales-sydney-c/EQ

Appendix A

List of Materials

A1 List of Materials

Hazardous Industry Planning Advisory Paper No 3: Risk Assessment, July 2011, State of New South Wales through the Department of Planning

Hazardous Industry Planning Advisory Paper No 6: Hazard Analysis, January 2011, State of New South Wales through the Department of Planning

Preliminary Hazard Analysis Report for a Medical Waste Facility at 9 Kenoma Place, Arndell Park**,** prepared by Benbow Environmental for State Waste Services Pty Ltd, December 2018

Med-X Waste Flow Inwards Diagram process Arndell Park NSW April 2020 v1.pdf

Med-X Treated Waste Flow Outwards Diagram process Arndell Park NSW April 2020 v1.pdf

Med-X Water Flow Diagram process Arndell Park NSW April 2020 v1.pdf

Appendix B

Qualifications and Experience of the Hazard Analysis Team

B1 Qualifications and Experience of the Hazard Analysis Team

Don Menzies – Team Leader and Author

- BE (Chem) University College, Dublin, Ireland
- PhD, University of Newcastle upon Tyne, UK.
- Chartered Engineer, Engineering Council, UK
- Member of the Institution of Chemical Engineers, UK
- BComm, University College, Dublin, Ireland.
- Chartered Engineer, Ireland
- Member, Institution of Engineers of Ireland
- European Engineer, FEANI
- Registered Safety Professional – Institution of Chemical Engineers, UK
- Member, Institute of Energy (now Energy Institute), UK
- Member, Institute of Gas Engineers (now Institute of Gas Engineers and Managers)
- Fellow, Institution of Chemical Engineers, UK
- Fellow, Institution of Engineers of Ireland
- Diploma in Legal Studies, King's Inns, Dublin, Ireland
- Barrister-at-Law, King's Inns, Dublin, Ireland
- Diploma in International Arbitration, University College, Dublin, Ireland
- Member, Chartered Institute of Arbitrators
- Member, Society of Construction Law
- Chartered Scientist, UK
- Chartered Environmentalist, UK
- Fellow, Chartered Institute of Arbitrators

A Chartered Engineer, Don joined as a Director of Arup in 2002 and was Director responsible for Health & Safety Policy in the company. Don is now a Consultant to the company as well as an independent arbitrator. He is a member of the Safety Register maintained by the Institution of Chemical Engineers. He has lectured in health and safety in University College Dublin and in the University of Dublin – Trinity College.

Dr Menzies has 30+ years' experience of safety and environmental consultancy, including safety audits, Seveso/COMAH Safety Reports and other compliance documentation, fire risk and firewater risk assessments ATEX assessments and preparation of Explosion Protection Documents. He was recently (2019) Project Manager for a Review of the Regulation of Petroleum Handling and Storage Facilities for the Department of Enterprise, Trade and Employment. He has chaired numerous HAZOPs for clients in the Pharmachem and other Chemical & Process Industries. Don has carried out many Quantitative Risk Assessments (QRAs) and other assignments to assist clients comply with Seveso Directive, and land-use planning advice in relation to Seveso establishments including oil storage and refining establishments.

Don has for a number of years been responsible for environmental, health and safety aspects of a number of due diligence studies of oil, gas and chemical storage and distribution facilities in the UK and other countries, including facilities for the storage of aviation spirit, natural gas, LNG and distillate hydrocarbons.

Don has acted as Technical Adviser and Inspector with the Irish Planning Appeals Board, An Bord Pleanála, in planning appeals and appeals in relation to air and water discharge licences.

Appendix C

Meteorological Data

C1 Meteorological Data

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 1 and **Figure 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 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

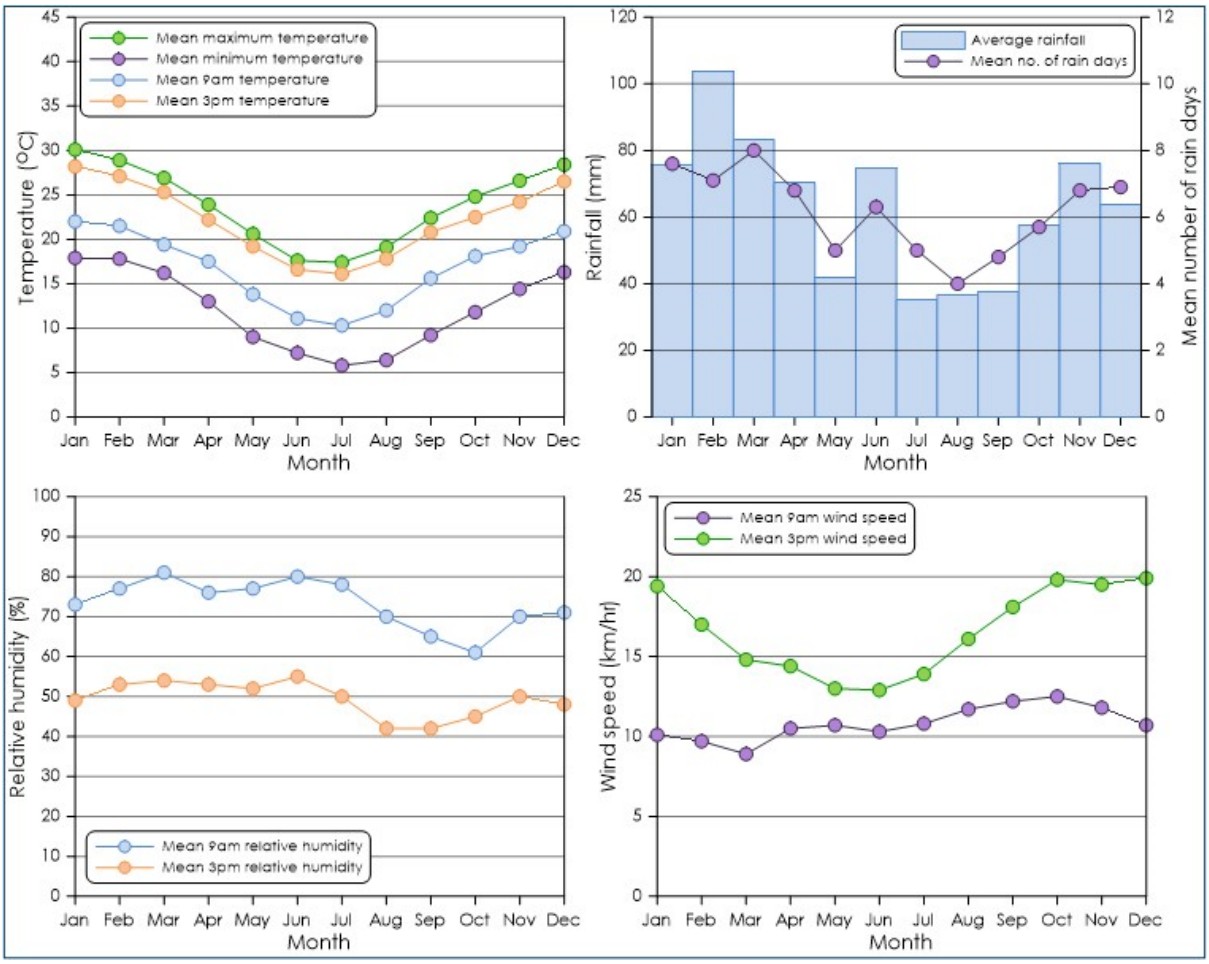


Figure 1 Monthly climate statistics summary – Horsley Park Equestrian Centre AWS

Appendix D

Computer Software

D1 Computer Software

Modelling of catastrophic (quasi-instantaneous) loss of containment of the LPG storage tank was modelled with PHAST Professional.

The input was 3,700 kg (7,500 litres) of propane stored at a temperature of 20C and a pressure of 6 barG.

Three weather conditions were modelled:

- Category 1.5/F = Wind speed 1.5 m/s, Pasquill Stability Category F
- Category 1.5/D = Wind speed 1.5 m/s, Pasquill Stability Category D
- Category 5/D = Wind speed 5 m/s, Pasquill Stability Category D

The summary results follow.

Appendix E

Word Diagram - Hazard Identification and Assessment

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
1	Truck loading/dispatch dock	Damaged bin/pallet packaging delivered to site.	Clinical and related waste products spill in delivery area.	Exposure of employees to pathogens	Contamination of surfaces	1	Only a small area would be affected	1	Truck drivers are trained in the appropriate waste collection, driving and emergency response/spill procedures. All bins and palletised waste delivered to site are inspected, sealed, locked and secured at the waste generators premises before delivery to the site. The contents of any damaged bins would be repacked in a new bin and the damaged bin returned to the site, cleaned and disposed of. The waste contained within the bins is typically sealed in plastic bags by the waste generator prior to placement in the bin. In the event of a bin being damaged the waste would be contained within the plastic bag.	1

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
2	Truck loading/dispatch dock	Damaged bin/pallet packaging delivered to site.	Pathogens from clinical and related waste released into the air.	Exposure of employees to pathogens	Pathogens dispersed to adjoining areas	1	Very little if any of waste would be likely to generate emissions of dust or pathogens to the atmosphere.	1	As for Risk 1	1
3	Truck loading/dispatch dock	Bin/pallet dropped or damaged during unloading from truck.	Clinical and related waste products spill in delivery area.	Exposure of employees to pathogens	Contamination of surfaces	1	Only a small area would be affected	1	As for Risk 1	1
4	Truck loading/dispatch dock	Bin/pallet dropped or damaged during unloading from truck.	Clinical and related waste products spill in delivery area.	Exposure of employees to pathogens	Pathogens dispersed to adjoining areas	1	Very little if any of waste would be likely to generate emissions of dust or pathogens to the atmosphere.	1	As for Risk 1	1
5	Truck loading/dispatch dock	Bin/pallet dropped or damaged during unloading from truck.	Pathogens from the clinical and related waste released into the air.	Exposure of employees to pathogens	Pathogens dispersed to adjoining areas	1	Very little if any of waste would be likely to generate emissions of dust or pathogens to the atmosphere.	1	As for Risk 1	1
6	Truck loading/dispatch dock	Bin/pallet dropped or damaged during unloading from truck.	Clinical and related waste products enter the storm water system and flow off-site	Exposure of public to pathogens if in contact with storm water	Negligible	1	Very little liquids in clinical waste bags. Significant dilution of any liquids containing pathogens	1	Absorbent material including socks would be available on site to contain any spillages.	1

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
							would take place in storm water drains			
7	Truck staging area	Truck parked in sloped area with unsecured handbrake. Truck door is not locked allowing unsecured bin/pallet to roll out from the truck, spilling contents	Clinical and related waste products spill in truck staging area.	Exposure of employees to pathogens	Contamination of surfaces	1	Clinical waste is double-bagged	1	Truck drivers are trained to apply handbrake and secure doors when parking trucks. Staging area is flat and will be concreted.	1
8	Truck staging area	Truck parked in sloped area with unsecured handbrake. Truck door is not locked allowing unsecured bin/pallet to roll out from the truck, spilling contents	Pathogens from the clinical and related waste released into the air and spread out to surrounding premises.	Exposure of employees to pathogens	Contamination of surfaces	1	Only a small area would be affected	1	As for Risk 1	1
9	Truck staging area	Truck parked in sloped area with unsecured handbrake. Truck door is not locked allowing unsecured bin/pallet to roll out from	Pathogens from the clinical and related waste released into the air and spread out to surrounding premises.	Exposure of employees to pathogens	Pathogens dispersed to adjoining areas	1	Very little if any of waste would be likely to generate emissions of dust or pathogens to the atmosphere.	1	As for Risk 1	1

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
		the truck, spilling contents								
10	Truck staging area	Truck parked in sloped area with unsecured handbrake. Truck door is not locked allowing unsecured bin/pallet to roll out from the truck, spilling contents	Clinical and related waste products enter the storm water system and flow off-site.	Exposure of public to pathogens if in contact with storm water.	Negligible	1	Very little liquids in clinical waste bags. Significant dilution of any liquids containing pathogens would take place in storm water drains	1	Absorbent material including socks would be available on site to contain any spillages.	1
11	Bin lifter area	Bin dropped or damaged during emptying into autoclave cart. Drawer overfilled during bin emptying.	Clinical and related waste products spill in bin empty area.	Employees exposed to pathogens.	Contamination of surfaces	1	Clinical waste is double-bagged	1	All employees are trained in the handling of clinical and related waste and are provided. All unloading operations are conducted within the building. The building is bunded to contain any spills, which could occur.	1
12		Cytotoxic waste bin emptied into drawer.	Treated clinical waste contaminated with cytotoxic materials	Employees exposed to cytotoxic materials during shredding and despatch	Cytotoxic residues on carts, shredder and other containers	2	Cytotoxic material may be absorbed through skin	1	Cytotoxic waste bins are a distinctive purple colour as opposed to the yellow clinical waste bins, the purple bins are identified,	2

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
									inspected and removed to a designated storage area before being treated via incineration elsewhere.	
13	Autoclave	Temperature/ pressure control malfunction - temperature too low Batch processing terminated early	Unsterilized clinical and related waste removed from the autoclave chamber and moved to the treated waste storage and shredder and sent to landfill.	Employees exposed to potentially infectious material during unloading of autoclave, shredding and despatch.	Potentially infectious material disposed of to landfill	2	Clinical waste may contain highly infectious pathogens, e.g. Ebola or COVID-19	1	Automated controls and validation of control settings ensure that the autoclave cannot be opened unless waste has been sterilised.	2
14	Autoclave	Autoclave chamber door not closed during sterilization	Autoclave unable to hold chamber pressure causing a release of steam through gaps in the seals on the doors.	Risk of steam burn	Negligible	2	Steam temperature is 140C	1	Doors of the autoclave are fitted with an interlock system, the interlock system must be engaged before the sterilisation process commences.	2
15	Autoclave	Autoclave chamber door opened before sterilisation process finished.	Release of vapours that contain pathogens from unsterilized clinical and related waste.	Steam released under pressure and employees exposed to pathogens	Negligible	2	Sterilization process incomplete	1	Door Safety Interlock in place to prevent the operator from inadvertently opening the door while the autoclave is under pressure and the sterilization	2

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
									process is incomplete.	
16	Autoclave	Steam boiler fails during sterilisation.	Batch not complete	None	None	1		1	Steam boiler is regularly maintained. Failed batch would be re-processed when steam supply is restored.	1
17	Autoclave	Steam pressure relief valve fails open	Steam and pathogens released to atmosphere	Small quantities if pathogens may be released to atmosphere	None	1	Valve discharges vertically upwards outside building	1	Steam valves are regularly checked and replaced when necessary.	1
18	Autoclave	Steam pressure relief valve fails closed	Autoclave over pressurised	Rupture of autoclave	Risk of injury or death	3	Metal projectiles	1	An extremely rare situation - requires failure of steam pressure control valve and pressure relief valve. Both valves are inspected and maintained in accordance with manufacturer's recommendations.	3
19	Treated waste shredder and compactor	Spill of treated waste at compactor discharge point.	Receiving container not emptied	None	None	1	No hazards - only labour to clear spillage	1	Operators are trained in how to dispense treated waste into shredder and compactor.	1
20	Bin Wash Area	Damaged bin interferes with pathways of	Bins not cleansed of pathogens	Risk of exposure of employees to pathogens	None	1	Low risk of infection with pathogens	1	Damaged bins would be removed for	1

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
		jets of washing water							individual cleaning	
21	Fire	Truck fire	Fire spread to storage building	-	-	3	A fire, unless supressed promptly, would have significant impacts - in the short term - smoke damage and nuisance - in the long-term loss of functionality.	1	Fire hoses and Portable Fire Extinguishers on site	3
22	Fire	Truck fire Electrical fault Lightning strike Sabotage	Loss of capacity	Employment continuance	None	1	As above	1	As above	1
23	Fire		Air pollution (smoke and products of combustion)	Risk of smoke inhalation	Smoke nuisance to adjacent premises	2	As above	1	As above	2
24	Fire		Release of pathogens to atmosphere.	Risk of exposure to pathogens	Negligible		As above	1	As above	0
25	Fire		Potentially contaminated firewater	Negligible	Risk of contamination of storm water drains	1	As above	1	Containment within building and retention tank (capacity 60 m³)	1
26	LPG Tank	Engulfing fire at LPG tank Rupture of LPG vapour pipeline	BLEVE of LPG tank	Projectiles, heat, pressure, projectiles, fire spread to other parts of site	Potentially contaminated firewater	1	Assuming that evacuation takes place promptly, no injuries or loss of life should occur	1	Fire wall on two sides of LPG tank. Pipework and tank protected by crash barriers. The yard within 6m of the LPG tank will be kept clear of bins and trucks,	1

Risk ID	Area/ Process	Event	Consequences	Effect on Humans	Environmental Effect	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score (Consequence x Likelihood)
									except when the LPG tank is being refilled. Painted yellow lines will mark out the 6m exclusion zone.	
27	Loss of electrical power	Mains supply failure	Unable to operate - if power failure occurs during batch, partially treated batch	No hazards	No hazards	1	Operation issue only - incomplete batch may require re-processing	1	Power cuts considered to be unlikely	1 painted
28	No processing capability	Boiler failure or autoclave inoperable	Backlog of untreated Clinical Waste accumulates on site	Increased risk of unsafe working conditions, including encroachment on LPG safety area.	Increased risk of loss of containment	2	Site is small and potentially congested, but a procedure is in place for preventing backlog accumulating on site beyond safe storage limits	2	Pandemic	4

Appendix F

Existing Licences and Approvals

Environment Protection Licence

Licence - 12609

Licence Details	
Number:	12609
Anniversary Date:	27-November

Licensee
MED-X PTY LTD
PO BOX 1184
OXENFORD QLD 4210

Scheduled Activity
Transport of trackable waste

Fee Based Activity	Scale
Transport of category 1 trackable waste	Any capacity
Transport of category 2 trackable waste	Any capacity

Region
Hazardous Materials, Chemicals & Radiation
59-61 Goulburn Street SYDNEY NSW 2000
Phone: (02) 9995 5000
Fax: (02) 9995 5999
PO Box A290
SYDNEY SOUTH NSW 1232

Environment Protection Licence

Licence - 12609

Environment Protection Licence

Licence - 12609

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 12609

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

MED-X PTY LTD
PO BOX 1184
OXENFORD QLD 4210

subject to the conditions which follow.

Environment Protection Licence

Licence - 12609

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the transport of waste.

A1.2 The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation (if relevant).
Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Transport of trackable waste	Transport of category 1 trackable waste	Any capacity
Transport of trackable waste	Transport of category 2 trackable waste	Any capacity

A2 Information supplied to the EPA

A2.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

Environment Protection Licence

Licence - 12609

3 Monitoring and Recording Conditions

M1 Recording of pollution complaints

M1.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M1.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M1.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M1.4 The record must be produced to any authorised officer of the EPA who asks to see them.

4 Reporting Conditions

R1 Notification of environmental harm

R1.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R1.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2 Written report

R2.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R2.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R2.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R2.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

5 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.2 The licence must be available for inspection by any employee or agent of the licensee operating the vehicle.

Environment Protection Licence

Licence - 12609

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 12609

flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

Licence - 12609

TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Ms Sandy Pupo

Environment Protection Authority

(By Delegation)

Date of this edition: 27-November-2006

End Notes

1 Licence varied by notice 1087968, issued on 28-May-2008, which came into effect on 28-May-2008.

2 Licence varied by notice 1105516, issued on 15-Oct-2009, which came into effect on 15-Oct-2009.

3 Licence transferred through application 1558385 approved on 17-Nov-2017 , which came into effect on 01-Dec-2017

Environment Protection Licence

Licence - 20233

Licence Details	
Number:	20233
Anniversary Date:	03-September

Licensee
MED-X PTY LTD
PO BOX 7439
BAULKHAM HILLS NSW 2153

Premises
9 KENOMA PLACE, ARNDELL PARK NSW 2148
9 KENOMA PLACE
ARNDELL PARK NSW 2148

Scheduled Activity
Waste processing (non-thermal treatment)
Waste storage

Fee Based Activity	Scale
Non-thermal treatment of hazardous and other waste	Any annual processing capacity
Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Any listed waste type stored

Region
Hazardous Materials, Chemicals & Radiation
59-61 Goulburn Street SYDNEY NSW 2000
Phone: (02) 9995 5000
Fax: (02) 9995 5999
PO Box A290
SYDNEY SOUTH NSW 1232

Environment Protection Licence

Licence - 20233

Environment Protection Licence

Licence - 20233

Environment Protection Licence

Licence - 20233

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

Licence - 20233

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

MED-X PTY LTD
PO BOX 7439
BAULKHAM HILLS NSW 2153

subject to the conditions which follow.

Environment Protection Licence

Licence - 20233

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Waste processing (non-thermal treatment)	Non-thermal treatment of hazardous and other waste	Any annual processing capacity
Waste storage	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Any listed waste type stored

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
9 KENOMA PLACE, ARNDELL PARK NSW 2148
9 KENOMA PLACE
ARNDELL PARK
NSW 2148

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

Environment Protection Licence

Licence - 20233

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Waste

L2.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
R100	Clinical and related wastes	As defined in Schedule 1 of the Protection of the Environment Operations Acr 1997	Waste storage	
R100	Clinical and related wastes	As defined in Schedule 1 of the Protection of the Environment Operations Acr 1997	Waste processing (non-thermal treatment)	Excluding cytotoxic waste, pharmaceutical waste, radiological waste and volatile and semi-volatile organic compounds (including formaldehyde, phenol and mercury)

L2.2 The maximum quantity of clinical and related waste, treated and/or untreated, at the premises must not exceed 5000 kilograms at any one time.

L3 Noise limits

L3.1 All operations and activities occurring on the premises must be conducted in a manner that will not cause or permit offensive noise beyond the boundary of the premises.

L4 Potentially offensive odour

L4.1 The licensee must not cause or permit emission of offensive odour beyond the boundary of the premises.

L4.2 No condition of this licence identifies a potentially offensive odour for the purposes of Section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

L5 Other limit conditions

L5.1 The licensee must comply with the conditions as specified in this licence or where no specific conditions are outlined in this licence, the licensee must comply with Clause 43 of *the Protection of the Environment Operations (Waste) Regulation 2005*.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and

b) must be operated in a proper and efficient manner.

O3 Emergency response

O3.1 The licensee must maintain, and implement as necessary, a current emergency response plan for the premises. The licensee must keep the emergency response plan on the premises at all times. The emergency response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment.

O4 Processes and management

O4.1 The licensee must ensure that any liquid and/or non-liqud waste generated and/or stored and/or treated and/or processed and/or reporocessed at the premises is assessed and classified in accordance with the EPA Waste Classification Guidelines as in force from time to time.

O5 Waste management

O5.1 Clinical and related wastes that are not allowed to process under this licence received at the premises, including cytotoxic waste, pharmaceutical waste and radiological waste, must be separated from all other waste and transported to a place where it can be lawfully received.

O5.2 The licensee must ensure that the handling, labelling, containment, storage and disposal of clinical and related waste are carried out in accordance with the NSW Health's Waste Management Guidelines for Health Care Facilities as in force from time to time.

O5.3 Without limiting to O5.2, the licensee must ensure that:
a) Clinical and related wastes are stored or contained in a weather proof secure location isolated from any other waste materials, and that the storage area is maintained in a condition which presents no threat to environment or human health
b) The storage area for clinical and related wastes contain all necessary equipment required to clean and disinfect the area in case of spillage
c) Bagged clinical and related waste are stored and transported in rigid containers which are leak proof, shatter resistant, washable and have security fitted lids to prevent spills at all times
d) Bags and containers used for storage and transport of clinical and related waste are colour coded and clearly marked with the wording "Clinical Waste" along with biological hazard symbol in accordance with the requirements of the NSW Health.
e) Containers used for clinical and related waste which are to be reused must be thoroughly cleansed and disinfected before being reused
f) Where second hand containers are used all other irrelevant marking shall be obliterated.

O5.4 The licensee must ensure that waste identified for recycling is stored separately from other waste.

O5.5 All aboveground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

O5.6 The licensee must ensure that suitable measures (e.g. high/low alarms, control valves with interlock control, one-way valves) are installed on all tanks, ponds or clarifiers and associated pipes and hoses to prevent spillage of waste.

O5.7 The licensee must ensure that all liquid materials including chemicals, fuels, oils, and waste materials are stored in a designated impervious bund that contains 110% of the largest container contained within the bund.

O5.8 The bunded area (floor and walls) must be impervious to the liquid(s) in the containers. The bund wall must not contain drain valves.

O5.9 The licensee must ensure that all waste materials covered under this licence, including empty containers are handled, loaded, unloaded and stored only within the building and within bunded area.

O5.10 The licensee must ensure that all decanting, consolidating, or bulking of waste materials must be conducted wholly within the building and within bunded area.

O6 Other operating conditions

O6.1 The licensee must always comply with the conditions as specified in the approval of the method of treatment of clinical waste issued by NSW Health (NSW Health Approval of a Method of Treatment of Clinical Waste Dated 20 June 2013 issued to State Waste Services Pty Ltd).

O6.2 The licensee must maintain a valid approval of the method of treatment of clinical waste issued by the NSW Health at all times

(a) A copy of current NSW Health approval of the method of treatment of clinical waste must be kept on the premises at all times.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;

b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Recording of pollution complaints

M2.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M2.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M2.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M2.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M3 Telephone complaints line

M3.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M3.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M3.3 The preceding two conditions do not apply until 3 months after the date of the issue of this licence.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,

5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

8 Special Conditions

E1 Requirement to maintain Financial Assurance

E1.1 A financial assurance in the form of an unconditional and irrevocable and on demand guarantee from a bank, building society or credit union operating in Australia as “Authorised Deposit-taking Institutions” under the Banking Act 1959 of the Commonwealth of Australia and supervised by the Australian Prudential Regulatory Authority (APRA) must be provided to the EPA to accompany the issuing of the licence. The financial assurance must be in favour of the EPA in the amount of forty thousand dollars ($40,000.00). The financial assurance is required to secure or guarantee funding for works or programs required by or under this licence. The financial assurance must contain a term that provides that any monies claimed can be paid to the EPA or, at the written direction of the EPA, to any other person.

E1.2 The licensee must provide to the EPA, along with the original counterpart guarantee, confirmation in writing that the financial institution providing the guarantee is subject to supervision by the Australian Prudential Regulatory Authority (APRA).

E1.3 An adjustment to the financial assurance must be calculated, each licence review period, in line with the Consumer Price Index (CPI*) for the number of years since the financial assurance was last paid. The financial assurance must be replenished to the full amount plus CPI adjustments each licence review period.
(*CPI means the Consumer Price Index (All Groups Index) for Sydney issued by the Australian Statistician)

E1.4 The financial assurance must be maintained during the operation of the facility and thereafter until such time as the EPA is satisfied the premises is environmentally secure.

E1.5 The assurance must be replenished up to the full amount required if the EPA has claimed on or realised the financial assurance or any part of it to undertake a work or program required to be carried out by the licence which has not been undertaken by the licence holder.

E1.6 The EPA may increase the amount of the financial assurance at any time as a result of reassessment of the total likely costs and expenses required.

E1.7 The licensee must provide to the EPA the original counterpart guarantee within five working days of the issue of:

(a) the financial assurance required by condition E1.1.
(b) the adjusted financial assurance as required by condition E1.3, E1.4 and E1.6

E2 Environmental Obligations of Licensee (Works and Programs)

E2.1 While the licensee’s premises are being used for the purpose to which the licence relates, the licensee must:

(a) Clean up any spill, leak or other discharge of any waste(s) or other material(s) as soon as practicable after it becomes known to the licensee or to one of the licensee's employees or agents.
(b) In the event(s) that any liquid and non-liquid waste(s) is unlawfully deposited on the premises, such waste(s) must be removed and lawfully disposed of as soon as practicable or in accordance with any direction given by the EPA.
(c) Provide all monitoring data as required by the conditions of this licence or as directed by the EPA.

E2.2 In the event of an earthquake, storm, fire, flood or any other event where it is reasonable to suspect that a pollution incident has occurred, is occurring or is likely to occur, the licensee (whether or not the premises continue to be used for the purposes to which the licence relates) must:

(a) Make all efforts to contain all firewater on the licensee's premises;
(b) Make all efforts to control air pollution from the licensee's premises;
(c) Make all efforts to contain any discharge, spill or run-off from the licensee's premises;
(d) Make all efforts to prevent flood water entering the licensee's premises;
(e) Remediate and rehabilitate any exposed areas of soil and/or waste;
(f) Lawfully dispose of all liquid and solid waste(s) stored on the premises that is not already securely disposed of;
(g) At the request of the EPA monitor groundwater beneath the licensee's premises and its potential to migrate from the licensee's premises;
(h) At the request of the EPA monitor surface water leaving the licensee's premises and
(i) Ensure the licensee's premises is secure.

E2.3 After the licensee's premises cease to be used for the purpose to which the licence relates or in the event that the licensee ceases to carry out the activity that is the subject of this licence, that licensee must

(a) remove and lawfully dispose of all liquid and non-liquid waste stored on the licensee's premises;
(b) rehabilitate the site, including conducting an assessment of and if required remediation of any site contamination.

E3 EPA may claim on Financial Assurance

E3.1 The EPA may claim on a financial assurance under s303 of the POEO Act if a licensee fails to carry out any work or program required to comply with the conditions of this licence.

Environment Protection Licence

Licence - 20233

Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 20233

flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

Licence - 20233

TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Greg Thomas

Environment Protection Authority

(By Delegation)

Date of this edition: 03-September-2013

End Notes

1 Licence transferred through application 1558364 approved on 09-Nov-2017 , which came into effect on 10-Nov-2017

NSW GOVERNMENT Health

ENVIRONMENTAL HEALTH BRANCH

OUR FILE: 12/4991-2
TRIM: H19/9477

Mr Christopher Liney
Med-X Pty Ltd
9 Kenoma Place
ARNDELL Park NSW 2148

Dear Mr Liney,

NSW Health Approval of a Method of Treatment of Clinical Waste.

Thank you for your application of 11 December 2018 and additional information for the approval of the autoclave and shredder located on site at the premises of Med-X Pty Ltd (t/a State Waste Services) at 9 Kenoma Place, Arndell Park, 2148, as a Method of Clinical Waste Treatment for consideration by NSW Health.

The method of treatment of clinical waste being sought for approval was treatment of general clinical waste by autoclave at 140°C for a minimum 50 minutes at a pressure of 310 Kpa, followed by shredding and disposal at landfill.

This method has been approved by the Secretary for the treatment of certain types of clinical waste subject to the conditions set out in Schedule 1 of the attached Certificate of Approval. Please note as per Condition 5, evidence of quality assurance certification must be provided to NSW Health within 12 months of this approval. Also note it is the responsibility of waste generators to classify the waste they produce. Waste treated by this method will need to be reclassified in accordance with the Environment Protection Authority's Waste Classification Guidelines before the final method of disposal or utilisation can be officially specified.

This approval expires in five years on 31 April 2024.

Should you have any further enquires in this regard, please contact Ms Achini Kuruppuarachchi on (02) 9461 7242 or email Achini.Kuruppuarachchi@health.nsw.gov.au (cc: NSWH–HealthRiskandRegulation@health.nsw.gov.au).

Yours sincerely,

12/3/2019

Matthew James
Deputy Director, Environmental Health Branch

NSW Ministry of Health
ABN 92 697 899 630
73 Miller St North Sydney NSW 2060
Locked Mail Bag 961 North Sydney NSW 2059
Tel. (02) 9391 9000 Fax. (02) 9391 9101
Website. www.health.nsw.gov.au

NSW GOVERNMENT | Health

Certificate of Approval

Clinical Waste Treatment Method

This Certificate of Approval is issued by the Secretary of the NSW Ministry of Health pursuant to the definition of "Clinical Waste" Schedule 1, Protection of the Environment Operations Act 1997.

Method: Clinical Waste Autoclave at 140°C core temperature for a minimum of 50 minutes at a pressure of 310 Kpa, followed by shredding.

By: Med-X Pty Ltd (t/a State Waste Services)

Of: 9 Kenoma Place, Arndell Park, NSW, 2148

The Clinical Waste Treatment Methods approval is subject to the conditions specified in Schedule 1 following.

Executive Director, Health Protection
for Secretary

Issued: 11/3/2019
Certificate No: CW002
Expires: 31 April 2024

Schedule 1

CONDITIONS OF APPROVAL OF THE MED-X TREATMENT METHOD

1. APPROVAL

This approval is issued to Med-X Pty Ltd (t/a State Waste Services), 9 Kenoma Place, Arndell Park, NSW, 2148, only for the clinical waste treatment method specified on the certificate.

2. OPERATION MANUALS

Operation and maintenance manuals must be supplied on site with education, operation and maintenance procedures, which include a troubleshooting section.

3. PERMITTED CLINICAL WASTE

The unit may treat clinical waste, as defined except for:

- Human body parts

4. EXCLUDED OTHER WASTES

The unit must not treat the following wastes:

- Cytotoxic waste
- Pharmaceutical waste
- Radiological waste

5. QUALITY ASSURANCE

Med-X is to provide evidence of certification within 12 months of this approval and be independently audited as required.

6. CONTINGENCY PLAN

A contingency plan must be made available to all staff, to deal with equipment failures.

7. MONITORING AND TESTING

7.1 The autoclave process must be verified annually by a NATA accredited Laboratory.
7.2 The autoclave process must be tested independently six monthly by a NATA accredited laboratory.
7.3 The autoclave process must be tested monthly for microbial efficiency using the EZTest Steam Biological Indicator (BI) test or equivalent.
7.4 Real time monitoring of every load using EZTest Steam Biological Indicator (BI) test must be performed.
These records must be kept for a period of 5 years.

8. FINAL WASTE CLASSIFICATION

Treated waste may need to be classified in accordance with any relevant Environment Protection Authority determination before disposal to landfill.

9. MODIFICATIONS

Any modifications or variations of design or operation shall be submitted for separate consideration and variation of approval.

Appendix G

Pollution Incident Response and Emergency Management Plan

MED-X HEALTHCARE SOLUTIONS
POLLUTION INCIDENT RESPONSE MANAGEMENT PLAN

9 Kenoma Place Arndell Park NSW 2148

RELEASED VERSION: 05 2020

Summary of Dangerous Goods held at the premises

Class	Description	Quantity
2.1	Flammable Gas	7500L
6.1, 6.2	Infectious Substances	<2.5T
3	Flammable Liquids	<40L

Table of Contents

EMERGENCY SERVICES INFORMATION PACKAGE

Site location:

Med-X Healthcare Solutions: 9 Kenoma Place Arndell Park (Main site- Processing and Operations).
Additional parking and storage site located at: 7 Vangeli Street, Arndell Park

Hours of Operation:

The normal hours of operation of the Site are between 7am to 7pm. Monday to Saturday.

Brief description of works:

Med-X Healthcare Solutions provides a waste collection and disposal service to health and allied health services industries and any other business that requires clinical and sharps waste disposal. The clinical wastes are treated by steam sterilisation process to destroy microbial organisms, rendering the waste harmless.

Cytotoxic and anatomical waste is collected and temporarily stored before being transported to another waste treatment facility to be incinerated.

Areas of the site that are potentially hazardous during a fire emergency have been determined to be the shredder, electrical equipment and the waste storage locations as well as the area around the LPG storage tank.

The potential for fire is an electrical fault or the shredder sparking and igniting combustible materials in the waste.

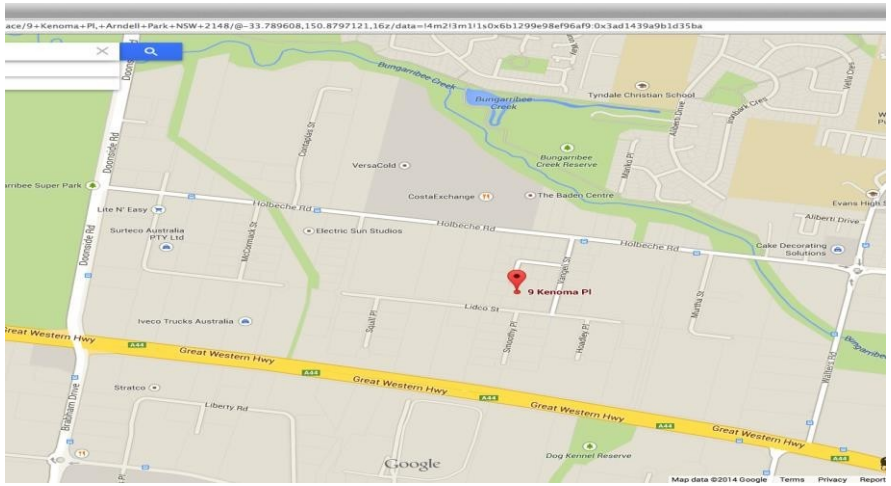
Clinical and related waste and cytotoxic waste is classified as **special waste** (Class 6.1 & 6.2) under the NSW EPA Waste Classification Guidelines. The main hazards associated with this waste are sharps injury and the infectious nature of the waste. The risk of these hazards depends on exposure.

There is a wash bay inside the building for cleaning of bins. This area is connected to the Sydney Water Tradewaste System.

- An industrial boiler running on LPG (Class 2.1) powers the autoclave. The capacity of the LPG tank, which is supplied by Supagas, is 7500L and the tank is situated in the corner of the yard with Hebel walls protecting the boundary fences against fire.

The nearest waterway is Bungarribee Creek that is located 500m to the north of the site. The building is bunded at all doorways to contain all spills and any contaminated firewater. There are two fire hose reels and fire extinguishers are installed throughout the facility.

Figure 1 Site Location - 9 Kenoma Place



The location of nearest fire services is:
Huntingwood Fire Station
42 Huntingwood Dr
Huntingwood NSW 2148

1. INTRODUCTION

This document describes the Pollution Incident Response Management Plan ("plan") for Med-X Healthcare Solutions (waste storage and treatment facility) at 9 Kenoma Place Arndell Park. For the purpose of this report, the facility will be known as "the site" from here onwards.

All personnel and contractors working at the site should be made aware of the general contents of this document and accompanying procedures.

It is a requirement that all those employees responsible for emergency response activities, as defined by this document, have a copy of this plan and receive the appropriate level of training needed to ensure the effective implementation of the respective emergency and pollution incident response procedures identified in this plan.

The plan is designed to cover all emergency and pollution incidents conditions that could be reasonably anticipated at the site.

1.1 DEFINITION OF AN EMERGENCY

An emergency situation can be defined as any abnormal or dangerous event that may adversely affect the safety or well-being of nearby persons, communities or the environment. Under these circumstances, the occupants of the said premises are called to immediately respond to the emergency situation in an effort to control, correct and return the dangerous situation to a safe condition.

If there is any doubt, an event should be treated as an emergency and the procedures stipulated by this plan should be followed. Note that all fires are to be treated as emergencies.

The three levels of emergency are defined as:

- **LOCAL ALERT:** Any emergency situation that threatens human lives, property or the environment at one location of the Site, but is not likely to spread to other areas of the Site or the property;

- **SITE ALERT:** Any emergency situation where effects may spread to other areas on the Site; and
- **EXTERNAL ALERT:** Any emergency situation where effects may spread and impact on people, property or the environment outside the site boundaries, such as a grass fire.

Each of these three levels of emergency may be further classified as follows:

- **MINOR EMERGENCY:** An emergency situation that can be handled entirely by the Site's emergency response personnel without the assistance of the respective public emergency services; and
- **MAJOR EMERGENCY:** An emergency situation that requires the assistance of the public emergency services i.e. ambulance, fire brigade or police services.

An EXTERNAL ALERT is automatically a MAJOR EMERGENCY, as action cannot be taken outside the site boundary independently of the public emergency services.

1.2 DEFINITION OF A POLLUTION INCIDENT

The Environmental Guidelines: Preparation of pollution incident response management plans (NSW EPA) defines a pollution incident as:

"...an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise."

Under the Section 148 of the POEO Act, pollution incidents causing or threatening material harm to the environment must be notified immediately to the relevant authorities.

"Material risk of harm to the environment" is defined under Section 147 of the POEO Act as:

(a) harm to the environment is material if:

(iii) It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

(iv) It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

1.3 POLLUTION INCIDENT RESPONSE MANAGEMENT

There is an obligation on holders of environmental protection licences to prepare and implement a pollution incident response management plan (PIRMP) for each licensed activity.

Med-X currently has two (2) environmental protection licences (EPL) under the POEO Act:

1. EPL No. 20233 for Waste storage and Non-thermal treatment of hazardous and other waste at 9 Kenoma Place Arndell Park; and,
2. EPL No. 12609 for transport of hazardous, industrial, Group A, Group B or Group C waste.

Requirements for pollution incident response management plans (PIRMP) include:

- Procedures to be followed in notifying a pollution incident and actions to be taken immediately after a pollution incident;
- The PIRMP must be kept at the premises to which the relevant EPL relates and be available on the website; and
- The PIRMP should be tested.

1.4 AIMS OF THE PLAN

The aims of this plan are to:

- Provide a clear understanding of how to handle and react to any emergency and pollution incidents that may occur at the site or during the transport of waste in the form of effective control structures, procedures and directives;
- Prevent or minimise the impact of an emergency on human life, the community and surrounding environment; and
- Facilitate a return to normal or safe operations as soon as possible.

The procedures contained in this plan have been designed to protect life and where possible prevent or minimise damage to the equipment, site and installations at the site. The procedures also aim to facilitate a return to normal operations by providing effective utilisation of the safety features, systems and equipment installed at the site to protect people from fire, pollution incidents and other emergencies.

1.5 SCOPE AND OBJECTIVES

This plan applies to all equipment, personnel and visitors under the control or management of MED-X HEALTHCARE SOLUTIONS whilst working or visiting the site.

The plan contains information and instructions that provide a basis for handling various types of emergency situations, such as a fire, medical emergency, spills and gas-leaks.

These instructions should not be regarded as rigid procedures to be followed, but rather as continually improving guidelines to be adapted to cope with unanticipated situations.

The objectives of this plan are:

- To protect human life and facilitate the rescue or evacuation of personnel affected by the emergency situation;
- To control or limit any effect that an emergency situation may have on the site, neighboring areas or on the community in the vicinity of the location of the emergency;
- To facilitate emergency response and to provide such assistance as is appropriate to the occasion;
- To ensure the quick and effective communication of all vital information to respective authorities;
- To facilitate the organisation and reconstruction activities so that normal operations can be resumed as soon as possible;
- To provide for emergency response training so that a high level of preparedness can be maintained at the facility;
- To provide the structure under which emergency procedures are revised and updated;
- To ensure timely and comprehensive communication of a pollution incident to staff, relevant authorities and all other stakeholders affected by the impacts of the pollution incident; and
- To identify risks and develop actions to minimise and manage these risks.

2. SUMMARY OF OPERATIONS, HAZARDS, AND SAFETY SYSTEMS

2.1 SUMMARY OF FACILITY OPERATIONS

The Site is located within an industrial area in Arndell Park and surrounded by industrial premises. The land area is 1,650 m2.

The site has one entrance and exit driveway from Kenoma Place. The site consists of an industrial warehouse; concrete driveways and open areas (refer to Figure 2-1). The adjoining land consists of industrial facilities.

The site provides treatment for clinical waste using an autoclave process. Wastes are transported to the site by Med-X vehicles across the Sydney metro and regional areas.

The clinical waste is delivered to the site in reusable yellow clinical waste bins by trucks. The waste includes sharps, infected material and human tissue. Cytotoxic (purple bins) and anatomical (yellow bins, orange lid) waste is also delivered to the site. However this waste is removed and incinerated off-site at another waste treatment facility.

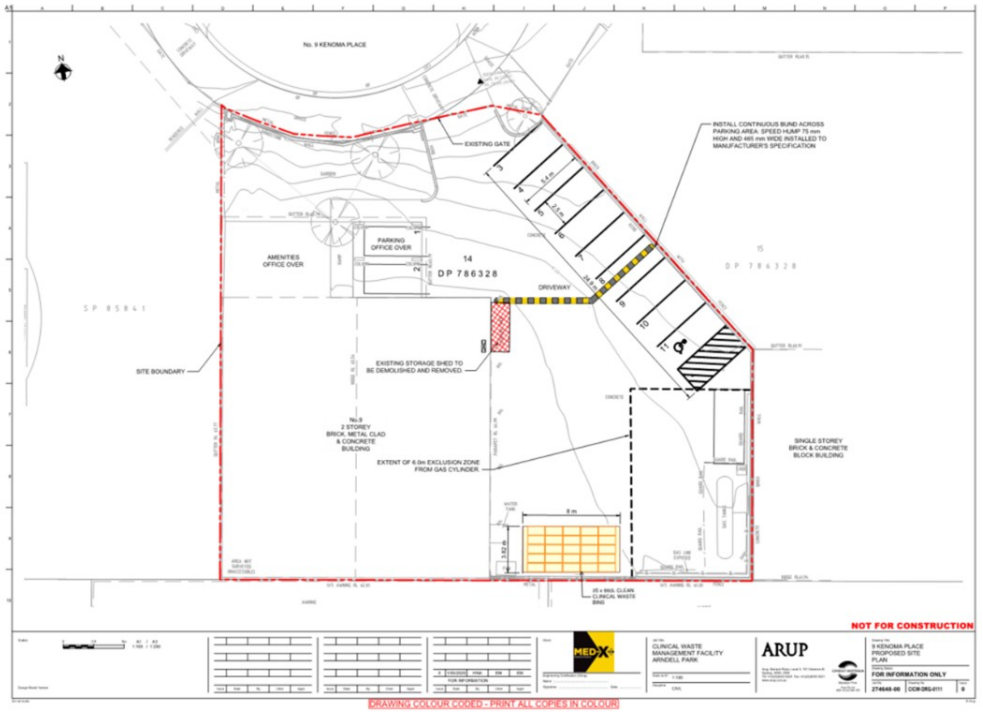


Figure 2-1: Site Layout

The autoclaving process involves the following steps:

- The clinical and related waste is weighed and emptied into an autoclave cart;
- The yellow bins are manually cleaned using disinfectant;
- The carts (4 at a time) are placed in the autoclave and cycled through a treatment process of pressure and steam;

- The steam reaches temperatures of 140C.
- The condensate and water used in the autoclave cooling process is collected in a 25,000 litre tank, cooled, filtered and re-used;
- After the steam sterilization process is complete, the autoclave chamber is opened and the carts removed;
- The treated waste is fed into a shredder using a forklift with attachment and the shredded waste is compacted and transferred to a compactor; and
- The compactor is transported by truck to landfill.

The locations of dangerous goods storage areas (refer figure 2-1) on site are provided in the following table. For flammable liquids, the containers are stored within a flammable/dangerous goods metal cabinet.

Table 2-1: Dangerous Goods Storage Details

Area	Chemical Name	UN No	DG Class	Quantity
1	LPG	1075	2.1	7500L
2	Clinical Waste	3291	6.2	<2.5T
3	Cytotoxic	2810	6.1	500kg
4	Flammable & Corrosive	Various	3	60L

Wastewater discharge to sewer is tested regularly in accordance with the Trade Waste agreement with Sydney Water.

2.2 SUMMARY OF TRANSPORT OPERATIONS

In addition to the licensed activities undertaken at the site, MED-X HEALTHCARE SOLUTIONS is licensed to transport waste of Category 1 and Category 2. Transport includes the following:

- Collection of wastes from clients around the Sydney and NSW regional areas, and then the transport of these wastes to the site;
- Transport of cytotoxic and anatomical waste from the site to Silverwater for incineration; and
- Transport of processed waste (after rendered harmless) from the site to landfill.

2.3 SUMMARY OF HAZARDS

The storing and handling of quantities of special waste on-site occurs as part of day-to-day operations. The main hazards are spillage and fire. A spillage may occur during unloading and handling. A fire may occur in the facility with the potential principal causes being:

- The potential for unknown substances within the collected waste to go through the shredding process and a spark causes an explosion or fire;
- Use of non-approved electrical devices; and
- Release of solvent.

Safeguards are in place to reduce the risk of a fire.

2.3.1 Dangerous Goods

Table 2-2: Classes of dangerous goods stored and handled at the Site

Class	Class Description	Major Hazards
2.1	Flammable Gas	• Flash fire • Unconfined vapour cloud explosion • Toxicity (under extreme concentrations)
3	Flammable Liquid	• Flash fire • Pool fire • Unconfined vapour cloud explosion • Potential toxic fumes (in the event of fire) • Potential water contamination (The flammable liquids are not part of the clinical waste processing and are stored separately).
6.2	Infectious Substances	• Can cause infectious disease in humans or animals • Capable of spreading disease when exposure to them occurs.

Table 2-2: Classes of dangerous goods stored and handled at the Site		
Class	Class Description	Major Hazards
		• Corrode metal and other materials • May ignite flammable/combustibles substances • React dangerously with other corrosive or incompatible substances

2.3.2 Special Waste

Clinical waste has the potential to cause injury, infection or offence. Some examples of clinical waste include:

- Body fluids or Blood;
- Materials or equipment that have been exposed to body fluids and or blood;
- Human tissue (excluding hair, nails, and teeth);
- Laboratory specimens/cultures; and
- Animal tissue/carcasses resulting from medical research.

This waste is put through a steam sterilisation process at the site, which renders the waste harmless.

Cytotoxic waste relates to any substance that may be contaminated with any residue or preparations that contains materials that are toxic to cells especially because of their ability to alter cell production. Some examples of cytotoxic waste may include:

- Drugs that are used to treat cancer, rheumatoid arthritis, multiple sclerosis;
- Equipment utilised in administering or preparation of cytotoxic materials; and
- Body fluids/blood that may still have cytotoxic properties.

Exposure can occur through skin absorption, skin contact, ingestion and sharp injuries, inhalation of aerosols and drug particles.

Cytotoxic, pharmaceutical and anatomical waste is stored at the site then incinerated off-site at another waste treatment facility.

Anatomical wastes are human/animal tissues, organs, body parts and pathological specimens.

Safety Data Sheets (SDS) for each chemical substance stored at the Site is kept at locations that are accessible to where each chemical is stored. It is noted that 240L of residual formaldehyde waste is stored at site & updated accordingly.

2.3.3 Process Related Hazards

Operations include the loading, unloading and storage of infectious and toxic wastes as well as the processing of infectious waste. The major operational related hazards associated with the site activities include:

- Damage to a waste bin during unloading from transport vehicle, causing a spill of a waste product;
- A pallet/bin collapses as a result of an unstable storage arrangement, causing possible injury to an employee and/or damage to bins;
- Injury to employees as a result of contact with a waste product (e.g. sharps injury);
- Spillage of waste bin during processing, transfer or equipment leak or the like;
- Release of vapours (toxic or flammable) during processing or as a result of a spill;
- A waste spill travels down a stormwater drain potentially causing environmental harm and/or human injury (off-site) due to direct or indirect contact with the substance;
- Fire caused by ignition of an unwanted substance such as flammable liquid or flammable gas most likely within the shredder; and
- Fire or explosion due to the storage of incompatible wastes or dangerous goods that are inadvertently brought onto site.

2.3.4 Potential Pollutants Stored on Site

Table 2-3: Potential Pollutants

Pollutant Name	**Storage location details**	**Maximum Quantity**
Wash water from bin wash bay.	Released to trade waste under Sydney Water TWA.	500L
Cytotoxic waste	Stored within purple bins in the facility	0.3T
Clinical waste	Stored within yellow bins in the facility	4.5T

Anatomical waste	Stored within yellow bins (orange lid) in the facility	0.2T
Waste inadvertently brought onto site.	Stored within the facility in a bunded area	Unknown (<0.5T)
Treated autoclave waste	Temporarily stored within bulk bin and removed off site every 2 days	4T

2.3.5 Risk Assessment

Risk can be evaluated using the template shown in Figure 2-2 as follows – Alignment to:

- HB 436:2004 Risk Management Guidelines Tables 6.3 – 6.8 reproduced with permission from SAI Global under licence 1210-c062.
- References: Safe Work Australia (2011) - Code of Practice: How to Manage Work Health and Safety Risks, ISO31000 -2018 Risk Management.

Figure 2-2: Risk Assessment Template

Step 3: Determine the risk score					
	Consequence				
Likelihood	**Insignificant**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost certain	**3 High**	**3 High**	**4 Acute**	**4 Acute**	**4 Acute**
Likely	**2 Moderate**	**3 High**	**3 High**	**4 Acute**	**4 Acute**
Possible	**1 Low**	**2 Moderate**	**3 High**	**4 Acute**	**4 Acute**
Unlikely	**1 Low**	**1 Low**	**2 Moderate**	**3 High**	**4 Acute**
Rare	**1 Low**	**1 Low**	**2 Moderate**	**3 High**	**3 High**
Step 4: Record risk score on worksheet (**Note** – Risk scores have no absolute value and should only be used for comparison and to engender discussion.)					

Score	Action
4 A: Acute	**DO NOT PROCEED.** Requires immediate attention. Introduce further high-level controls to lower the risk level. Re-assess before proceeding.
3 H: High	**Review before commencing work**. Introduce new controls and/or maintain high-level controls to lower the risk level. Monitor frequently to ensure control measures are working.
2 M: Moderate	**Maintain control measures.** Proceed with work. Monitor and review regularly, and if any equipment/people/materials/work processes or procedures change.
1 L: Low	**Record and monitor**. Proceed with work. Review regularly, and if any equipment/people/materials/work processes or procedures change.

2.4 SUMMARY OF SAFETY SYSTEMS

A number of important safety features have been incorporated into the design and operation of the Site to reduce the potential for hazardous events as outlined above to occur, or to minimise their impacts in terms of potential effects on human life and the surrounding environment.

2.4.1 On-site Water Containment System

The facility is equipped with bunding, which would limit pollutant release in the event of a spill for which spill kits are not sufficient to limit the extent of the spill.

There is 120mm high bunding at all doorways to contain all spill and contaminated firewater within the building. All spills within the building will be treated and collected before ultimately being released to the sewer with no potential release to the stormwater system.

Med-X is investigating the option of stormwater isolation protection as an additional protective barrier.

2.4.2 Fire Services

The fire services available at the site are:

- 1 x 9kg CO2 Fire Extinguisher
- 3 x 9kg A:B(E) Powder Fire Extinguisher
- 2 x 36m fire hoses connected to hydrant water mains
- Fire Alarm

Services are inspected semi-annually.

Contaminated firewater would be treated with bleach at 10000ppm and the pH level tested and adjusted (should it be below pH7) before being released to sewer.

Med-X Emergency Response Personnel can be quickly contacted via the following communication methods:

- Using internal telephone system; and
- Mobile phones (if the person to be contacted is known to be outside the site).

2.4.3 Spill Control Equipment

In addition to the water containment measures, Med-X Healthcare Solutions maintain the following clinical waste spill kit items on site.

- Broom, a pan and scraper, mop and mop bucket;
- A large (10 litre) reusable plastic container or bucket with fitted lid;
- Clinical waste bags for the disposal of clinical waste;
- Disinfectant containing (1%) 10,000 ppm available chlorine or equivalent;
- Rubber gloves suitable for cleaning;
- Detergent, sponges / disposable cloths;
- Personal protective equipment including eye protection, an apron or long sleeve impervious gown, a face mask, heavy-duty gloves;
- Incident report form;

- Waste spill sign.

Cytotoxic spill kit should contain at least:

- Mop and mop bucket, a pan and scraper;
- A large (10 litre) reusable plastic container or bucket with fitted lid;
- Cytotoxic waste bags for the disposal of cytotoxic waste;
- 2 hooded overalls, shoe covers, long heavy-duty gloves, latex gloves, a face mask and eye protection;
- Absorbent toweling / absorbent spill mat;
- Incident report form;
- Waste spill sign.

2.4.4 Other

Personal Protective Equipment (PPE) available to employees includes:

- Safety footwear, headwear, and hi-viz clothing;
- Eye Protection and ear protection;
- Various gloves.

Additional PPE is provided in spill kits in case employees need to clean up clinical or cytotoxic waste.

A **Safety Data Sheet** (SDS) register is located in the facility at the chemical cabinets.

Waste audits are periodically conducted of waste collected from hospitals, laboratories and medical research centres with the results reported back to clients. Any incorrectly disposed waste type is highlighted and fed back into the client's waste segregation programs.

3. TYPES OF EMERGENCIES

The following types of emergencies covered by this plan are summarised in Table 3-1 below.

Table 3-1: Types of emergencies

Emergency Event	Emergency Type	Emergency Response Procedure
Fire/Explosion	Fire within property	Fire/Explosion; Gas Release
	Fire within shredder / waste bin	
Spills	Spills during material handling operations or transport	Dangerous Goods Emergency; Spill Control and Containment
	Collision of road vehicles	
	Bin damaged by forklift	
	Overflow causing release of contaminated wastewater	
	Bin containing infectious waste overturns during unloading, spilling contents	
Personal Injury	Work accident, such as heart attack, serious fall, severe injury or contact with chemical	Medical Emergency
Miscellaneous	Site Evacuation	Evacuation.

4. EMERGENCY CONTROL AND RESPONSE

The normal hours of operation of the Site are between 6am and 4pm, Monday to Friday.

4.1 PRINCIPLES OF EMERGENCY CONTROL AND RESPONSE

The principles of emergency response will be based on Prevention, Containment, Rescue and First aid. These have been summarised below:

Table 4-1: Emergency response principles	
Prevention	Inspection of all Site and dangerous goods storage facilities. Frequency of inspections are bi-annually.
	Regular emergency response drills to ensure site readiness.
Containment	Minimise any secondary damage.
	Immediate isolation of all electrical power to the affected area.
	Strict co-operation with any instructions provided by the Chief Warden.
Rescue	Only trained emergency personnel are to use emergency equipment where an emergency situation requires particular precautions (i.e., Spill Kits, Fire Fighting Equipment) or the use of specialised Personal Protection Equipment (PPE).
	Approved safety clothing to be worn.
	All emergency equipment would be located in relative areas of concern.
	Emergency equipment operations must never endanger the safety of personnel.
First Aid	First-aid officer to provide assistance.

4.2 EMERGENCY CONTROL ORGANISATION

The Emergency Control Organisation (Table 4-1) consists of a group of Site personnel who have the responsibility of providing first response actions in an emergency.

The Emergency Control Organisation tasks involve organising the necessary resources, communications, evacuation of personnel and implementing corrective actions that may be necessary to return the emergency situation back to normal.

Table 4-1: Emergency Control Organisation Member Summary

Team Member	Personnel	Internal Contact No
Chief Warden/First Aid	Patrick Liney	0433 881 655
Warden/Communication	Aaron Whitton	0447 559 860
Branch Manager	John de Smit	0400 324 005

All Emergency Control Organisation members clearly understand that they provide the first line of attack in an emergency situation, such as a fire.

4.3 PRINCIPLE ROLES AND RESPONSIBILITIES

The Chief Warden is in charge of overseeing and controlling all emergency response actions at the Site. In the case that the Chief Warden is unavailable at the time of the emergency, control will be delegated to the responsibility of the Warden.

4.3.1 Damage Control

All Emergency Control Organisation personnel shall be trained in the use of fire-fighting equipment, including the use of fire extinguishers and hose reels.

In the event of a Major Emergency, the role of the Emergency Control Organisation is to ensure that the damage or danger caused by the emergency situation is controlled or minimised until external aid arrives at the Site.

4.3.2 Rescue and First Aid

First Aid Officer/s will be required to render assistance in removing any injured personnel from the emergency area and to provide effective management of injuries until paramedics arrive on-site.

4.3.3 Communications

The Communications Officer will monitor and facilitate the effective exchange of information between the Site and the relevant State Emergency Services.

The Executive will be responsible for relaying information to the media and other public bodies. All staff will be instructed to not discuss such issues with any external bodies.

4.3.4 Evacuation

The Chief Warden will determine and control the evacuation of the Site. The Chief Warden will direct staff to evacuate the Site should the emergency grow beyond manageable proportions. To aid in the evacuation an employee checklist will be used by Chief Warden to mark names and ensure all employees working in the affected area have been safely evacuated. All staff sign in daily via the Bundy app on mobile and for timesheet purposes.

4.3.5 Traffic Control

A Traffic Control Officer, nominated by the Chief Warden will be responsible for ensuring the free flow of traffic around the Site. The task may also involve the removal of any vehicle that may obstruct the free flow of emergency vehicles in and out of the Site.

4.3.6 Emergency control Point

In the event of an emergency, the Chief Warden will co-ordinate the emergency response activities from the Emergency Control Point, which is located on the grassed area at the front of the site (if appropriate to emergency).

4.3.7 Movement of Vehicles

Vehicles shall not be removed from the car park area during an emergency requiring evacuation of the premises, unless authorised by the State Emergency Services Commander. This is to avoid local traffic congestion, and to protect employees in vehicles against possible injury.

4.4 FIRE DETECTION

Site personnel are the primary mechanism by which fires are detected. Site personnel would be able to quickly detect any leaks of flammable materials, which may lead to an increased fire risk, via visual or odour recognition. Once such situations are detected appropriate first response action would be taken.

An audible alarm is utilized throughout the Treatment facility. Smoke detectors are fitted throughout the facility.

4.5 RAISING ALARM

When an emergency situation has been identified, the Manager shall immediately be informed. If necessary, emergency services shall be contacted by calling 000.

4.5.1 Evacuation Initiation

The Chief Warden shall assess the extent and severity of the emergency situation and issue a complete site evacuation order if considered necessary.

If it is considered safe to do so, pre-selected personnel shall remain behind to ensure that the Site is brought to a safe or stable condition before proceeding to the Emergency Assembly Area.

All other personnel shall be evacuated immediately.
Where a clear danger exists, Site personnel may evacuate on their own initiative to safe areas or the emergency assembly area.

4.5.2 Personnel Accounting System

After evacuating, personnel shall assemble at their designated Emergency Assembly Area. The Chief Warden shall then conduct an attendance roll call to ensure that all persons are accounted for including any visitors and contractors working on-site.

Any missing persons shall be advised immediately to the State Emergency Service upon arrival. The Chief Warden will assess whether or not the on-site emergency response team has the capability or necessary equipment to safely undertake the search and rescue activity of the missing person or wait until the State Emergency Service personnel arrive on-site.

4.5.3 Adjacent Premises

The occupants of adjacent premises should be advised if endangered by the emergency. However, evacuation of those areas is the responsibility of the individual companies and the Emergency Services.

4.6 NOTIFICATION OF A POLLUTION INCIDENT

A pollution incident that occurs in the course of an activity (within the facility or during the transportation of waste) so that material harm to the environment is caused or threatened must be notified.

4.6.1 Notification of a Pollution Incident at the Facility

Under Section 148 of the POEO Act, holders of environmental protection licenses and anyone carrying on an activity or occupying licensed premises that become aware of a pollution incident are required to report it immediately.

Note that pollution incidents that warrant notification are defined under Section 1.3.

4.6.2 How to Notify?

If the incident presents an immediate threat to human health or property:

CALL 000

Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service.

Then immediately contact the Chief Warden/Warden who will take over communication responsibilities.

If the incident does not present an immediate threat, or once the initial 000 call has been made, a decision on who to notify needs to be made. Where notifications are required then notify the relevant authorities in the following order:

NSW EPA – Environmental Direct Line

131 555

Blacktown City Council – (02) 9839 6000, A/H 1300-133-491
NSW Health (Public Health) – 1300 066 055
WorkCover on 13 10 50 (WorkCover will ask for the ABN)

4.6.3 What to Notify?

Section 150 of the POEO Act specifies relevant information about a pollution incident to be given as follows:

(a) the time, date, nature, duration and location of the incident, (b) the location of the place where pollution is occurring or is likely to occur,

(c) the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known,

(d) the circumstances in which the incident occurred (including the cause of the incident, if known),
(e) the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known,
(f) other information prescribed by the regulations.

The above information is that known to the informant notifying the incident at the time it is notified. If further information becomes known after notification, this information needs to be notified immediately after it becomes known.

4.7 TERMINATING AN EMERGENCY

Once clearance is given by the Emergency Services that the emergency incident has been controlled, the Chief Warden will assume control of the site. In this event the following tasks shall be undertaken:

- The Chief Warden and Warden must undertake a full investigation and assessment of the area prior to allowing workers to return;
- The Chief Warden and Warden must ensure any clean up required is done so to ensure a safe work environment for all staff. In addition, ensure the safe handling, transport and storage of any waste materials is undertaken;
- All clean up material and contaminated items must be disposed of appropriately, according to the waste management procedure; and
- When the area is considered safe, workers can return to work.

4.8 WRITTEN REPORT ON EMERGENCY AND REVIEW OF EMERGENCY PLAN

After any emergency, the Site Manager and Chief Warden shall prepare an incident report providing the following information:

- Reason and cause of incident;
- Review of the emergency response performance;
- Recommendations on preventative strategies or additional safety systems that may be considered essential to avoid a recurrence of the incident; and
- Recommendations on methods or ways to improve the emergency response performance so that any future incidents can be dealt with in a more effective manner.

In the case of a pollution incident that was required to be notified under Section 148 of the POEO Act, written notification must be provided to all regulatory authorities that were notified within 7 days of the incident. Information required in the written notification is included in the site's Environment Protection Licence.

4.9 TRAINING

All personnel working at the Site shall be trained in the basic emergency response procedures. All personnel must undertake Induction Training at the commencement of their employment at the Site and be aware of standard operating procedures.

Competency would be recorded following the completion of the training program to ensure that the employee has acquired a satisfactory level of knowledge. Refresher training is programmed annually.

4.10 PREMPTIVE ACION

Above all it is pre-emptive actions that will mitigate against any risk of harm to human health or the environment include:

- Always follow the company standard operating procedures;
- Take personal responsibility for your safety and the safety of others;
- Ensure all containers and each load is secure and correctly labeled;
- Use the tailgate to load and unload vehicles;
- Carry a clinical waste and cytotoxic waste spill kit in all transport vehicles.

5. REVIEW AND TESTING OF THE PLAN

This plan needs to be reviewed once per year, or otherwise:

- Within one month of any emergency pollution incident that requires notification;
- Following any significant changes to the layout or operations on site.

Review and testing of the plan needs to ensure:

- Information in the plan is accurate and up to date; and
- The plan is capable of being implemented in a workable and effective manner (through drills).

Attachment 1: MED-X HEALTHCARE SOLUTIONS Site Risk Assessment Analysis.

Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
1. Truck delivery	Damaged bin delivered to site.	Clinical and related waste products spill in delivery area.	Moderate	Possible	Moderate	All bins delivered to site are inspected, locked and secured at the waste generators premises before delivery to the site. The contents of any damaged bins would be repacked in a new bin and the damaged bin returned to the site, cleaned and disposed of.
	Bin dropped or damaged during unloading from truck.	Pathogens from the clinical and related waste released into the air.				The waste contained within the bins is typically sealed in plastic bags by the waste generator prior to placement in the bin. In the event of a bin being damaged the waste would be contained within the plastic bag.
		Employees come into contact with clinical and related waste and are exposed to pathogens.				All employees are trained in the handling of clinical and related waste and are provided with appropriate personal protective equipment (PPE).
		Clinical and related waste products enter the storm water system and flow off-site.				Employees are in attendance during all unloading operations and will implement spill control procedures and/or emergency response procedures in the event of a large spill.
						All unloading operations are conducted within the building, which is bunded to contain all spills. Any spills within the building drain to the site's drainage system, treated and ultimately released to the sewer with no potential release to the storm water system.

Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
2. Bin empty area	Bin dropped or damaged during emptying into cart. Cart overfilled during bin emptying. Cytotoxic waste bin emptied into cart.	Clinical and related waste products spill in bin empty area. Pathogens from the clinical and related waste released into the air. Employees come into contact with clinical and related waste and are exposed to pathogens. Clinical and related waste products enter the storm water system and flow off-site. Cytotoxic waste mixed with clinical and related waste.	Moderate	Likely	Significant	All employees are trained in the handling of clinical and related waste and are provided with appropriate PPE. Employees are in attendance during all unloading operations and will implement spill control procedures and/or emergency response procedures in the event of a large spill. Cytotoxic waste bins are a distinctive purple colour as opposed to the yellow clinical waste bins; the purple bins are identified, inspected and removed to a designated staging area before being removed for waste treatment off-site. All unloading operations are conducted within the building, which is bunded to contain all spills. Any spills within the building drain to the site's drainage system, treated and ultimately released to the sewer with no potential release to the storm water system.

Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
3. Pre-treatment storage area	Cart full of clinical and related waste is damaged or tipped over during transport from bin unloading area. Cart full of clinical and related waste is left outside pre-treatment storage area.	Clinical and related waste products spill in pre-treatment storage area. Pathogens from the clinical and related waste released into the air. Employees come into contact with clinical and related waste and are exposed to pathogens. Clinical and related waste products enter the stormwater system and flow off-site.	Moderate	Likely	Significant	All employees are trained in the handling of clinical and related waste and are provided with appropriate PPE. Employees are in attendance during all transport operations and will implement spill control procedures and/or emergency response procedures in the event of a large spill. All transport operations are conducted within the building, which is bunded to contain all spills. Any spills within the building drain to the site's drainage system, treated and ultimately released to the sewer with no potential release to the stormwater system.

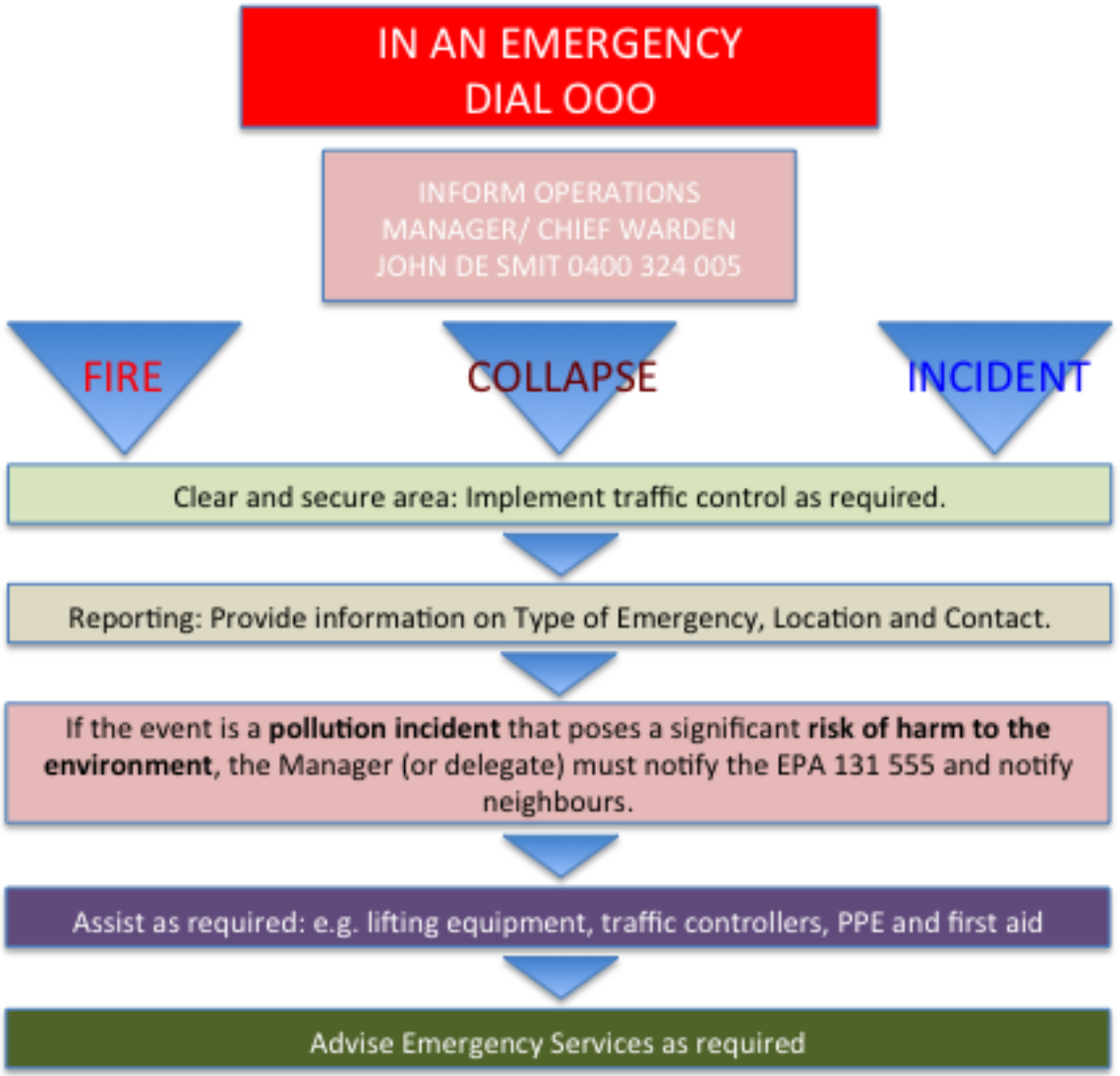
Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
4. Autoclave	Autoclave chamber door not closed during sterilization.	Autoclave unable to hold chamber pressure causing an explosion.	Major	Unlikely	Moderate	Door of the autoclave is fitted with an outer locking ring system. The interlock system must be engaged for the autoclave sterilization process to commence.
	Autoclave chamber door opened before sterilization process finished. Autoclave chamber fails during sterilization.	Release of vapours that contain pathogens from unsterilized clinical and related waste.				Waste treatment guidelines require the temperature of the waste in the autoclave to the monitored and recorded. In the event that the temperature, pressure or time required fail to satisfy the requirement of the guidelines, the waste will remain sealed in the autoclave chamber until the sterilization cycle can be completed to satisfy the guidelines.
						Employees are trained in the autoclave operating procedures and are in regular attendance during all sterilization processes.
	Steam boiler fails during sterilization.	Release of condensate into stormwater system.				In the event of a failure of the steam boiler or steam control valve before the completion of the sterilization cycle, the waste will remain sealed in the autoclave chamber until the sterilization cycle can be completed to satisfy the guidelines.
		Sterilization process does not meet the requirements of NMHRC and NSW Health guidelines for treatment of clinical and related waste.				Condensate from autoclave is treated and released to sewer.
	Steam control valve fails open or closed.	Unsterilized clinical and related waste removed from the autoclave chamber and moved to the treated waste storage and shredder and sent to landfill.				Autoclave chamber can withstand pressures up to 250 psi, operating pressures are typically 75 psi. The autoclave is fitted with pressure relief valves, which are regularly inspected.

Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
5. Treated waste storage area and Shredder	Cart full of treated waste is damaged or tipped over during transport from bin unloading area.	Treated waste products spill in pre-treatment storage area. Treated waste products enter the stormwater system and flow off-site. Release of vapours that contain pathogens from treated waste.	Moderate	Likely	Significant	The autoclave process destroys all pathogens and the treated waste is considered harmless. All employees are trained in the handling of clinical and related waste and are provided with appropriate PPE1. Employees are in attendance during all transport operations and will implement spill control procedures and/or emergency response procedures in the event of a large spill or fire. All transport operations are conducted within the building, which is bunded to contain all spills. Any spills within the building drain to the site's sewerage system, treated and ultimately released to the sewer with no potential release to the stormwater system.

Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
6. Bin wash area	Clinical and related waste left in bin moved to bin wash area.	Clinical and related waste products spill in wash area. Pathogens from the clinical and related waste released into the air. Employees come into contact with clinical and related waste and are exposed to pathogens. Clinical and related waste and/or cleaning solution products enter the stormwater system and flow off-site.	Minimal	Almost Certain	Moderate	The waste contained within the bins is typically sealed in plastic bags by the waste generator prior to placement in the bin. All clinical and related waste products are removed from the bins in the bin empty area. All employees are trained in the handling of clinical and related waste and are provided with appropriate PPE. Employees are in attendance during all washing operations and will implement spill control procedures and/or emergency response procedures in the event of a large spill. All bin-washing operations are conducted within the building, which is bunded to contain all spills. Any spills within the building drain to the site's drainage system, treated and ultimately released to the sewer with no potential release to the stormwater system.

Functional Area	Description of Hazard / Incident leading to hazard	Possible Consequences	Consequence	Likelihood	Risk Level	Control Measures / Corrective Action
7. Transport of Medical Waste	Transport container fractures due to traffic accident. Transport container falls from truck spilling contents on driveway. Transport truck unloads at wrong location spilling contents outside designated area.	Spill is contained by truck operator or site personnel without any effect. Spill is not contained and finds its way into the stormwater system. Potential contamination of stormwater system with quarantine waste.	Major	Possible	Significant	Transport containers are of sturdy construction able to withstand significant impacts without fracturing. Transport containers are fully sealed so potential for spillage is negligible. There are no stormwater drains within the vicinity of the unloading area. Truck unloading procedure is always supervised by Site personnel who can provide guidance and assistance if required to do so. Truck driver and Site personnel have been trained in the correct spill clean-up procedure. Procedures and facilities for spillage control are maintained at the Site for effective response. Spill kits are available on each truck and within the facility. All medical waste transport operations undertaken within the requirements of the ADG Code and NSW Health guidelines. All medical waste transport operations are undertaken by Med-X trucks.

Attachment 2:
Emergency Flowchart.



Attachment 3: Emergency Procedures.

FIRE/EXPLOSION

A fire or explosion at the site can have severe repercussions in terms of loss of life and property damage. The site has been furbished with an array of manual fire fighting systems in the form of fire hose reels and fire extinguishers.

As part of the Employee Induction, it is recommended all employees go through a minimum level of emergency response training that includes basic fire-fighting skills using fire extinguishers and hose reels.

FIRST-RESPONSE ACTION ON DISCOVERY OF FIRE OR SMOKE (GENERAL)

1. Assist and remove any person from the danger area, only if safe to do so;
2. Raise the alarm;
3. Activate the nearest emergency stops or shutdown systems relevant to the affected area;
4. If safe to do so, isolate all electrical equipment in affected area;
5. Immediately notify the Chief Warden;
6. If safe to do so, use the nearest fire extinguisher to smother the fire;
7. Move to the designated Emergency Assembly Area, if instructed to do so by the Chief Warden.

CHIEF WARDEN/ WARDEN

When informed of the emergency:

1. Proceed to the emergency and establish the nature and location of the emergency;
2. Mobilise and co-ordinate Emergency Control Organisation personnel to take emergency response action;
3. Ensure that the correct Personal Protection Equipment is available to personnel;
4. Determine and carry out the most appropriate fire-fighting response action;

5. If required, telephone the Fire Brigade and/or Police or Ambulance Services confirming the state of the emergency at the site and requesting for additional assistance;
6. Ensure that personnel are safe.
7. Ensure First Aiders are notified.
8. Notify the Manager of status of emergency. In the event that the emergency poses a material risk of harm to the environment, the Manager shall initiate the notification of a pollution incident procedure.
9. Brief the State Emergency Services upon their arrival.
10. Ensure that no vehicles other than emergency services vehicles enter the site.

EMERGENCY CONTROL ORGANISATION

When informed of emergency:

1. Proceed to the Emergency Assembly Point for immediate preparation and activation of the fire-fighting equipment;
2. Proceed to the location of the emergency;
3. Report to the Chief Warden or personnel on location for further instructions;
4. Under the instruction of the Chief Warden, carry out the most appropriate fire-fighting response action;
5. Ensure that personnel are safe;
6. If instructed to do so by the Chief Warden, leave emergency location and proceed to Emergency Assembly Area.

GAS RELEASE

This section applies to a major release of gaseous substances into the ambient environment. The gases that can potentially be released at the site are the following:

1. LPG, which is a flammable gas.

FIRST-RESPONSE ACTION ON DISCOVERY OF MAJOR GAS RELEASE (GENERAL)

1. Assist and remove any person from the danger area, only if safe to do so;
2. Raise the alarm;
3. If safe to do so, isolate all electrical equipment in affected area- refer to main switchboard;
4. Immediately notify the Chief Warden and specify details of gas leak such as odour, location of leak and size of leak;
5. Move to the designated Emergency Assembly Area, if instructed to do so by the Chief Warden responsible for the affected area.

CHIEF WARDEN/ WARDEN

When informed of the emergency:

1. Proceed to the emergency and establish/confirm its nature and location;
2. Determine appropriate action to take;
3. Take into account the Material Safety Data Sheet information;
4. Ensure that all personnel are safe;
5. Mobilise and co-ordinate Emergency Control Organisation personnel to take emergency response action;
6. Initiate a partial or full evacuation, depending upon the location and severity of the gas leak;
7. If required, telephone the Fire Brigade and/or Police or Ambulance Services confirming the state of the emergency at the site and requesting for additional assistance;
8. Notify the Manager of status of emergency. In the event that the emergency poses a material risk of harm to the environment, the Manager shall initiate the notification of a pollution incident procedure;

9. Brief the State Emergency Services upon their arrival;
10. Ensure that no vehicles other than emergency services vehicles enter the site;
11. Consideration must be given to the notification of neighbouring buildings, particularly down-wind of the incident.

EMERGENCY CONTROL ORGANISATION

When informed of emergency

1. Proceed to the Emergency Control Point for immediate preparation and activation of emergency response equipment;
2. Proceed to the location of the emergency;
3. Report to the Chief Warden or personnel on location for further instructions;
4. Ensure that personnel are safe;
5. If instructed to do so by the Chief Warden, leave the emergency location and proceed to Emergency Assembly Area.

DANGEROUS GOODS EMERGENCY

This section applies to a major release or spill of a dangerous good substance in an uncontrolled or unconfined. The types of dangerous goods that can potentially be released or spilt at the site are the following:

- Class 2.1 Flammable Gas;
- Class 3 – Flammable Liquid

ACTION ON DANGEROUS GOODS EMERGENCY (GENERAL)

1. Assist and remove any person from the danger area, only if safe to do so;
2. Raise the alarm;
3. If safe to do so, isolate all electrical equipment in affected area;
4. Immediately notify the Chief Warden;
5. If safe to do so, use the nearest spill control equipment to clean up the spill; and
6. Move to the designated Emergency Assembly Area, if instructed to do so by the Chief Warden.

CHIEF WARDEN/ WARDEN

When informed of the emergency:

1. Proceed to the emergency and establish its nature and location;
2. Secure the area and barricade the area in the most suitable way;
3. Determine to appropriate action to take;
4. Take into account Safety Data Sheets;
5. Ensure that personnel are safe and clear of vapours, gases and fumes;
6. Maintain contact with the Chief Warden and First Aid personnel;
7. Mobilise and co-ordinate Emergency Control Organisation personnel to take emergency response action;

8. If required, telephone the Fire Brigade and/or Police or Ambulance Services confirming the state of the emergency at the site and requesting for additional assistance;
9. Notify the Manager of status of emergency. In the event that the emergency poses a material risk of harm to the environment, the Manager shall initiate the notification of a pollution incident procedure;
10. Brief the State Emergency Services upon their arrival;
11. If necessary, activate a partial or total evacuation procedure in consultation with the Chief Warden.42
12. When assessing the situation the following must be considered:
    - Is there a fire?
    - Is there a spill or leak, how large is it?
    - Is containment of the Dangerous Good necessary?
    - What are the weather conditions?
    - What is the area like?
    - What is the risk to: people, property or environment?
    - How significant is the risk, based on the situation?
    - The hazards of the product, Class and Sub Risk?
    - The degree of danger, based on the Packing Group?
    - Is public protection necessary: stay in place or evacuate?
    - What resources: human and equipment are required and how readily available are they?
13. Ensure that no vehicles other than emergency services vehicles enter the site;
14. Consideration must be given to the notification of neighbouring buildings, particularly down-wind of the incident.

EMERGENCY CONTROL ORGANISATION

When informed of emergency:

1. Proceed to the Emergency Control Centre for immediate preparation and activation of emergency response equipment and fire truck;
2. Proceed to the location of the emergency;

3. Report to the Chief Warden or personnel on location and implement emergency response strategy as instructed by the Chief Warden or provide assistance to State Emergency Service personnel as required;
4. Ensure that personnel are safe;
5. If instructed to do so by the Chief Warden, leave emergency location and proceed to Emergency Assembly Area; and
6. Ensure any spillage is cleaned up and disposal of resulting waste is in accordance with regulations.

SPILL CONTROL AND CONTAINMENT PLAN

The purpose of this procedure is to ensure the containment of all spills on the site and to prevent the entry of spilled materials/debris into stormwater systems and public waterways, reducing the risk of environmental pollution and exposure to breaches and penalties under environmental pollution legislation.

SPILL CONTROL INFORMATION

There is potential for a spillage of clinical or cytotoxic waste from the storage bins to occur and to a lesser extent, a dangerous goods spill. As there is only minor storage of dangerous goods, a spill of this waste is much less likely that spill of clinical waste.

The designated secure area for containers of flammable liquids and Corrosive materials are found in two cabinets which are next to each other. The blue cabinet is for Corrosive materials and the Yellow cabinet is for flammable liquids.

Where a spillage occurs, it is important to know what is spilt and access to the following information will be critical if control is to be effective:

- Name of material;
- Type of material (solid, liquid, granulated);
- Type of waste (if applicable). This can be identified by the colour of the storage bin. ie: purple for cytotoxic waste, yellow for clinical and related waste and yellow with an orange lid for anatomical waste; and
- Current Safety Data Sheet (SDS) Register kept on site and available from the Site Manager or in the Fire Manifest.

The SDS will provide information on:

- Ingredients of the spilt substance;
- Harmful properties of the substance and its ingredients e.g. evolution of toxic fumes, miscibility with water, effects on the skin and internal bodily systems etc;
- Requirements of personal protective equipment for safe handling of the spill e.g. impervious gloves, respiratory protection etc;

- Recommended method for containing the spill and preventing environmental damage. NB Emphasis is required on the necessity of containment of the spill rather than dispersal of it;
- The safest means of disposing of the spilled materials, e.g. use of approved/authorised waste disposal authorities; and
- Locations of the spill hardware (shovels, brooms, Hazspill Containers etc) and absorbent materials around the site.

The facility is fully bunded.

Spill kits for clinical and cytotoxic waste are located at the site and within all transport vehicles. These provide means of controlling minor spills and are located at appropriate locations at the facility. Contents of spill kits should include:

Clinical waste spill kit

- Broom, a pan and scraper, mop and mop bucket;
- A large (10 litre) reusable plastic container or bucket with fitted lid;
- 2 clinical waste bags for the disposal of clinical waste;
- Disinfectant containing (1%) 10,000 ppm available chlorine or equivalent;
- Rubber gloves suitable for cleaning;
- Detergent, sponges / disposable cloths;
- Personal protective equipment including eye protection, an apron or long sleeve impervious gown, a face mask, heavy duty gloves;
- Incident report form; and
- Wastes spill sign.

Cytotoxic spill kit

- Mop and mop bucket, a pan and scraper;
- A large (10 litre) reusable plastic container or bucket with fitted lid;
- 2 cytotoxic waste bags for the disposal of cytotoxic waste;
- 2 hooded overalls, shoe covers, long heavy duty gloves, latex gloves, a face mask and eye protection;
- Absorbent toweling / absorbent spill mat;

- Incident report form; and
- Waste spill sign

Any spill incidents are considered incidents warranting completion of the incident response procedure.

SPILL CONTROL PROCEDURE

- Take action to stop or reduce the source of the spill, or divert the flow to safe containment, to the extent that personal safety will permit;
- Contain the spillage to minimise spread of material using the contents of the spill kits available on site;
- Notify the shift supervisor;
- Report the spill incident, location, time of occurrence, type of spill, chemical involved and quantity to the Manager;
- Consult SDS (if available) for recommended clean-up procedure; and
- Dispose of material and all contaminated absorbents etc. as per Disposal Procedure outlined in SDS or in accordance with regulations.

SPILL CONTROL EQUIPMENT MAINTENANCE

- If emergency equipment is used or borrowed for any purpose it must be replenished or replaced immediately; and
- Spill kits are to be checked and maintained on a routine basis.

EVACUATION

GENERAL

The most likely reasons for a total or partial evacuation of staff are:

1. Fire, explosion; or
2. Major spill of special (clinical / cytotoxic) waste; or
3. Failure of an internal service or other internal emergency e.g. gas leak etc; or
4. External emergency.

Total evacuation is not the appropriate response for all of the emergencies likely to be encountered. Such an action should only be undertaken in extreme emergencies.

STAGES OF EVACUATION

There are three stages of evacuation for the site:

Stage 1 - The affected area.
Stage 2 - Certain other areas.
Stage 3 - Total evacuation of the site.

Stage 1: Partial Evacuation
The most likely response to an emergency is the partial evacuation of an area in response to a fire. The evacuation may be short term until: the emergency has been rectified, medium term, overnight, or long term if damage has been extensive, and reconstruction is required.

Stage 2: Certain other areas
In addition to the affected building, adjacent buildings may need to be evacuated.

Stage 3: Total site Evacuation

In the event of the whole site being untenable, even temporarily, total evacuation must be considered.48

EMERGENCY ASSEMBLY AREA

The Emergency Assembly Area is located at the front of the site. This may change at the discretion of the Chief Warden.

ACTION BY STAFF

Evacuation

1. When the signal to evacuate is given, all staff must evacuated immediately to the nearest Emergency Assembly Area;
2. The Chief Warden shall supervise evacuation to the nearest safe exit route and then to the Emergency Assembly Area and account for personnel.

CHIEF WARDEN/WARDEN

The Chief Warden is responsible for authorising the immediate evacuation of employees/contractors to each Emergency Assembly Area. The decision to evacuate can only be made by the Chief Warden or delegate.

The Chief Warden shall liaise with the Police, Ambulance and Fire Brigade officers present on the scene.

EVACUATION CHECKLIST

This is to be complete as a last check, to ensure that all documentation has been completed.

(Please circle)

YES NO N/A Have police / fire / ambulance been notified?
(Please circle the appropriate department)

YES NO N/A Has the visitor book been checked and person/s been accounted for?

YES NO N/A Has the Chief Warden – employee checklist been completed and all person/s accounted for?

YES NO N/A If person/s were found missing, has the search warden been notified and the Chief Warden checklist been completed?

YES NO N/A Once the emergency is over pass this document and all relating documents to the management systems co-ordinator.

CHECKLIST COMPLETED BY: _____

(Print and signature)

DATE: _____

EMERGENCY DRILL PROCEDURE AND LOG

The purpose of this procedure is to give clear instructions regarding how to undertake emergency and pollution response drills

METHOD

A drill should include/assess the following:

1. Regular monthly checks to ensure alarms - such as smoke alarms - are working;
2. Identifying where employees/contractors should gather after evacuation;
3. Regular monthly checks to ensure escape routes are clear of obstruction;
4. Appointing a warden to take a role call or register to ensure all employees/contractors are safe;
5. Ensuring safety equipment is in a sensible and easily accessible location and is in working order; and
6. Making sure the correct containment equipment is available.

Drill coordinator: John de Smit
Examples: Fire in the bulk bin; spillage in delivery area; spillage in building.

PROCEDURE

1. (Drill Coordinator) Raise alarm;
2. (Safety Wardens/Drill Coordinator) Assess situation, judgement call on whether evacuation is necessary as well as whether or not to contact emergency services;
3. (Safety Wardens/Drill Coordinator) Instruct all employees/contractors to evacuate via emergency exits and assemble at the assembly point;
4. (Safety Wardens) Final sweep and isolate premises only if safe to do so;
5. (Safety Wardens) Role call at assembly point to make sure all employees/contractors are accounted;
6. (Safety Wardens/Drill Coordinator) Judgement call on whether or not it is safe to recommence normal site operations;

7. (Safety Wardens/Drill Coordinator) facilitate a “Toolbox Meeting” to discuss the positive and negative aspects of the drill as well as possible improvements;
8. (Safety Wardens/Drill Coordinator) Record all drill information in the “Drill Log”.

DOCUMENTATION

- It is important to document everything regarding your safety drills as it will aid WHS program training, help identify areas that might need further practice and to help identify maintenance issues, particularly with safety equipment.
- Discuss what went well during the drill and why?
- Discuss what could have been done better and why?
- Look at records of previous drills to see if you’re doing things better, are there any repeat mistakes?

Appendix H

LPG Summary

Med-X LPG

Med-X

Vessel/Pipe Source

Base Case

CASE Name: **Data**

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

User-Defined Data

Material

Material Identifier	PROPANE	
Type of Vessel	Pressurized Gas	
Pressure Specification	Pressure specified	
Storage Pressure - gauge	6	bar
Temperature	20	degC
Mass Inventory	3700	kg

Scenario

Scenario Type	Catastrophic rupture	
Phase to be Released	Vapor	
Building Wake Effect	None	

Location

[Elevation	1	m]
Distances for Radiation Modeling and Dispersion Scope(1)	10	m
Distances for Radiation Modeling and Dispersion Scope(2)	100	m
Distances for Radiation Modeling and Dispersion Scope(3)	200	m
Use ERPG averaging time	ERPG not selected	
Use IDLH averaging time	IDLH not selected	
Use STEL averaging time	STEL not selected	
Supply a user defined averaging time	Not supplied	

Bund

Status of Bund	No bund present	
[Type of Bund Surface	Concrete]	
[Bund Height	0	m]
[Bund Failure Modeling	Bund cannot fail]	

Indoor/Outdoor

Location of release	Open air release	

Flammable

Explosion Method	TNT	
Jet Fire Method	Cone Model	

Dispersion

Late Ignition Location	No ignition location	
Mass Inventory of material to Disperse	3700	kg
Use Burst Pressure	No - Use release pressure for fireball	

Fireball Parameters

[Mass Modification Factor	3]	

[Calculation method for fireball	DNV Recommended]	
[TNO model flame temperature	1727	degC]

Toxic Parameters

[Indoor Calculations	Unselected]	
[Wind Dependent Exchange Rate	Case Specified]	
[Building Exchange Rate	4	/hr]
[Tail Time	1800	s]
[Set averaging time equal to exposure time	Use a fixed averaging time]	
[Cut-off fraction of toxic load for exposure time calculation	0.05	fraction]
[Cut-off concentration for exposure time calculations	0	fraction]

Geometry

Shape	Point	
Dimension	2D	
System	Absolute	
East(1)	0	m
North(1)	0	m

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

DISCHARGE DATA for Weather: Global Weathers\Category 1.5/F

Wind Speed:	1.50	m/s
Wind Speed at Height (Calculated)	0.46	m/s
Pasquill Stability:	F	

USER-DEFINED QUANTITIES

Material	PROPANE	
Scenario	Catastrophic rupture	
Inventory	3,700.00	kg
Fixed Duration	n/a	s
Stagnation data (data at upstream end for long pipe):		
- Pressure	7.01	bar
- Temperature	20.00	degC
- Fluid State	Pressurized gas	

CALCULATED QUANTITIES

Mass Flow of Air (Vent from Vapor Space only)	n/a	
Mass Flowrate	n/a	kg/s
Release Duration	n/a	s
Orifice or pipe exit data (before atmospheric expansion):		
- Pressure	n/a	bar
- Temperature	n/a	degC
- Vena Contracta Velocity (exit velocity for pipe releases)	n/a	m/s
- Discharge Coefficient	n/a	
Final data (after atmospheric expansion):		
- Temperature	-42.07	degC
- Liquid Mass Fraction	0.02	fraction
- Droplet Diameter	45.12	um
- Expanded Radius	n/a	m
- Velocity	302.96	m/s

DISCHARGE DATA for Weather: Global Weathers\Category 1.5/D

Wind Speed:	1.50	m/s
Wind Speed at Height (Calculated)	0.96	m/s
Pasquill Stability:	D	

USER-DEFINED QUANTITIES

Material	PROPANE	
Scenario	Catastrophic rupture	
Inventory	3,700.00	kg
Fixed Duration	n/a	s
Stagnation data (data at upstream end for long pipe):		
- Pressure	7.01	bar
- Temperature	20.00	degC
- Fluid State	Pressurized gas	

CALCULATED QUANTITIES

Mass Flow of Air (Vent from Vapor Space only)	n/a	
Mass Flowrate	n/a	kg/s
Release Duration	n/a	s
Orifice or pipe exit data (before atmospheric expansion):		
- Pressure	n/a	bar
- Temperature	n/a	degC
- Vena Contracta Velocity (exit velocity for pipe releases)	n/a	m/s
- Discharge Coefficient	n/a	
Final data (after atmospheric expansion):		
- Temperature	-42.07	degC
- Liquid Mass Fraction	0.02	fraction
- Droplet Diameter	45.12	um
- Expanded Radius	n/a	m
- Velocity	302.96	m/s

DISCHARGE DATA for Weather: Global Weathers\Category 5/D

Wind Speed:	5.00	m/s
Wind Speed at Height (Calculated)	3.21	m/s
Pasquill Stability:	D	

USER-DEFINED QUANTITIES

Material	PROPANE	
Scenario	Catastrophic rupture	
Inventory	3,700.00	kg
Fixed Duration	n/a	s
Stagnation data (data at upstream end for long pipe):		
- Pressure	7.01	bar
- Temperature	20.00	degC
- Fluid State	Pressurized gas	

CALCULATED QUANTITIES

Mass Flow of Air (Vent from Vapor Space only)	n/a	
Mass Flowrate	n/a	kg/s
Release Duration	n/a	s
Orifice or pipe exit data (before atmospheric expansion):		
- Pressure	n/a	bar
- Temperature	n/a	degC
- Vena Contracta Velocity (exit velocity for pipe releases)	n/a	m/s
- Discharge Coefficient	n/a	
Final data (after atmospheric expansion):		
- Temperature	-42.07	degC
- Liquid Mass Fraction	0.02	fraction
- Droplet Diameter	45.12	um
- Expanded Radius	n/a	m
- Velocity	302.96	m/s

Consequence Results

Distance to Concentration Results

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

The height for user defined concentrations is the user defined height 0 m
All toxic results are reported at the toxic effect height 0 m
All flammable results are reported at the cloud centreline height

Concentration(ppm)	Averaging Time		Distance (m)		
			Category 1.5/F	Category 1.5/D	Category 5/D
UFL (95000)	18.75	s	14.018	13.9559	15.2545
LFL (20000)	18.75	s	27.2538	26.8191	43.4268
LFL Frac (10000)	18.75	s	40.3325	38.1794	89.0801

Concentration(ppm)	Averaging Time		Heights (m) for above distances		
			Category 1.5/F	Category 1.5/D	Category 5/D
UFL (95000)	18.75	s	1	1	1
LFL (20000)	18.75	s	1	1	1
LFL Frac (10000)	18.75	s	1	1	0.200589

Concentration At Distance Results

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

The height for user defined concentrations is the user defined height 0 m
All toxic results are reported at the toxic effect height 0 m
All flammable results are reported at the cloud centreline height

Distance		Conc.(ppm) at Flammable Avg.Time of 18.75 s		
		Category 1.5/F	Category 1.5/D	Category 5/D
10	m	237811	235445	253785
100	m	6543.78	6317.82	9585.37
200	m	4209.12	4062.89	6252.06

Distance		Heights (m) for above concentrations		
		Category 1.5/F	Category 1.5/D	Category 5/D
10	m	1	1	1
100	m	0	0	1e-006
200	m	0	0	0

Distance		Conc.(ppm) at Core Avg.Time of 18.75 s		
		Category 1.5/F	Category 1.5/D	Category 5/D
10	m	237811	235445	253785
100	m	6543.78	6317.82	9585.37
200	m	4209.12	4062.89	6252.06

Distance		Heights (m) for above concentrations		
		Category 1.5/F	Category 1.5/D	Category 5/D
10	m	1	1	1
100	m	0	0	1e-006
200	m	0	0	0

Fireball Hazard

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

	Category 1.5/F Hazard	Category 1.5/D Hazard	Category 5/D Hazard
Fireball Flame Status			

Radiation Effects: Fireball Ellipse

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

			Distance (m)		
			Category 1.5/F	Category 1.5/D	Category 5/D
Radiation Level	4	kW/m2	256.803	256.803	256.803
Radiation Level	12.5	kW/m2	130.444	130.444	130.444
Radiation Level	37.5	kW/m2	22.5906	22.5906	22.5906

Radiation Effects: Fireball Distance

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

			Radiation Level (kW/m2)		
			Category 1.5/F	Category 1.5/D	Category 5/D
Distance Of Interest	10	m	39.3819	39.3819	39.3819
Distance Of Interest	100	m	17.5685	17.5685	17.5685
Distance Of Interest	200	m	6.31737	6.31737	6.31737

Flash Fire Envelope

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

All flammable results are reported at the cloud centreline height

			Distance (m)		
			Category 1.5/F	Category 1.5/D	Category 5/D
Furthest Extent	10000	ppm	40.3325	38.1794	89.0801
Furthest Extent	20000	ppm	27.2538	26.8191	43.4268

			Heights (m) for above distances		
			Category 1.5/F	Category 1.5/D	Category 5/D
Furthest Extent	10000	ppm	1	1	0.200589
Furthest Extent	20000	ppm	1	1	1

Explosion Effects: Early Explosion

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

Early Explosions are assumed to be centered at the release location
Explosion Model Used : TNT

			Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass		kg	3700	3700	3700
			Distance (m) at Overpressure Levels		
			Category 1.5/F	Category 1.5/D	Category 5/D
Overpressure	0.02068	bar	511.129	511.129	511.129
Overpressure	0.1379	bar	132.344	132.344	132.344
Overpressure	0.2068	bar	102.405	102.405	102.405
			Used Mass (kg) at Overpressure Levels		
			Category 1.5/F	Category 1.5/D	Category 5/D
Overpressure	0.02068	bar	3700	3700	3700
Overpressure	0.1379	bar	3700	3700	3700
Overpressure	0.2068	bar	3700	3700	3700
			Overpressures (bar gauge) at Distances		
			Category 1.5/F	Category 1.5/D	Category 5/D
Distance Of Interest	10	m	1	1	1
Distance Of Interest	100	m	0.213923	0.213923	0.213923
Distance Of Interest	200	m	0.0737262	0.0737262	0.0737262
			Used Mass (kg) at Distances		
			Category 1.5/F	Category 1.5/D	Category 5/D
Distance Of Interest	10	m	3700	3700	3700
Distance Of Interest	100	m	3700	3700	3700
Distance Of Interest	200	m	3700	3700	3700

Explosion Effects: Late Ignition

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

Explosion Model Used : TNT
Explosion Location Criterion: Cloud Front (LFL Fraction)
All distances are measured from the Source
All flammable results are reported at the cloud centreline height

			Maximum Distance (m) at Overpressure Level		
			Category 1.5/F	Category 1.5/D	Category 5/D
Overpressure	0.02068	bar	471.359	470.631	453.774
Overpressure	0.1379	bar	144.279	144.09	145.481
Overpressure	0.2068	bar	118.426	118.281	121.619

		Supplementary Data at 0.02068 bar		
		Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass	kg	2382.25	2370.48	2108.7
Used Flammable Mass	kg	2382.25	2370.48	2108.7
Overpressure Radius	m	441.359	440.631	423.774
Distance to:				
- Ignition Source	m	30	30	30
- Cloud Front/Centre	m	2.06775	1.97393	3.87756
- Explosion Centre	m	30	30	30

		Supplementary Data at 0.1379 bar		
		Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass	kg	2382.25	2370.48	1873.3
Used Flammable Mass	kg	2382.25	2370.48	1873.3
Overpressure Radius	m	114.279	114.09	105.481
Distance to:				
- Ignition Source	m	30	30	40
- Cloud Front/Centre	m	2.06775	1.97393	10.6064
- Explosion Centre	m	30	30	40

		Supplementary Data at 0.2068 bar		
		Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass	kg	2382.25	2370.48	1873.3
Used Flammable Mass	kg	2382.25	2370.48	1873.3
Overpressure Radius	m	88.4264	88.2806	81.6185
Distance to:				
- Ignition Source	m	30	30	40
- Cloud Front/Centre	m	2.06775	1.97393	10.6064
- Explosion Centre	m	30	30	40

			Overpressures (bar gauge) at Distances		
			Category 1.5/F	Category 1.5/D	Category 5/D
Distance	10	m	1	1	1
Distance	100	m	0.301627	0.300803	0.341286
Distance	200	m	0.0754614	0.0752794	0.0733495

		Supplementary Data at 10 m		
		Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass	kg	158.928	168.552	168.051

Used Flammable Mass	kg	158.928	168.552	168.051
		Supplementary Data at 100 m		
		Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass	kg	2382.25	2370.48	1873.3
Used Flammable Mass	kg	2382.25	2370.48	1873.3
		Supplementary Data at 200 m		
		Category 1.5/F	Category 1.5/D	Category 5/D
Supplied Flammable Mass	kg	2382.25	2370.48	1873.3
Used Flammable Mass	kg	2382.25	2370.48	1873.3

Weather Conditions

Path: \Med-X LPG\Med-X\Vessel/Pipe Source

		Category 1.5/F	Category 1.5/D	Category 5/D
Wind Speed	m/s	1.5	1.5	5
Pasquill Stability		F	D	D
Surface Roughness Length	mm	183.156	183.156	183.156
Surface Roughness Parameter		0.0999999	0.0999999	0.0999999
Atmospheric Temperature	degC	9.85	9.85	9.85
Surface Temperature	degC	9.85	9.85	9.85
Relative Humidity	fraction	0.7	0.7	0.7

Appendix I

Glossary and Abbreviations

I1 Glossary and Abbreviations

To ensure that the hazard analysis report is understood, a glossary of special terms, titles, names of parts of the facility and a list of abbreviations may also be appropriate.

ADGC	Australian Dangerous Goods Code
BLEVE	Boiling Liquid Expending Vapour Cloud Explosion
EHS	Environmental Health and Safety
EPA	Environmental Protection Agency
EPL	Environmental Protection Licence
ERP	Emergency Response Plan
ERT	Emergency response team
LPG	Liquefied Petroleum Gas
MRV	Medium rigid vehicle
PFE	Portable fire extinguisher
PHA	Preliminary Hazard Analysis
POEO Act	*Protection of the Environment Operations Act 1997*
PPE	Personal Protective Equipment
PRV	Pressure relief valve
tpa	Tonnes per annum

Appendix I

Indicative proposed delivery schedule

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		MONDAY			
MRV 1 - XN 19 ME	5.00am	8.30am	9.15am	11.30am	12.15pm
MRV 2 - CI 55 WY	5.00am	7.30am	8.15am	2.00pm	2.45pm
MRV 3 - XN15 IJ	7.00am	9.30am	10.15am	2.45pm	3.15pm
MRV- 4 - BE 87 RZ	7.30am	10.00am	12.15am	4.15pm	4.45pm
LRV-5 - CA 85 DP	8.00am	11.00am	11.45am	4.30pm	5.00pm
Van Pan - CT 21 NT	8.00am	12.15pm	12.40pm	3.15pm	3.45pm
LWB Van - DYQ O6G	7.00am	10.15am	10.20am	2.30pm	3.15pm
LWB Van - DYQ 05Z	8.00am	12.00pm	12.20pm	5.00pm	5.15pm
Van - CP 75 VY	7.30am	10.15am	10.05am	2.15pm	2.25pm
Van - CS 83 DI	8.00am	1.00pm	1.15pm	3.30pm	3.45pm
Small Van - CML 16Q	7.30am	12.30pm	12.45pm	3.45pm	4.00pm
Van - YHZ55T	7.30am	10.45am	11.00am	2.40pm	2.50pm
LWB Van - CQ 58 CO	*2.30am*	*7.00am*	*7.30am*	*10.30am*	*10.40am*
LRV-1	7.30am	10.40am	11.10am	3.45pm	4.15pm
LRV-2	8.00am	11.30am	12.00pm	4.00pm	4.30pm
MRV-3	7.00am	10.30am	11.15am	2.15pm	3.00pm

LWB Van-CQ 58 CO is an Owner Driver Contractor- leaves from home

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		TUESDAY			
MRV 1 - XN 19 ME	5.00am	8.30am	9.15am	11.30am	12.15pm
MRV 2 - CI 55 WY	5.00am	7.30am	8.15am	2.00pm	2.45pm
MRV 3 - XN 15 IJ	7.00am	DOES NOT RETURN REGIONAL RUN			
MRV- 4 - BE 87 RZ	7.30am	10.00am	12.15am	4.15pm	4.45pm
LRV-5 - CA 85 DP	8.00am	11.00am	11.45am	4.30pm	5.00pm
Van Pan - CT 21 NT	8.00am	12.15pm	12.40pm	3.15pm	3.45pm
LWB Van - DYQ O6G	7.00am	10.15am	10.20am	2.30pm	3.15pm
LWB Van - DYQ 05Z	8.00am	12.00pm	12.20pm	5.00pm	5.15pm
Van - CP 75 VY	7.30am	10.15am	10.05am	2.15pm	2.25pm
Van - CS 83 DI	8.00am	1.00pm	1.15pm	3.30pm	3.45pm
Small Van - CML 16Q	7.30am	12.30pm	12.45pm	3.45pm	4.00pm
Van - YHZ55T	7.30am	10.45am	11.00am	2.40pm	2.50pm
LWB Van - CQ 58 CO	*2.30am*	*7.00am*	*7.30am*	*10.30am*	*10.40am*
LRV-1	7.30am	10.40am	11.10am	3.45pm	4.15pm
LRV-2	8.00am	11.30am	12.00pm	4.00pm	4.30pm
MRV-3	7.00am	10.30am	11.15am	2.15pm	3.00pm

LWB Van-CQ 58 CO is an Owner Driver Contractor- leaves from home

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		WEDNESDAY			
MRV 1 - XN 19 ME	5.00am	8.30am	9.15am	11.30am	12.15pm
MRV 2 - CI 55 WY	5.00am	7.30am	8.15am	2.00pm	2.45pm
MRV 3 - XN15 IJ	7.00am	9.30am	10.15am	2.45pm	3.15pm
MRV- 4 - BE 87 RZ	7.30am	10.00am	12.15am	4.15pm	4.45pm
LRV-5 - CA 85 DP	8.00am	11.00am	11.45am	4.30pm	5.00pm
Van Pan - CT 21 NT	8.00am	12.15pm	12.40pm	3.15pm	3.45pm
LWB Van - DYQ O6G	7.00am	10.15am	10.20am	2.30pm	3.15pm
LWB Van - DYQ 05Z	8.00am	12.00pm	12.20pm	5.00pm	5.15pm
Van - CP 75 VY	7.30am	10.15am	10.05am	2.15pm	2.25pm
Van - CS 83 DI	8.00am	1.00pm	1.15pm	3.30pm	3.45pm
Small Van - CML 16Q	7.30am	12.30pm	12.45pm	3.45pm	4.00pm
Van - YHZ55T	7.30am	10.45am	11.00am	2.40pm	2.50pm
LWB Van - CQ 58 CO	*2.30am*	*7.00am*	*7.30am*	*10.30am*	*10.40am*
LRV-1	7.30am	10.40am	11.10am	3.45pm	4.15pm
LRV-2	8.00am	11.30am	12.00pm	4.00pm	4.30pm
MRV-3	7.00am	10.30am	11.15am	2.15pm	3.00pm

LWB Van-CQ 58 CO is an Owner Driver Contractor- leaves from home

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		THURSDAY			
MRV 1 - XN 19 ME	5.00am	8.30am	9.15am	11.30am	12.15pm
MRV 2 - CI 55 WY	5.00am	7.30am	8.15am	2.00pm	2.45pm
MRV 3 - XN15 IJ	7.00am	9.30am	10.15am	2.45pm	3.15pm
MRV- 4 - BE 87 RZ	7.30am	10.00am	12.15am	4.15pm	4.45pm
LRV-5 - CA 85 DP	8.00am	11.00am	11.45am	4.30pm	5.00pm
Van Pan - CT 21 NT	8.00am	12.15pm	12.40pm	3.15pm	3.45pm
LWB Van - DYQ O6G	7.00am	10.15am	10.20am	2.30pm	3.15pm
LWB Van - DYQ 05Z	8.00am	12.00pm	12.20pm	5.00pm	5.15pm
Van - CP 75 VY	7.30am	10.15am	10.05am	2.15pm	2.25pm
Van - CS 83 DI	8.00am	1.00pm	1.15pm	3.30pm	3.45pm
Small Van - CML 16Q	7.30am	12.30pm	12.45pm	3.45pm	4.00pm
Van - YHZ55T	7.30am	10.45am	11.00am	2.40pm	2.50pm
LWB Van - CQ 58 CO	*2.30am*	*7.00am*	*7.30am*	*10.30am*	*10.40am*
LRV-1	7.30am	10.40am	11.10am	3.45pm	4.15pm
LRV-2	8.00am	11.30am	12.00pm	4.00pm	4.30pm
MRV-3	7.00am	10.30am	11.15am	2.15pm	3.00pm

LWB Van-CQ 58 CO is an Owner Driver Contractor- leaves from home

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		FRIDAY			
MRV 1 - XN 19 ME	5.00am	8.30am	9.15am	11.30am	12.15pm
MRV 2 - CI 55 WY	5.00am	7.30am	8.15am	2.00pm	2.45pm
MRV 3 - XN15 IJ	7.00am	9.30am	10.15am	2.45pm	3.15pm
MRV- 4 - BE 87 RZ	7.30am	10.00am	12.15am	4.15pm	4.45pm
LRV-5 - CA 85 DP	8.00am	11.00am	11.45am	4.30pm	5.00pm
Van Pan - CT 21 NT	8.00am	12.15pm	12.40pm	3.15pm	3.45pm
LWB Van - DYQ O6G	7.00am	10.15am	10.20am	2.30pm	3.15pm
LWB Van - DYQ 05Z	8.00am	12.00pm	12.20pm	5.00pm	5.15pm
Van - CP 75 VY	7.30am	10.15am	10.05am	2.15pm	2.25pm
Van - CS 83 DI	8.00am	1.00pm	1.15pm	3.30pm	3.45pm
Small Van - CML 16Q	7.30am	12.30pm	12.45pm	3.45pm	4.00pm
Van - YHZ55T	7.30am	10.45am	11.00am	2.40pm	2.50pm
LWB Van - CQ 58 CO	*2.30am*	*7.00am*	*7.30am*	*10.30am*	*10.40am*
LRV-1	7.30am	10.40am	11.10am	3.45pm	4.15pm
LRV-2	8.00am	11.30am	12.00pm	4.00pm	4.30pm
MRV-3	7.00am	10.30am	11.15am	2.15pm	3.00pm

LWB Van-CQ 58 CO is an Owner Driver Contractor- leaves from home

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		SATURDAY			
MRV 1 - CI 55 WY	5.00am	07.00am	07.45am	11.45am	12.45pm
MRV-3	5.00am	9.00am	9.00am	12.30pm	1.15pm

Vehicle	Start time	1st Arrival Time	2nd Depart Time	Final Arrival	Final departure
		PUBLIC HOLIDAYS			
MRV 1 - XN 19 ME	5.00am	07.00am	07.45am	12.00pm	1.45pm

Appendix J

Vangeli Street landowner consent letter

Christine Morris

PO Box 217

Kenthurst NSW 2156

Ph.; 0418 431 030

E: chris@sirromcorp.com.au

30th June 2020

Mr Robert Aminde

Med-X National Manager

Dear Robert,

RE: 7 Vangeli Street Arndell Park NSW

I refer to your email of 11th June 2020, subsequent emails and confirm that I am the Landlord and Owner of the property situated at 7 Vangeli Street Arndell Park.

I also confirm that the current Lease dated 1st May 2018 expires on 30th April 2021 and includes an Option to Renew the Lease for a further 2 Years to 30th April 2023.

Providing the terms of the current Lease and Item 9 (Page 3 of 40) "Permitted Use" continue to be met I have no objection to continuing my relationship with Med-X Pty Ltd.

I therefore give permission for Med-X Pty Ltd to proceed with SSD (State Significant Development) Application 6761 for Arndell Park Clinical Waste Management Facility.

Please feel free to contact me should you require anything further regarding this matter.

Kind regards

Christine Morris