

**ENVIRONMENTAL RISK ASSESSMENT
FOR
SPF DIANA AUSTRALIA PTY LTD
91 GARDINER STREET, RUTHERFORD NSW**

Prepared for: Masood Khan, SPF Diana Australia Pty Ltd
Nicolas Balon, SPF Diana Australia Pty Ltd

Prepared by: Emma Hansma, Senior Engineer
R T Benbow, Principal Consultant

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Benbow
ENVIRONMENTAL

Engineering a Sustainable Future for Our Environment

Head Office: 25-27 Sherwood Street, Northmead NSW 2152 AUSTRALIA

Tel: 61 2 9896 0399 Fax: 61 2 9896 0544

Email: admin@benbowenviro.com.au

Visit our website: www.benbowenviro.com.au

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Prepared by:	Position:	Signature:	Date:
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Emma Hansma	Senior Engineer		13 May 2022
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Reviewed by:	Position:	Signature:	Date:
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Linda Zanotto	Senior Environmental Engineer		13 May 2022
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Approved by:	Position:	Signature:	Date:
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R T Benbow	Principal Consultant		13 May 2022
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ENVIRONMENTAL

A.B.N. 17 160 013 641

Head Office:

25-27 Sherwood Street Northmead NSW 2152 Australia
 P.O. Box 687 Parramatta NSW 2124 Australia
 Telephone: +61 2 9896 0399 Facsimile: +61 2 9896 0544
 E-mail: admin@benbowenviro.com.au

Visit our Website at www.benbowenviro.com.au

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1. INTRODUCTION

This report presents the results of an Environmental Risk Assessment (ERA) for the proposed development located at Lot 206, 91 Gardiner Street, Rutherford. The proposed development would manufacture a liquid palatability enhancer which is a liquid petfood ingredient supplied to petfood manufacturers.

The ERA includes a preliminary risk screening in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33 (DoP, 2011).

The ERA assesses the potential hazards to the environment from activities proposed to occur on-site. The ERA follows the principles established in the following standards and guidelines:

- AS/NZS ISO 31000:2009 *Risk management –Principles and guidelines*;
- SA/SNZ HB 436:2013 *Risk management guidelines – Companion to AS/NZS ISO 31000:2009*; and
- HB 203:2012 – *Managing Environment-Related Risk*.

The purpose of the ERA is to identify risks associated with the proposed development to the site's activities and ensure that adequate safeguards are in place to protect the health and safety of workers, surrounding businesses and the environment. Impacts on organisations and communities from environment related matters are also considered.

1.1 SCOPE OF WORKS

The scope of this report extends to the following:

- Present details of the site, proposed site activities and surrounding area;
- Conduct a preliminary risk screening in accordance with SEPP 33;
- Determine the potential effects of the site's proposed activities on the environment;
- Undertake a qualitative risk assessment. This is done by assessing proposed controls to be implemented at the site, identifying additional controls that may be required and assessing any residual risks. Present the findings of this as a Hazard and Risk Register; and
- Prepare a report which presents the above, the risk assessment methodology, hazard and risk register, risk issues and any additional recommendations as found necessary.

1.2 SITE LOCATION

The proposed facility will be located at Lot 206, 91 Gardiner Street, Rutherford. Figure 1-1 presents the location of the site. Figure 1-2 shows the location of the entire property to be subdivided subject to a separate development application. Figure 1-3 shows the land zoning, this site is in an IN1 general industrial zone.

Figure 1-1: Site Location (Aerial View)

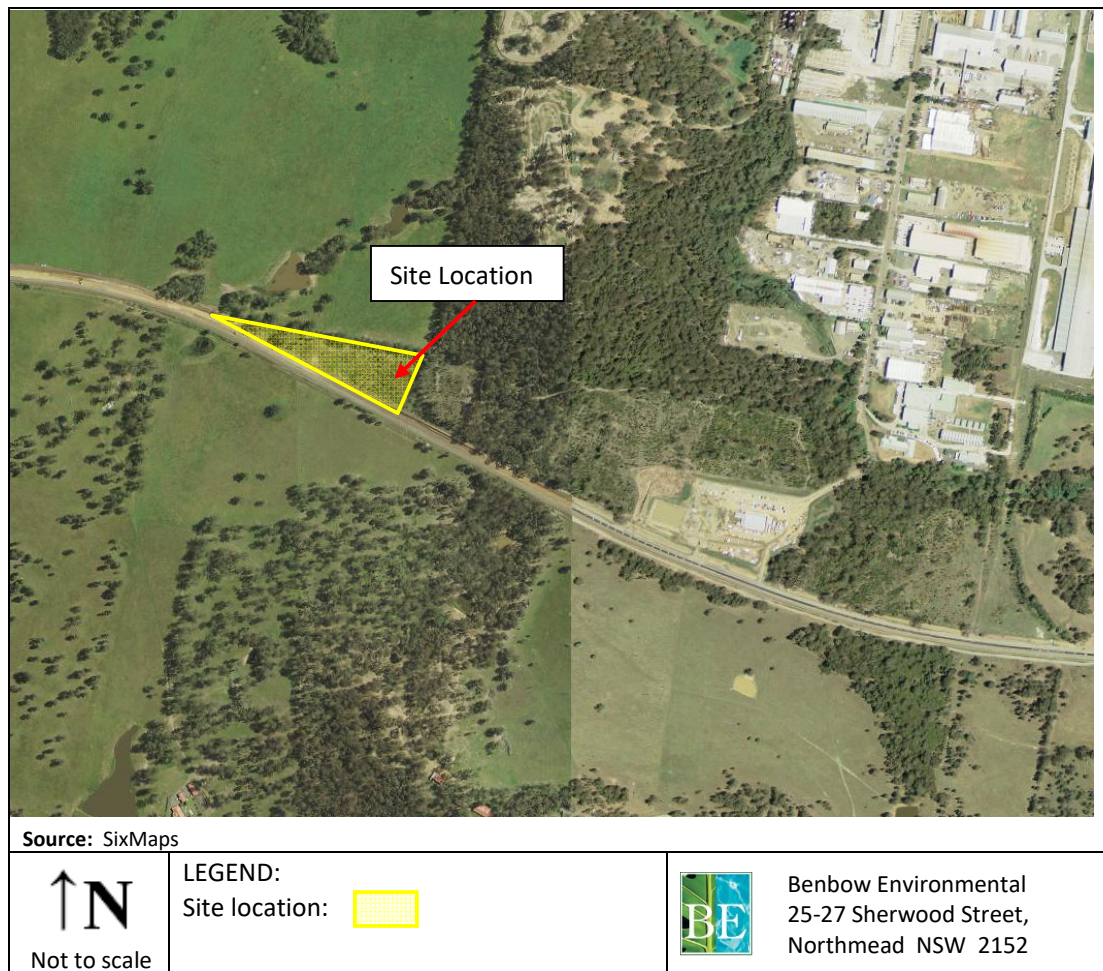


Figure 1-2: Aerial Photograph of the Site and Surrounds



Source:

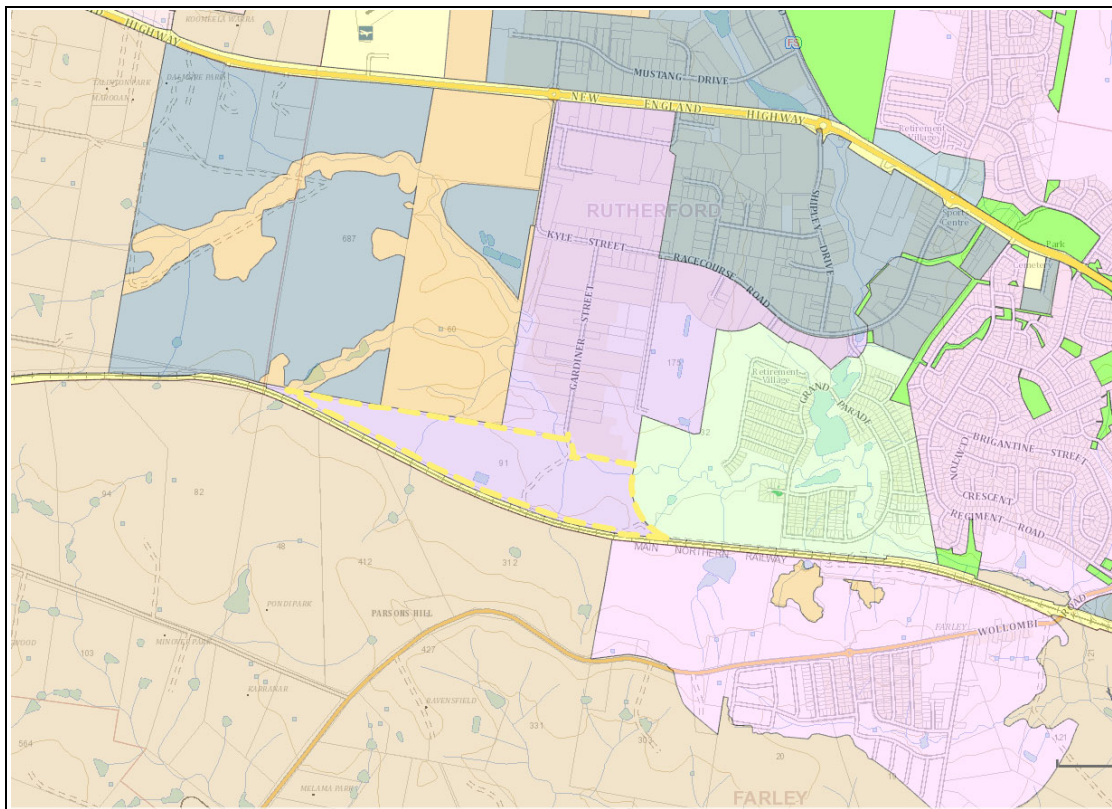


Not to scale



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25-27 Sherwood Street,
Northmead NSW 2152

Figure 1-3: Land Use Zoning Map



Source: NSW ePlanning Spatial Viewer 2021

 Not to scale	LEGEND: Site Boundaries		 Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152
	Zone B1 Neighbourhood Centre B2 Local Centre B3 Commercial Core B4 Mixed Use B5 Business Development B6 Enterprise Corridor E2 Environmental Conservation E3 Environmental Management E4 Environmental Living IN1 General Industrial	R1 General Residential R5 Large Lot Residential RE1 Public Recreation RE2 Private Recreation RU1 Primary Production RU2 Rural Landscape SP1 Special Activities SP2 Infrastructure SP3 Tourist	



2. PROPOSED SITE OPERATIONS

The proposed development will manufacture a liquid palatability enhancer which is a liquid petfood ingredient supplied to petfood manufacturers.

2.1 PROCESS DESCRIPTION

The process consists of:

- Receiving

Trucks arrive at the facility to drop off pallets of raw materials including:

- Beef Livers
- Chicken Livers
- Chicken Guts
- Chicken MDM (Mechanically deboned meat)
- Salmon
- Kangaroo

The packaging of the incoming material is manually removed and the raw material is transferred into plastic lined crates.

- Unfreezing (if required)

Most of the incoming material is delivered frozen. Frozen raw materials crates get moved into a tempering room (unfreezing room) which is heated with steam from the boiler.

- Grinding

Other material and frozen material once thawed gets tipped into a grinder and the resultant slurry gets transferred into a mixing tank.

- Cooking and adding ingredients

The mixing tank receives flavour additives before being transferred to the heated processing tank (reactor) where the pH and temperature is controlled (pH with dosing phosphoric acid and caustic soda) and temperature from the steam from the boiler. Strict control of these parameters are necessary for the efficacy of the enzymes which are added as a powder manually via a hatch at the top of the tank. The enzymes and temperature liquify the slurry. Typical temperature of the liquid is 100°C, and max is 130°C.

- Sifting

This liquid is then sifted (screened using a vibrating screen) which removes solids such as bits of bone etc (material that the enzymes cannot break down) which is transferred directly into a bin as solid waste which is removed offsite by a licensed waste contractor.

- Transfer to storage tanks

The product is cooled to 40°C transferred to bulk storage tanks where it is either decanted into IBCs BIBs Pallecons or Drums (mostly IBCs) or it is unloaded directly from the bulk storage via a tanker truck.

- Quarantine (if required)

Some of the products are quarantined for a designated period within the facility.



2.2 WATER USE

The majority of water is used for cleaning purposes, some of the water is also added into the product. The cleaning water ends up as waste water to be processed in the site's waste water treatment plant before being discharged to trade waste.

Water is fed to a boiler which generates steam. This steam is used for cleaning, in the cooking process and for heating the tempering room (unfreezing room).

2.3 HOURS OF OPERATION

The proposed development will operate 24/7.

2.4 CHEMICALS AND DANGEROUS GOODS

The following table presents the proposed dangerous goods storage.



Table 2-1: Proposed Dangerous Good/Chemical Storage

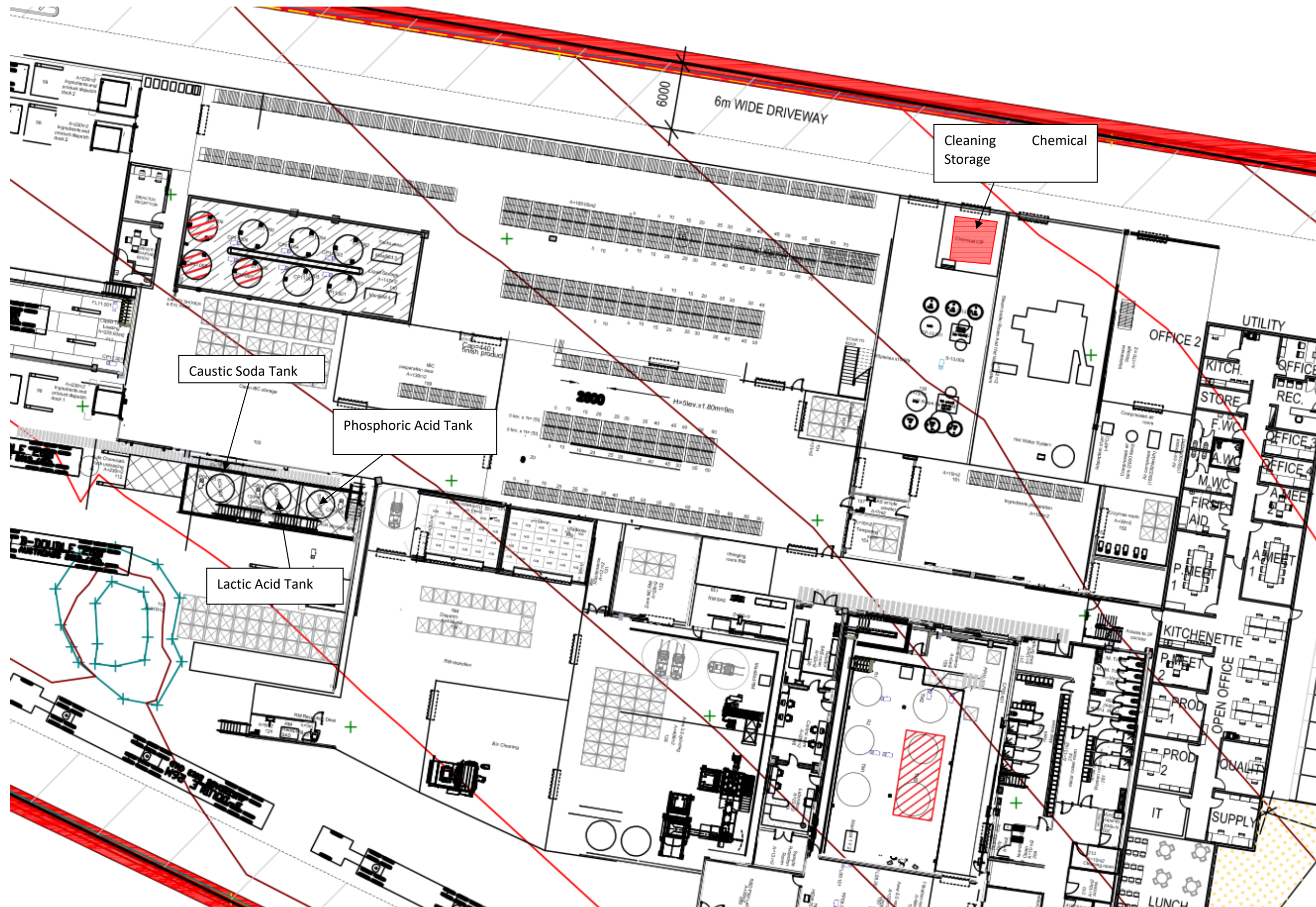
Location	Product Name	ADG Class	Packaging Group	GHS Category	UN Number	Max Storage Quantity	Storage Type	Storage Area
Location 1: CIP Area	Sodium hydroxide solution (NaOH (30%-60%))	8	II	Metal Corrosion Category 1 Skin Corrosion/Irritation Category 1A Serious Eye Damage Category 1	1824	3 tonnes	1000L IBC	Cleaning Chemical Storage
	Potassium Hydroxide Solution	8	II	Metal Corrosion Category 1 Skin Corrosion/Irritation Category 1A Serious Eye Damage Category 1	1814	250kg	25 Can	Cleaning Chemical Storage
	Nitric Acid 68%	8 (sub risk 5.1)	II	Oxidizing Liquid Category 2 Metal Corrosion Category 1 Acute Toxicity (Inhalation) Category 4 Skin Corrosion/Irritation Category 1A Serious Eye Damage Category 1	2031	2 tonnes	1000L IBC	Cleaning Chemical Storage
Location 2: Bulk storage area	Phosphoric acid, >=25%	8	III	Corrosive to Metals – Category 1 Acute Toxicity (Oral) – Category 4 Acute Toxicity (Dermal) – Category 5 Skin Corrosion/Irritation – Category 1B	1805	45 tonnes	45 tonne bulk storage tank	Bulk Chemical Storage Tank Area
	Caustic soda – liquid (NaOH 46%-50%)	8	II	Corrosive to Metals – Category 1 Skin Corrosion – Sub-category 1A Eye Damage – Category 1 Specific target organ toxicity (single exposure) – Category 3	1824	45 tonnes	45 tonne bulk storage tank	Bulk Chemical Storage Tank Area
	Lactic Acid	8	III	Skin Corrosion/Irritation Category 1C Serious Eye Damage Category 1	3265	45 tonnes	45 tonne bulk storage tank	Bulk Chemical Storage Tank Area
Location 3: Waste Water Treatment Plant	Acid for WWTP Dosing	8	III	Corrosive to Metals – Category 1 Acute Toxicity (Oral) – Category 4 Acute Toxicity (Dermal) – Category 5 Skin Corrosion/Irritation – Category 1B	TBA	<1 tonne	1000L IBC or Drums	Waste Water Treatment Plant
	Base for WWTP dosing	8	III	Corrosive to Metals – Category 1 Skin Corrosion – Sub-category 1A Eye Damage – Category 1	TBA	<1 tonne	1000L IBC or Drums	Waste Water Treatment Plant



Table 2-1: Proposed Dangerous Good/Chemical Storage

Location	Product Name	ADG Class	Packaging Group	GHS Category	UN Number	Max Storage Quantity	Storage Type	Storage Area
Location 4: Fire rated cabinet in warehouse	Isopropanol Alcohol 70%	3	II	Flammable Liquid Category 2 Eye Irritation Category 2A Specific target organ toxicity – single exposure Category 3 (narcotic effects)	1219	10L	10L Can	Cleaning Chemical Storage

Figure 2-1: Dangerous Goods Storage Locations





3. PRELIMINARY RISK SCREENING – SEPP33

3.1 ONSITE STORAGE

A preliminary risk screening of the proposed development in accordance with *State Environment Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33)* and the NSW Planning's *Applying SEPP 33* has been undertaken, with results provided below.

A preliminary risk screening of the proposed development in accordance with *State Environment Planning Policy No. 33 – Hazardous and Offensive Development* has been undertaken with results provided below.

Table 3-1: Comparison of Screening Threshold Quantities by SEPP 33

Class	Screening Threshold	Description	Site Specific Description	Quantity to be stored based on separation distances	Triggers SEPP33
Class 1.2	5 tonne	Explosives	None on site	None	No
Class 1.3	10 tonne	Explosives	None on site	None	No
Class 2.1	10 tonne or 16 m ³ if stored above ground 40 tonnes or 64 m ³ if stored underground or mounded	Flammable Gases	None on site	None	No
Class 2.2	Not Relevant	Non-flammable, non-toxic gases	None on site	None	No
Combustible Liquid C1	Not relevant	Combustible liquid with flashpoint of 150°C or less	None on site	None	No
Combustible Liquid C2	Not relevant	Combustible liquid with flashpoint exceeding 150°C	None on site	None	No
Class 2.3	5 tonne	Anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale	None on site	None	No
	1 tonne	Chlorine and sulphur dioxide stored as liquefied gas in contains <100 kg	None on site	None	No



Table 3-1: Comparison of Screening Threshold Quantities by SEPP 33

Class	Screening Threshold	Description	Site Specific Description	Quantity to be stored based on separation distances	Triggers SEPP33
	2.5 tonne	Chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg	None on site	None	No
	100 kg	Liquefied gas kept in or on premises	None on site	None	No
	100 kg	Other poisonous gases	None on site	None	No
Class 3	Assessed by reference to figures 8 & 9 of applying Sepp 33	Flammable liquids PG I, II and III	Small container isopropanol	10L	No
Class 4.1	5 tonne	Flammable Solids	None on site	None	No
Class 4.2	1 tonne	Reactive in the air	None on site	None	No
Class 4.3	1 tonne	Spontaneous combustion in contact with water	None on site	None	No
Class 5.1	25 tonne	Ammonium nitrate – high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary.	None on site	None	No
Class 5.1	5 tonne	Oxidising substances	None on site	None	No
Class 5.1	2.5 tonne	Dry pool chlorine – if at a dedicated pool supply shop, in containers <30 kg	None on site	None	No
Class 5.1	1 tonne	Dry pool chlorine – if at a dedicated pool supply shop, in containers >30 kg	None on site	None	No
Class 5.1	5 tonne	Any other Class 5.1	2 tonne nitric acid with sub risk 5.1	2 tonnes	No
Class 5.2	10 tonne	Organic peroxide	None on site	None	No
Class 6.1 PG1	0.5 tonne	Toxic substances	None on site	None	No



Table 3-1: Comparison of Screening Threshold Quantities by SEPP 33

Class	Screening Threshold	Description	Site Specific Description	Quantity to be stored based on separation distances	Triggers SEPP33
Class 6.1 PGII & III	2.5 tonne	Toxic substances	None on site	None	No
Class 6.2	0.5 tonne	Includes clinical waste	None on site	None	No
Class 7	All	Should demonstrate compliance with Australian codes	None on site	None	No
Class 8 PGI	5 tonne	Corrosive substance	None on site	None	No
Class 8 PGII	25 tonne	Corrosive substance	Caustic soda – liquid Cleaning Chemicals Various	52 tonnes	Yes
Class 8 PGIII	50 tonne	Corrosive substance	Phosphoric acid, ≥25% Lactic Acid	90 tonnes	Yes

As shown in the table, dangerous goods quantities exceed the SEPP 33 screening thresholds and therefore, a preliminary hazard analysis is required.

3.2 TRANSPORT QUANTITIES

“Transportation Screening Thresholds” from *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33*, NSW Government Department of Planning (2011) are shown below.

Table 3-2: Transportation Screening Thresholds

Class	Vehicle Movements		Minimum quantity*	
	Cumulative	Peak	per load (tonne)	
	Annual <i>or</i>	Weekly	Bulk	Packages
1	see note	see note	see note	
2.1	>500	>30	2	5
2.3	>100	>6	1	2
3PGI	>500	>30	1	1
3PGII	>750	>45	3	10
3PGIII	>1000	>60	10	no limit
4.1	>200	>12	1	2
4.2	>100	>3	2	5
4.3	>200	>12	5	10
5	>500	>30	2	5



Table 3-2: Transportation Screening Thresholds

Class	Vehicle Movements		Minimum quantity*	
	Cumulative	Peak	per load (tonne)	
	Annual <i>or</i>	Weekly	Bulk	Packages
6.1	all	all	1	3
6.2	see note	see note	see note	
7	see note	see note	see note	
8	>500	>30	2	5
9	>1000	>60	no limit	

Note: Where proposals include materials of class 1, 6.2 or 7, the Department of Planning should be contacted for advice. Classes used are those referred to in the Dangerous Goods Code and are explained in Appendix 7.

* If quantities are below this level, the potential risk is unlikely to be significant unless the number of traffic movements is high.

The number of Class 8 dangerous goods deliveries per week is typically 4-5. Therefore, the vehicle movements are well below that which triggers SEPP33.



4. ENVIRONMENTAL RISK ASSESSMENT

The following section describes the methodology and risk criteria utilised for the risk analysis of the proposed development and activities.

4.1 HAZARD IDENTIFICATION

This is the first step in the risk assessment. It involves the identification of all theoretically possible hazardous events as the basis for further quantification and analysis. This does not in any way imply that the hazard identified or its theoretically possible impact will occur in practice. Essentially, it identifies the particular characteristics and nature of hazards to be further evaluated in order to quantify potential risks.

To identify hazards, a survey of operations was carried out to isolate the events which are outside normal operating conditions and which have the potential to impact outside the boundaries of the site. In accordance with the NSW Department of Planning's Hazardous Industry Planning Advisory Paper (HIPAP) No. 6 – *Guidelines for Hazard Analysis*, these events do not include occurrences that are a normal part of the operational cycles of the site but rather the atypical and abnormal, such as the occurrence of a significant liquid spill during product transfer operations.

4.2 RISK CRITERIA

4.2.1 Consequence Estimation

This aspect involves the analysis of events carried forward from the hazard identification process in order to quantify their potential on-site and off-site impacts. In this case, these events typically include fire and the potential effects on people, the environment, damage to property and the financial loss as a result of this damage.

Categories of consequences have been defined in terms of environmental, health and financial impacts and include the following:



Table 4-1: Consequence or Impact

Level	Descriptor	Description
1	Insignificant	Confined on-site environmental impacts able to be promptly rectified. No injuries. Financial loss less than \$2,000
2	Minor	Confined environmental impacts requiring short term recovery with potentially little or no off-site impacts. First Aid treatment. Financial loss \$2,000 to \$20,000
3	Moderate	Confined environmental impacts requiring medium term recovery both on-site and off-site. Medical treatment required. Financial loss \$20,000 to \$200,000
4	Severe	Unconfined environmental impacts requiring long term recovery and leaving residual damage both on-site and off-site. Extensive injuries, loss of product capability. Financial loss \$200,000 to \$1M
5	Catastrophic	Widespread environmental impact requiring long term recovery and leaving major damage both on-site and off-site. Death. Financial loss more than \$1M

4.2.2 Likelihood Estimation

This aspect involves determining how likely an event is to occur. Likelihood is the chance that something might happen and is defined for the purposes of this assessment in Table 4-2.

Table 4-2: Likelihood Table

Level	Descriptor	Description
A	Almost Certain	Very likely. The event is expected to occur in most circumstances.
B	Likely	Strong possibility. The event will probably occur in most circumstances.
C	Possible	The event might occur at some time.
D	Unlikely	Not expected. There is a slight possibility the event could occur at some time.
E	Rare	Highly unlikely. The event may occur only in exceptional circumstances.



4.2.3 Level of Risk

The level of risk is defined by Table 4-3.

Table 4-3: Level of Risk Table

		Consequence				
		Insignificant 1	Minor 2	Moderate 3	Severe 4	Catastrophic 5
Likelihood	A (almost certain)	M (5)	H (10)	H (15)	V (20)	V (25)
	B (likely)	L (4)	M (8)	H (12)	H (16)	V (20)
	C (possible)	L (3)	M (6)	M (9)	H (12)	H (15)
	D (unlikely)	L (2)	L (4)	M (6)	M (8)	H (10)
	E (rare)	L (1)	L (2)	L (3)	L (4)	M (5)

The area shown in red indicates a very high level of risk (V) where mitigation measures are essential.

The area in orange is a high level of risk (H) which is intolerable and where risk reduction is required.

The area shown in yellow indicates a moderate level of risk (M). Whilst the risk is not unacceptable, there should be practical measures taken to lower the risk. For risks where further mitigation is not economically viable, judgment needs to be exercised as to whether the level of risk is acceptable or not. While risk of an incident may be tolerable, steps still need to be taken to reduce the risk level to as low as reasonably practicable.

The area, shown in green, indicates a low level of risk (L) and is broadly considered to be acceptable. Further risk mitigation may not be required/appropriate. However, low and accepted risks should be monitored and routinely reviewed to ensure that they remain acceptable.

4.3 RISK ANALYSIS

Table 4-4 provides a risk assessment of the potential hazards that could occur at the site. The risk assessment considers the hazards with and without safeguards, controls and mitigation measures in place. Emboldened text is for potential hazards associated with the proposed development.

Table 4-4: Risk Assessment Table

Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
RAW MATERIAL DELIVERY	Unloading of Materials and handling of packages	Excessive noise emissions	1	D	L	Separation distances from sensitive receivers sufficient	1	D	L
		Odour	2	C	M	Appropriately designed ventilation system to ensure fugitive emissions are minimised and stack emissions are within acceptable levels to ensure compliance at sensitive receivers	1	D	L
		Spill from residues of raw material discharging from facility and entering soil/water.	3	B	H	Floor area graded to collection sumps (also used for cleaning) to prevent spills escaping. Liquids collected are processed in waste water treatment facility.	3	E	L
TEMPERING ROOM (UNFREEZING ROOM)	Material handling and tempering operations with steam.	Odour	2	C	M	Appropriately designed ventilation system to ensure fugitive emissions are minimised and stack emissions are within acceptable levels to ensure compliance at sensitive receivers	1	D	L
		Spill from residues of raw material or condensate steam in contact with raw material discharging from facility and entering soil/water.	3	B	H	Floor area graded to collection sumps (also used for cleaning) to prevent spills escaping. Liquids collected are processed in waste water treatment facility.	3	E	L
GRINDING	Use of grinding machine including material handling	Excessive noise emissions	1	D	L	Process undertaken within building, separation distances from sensitive receivers sufficient	1	D	L
		Odour	2	C	M	Appropriately designed ventilation system to ensure fugitive emissions are minimised and stack emissions are within acceptable levels to ensure compliance at sensitive receivers	1	D	L
		Spill from residues of raw material handling discharging from facility and entering soil/water.	3	B	H	Floor area graded to collection sumps (also used for cleaning) to prevent spills escaping. Liquids collected are processed in waste water treatment facility.	3	E	L
		Spill of grinder output slurry due to equipment failure discharging from facility and entering soil/water.	3	E	L		3	E	L
MIXING AND COOKING OPERATIONS	General mixing and cooking operations	Excessive noise emission from pumps and associated equipment	1	D	L	Process undertaken within building, separation distances from sensitive receivers sufficient	1	D	L
		Spill due to equipment failure discharging from facility and entering soil/water.	5	E	M	Bundling provided Overfill prevention provided	3	E	L



Table 4-4: Risk Assessment Table

Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
	Tank filling	Odour from tanks venting displaced air from tank vents during filling	2	C	M	Tanks vented directly to air control system, no fugitive emissions from tanks. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
	Tank heating	Odour from tank vent from heating	2	C	M		1	D	L
	Tank hatch use for enzyme adding	Fugitive odour from tank hatch use	2	C	M	Processing room air extraction system designed to ensure no fugitive emissions from this room leave the building. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
SIFTING/SCREENING	Sifting/screening operations	Excessive noise emission from screens	1	D	L	Process undertaken within building, separation distances from sensitive receivers sufficient	1	D	L
		Fugitive odour emissions from collection bin and sifting equipment	2	C	M	Processing room air extraction system designed to ensure fugitive emissions from this room do not leave the building. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill due to equipment failure discharging from facility and entering soil/water.	3	E	L	Floor area graded to collection sumps (also used for cleaning) to prevent spills escaping. Liquids collected are processed in waste water treatment facility.	3	E	L
TANK FARM STORAGE	Filling and ongoing use of bulk product storage	Odour from tanks filling	2	C	M	Tanks vented directly to air control system, no fugitive emissions from tanks. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill due to equipment failure discharging from facility and entering soil/water.	4	E	L	Bunding provided Overfill prevention provided	3	E	L
DECANTING	Decanting from bulk storage to IBCs and other packages	Odour emissions released in displaced air during filling	2	C	M	Automatic extraction registers in filling area, automatically triggered by use of filling apparatus. Extracted air to ventilation system designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill due to splashing (standard operations)	2	C	M	Bunding provided	2	D	L



Table 4-4: Risk Assessment Table

Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
		Spill due to equipment failure discharging from facility and entering soil/water.	4	E	L		2	D	L
TANKER TRUCK EXTERNAL FILLING	Tanker filling externally direct from bulk storage tanks	Excessive noise from tanker truck vacuum pump	3	C	M	Separation distances likely sufficient, contingency measures include internal pump that can replace external pump	2	D	L
		Odour from tanker truck filling	2	D	L	Air quality impact assessments demonstrates likely compliance.	2	D	L
DANGEROUS GOODS STORAGE AND HANDLING	Receive/ handling and storage of dangerous goods	Spill discharging from facility and entering soil/water.	4	C	H	Bunded storage areas, graded receival areas. Storage in accordance with relevant standards. Spill kits.	3	E	L
		Reaction of incompatible materials	4	E	M	Incompatible material separated/segregated in accordance with Australian standards. Spill Kits. Dangerous goods storage and handling training.	3	E	L
BOILER	Operating boiler for the purposes of generating steam	Excessive noise generation	1	D	L	Boiler located within building, separation distances from sensitive receivers sufficient	1	D	L
	Air quality	Combustion emissions from burning natural gas to power boiler, NOx, CO, CO2, particulates	3	C	M	Boiler stack installed in accordance with manufacturer specifications. Boiler size unlikely to cause significant impacts, especially given separation distances from nearest sensitive receptors.	2	D	L
CLEANING OPERATIONS	Site washdown	Spill/release discharging from facility and entering soil/water.	4	C	H	Bunded/graded areas. Spill kits. Waste water treatment plant. Dangerous goods storage and handling.	3	E	L
	Fortnightly tank cleaning (with caustic soda/phosphoric acid/hot water)	Spill/release discharging from facility and entering soil/water.	4	C	H	Bunded/graded areas. Spill kits. Waste water treatment plant. Dangerous goods storage and handling.	3	E	L
	Quarterly tank descaling (with nitric acid)	Spill/release discharging from facility and entering soil/water.	4	C	H	Bunded/graded areas. Spill kits. Waste water treatment plant. Dangerous goods storage and handling.	3	E	L
WASTEWATER TREATMENT PLANT	Dosing tank	Odour from tank vent	2	C	M	Tank vented to WWTP ventilation system. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill/release due to equipment failure discharging from dosing tank and entering soil/water.	4	E	L	Bunded. Spill kits.	2	D	L



Table 4-4: Risk Assessment Table

Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
		Spill/release due to equipment failure discharging from dosing chemicals and entering soil/water.	4	E	L	Bunded. Spill kits. Dangerous goods storage and handling.	2	D	L
	DAF	Odour from DAF	2	C	M	DAF within enclosed building with ventilation system designed to minimise fugitive emissions. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill/release due to equipment failure discharging from DAF and entering soil/water.	4	E	L	Bunded. Spill kits.	2	D	L
	Bioreactor	Odour from bioreactor	2	C	M	Within enclosed building with ventilation system designed to minimise fugitive emissions. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill/release due to equipment failure discharging from bioreactor and entering soil/water.	4	E	L	Bunded. Spill kits.	2	D	L
	Sludge storage	Odour from sludge vent	2	C	M	Tank vented to WWTP ventilation system. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
		Spill/release due to equipment failure discharging from sludge storage tank and entering soil/water	4	E	L	Bunded. Spill kits.	2	D	L
	Solid filtration	Odour from gross pollutant trap filtration	2	C	M	Within enclosed building with ventilation system designed to minimise fugitive emissions. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L



Table 4-4: Risk Assessment Table

Activity	Aspect	Potential Impacts on the Environment	Pre-Control Risk			Mitigation Measures (Physical, Procedures and Plans)	Post-Control Risk		
			Consequence	Likelihood	Raw Risk		Consequence	Likelihood	Residual Risk
	Waste storage	Odour from waste storage	2	C	M	Within enclosed building with ventilation system designed to minimise fugitive emissions. System designed to ensure stack emissions are within acceptable levels to ensure compliance at sensitive receivers.	1	D	L
	Wastewater piping	Blockage of drains resulting on contaminated wastewater released into stormwater.	3	C	M	Physical: Truck wash area separated from stormwater Procedural: Water Management, Pollution Control Equipment Maintenance, Workplace Inspection	1	D	L
VEHICLE MOVEMENTS	Vehicle movements deliveries and pickup general	Noise emissions & possible sleep disturbance	1	D	L	Separation distance sufficient	1	D	L
		Generation of dust and air pollutants	2	C	M	Sealed road	1	D	L
		Excessive use of energy, fossil fuel resources	1	D	L	None	1	D	L
WASTE MANAGEMENT	General	Incorrect management of waste	3	C	M	Waste management plan Use of licensed waste contractors Trade waste agreement	1	D	L
		Contamination of land and water	2	D	L	Designated waste bins, bunded/graded storage, Waste Management Plan	1	E	L
	Incorrect management or disposal of wastes	2	D	L	Designated waste bins, bunded/graded storage, Waste Management Plan	1	E	L	
	Other refuse, litter and sweepings	Potential for litter to escape onto land or into waterways resulting in contamination	1	D	L	Designated waste bins, Waste Management Plan	1	E	L
	Paper use & other office waste	Incorrect management of waste	1	D	L	Designated waste bins, Waste Management Plan	1	E	L



5. RECOMMENDATIONS & CONCLUDING REMARKS

The risk analysis undertaken identified the main environmental site hazards associated with the proposed development to be odour emissions and chemical/product/wastewater spills. Risks were analysed considering all proposed safeguards relating to those hazards within the risk register. No high or medium level risks were found. The proposed development as designed is considered to present a low risk to the environment.

This concludes the report.

A handwritten signature in blue ink, appearing to read 'EH'.

Emma Hansma
Senior Engineer

A handwritten signature in black ink, appearing to read 'R T Benbow'.

R T Benbow
Principal Consultant



6. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of SPF Diana Australia Pty Ltd, as per our agreement for providing environmental services. Only SPF Diana Australia Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by SPF Diana Australia Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.