DANGEROUS GOODS REPORT
FOR
SPF DIANA AUSTRALIA PTY LTD
91 GARDINER STREET, RUTHERFORD NSW

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Engineering a Sustainable Future for Our Environment

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1. INTRODUCTION

Benbow Environmental has been engaged by SPF Diana Australia Pty Ltd to undertake a Dangerous Goods Report for the proposed facility 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.

1.1 SCOPE OF WORKS

The scope of this report is limited to the following:

- Identify the proposed quantities of dangerous goods and hazardous chemicals to be stored at the site;
- Determine the design requirements of the proposed dangerous goods in accordance with the relevance standards and SDS requirements.

1.2 SITE LOCATION

The proposed facility will be located at Lot 206, 91 Gardiner Street, Rutherford. Figure 1-1 present the location of the site. Figure 1-2 shows the site is situated on parcel of land being subdivided (subject to a separate development application handled by the developer of the industrial park (not SPF Diana Aust. Pty Ltd)). Figure 1-3 shows the land zoning, this site is in an IN1 general industrial zone.

Figure 1-1: Site Location (Aerial View)

Source: SixMaps

N Not to scale	LEGEND: Site location:	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

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

Source:

↑N
Not to scale

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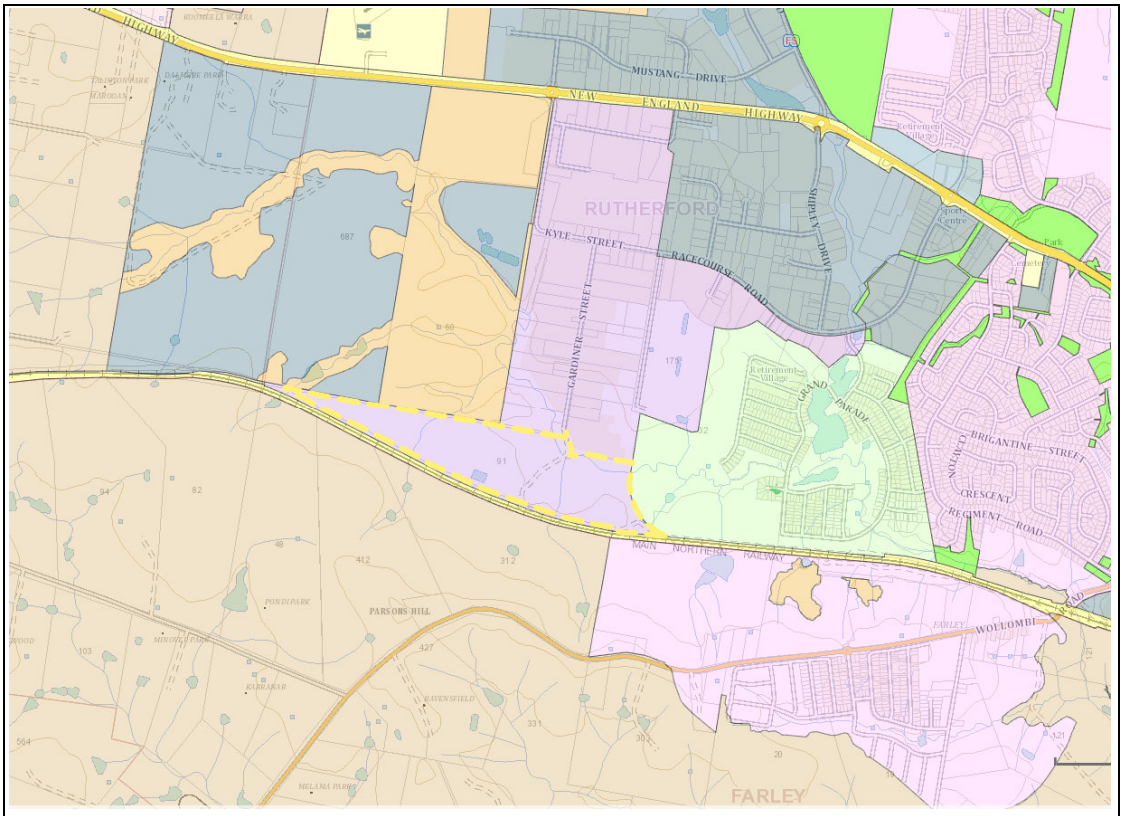
Figure 1-3: Land Use Zoning Map



Source: NSW ePlanning Spatial Viewer 2021

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LEGEND:

Site Boundaries

Zone

B1	Neighbourhood Centre	R1	General Residential
B2	Local Centre	R5	Large Lot Residential
B3	Commercial Core	RE1	Public Recreation
B4	Mixed Use	RE2	Private Recreation
B5	Business Development	RU1	Primary Production
B6	Enterprise Corridor	RU2	Rural Landscape
E2	Environmental Conservation	SP1	Special Activities
E3	Environmental Management	SP2	Infrastructure
E4	Environmental Living	SP3	Tourist
IN1	General Industrial		

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2. PROPOSED STORAGE DETAILS

The following table presents the proposed dangerous goods storage.

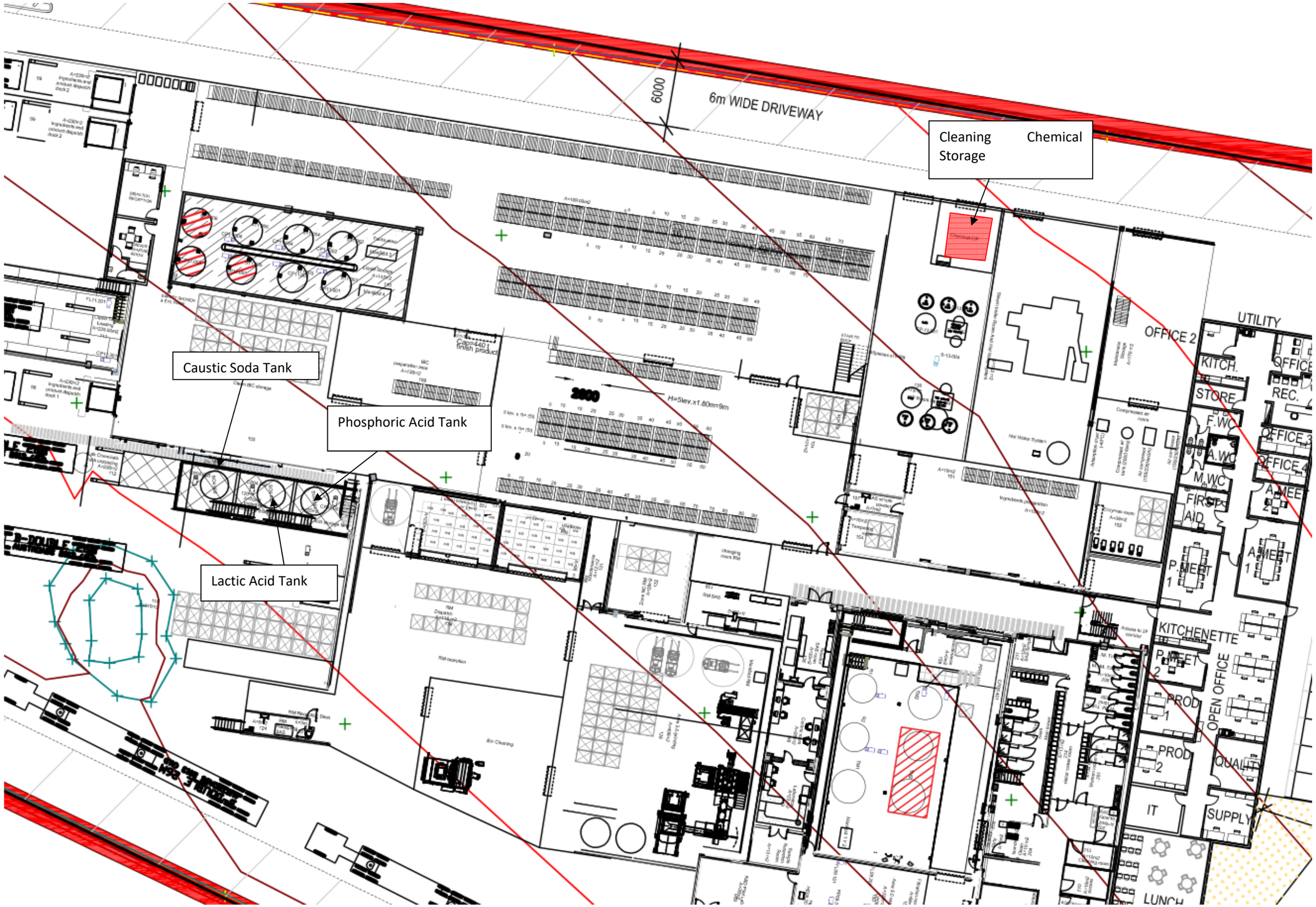
Table 2-1: Proposed Dangerous Good/Chemical Storage

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	IIII	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. CHEMICAL MANAGEMENT AND STORAGE REQUIREMENTS

The main class of dangerous goods stored on site is class 8 corrosive substances. There are also minor quantities of class 3 flammables <10L and nitric acid which is a class 8 with a sub risk class 5.1 oxidising agents.

Class 8 corrosives can be acids or bases.

The design requirements for the Storage of Class 8 dangerous goods are stipulated in AS *3780–2008 – The storage and handling of corrosive substances*. This section also draws from *AS1940-2017 – The storage and handling of flammable and combustible liquids* and *AS/NZS 3833:2007 – The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*.

3.1 SEPARATION DISTANCES

The minimum separation distances of class 8 package stores from protected places for PGII are 5m in stores where packages are opened and 3m where the packages remain closed. The minimum separation distances from protected places and boundaries for bulk storage of class 8 PG II liquids between 3,000L/kg-50,000L/kg is also 5m. Given the site's design consists of a driveway around the perimeter of the facility, the separation distances from boundaries and off-site protected places will be readily achieved. The bulk storage area and cleaning chemical storage area are located more than 5m from onsite protected places (areas where people are employed within the facility such as warehousing, processing/ manufacturing areas, amenities and other dangerous good stores).

3.2 SEGREGATION

3.2.1 Bulk Storage

Phosphoric acid and lactic acid are incompatible with caustic soda which must be kept in separate compounds and segregated by 5 m. These segregation distances may be measured laterally around an intervening screen wall. The screen wall shall extend a distance at least equal to the height of the higher store and have a FRL of at least 120/120/120.

In accordance with the SDSs these acids may react violently with bases. However, the bioproducts of this reaction is not considered a significant risk:

- Caustic soda (NaOH) and phosphoric acid react to make sodium phosphate and water. Sodium phosphate is a substance ingested to empty the colon prior to a colonoscopy (FDA approved and low risk).
- Caustic soda (NaOH) and lactic acid react to make sodium lactate and water. Sodium lactate is non-toxic and biodegradable and is used for electrolyte replenishment and as a systemic alkaliser.

These reactions do not generate toxic substances or release gaseous emissions.

3.2.2 Cleaning Chemical Storage

The following table demonstrates the segregation requirements of the cleaning chemicals in accordance with *AS/NZS 3833:2007 The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*.

Table 3-1: Cleaning Chemical Compatibility Table

	Sodium hydroxide solution (NaOH (30%-60%)	Isopropanol Alcohol 70% ()	Potassium Hydroxide Solution	Nitric Acid 68%
Sodium hydroxide solution (NaOH (30%-60%)	Compatible	Keep apart	Compatible	Segregate from
Isopropanol Alcohol 70%	Keep apart	Compatible	Keep apart	Segregate from
Potassium Hydroxide Solution	Compatible	Keep apart	Compatible	Segregate from
Nitric Acid 68%	Segregate from	Segregate from	Segregate from	Compatible

Compatible: May be stored in the same compartment;
Keep apart: must be kept apart by at least 3 m.
Segregate from: kept in separate compound by at least 5 m (intervening screen wall may be used).

As the cleaning chemicals storage room is only approximately 25 sqm it is recommended this room store the bases only. It is recommended the small quantity of flammable Isopropanol be stored in a flammable cabinet elsewhere in the facility. It is recommended the 2 x IBCs of acid be stored in a separate acid storage cabinet more than 5m from the bases.

Clear signage to ensure segregation/separation requirements are to be implemented.

3.2.3 WWTP Dosing

A container (drum or IBC) of acid and a container of a base will be used to regulate the pH of the wastewater. These are to be kept apart from each other on their own separate bunded pallet.

3.3 BUNDING

Bunding of packages must contain no less than 100% capacity of the largest container within the compound.

For bulk tanks, the distance between the tank and the bund wall must be at least 1m and must satisfy the bund location limits presented in figure 5.1 of AS 3781-2008. The bund compound must have the capacity to contain 100% of the total volume.

They must be constructed from a material that is "substantially immune to attack by any corrosive substance that they may be required to contain" therefore any concrete bunded areas must have a corrosive resistant coating such as an epoxy resin to prevent corrosion of the concrete.

Figure 3-1: AS3780-2008 – Bund Location Limits

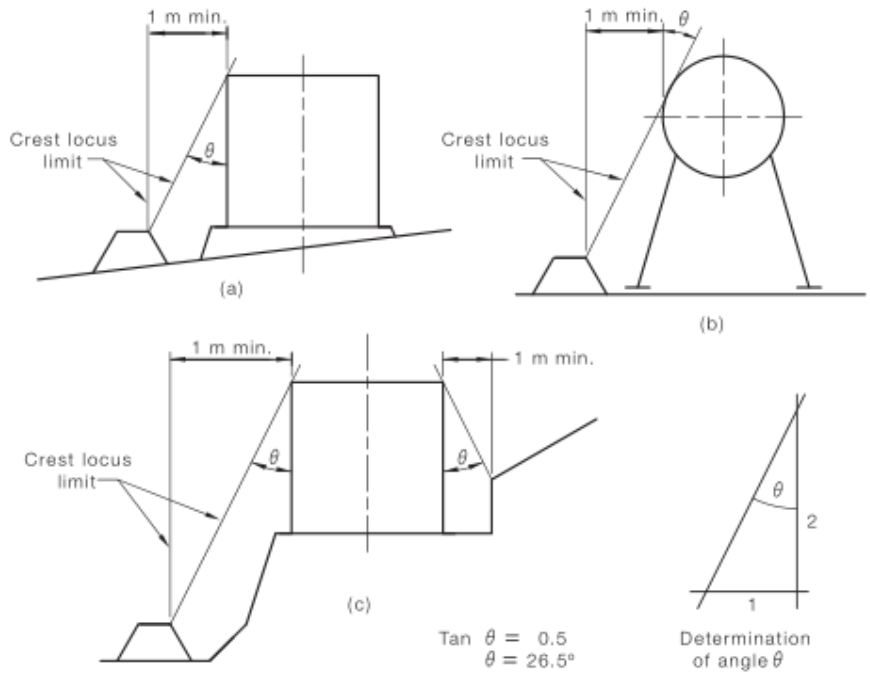


FIGURE 5.1 BUND LOCATION LIMITS

3.4 OTHER REQUIREMENTS

Other storage requirements

- A face and hand wash basin is needed.
- Signage needs to consist of the following at main entrances.
  - ◊ 250 x 250 mm Class 8 diamond sign.
  - Warning, restricted area, authorized personnel only.
  - Placarding is required at DG storage locations and recommended for bulk fill points.
- Ventilation is to meet BCA requirements
- Spill control/clean-up station are to be provided with its location signposted
- Fire protection in accordance with BCA requirements
- SDS (formerly known as MSDS) would be readily available.
- A dangerous goods register is required.
- An Emergency Plan to the requirements of fire officers is needed.

4. CONCLUDING REMARKS

Benbow Environmental has been engaged by SPF Diana Australia Pty Ltd to undertake a Dangerous Goods Report for the proposed pet food palliative enhancer manufacturing facility located at Lot 206, 91 Gardiner Street, Rutherford.

The report provides details of chemical management and storage requirements for the site.

This concludes the report.

Emma Hansma
Senior Engineer

R T Benbow
Principal Consultant

5. 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.

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