



Dangerous Goods Compliance Report

5 Kiora Crescent, Yennora

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5 Kiora Crescent, Yennora

Kiora One Pty Ltd

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Quality Management

| Rev | Date | Remarks | Prepared By | Reviewed By |
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| 0 | 22 October 2025 | Issued final | | |

Executive Summary

Background

Kiara One Pty Ltd (K1) has proposed to operate three (3) warehouse units at 5 Kiara Crescent, Yennora to house the processing operations for various waste streams. One of the waste streams that will be processed includes materials classified as Dangerous Goods (DGs); hence, the site is subject to the NSW Work Health and Safety Regulation 2025 (Ref. [1]) which requires the risks associated with the storages to be assessed and minimised So Far As Is Reasonably Practicable (SFAIRP). Demonstrating the risks have been minimised may be achieved via compliance with an applicable design standard.

MRA Consulting Pty Ltd (MRA), on behalf of K1, has commissioned Riskcon Engineering Pty Ltd (Riskcon) to prepare a DG assessment of the DG warehouse at 5 Kiara Crescent, Yennora.

Conclusions

A review of the classes, quantities and locations of DGs stored at the Kiara 1 Unit 2 building was conducted to assess the compliance with the WHS 2025 and the relevant Australia Standards for storage of DGs at the site.

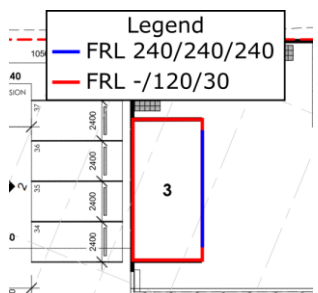
The storage locations were assessed according to the standard applicable to the classes of DGs stored in a clause-by-clause fashion to identify any deficiencies in the design and make recommendation for inclusion in the design.

Based on this review, it is concluded that should the aforementioned design requirements be incorporated into the DG storages the stores will comply with the standards; hence, comply with the WHS Regulations.

Recommendations

The following recommendations have been made for the facility:

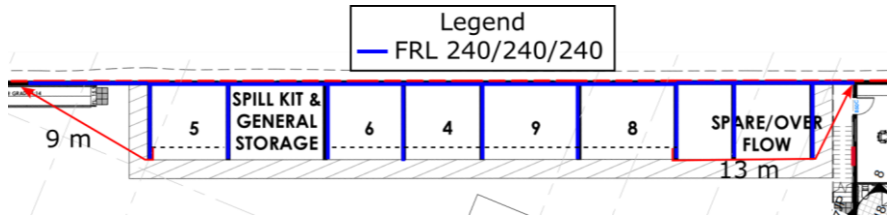
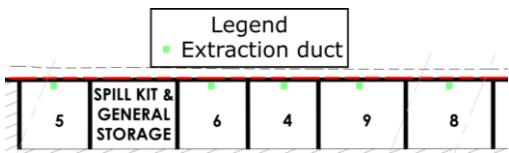
Flammable Liquid Store

| ID | Recommendation |
|------|---|
| FLS1 | <ul style="list-style-type: none"> The flammable liquid store shall be enclosed in walls having an FRL of 240/240/240. The roof of the store shall have an FRL of 180/180/180. The door to the store shall have an FRL of -/120/30 which may be achieved by a roller door with an FRL of -/120/- with drenchers on either side to provide -/120/30. The roller door shall be held open by electromagnetic link which will deactivate upon fire or smoke detection.  |
| FLS2 | <ul style="list-style-type: none"> A hazardous area classification in accordance with AS/NZS 60079.10.1:2022 shall be prepared for the flammable liquid store. |

| ID | Recommendation |
|------|--|
| | <ul style="list-style-type: none"> Emergency egress doors in the fire rated structure of the flammable liquid store shall have an FRL of -/120/30. |
| FLS3 | <ul style="list-style-type: none"> The flammable liquid store shall be bunded to contain 7.5 m³ + the discharge of sprinklers & drenchers operating for 20 minutes. Bund to be constructed of concrete or other material that is compatible with flammable liquids. The bund shall have a sump installed to enable the recovery of spilled material. |
| FLS4 | <ul style="list-style-type: none"> Lighting shall be provided in the flammable liquid store to enable visual identification of liquids stored per AS/NZS 1680.2.4. Electrical installation shall comply with the hazardous area classification zoning per the requirements of AS/NZS 60079.14:2022. |
| FLS5 | <ul style="list-style-type: none"> Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). Exhaust registers shall be at low level (<500 mm above bund level). The exhaust rate of the system shall be 10 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Where ducting passes through an area outside of the flammable liquid store, it shall be protected by a material having an FRL of -/180/180. Should the dimensions of the store change, the required extraction rate shall be reviewed. <div style="text-align: center;"> <p>The diagram shows a vertical extraction duct with four sections, each labeled '2400'. Arrows point from the duct to the left, indicating the direction of air flow. A legend box at the top contains the text 'Legend' and 'Extraction duct' with a green square symbol. Below the legend, the text 'Air Flow Direction' is written next to an arrow pointing left.</p> </div> |
| FLS6 | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the flammable liquid store. |
| FLS7 | <ul style="list-style-type: none"> The forklifts shall be reviewed for compliance with the hazardous area zoning. |
| FLS8 | <ul style="list-style-type: none"> Fire hose reels with foam making capabilities shall be provided for the flammable liquid store. A dry powder fire extinguisher shall be provided for the flammable liquid store. A foam pouring connection shall be installed in the fire wall to enable application of foam into the flammable liquid store. The site shall store sufficient foam for at least one (1) hour of application. |

Mixed DG Stores

| ID | Recommendation |
|-----|--|
| MS1 | <ul style="list-style-type: none"> The DG storages shall have FRL 240/240/240 walls. The walls shall extend 1 m above the height of the top package. |

| ID | Recommendation |
|-----|--|
| | <ul style="list-style-type: none"> The maximum storage height shall be identified on the walls of the individual stores.  <p style="text-align: center;">Legend — FRL 240/240/240</p> |
| MS2 | <ul style="list-style-type: none"> The Class 5 store shall contain 4.5 m³. The Class 6 store shall contain 6.6 m³. The Class 8 store shall contain 4.9 m³. The Class 9 store shall contain 6.5 m³. Each DG storage shall have a sump to enable recovery of spilled liquids. Unit 2 shall be bunded to contain 20 minutes of sprinkler discharge. The Unit 2 shall have a sump to enable the recovery of potentially contaminated water. The bunded areas shall be constructed of materials compatible with the characteristics of the materials being stored. |
| MS3 | <ul style="list-style-type: none"> Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). Exhaust registers shall be at low level (<500 mm above bund level). The exhaust rate of the Class 4 store shall be 6 m³/min. The exhaust rate of the Class 5 store shall be 5 m³/min. The exhaust rate of the Class 6 store shall be 5 m³/min. The exhaust rate of the Class 8 store shall be 6 m³/min. The exhaust rate of the Class 9 store shall be 5 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Should the dimensions of the store change, the required extraction rate shall be reviewed.  <p style="text-align: center;">Legend ■ Extraction duct</p> |
| MS4 | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the mixed DG stores. |
| MS5 | <ul style="list-style-type: none"> Where triple stacking is to be adopted, a risk assessment shall be conducted to confirm whether this is achievable. Should triple stacking be adopted, the fire wall design shall be adjusted to ensure a 1 m wall height above the highest IBC. |
| MS6 | <ul style="list-style-type: none"> The storage areas shall be designed such that the IBCs are at least 1 m away from the opening to the DG store. |
| MS7 | <ul style="list-style-type: none"> Additional exits from the office / laboratory areas shall be provided such that evacuation does not occur through the main Unit 2 building. |
| MS8 | <ul style="list-style-type: none"> Fire hose reels shall be installed to provide full coverage to the DG stores. |

| ID | Recommendation |
|----|--|
| | <ul style="list-style-type: none"> • A dry powder fire extinguisher(s) shall be provided such that the maximum travel distance to an extinguisher is 15 m. • The sprinkler system shall be reviewed to confirm that is adequate to provide protection to the commodities stored. |

General Items

| ID | Recommendation |
|----|--|
| G1 | <ul style="list-style-type: none"> • A Dangerous Goods Register, indicating the type of chemical, any notations that may be required from the risk assessment and the Safety Data Sheet for the chemical. |
| G2 | <ul style="list-style-type: none"> • A DG Risk Assessment of the storage and handling area. |
| G3 | <ul style="list-style-type: none"> • A Placard Schedule to identify locations for DG placards around the site. |
| G4 | <ul style="list-style-type: none"> • A Manifest of Hazardous Chemicals. |
| G5 | <ul style="list-style-type: none"> • Notification to SafeWork NSW. |
| G6 | <ul style="list-style-type: none"> • An Emergency Plan & An Emergency Services Information Pack. |
| G7 | <ul style="list-style-type: none"> • A Hazardous Area Classification (HAC) in accordance with AS/NZS 60079.10.1:2022. |
| G8 | <ul style="list-style-type: none"> • Hazardous Area Verification Dossier (HAVD) in accordance with AS/NZS 60079.14:2022. |

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Abbreviations

| Abbreviation | Description |
|--------------|---|
| ADG | Australian Dangerous Goods Code |
| AQR | Aggregate Quantity Ratio |
| CBD | Central Business District |
| DGs | Dangerous Goods |
| FP | Flash Point |
| FRL | Fire Resistance Level |
| FTE | Full Time Employment |
| HAC | Hazardous Area Classification |
| HAVD | Hazardous Area Verification Dossier |
| IBC | Intermediate Bulk Container |
| K1 | Kiora One Pty Ltd |
| MRA | MRA Consulting Pty Ltd |
| MHF | Major Hazard Facility |
| NOS | Not Otherwise Specified |
| OSPP | Onsite Protected Place |
| PCBU | Person Conducting a Business or Undertaking |
| SDS | Safety Data Sheet |
| SFAIRP | So Far As Is Reasonably Practicable |
| WHS | Work Health and Safety |

1.0 Introduction

1.1 Background

Kiora One Pty Ltd (K1) has proposed to operate three (3) warehouse units at 5 Kiora Crescent, Yennora to house the processing operations for various waste streams. One of the waste streams that will be processed includes materials classified as Dangerous Goods (DGs); hence, the site is subject to the NSW Work Health and Safety Regulation 2025 (Ref. [1]) which requires the risks associated with the storages to be assessed and minimised So Far As Is Reasonably Practicable (SFAIRP). Demonstrating the risks have been minimised may be achieved via compliance with an applicable design standard.

MRA Consulting Pty Ltd (MRA), on behalf of K1, has commissioned Riskcon Engineering Pty Ltd (Riskcon) to prepare a DG assessment of the DG warehouse at 5 Kiora Crescent, Yennora.

1.2 Objectives

The objectives of the study are to provide a design compliance assessment document for the DG storage warehouse (Unit 2) at 5 Kiora Crescent, Yennora to determine whether the storages achieve compliance.

1.3 Scope of Services

The scope of work is to prepare a DG design document for the DG storage warehouse (Unit 2) at 5 Kiora Crescent, Yennora.

2.0 Methodology

2.1 General Methodology

The following methodology was adopted for this study:

- Review the DG classes and quantities to be stored and the locations where they are to be stored within the warehouse.
- Review the relevant DG standards to identify the most applicable standard for the warehouse.
- Review the WHS Regulation 2025 (Ref. [1]) to identify the requirements for the warehouse based on the quantity of DGs stored.
- Prepare a report detailing the findings of the design assessment for submission to assist the project team design a compliant warehouse.

3.0 Site Description

3.1 Site Location

The site is located at 5 Kiora Crescent, Yennora which is approximately 30 km west of the Sydney Central Business District (CBD). **Figure 3-1** shows the regional location of the site in relation to the Sydney CBD. Provided in **Figure 3-2** is the layout of the site.

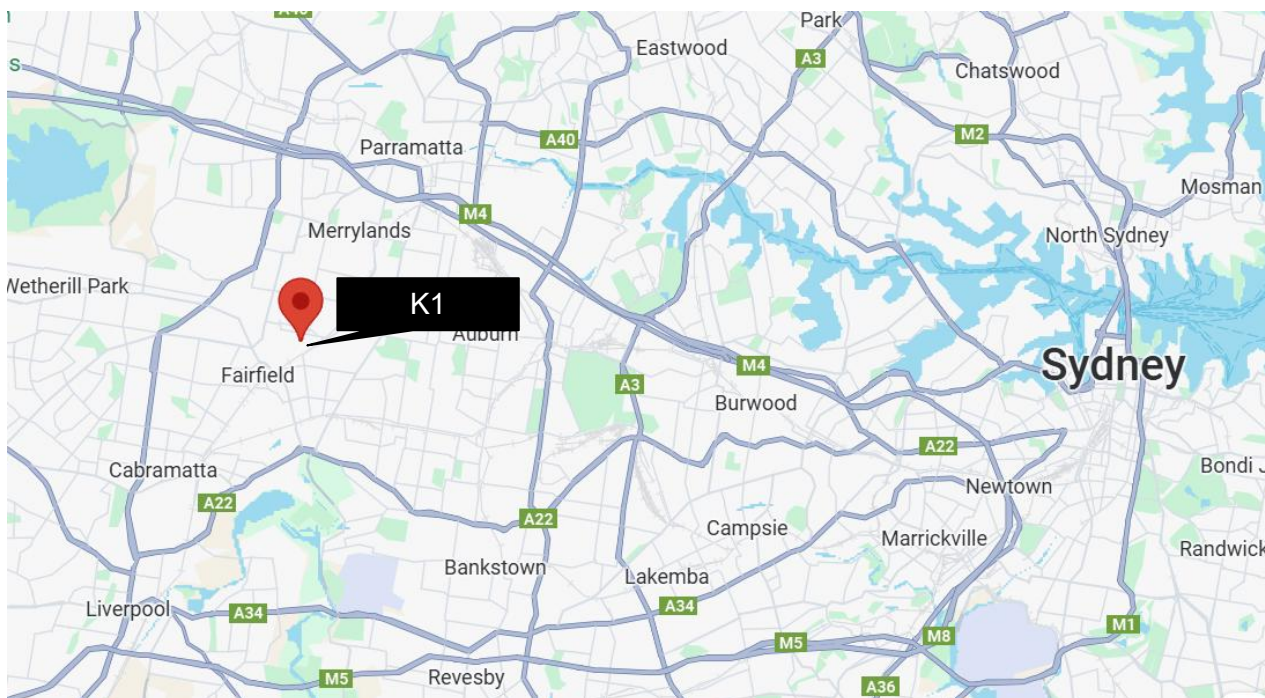
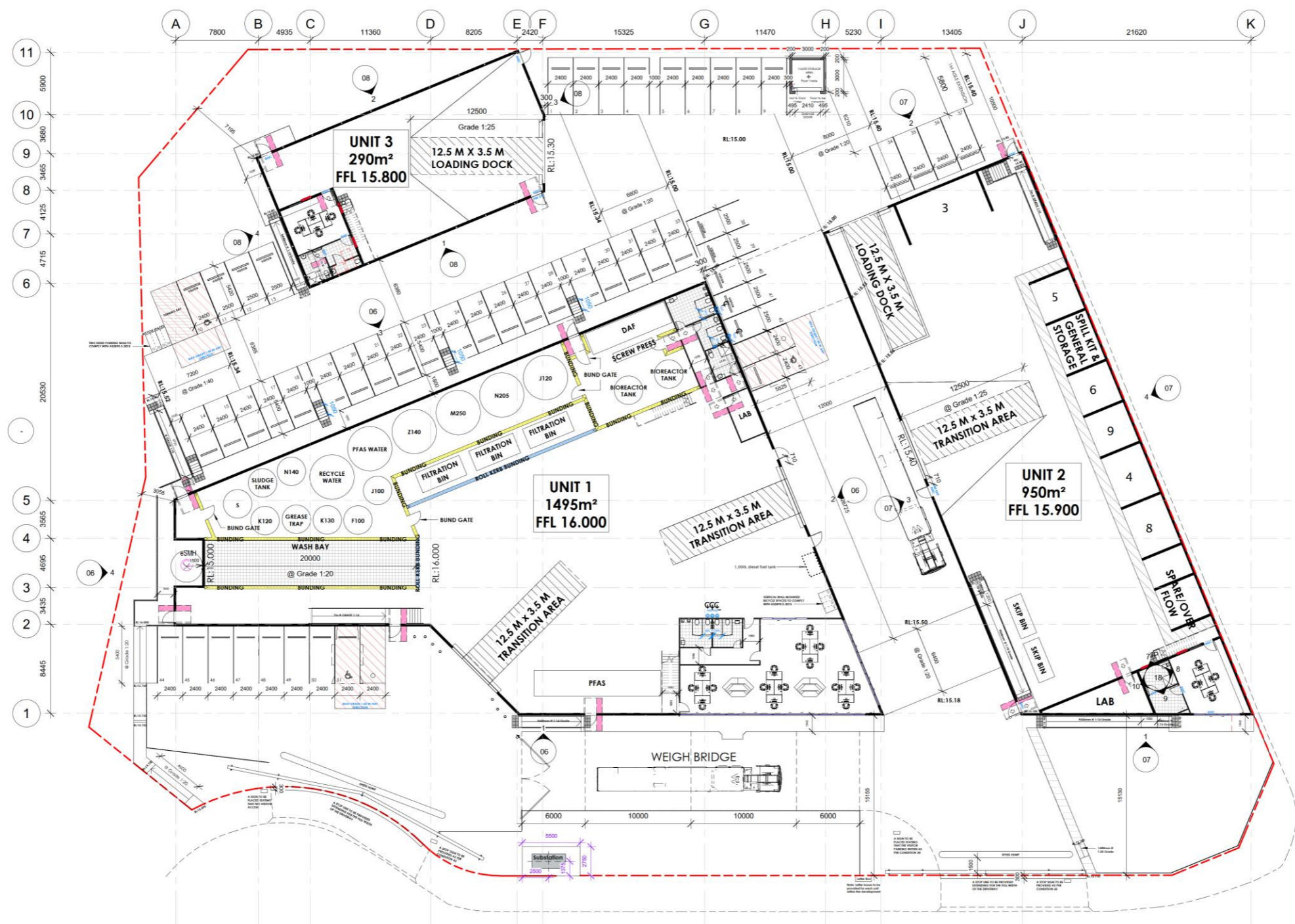


Figure 3-1: Site Location

3.2 Project Layout

The layout of the three (3) units at 5 Kiora Crescent are provided in **Figure 3-2**. The internal layout would be broadly consistent with **Figure 3-2**, however minor changes may occur if equipment, machinery and storage require relocation within the buildings due to operational constraints.



1 Ground Level
1 : 200

| REV | DESCRIPTION | DATE | BY |
|-----|-------------------|----------|----|
| A | FOR CLIENT REVIEW | 15/12/22 | MP |
| B | FOR CLIENT REVIEW | 16/01/23 | MP |
| C | FOR CLIENT REVIEW | 23/01/23 | MP |
| D | FOR COORDINATION | 02/03/23 | MP |
| E | FOR CLIENT REVIEW | 14/07/23 | MP |
| F | FOR CLIENT REVIEW | 07/08/23 | MP |
| G | FOR CLIENT REVIEW | 16/08/23 | MP |

NOT FOR CONSTRUCTION
DRAFT

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PROJECT TITLE
INDUSTRIAL DEVELOPMENT
5 KIORA CRESCENT, YENNORA 2161
DRAWING TITLE
OVERALL GROUND FLOOR LAYOUT

| PROJECT NUMBER | DRAWING NUMBER | DATE | REVISION |
|----------------|----------------|----------|------------|
| 23032 | 02 | 06/07/17 | G |
| | SCALE @ A1 | DRAWN BY | CHECKED BY |
| | 1 : 200 | GA/SE | CB |

This drawing is copyright and the property of Baini Design. Larger scale drawings and written dimensions take preference. Do not scale from drawing. All dimensions to be verified on site before commencement of work. All discrepancies to be brought to the attention of the author.

Figure 3-2: General Site Layout (Baini Design, 2023)

3.3 Waste Summary

3.3.1 Uses and Activities

Three industrial warehouse buildings have been built according to development approval (DA2019/457/1) at the site at 5 Kiora Crescent, Yennora. The proposed facility would be capable of accepting up to 220,000 tpa of waste which would be received across the three units as follows:

- Unit 1 – processing of 180,000 tpa of liquid waste (waste cooking oil, sewage sludge and residues, and industrial waste residues);
- Unit 2 – transfer of 20,000 tpa chemical and clinical wastes; and
- Unit 3 – processing of 20,000 tpa of rejected commercial waste (product destruction waste).

All buildings would be installed with internal bunding around operational areas and where liquid tanks and/or containers are present to ensure that any spills are contained and do not escape buildings to the environment.

3.3.2 Waste Types

This section outlines the types of waste to be processed or transferred at the site and a full description of the receipt, processing, storage and offtake methods. Waste types are detailed in **Table 3-1**. Detailed descriptions of process and operations are outlined in the following sections.

Table 3-1: List of Waste Types

| Waste Code | Waste Code Name | Waste Description |
|--|--|--|
| Liquid Waste and Depackaging Processing | | |
| J120 | Waste oil/hydrocarbons mixtures/emulsions in water | <ul style="list-style-type: none"> • Vehicle washwaters • Boiler blowdown sludge • Cooling tower washwaters • Textile effluent & residues NOS • Industrial plant washwaters • Ethylene glycol-water (antifreeze) • Oil/hydrocarbon (<50%) mixed with water • Oil/hydrocarbon (>50%) mixed with water • Other (cutting oils, soluble oils) • Oil/hydrocarbon mixed with water NOS |
| J100 | Waste mineral oils | <ul style="list-style-type: none"> • Mineral oils unfit for their original intended use • Transformer fluids (excluding PCBs) • Waste hydrocarbons |
| K110 | Grease trap waste | <ul style="list-style-type: none"> • Grease interceptor trap waste – domestic • Grease interceptor trap waste - industrial |
| K120 | Liquid food waste | <ul style="list-style-type: none"> • Vegetable oils & derivatives • Vegetable & fruit processing effluent • Other liquid food waste |
| K130 | Sewage sludge & residues | <ul style="list-style-type: none"> • Bacterial sludge (septic tank) • Night soil |

| Waste Code | Waste Code Name | Waste Description |
|-----------------------------|--|---|
| | | <ul style="list-style-type: none"> • Sewerage sludge & residues |
| M250 | Surfactants containing principally organic constituents | <ul style="list-style-type: none"> • Surfactants |
| N205 | Industrial waste treatment/disposal residues | <ul style="list-style-type: none"> • Scrubber sludge • Ion-exchange column residues • Industrial waste treatment sludges and residues NOS • Residues from pollution control operations NOS |
| Z140 | Ground Water | <ul style="list-style-type: none"> • Water extracted from construction sites and other locations. |
| F100 | Waste ink, dye, pigment, paint, lacquer & varnish | <ul style="list-style-type: none"> • Paints, inks, etc (aqueous non-flammable vapours) • Paints, inks, etc (aqueous, flammable vapours) • Paints, inks, etc (solvent combustible FP<60.5C) • Paints, inks, etc (solvent combustible FP>60.5C) • Paint residues NOS |
| F110 | Waste resin, latex, plasticiser, glue & adhesive | <ul style="list-style-type: none"> • Adhesives, glues, etc (aqueous non-flammable vapours) • Adhesives, glues, etc (aqueous flammable vapours) • Adhesives, glues, etc (solvent combustible FP<60.5C) • Adhesives, glues, etc (solvent combustible FP>60.5C) • Uncured adhesives or resins NOS • Cured adhesives or resins NOS • Adhesives, glues, etc NOS |
| M270 | Per- and poly-fluoroalkyl substances (PFAS) contaminated materials | <ul style="list-style-type: none"> • PFAS contaminated water |
| N140 | Fire debris and fire washwaters | <ul style="list-style-type: none"> • Fire washwaters |
| Storage and Transfer | | |
| B100 | Acidic solutions or acids in solid form | <ul style="list-style-type: none"> • Sulfuric acid • Hydrochloric acid • Nitric acid • Phosphoric acid • Chromic acid, sodium dichromate • Hydrofluoric acid • Sulfuric/hydrochloric acid mixtures • Mixed acids (inorganic) • Organic acids • Pickle liquor • Acids NOS (not otherwise stated) |
| C100 | Basic solutions or bases in solid form | <ul style="list-style-type: none"> • Alkaline cleaners, potash, caustic soda • Ammonium hydroxide |

| Waste Code | Waste Code Name | Waste Description |
|------------|---|---|
| | | <ul style="list-style-type: none"> Waste lime & cement (no metallic constituents) Caustic neutralised waste (metallic constituents) Other alkaline waste (inorganic) Other alkaline waste (organic) |
| D220 | Lead; lead compounds | <ul style="list-style-type: none"> Lead acid batteries Gritblast waste Lead & lead compounds NOS |
| F100 | Waste ink, dye, pigment, paint, lacquer & varnish | <ul style="list-style-type: none"> Paints, inks, etc (aqueous non-flammable vapours) Paints, inks, etc (aqueous, flammable vapours) Paints, inks, etc (solvent combustible FP<60.5C) Paints, inks, etc (solvent combustible FP>60.5C) Paint residues NOS |
| G110 | Organic solvents excluding halogenated solvents | <ul style="list-style-type: none"> Klenasol (non-chlorinated) Non-halogen organic solvents (flammable FP<60.5C) Non-halogen organic solvents (combustible FP>60.5C) Non-halogenated organic solvents NOS |
| G160 | Waste from production formulation & use of organic solvents | <ul style="list-style-type: none"> Waste from production & formulation of organic solvents Solvent recovery residues Organic solvents & solvent residues NOS |
| M100 | Waste substances & articles containing PCB, PCN, PCT, PBB | <ul style="list-style-type: none"> Oil, solvents & materials contaminated with PCB Equipment containing PCBs Polychlorinated biphenyls (PCBs) NOS Equipment containing PCNs, PCTs and PBBs PCNs, PCTs and PBBs |
| N100 | Containers & drums containing controlled waste residues | <ul style="list-style-type: none"> Drums containing waste which must be tracked Other containers containing waste which must be tracked Aerosol cans |
| R100 | Clinical and related wastes | <ul style="list-style-type: none"> Clinical and related wastes Sharps Pathogenic substances |
| R120 | Waste pharmaceuticals, drugs and medicines | <ul style="list-style-type: none"> Pharmaceuticals and residues |
| T100 | Waste arising from R&D or teaching activities | <ul style="list-style-type: none"> Waste chemicals from R&D or teaching Waste from domestic chemical collections |
| T120 | Photographic chemicals & processing waste | <ul style="list-style-type: none"> Photographic waste containing silver Photographic waste (no silver) Photographic waste NOS |
| Z100 | No related waste descriptions | |

3.4 Hours of Operation

The hours of operation for receipt, processing, and offtake across the site uses would be as follows:

- Material delivery – 24/7.
- Offtake times – 24/7.
- Operation of machinery times – 24/7.
- Anticipated to have two site operation shifts – 4 am to 4 pm and 4 pm to 4 am including maintenance.
- Administration and management – between 8 am and 6 pm, Monday to Friday.

3.5 Staff

The proposed development would generate 33 Full Time Employment (FTE) positions during operation. This includes 30 FTE staff working on the processing operations (in 2 x 10 or 12 hour shifts) and 3 FTE office staff.

Shifts may be staggered once operational to limit crossover of staff change-over and office staff would typically be limited to day operations. Therefore, the number of staff onsite at any time is expected to be approximately 33 personnel across all uses at any given time.

3.6 Classes and Quantities of DGs

The classes and quantities of materials classified as DGs proposed to be stored and handled at the site are summarised **Table 3-2**.

Table 3-2: Maximum Classes and Quantities of Dangerous Goods Stored

| Storage Location | Class | Description | PG | Quantity (kg) |
|------------------|------------------|-----------------------|----------|---------------|
| Unit 1 | 8 | Corrosive substances | II | 2,000 |
| Unit 2 | 3 | Flammable liquids | II & III | 40,000 |
| | 4.1 | Flammable solids | II & III | 20,000 |
| | 5.1 | Oxidising agents | II & III | 20,000 |
| | 6.1 | Toxic substances | I | 1 |
| | | | II & III | 20,000 |
| | 6.2 | Infectious substances | - | 20,000 |
| | 8 | Corrosive substances | I | 5 |
| | | | II & III | 50,000 |
| 9 | Miscellaneous DG | III | 40,000 | |
| Unit 3 | - | - | - | - |
| Miscellaneous | C1 | Diesel fuel | - | 1,000 |

3.7 Aggregate Quantity Ratio

Where more than one class of dangerous goods are stored and handled at the site an AQR exists. This ratio is calculated using **Equation 3-1**:

$$AQR = \frac{q_x}{Q_x} + \frac{q_y}{Q_y} + [...] + \frac{q_n}{Q_n} \quad \text{Equation 3-1}$$

Where:

x,y [...] and n are the dangerous goods present

q_x, q_y, [...] and q_n is the total quantity of dangerous goods x, y, [...] and n present.

Q_x, Q_y, [...] and Q_n is the individual threshold quantity for each dangerous good of x, y, [...] and n

Where the ratio AQR exceeds a value of 1, the site would be considered a Major Hazard Facility (MHF). The threshold quantity for each class is taken from Schedule 15 of the Work Health and Safety (WHS) Regulation 2025 (Ref. [1]). These are summarised in **Table 3-3** noting Class 8 and 9 are not subject to MHF legislation.

Table 3-3: Major Hazard Facility Thresholds

| Class | Packing Group | Quantity (tonnes) | | Quantity Ratio |
|------------|---------------|--------------------|--------------------|----------------|
| | | Stored | Threshold | |
| 3 | II & III | 40 | 50,000 | 0.0008 |
| 4.1 | II & III | 20 | Not subject to MHF | - |
| 5.1 | II & III | 20 | 200 | 0.10 |
| 6.1 | I | 1 | 20 | 0.05 |
| | II & III | 20 | 200 | 0.10 |
| 6.2 | - | 20 | Not subject to MHF | - |
| 8 | I | 5 | Not subject to MHF | - |
| 8 | II & III | Not subject to MHF | Not subject to MHF | - |
| 9 | III | Not subject to MHF | Not subject to MHF | - |
| AQR | | | | 0.2508 |

The AQR is less than 1; hence, the facility would be unlikely to be classified as an MHF. The site will exceed 10% of the MHF; hence, a notification to SafeWork would be required.

4.0 Assessment

4.1 Introduction

Unit 2 contains mixed class storage which is segregated into two areas:

- Flammable liquid storage
- Mixed storage

The whole warehouse will operate a mixed class DG storage; however, the separate areas will be reviewed individually to minimise confusion between the spaces given the disparate design requirements that would be necessary to minimise risks according to the characteristics of the goods stored. The compliance assessments have been provided in the following sections.

4.2 Flammable Liquid Storage

The proposed quantities of flammable liquids to be stored in the flammable liquid storage are summarised in **Table 4-1**.

Table 4-1: Classes and Quantities of Goods Stored in the Flammable Liquid Store

| Class | Description | PG | Quantity (kg) |
|-------|-------------------|----------|--------------------|
| 3 | Flammable liquids | II & III | 40,000 / 50,000 L* |

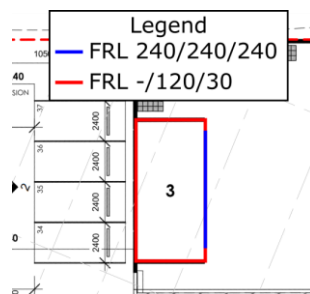
*Density of 800 kg/m³ adopted

The package sizes stored in the flammable liquid store exceed the limits for retail packaging; hence, the store is subject to the package store requirements of AS 3833:2024 (Ref. [2]). A clause-by-clause assessment of the site has been conducted in **Table 4-3** against AS 3833:2024.

A summary of the recommendations for the flammable liquid store is provided below in **Table 4-2**.

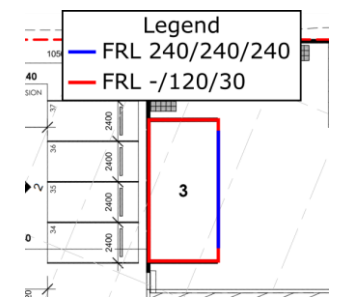
Table 4-2: Flammable Liquid Store Recommendations

| ID | Recommendation |
|------|--|
| FLS1 | <ul style="list-style-type: none"> • The flammable liquid store shall be enclosed in walls having an FRL of 240/240/240. • The roof of the store shall have an FRL of 180/180/180. • The door to the store shall have an FRL of -/120/30 which may be achieved by a roller door with an FRL of -/120/- with drenchers on either side to provide -/-/30. • The roller door shall be held open by electromagnetic link which will deactivate upon fire or smoke detection. |
| FLS2 | <ul style="list-style-type: none"> • A hazardous area classification in accordance with AS/NZS 60079.10.1:2022 shall be prepared for the flammable liquid store. |



| ID | Recommendation |
|------|--|
| | <ul style="list-style-type: none"> Emergency egress doors in the fire rated structure of the flammable liquid store shall have an FRL of -/120/30. |
| FLS3 | <ul style="list-style-type: none"> The flammable liquid store shall be bunded to contain 7.5 m³ + the discharge of sprinklers & drenchers operating for 20 minutes. Bund to be constructed of concrete or other material that is compatible with flammable liquids. The bund shall have a sump installed to enable the recovery of spilled material. |
| FLS4 | <ul style="list-style-type: none"> Lighting shall be provided in the flammable liquid store to enable visual identification of liquids stored per AS/NZS 1680.2.4. Electrical installation shall comply with the hazardous area classification zoning per the requirements of AS/NZS 60079.14:2022. |
| FLS5 | <ul style="list-style-type: none"> Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). Exhaust registers shall be at low level (<500 mm above bund level). The exhaust rate of the system shall be 10 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Where ducting passes through an area outside of the flammable liquid store, it shall be protected by a material having an FRL of -/180/180. Should the dimensions of the store change, the required extraction rate shall be reviewed. <div style="text-align: center;"> <p>The diagram shows a vertical extraction duct system. A legend at the top indicates that a green square represents an 'Extraction duct'. Below the legend, a vertical duct is shown with four horizontal intake registers, each with a height of 2400 units. Arrows point from the registers into the duct, labeled 'Air Flow Direction'. The duct is shown extending downwards from the registers.</p> </div> |
| FLS6 | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the flammable liquid store. |
| FLS7 | <ul style="list-style-type: none"> The forklifts shall be reviewed for compliance with the hazardous area zoning. |
| FLS8 | <ul style="list-style-type: none"> Fire hose reels with foam making capabilities shall be provided for the flammable liquid store. A dry powder fire extinguisher shall be provided for the flammable liquid store. A foam pouring connection shall be installed in the fire wall to enable application of foam into the flammable liquid store. The site shall store sufficient foam for at least one (1) hour of application. |

Table 4-3: Flammable Liquid Store Compliance Assessment Against AS 3833:2024

| Clause | Requirement | Assessment | Comment / Recommendation | | | | | | | | |
|-----------------------------------|--|---|--------------------------|--------------|-------------------------|-------|-------------------------------|-------|-------------------|---|--|
| Separation and Segregation | | | | | | | | | | | |
| 5.3.3 | Stores shall be separated from protected places and boundaries as required by Clause 6.2 of this document. Segregation shall be as required by Clause 6.3. | <p>The separation requirements for the flammable liquid store to sensitive receptors are provided in the following table:</p> <table border="1"> <thead> <tr> <th>Receptor</th> <th>Distance (m)</th> </tr> </thead> <tbody> <tr> <td>Offsite Protected Place</td> <td>11.75</td> </tr> <tr> <td>Onsite Protected Place (OSPP)</td> <td>11.75</td> </tr> <tr> <td>Property Boundary</td> <td>3</td> </tr> </tbody> </table> <p>Provided in the following figure are the separation to Protected Places. The distances impact over the site boundary which would be a non-compliance. As the whole store is considered a mixed store, the OSPP distance does not apply to the DG storages; however, for conservatism given the nature of the waste stored and the potential for propagation this has been applied.</p> <p>Subsequently, the distances are exceeded; hence, the flammable liquid store is required to be contained within a fire rated enclosure.</p> | Receptor | Distance (m) | Offsite Protected Place | 11.75 | Onsite Protected Place (OSPP) | 11.75 | Property Boundary | 3 | <ul style="list-style-type: none"> The flammable liquid store shall be enclosed in walls having an FRL of 240/240/240. The roof of the store shall have an FRL of 180/180/180. The door to the store shall have an FRL of -/120/30 which may be achieved by a roller door with an FRL of -/120/- with drenchers on either side to provide -/30. The roller door shall be held open by electromagnetic link which will deactivate upon fire or smoke detection.  <p>The diagram shows a plan view of a rectangular store. A legend indicates that blue lines represent FRL 240/240/240 walls and red lines represent FRL -/120/30 doors. The store is labeled with the number '3'. Distances of 11.75m and 3m are marked from the store to various receptors. A '40 SIGN' is also indicated near the store.</p> |
| Receptor | Distance (m) | | | | | | | | | | |
| Offsite Protected Place | 11.75 | | | | | | | | | | |
| Onsite Protected Place (OSPP) | 11.75 | | | | | | | | | | |
| Property Boundary | 3 | | | | | | | | | | |

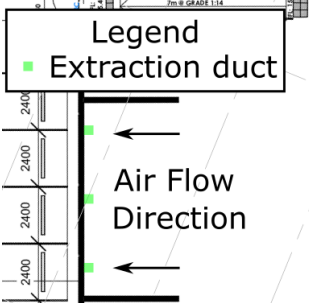
| Clause | Requirement | Assessment | Comment / Recommendation |
|--|---|---|---|
| | | | |
| Design & Construction of Stores | | | |
| 5.4.1 | <p>The following requirements shall apply to the design and construction of stores for mixed classes of dangerous goods:</p> <p>(a) Except for storage cabinets, stores shall be on a floor that has direct access from ground level on at least one side.</p> <p>(b) Stores shall be designed, constructed and operated in a manner that will allow the housekeeping requirements of Clause 7.5 to be carried out effectively.</p> <p>(c) Stores shall be constructed of non-combustible materials that are compatible with the dangerous goods being kept. Surfaces may be treated to ensure compatibility with, or</p> | <p>a) the storages are located on ground level.</p> <p>b) dedicated racked storage provided assists in achieving housekeeping requirements.</p> <p>c) The building is constructed of non-combustible materials.</p> <p>d) n/a – no racking. IBCs are block stacked.</p> <p>e) noted</p> <p>f) the building has adequate lighting for operational needs.</p> <p>g) Electrical wiring is installed per AS/NZS 3000.</p> | <ul style="list-style-type: none"> A hazardous area classification in accordance with AS/NZS 60079.10.1:2022 shall be prepared for the flammable liquid store. |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|--|--|--------------------------|
| | <p>resistance to attack by the dangerous goods to be kept in the store.</p> <p>NOTE 1 Some corrosive substances and some oxidizing agents can attack surfaces.</p> <p>(d) Where corrosive substances are stored, all materials of construction shall have corrosion resistance appropriate to the substances being kept or be lined with corrosion-resistant materials.</p> <p>(e) Any special storage requirements (e.g. those given on SDS, labels and other product information) shall be met.</p> <p>(f) Lighting shall meet the requirements of Clause 5.4.4.</p> <p>(g) Electrical wiring shall conform to AS/NZS 3000. In stores where there is a risk of corrosion, all electrical wiring and lighting shall conform to IP 65 in accordance with AS 60529.</p> <p>NOTE 2 Examples of oxidizing agents that cause corrosion are calcium hypochlorite and ammonium nitrate.</p> <p>(h) Where flammable dangerous goods are to be stored, and a Hazardous Zone could be present, the relevant requirements of AS/NZS 60079.10.1 and AS/NZS 60079.14 shall apply.</p> <p>NOTE 3 Where dangerous goods of Divisions 2.1, 4.1, 4.2 or 4.3, or Class 3, are stored in quantities greater than those given for minor storage in Section 2, it may be necessary to install hazardous area rated equipment in the store in accordance with the relevant part of AS/NZS 60079.14. This includes any materials handling equipment (e.g. forklift trucks) to be used in the store. Consideration should be given to building and operating the store to AS 1940.</p> <p>(i) Stores shall be provided with ventilation conforming to Clause 5.4.5.</p> | <p>h) A hazardous area classification has not been performed for the site.</p> <p>i) The store will require mechanical ventilation and is assessed in 5.4.5.3.</p> <p>j) n/a – no shelving.</p> <p>k) n/a – aerosols are not stored.</p> | |

| Clause | Requirement | Assessment | Comment / Recommendation | | | | | | | | | | | | |
|-----------------------------------|--|---|---|-------------------------------|-------------------|---|--------------------|-----|---------------------|---|------------------|------------|-----------------------------------|-----|--|
| | <p>(j) Where shelving is fitted, it shall be designed and installed so that residues cannot build up along ledges or in corners, and any spillage can be readily noticed and cleaned up.</p> <p>Except where designed as spill trays or compounds, any racks or shelves shall be designed so as to prevent any accumulation or pooling of liquid.</p> <p>(k) Aerosols shall be stored in strong mesh enclosures in accordance with Section 3.5.8.</p> | | | | | | | | | | | | | | |
| 5.4.2 | <p>Where exits are provided in accordance with the NCC, any door in a fire rated wall separating a dangerous goods store from another room shall have an FRL of at least -/120/30.</p> | <p>An emergency egress door is likely to be required.</p> | <ul style="list-style-type: none"> Emergency egress doors in the fire rated structure of the flammable liquid store shall have an FRL of -/120/30. | | | | | | | | | | | | |
| 5.4.3 | <p>Stores in which liquids are kept shall be provided with a system of spill containment such as a bund, or a means of diverting any spill to a compound within the premises. Spillage containment shall meet the following requirements:</p> <p>(a) Stores with a storage capacity of less than 10 000 L of liquid dangerous goods shall have a compound with volume at least 25 % of the total storage capacity and not less than the volume of the largest container. Stores with a storage capacity of 10 000 L or more of liquid dangerous goods needs to have a compound with volume at least 2 500 L plus 10 % of the storage capacity beyond 10 000 L, but not less than the volume of the largest container.</p> <p>NOTE 1 For example, a store with capacity for 8 000 L of liquid dangerous goods in packages not greater than 200 L needs a spill compound of volume 2 000 L.</p> <p>NOTE 2 For example, a store with capacity for 15 000 L of liquid dangerous goods in packages not greater than 200 L needs a spill compound of volume 3 000 L.</p> | <p>a) Bunding to be provided as follows:</p> <table border="1"> <thead> <tr> <th>Requirement</th> <th>Bund volume (m³)</th> </tr> </thead> <tbody> <tr> <td>Largest container</td> <td>1</td> </tr> <tr> <td>25% up to 10,000 L</td> <td>2.5</td> </tr> <tr> <td>10% beyond 10,000 L</td> <td>4</td> </tr> <tr> <td>Sub-total</td> <td>7.5</td> </tr> <tr> <td>20 minutes of sprinkler discharge</td> <td>TBD</td> </tr> </tbody> </table> <p>b) Recommendation made to capture sprinkler discharge.</p> <p>c) Bund will be constructed of concrete which is compatible with flammable liquids.</p> | Requirement | Bund volume (m ³) | Largest container | 1 | 25% up to 10,000 L | 2.5 | 10% beyond 10,000 L | 4 | Sub-total | 7.5 | 20 minutes of sprinkler discharge | TBD | <ul style="list-style-type: none"> The flammable liquid store shall be banded to contain 7.5 m³ + the discharge of sprinklers & drenchers operating for 20 minutes. Bund to be constructed of concrete or other material that is compatible with flammable liquids. The bund shall have a sump installed to enable the recovery of spilled material. |
| Requirement | Bund volume (m ³) | | | | | | | | | | | | | | |
| Largest container | 1 | | | | | | | | | | | | | | |
| 25% up to 10,000 L | 2.5 | | | | | | | | | | | | | | |
| 10% beyond 10,000 L | 4 | | | | | | | | | | | | | | |
| Sub-total | 7.5 | | | | | | | | | | | | | | |
| 20 minutes of sprinkler discharge | TBD | | | | | | | | | | | | | | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|---|--------------------------|
| | <p>(b) The capacity of the spillage containment compound shall be increased to include the output of any fire sprinklers over a 20 min period.</p> <p>(c) The bund shall be constructed of materials that are resistant to attack by the dangerous goods being stored.</p> <p>(d) Shields can be used to deflect any leaks into a compound. Where used, they shall be —</p> <p>(i) non-combustible;</p> <p>(ii) chemically resistant to the goods being stored; and</p> <p>(iii) positioned so that they do not impede ventilation.</p> <p>(e) A spillage containment compound shall be impervious to retain spillage and to enable recovery of any such spillage. The compound shall be chemically resistant and fire resistant as far as is necessary to perform its containment functions.</p> <p>(f) Chemicals that could be incompatible shall not be directed into a common compound.</p> <p>NOTE 1 For example, this includes the possible combination of ammonium nitrate and flammable or combustible liquids.</p> <p>(g) Spillage containment shall be designed so that substances that might react dangerously are not directed into the same compound.</p> <p>NOTE 2 Environmental legislative requirements also apply.</p> <p>(h) All surfaces of the spillage containment system shall be non-porous and chemically resistant to all stored liquids.</p> <p>(i) Discharges from the compound directed off site shall conform with the requirements of the responsible authority (e.g. to stormwater in conformance with local council and/or environment protection authority or to sewer in compliance with a trade waste agreement). Compounds may be drained to on</p> | <p>d) n/a – walls of the store direct spillage into the bund.</p> <p>e) Bund contains liquids.</p> <p>f) n/a - only flammable liquids stored.</p> <p>g) as above</p> <p>h) per (c)</p> <p>i) Bund contains spillage in bounds and does not discharge to stormwater.</p> | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------------------|---|---|---|
| | <p>site treatment facilities. Examples of drainage of any fire water or rainwater from the compound to off site include —</p> <ul style="list-style-type: none"> (i) via an interceptor or separator (approved by the authority if required); or (ii) after sampling and testing of the water to ensure it meets the discharge standards (iii) of the authority. | | |
| 5.4.4 | <p>Lighting shall be provided in accordance with the following requirements:</p> <p>(a) During the hours of operation lighting shall be sufficient to provide safe working conditions that include, but are not limited to, clear visibility of all markings on packages, signs, instruments and other necessary items.</p> <p>(b) Interior lighting shall be of at least the luminance specified in AS/NZS 1680.2.4.</p> <p>(c) Sufficient lighting shall be available on any of the premises' internal roads when they may be used by personnel at the premises.</p> <p>(d) Any lighting in a hazardous area shall be suitable to operate in that area. Refer to AS/NZS 60079.14.</p> | <p>Suitable lighting is to be provided. Recommendation made to capture the requirement.</p> | <ul style="list-style-type: none"> • Lighting shall be provided in the flammable liquid store to enable visual identification of liquids stored per AS/NZS 1680.2.4. • Electrical installation shall comply with the hazardous area classification zoning per the requirements of AS/NZS 60079.14:2022. |
| Ventilation | | | |
| 5.4.5.3 | <p>A mechanical ventilation system shall meet the following requirements:</p> <p>(a) The termination points within the store for both the fresh air supply and the draw-off ducts shall be —</p> <ul style="list-style-type: none"> (i) immediately above the upper limit of the spillage compound; (ii) on opposing walls; and (iii) of equal capacity. | <p>The flammable liquid store will require ventilation.</p> | <p>Ventilation in the general warehouse shall comply with the following requirements:</p> <ul style="list-style-type: none"> • Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|------------|--|
| | <p>The distance between any two inlets or any two outlets shall not exceed 5 m.</p> <p>NOTE 1 The registers should be located along the longest side of the building, in order to optimize their effect.</p> <p>NOTE 2 If a single-fan system is adopted, the fan should be in the exhaust duct.</p> <p>NOTE 3 The supply duct may be in the form of natural ventilation in an external wall at low level, meeting the requirements of this Clause (5.4.5).</p> <p>(b) If the ventilation system incorporates fans on both the supply and exhaust ducts, the capacities of the fans shall be adjusted so that the room is under negative pressure.</p> <p>(c) The system shall be capable of exhausting 0.3 m³ per square metre of floor area per minute or 5 m³/min, whichever is the greater, and the air velocity at the air entry register shall exceed 300 m/min.</p> <p>(d) The system shall be provided with an airflow failure warning device.</p> <p>NOTE 4 The warning should be able to be detected from outside the store.</p> <p>(e) Any intake or exhaust duct shall terminate in the open air at least 2 m from any opening into a building, or 4 m from the outlet of any chimney or flue at least 3 m above the ground. The external termination of any inlet duct shall be at least 5 m from the termination of any exhaust duct.</p> <p>(f) The system shall be designed so that it operates —</p> <p>(i) continuously; or</p> <p>(ii) whenever work is being carried out in the store; or</p> <p>(iii) whenever a person is in the store.</p> | | <ul style="list-style-type: none"> Exhaust registers shall be at low level (<500 mm above bund level). The exhaust rate of the system shall be 10 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Where ducting passes through an area outside of the flammable liquid store, it shall be protected by a material having an FRL of -/180/180. Should the dimensions of the store change, the required extraction rate shall be reviewed.  <p>The diagram illustrates a cross-section of a wall with an extraction duct. The duct is 2400mm wide and is positioned 2400mm from the ground. Arrows indicate the air flow direction into the duct. A legend identifies the green square as the extraction duct.</p> |

| Clause | Requirement | Assessment | Comment / Recommendation |
|-----------------------------|--|--|--|
| | <p>NOTE 5 The requirements for mechanical ventilation of stores containing dangerous goods are not adequately covered by AS 1668.2.</p> <p>(g) Where flammable substances are stored —</p> <p>(i) any duct which passes through a building other than the store shall be constructed of, or protected by, material having an FRL/FRR of at least –/180/180; and</p> <p>(ii) fan blades and nearby components shall be made of materials that have minimal potential for giving off sparks when struck.</p> <p>NOTE 5 A common enclosure may be used for both intake and exhaust ducts.</p> <p>NOTE 6 Unsatisfactory materials include steel with steel, or steel with aluminium-magnesium alloys.</p> <p>(h) Where gases or vapours lighter than air may be generated, natural roof ventilation shall also be installed to prevent accumulation at upper levels.</p> | | |
| General Requirements | | | |
| 5.5 | <p>Except for storage cabinets (as described in Clause 5.10), stores for packages of dangerous goods shall meet the following requirements and recommendations, as appropriate:</p> <p>(a) Packages shall be kept in a manner such that they cannot fall and cause spillage outside the compound.</p> <p>(b) Packages should be kept at least 600 mm from the inner edge of the bund wall, or restraints provided to prevent falls or spills outside the compound.</p> <p>(c) Clear access shall be available to the store.</p> <p>(d) In any location where packages are stored or handled, emergency shower, eyewash and hand washing facilities shall</p> | <p>a) Packages are block stacked inside a bund with walls.</p> <p>b) Packages are contained within an enclosure preventing loss of containment externally to the bund.</p> <p>c) Clear access provided to the store within the building.</p> <p>d) Mixed flammable liquid waste is stored; hence, loss of containment may occur. Safety shower and eye are required.</p> | <ul style="list-style-type: none"> • A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the flammable liquid store. • The forklifts shall be reviewed for compliance with the hazardous area zoning. |

| Clause | Requirement | Assessment | Comment / Recommendation |
|-----------------------------------|---|--|----------------------------|
| | <p>be provided as required by risk assessment which determines the number, location and type of equipment.</p> <p>In any location where packages are opened and their contents transferred, there shall be at least one emergency shower and eyewash within 10 m of, but not nearer than 2 m, to that location, on the same level or floor and readily accessible. Risk assessment may require additional facilities.</p> <p>(e) Such eyewash facilities and safety showers shall conform with AS 4775.</p> <p>(f) All relevant requirements of Clause 7.2 shall apply.</p> <p>(g) Where the dangerous goods could generate combustible dusts or flammable vapours or gases, a Hazardous Zone, as described in AS/NZS 60079.10.1 might exist. In such a case, all equipment used in the Hazardous Zone shall be suitable for use in that Zone and conform with AS 60079.14.</p> <p>(h) Any forklift truck used in Hazardous Zone shall meet the relevant requirements of AS 2359.12 for use in the relevant Zone. Any forklift trucks or similar vehicles that are not approved for use in Zone 2, or that do not conform with AS 2359.12, shall not be used unless both the store and the vehicle meet Appendix C of AS 1940.</p> <p>(i) Where a forklift truck is to be used in a storage area containing oxidizing agents (Class 5.1), the relevant requirements of AS 4326 shall apply.</p> | <p>e) Noted</p> <p>f) Site access is controlled as required.</p> <p>g) Recommendation made to prepare a hazardous area classification.</p> <p>h) Forklifts are to comply with the hazardous area zoning.</p> <p>i) n/a – no oxidising agents stored.</p> | |
| Security and Storage Areas | | | |
| 5.6 | <p>All non-retail storage areas shall be appropriately secured against access by unauthorized persons.</p> <p>Stricter requirements may be appropriate for dangerous goods that are security sensitive or that are regulated by legislation</p> | <p>Site access is restricted as required. There are no retail areas.</p> | <p>No action required.</p> |

| Clause | Requirement | Assessment | Comment / Recommendation |
|----------------------------|---|---|--------------------------|
| | <p>such as for firearms, drugs or explosives. These measures could include the following:</p> <ul style="list-style-type: none"> (a) Physical security and surveillance. (b) Background and criminal record checks for workers. (c) Keeping supply records such as the identity of the purchaser and the quantity supplied. (d) Systems such as inventory records and stocktaking to detect and report unexplained loss or theft. (e) Supplying only to legitimate customers and reporting suspicious transactions. | | |
| Storage of Packages | | | |
| 5.7 | <p>Vertical storage of packages should be conducted with a racking system that is designed, installed and maintained by a competent person. Pallets stored above ground level on a rack shall be tightly wrapped in plastic to ensure stability of the stack. Where packages are stacked without racking, the height of the stack shall be determined having regard to factors that include—</p> <ul style="list-style-type: none"> (a) the design, quality, condition and load bearing ability of the packagings; (b) the gross mass of the packages, accounting for the specific gravity of liquid dangerous goods; (c) the weight and safe working load of the pallets; (d) the presence of different types of packaging and pallets within a stack, each of which may have a different performance level and load bearing capacity; (e) the method of stacking; (f) the stability of the stack; and | <p>n/a – IBCs are blocked stacked. A review of available space to store the required volume of products has been conducted.</p> <p>The store has an approximate area of 33 m². An IBC has dimensions of 1.2 m x 1 m = 1.2 m². Allowing for 10% packing efficiency the area for an IBC is 1.2 x 1.1 = 1.32 m². Total IBC spaces in the store are 33/1.32 = 24 IBCs. Double stacked allows for 48 IBCs or 48,000 L. This aligns with the intend maximum storage of 50,000 L.</p> | No action required. |

| Clause | Requirement | Assessment | Comment / Recommendation |
|------------------------------|---|--|--|
| | <p>(g) the stability of packages on the pallets.</p> <p>All UN approved packagings for dangerous goods are tested to an equivalent height of 3 m. A stack of identical packagings shall not exceed that height. A stack of different packagings may have a different maximum height and require an assessment of packaging capability.</p> <p>Packages on stacked pallets shall be tightly wrapped in plastic to ensure stability of the stack. Packages should interlock with each other and cover the whole pallet as far as practicable. Other than the topmost pallet in a stack, the top layer of packages on each pallet shall present a uniform, horizontal surface.</p> | | |
| Storage of IBCs | | | |
| 5.8 | <p>Intermediate bulk containers (IBCs) of up to 1.6 m3 capacity may be stored in a package store provided that—</p> <p>(a) they are not connected to any piping or product delivery system;</p> <p>(b) the IBCs are stored at least 1 m from the edge of the spill compound, unless splash shields or baffles constructed from compatible, non-combustible materials are used; and</p> <p>(c) they conform with the ADG Code.</p> | <p>a) IBCs are not connected for use.</p> <p>b) Storage quantity requires full storage area thus IBCs would be within 1 m of the store opening.</p> <p>c) IBCs are received from customers and are expected to be compliant with ADG.</p> | <ul style="list-style-type: none"> • The flammable liquid store shall be designed to extend 1 m beyond the intend storage area of the IBCs. • The IBC storage area in the flammable liquid store shall be delineated via markings to show the maximum storage area for the IBCs. |
| Offices within Stores | | | |
| 5.11 | <p>Where an office is inside a dangerous goods store, the following requirements shall apply:</p> <p>(a) The office shall be provided with a means of escape other than through the area where the dangerous goods are stored.</p> | <p>a) There is no office in the flammable liquid store.</p> <p>b) Extraction ventilation prevents vapours migrating into the main area of Unit 2.</p> <p>c) The office area in Unit 2 is not in proximity to the flammable liquid store.</p> | No action required. |

| Clause | Requirement | Assessment | Comment / Recommendation |
|------------------------|--|---|---|
| | (b) Personnel employed in the office shall not be exposed to any vapours from the store. (c) Where the store contains any flammable or toxic dangerous goods, the office shall be ventilated so that its air pressure cannot fall below that of the store. (d) Access to the store shall be limited to authorized persons. | d) Site access is secured. | |
| Fire Protection | | | |
| Table 9.3 | From Table 9.3, the following fire protection is required for a store containing >50,000 L and <100,000 L: <ul style="list-style-type: none"> • Fire extinguishers • Hose reels • Hydrants | The site has hydrants. It is unclear whether hose reels or extinguishers have been provided for the store. While the building is sprinkler protected, the flammable liquid compartment would not trigger the requirements for a sprinkler system within the storage area. Inclusion of a sprinkler system may exacerbate the hazard by overflowing the bund enabling flammable liquids to spread throughout the building. A foam pouring connection would enable Fire & Rescue NSW to discharge foam directly into the store to extinguish the fire without requiring exposure to the hazard. | <ul style="list-style-type: none"> • Fire hose reels with foam making capabilities shall be provided for the flammable liquid store. • A dry powder fire extinguisher shall be provided for the flammable liquid store. • A foam pouring connection shall be installed in the fire wall to enable application of foam into the flammable liquid store. • The site shall store sufficient foam for at least one (1) hour of application. |

4.3 Mixed Storage

The bulk of Unit 2 will operate as a mixed store for a range of DG classes which have been summarised in **Table 4-4**.

Table 4-4: Classes and Quantities of Goods Stored in Unit 2 (Excluding Flammable Liquid Store)

| Class | Description | PG | Quantity (kg) |
|-------|-----------------------|----------|---------------|
| 4.1 | Flammable solids | II & III | 20,000 |
| 5.1 | Oxidising agents | II & III | 20,000 |
| 6.1 | Toxic substances | I | 1 |
| | | II & III | 20,000 |
| 6.2 | Infectious substances | - | 20,000 |
| 8 | Corrosive substances | I | 5 |
| | | II & III | 50,000 |
| 9 | Miscellaneous DG | III | 40,000 |

The package sizes stored in the balance of Unit 2 store exceed the limits for retail packaging; hence, the store is subject to the package store requirements of AS 3833:2024 (Ref. [2]). A clause-by-clause assessment of the site has been conducted in **Table 4-6** against AS 3833:2024.

A summary of the recommendations for the balance of Unit 2 is provided below in **Table 4-5**.

Table 4-5: Unit 2 Recommendations

| ID | Recommendation |
|-----|---|
| MS1 | <ul style="list-style-type: none"> The DG storages shall have FRL 240/240/240 walls. The walls shall extend 1 m above the height of the top package. The maximum storage height shall be identified on the walls of the individual stores. |
| MS2 | <ul style="list-style-type: none"> The Class 5 store shall contain 4.5 m³. The Class 6 store shall contain 6.6 m³. The Class 8 store shall contain 4.9 m³. The Class 9 store shall contain 6.5 m³. Each DG storage shall have a sump to enable recovery of spilled liquids. Unit 2 shall be bunded to contain 20 minutes of sprinkler discharge. The Unit 2 shall have a sump to enable the recovery of potentially contaminated water. The bunded areas shall be constructed of materials compatible with the characteristics of the materials being stored. |
| MS3 | <ul style="list-style-type: none"> Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). Exhaust registers shall be at low level (<500 mm above bund level). |

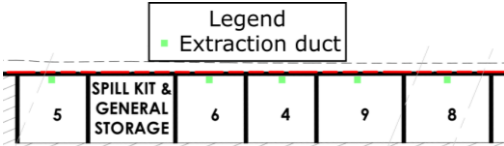
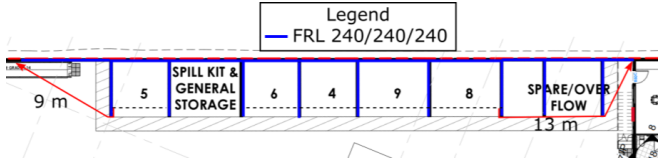
| ID | Recommendation |
|-----|---|
| | <ul style="list-style-type: none"> The exhaust rate of the Class 4 store shall be 6 m³/min. The exhaust rate of the Class 5 store shall be 5 m³/min. The exhaust rate of the Class 6 store shall be 5 m³/min. The exhaust rate of the Class 8 store shall be 6 m³/min. The exhaust rate of the Class 9 store shall be 5 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Should the dimensions of the store change, the required extraction rate shall be reviewed. <div style="text-align: center;">  </div> |
| MS4 | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the mixed DG stores. |
| MS5 | <ul style="list-style-type: none"> Where triple stacking is to be adopted, a risk assessment shall be conducted to confirm whether this is achievable. Should triple stacking be adopted, the fire wall design shall be adjusted to ensure a 1 m wall height above the highest IBC. |
| MS6 | <ul style="list-style-type: none"> The storage areas shall be designed such that the IBCs are at least 1 m away from the opening to the DG store. |
| MS7 | <ul style="list-style-type: none"> Additional exits from the office / laboratory areas shall be provided such that evacuation does not occur through the main Unit 2 building. |
| MS8 | <ul style="list-style-type: none"> Fire hose reels shall be installed to provide full coverage to the DG stores. A dry powder fire extinguisher(s) shall be provided such that the maximum travel distance to an extinguisher is 15 m. The sprinkler system shall be reviewed to confirm that is adequate to provide protection to the commodities stored. |

Table 4-6: Mixed Class Storage per AS 3833:2024

| Clause | Requirement | Assessment | Comment / Recommendation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|--|--|--------------------------|--------------|--|--|-----------|------------|----------|-----|---|---|---|-----|----------------|---|---|-----|----------------|---|---|-----|----------------|---|---|---|---|------|---|---|------------------|-------|---|---|
| Separation and Segregation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.3.3 | <p>Stores shall be separated from protected places and boundaries as required by Clause 6.2 of this document.</p> <p>Segregation shall be as required by Clause 6.3.</p> | <p>The separation required to offsite protected places and property boundary are summarised in the following table:</p> <table border="1"> <thead> <tr> <th rowspan="2">Area</th> <th colspan="3">Distance (m)</th> </tr> <tr> <th>Onsite PP</th> <th>Offsite PP</th> <th>Boundary</th> </tr> </thead> <tbody> <tr> <td>4.1</td> <td>9</td> <td>9</td> <td>3</td> </tr> <tr> <td>5.1</td> <td>3[^]</td> <td>9</td> <td>3</td> </tr> <tr> <td>6.1</td> <td>3[^]</td> <td>9</td> <td>3</td> </tr> <tr> <td>6.2</td> <td>3[^]</td> <td>9</td> <td>3</td> </tr> <tr> <td>8</td> <td>3</td> <td>12.8</td> <td>3</td> </tr> <tr> <td>9</td> <td>7.5[*]</td> <td>11.75</td> <td>3</td> </tr> </tbody> </table> <p>[^]restricted per Clause 6.2.4(c)</p> <p>[*]Restricted per Clause 6.2.4(b)</p> <p>The separation distance to boundaries and offsite places cannot be met; hence, fire rated walls will be required to achieve the required separation.</p> <p>The individual classes are not considered protected places from each other under the standard. Therefore, discrete storage of DG classes providing 3 m separation around a fire wall adequately prevents interaction.</p> <p>The standard requires fire walls to extend 1 m above the highest package. Depending on the characteristics of a class, a variable FRL can be provided; however, for</p> | Area | Distance (m) | | | Onsite PP | Offsite PP | Boundary | 4.1 | 9 | 9 | 3 | 5.1 | 3 [^] | 9 | 3 | 6.1 | 3 [^] | 9 | 3 | 6.2 | 3 [^] | 9 | 3 | 8 | 3 | 12.8 | 3 | 9 | 7.5 [*] | 11.75 | 3 | <ul style="list-style-type: none"> The DG storages shall have FRL 240/240/240 walls. The walls shall extend 1 m above the height of the top package. The maximum storage height shall be identified on the walls of the individual stores. |
| Area | Distance (m) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Onsite PP | Offsite PP | Boundary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 | 9 | 9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1 | 3 [^] | 9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.1 | 3 [^] | 9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.2 | 3 [^] | 9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 3 | 12.8 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 7.5 [*] | 11.75 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--|---|---|--------------------------|
| | | <p>simplicity and for conservatism, all walls are nominated as FRL 240/240/240.</p>  | |
| Design & Construction of Stores | | | |
| 5.4.1 | <p>The following requirements shall apply to the design and construction of stores for mixed classes of dangerous goods:</p> <p>(a) Except for storage cabinets, stores shall be on a floor that has direct access from ground level on at least one side.</p> <p>(b) Stores shall be designed, constructed and operated in a manner that will allow the housekeeping requirements of Clause 7.5 to be carried out effectively.</p> <p>(c) Stores shall be constructed of non-combustible materials that are compatible with the dangerous goods being kept. Surfaces may be treated to ensure compatibility with, or resistance to attack by the dangerous goods to be kept in the store.</p> <p>NOTE 1 Some corrosive substances and some oxidizing agents can attack surfaces.</p> <p>(d) Where corrosive substances are stored, all materials of construction shall have corrosion resistance appropriate to the substances being</p> | <p>a) the storages are located on ground level.</p> <p>b) Stores are accessible for housekeeping.</p> <p>c) The building is constructed of non-combustible materials.</p> <p>d) n/a – IBCs are block stacked.</p> <p>e) noted</p> <p>f) the building has adequate lighting for operational needs.</p> <p>g) Electrical wiring is installed per AS/NZS 3000.</p> <p>h) n/a - no flammable liquid or gas storages in this portion of the building.</p> <p>i) The stores will require mechanical ventilation and is assessed in 5.4.5.3.</p> <p>j) n/a – block stacked, no shelves.</p> <p>k) n/a – aerosols are not stored.</p> | No action required. |

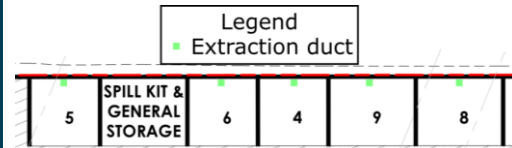
| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|------------|--------------------------|
| | <p>kept or be lined with corrosion-resistant materials.</p> <p>(e) Any special storage requirements (e.g. those given on SDS, labels and other product information) shall be met.</p> <p>(f) Lighting shall meet the requirements of Clause 5.4.4.</p> <p>(g) Electrical wiring shall conform to AS/NZS 3000. In stores where there is a risk of corrosion, all electrical wiring and lighting shall conform to IP 65 in accordance with AS 60529.</p> <p>NOTE 2 Examples of oxidizing agents that cause corrosion are calcium hypochlorite and ammonium nitrate.</p> <p>(h) Where flammable dangerous goods are to be stored, and a Hazardous Zone could be present, the relevant requirements of AS/NZS 60079.10.1 and AS/NZS 60079.14 shall apply.</p> <p>NOTE 3 Where dangerous goods of Divisions 2.1, 4.1, 4.2 or 4.3, or Class 3, are stored in quantities greater than those given for minor storage in Section 2, it may be necessary to install hazardous area rated equipment in the store in accordance with the relevant part of AS/NZS 60079.14. This includes any materials handling equipment (e.g. forklift trucks) to be used in the store. Consideration should be given to building and operating the store to AS 1940.</p> | | |

| Clause | Requirement | Assessment | Comment / Recommendation | | | | | | | | | | | | | | | | | | |
|-----------|--|--|--------------------------|--------------------------|-------------------------------|-----|----|---------------------|-----|----|-----|-----------|----|-----|---|----|-----|---|----|-----|---|
| | <p>(i) Stores shall be provided with ventilation conforming to Clause 5.4.5.</p> <p>(j) Where shelving is fitted, it shall be designed and installed so that residues cannot build up along ledges or in corners, and any spillage can be readily noticed and cleaned up.</p> <p>Except where designed as spill trays or compounds, any racks or shelves shall be designed so as to prevent any accumulation or pooling of liquid.</p> <p>(k) Aerosols shall be stored in strong mesh enclosures in accordance with Section 3.5.8.</p> | | | | | | | | | | | | | | | | | | | | |
| 5.4.2 | Where exits are provided in accordance with the NCC, any door in a fire rated wall separating a dangerous goods store from another room shall have an FRL of at least –/120/30. | n/a – no egress doors in fire walls. | No action required. | | | | | | | | | | | | | | | | | | |
| 5.4.3 | <p>Stores in which liquids are kept shall be provided with a system of spill containment such as a bund, or a means of diverting any spill to a compound within the premises. Spillage containment shall meet the following requirements:</p> <p>(a) Stores with a storage capacity of less than 10 000 L of liquid dangerous goods shall have a compound with volume at least 25 % of the total storage capacity and not less than the volume of the largest container. Stores with a storage capacity of 10 000 L or more of liquid dangerous goods needs to have a compound with volume at least 2 500 L plus 10 % of the</p> | <p>a) Bunding to be provided based on largest package (1 m³) + 25% up to 10,000 L + 10% beyond 10,000 L. Density assumed as 1,000 kg/m³ except for Class 8s which 1,200 kg/m³ has been used.</p> <table border="1"> <thead> <tr> <th>Class</th> <th>Stored (m³)</th> <th>Bund volume (m³)</th> </tr> </thead> <tbody> <tr> <td>4.1</td> <td>20</td> <td>n/a – solid product</td> </tr> <tr> <td>5.1</td> <td>20</td> <td>4.5</td> </tr> <tr> <td>6.1 & 6.2</td> <td>41</td> <td>6.6</td> </tr> <tr> <td>8</td> <td>24</td> <td>4.9</td> </tr> <tr> <td>9</td> <td>40</td> <td>6.5</td> </tr> </tbody> </table> | Class | Stored (m ³) | Bund volume (m ³) | 4.1 | 20 | n/a – solid product | 5.1 | 20 | 4.5 | 6.1 & 6.2 | 41 | 6.6 | 8 | 24 | 4.9 | 9 | 40 | 6.5 | <p>The following recommendations have been made for the bunding:</p> <ul style="list-style-type: none"> • The Class 5 store shall contain 4.5 m³. • The Class 6 store shall contain 6.6 m³. • The Class 8 store shall contain 4.9 m³. • The Class 9 store shall contain 6.5 m³. • Each DG storage shall have a sump to enable recovery of spilled liquids. • Unit 2 shall be banded to contain 20 minutes of sprinkler discharge. • The Unit 2 shall have a sump to enable the recovery of potentially contaminated water. |
| Class | Stored (m ³) | Bund volume (m ³) | | | | | | | | | | | | | | | | | | | |
| 4.1 | 20 | n/a – solid product | | | | | | | | | | | | | | | | | | | |
| 5.1 | 20 | 4.5 | | | | | | | | | | | | | | | | | | | |
| 6.1 & 6.2 | 41 | 6.6 | | | | | | | | | | | | | | | | | | | |
| 8 | 24 | 4.9 | | | | | | | | | | | | | | | | | | | |
| 9 | 40 | 6.5 | | | | | | | | | | | | | | | | | | | |

| Clause | Requirement | Assessment | Comment / Recommendation | | | | | | |
|---------------------|--|--|--------------------------|--|--|--------|---|--------------------------------|---|
| | <p>storage capacity beyond 10 000 L, but not less than the volume of the largest container.</p> <p>NOTE 1 For example, a store with capacity for 8 000 L of liquid dangerous goods in packages not greater than 200 L needs a spill compound of volume 2 000 L.</p> <p>NOTE 2 For example, a store with capacity for 15 000 L of liquid dangerous goods in packages not greater than 200 L needs a spill compound of volume 3 000 L.</p> <p>(b) The capacity of the spillage containment compound shall be increased to include the output of any fire sprinklers over a 20 min period.</p> <p>(c) The bund shall be constructed of materials that are resistant to attack by the dangerous goods being stored.</p> <p>(d) Shields can be used to deflect any leaks into a compound. Where used, they shall be —</p> <p>(i) non-combustible;</p> <p>(ii) chemically resistant to the goods being stored; and</p> <p>(iii) positioned so that they do not impede ventilation.</p> <p>(e) A spillage containment compound shall be impervious to retain spillage and to enable recovery of any such spillage. The compound shall be chemically resistant and fire resistant as far as is necessary to perform its containment functions.</p> | <table border="1"> <thead> <tr> <th colspan="3">Sprinkler Discharge</th> </tr> </thead> <tbody> <tr> <td>Unit 2</td> <td>-</td> <td>TBC – 20 minutes of discharge.</td> </tr> </tbody> </table> <p>b) The bund for Unit 2 is required to contain 20 minutes of sprinkler water.</p> <p>c) noted</p> <p>d) n/a</p> <p>e) noted</p> <p>f) Chemicals are stored separately.</p> <p>g) as above</p> <p>h) noted</p> <p>i) Water from emergencies will be tested prior to discharge.</p> | Sprinkler Discharge | | | Unit 2 | - | TBC – 20 minutes of discharge. | <ul style="list-style-type: none"> The bunded areas shall be constructed of materials compatible with the characteristics of the materials being stored. |
| Sprinkler Discharge | | | | | | | | | |
| Unit 2 | - | TBC – 20 minutes of discharge. | | | | | | | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|------------|--------------------------|
| | <p>(f) Chemicals that could be incompatible shall not be directed into a common compound.</p> <p>NOTE 1 For example, this includes the possible combination of ammonium nitrate and flammable or combustible liquids.</p> <p>(g) Spillage containment shall be designed so that substances that might react dangerously are not directed into the same compound.</p> <p>NOTE 2 Environmental legislative requirements also apply.</p> <p>(h) All surfaces of the spillage containment system shall be non-porous and chemically resistant to all stored liquids.</p> <p>(i) Discharges from the compound directed off site shall conform with the requirements of the responsible authority (e.g. to stormwater in conformance with local council and/or environment protection authority or to sewer in compliance with a trade waste agreement). Compounds may be drained to on site treatment facilities. Examples of drainage of any fire water or rainwater from the compound to off site include —</p> <ul style="list-style-type: none"> (iv) via an interceptor or separator (approved by the authority if required); or (v) after sampling and testing of the water to ensure it meets the discharge standards (vi) of the authority. | | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------------------|---|--|---|
| 5.4.4 | <p>Lighting shall be provided in accordance with the following requirements:</p> <p>(a) During the hours of operation lighting shall be sufficient to provide safe working conditions that include, but are not limited to, clear visibility of all markings on packages, signs, instruments and other necessary items.</p> <p>(b) Interior lighting shall be of at least the luminance specified in AS/NZS 1680.2.4.</p> <p>(c) Sufficient lighting shall be available on any of the premises' internal roads when they may be used by personnel at the premises.</p> <p>(d) Any lighting in a hazardous area shall be suitable to operate in that area. Refer to AS/NZS 60079.14.</p> | <p>Suitable lighting is provided in the warehouse.</p> <p>No flammable gases or liquids stored in this portion of the warehouse.</p> | <p>No action required.</p> |
| Ventilation | | | |
| 5.4.5.3 | <p>A mechanical ventilation system shall meet the following requirements:</p> <p>(a) The termination points within the store for both the fresh air supply and the draw-off ducts shall be —</p> <p>(i) immediately above the upper limit of the spillage compound;</p> <p>(ii) on opposing walls; and</p> <p>(iii) of equal capacity.</p> <p>The distance between any two inlets or any two outlets shall not exceed 5 m.</p> | <p>The mixed DG stores will require ventilation. Recommendations have been made.</p> | <p>Ventilation in the general warehouse shall comply with the following requirements:</p> <ul style="list-style-type: none"> • Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). • Exhaust registers shall be at low level (<500 mm above bund level). • The exhaust rate of the Class 4 store shall be 6 m³/min. • The exhaust rate of the Class 5 store shall be 5 m³/min. • The exhaust rate of the Class 6 store shall be 5 m³/min. |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|------------|---|
| | <p>NOTE 1 The registers should be located along the longest side of the building, in order to optimize their effect.</p> <p>NOTE 2 If a single-fan system is adopted, the fan should be in the exhaust duct.</p> <p>NOTE 3 The supply duct may be in the form of natural ventilation in an external wall at low level, meeting the requirements of this Clause (5.4.5).</p> <p>(b) If the ventilation system incorporates fans on both the supply and exhaust ducts, the capacities of the fans shall be adjusted so that the room is under negative pressure.</p> <p>(c) The system shall be capable of exhausting 0.3 m³ per square metre of floor area per minute or 5 m³/min, whichever is the greater, and the air velocity at the air entry register shall exceed 300 m/min.</p> <p>(d) The system shall be provided with an airflow failure warning device.</p> <p>NOTE 4 The warning should be able to be detected from outside the store.</p> <p>(e) Any intake or exhaust duct shall terminate in the open air at least 2 m from any opening into a building, or 4 m from the outlet of any chimney or flue at least 3 m above the ground. The external termination of any inlet duct shall be at least 5 m from the termination of any exhaust duct.</p> | | <ul style="list-style-type: none"> The exhaust rate of the Class 8 store shall be 6 m³/min. The exhaust rate of the Class 9 store shall be 5 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Should the dimensions of the store change, the required extraction rate shall be reviewed. <div style="text-align: center;">  <p>Legend ■ Extraction duct</p> </div> |

| Clause | Requirement | Assessment | Comment / Recommendation |
|-----------------------------|--|------------|--------------------------|
| | <p>(f) The system shall be designed so that it operates —</p> <ul style="list-style-type: none"> (i) continuously; or (ii) whenever work is being carried out in the store; or (iii) whenever a person is in the store. <p>NOTE 5 The requirements for mechanical ventilation of stores containing dangerous goods are not adequately covered by AS 1668.2.</p> <p>(g) Where flammable substances are stored —</p> <ul style="list-style-type: none"> (i) any duct which passes through a building other than the store shall be constructed of, or protected by, material having an FRL/FRR of at least –/180/180; and (ii) fan blades and nearby components shall be made of materials that have minimal potential for giving off sparks when struck. <p>NOTE 5 A common enclosure may be used for both intake and exhaust ducts.</p> <p>NOTE 6 Unsatisfactory materials include steel with steel, or steel with aluminium-magnesium alloys.</p> <p>(h) Where gases or vapours lighter than air may be generated, natural roof ventilation shall also be installed to prevent accumulation at upper levels.</p> | | |
| <p>General Requirements</p> | | | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|--|---|
| 5.5 | <p>Except for storage cabinets (as described in Clause 5.10), stores for packages of dangerous goods shall meet the following requirements and recommendations, as appropriate:</p> <p>(a) Packages shall be kept in a manner such that they cannot fall and cause spillage outside the compound.</p> <p>(b) Packages should be kept at least 600 mm from the inner edge of the bund wall, or restraints provided to prevent falls or spills outside the compound.</p> <p>(c) Clear access shall be available to the store.</p> <p>(d) In any location where packages are stored or handled, emergency shower, eyewash and hand washing facilities shall be provided as required by risk assessment which determines the number, location and type of equipment.</p> <p>In any location where packages are opened and their contents transferred, there shall be at least one emergency shower and eyewash within 10 m of, but not nearer than 2 m, to that location, on the same level or floor and readily accessible. Risk assessment may require additional facilities.</p> <p>(e) Such eyewash facilities and safety showers shall conform with AS 4775.</p> <p>(f) All relevant requirements of Clause 7.2 shall apply.</p> <p>(g) Where the dangerous goods could generate combustible dusts or flammable vapours or</p> | <p>a) IBCs are block stacked.</p> <p>b) Packages contained within the general warehouse bunding preventing offsite impact.</p> <p>c) Clear access provided to each DG store.</p> <p>d) Based on wastes stored, safety shower and eye wash should be available.</p> <p>e) Recommendation made to comply.</p> <p>f) Site access is controlled as required.</p> <p>g) DG stores do not contain flammable gases or liquids.</p> <p>h) n/a – no hazardous zones in the mixed portion of the unit.</p> <p>i) Operational requirements relating to forklifts charging, refuelled or idling in an oxidising store. None of these activities occur in proximity to the store and the store is not large enough to park the forklift in when material is stored.</p> | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the mixed DG stores. |

| Clause | Requirement | Assessment | Comment / Recommendation |
|-----------------------------------|--|---|--------------------------|
| | <p>gases, a Hazardous Zone, as described in AS/NZS 60079.10.1 might exist. In such a case, all equipment used in the Hazardous Zone shall be suitable for use in that Zone and conform with AS 60079.14.</p> <p>(h) Any forklift truck used in Hazardous Zone shall meet the relevant requirements of AS 2359.12 for use in the relevant Zone. Any forklift trucks or similar vehicles that are not approved for use in Zone 2, or that do not conform with AS 2359.12, shall not be used unless both the store and the vehicle meet Appendix C of AS 1940.</p> <p>(i) Where a forklift truck is to be used in a storage area containing oxidizing agents (Class 5.1), the relevant requirements of AS 4326 shall apply.</p> | | |
| Security and Storage Areas | | | |
| 5.6 | <p>All non-retail storage areas shall be appropriately secured against access by unauthorized persons.</p> <p>Stricter requirements may be appropriate for dangerous goods that are security sensitive or that are regulated by legislation such as for firearms, drugs or explosives. These measures could include the following:</p> <p>(a) Physical security and surveillance.</p> <p>(b) Background and criminal record checks for workers.</p> | Site access is restricted as required. There are no retail areas. | No action required. |

| Clause | Requirement | Assessment | Comment / Recommendation | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|--|--|--------------------------|--------------------------|------------------------|------------|-----|----|----|----|-----|----|----|----|-----------|----|----|----|---|----|----|----|---|----|----|----|---|
| | <p>(c) Keeping supply records such as the identity of the purchaser and the quantity supplied.</p> <p>(d) Systems such as inventory records and stocktaking to detect and report unexplained loss or theft.</p> <p>(e) Supplying only to legitimate customers and reporting suspicious transactions.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Storage of Packages | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.7 | <p>Vertical storage of packages should be conducted with a racking system that is designed, installed and maintained by a competent person. Pallets stored above ground level on a rack shall be tightly wrapped in plastic to ensure stability of the stack.</p> <p>Where packages are stacked without racking, the height of the stack shall be determined having regard to factors that include—</p> <p>(a) the design, quality, condition and load bearing ability of the packagings;</p> <p>(b) the gross mass of the packages, accounting for the specific gravity of liquid dangerous goods;</p> <p>(c) the weight and safe working load of the pallets;</p> <p>(d) the presence of different types of packaging and pallets within a stack, each of which may have a different performance level and load bearing capacity;</p> <p>(e) the method of stacking;</p> | <p>n/a – IBCs are blocked stacked. A review of available space to store the required volume of products has been conducted.</p> <p>The store has an approximate area of 33 m². Available space for each store has been assessed to confirm capacities based on double stacking of IBCs.</p> <p>An IBC has dimensions of 1.2 m x 1 m = 1.2 m². Allowing for 10% packing efficiency the area for an IBC is 1.2 x 1.1 = 1.32 m².</p> <table border="1"> <thead> <tr> <th>Class</th> <th>Stored (m³)</th> <th>Area (m²)</th> <th>IBC Spaces</th> </tr> </thead> <tbody> <tr> <td>4.1</td> <td>20</td> <td>20</td> <td>15</td> </tr> <tr> <td>5.1</td> <td>20</td> <td>16</td> <td>12</td> </tr> <tr> <td>6.1 & 6.2</td> <td>41</td> <td>16</td> <td>12</td> </tr> <tr> <td>8</td> <td>24</td> <td>20</td> <td>15</td> </tr> <tr> <td>9</td> <td>40</td> <td>16</td> <td>12</td> </tr> </tbody> </table> | Class | Stored (m ³) | Area (m ²) | IBC Spaces | 4.1 | 20 | 20 | 15 | 5.1 | 20 | 16 | 12 | 6.1 & 6.2 | 41 | 16 | 12 | 8 | 24 | 20 | 15 | 9 | 40 | 16 | 12 | <ul style="list-style-type: none"> Where triple stacking is to be adopted, a risk assessment shall be conducted to confirm whether this is achievable. Should triple stacking be adopted, the fire wall design shall be adjusted to ensure a 1 m wall height above the highest IBC. |
| Class | Stored (m ³) | Area (m ²) | IBC Spaces | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 | 20 | 20 | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1 | 20 | 16 | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.1 & 6.2 | 41 | 16 | 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 24 | 20 | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 40 | 16 | 12 | | | | | | | | | | | | | | | | | | | | | | | | |

| Clause | Requirement | Assessment | Comment / Recommendation |
|--------|---|--|--------------------------|
| | <p>(f) the stability of the stack; and (g) the stability of packages on the pallets.</p> <p>All UN approved packagings for dangerous goods are tested to an equivalent height of 3 m. A stack of identical packagings shall not exceed that height. A stack of different packagings may have a different maximum height and require an assessment of packaging capability.</p> <p>Packages on stacked pallets shall be tightly wrapped in plastic to ensure stability of the stack. Packages should interlock with each other and cover the whole pallet as far as practicable. Other than the topmost pallet in a stack, the top layer of packages on each pallet shall present a uniform, horizontal surface.</p> | <p>The Class 6 and 9 stores will have inadequate storage if IBCs are restricted to double stacking. Triple stacking of IBCs would also fall short for these storages.</p> <p>Consider reducing the storage volumes for these stores or undertake risk assessment to explore the potential for triple stacking.</p> | |

Storage of IBCs

| | | | |
|-----|--|--|--|
| 5.8 | <p>Intermediate bulk containers (IBCs) of up to 1.6 m³ capacity may be stored in a package store provided that—</p> <p>(a) they are not connected to any piping or product delivery system;</p> <p>(b) the IBCs are stored at least 1 m from the edge of the spill compound, unless splash shields or baffles constructed from compatible, non-combustible materials are used; and</p> <p>(c) they conform with the ADG Code.</p> | <p>a) IBCs are not connected for use.</p> <p>b) The full allocated area for a store would be required to achieve the envisaged volumes; hence, IBCs would be within 1 m of the edge of the bund.</p> <p>c) IBCs are received from customers and are expected to be compliant with ADG.</p> | <ul style="list-style-type: none"> The storage areas shall be designed such that the IBCs are at least 1 m away from the opening to the DG store. |
|-----|--|--|--|

Offices within Stores

| Clause | Requirement | Assessment | Comment / Recommendation |
|------------------------|--|---|---|
| 5.11 | <p>Where an office is inside a dangerous goods store, the following requirements shall apply:</p> <p>(a) The office shall be provided with a means of escape other than through the area where the dangerous goods are stored.</p> <p>(b) Personnel employed in the office shall not be exposed to any vapours from the store.</p> <p>(c) Where the store contains any flammable or toxic dangerous goods, the office shall be ventilated so that its air pressure cannot fall below that of the store.</p> <p>(d) Access to the store shall be limited to authorized persons.</p> | <p>a) An office is located in Unit 2. The only escape is through the main building where DGs are stored.</p> <p>b) Extractive ventilation recommended for each DG store; hence, vapours would not be expected to enter the office / laboratory areas.</p> <p>c) Based on the location of the Class 3 and 6.1 products, vapours from this area would be unable to migrate to the office area as there are numerous extractive sources between the store and the office. Thus it is considered that the risks are minimised adequately.</p> <p>d) Site access is secured.</p> | <ul style="list-style-type: none"> Additional exits from the office / laboratory areas shall be provided such that evacuation does not occur through the main Unit 2 building. |
| Fire Protection | | | |
| Table 9.3 | <p>For the purposes of fire protection, Class 9 has been assumed to be a combustible liquid. Therefore, the total mass stored for fire protection assessment includes Class 4.1, 5.1, and 9 totalling 80,000 kg. From Table 9.3, the following fire protection is required for a store containing >50,000 kg and <100,000 kg:</p> <ul style="list-style-type: none"> Fire extinguishers Hose reels Hydrants | <p>The site has hydrants. It is unclear whether hose reels or extinguishers have been provided for the store.</p> <p>The building is sprinkler protected which exceeds the minimum requirements.</p> | <ul style="list-style-type: none"> Fire hose reels shall be installed to provide full coverage to the DG stores. A dry powder fire extinguisher(s) shall be provided such that the maximum travel distance to an extinguisher is 15 m. The sprinkler system shall be reviewed to confirm that is adequate to provide protection to the commodities stored. |

5.0 Work Health and Safety Regulation 2025

5.1 Introduction

In addition to the requirements of the relevant standards, a Person Conducting a Business or Undertaking (PCBU) must also satisfy several obligations outlined in the Work Health and Safety Regulation 2025 (Ref. [1]). The relevant requirements are dependent on the quantities of DGs stored on site. The assessment has been conducted on the maximum possible DG storage quantities for conservatism. Unless noted, a density of 1,000 kg/m³ has been adopted.

The DG quantities and the placard and manifest thresholds are outlined in **Table 5-1**. As a number of the DG storages exceed the placard thresholds, the site would be classified as a Manifest site.

Table 5-1: WHS Placard and Manifest Threshold Quantities

| Class | PG | Stored Qty (L) | Threshold Qty (kg or L) | | Outcome |
|-------|----------|---------------------|-------------------------|----------|----------|
| | | | Placard | Manifest | |
| 3 | II & III | 50,000 | 250 | 2,500 | Manifest |
| 4.1 | II & III | 20,000 | 1,000 | 10,000 | Manifest |
| 5.1 | II & III | 20,000 | 250 | 2,500 | Manifest |
| 6.1 | II & III | 40,000 | 250 | 2,500 | Manifest |
| 8 | II & III | 62,400 [^] | 250 | 2,500 | Manifest |
| 9 | III | 40,000 | - | - | - |
| C1 | - | 1,000 | 10,000 | 100,000 | - |

*Density of 800 kg/m³

[^]Density of 1,200 kg/m³

5.2 Applicable WHS Clauses

The applicable clauses for a Manifest site are outlined in **Table 5-2**.

Table 5-2: Relevant WHS Clauses and Requirements

| Clause | WHS Requirement |
|--------|--|
| 346 | <p>A Hazardous Chemicals [<i>Dangerous Goods</i>] register shall be prepared which must include;</p> <ul style="list-style-type: none"> • A list of hazardous chemicals stored, used or handled • The current Safety Data Sheet (SDS) for DGs stored, used or handled, unless the hazardous chemical is a consumer product (e.g. hand sanitiser). <p>The register must be readily accessible to workers involved in handling or storing the chemicals, and anyone who is likely to be affected by the chemicals.</p> |
| 347 | <p>A manifest of Schedule 11 Hazardous Chemicals [<i>Dangerous Goods</i>] shall be prepared in accordance with Schedule 12 of the WHS Regulations.</p> <p>A scale plan of the workplace shall be prepared in accordance with Schedule 12 of the WHS Regulations.</p> <p>The manifest must be kept;</p> |

| Clause | WHS Requirement |
|-----------|---|
| | <ul style="list-style-type: none"> (a) In a place determined in agreement with the primary emergency services organisation; and (b) Available for inspection under the Act; and (c) Readily accessible to the emergency services organisation. |
| 348 | <p>PCBU shall give the regular written notification of intent to exceed manifest quantities of Schedule 11 hazardous chemicals. Notice must be given;</p> <ul style="list-style-type: none"> (a) Immediately after the person knows when the Schedule 11 hazardous chemicals are first to be used or at least 14 days before that first use, handling or storage (whichever is earlier); and (b) Immediately after the person knows that there will be a significant change in the risk of using, handling or storing the Schedule 11 hazardous chemicals. <p>The notification must include;</p> <ul style="list-style-type: none"> (a) The name and ABN of the PCBU; (b) The type of business or undertaking conducted; (c) If the workplace was previously occupied by someone else, the name of the most recent previous occupier; (d) The activities of the business or undertaking that involve using, handling or storing the Schedule 11 hazardous chemicals; (e) The manifest prepared by the PCBU under Regulation 347; (f) If notice is required by a change in the risk of using, handling or storing the Schedule 11 hazardous chemicals, details of the changes to the manifest. |
| 349 & 350 | <p>PCBU shall ensure placards are displayed for all chemicals which exceed placard quantity of Schedule 11, and that placards comply with Schedule 13, as shown in Figure 5-1 and Figure 5-2. A Placard Schedule shall be prepared to indicate the placard requirements.</p> <p>A PCBU shall ensure an outer warning placard shall is prominently displayed at the site. The placard is to show the words “HAZCHEM” in red lettering on white or silver background and shall have minimum dimensions 120 mm x 600 mm, in compliance with Schedule 13, as shown in Figure 5-2.</p> |
| 351 & 354 | <p>A PCBU must manage the risk to health and safety associated with using and storing a hazardous chemical [<i>Dangerous Good</i>] and have regard of the following:</p> <ul style="list-style-type: none"> • Hazardous properties of the chemical • Reactions between chemicals (physical) or between the chemical and other substances/materials; • The nature of the work to be carried out with the hazardous chemical; • Any structure, plant or system of work used in the handling, generation or storage of the hazardous chemical [<i>Dangerous Good</i>] or that could react with the hazardous chemical [<i>Dangerous Good</i>] at the workplace. <p>In order to comply with this requirement, it is necessary to conduct a risk assessment and to identify those hazards and risks associated with the storage and handling of the hazardous chemicals [<i>Dangerous Goods</i>]. The following recommendation has been made:</p> <ul style="list-style-type: none"> • A risk assessment of the hazardous chemical [<i>Dangerous Good</i>] storage areas be conducted, including the use of the chemicals in the manufacturing areas; |

| Clause | WHS Requirement |
|--------|---|
| 353 | <p>A PCBU must display safety signs required to control an identified risk in relation to using, handling or storing hazardous chemicals. The safety signs must warn of a particular hazard associated with the hazardous chemical, and be located next to hazard, clearly visible to a person approaching the hazard.</p> |
| 355 | <p>A PCBU must ensure ignition sources are not introduced to areas which where there is a possibility of fire or explosion in a hazardous area. In the flammable liquids containers, there is potential for vapours to accumulate and ignite. Therefore, the following recommendation has been made:</p> <ul style="list-style-type: none"> • A Hazardous Area Classification (HAC) report and associated drawings should be prepared for flammable liquid in accordance with AS/NZS 60079.10.1:2022 (Ref. [3]). • A Hazardous Area Dossier shall be prepared prior to occupation in accordance with AS/NZS 3000:2018 (Ref. [4]). |
| 357 | <p>A PCBU must ensure, SFAIRP, that where there is a risk from a spill or leak of a hazardous chemical, a spill containment system contains the resulting effluent within the workplace.</p> <ul style="list-style-type: none"> • The containment system must not create a hazard by bringing together incompatible chemicals. <p>The containment system must provide for the clean-up and disposal of hazardous chemicals.</p> |
| 358 | <p>A PCBU must ensure containers of hazardous chemicals are protected against impact damage and damage from excessive load.</p> |
| 359 | <p>A PCBU shall ensure that a workplace is provided with fire protection and firefighting equipment that is designed and built for the types of hazardous chemicals at the workplace.</p> <ul style="list-style-type: none"> • The PCBU shall have regard to the fire load of the hazardous chemicals and from other sources, and the compatibility of the hazardous chemicals with other substances on site. • The equipment shall be compatible with firefighting equipment used by Local Fire Brigades <p>Fire protection and firefighting equipment shall be properly installed, tested and maintained, and a dated record shall be kept of the latest testing results.</p> |
| 361 | <p>Where the quantity of Schedule 11 hazardous chemical exceeds manifest quantities, the PCBU must give a copy of the emergency plan prepared under Division 4 of Part 3.2 for the workplace to the primary emergency service organisation. If the primary emergency service organisation gives the person a written recommendation about the content or effectiveness of eh emergency plan, the person must revise the plan in accordance with the recommendation.</p> <p>The emergency plan must provide for the following;</p> <ol style="list-style-type: none"> (a) Emergency procedures including – <ol style="list-style-type: none"> i. An effective response to an emergency; ii. Evacuation procedures; iii. Notifying emergency services organisations at the earliest opportunity; iv. Medical treatment and assistance; v. Effective communication between a person authorised by the PCBU to coordinate the response and all persons at the workplace; (b) Testing of emergency procedures, including frequency of testing; (c) Information, training and instruction to relevant workers in relation to implementing the emergency procedures |

| Clause | WHS Requirement |
|--------|---|
| | <ul style="list-style-type: none"> An emergency plan shall developed and provided to emergency services. |
| 364 | A PCBU must ensure that containers in which hazardous chemicals are used, handled, or stored in bulk shall have stable foundations and supports, and be secured to the foundations and supports to prevent movement and subsequent damage to the container. |



Figure 5-1: DG Placards



Figure 5-2: HAZCHEM Placard

5.3 Summary of Requirements

The site will require the recommendations made in **Table 5-3**.

Table 5-3: WHS Recommendations

| ID | Recommendation |
|----|--|
| G1 | <ul style="list-style-type: none"> A Dangerous Goods Register, indicating the type of chemical, any notations that may be required from the risk assessment and the Safety Data Sheet for the chemical. |
| G2 | <ul style="list-style-type: none"> A DG Risk Assessment of the storage and handling area. |
| G3 | <ul style="list-style-type: none"> A Placard Schedule to identify locations for DG placards around the site. |
| G4 | <ul style="list-style-type: none"> A Manifest of Hazardous Chemicals. |
| G5 | <ul style="list-style-type: none"> Notification to SafeWork NSW. |
| G6 | <ul style="list-style-type: none"> An Emergency Plan & An Emergency Services Information Pack. |
| G7 | <ul style="list-style-type: none"> A Hazardous Area Classification (HAC) in accordance with AS/NZS 60079.10.1:2022. |
| G8 | <ul style="list-style-type: none"> Hazardous Area Verification Dossier (HAVD) in accordance with AS/NZS 60079.14:2022. |

6.0 Conclusion and Recommendations

6.1 Conclusions

A review of the classes, quantities and locations of DGs stored at the Kiora 1 Unit 2 building was conducted to assess the compliance with the WHS 2025 and the relevant Australia Standards for storage of DGs at the site.

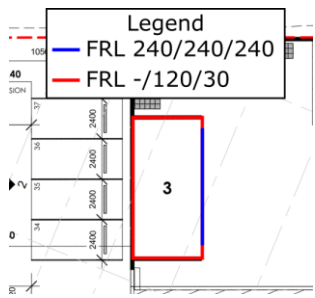
The storage locations were assessed according to the standard applicable to the classes of DGs stored in a clause-by-clause fashion to identify any deficiencies in the design and make recommendation for inclusion in the design.

Based on this review, it is concluded that should the aforementioned design requirements be incorporated into the DG storages the stores will comply with the standards; hence, comply with the WHS Regulations.

6.2 Recommendations

The following recommendations have been made for the facility:

Flammable Liquid Store

| ID | Recommendation |
|------|---|
| FLS1 | <ul style="list-style-type: none"> The flammable liquid store shall be enclosed in walls having an FRL of 240/240/240. The roof of the store shall have an FRL of 180/180/180. The door to the store shall have an FRL of -/120/30 which may be achieved by a roller door with an FRL of -/120/- with drenchers on either side to provide -/30. The roller door shall be held open by electromagnetic link which will deactivate upon fire or smoke detection.  |
| FLS2 | <ul style="list-style-type: none"> A hazardous area classification in accordance with AS/NZS 60079.10.1:2022 shall be prepared for the flammable liquid store. |
| | <ul style="list-style-type: none"> Emergency egress doors in the fire rated structure of the flammable liquid store shall have an FRL of -/120/30. |
| FLS3 | <ul style="list-style-type: none"> The flammable liquid store shall be bunded to contain 7.5 m³ + the discharge of sprinklers & drenchers operating for 20 minutes. Bund to be constructed of concrete or other material that is compatible with flammable liquids. The bund shall have a sump installed to enable the recovery of spilled material. |
| FLS4 | <ul style="list-style-type: none"> Lighting shall be provided in the flammable liquid store to enable visual identification of liquids stored per AS/NZS 1680.2.4. |

| ID | Recommendation |
|------|---|
| | <ul style="list-style-type: none"> Electrical installation shall comply with the hazardous area classification zoning per the requirements of AS/NZS 60079.14:2022. |
| FLS5 | <ul style="list-style-type: none"> Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). Exhaust registers shall be at low level (<500 mm above bund level). The exhaust rate of the system shall be 10 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Where ducting passes through an area outside of the flammable liquid store, it shall be protected by a material having an FRL of -/180/180. Should the dimensions of the store change, the required extraction rate shall be reviewed. <div style="text-align: center;"> <p>Legend ■ Extraction duct</p> <p>Air Flow Direction</p> </div> |
| FLS6 | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the flammable liquid store. |
| FLS7 | <ul style="list-style-type: none"> The forklifts shall be reviewed for compliance with the hazardous area zoning. |
| FLS8 | <ul style="list-style-type: none"> Fire hose reels with foam making capabilities shall be provided for the flammable liquid store. A dry powder fire extinguisher shall be provided for the flammable liquid store. A foam pouring connection shall be installed in the fire wall to enable application of foam into the flammable liquid store. The site shall store sufficient foam for at least one (1) hour of application. |

Mixed DG Stores

| ID | Recommendation |
|-----|---|
| MS1 | <ul style="list-style-type: none"> The DG storages shall have FRL 240/240/240 walls. The walls shall extend 1 m above the height of the top package. The maximum storage height shall be identified on the walls of the individual stores. <div style="text-align: center;"> <p>Legend — FRL 240/240/240</p> </div> |
| MS2 | <ul style="list-style-type: none"> The Class 5 store shall contain 4.5 m³. The Class 6 store shall contain 6.6 m³. The Class 8 store shall contain 4.9 m³. The Class 9 store shall contain 6.5 m³. |

| ID | Recommendation |
|-----|--|
| | <ul style="list-style-type: none"> Each DG storage shall have a sump to enable recovery of spilled liquids. Unit 2 shall be bunded to contain 20 minutes of sprinkler discharge. The Unit 2 shall have a sump to enable the recovery of potentially contaminated water. The bunded areas shall be constructed of materials compatible with the characteristics of the materials being stored. |
| MS3 | <ul style="list-style-type: none"> Intake register (where provided) shall be at low level (i.e. <500 mm above bund level). Exhaust registers shall be at low level (<500 mm above bund level). The exhaust rate of the Class 4 store shall be 6 m³/min. The exhaust rate of the Class 5 store shall be 5 m³/min. The exhaust rate of the Class 6 store shall be 5 m³/min. The exhaust rate of the Class 8 store shall be 6 m³/min. The exhaust rate of the Class 9 store shall be 5 m³/min. Air velocity into the registers shall be at least 300 m/min. An air flow failure device and alarm shall be provided to alert to no flow. Fan motors shall be of a non-sparking material. Should the dimensions of the store change, the required extraction rate shall be reviewed. <div style="text-align: center; margin-top: 10px;"> <p>Legend ■ Extraction duct</p> </div> |
| MS4 | <ul style="list-style-type: none"> A safety shower and eye wash station conforming to AS 4775 shall be provided in no closer than 2 m and no further than 10 m from the mixed DG stores. |
| MS5 | <ul style="list-style-type: none"> Where triple stacking is to be adopted, a risk assessment shall be conducted to confirm whether this is achievable. Should triple stacking be adopted, the fire wall design shall be adjusted to ensure a 1 m wall height above the highest IBC. |
| MS6 | <ul style="list-style-type: none"> The storage areas shall be designed such that the IBCs are at least 1 m away from the opening to the DG store. |
| MS7 | <ul style="list-style-type: none"> Additional exits from the office / laboratory areas shall be provided such that evacuation does not occur through the main Unit 2 building. |
| MS8 | <ul style="list-style-type: none"> Fire hose reels shall be installed to provide full coverage to the DG stores. A dry powder fire extinguisher(s) shall be provided such that the maximum travel distance to an extinguisher is 15 m. The sprinkler system shall be reviewed to confirm that is adequate to provide protection to the commodities stored. |

General Items

| ID | Recommendation |
|----|--|
| G1 | <ul style="list-style-type: none"> A Dangerous Goods Register, indicating the type of chemical, any notations that may be required from the risk assessment and the Safety Data Sheet for the chemical. |
| G2 | <ul style="list-style-type: none"> A DG Risk Assessment of the storage and handling area. |

| ID | Recommendation |
|----|--|
| G3 | <ul style="list-style-type: none"><li>• A Placard Schedule to identify locations for DG placards around the site. |
| G4 | <ul style="list-style-type: none"><li>• A Manifest of Hazardous Chemicals. |
| G5 | <ul style="list-style-type: none"><li>• Notification to SafeWork NSW. |
| G6 | <ul style="list-style-type: none"><li>• An Emergency Plan & An Emergency Services Information Pack. |
| G7 | <ul style="list-style-type: none"><li>• A Hazardous Area Classification (HAC) in accordance with AS/NZS 60079.10.1:2022. |
| G8 | <ul style="list-style-type: none"><li>• Hazardous Area Verification Dossier (HAVD) in accordance with AS/NZS 60079.14:2022. |

7.0 References

- [1] SafeWork NSW, "Work Health and Safety Regulation," SafeWork NSW, Lisarow, 2025.
- [2] Standards Australia, "AS 3833:2024 - Storage and Handling of Mixed Classes of Dangerous Goods, in Packages and Intermediate Bulk Containers," Standards Australia, Sydney, 2024.
- [3] Standards Australia, AS/NZS 60079.10.1:2022 - Explosive Atmospheres Part 10.1: Classification of Areas, Explosive Gas Atmospheres, Sydney: Standards Association of Australia, 2022.
- [4] Standards Australia, "AS/NZS 3000:2018 - Wiring Rules," Standards Australia, Sydney, 2018.