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Dangerous Goods Report

FIFE Qld Health Warehouse & Fitout, 104 Bandara Street, Richlands

Prepared for: McNab Developments (QLD) Pty Ltd

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Revisions

Revision	Description	Date	Prepared by	Approved by
A	Draft for Review	25/07/2025	Jack Parsons	Scott Tamasauskas Imran Shaik (RPEQ 28416)
0	Initial Release	28/08/2025	Jack Parsons	Scott Tamasauskas Imran Shaik (RPEQ 28416)
1	Revised to remove requirements to allow the use of unrated MHE in hazardous areas as stored flammable liquids exceeds relevant thresholds	08/01/2026	Scott Tamasauskas	Imran Shaik (RPEQ 28416)
2	Revised DG manifest quantities, and clarify items for DA resubmission	20/05/2026	Jack Parsons	Scott Tamasauskas Imran Shaik (RPEQ 28416)

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Abbreviations

Table 1 Abbreviations

Abbreviation	Description
ACOR	ACOR Consultants
ALARP	As low as reasonably practicable
AS	Australian standard
AS/NZS	Australian/ New Zealand standard
BCC	Brisbane City Council
DG	Dangerous goods
ERP	Emergency response plan
FRL	Fire resistance level
HCF	Hazardous chemical facility
MHF	Major hazard facilities
n/a	Not applicable
PG	Packing Group
PHA	Preliminary Hazard Analysis
PPE	Personal protective equipment
SDS	Safety data sheets

Definitions

Table 2 Definition List

Terms	Definition
Aerosol	A non-refillable receptacle made of metal, glass, or plastics, containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.
Combustible liquid	Any liquid, other than a flammable liquid, that has a flash point, and has a fire point that is less than its boiling point. For the purpose of AS 3833, combustible liquids are divided into two classes as follows: Class C1 - A combustible liquid that has a closed cup flash point of greater than 60°C and no greater than 93°C. (dangerous goods for storage) Class C2 - A combustible liquid that - has a flash point of greater 93°C; or has been excluded from being a flammable liquid by any of the criteria for sustaining combustion. (non-dangerous goods)
Corrosive substances	Are substances or mixtures which, by chemical action, will cause irreversible damage to the skin, or in the case of leakage, will materially damage, or even destroy, metals or other goods. Note - Such substances are listed as Class 8 corrosive substances in the ADG Code or meet the classification criteria specified in that Code for corrosive substances.
Fire resistance level	The grading period, in minutes, determined in accordance with AS 1530.4 for — (a) structural adequacy; (b) integrity; and (c) insulation and expressed in that order (e.g. 60/60/30)
Hazardous Area	An area (three-dimensional space) in which an explosive atmosphere, due to flammable gas or flammable vapour, is or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of equipment.
Ignition source	A source of energy sufficient to ignite a flammable atmosphere. Examples of ignition sources include naked flames, exposed incandescent material, electrical welding arcs, mechanical sparks, electrical discharge due to static electricity.
Incompatible	Dangerous goods that are — (a) likely to interact with other goods so as to increase the risk when mixed or otherwise brought into contact with the dangerous goods; (b) listed in the ADG Code or this Standard as being incompatible; or (c) declared by the regulatory authority as being incompatible. In relation to materials for construction of the storage and handling facility, including packaging, transfer equipment, containers, items of equipment, spill containment or racking the material likely to interact with the dangerous goods such that it is weakened or damaged.
Label (for Dangerous Goods)	A class or division diamond used to communicate the hazard(s) of the dangerous goods
On-site protected place	A building where people are employed within the property boundary, including offices, warehouses, manufacturing or processing areas, amenities, and other dangerous goods stores where quantities exceed minor storage.
Package	A complete product of the packaging operation, consisting of the packaging and its contents, prepared for Transport.
Public place	Any place other than private property, open to the public, which the public has a right to use, and which includes a public road.

Terms	Definition
React dangerously	React in a manner that directly creates a hazard due to the reaction. Examples of dangerous reactions are — (a) combustion and/or evolution of considerable heat; (b) evolution of flammable, toxic or asphyxiant gases; (c) the formation of corrosive substances; or (d) the formation of unstable substances.
Reasonably practicable	That which is, or was at a particular time, reasonably able to be done to ensure health and safety, taking into account and weighing up all relevant matters including: (a) the likelihood of the hazard or the risk concerned occurring. (b) the degree of harm that might result from the hazard or the risk. (c) what the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk. (d) the availability and suitability of ways to eliminate or minimise the risk. (e) after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.
Segregation	The isolation of incompatible goods from each other within the store.
Separation	Isolation of dangerous goods from protected places, on-site protected places, boundaries and other dangerous goods stores.
Shall	Indicates that a statement is mandatory
Should	Indicates a recommendation

Note: Under the Work Health and Safety Act 2011 and Regulations 2011 (QLD), dangerous goods are termed hazardous chemicals. Australian Standards still use the term ‘dangerous goods’ when referring to the definitions and classes as set out in the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code). In this report, the terminology of dangerous goods will mainly be used to be consistent with Australian Standards.

1 Introduction

McNab Developments (QLD) Pty Ltd has engaged ACOR Consultants to provide dangerous goods (DG) consulting services for the proposed QLD Health Warehouse and Fitout at 104 Bandara Street, Richlands QLD 4077 (the Facility)

This report is to provide sufficient guidance for designers to understand the key requirements and considerations to achieve compliance for the proposed storage of dangerous goods at the Facility.

1.1 Scope

This report covers the storage of packaged dangerous goods at the Facility. Identified dangerous goods storages were:

- DG Storage containing:
  - Class 3 flammable liquids in packages on pallet racking;
  - Class 2.1 aerosol cans within a cage; and
  - Class 8 corrosive substances in packages within a purpose built DG cabinet.
- Storage of Class 9 DG packages in the Warehouse.

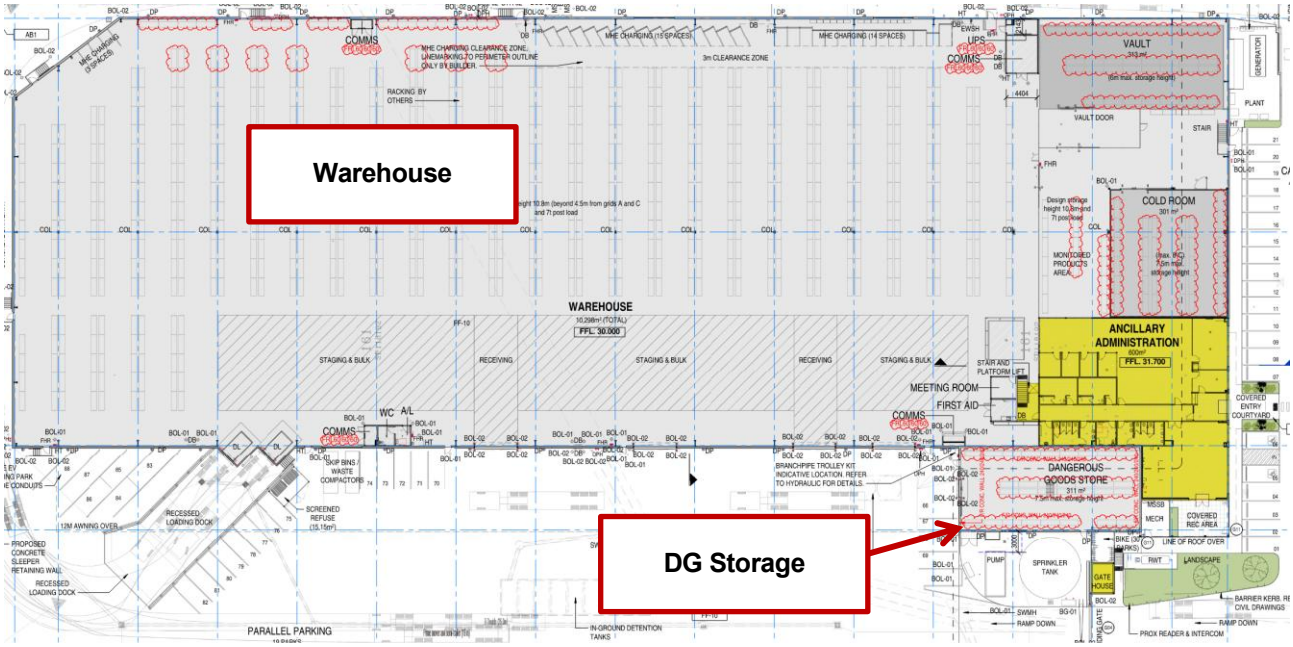

Figure 1 QLD Health Bandara St Warehouse Layout

Dangerous goods storage requirements considered in this report include:

- Construction materials of DG stores;
- Size and capacity of DG stores;
- Minimum separation distances of DG stores;
- Ventilation;
- Lighting;
- Drainage and spill containment;
- Safety equipment;

- Fire protection;
- Signage and placarding requirements; and
- Other key items as identified.

1.2 Criteria

The requirements set out in this report have been based on the requirements of:

1. QLD Legislation:
   - Planning Act 2016 (QLD)
   - Planning Regulation 2017 (QLD)
   - Work Health and Safety Act 2011 (QLD)
   - Work Health and Safety Regulation 2011 (QLD)
2. Planning Codes and Guidelines
   - State Development Assessment Provisions State Code 21
   - Brisbane City Council City Plan 2014 (v32)
3. Australian Standards:
   - AS 1940-2017: The storage and handling of flammable and combustible liquids;
   - AS 3780-2023: The storage and handling of corrosive substances;
   - AS 3833-2023: The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers; and
   - AS/NZS 4681-2000: The storage and handling of Class 9 (miscellaneous) dangerous goods and articles.

1.3 Limitations

ACOR has provided guidance based on IFC designs (as of 13th March 2026) and information provided by provided by QLD Health in relation to the storage quantities and configurations. Storage quantities and product mix were received on 8th May 2026. The product mix and quantities considered in this report were the “End of Lease Projection at 3% per year” quantities provided by QLD Health in the spreadsheet “20260508 QLD Health Dangerous Goods Manifest - SUBMISSION.xlsx”“ (received 8th May 2026).

Should the storage conditions or volumes change, the contents and findings in this report shall be reviewed, and the risks associated with any change assessed and controlled.

1.4 Methodology

The methodology for the review was to evaluate the existing controls and identify any areas of concern or non-compliance with the Act, Regulations and Australian Standards.

The following steps were undertaken:

- Review information provided by QLD Health to identify the proposed dangerous goods storage areas, classes and quantities at the Facility.
- Identify and document compliance requirements of Legislation and Australian Standards (as documented in Section 1.2) to provide guidance for designers.

Note: All information obtained is provided to the client for verification and acceptance prior to being published.

2 Dangerous Goods Quantity Assessment

2.1 Dangerous Goods Storage Overview

The proposed dangerous goods storage at the Facility is summarised in Table 3. The quantities in this table are based on the storage configurations proposed by QLD Health and an overall maximum of 100,000 kg/L being applicable for the DG Storage.

Table 3 Total Storage of Dangerous Goods at the Facility

Site Area	Classes and Packing Groups	Maximum Storage Quantity	Storage Type	Standards Applied
DG Storage	Division 2.1 Aerosols	180 L	Package Storage	AS 3833-2024 *AS 1940-2017*
	Class 3 PG II / III	99,720 L		
	Class 8 PG II / III	100 L	Cabinet Storage	
Warehouse	Class 9 PG II / III	8,500 L	Package Storage	AS/NZS 4681-2000

2.2 Regulation Quantities of Dangerous Goods

Under Schedule 11 of the Work Health and Safety (WHS) Regulations 2011 (QLD), placard and manifest quantities for relevant DG are as described in Table 4.

Table 4 Placarding and Manifest Quantity Limits

Description of Dangerous Goods	GHS Classification	Equivalent DG Class/Division/Packing Group	Placarding Quantity	Manifest Quantity	Facility Quantity
Flammable Liquids	Category 2	3 PG I	250 L	2,500 L	99,720 L
	Category 3	3 PG II	1,000 L	10,000 L	
	Category 4 (Combustible Liquids)	3 PG III	10,000 L	100,000 L	-
Gases Under Pressure	Aerosols Category 1/2/3	2.1	5,000 L	10,000 L	180 L
Skin corrosion	Category 1A	8 PG I	250 L	2,500 L	100 L [Note 1]
	Category 1B	8 PG II	1,000 L	10,000 L	
	Category 1C	8 PG III	1,000 L	10,000 L	
Corrosive to metals	Category 1	8 PG III	250 L	2,500 L	

Note 1 – It is assumed that Class 8 corrosive substances kept do not include any classified as Category 1A skin corrosion.

2.3 Placarding Quantity

Placards must be displayed for all chemicals exceeding the placard quantity in Table 4. This includes only Class 3 flammable liquids in the DG Store. Further details are provided in Section 4.11.

2.4 Manifest Quantity

The expected quantities of dangerous goods are above manifest quantity for flammable liquids. The site will therefore be classified as a manifest quantity site with the following requirements:

- WorkSafe QLD are to be notified by the operator via Form 73 – Notification of a Manifest Quantity Workplace.
- A dangerous goods manifest and site plan must be prepared.
- An emergency management plan must be prepared and lodged with the Queensland Fire Department.

2.5 Major Hazard Facility

Sites containing 'Relevant hazardous chemicals' as laid out in Schedule 15 of the *Work Health and Safety Regulation 2011 (QLD)*, above thresholds defined in Tables 15.1, 15.2, 15.3, are subject to assessment to determine if they are to be managed as Major Hazard Facilities (MHFs).

Typically, all applications for dangerous goods sites where dangerous goods may be present above a critical quantity (10% of the MHF threshold) are considered by WorkSafe QLD's major hazard team to determine if the site should be declared as an MHF.

Table 5 Major Hazard Facility Comparison

Hazardous Material (Class of Substance)	Threshold Qty (t)	Maximum Storage Qty (t)
Flammable Materials (Class 3 Packing Group II/III)	50,000 t	78.9 t
Compressed and Liquified Gases (Division 2.1 Aerosols)	200 t	N/A

The flammable liquid quantity in tonnes is calculated using the quantity in kilolitres (100 kL) and multiplying by the average density (there are small quantities of propanol, acetone, eucalyptus oil, totally less than 0.2%, with the remainder being ethanol-based products), assumed to be equal to that of ethanol (789 kg/m^3).

$$100\ m^3 \times\ 789\ kg/m^3 = 78{,}900\ kg$$

The Division 2.1 aerosols are kept in small quantities compared to their threshold quantity, so have been excluded from the assessment.

For this site, the critical quantity is determined below:

$$\frac{q_1}{Q_1} + \frac{q_2}{Q_2} + \cdots + \frac{q_n}{Q_n} = \frac{78.9}{50000} = 0.00158 < 0.1$$

The critical quantity is calculated to be below 0.1 (or 10%) of the MHF threshold. Therefore, QLD Health is not required to submit an MHF notification to WorkSafe QLD, and the site is not considered an MHF.

2.6 State Code 21

State Code 21 applies to any facility that can be classified as a hazardous chemical facility (HCF). A HCF is defined in the Planning Regulation as a Facility holding 10% of the threshold of an MHF. As discussed in Section 2.5, the facility does not breach this threshold and therefore State Code 21 does not apply.

2.7 Brisbane City Council Planning Scheme

This scheme has thresholds for each DG class which dictates the level of assessment that is required as part of the planning approval process. The relevant threshold limits from Table 9.3.12.3.H of the Brisbane City Council (BCC) Planning Scheme are presented in Table 6 below

Table 6 Brisbane City Council Planning Scheme Assessment

Class / Division	BCC Threshold (kg)	Maximum Storage Quantity (kg)	Assessment
2.1	2,000	180 (L)	Below
3 (PG II)	50,000	78,900	**Exceeds**
8 (PG II)	10,000	100	Below
9	10,000	8,500	Below

The expected quantity of Class 3 DG exceeds the BCC threshold. This requires a Qualitative Preliminary Hazard Assessment (PHA) Report to be undertaken for the site. This has been documented by ACOR in NA250215-DG-04.

3 Site Requirements

The site contains two separate DG stores, each with unique requirements, based on different Australian Standards and the contents stored. The Dangerous Goods Store, covered in Section 4, and the storage of DG in the Warehouse, covered in Section 5. This section covers requirements which are common across the two stores and apply to the site broadly.

3.1 Site Entrance Signage

All placards installed must be clean, in good order and unobstructed. These must be located so that they are clearly legible to persons approaching and shall be separated from any other sign or writing that contradicts, qualifies, or distracts attention from the placard.

All entrances where an emergency services organisation may enter the site must display the following:

- An outer warning placard ('HAZCHEM' sign), red letters on a white or silver background, at least 100 mm high;
- A WARNING—RESTRICTED AREA, AUTHORIZED PERSONNEL ONLY sign;
- A sign listing the emergency contact names, titles and phone numbers relevant to the installation;
- The name, address, and phone number of the occupier;
- A layout diagram showing the location of fire protection facilities, and the drainage system; and
- Signage shall be visible from the normal direction of travel into the site.
- Signs shall comply with AS 1319

3.2 Site Safety

Safety information, intended principally for emergency services, shall be provided at a suitable location near the entrance to the facility (and at least one entrance if there is more than one access point) and include:

- The location of emergency plan
- The location of manifest
- The location of PPE and clean-up equipment; and
- The location of essential services and of the controls of their distribution
- Safety Data Sheets for each substance kept and handles on site should be made available, along with the appropriate first aid measures to respond to them.

4 DG Store

4.1 Overview

The Dangerous Goods Store is in the south of the facility. Currently there is a discrepancy between the established maximum holdings and the expected holdings provided, as shown in Table 7. The established maximum holdings are being used as the basis of storage guidance provided.

Table 7 List of Dangerous Goods proposed for DG Store

Class / Division	Maximum Storage Quantity (kg or L)
2.1	130
3	99,720
8	100

The DG Store is classified as a mixed class package store subject to the requirements of AS 3833. The items included in the QLD Health spreadsheet have a maximum package size of 2.5 L.

Stored quantities will exceed that allowable as minor storage (250 L per 500 m^2 for PG II dangerous goods).

4.2 General Requirements

- No packages are to be opened, or contents transferred, while in storage.
- Any leaks or spills are to be cleaned up as soon as is practicable and disposed of safely, with appropriate PPE and clean up materials provided.
- Clear access shall be available to the store, as well as fire protection equipment, PPE, spill kits, and the chemical register.
- Each store is to be secured against unauthorised access.
- Where packages are palletised, they shall be protected from the possibility of punctures or tears caused by splinters or nails in the pallet.
- Ignition and heat sources shall be excluded from the 3 m around the entry to any store.
- Stores shall be on ground level with at least one external wall.
- Stores shall be constructed of non-combustible materials that are compatible with the dangerous goods being kept. Surface treatments and coatings may be used to ensure compatibility.
- Liquids should not be stored above powders and other solids, to reduce the likelihood of contamination.
- Any floor shall be impervious, not liable to degradation or to incendive sparking. Suitable materials include concrete and sealed masonry.
- Aerosols may be stored in a dangerous goods store for flammable liquids if projectile protection (e.g. cages) is provided.
  - QLD Health have indicated that they will use a compliant Storemasta aerosol 180 can aerosol cage.
- Aerosols shall be:
  - Stored under cover and protected from exposure to the weather and direct sunlight;
  - Kept at least 3 m from any source of heat or ignition; and
  - Stored in a manner that prevents the risk of collapse of stacks or any damage to the aerosol containers.

4.3 Racking

- 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.
- Any shelving 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.
- Bollards, crash barriers or other suitable protective barriers shall be installed where there is a risk of the goods, racking or shelving being damaged by vehicular traffic, including forklifts.
- Steel pallet racking should be certified in accordance with AS 4084.
- It is recommended that the width of aisles between racks be at least 1.2 m. The forklift manufacturer's specification should be followed where forklifts are used.

4.4 Corrosive Cabinet

- The storage capacity of the cabinet shall only contain Class 8 dangerous goods and not exceed 850 L.
- Where multiple cabinets are used, the aggregate capacity must not exceed 850 L per 250 m^2 when located on the ground floor. If multiple aggregate quantities are kept they must be located at least 10 m apart.
- The cabinet shall be located so as to not impede escape in the case of an emergency.
- The cabinet must be constructed to the requirements of AS 3780 and be of double-walled steel construction having a 40 mm air gap.
- A certification of AS 3780 shall be obtained from the supplier of the Cabinet

4.5 Separation

The applicable separation distances are documented in Table 8.

Table 8 Separation Distance as per AS 3833

Minimum Separation Distance required from DG stores to	Minimum Distance (m)
On-site protected place such as office, warehouse, workshop area and other DG stores	15
Offsite protected place	16.24
Property Boundary	3
Ignition Sources	3

4.5.1 Fire Resistant Walls Construction

- Separation distances may be measured laterally around an intervening screen wall which meets the following requirements:
  - The screen wall must be non-combustible, structurally sound, impervious to liquid / vapour, constructed of materials that are substantially resistant to attack by the dangerous goods stored and capable of acting as a shield or deflection barrier.
  - As flammable liquids are stored within the DG Store, the screen wall must have a fire resistance level (FRL) of at least 240/240/240.
  - The screen wall must extend at least 1 m above the highest container in the store (with the maximum allowable storage height marked on the wall) or continue as a roof above the store.

- Any door in a fire rated wall separating a dangerous goods store from a protected place shall have an FRL of at least -/120/30.
- Separation has currently been achieved by all walls of the DG Store being proposed to be screen walls having an FRL of at least 240/240/240.

4.6 Segregation

- Dangerous goods that are incompatible or may react dangerous shall be segregated to minimise the likelihood of dangerous interactions. Dangerous interactions may either be through chemical reaction (i.e. mixing of chemicals) or through complication of fire responses (e.g. through generation of toxic or corrosive gases). Safety Data Sheets (SDS) shall be consulted to understand fully the incompatibilities of all substances stored.
- Dangerous goods which are incompatible shall either be:
  - Kept in separate compounds;
  - Segregated by a distance of at least 3 m (or 1 m where both substances are solids); or
  - Stored with the use of a secondary containment device (i.e. spill bunds) such that any leak or discharge is prevented from leaving the device.
- Dangerous goods that might react dangerously shall:
  - Be segregated by at least 5 m (from the edge of the bund); and
  - Not be kept within the same compound, or in compounds that share a common drainage system.
- Foodstuffs shall not be kept in the same store, or within 5 m of, the dangerous goods store.
- Non-dangerous goods may be kept in segregation spaces provided that they will not react dangerously with any of the dangerous goods being kept or unduly increase fire load.
- Class 8 DG could potentially release corrosive vapours if impacted by a fire in the Class 3 goods.
  - The Class 8 DG is segregated by the storage within a dangerous goods cabinet which provides a degree of fire resistance and containment.
- Division 2.1 aerosols can present a projectile hazard if impacted by a fire.
  - Aerosols are proposed to be stored within an aerosol cage in order to contain any potential projectiles.
- Incompatibilities within Class 8 DG is common (e.g. between acids and bases).
  - The Class 8 cabinet is currently proposed to only store a single product.
  - If incompatible products are to be stored in future they shall either be stored in another cabinet or with the use of spill trays within the cabinet.

4.7 Fire Protection

An indoor package store for between 10,000 L and 100,000 L must be provided with the following:

- One powder-type extinguisher located at each doorway to the storage area.
- Powder-type extinguishers internally to the store such that maximum distance travelled, including around racks is 15 m.
- Hose reel(s) with foam capabilities, able to reach all parts of the storage.
  - Foam hose reels shall be fitted with suitable foam-making equipment capable of producing at least 27 L/min of foam solution at a minimum of 220 kPa for 30 minutes.

- 20 L/s water supply for the hydrant system **in addition to the requirements of AS 2419.1**.

Note: Where the term 'powder-type extinguisher' is used it shall mean a portable powder-type fire extinguisher having a rating of at least 2A 60B(E) and 9 kg capacity.

4.8 Spillage Containment and Drainage

Spillage containment for the flammable liquids in the DG Store shall meet the following requirements:

- Spillage containment compound capacity is to be at least 2,500 L plus 10% of the store capacity in excess of 10,000 L. For a store capacity of 100,000 L, the spillage containment compound requires a minimum of 11,500 L.
  - As an additional risk control measure, the current design also allows for the containment of up to 20 minutes of firewater flow from hydrants. This is 36,000 L additional capacity, for a total of 47,500 L minimum capacity.
  - The current design proposes that spill containment is provided by use of underground tanks adjacent to the DG Store to minimise falls within the store and threshold ramps. 50 mm threshold ramps are provided. A sump is provided within the store to allow for cleanup of minor spills, which would overflow into the underground tanks in an emergency.
- The spillage containment compound shall be increased to include the output of any fire sprinklers over a 20-minute period.
  - Fire sprinklers are not required nor proposed to be installed.
- The spillage containment compound shall be resistant to the dangerous goods being stored, and to fire as is necessary to perform its containment functions.
- Chemicals that could be incompatible or might react dangerously shall not be directed into a common compound.

4.9 Ventilation

- Natural or mechanical ventilation must be provided sufficient to prevent any accumulation of flammable or corrosive vapours within the store.
- As all four walls of the DG store are fire rated to achieve the required separation distances, natural ventilation cannot be provided. Mechanical ventilation must comply with the following:
  - The termination points within the room for both the fresh air supply and the draw-off ducts must be:
    - immediately above the upper limit of the spillage compound;
    - on opposite walls, and
    - of equal capacity.
  - The distance between any two inlets or any two outlets must not exceed 5 m.
  - It is recommended that the outlets be located along the longest side of the building for optimum effect.
  - If a single fan system is adopted, the fan should be in the exhaust duct.
  - If the ventilation system incorporates fans on both the supply and exhaust ducts, the capacities of the fans must be so adjusted that the room is under negative pressure. (i.e. The capacities of the fans on the exhaust ducts should be greater than those on the supply ducts).
  - The system must be capable of exhausting 0.3 m^3 per square metre of floor area per minute or 5 m^3/min (whichever is greater) and the air velocity at the air supply outlet must exceed 300 m/min.

        - With a floor area of 308 m^2, the minimum required exhaust rate is 92.4 m^3/min.
    - The system must be provided with an airflow failure-warning device capable of being detected from outside the store.
    - Any intake or exhaust duct must terminate in open air at least:
        - 2 m from any opening into a building; and
        - 4 m from the outlet of any chimney or flue; and
        - 3 m above the ground.
    - The external termination of any inlet duct must be at least 5 m from the external termination of any exhaust duct.
    - The system must be designed so that it operates:
        - continuously;
        - whenever work is being carried out in the store; or
        - whenever a person is in the store.
    - Any duct that passes through a building other than the storage area must be constructed of or protected by material having an FRL of at least -/180/180. A common enclosure may be used for both intake and exhaust ducts.
    - Fans must be suitable for hazardous areas and selected in accordance with the classification. Relevant potential ignition sources (e.g. frictional sparking, static electricity and hot spots) must be taken into account when selecting and installing fans. Fan blades and nearby components must be made of materials that have minimal potential for giving off sparks when struck. Materials known to be unsatisfactory are steel with steel, or steel with aluminium or aluminium-magnesium alloys.
- Where gases or vapours lighter than air may be generated. Natural roof ventilation must also be installed to prevent accumulation at upper levels of the store.

4.10 Lighting

Lighting shall comply with the following requirements:

- Luminance shall be sufficient to provide safe working conditions during hours of operation. This includes being able to read all dangerous goods markings clearly. Luminance must achieve the minimum specified by AS/NZS 1680.2.4.
- Lighting shall be sufficient on internal roads of the premises during hours of operation. This includes roads leading to areas, rooms or buildings where dangerous goods are kept or handled. It is recommended that the level of lighting provide be 50 lx.
- Lighting in hazardous areas shall be suitably designed and installed to operate in that area.

4.11 Placards and Signage

At any entrance to the DG Store the following shall be displayed:

- DANGER—NO SMOKING, NO NAKED FLAMES sign; and
- WARNING—RESTRICTED AREA, AUTHORIZED PERSONNEL ONLY sign;
- Placards shall be installed for Class 3 flammable liquids:
    - Class labels shall conform to AS 1216; and
    - Be a minimum of 100 mm square.

The store entry signs displayed shall meet the following requirements

- These must be located so that they are clearly legible to persons approaching and shall be separated from any other sign or writing that contradicts, qualifies, or distracts attention from the placard.
- All placards installed must be clean, in good order and unobstructed.
- Where two or more points of access are adjacent to each other so that a single set of signs and notices are clearly readable from each point of access, duplicate signs and notices are not required; and
- Signs shall comply with AS 1319.

4.12 Safety Equipment

- Safety showers, eyewash stations and hand washing facilities shall be provided where required by risk assessment. Such safety showers and eyewash facilities shall comply with AS 4775.
  - A safety shower / eye wash has been provided to the west of the DG Store.

4.13 Hazardous Areas

- Hazardous area requirements apply to the store. Refer to the hazardous area classification report, NA250215-DG-03.
- Material handling equipment (MHE) for use in hazardous areas must comply with the requirements of AS 2359.12 as appropriate to the type of MHE and rating of the hazardous area.

5 Warehouse Dangerous Goods Storage Requirements

5.1 Overview

Class 9 dangerous goods are to be stored within the Warehouse as summarised in Table 9.

Table 9 List of Dangerous Goods proposed for Warehouse

Class / Division	Maximum Storage Quantities (kg or L)
9	8,500

The Dangerous goods store is classified as a Class 9 DG store, with requirements of AS 4681 being applicable to the store. The assessment has been made on the expected end of lease quantities.

5.1.1 Minor Storage Strategy

The intention is to store Class 9 dangerous goods throughout the main Warehouse as minor storage. The following requirements apply:

- The storage of Class 9 dangerous goods must not exceed one minor storage per 500 m^2 floor area.
- Each minor storage may have up to 1,000 kg/L of Class 9 dangerous goods.
- Each minor storage shall be at least 10 m apart.

Based on the maximum storage quantity of miscellaneous dangerous goods (Class 9), nine separate minor storage areas have been allocated within the warehouse. The storage of Class 9 dangerous goods must be monitored across the life of the Facility and additional storage areas designated if required as capacity increases.

5.2 Minor Storage Requirements

- No packages are to be opened, or contents transferred, while in storage.
- Any leaks or spills are to be cleaned up as soon as is practicable and disposed of safely, with appropriate PPE and clean up materials provided.
- Clear access shall be available to the store, as well as fire protection equipment, PPE, spill kits, and the chemical register.
- Each store is to be secured against unauthorised access.
- Where packages are palletised, they shall be protected from the possibility of punctures or tears caused by splinters or nails in the pallet.
- Class 9 DG stores shall be away from heat sources and naked flames.
- The method of storage shall be to avoid leakage or spillage, via the use of racking as described in Section 4.3.
- Water shall be available for personal hygiene at a nearby location.
- Class 9 dangerous goods should be segregated from incompatible substances and foodstuffs.
- Liquids should not be stored above solids.
- The warehouse must be provided with natural or mechanical ventilation.
- Lighting shall be sufficient to enable personnel to easily read all markings on containers, signs, instruments and other necessary items whilst working in the store area.
- One powder-type extinguisher, rated 2A 60B(E), must be provided to cover each minor storage area

6 Conclusion

This Dangerous Goods report outlines the design requirements for the proposed QLD Health Warehouse and Fitout at 104 Bandara Street, Richlands QLD 4077. The contractors and designers shall implement all given requirements to be compliant with QLD regulations and Australian Standards.

Appendix A Chemical Register

Location	Product Name	UN Number	DG Class	Packing Group	Package Size (L)
Warehouse	SIMPLEX HV (POWDER) 40gm	3077	9	III	0.04
	CHLORHEXIDINE SURGICAL SCRUB 4% 50 ML	3082	9	III	0.05
	MICROSHIELD 4 CHLORHEXIDINE SURGICAL HANDWASH	3082	9	III	1.5
	SEVOFLURANE 250mL	3334	9	III	0.25
	SUDOCREM ANTISEPTIC HEALING CREAM [Zinc Oxide]	3077	9	III	0.06
Dangerous Goods Store	Plastic Wound Dressing, Hydron Copolymer, Opsite, 110mL	1950	2.1	N/A	0.11
	Dimethyl Ether (Medi Freeze - Tick Off) 38mL Aerosol 1	1033	2.1	II	0.038
	Alcohol (Ethanol) (SAS),96%, 10mL,Injection,10	1170	3	II	0.01
	Alcohol (Rectified),96% (SVR), 1L,Solution,1	1170	3	II	0.5
	Gentamicin Bone Cement (CMW2 with Gentamicin) 1g, 40g Powder 1	1170	3	II	0.04
	Gentamicin Bone Cement (Palacos R + G PRO) 0.5g, 55g Powder 1	1170	3	II	0.055
	Gentamicin Bone Cement, 1g, 40g, Powder	1170	3	II	0.05
	Gentamicin Bone Cement (High Viscosity) (SmartSet (G)HV) 1g, 40g Powder 1	1170	3	II	0.04
	Gentamicin - Clindamycin Bone Cement (Copal G + C) 1g - 1g, 40g Powder 1	1170	3	II	0.04
	Gentamicin - Vancomycin Bone Cement (Copal G + V) 0.5g - 2g, 40g Powder 1	1170	3	II	0.04
	Gentamicin Bone Cement (fast setting) (Palacos fast R + G) 0.62g, 40g Powder 1	1170	3	II	0.04
	Gentamicin Bone Cement (CMW3 with Gentamicin) 1g, 40g Powder 1	1170	3	II	0.04
	Gentamicin Bone Cement (Palacos R + G PRO) 0.5g, 75g Powder 1	1170	3	II	0.075
	Gentamicin Bone Cement Powder 40g	1170	3	II	0.04
	Glyceryl Trinitrate (Medsurge) 50 mg/50 mL injection, 50 mL vial	1170	3	II	0.05
	Alcohol (Ethanol) Antibacterial Hand Wash,75%, 50mL,Gel,10	1170	3	II	0.05
	Alcohol (Ethanol),Absolute, 1L,Solution,1	1170	3	II	1
	Microshield Handrub solution, 125 mL, bottle	1170	3	II	0.125
	Compound Benzoin Friar's Balsam (Orion) tincture, 50 mL, bottle (Old Formulation 2010)	1170	3	II	0.05
	Isopropyl Alcohol (David Craig) 100%, 500mL Liquid 1	1919	3	II	0.5
	Grntamicin Bone Cement, 40g, Powder	1170	3	II	0.04
	Acetone,100mL,Solution,1	1090	3	II	0.1
	Tobramycin Bone Cement - powder sachet + ampoule (Simplex Cement with Tobramycin) 1g, 40g . 10	1170	3	II	0.04
	Chlorhexidine Gluconate in Alcohol 70% - Pink (Surgi-Prep C) 0.5%, 100mL Solution 1	1170	3	II	0.1
	Chlorhexidine Gluconate in Alcohol 70% - Red (Surgi-Prep C+) 2%, 30mL Solution 30	1170	3	II	0.03

Location	Product Name	UN Number	DG Class	Packing Group	Package Size (L)
	Nitrolingual 400 microgram/actuation spray, 200 actuations, pump pack	1170	3	II	0.0147
	Glyceryl Trinitrate (DBL) 50 mg/10 mL injection, 5 x 10 mL ampoules	1170	3	II	0.01
	Alcohol (Ethanol),70%, 500mL,Gel,1	1170	3	II	0.5
	Boric Acid in Ethanol 96% (QH-CP) 5%, 15mL Ear drops 1	1170	3	II	0.5
	Alcohol (Ethanol) Antimicrobial Hand Gel,70%, 100mL,Gel,1	1170	3	II	0.1
	Alcohol (Ethanol) - Propanol,70%-10%, 1L,Liquid,1	1170	3	II	1
	Alcohol (Ethanol) - Propanol,70%-10%, 50mL,Liquid,25	1170	3	II	0.05
	Alcohol (Ethanol) Untinted,70%, 500mL,Solution,1	1170	3	II	0.1
	Alcohol (Ethanol) - Propanol,10%-75%, 1L,Solution,1	1170	3	II	0.5
	Chlorhexidine Gluconate in Alcohol 70% - Red (Surgi-Prep C) 0.5%, 100mL Solution 1	1170	3	II	0.1
	Betadine Alcoholic Skin Preparation solution, 100 mL, bottle	1170	3	II	0.1
	Chlorhexidine Gluconate in Alcohol 70% - Pink (PharmAust) 0.5%, 500mL Solution 1	1170	3	II	0.5
	Iodine 1% in Alcohol 70% (Orion) solution, 100 mL, bottle	1170	3	II	0.1
	Chlorhexidine Gluconate in Alcohol 70% - Red (Pharm Aust) 0.5%, 500mL Solution 1	1170	3	II	0.5
	Alcohol (Specially Methylated),95% (SVM),Solution,1L	1170	3	II	1
	Alcohol Sterile Spray,70%, 500mL,Solution,1	1170	3	II	0.5
	Chlorhexidine Gluconate in Alcohol 70% - Pink (Surgi-Prep C+) 2%, 100mL Solution 1	1170	3	II	0.1
	Chlorhexidine Gluconate in Alcohol 70% - Pink (Surgi-Prep C+) 2%, 30mL Solution 30	1170	3	II	0.03
	Alcohol (Ethanol),80% v/v, 250mL,Solution,1	1170	3	II	0.25
	Alcohol (Ethanol) Antibacterial Hand Wash,75%, 500mL,Gel,1	1170	3	II	0.5
	Chlorhexidine Gluconate in Alcohol 70% - Pink (Surgi-Prep C+) 2%, 500mL Solution 1	1170	3	II	0.5
	Chlorhexidine Gluconate in Alcohol 70% - Red (Surgi-Prep C+) 2%, 100mL Solution 1	1170	3	II	0.1
	Alcohol (Ethanol) Antimicrobial Hand Gel,70%, 1L,Gel,1	1170	3	II	1
	Alcohol (Ethanol) - Propanol,70%-10.6%, 400mL,Liquid,1	1170	3	II	0.4
	Alcohol (Ethanol) - Propanol,70%-10.6%, 1L,Liquid,1	1170	3	II	1
	Alcohol (Ethanol) Antimicrobial Hand Gel,70%, 500mL,Gel,1	1170	3	III	0.5
	Eucalyptus Oil (Bosisto's) 1 mL/mL oil, 500 mL, bottle	1993	3	III	0.001
	MILTON ANTI-BACTERIAL SOLUTION	1791	8	III	0.5