SEPP 33 - Risk Screening Document and Preliminary Hazard Analysis

Proposed Aboveground Diesel Storage

FoodBoss
24-27 Lambridge Place
PENRITH NSW

Hazkem Pty Ltd
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This report was written by Phil Kemm, member AIDGC,
© Hazkem Pty Ltd
Suite 12, 1020 Doncaster Road
East Doncaster 3109
Australia
Tel: +61 3 9842 7300
Web: www.hazkem.com.au

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24-27 Lambridge Place
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PURPOSE AND SCOPE OF THIS DOCUMENT

For dangerous goods installation designs where there is proposed storages above minor quantities, an investigation process must be followed in order to assess whether or not a proposal is suitable for a particular site or not. Such sites should be deemed "potentially hazardous" until a detailed risk assessment determines otherwise. The process flow chart is detailed in appendix 1.

NSW State Environmental Planning Policy 33[1], (SEPP 33) is a document published by the NSW Department of Planning which provides guidelines for local government and developers for ensuring that the safety and pollution impacts of an industrial proposal are addressed at an early stage of the development application process. Through this document an assessment procedure is followed which links the permissibility of a proposal to its safety performance. SEPP 33 ensures that only those industrial proposals which are suitably located, and able to demonstrate that they can be built and operated with an adequate level of safety, can proceed[2].

As detailed in SEPP 33 a *"hazardous industry"* is one which poses a significant risk when all locational, technical, operational and organizational safeguards are included.

A *"potentially hazardous industry"* is one which, when all safeguards are operating, imposes a risk level which is significantly lower.

SEPP 33 also incorporates a screening process which will determine whether or not a site is potentially hazardous. If deemed potentially hazardous, a preliminary hazard analysis is required.

Certain activities may involve handling, storing or processing a range of substances which in the absence of locational, technical or operational controls may create an off-site risk or offence to people, property or the environment. Such activities would be defined as potentially hazardous or potentially offensive. SEPP 33 also provides guidelines to assist councils and proponents to establish whether a development proposal would fit into such definitions and hence, come under the provisions of the policy.

The purpose of a PHA is to gain a better understanding of the risks and hazards associated with a site and to provide a reasonable basis for an informed judgment to be made on the acceptability of the site for the proposed development[3]. A PHA will outline in detail the possible risks and hazards associated with a site.

It is important to note also that this investigation has been carried out by a suitably qualified person who understands the properties of the dangerous goods stored on site and the possible impact they may have on equipment and structures located on and off site. Under state legislation a system must be designed by a suitably qualified person who is experienced in this type of work[4].

REFERENCE AND ASSISTANCE DOCUMENTS

This document has been compiled with guidance from:

- Hazardous Industry Planning Advisory Paper No 4 'Risk Criteria for Land Use Safety Planning'
- Hazardous Industry Planning Advisory Paper No 6. 'Guidelines for Hazard Analysis"
- Hazardous and Offensive Development Application Guideline 'Applying SEPP 33'
- NSW Dept of Planning assessment guidelines "Multi Level Risk Assessment".

SITE DESCRIPTION

LOCATION

The site is an existing cold storage facility located at 24-27 Lambridge Place in Penrith. The site is approximately 250 meters south of the Lambridge Place and Andrews Road "tee" intersection. The site is located in an industrial area with several industrial sites surrounding the subject site.

PROPOSAL

This site is an existing cold storage facility which incorporates refrigerated transport solutions. The proposal is to install an aboveground Diesel tank and associated dispensing area to be utilized for on-site refueling of the trucks on site. The aboveground tank and dispensing area are proposed to be installed near the western boundary of the subject site.

HAZARDOUS MATERIALS

There is a proposed maximum of 90,000 liters of Diesel (combustible liquid C1) in bulk to be stored on site within the aboveground tank. The site is estimated to have approximately one delivery of Diesel per week. The frequency of site deliveries is well within the SEPP 33 requirements and does not add any potential issues for this site.

SEPP 33 RISK SCREENING

PROPOSED FUEL STORAGE

Proposal

Product	Quantity	Type	Class
Diesel	90,000 litres	Combustible Liquid	C1

Calculations

The screening method set out in Applying SEPP 33 (Department of Planning, 2011) provides the first step in the analysis. The screening method is based on broad estimates of the possible off-site effects or consequences from hazardous materials present on site, taking into account locational characteristics.

This proposed installation is for a single tank of C1 Combustible Liquid with no adjacent storages of Class 3 flammable liquids. With reference to the document "Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines" an installation storing only C1 or C2 Combustible Liquids is not considered to be a potentially hazardous installation. Therefore, a PHA is not required.

CONCLUSION

It has been determined via assessment of this proposal under the NSW State Environmental Planning Policy 33 (SEPP 33) that the site is deemed "not potentially hazardous". Whilst the proposed design is within the parameters of the risk screening requirements under SEPP 33, a PHA has still been prepared in order to confirm that the site is safe.

PRELIMINARY HAZARD ANALYSIS

Introduction

As previously detailed, SEPP 33 screening has deemed this proposal is not "Potentially Hazardous or Offensive", however a Preliminary Hazard Analysis (PHA) has been prepared in order to confirm that this proposal is acceptable for this site.

After reviewing all available NSW Government Planning assessment guidelines, it has been determined that none of these guidelines are applicable to the storage of Diesel (combustible liquid C1).

Therefore, due to the unique nature of combustible liquids, the best way to complete a PHA and to demonstrate the safety of the proposed installation, is to assess the storage using the industry's best practice method of documenting compliance against the relevant Australian Standard, AS 1940-2017 "The storage and handling of flammable and combustible liquids".

AS 1940-2017 COMPLIANCE AND CERTIFICATION ASSESSMENT

Preliminary

In New South Wales, Hazardous Chemicals (previously referred to as Dangerous Goods) are covered under the Work Health and Safety Regulation (and Act) 2011. Under these regulations, any risks to the health and safety of persons must be managed at a workplace (Regulation 351)[6].

Attached to these regulations, is a Code of Practice which details a number of Australian Standards and provides practical guidance on how to comply with the regulations. As a duty under these regulations, one method of compliance is to complete a self-assessment of the design against AS 1940-2017 "The storage and handling of flammable and combustible liquids". Compliance of design against these standards is deemed to be an adequate risk assessment for the purposes of these regulations.

The occupier is not required to produce a written plan for dealing with emergencies associated with the storage and handling of the dangerous goods on the premises as the storage of combustible liquids does not exceed 100,000 litres. (Regulation 361)[2]

A Hazardous Chemical Register is required to be maintained for any site storing Hazardous Chemicals (Regulation 346)[2].

As the quantity of combustible liquids does not exceed 100,000 litres, the Authority does not need to be notified (Regulation 348)[3] nor is there a requirement to maintain a manifest (Regulation 347)[4].

Signage as per Appendix 1 (attached) is required. Figure 1 should be installed at each entrance to the property and figure 2 on or adjacent to the aboveground combustible liquids tank (regulation 349 and 350)[5].

AS 1940-2017 Assessment

This self-assessment shows compliance with AS 1940-2017 for the proposed aboveground diesel storage.

Tank proposed is;
Tank 1 90,000 litres Diesel

The relevant sections of AS1940-2004 are as follows: -

SECTION 1 - Scope and General
SECTION 3 - General Requirements
SECTION 5 - Storage in Tanks
SECTION 6 - Systems for Piping, Valves Pumps and Tank Heating
SECTION 7 - Fuel Dispensing
SECTION 8 - Tank Vehicle Loading Facilities
SECTION 11 - Fire Protection

SECTION 1 - SCOPE AND GENERAL

1.1	SCOPE
	This Standard sets out requirements and recommendations for the safe storage and handling of flammable liquids of dangerous goods Class 3, as classified in the UN Recommendations for the Transport of Dangerous Goods—Model Regulations and listed in the ADG Code. This Standard also provides requirements and recommendations for the storage and handling of combustible liquids, as defined in Clause 1.4.9. This Standard provides minimum acceptable safety requirements for storage facilities, operating procedures, emergency planning and fire protection. It provides technical guidance that may assist in the storage and handling of flammable and combustible liquids in accordance with the risk management requirements of NOHSC:1015 and legislation which draws on that document. This Standard provides requirements for commonly used flammable and combustible liquids such as hydrocarbons and industrial solvents. Some flammable and combustible liquids have other physical and chemical properties that require additional precautions and design considerations. Examples of these are— a) liquids that can polymerize; b) liquids that require blanketing with inert gas; c) liquids that are heated; and d) liquids that are assigned a subsidiary risk. Any special precautions and considerations necessary for the safe storage and handling of such liquids are additional to the requirements and recommendations provided in this Standard. For the storage and handling of dangerous goods of another class but having a Class 3 subsidiary risk, this Standard is relevant to their flammability aspects.
	This site stores combustible liquids in accordance with this standard. INFORMATIVE ONLY

SECTION 3 - GENERAL REQUIREMENTS

3.1	SCOPE OF SECTION
	This Section provides general requirements and recommendations that apply to stores of flammable or combustible liquids, in quantities greater than those classified as minor storage in Section 2. Additional requirements that are specific to particular types of installation are given in other sections of this Standard. NOTE: Recommendations for blending plants are given in Appendix C.
	This section covers general requirements applicable to this site for the storage of combustible liquids in quantities exceeding minor storages. INFORMATIVE ONLY

3.2	GENERAL DESIGN AND CONSTRUCTION REQUIREMENTS
3.2.1	**Design safety and suitability** Any installation intended for the storage and handling of flammable or combustible liquids shall be designed and constructed so that it is safe and suitable for the conditions of use. Factors that need to be considered include the following: a) Working pressures and structural stresses. b) Heat, corrosion, or attack by the liquid being handled.

c) Site conditions such as topography, usage of adjoining areas, or the risk of natural disasters, e.g. flood, earthquake, lightning strikes.
d) Design of plant, equipment, and operating methods, so as to minimize fire and accident risks and the possibility of errors or misunderstanding by staff.
e) Specific design for emergencies (see Clause 3.2.2 and Section 10), particularly firefighting facilities.
f) The identification of the function of every valve, switch or control actuator, including any remote switches or actuators.
g) Safe access to and egress from all working locations.
h) Avoidance of ignition sources.
i) Ventilation for vapour dispersal, taking into account the possible effect of nearby structures, excavations, embankments, and the like.
j) Separation of potential hazards, including areas where activities cannot be controlled.
k) Points of vapour relief.
l) Spill control measures to avoid contamination of soil and water.

The tank and installation have been designed with all factors of this Clause (3.2.1) being taken into consideration to maintain safe and suitable conditions for use.
COMPLIES

3.2.2 Emergency provisions

An installation shall be designed to facilitate the management of an emergency, taking into account—
a) the nature and quantity of the liquids stored;
b) the layout of the storage area;
c) access through or around walls or other barriers;
d) the type of construction of any buildings; and
e) the type and means of operation of any fire protection system.
NOTE: See also Sections 9, 10 and 11.

This site has been designed to facilitate the management of an emergency. COMPLIES

3.2.3 Minimization of vapour hazards

Where a flammable liquid is being used or transferred in such a manner that vapour is released, the ventilation, extraction, or dispersal provisions shall be sufficient to maintain exposure levels below the exposure standards published by Safe Work Australia.

This storage does not use or transfer flammable liquids. NOT APPLICABLE

3.2.4 Ignition sources

A hazardous area shall not extend beyond a boundary if it could encompass a fixed source of ignition on the adjacent property.
NOTE: Hazardous areas and zones are defined in the AS/NZS 60079.10.1.

As only combustible liquids are stored no hazardous areas exist around this storage as defined by AS/NZS 60079.10.1. NOT APPLICABLE

3.2.5 Separation distances

3.2.5.1 General

Storages shall be separated from boundaries, ignition sources, protected places and accumulations of combustible materials by the minimum distances relevant to each type of storage as specified in Clauses 4.3 and 5.7, with the additional requirements and qualifications as set out in this Clause (3.2.5).

Where alterations to the installation or adjoining site result in a breach of the required separation distances, the installation shall be assessed and brought into compliance or decommissioned.

The storage is the required distance from boundaries, ignition sources, protected places and combustible materials. Refer elsewhere in this report. COMPLIES

3.2.5.2 Separation to property boundary

The separation distance to any property boundary shall be at least that distance required by Table 4.2 or Table 5.3.

This aboveground storage of combustible liquids is separated from the property boundary by at least 3 meters as required by table 5.3. COMPLIES

3.2.5.3 Separation to protected places on adjoining properties

The separation distance to a protected place on another property shall be at least that specified in Table 4.1. or Table 5.4, as appropriate. This distance may be measured across a boundary, provided that, if alterations on the adjacent property result in a breach of the separation distance, the installation will be modified or relocated to restore compliance or taken out of service.

Where the future installation of a protected place on the adjoining property is possible, the installation may be located in accordance with boundary separation distances, provided that the provisions stated in the above paragraph are satisfied.

NOTES:
1 The use of the protected place distance measured to the boundary of the adjacent property is recommended to eliminate future problems, although its use is a commercial decision.
2 A formal agreement or covenant may be used.

This aboveground storage of combustible liquids is separated from all protected places in excess of 7 meters as required by table 5.4. COMPLIES

3.2.5.4 Adjacent occupancies storing flammable and combustible liquids

Where two adjacent premises under separate occupancies are each used for the storage and handling of flammable and combustible liquids and share a common boundary, the separation distances between tanks, package stores and other buildings may be measured as though both premises were under a single occupancy, provided that an agreement similar to that described in Note 2 to Clause 3.2.5.3, but providing for the alteration, redevelopment or change of ownership of either site is in place.

There are no adjoining properties storing flammable or combustible liquids where an agreement is in place. NOT APPLICABLE

3.2.5.5 On-site storage of other dangerous goods

The on-site storage of other classes of dangerous goods may require differing separation distances, as specified in the relevant Australian Standards or by legislation, or both. Where no such distances are specified, the storage containing the other dangerous goods should be considered as an on-site protected place and the relevant distance specified in this Standard applied.

This is the only dangerous goods store onsite. COMPLIES

3.3 MECHANICAL EQUIPMENT AND INSTALLATIONS

Mechanical equipment that meets any recognized industry standard for handling flammable liquids is deemed to meet the intent of Clause 1.4.37 for control of ignition sources in hazardous areas.
Examples of such standards include API standards for pumps and EN or AS/NZS standards for industrial trucks in hazardous areas.
NOTE: While standards under the ISO/IEC 80079 series may be used to provide guidance on possible ignition sources for mechanical equipment in hazardous areas, it

is not a requirement of this standard that equipment complies with or is certified to these standards.

As only combustible liquids are stored no hazardous areas exist around this storage as defined by AS/NZS 60079.10.1. NOT APPLICABLE

3.4 ELECTRICAL INSTALLATIONS AND EQUIPMENT

The following requirements shall apply to both electrical equipment and installations in areas designated as hazardous areas under AS/NZS 2430:

a) Electrical installations

All electrical installations shall be installed in compliance with the provisions of AS/NZS 3000 that relate to electrical equipment in hazardous locations. The equipment shall be of a type certified to comply with the relevant Australian Standard or that has been approved for use in such locations by the relevant authority.

b) Portable and mobile electrical equipment

All electrical equipment to which AS/NZS 3000 does not apply shall be of a type certified to comply with the relevant Australian Standard or that has been approved for use in such locations by the relevant authority, except where Item (c) below applies.

c) Electric forklift trucks

In hazardous areas classified as Zone 2, electric forklift trucks and similar vehicles (e.g. stackers) not suitable for use in the Zone shall not be used except where Appendix D is complied with in all respects.

NOTE: Requirements for electric forklift trucks for use in hazardous zones are specified in AS 1915.

As only combustible liquid is stored there are no hazardous areas as defined by AS/NZS 60079.10.1. COMPLIES

3.5 INTERNAL COMBUSTION ENGINES

Internal combustion engines may be used in hazardous areas as designated in AS/NZS 2430 under the following conditions:

a) An engine designed and certified to AS 2359 may be used in the zones for which it is certified. In such cases, a hot work permit is not required.

b) A spark ignition engine not complying with Item (a) may be operated in a hazardous zone if a hot work permit (see Clauses 9.8.3 and 9.8.6) has first been issued.

c) A compression ignition engine may be operated in a Zone 2 hazardous area if—

i) any incorporated or attached electrical equipment is suitable for use in a Zone 2 hazardous area;

ii) the air intake is either extended to outside the hazardous zone, or is provided with a strangler valve or equivalent in the manifold, in which case the engine is attended when in use;

iii) mechanical sparks cannot be produced in the engine compartment of the appliance during its operation; and

iv) the exhaust has a spark arrester complying with AS 1019 or is extended to outside the hazardous zone.

Any compression ignition engine not complying with AS 2359 (see Item (a) above) shall not be operated in a Zone 0 or Zone 1 area unless a hot work permit has been issued.

Forklift trucks and similar vehicles that are not approved for use in Zone 2, or which do not comply with Items (a) to (c) above, shall not be used unless both the store and the vehicle comply with Appendix D and a work permit has been issued.

There are no hazardous areas as defined by AS/NZS 60079.10.1. COMPLIES

3.6 LIGHTING

Lighting shall be provided in accordance with the following requirements:

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.
NOTE: A minimum value of 50 lx is recommended.
b) Sufficient lighting shall be available on any of the installation's internal roads when personnel at the premises might use them.
c Any lighting in a hazardous area shall be suitable to operate in that area.

Sufficient lighting is provided during hours of operation. External lights may be fitted to enable refuelling between dusk and dawn. COMPLIES

3.7	RESTRICTED USAGE

A storage that has a capacity greater than that given for minor storage shall only contain flammable or combustible liquids or both, unless the other products being stored will not react dangerously or be incompatible with the liquids.

If the store contains dangerous goods having a primary risk of other than Class 3, any other appropriate Australian Standards shall be consulted and the more stringent requirement shall apply.

Aerosols of Classes 2.1 and 2.2 may be stored in a store for Class 3 dangerous goods if projectile protection (e.g. cages) is provided.
NOTE: Activities within package stores are described in Clause 4.10.

This storage is for combustible liquids only. NOT APPLICABLE

3.8	FIREWALLS AND VAPOUR BARRIERS

3.8.1 Conditions of use

Separation distances may be measured in a horizontal plane around the end of any intervening vapour barrier, provided that the barrier complies with the following:
a) For separation from protected places and on-site protected places, such a vapour barrier is also a firewall.
b) Building walls may be treated as being firewalls or vapour barriers provided that they qualify as such.

A wall on an adjacent property shall not be used as a firewall unless an agreement similar to that described in Clause 3.2.5.4 is in place.

Firewalls and vapour barriers may be used to achieve the separation distance in Tables 4.1, 4.2, 5.3 and 5.4 to protected places, public places and security fences.

There are no vapour barriers or firewalls incorporated with this installation. All required separation distances are achieved. COMPLIES

3.9	SECURITY, SIGNS AND NOTICES

3.9.1 Control of access

All installations shall be appropriately secured against unauthorized access and tampering.

This site is a private refuelling facility that is for use by authorised personnel only. The installation is located well within the property and can only be accessed by authorised personnel COMPLIES

3.9.2 Signs and notices

At the entrance to any storage area greater than minor storage, the following signs shall be displayed:
a) A DANGER—NO SMOKING, NO NAKED FLAMES sign;
b) For flammable liquids, a Class label and Subsidiary risk label (if any).
c) For combustible liquids, a COMBUSTIBLE LIQUID sign.

The following signs should be placed at the entrance(s) to the premises:
i) A WARNING—RESTRICTED AREA, AUTHORIZED PERSONNEL ONLY sign.

ii) A sign listing the emergency contact names, titles and phone numbers relevant to the installation.
iii) The name, address and phone number of the occupier.
iv) A layout diagram showing the location of fixed fire protection facilities (where installed), the drainage system and the 'Emergency Stop' switch.

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.

Signs shall comply with AS 1319. Class labels shall conform to AS 1216 and be a minimum of 250 mm square. Other signs shall have lettering at least 50 mm high.
NOTE: Composite signs or pictographs complying with the above requirements may be used.

The following signs are displayed on site:-
1 "DANGER-NO SMOKING, NO NAKED FLAME"
2 A HAZCHEM sign at the entrance to the site
3 A sign listing emergency contact names, titles and phone numbers relevant to the storage is located inside the emergency manifest box.
4 A Combustible liquids a COMBUSTIBLE LIQUID sign
5 At the entrance a layout diagram showing the location of fixed fire protection facilities, the drainage system and Emergency Stops. COMPLIES

3.10	TRANSIT STORAGE

3.10.1 General

This Clause (3.10) specifies requirements for the transit storage (as defined in Clause 1.4.72) of flammable and combustible liquids.

Sections 1, 9, 10 and 11 also apply to transit storage.

There is no transit storage at this site. NOT APPLICABLE

3.11	IGNITION SOURCES

A vehicle shall not be regarded as an ignition source while it is entering or leaving a hazardous zone surrounding a fuel dispenser or a bulk cargo transfer connection for the purposes of refuelling or for loading or unloading bulk liquids. However it shall be treated as a potential ignition source during the period of the bulk liquid transfer, and the procedures and precautions given in Section 7 of this Standard shall apply.

A vehicle shall not be regarded as an ignition source while it is entering or leaving the hazardous zone outside a package storage area for the purposes of loading or unloading packages, provided that the hazardous zone is not enclosed and the vehicle is not within the package storage area. During the loading and unloading, the vehicle's engine shall be switched off and shall not be started. Any vehicle shall not enter the package storage area unless—
a) it is suitable for the applicable hazardous zone as given in AS/NZS 60079.10.1; or
b) the store and vehicle comply with Appendix C and a work permit has been issued (see also Clause 3.4).

Vehicles movements will be restricted during bulk liquid transfer to minimise the potential for ignition sources to enter hazardous zones. Compliance with Section 7 is achieved. COMPLIES

SECTION 5 - STORAGE IN TANKS

5.1	SCOPE OF SECTION

This Section sets out requirements and recommendations for the storage of flammable or combustible liquids in tanks. The provisions of this Section are additional to those

given in Section 3 of this Standard.

Where tanks contain differing classes of liquid, all the provisions of this Section shall apply to the liquid of the lowest flash point.

Requirements for tank vehicle loading areas are given in Section 8. Requirements for IBCs of less than 1.6 m3 capacity are given in Clause 4.7.

Where flammable potable spirits are stored in bulk, Appendix F provides requirements that are alternative to this Section. However, the general principles given in this Section may be applied to such storages.

Provisions for spillage containment at power stations and grid transformers are described in Appendix G.
NOTE: See Figure 5.1 for an illustration of the terms used in this Section.

This section sets outs requirements and recommendations for the storage of combustible liquids in tanks. Provisions of this section are additional to those given in Section 3 of this standard. COMPLIES

5.2 GENERAL REQUIREMENTS

5.2.1 Design and construction of static storage tanks

A static storage tank shall be designed and constructed to comply with AS 1692 or an equivalent Standard for the category of tank appropriate to the application.

NOTE: Where the filling pressure, static head or vapour pressure in the ullage space exceed 35 kPa, the tank plate thickness and end design should be stress-checked in accordance with API Std 620 or other recognized Standards.

A Category 1 tank shall not be used for flammable liquid.
NOTES:
1 AS 1692 requires that certain essential information be provided by the purchaser to enable the correct tank to be supplied.
2 In some circumstances it may be necessary to use a pressure vessel that complies with AS 1210.

The tank is designed in accordance with AS 1692 "Steel tanks for flammable and combustible liquids". COMPLIES

5.2.2 Markings

Each tank in an installation shall be distinguished from any other tank by individual identification numbers or letters as part of a system for verifying the contents of each tank at any time and shall meet the following criteria:

a) For above-ground tanks:

i) Markings shall be displayed on the outside walls of the tanks and shall be not less than 500 mm in height for tanks having a diameter of 6 m or greater. For tanks of less than 6 m diameter the markings shall be not less than 150 mm in height.

ii) The bottom of the markings shall be above the crest of the main bund and any plant, equipment and piping on or above the bund.

iii) Where possible, the markings shall be clearly visible from main alternative access points likely to be used by the fire authority.

iv) Where there is a foam pumphouse or manifold for the control of firefighting foam, one such marking shall be clearly visible from that point or its close proximity.

v) Where there is a cluster of vertical tanks of 6 m diameter or greater or tanks are not separated as given in Table 5.3, the tanks shall have similar markings affixed to the roof with the numerals 6 and 9 underbarred.

vi) All markings shall be of a colour contrasting with that of the tank.

b) For underground tanks, the fill, dip and vapour recovery point for each tank shall be marked to identify it. Guidance is provided in AS 4977.
c) All tanks shall be marked with the appropriate warning placard as required by NOHSC:1015 or relevant regulation.

The aboveground tank is marked in accordance with the following:
i) Markings are displayed on the outside walls of the tanks and as the tanks have a diameter of less than 6m diameter the markings are not less than 150mm in height.
iii) The markings are clearly visible from main alternative access points likely to be used by fire authority.
iv) Where there is a foam pumphouse or manifold for the control of firefighting foam, one such marking will be clearly visible from that point or its close proximity.
vi) All markings are of a colour contrasting with that of the tanks. COMPLIES

5.2.3 Change of tank contents

Where there is a change of contents of a tank, the requirements of this Standard applicable to the new contents shall apply.

There is no change to the product of the tank proposed. COMPLIES

5.2.4 Pipework

The following requirements apply to pipes and flexible hoses:
a) Pipes and pipe joints shall be constructed from a material that is resistant to attack by, and is compatible with, the liquid under all service conditions. Where pressure piping is used, it shall comply with AS 4041.
b) All pipes shall be adequately protected from physical damage. Where plastic piping is used, it may also require electrostatic protection (see AS/NZS 1020 and IEC 60079-32-2).
NOTES:
1 Plastics may be subject to environmental stress cracking, 'ageing' and UV degradation. They are more susceptible to physical damage than steel, aluminium or stainless steel. Their physical properties can be seriously affected by extremes of ambient temperature, particularly when used above ground.
2 Manufacturers' data and testing should be consulted for guidance when selecting piping for the installation conditions.
3 Such protection may require the installation of physical barriers.
c) All above-ground pipes shall be colour-coded or labelled.
d) Pipework shall be well-supported and protected from potential traffic damage.
e) Flexible hoses shall not be used, except at transfer points. Where such hose is used, it shall be constructed of material that is resistant to attack by, and is compatible with, the liquid being transferred. The length of the hose shall be kept to a minimum.
NOTE: The use of bellows joints should be avoided (see also Clause 6.2.2).

All pipes and flexible hoses are installed and used as follows:
a) All pipes and pipe joints are compatible with the product stored under all service conditions. The pressure lines comply with AS4041.
b) All pipes are protected from physical damage.
c) All above ground pipes will be colour-coded or labelled
d) Flexible hoses will only be used at transfer points and be constructed of material that is resistant to attack by the liquid being transferred. COMPLIES

5.2.5 Roofs over tanks

This Clause applies to a tank or group of tanks that are located under a roof. It is not intended to apply to indoor tanks, which are addressed in Clause 5.6.

Where there is a roof over a tank or group of tanks, the following requirements and recommendations apply:
a) All tanks shall be vented above roof level.
b) Tanks shall be located and separated in accordance with Clauses 5.7 and 5.8.
c) If, under normal operations, personnel are to work on the tank (e.g. when dipping

the tank contents) a vertical clearance of at least 2.5 m shall be provided between the top of the tank or landing and the roof.
d) Separation distances shall be based on the aggregate volume of all of the tanks under the same roof, and shall be measured from the edge of the roof.
NOTE: This requirement does not apply if the roof is designed to burn or collapse quickly in a fire.
e) The effect of the roof upon hazardous atmosphere zoning shall be considered when designing such storage.
f) Provision shall be made for access, egress, and the application of cooling water.
g) Consideration should be given to—
i) the impact that the roof might have on heat dissipation and on the dispersal of flammable vapours;
ii) any restrictions that might be placed on firefighting as a result of the tanks being roofed; and
iii) the mode of failure of the roof and its supporting members under fire conditions.

The tank is not located under any form of roof. NOT APPLICABLE

5.2.6 Tanks on or above a roof

Any tank that is to be installed on or above a roof shall be of double-walled construction, with the outer shell draining to a remote drainage tank, sump or compound having a capacity at least equal to the tank capacity. A tank overflow pipe shall be provided, having sufficient capacity to return the full capacity of the filling pump to the remote drainage tank, sump or compound without spillage or over-pressuring the storage tank. An overflow alarm shall be fitted, audible at the filling point.

The tank is not located on or above any form of roof. NOT APPLICABLE

5.3 STORAGE TANK FILL POINTS

5.3.1 Fill connection

The fill connection to a storage tank that is filled from a tank vehicle shall incorporate a liquid-tight connection unless the filling method employs a hand-held trigger nozzle with a non-latching feature. A cap or cover shall be provided for the fill point.

The fill points incorporate liquid tight connections. (100NB camlocks or dry break couplings) Camlock caps are also provided. COMPLIES

5.3.2 Location of fill point

The fill point for any tank intended to be filled from a tank vehicle shall comply with the following requirements:
a) The fill point shall be readily accessible.
b) The fill point shall be protected from accidental damage.
c) The fill point for any tank containing a flammable liquid shall be in open air and no ignition sources shall be located within the hazardous area defined in accordance with AS/NZS 60079.10.1.
d) Where practicable, the fill point for any tank containing a combustible liquid shall be outside. If it is inside, it shall be not more than 2 m from a building entrance useable by a tank vehicle, and shall not be in a boiler room, furnace room, or an elevated temperature area.
NOTE: Fill points located inside a building should not be operated unless the building has sufficient alternative access and egress points to ensure the safe evacuation of personnel in an emergency.
e) The fill point for a tank shall be located so that a tank vehicle is not required to enter the tank compound to make a delivery.
f) For any tank containing a flammable liquid, the location shall be such that the tanker can stand wholly off any public road, except where allowed under the ADG Code.
g) Each fill point shall be clearly identified. For petroleum products, fill points shall comply with AS 4977.

h) The areas around the tank fill point and the vehicle hose connection point shall be impervious to the product.

For restrictions on the loading of vehicles, see Section 8.
NOTE: Where a service station is located near sensitive facilities (including where vulnerable people are concentrated such as schools, hospitals, aged care accommodations, child care and large entertainment venues), consideration should be given to preventing any potential large spill of fuel during a road tanker unloading operation impacting on these nearby sensitive facilities.

The combustible liquids tank fill point is:
a) Readily accessible.
b) Protected from accidental damage
d) Located outdoors
e) Located out of any tank compound.
g) All fill points are clearly identified.
h) All areas around the fill points and vehicle hose connection point are impervious to the product. COMPLIES

5.3.3 Liquid level indication

It shall be possible to monitor or gauge the amount of liquid in any tank intended to receive a delivery. This gauge or monitor shall also show the normal fill level of the tank. The following shall apply:

a) The normal fill level shall not exceed 95% of tank capacity (overfill level).
b) The provision of only a dipstick without an alarm is acceptable for liquid level monitoring of tanks—
(i) up to 25 000 L tank capacity for combustible liquids;
(ii) up to 5000 L tank capacity for flammable liquids; or
(iii) underground tanks filled by gravity.
c) All other tanks shall have a suitable high level alarm (LAH) set at a maximum of 97% of tank capacity. This alarm is the first stage overfilling protection, and shall be set to warn when the normal fill level has been exceeded. It shall not be used to control filling.
d) Any tank filled by gravity shall be fitted with an automatic flow limiting device which reduces the flow rate into the tank by 98% when the normal fill level of the tank has been attained.
NOTE: Hydraulic shock can result from sudden valve closures and any static electricity that might accumulate due to a high flow rate should be dissipated.
e) A contents gauge or monitoring device together with a LAH, remote from the tank, shall be provided at the fill point, or where the tank filling operation is monitored and controlled (e.g. a control room), in the following circumstances:
i) Where the tank is located within a building or under a building and the dip point is more than 8 m from the entrance to the building or otherwise inaccessible.
(ii) Where the tank is in a tank chamber and access to the dip point is prevented.
(iii) Where the tank is out of direct sight of the attendant monitoring filling flow controls.
(iv) Where Category 6 tanks are filled from ship to shore, from a refinery, or similar high volume transfers (e.g. 100 m3/h).
f) In addition to the LAH, they shall incorporate a physically and electrically independent high-high level alarm (LAHH). It will warn of a failure of some element of a primary (process) control system. It shall be set at or below the tank rated capacity to allow adequate response time to terminate the transfer before loss of containment/damage occurs.
NOTE: Response times should be based on maximum flow rates and generally should not be more than 10 minutes and be determined by a risk assessment.
NOTES:

1 Any alarm system should be appropriately maintained with a safety testing regime.
2 For Category 6 tanks, the level settings may be established on a risk assessment methodology to ensure that the maximum liquid level of the tank does not compromise the design parameters of the tank.
3 When a high level is reached, consideration should be given to shutting down the pump via a suitable interlock.

The tanks are fitted with dipsticks, which show the amount of liquid in the tank and also the maximum safe fill. The tanks are also fitted with an automatic flow limiting device, which reduces flow into the tank by 98% when the SFL has been reached. COMPLIES

5.3.4 Filling of elevated tanks

If the fill point is at or below the highest likely level of liquid in the tank or piping system, the fill connection shall be a dry-break type in accordance with AS 3664, incorporating a manual shut-off valve immediately upstream of the coupling. Where the fill point is beyond the security fence around the installation, a non-return valve shall be incorporated in the piping system at the security fence.
NOTE: An end-of-line assembly comprising a non-return valve, manual shut-off valve and cap with witness hole may be used in lieu of a dry-break coupling.

The filling arrangement for the elevated tank will be via an end-of-line assembly comprising a no-return valve, manual shut-off valve and cap with witness hole installed or a dry break coupling. COMPLIES

5.4 VENTING

5.4.1 General requirements

A tank manufacturer will not normally be able to finalize the design and size of the vent provision without consultation concerning the conditions of installation, filling, and operation, and the type of product to be stored.

Tanks, other than Categories 1 and 2, shall not be installed unless the owner holds design documentation confirming compliance with the relevant Standard, or it can be demonstrated that the tank is fit for service.

Each tank shall be fitted with a vent or vents in accordance with the following provisions:
a) A free vent or a pressure-vacuum (PV) vent designed for the type of liquid being stored.
b) An emergency vent when the conditions of Clause 5.5 apply.
c) Vapours shall be safely discharged outdoors unless their recovery and treatment is otherwise required.
d) The vents shall be separate from the filling pipe except for a Category 1 tank.
e) API 2000 is the basis for the requirements of this Clause. Appendix I of this Standard provides a metric version of parts of API 2000, but in cases of dispute the original Standard in imperial units will be the basis for decision.

NOTES:
1 Tanks of Categories 1 and 2 are intended for specific applications; the former for oil supply to domestic heaters, the latter for minor storage in open-space locations. Neither is intended for industrial use, and their vent provision could be inadequate for the filling and draw-off rates likely to be required in such usage.
2 Classification of tanks is in accordance with AS 1692.

The tank is fitted with a vent located on top of the tank. All vapours are discharged outdoors. The vent is separate from the fill line. COMPLIES

5.4.2 Vent capacity

The size of any free vent or pressure-vacuum vent shall be such that pressure or vacuum resulting from filling, emptying, or atmospheric temperature change will not cause the maximum allowable stress for the tank to be exceeded, nor the tank to

collapse. These requirements shall be met by one of the following:
a) For a Category 1 or 2 tank, the vent provided with the tank in accordance with AS 1692 shall be deemed to be suitable for the types of installations for which the tanks are intended (see Note 1 to Clause 5.4.1).
b) The vent size for a Category 3, 4, 5 or 6 tank installed above-ground shall comply with the relevant requirements of API 2000.
NOTE: The vent size of a Category 4 above-ground tank may be in accordance with Table 5.1 (see also Clause 5.4.1 regarding vent size).
c) The vent size of a Category 4 tank installed underground shall be at least that specified in Table 5.2.

The vent fitted to the tank is 50NB.
API 2000 requires:
Liquid In: flow maximum 500L/min
Liquid Out: flow maximum 500L/min
From table 5.1 the minimum venting requirement is 40NB. COMPLIES

5.4.3 Vent piping

Any vent piping between the tank vent connection and the discharge point shall comply with the following requirements:
a) The vent pipe shall fall consistently back to the tank at a slope of at least 1 in 100.
b) A vent pipe shall not pass through building foundations but may be embedded in concrete that is part of other building construction. Joints in vents shall be—
i) of such quality as to prevent vapour leaking; and
ii) located so that any leaking that might occur, is prevented from accumulating inside or transferring into cavity walls, ceilings or enclosed spaces.
c) An underground vent pipe shall be either embedded in a concrete slab or laid in the earth.
If the vent pipe is laid in the earth, it shall be—
i) located at least 300 mm below ground level;
ii) surrounded by clean washed sand;
iii) suitably protected if the area is subject to vehicular traffic;
iv) designed and installed to provide flexibility to accommodate settlement; and
v) protected from corrosion.
d) Where vent piping penetrates a fire-rated wall, it shall be installed so as to ensure that the fire resistance of the wall is maintained.
e) The vent pipe and terminal shall be located or protected so that they are not liable to damage resulting from normal activities.
f) Joints in vent piping shall be sealed to prevent liquid or vapour release and tested to a minimum hydrostatic pressure of 35 kPa or the operating pressure of the vent unit, whichever is the greater.
NOTE: Vent pipes may be connected together to form a common vent line, provided that the area of any common vent line is not less than the sum of the cross-sectional areas required for the individual vents connected to it, and that cross-contamination will not affect adversely the use of the contents of either tank.
g) Where several tanks are interconnected by a common venting system and the vapours in the vapour are within the explosive range, measures shall be taken to prevent the possibility of flashback or flame propagation through the system from one tank to another, e.g. by the use of flashback arresters, barometric dampers, nitrogen inerting or ensuring that the vapour concentration is always above the explosive range.
NOTE: Additional requirements may be necessary where vapour recovery is adopted.

The vent piping is installed and located in accordance with the following:
a) The vent pipes are mounted directly on the tanks.
b) The vent pipes do not pass through any foundation.
c) The joins prevent vapour leaking. The joins are fully welded.
d) The vent pipe is not in a vulnerable position.
e) The vent line is one length of pipe approx. 1.0m long which does not require pressure

testing.
f) Each tank is fitted with its own vent. COMPLIES

5.4.4 Vent outlet location

The discharge point of a vent shall comply with the following requirements:
a) The vent discharge point shall be located laterally at least 4 m for flammable liquids and 2 m for combustible liquids from any opening into a building, e.g., window, door, ventilator, airconditioner or a mechanical vent intake to reduce the possibility of the entry of nuisance vapour. The vent shall be located such that the opening into a building shall be outside the hazardous zone specified in the relevant part of AS/NZS 60079.10.1.
NOTE: The vent for any above-ground tank may discharge at a point at least 150 mm above the top of the tank, provided that other requirements for tank and vent locations are met.
b) The vent discharge point shall be located at least 4 m above ground level except for direct-vented tanks of Categories 1 or 2.
c) Where the tank is to be filled by gravity flow from a tank vehicle, the vent discharge point for the tank shall be at least 4 m above ground level at the fill point and in all circumstances shall be higher than the tank vehicle.
d) Where a Category 1 to 5 tank is to be filled by pumping from a tank vehicle—
i) the vent pipe or overfill point shall terminate in view of the filling operator; or
ii) the tank shall be fitted with a high level alarm audible to the filling operator.
Notwithstanding other requirements in this Clause, a vent provision may be connected to a vapour recovery or collection system.
NOTE: When filling rates are high, the velocity of the discharging vapour may be high enough to carry it a considerable distance. In such cases, particular attention should be paid to direction of discharge, to vapour diffusion and to potential ignition sources, especially for flammable liquid.

The vent outlet is located in accordance with the following:
a) As this tank stores combustible liquids the discharge point of the vent is laterally at least 2m from any opening into a building.
b) The vent for any above-ground tank may discharge at a point at least 150mm above the top of the tank provided that other requirements for tank and vent locations are met.
c) The vent discharge point is at least 4 meters above ground level.
d) The vent discharge point is higher than the tank vehicle.
e) (i) The vent is in full view of the filling operator.
(ii) The tank will be fitted with a high level alarm audible to the filling operator.
COMPLIES

5.4.5 Vent terminals

The discharge end of a vent shall be protected from the ingress of foreign material by means of a protective cage or fitting. Where a tank contains flammable liquid and the vapour within the ullage space of the tank is within explosive limits, a flame arrester or similar device shall be fitted. Any such protective cage, flame arrester or other means shall not reduce the required effective vent area or create undue back-pressure within the tank.
NOTE: A flame arrester incorporating a bronze or stainless steel wire mesh having openings not greater than 600 µm is acceptable.

The vent pipes are fitted with a cover to prevent the ingress of rainwater and have a gauze screen. COMPLIES

5.4.6 Application of pressure-vacuum vents

A pressure-vacuum vent shall not be used on any tank of Categories 1, 2 or 3, unless the tank has been specifically designed and tested as prescribed in AS 1692 for use with such a vent.

A pressure-vacuum vent shall not be fitted to any Category 4 underground tank except as part of a vapour recovery system.

This aboveground category 3 tank is not fitted with a pressure-vacuum vent. COMPLIES

5.4.7 Setting of pressure-vacuum vents

The settings of any pressure-vacuum vent shall be such that the pressure and vacuum limits, as given in the Standard to which the tank has been designed and tested, are not exceeded.

For tanks in Categories 4 or 5 designed and tested in accordance with AS 1692, the pressure setting shall be such that the test pressure of the tank is not exceeded under maximum normal venting conditions. The vacuum setting shall be such that the internal pressure does not fall below a pressure of −0.5 kPa gauge. On such tanks, the setting of the pressure-vacuum vent shall be more than 7 kPa below that of the emergency vent.

The tank is not fitted with pressure-vacuum vents. COMPLIES

5.5 EMERGENCY VENTING

5.5.1 Application of emergency venting

Emergency venting shall be provided for any Category 3 (above 2500L), 4, 5 or 6 above-ground tank having a fixed roof and containing a flammable liquid or which, though it contains a combustible liquid, is in the same compound as a tank containing a flammable liquid.

Clauses 5.5.2 and 5.5.3 do not apply to:
a) Any open-top tank with pontoon, floating or lifter roof.
b) Any fixed-roof tank that has an internal floating roof and free air vents of equal or greater area than that required for emergency venting.
c) Any fixed-roof tank having a diameter of 12 m or greater (see Clause 5.5.2).

As only combustible liquids are stored an emergency vent is not required.
NOT APPLICABLE

5.6 LOCATION AND CAPACITY OF INDOOR TANKS

5.6.1 General

Tanks containing flammable or combustible liquids that are an integral part of blending, mixing or processing equipment, are exempt from this Clause (5.6). However, the fire protection requirements given in Clause 11.11.1 shall apply to such tanks.
NOTE: See Figure 5.1 for illustrations of terms relating to tank locations.

There are no tanks installed indoors at this site. NOT APPLICABLE

5.7 SEPARATION OF ABOVE-GROUND TANKS

5.7.1 Application

The tank spacing requirements of this Clause (5.7) shall apply to both outdoor and indoor locations, provided that the latter are permitted by other limiting requirements.

The tank is separated in accordance with this clause as an aboveground tank stored outdoors. COMPLIES

5.7.2 Separation distance from tank to protected places, security fences or to on-site protected places

A tank or tanks shall be located so that the following minimum separation distances are maintained:
a) To security fences and on-site protected places, Table 5.3.
b) To a protected place beyond the site boundary, Table 5.4.
c) Except where provided with cooling water in accordance with Appendix I, the layout of tanks storing flammable liquids (or combustible liquids within the same compound as flammable liquids) shall be such that any tank is accessible on at least two sides from an access road outside the bund.

The separation distance to a protected place on an adjacent property may be measured across the property boundary as if the boundary did not exist. Where there is no protected place on the adjoining property the installation may be located in accordance with Item (a).

In all cases, if alterations on the adjacent property result in a breach of the requirements for separation distance, the installation shall be modified or relocated to restore compliance, or taken out of service.

The aboveground tank storing combustible liquids is separated from:
a) Security fences and any on-site protected place by a minimum of 3m
b) Protected place beyond the site boundary in excess of 6.7m. COMPLIES

5.7.3 Distance between vertical tanks for flammable liquids

The distance between any two adjacent vertical tanks that contain flammable liquids shall be as follows, except as otherwise provided in Clause 5.7.5.
a) If neither tank exceeds 6 m in diameter, the distance between them shall be at least either one-third of the diameter of the larger tank or 1 m, whichever is the greater.
b) If one of the tanks is more than 6 m but neither is more than 20 m in diameter, the distance between them shall be at least one-half of the diameter of the larger tank.
c) If one tank is more than 20 m in diameter, the distance between it and any other tank shall be at least 15 m.

This storage is of a single combustible liquids tank only. NOT APPLICABLE

5.7.4 Distance between vertical tanks for combustible liquids

The distance between any two adjacent vertical tanks that contain combustible liquids shall be as follows:
a) For Class C1 liquids, at least either one-sixth of the sum of their diameters or 1 m, whichever is the greater, except as otherwise provided in Clause 5.7.5.
b) For Class C2 liquids, at least 1 m.

This storage is of a single combustible liquids tank only. NOT APPLICABLE

5.7.5 Clusters of tanks

Vertical tanks having a diameter greater than 3 m but not exceeding 10 m may be grouped in a cluster with reduced tank-to-tank spacing, provided that—
a) the distance between any two tanks is at least 1 m;
b) the total cross-sectional area of all tanks in the cluster does not exceed 320 m2;
c) the distance separating any such cluster from any other above-ground tank or cluster of tanks is at least 15 m for flammable liquids or at least 7.5 m for combustible liquids;
d) where the total cross-sectional area of the tanks in any such cluster exceeds 30 m2, and one or more tanks contain flammable liquid, all tanks in the cluster are provided with foam fire protection in accordance with Clause 11.13.1 and Clause 11.13.2; and
e) when the required compound capacity and clearances from other structures is being calculated, such a cluster is regarded as being one tank of aggregated volume containing liquid of the lowest flash point present.

This storage is of a single combustible liquids tank only. NOT APPLICABLE

5.7.6 Horizontal tanks

The following requirements and recommendations apply to the storage of liquids in horizontal tanks:
a) Horizontal tanks shall comply with AS 1692 and the requirements of this Standard.
b) The distance between horizontal tanks shall be at least 600 mm. Where horizontal tanks are adjacent to vertical tanks, the distance requirements for vertical tanks shall apply.
c) Tanks shall not be arranged end-to-end unless the potential for end failure and the resulting exposure hazard has been taken into account when determining the tank's

location.
Note: Tanks may be arranged in parallel (side-by-side) in a row.

The horizontal tank complies with AS 1692. The separation distances between horizontal tanks are not valid as this is a single tank installation. COMPLIES

5.7.7 Mixed products

Where liquids of differing flash point are stored, the following requirements shall apply:
a) Where stored within the same compound, the separation distance between tanks applicable to the liquid of the lowest flash point present shall apply to each tank within that compound.
b) Where two compounds are separated by a bund, each tank in each compound shall be considered separately in its relationship to each tank in the adjacent compound. In each case, the separation distance shall be that applicable to the liquid of the lower flash point actually present in either of the tanks under consideration.

This storage is of a single combustible liquids tank only. NOT APPLICABLE

5.8 BUNDS AND COMPOUNDS

5.8.1 Requirements

Provision shall be made to contain any leakage or spillage from the tank storage facility and to prevent it from contaminating the surrounding soil or from entering any watercourse or water drainage system.

Any above-ground tank shall be installed within a compound, except where the quantity of liquid stored is within that allowable as minor storage in Table 2.1, or where the tank has integral secondary containment complying with Clause 5.9.

The aboveground tank has integral secondary containment therefore additional bunding for the tank storage is not required. NOT APPLICABLE

5.9 REQUIREMENTS FOR ABOVE-GROUND TANKS WITH INTEGRAL SECONDARY CONTAINMENT

5.9.1 General

A tank complying with this Clause (5.9) shall be one of the following:
a) A double-walled tank.
b) A tank having secondary containment and an external, fire-rated covering.
c) A tank with an attached or integrated spillage compound.

The tank on site is an aboveground tank with integral secondary containment and defined as a double walled tank. COMPLIES

5.9.2 Requirements for all tanks having integral secondary containment

The following requirements apply to tanks with integral secondary containment:
a) The tank shall not be used for the storage of PG I flammable liquids.
b) The capacity of the tank shall not exceed—
   i) 55 000 L for PG II liquids;
   ii) 110 000 L for PG III liquids; or
   iii) 110 000 L for combustible liquids.
c) The primary (inner) tank shall be constructed to AS 1692 or equivalent Standard.
d) The secondary containment shall be adequately designed and constructed, to contain the entire contents of the primary tank.
e) Means shall be provided to establish and monitor the integrity of the primary tank.
f) The tank shall be installed in accordance with Clause 5.11 or 5.12.6 as appropriate.
g) Where flammable liquid or vapour could escape from the interstitial space of a tank, the tank shall be separated by at least 3 m from any ignition source, including vehicles being refuelled.
h) Spacing between adjacent tanks shall be at least 600 mm.
i) The tank shall be protected from damage caused by an impact.
j) Means shall be provided to prevent release of liquid by siphon flow from the tank.
k) The tank shall be fitted with a means of determining the level of its contents. Such

means shall be available to the delivery operator.
l) All piping connections to the tank shall be above the normal maximum fill level.
m) Tanks shall not be manifolded unless provisions are made to prevent their being overfilled.
n) Overfill protection shall be provided by a suitable alarm with the flow of liquid being stopped, before the tank overflows.
If the tank is designed to contain overflow, such an alarm is the minimum provision necessary to achieve this objective. If the overflow is to be discharged outside the secondary containment, an automatic shut-off shall be provided. These provisions shall not restrict or interfere with the proper functioning of the normal vent or the emergency vent.
o) Each fill point shall be provided with spill containment having a minimum capacity of 15 L per fill point. Such a device shall be fitted to a tank in order to catch and contain any minor spill during product delivery to the tank.
p) Where a tank having multiple compartments is installed, the separation distance to protected places shall be based on the aggregate volume of the compartments and the lowest flash point of the liquid in any tank compartment.
q) Venting shall comply with Clause 5.4. Venting of compartments of a multiple-compartment tank shall be based on the lowest flash point product in any of the compartments.
r) Where the interstitial space is enclosed, it shall be provided with venting in accordance with this Standard or with a UL approved method.
s) Means shall be provided to physically test the correct functioning of any internal valve without the need to remove the valve.

The tank on site is an aboveground tank with integral secondary containment and it complies with the following:
a) No tank stores PG I flammable liquids
b) The capacity of an individual tank does not exceed 110 000 L for combustible liquids
c) The primary tanks are constructed to AS 1692.
d) The secondary tanks are adequately designed and constructed to contain the entire contents of the primary tank. It is also constructed in accordance with AS1692
e) The primary tanks integrity is monitored
f) The installation of the aboveground tanks is in accordance with Clause 5.11
g) The tank are separated from any ignition source by at least 3m
h) There are no adjacent tanks on site
i) Tanks are protected from vehicular impact by bollards
j) Procedures are in place to prevent release of liquid by siphon flow from the tank. Anti siphon valves and back checks are used on all outlets
k) The tank has a dip point installed to determine the level of its contents and is available for use by the delivery operators
l) All piping connections to the tank is above the normal maximum fill level (SFL)
m) Tanks are not manifolded
n) An alarm is installed to protect against overfilling. An overfill valve is also fitted which stops the flow of liquid
o) Each fill point has at least the minimum capacity of spill containment of 15L
p) The tank is not a multi compartment tank
q) Venting complies with Clause 5.4.
r) As the interstitial space is enclosed it has been provided with venting in accordance with this standard.
s) The correct functioning of any internal valve can be physically tested without the need to remove the valve. COMPLIES

5.9.3 Additional requirements for double-walled tanks

The following requirements and recommendations apply in addition to those in Clause 5.9.2 above:
a) Primary and secondary containment shall be wholly constructed of steel and shall be designed in accordance with AS 1692 or equivalent Standard.
b) Separation distances as given in Clause 5.7 shall apply.

As the tank is classed as double walled tank, in addition to Clause 5.9.2 the following applies:
a) Both the primary and secondary containment is wholly constructed of steel and designed in accordance with AS 1692
b) Separation distances as given in 5.7 apply. COMPLIES

5.9.4 Additional requirements for tanks with external fire-rated covering

NOTE: Fire rated tanks include 'vaulted' tanks which comply with UL 2085 or are approved by Underwriters Laboratories (UL) or Factory Mutual (FM) to the equivalent US fire rating.

The following requirements apply to tanks having an external, fire-rated covering on both the tank and any supports:
a) The secondary containment shall have an FRL of 240/240/240.
b) Emergency venting for the interstitial space in this tank system may be provided by a weak seam incorporated into the tank's external cover. In such a system, this seam shall fail preferentially if the pressure within the interstitial space builds up excessively, without compromising the integrity of the secondary containment.
c) Tanks having an FRL of 240/240/240 shall be regarded as complying with the requirements for tanks in chambers (see Clauses 5.13.1 and 5.13.2).
d) Where the tank's secondary containment has an FRL of at least 240/240/240 or complies with UL 2085, the following separation distances apply:
i) To on-site and off-site protected places, the distances given in Clause 5.7 may be halved.
ii) To boundaries and public places .....2 m.
iii) To any security fence.....1 m.
iv) To a dispenser .....nil.

NOTE: A dispenser may be mounted on a tank, provided it is suitable for use in the hazardous area around the tank.

The tank is not fitted with external fire-rated covering. NOT APPLICABLE

5.9.5 Additional requirements for tanks with integrated spillage compounds

The following requirements apply in addition to those in Clause 5.9.2:
a) The design of the external secondary containment shall comply with Clause 5.8.3 except that the 1 m separation distance given in Figure 5.2 does not apply. However, provision shall be made for inspection of the tank's outer surface.
b) The separation distances given in Clause 5.7 shall apply.

The tank does not have integrated spillage controls. NOT APPLICABLE

5.10 REQUIREMENTS FOR TANK CONTAINERS (ISO TANKS, PORTABLE TANKS) INCLUDING IBCs WHEN USED AS STATIC STORAGE TANKS

Tank containers and IBCs complying with the ADG Code may be used as static storage tanks. As such they are exempt from the provisions of Clause 5.2.1.

NOTE: The UN *Recommendations on the Transport of Dangerous Goods – Model Regulations* refers to these tanks as 'portable tanks' or IBCs.

Where flammable or combustible liquids are to be stored in tank containers, other than when such containers are used as delivery tanks or in transit storage, the following requirements apply:
a) All of the requirements of this Section (Section 5) shall apply with the exception of Clause 5.2.1.
b) Tank containers or IBCs shall not be stacked.
c) Storage configurations shall be maintained to ensure venting from relief vents is to free space.
NOTE: This safety control is to guard against the potential for flame impingement and jet fire on the ISO tank or any other ISO tank through the ignition of vapours.

d) Tank containers or IBCs shall be separated from each other so as not to impede or obstruct any necessary firefighting operations.
e) IBCs used for flammable liquids shall comply with the ADG Code. This includes compatibility of the specific liquid with the IBC material and the designated life span for plastics and composite IBCs.

The tank is not an ISO or portable tank. NOT APPLICABLE

5.11 INSTALLATION METHODS FOR ABOVE-GROUND TANKS

5.11.1 Foundations

An above-ground storage tank shall rest on a foundation which is adequate to support, without unacceptable or uneven settling, the following loads and forces:
a) The direct load imposed by the tank when full of either water or product, whichever is the more dense.
b) Any possible overturning forces, and in particular those due to wind when the tank is empty.
c) Any uplift or other distorting forces such as may occur in a tank under pressure.

Any attachment between the tank and its supporting structure or foundation shall be adequate to withstand any such forces.
NOTE: Because of the wide variety of surface, subsurface, and climatic conditions, it is obviously not possible to establish design data to cover all such situations. The allowable soil loading requires a decision for each individual case, having regard to the permissible settlement (see AS 1726).

The aboveground tank has been located on foundations that are capable to support all the relevant loads and forces. COMPLIES

5.11.2 Supporting structures

Any supporting structure between the foundation and the tank shall comply with the following requirements:
a) Any supporting structure, or ancillary structure used to provide rigidity, shall be made wholly of non-combustible material.
b) Any metallic support that is more than 1 m high and supports a tank having a capacity greater than 2500 L of PG I and PG II liquids, or 5000 L of PG III liquid, or 10 000 L of combustible liquid, shall be protected by material having an FRL of at least 120/120/120.
c) The structure shall be designed according to the requirements of the Australian Standard applicable to the particular construction (see AS 4100 for steel and AS 3600 for concrete).
d) The design shall take account of the total mass of the tank when full of either water or product, whichever is the greater, any wind loading, any possible uplift loading on restraining connections, and any likely seismic loading (see AS 1170.4).

Any such anchorage shall be designed to overcome the maximum anticipated buoyancy force.

All supporting structure between the foundation and the tank have been designed to incorporate all requirements of this clause. COMPLIES

5.11.3 Tank bearing area

The method of support of a tank shall avoid excessive concentration of loads on the supporting portion of the tank shell. Legs, cradles or similar methods of support shall be attached in a manner that will prevent possible trapping of moisture and corrosion of the tank shell.

The tank supports have been designed to avoid excessive load concentration and potential for any possible trapping of moisture and or corrosion of the tank shell. COMPLIES

5.11.4 Tanks in areas subject to flooding

A tank located in a flood-prone area shall be anchored to prevent floating.

Should the area be flood prone the tank will be anchored to prevent floating.

COMPLIES

5.12 INSTALLATION METHODS FOR UNDERGROUND TANKS

5.12.1 Method of installation

Any tank with more than 50% of its height buried below the surrounding ground gradient and mounded without any surrounding pit or chamber shall be considered an underground tank and shall be installed in accordance with AS 4897 and the following requirements:

a) The tank shall be set on and be surrounded with at least 150 mm of non-corrosive inert material such as clean sand well-tamped into place.

b) The tank shall be covered with sand or earth to a depth of at least 600 mm or, alternatively, the cover shall consist of 300 mm of sand superimposed with reinforced concrete at least 150 mm thick. Any covering shall provide adequate support.

c) The tank shall be securely anchored where necessary to prevent floating. Any such anchorage shall be designed to overcome the maximum anticipated buoyancy force.

d) A tank within a building shall be wholly below the lowest floor level of the building, and shall have a concrete covering.

e) Glass reinforced plastic tanks shall be installed in accordance with the manufacturer's instructions.

NOTES: Tanks that are installed with part of the shell above ground gradient and with the shell exposed to atmosphere, are not recommended because of corrosion control problems.

The tank is not installed underground. NOT APPLICABLE

5.13 INSTALLATION METHODS FOR TANKS IN TANK CHAMBERS

5.13.1 Above-ground tank chambers

Any tank chamber that is on or partly below the lowest floor level shall be constructed in accordance with the following requirements:

a) The walls shall have an FRL of 240/240/240.

b) The roof shall be of reinforced concrete at least 150 mm thick.

NOTE: The roof may have a removable section or sections for access or maintenance.

c) Where a tank chamber is subject to superimposed loads, the thickness of the roof or walls, or both, shall be increased appropriately.

d) The floor shall be of masonry or reinforced concrete, or of material of equivalent strength, excluding earth and asphalt.

e) There shall be a clear space of at least 450 mm between any tank and any wall or roof of the chamber, or any other tank in the chamber.

f) Any doorway or other access opening in any wall shall be protected by a fire door or cover having an FRL of at least –/120/30. Such a door or cover shall be designed to normally be closed.

g) The sill of any doorway shall be raised to provide a liquid-tight compound capable of sustaining the hydrostatic load and having a net capacity at least that of the largest tank.

h) The tank chamber shall not have an automatic pump-out system.

NOTE: If spills could accumulate in the tank chamber, a manually operated low-point sump or pump-away facility should be installed.

The tank is not installed within a chamber. NOT APPLICABLE

5.14 SERVICE TANKS

5.14.1 Use of service tanks

A service tank shall be interposed between a storage tank and a burner, engine, or other fuel-consuming equipment in the following circumstances:

a) When the storage tank is higher than the consuming equipment.

b) When the supply pressure that the consuming equipment can tolerate might otherwise be exceeded.
c) When for any other reason it is necessary to provide a limited storage or pressure controlling facility close to the consuming equipment.

The service tank shall be located close to the consuming device.

There are no service tanks incorporated with this installation. NOT APPLICABLE

SECTION 6 - SYSTEMS FOR PIPING, VALVES PUMPS AND TANK HEATING

6.1 GENERAL DESIGN AND CONSTRUCTION

6.1.1 Design suitability

The design, fabrication, assembly, testing and inspection of piping that is to contain flammable or combustible liquids shall be suitable for the expected working pressures, temperatures, and structural stresses. AS 4041 should also be consulted.

AS 4897 should be consulted when designing, installing and operating underground petroleum storage systems.

All piping is suitable for the expected working pressures, temperatures and structural stresses. COMPLIES

6.1.2 Material suitability

Any material used in the construction or installation of piping shall be suitable for the conditions of use (see also Clause 5.2.4). The following requirements apply:
a) The material shall be compatible with the particular liquid or any other component with which it may be in contact.
b) The material shall be resistant to any heat to which it may normally be exposed.
c) Where exposed to corrosion, from within or without, the material shall be sufficiently resistant to ensure a life span at least equal to other parts of the installation or to achieve its design life.
NOTE: Copper is not a preferred material for product lines and its use is to be discouraged for the following reasons:

(a) It is mechanically weaker, and has a lower melting point than other materials (e.g. steel).
(b) The jointing methods used for copper pipe are less robust than other systems (e.g. flanges, welds).
(c) Given the wide range of flammable and combustible liquids, chemical reaction between the liquid and the copper pipe may be more likely.
(d) Vibration could cause copper to harden over time.
(e) Copper could catalyse the decomposition of some fuels.

All piping materials used in this installation are suitable for the conditions of use, including:-
a) The material is compatible with combustible liquids.
b) The material is resistant to likely encountered heat.
c) Where the material is not exposed to corrosion COMPLIES

6.2 PIPING

6.2.1 Design and construction

The following general design considerations shall be taken into account when designing or installing any piping:
a) Access for operating, testing, maintenance, replacement or drainage.
b) Support and fixing.
c) Exposure to mechanical damage.
d) Protection against corrosion wherever necessary, particularly for piping that is outdoors, or underground, or underwater, or which passes through or is embedded in any material likely to induce corrosion.
e) Suitability for the liquids to be piped, and possible change of such liquids.

f) Integration with any cathodic protection system.
g) Any need to relieve excess pressure between valved-off sections of pipe in liquid service.
h) Expansion or contraction of the piping.
i) Drainage for any trench in which pipes are laid.
j) Protection for any buried piping from superimposed loads or ground settlement.
k) Electrical bonding and earthing (see AS/NZS 1020 and IEC 60079-32-2).
l) Where piping is encased in concrete, the need to guard against corrosion and to provide for expansion.
m) Painting or marking of piping, to permit ready identification of its contents (see AS 1345).
n) Access to, and operation of, valves and other control devices, including ergonomic considerations.
o) Fire resistance, where piping could be exposed to fire.

All of the design considerations of Clause 6.2.1 were taken into account when the pipe lines relevant to these tanks were designed and installed. COMPLIES

6.2.2 Joints

Joints in piping shall be suitable for the operating pressures, temperatures, materials, and other conditions of use. Particular attention should be paid to the joint's vulnerability to failure in the event of fire and susceptibility to corrosion, particularly if it is buried or submerged.

Joint types that are suitable are—
a) threaded joints conforming with AS 1722; and
b) flanged joints conforming with AS 2129 or ASME/ANSI B16.5, Class 150.
NOTES:
1 Mechanical grooved couplings tested to API 607 should only be used to accommodate misalignment or movement.
2 AS 4041 provides requirements for joints in pressure piping.

Any joint in copper pipework shall be made only with a flare compression fitting, or with a capillary fitting using a brazing metal with a melting point of at least 540°C, or by a spigotted joint formed from the pipe itself, and brazed as above. Flare fittings having mismatching cone angles shall not be used.

Joints in piping are suitable for the operating temperatures, pressures materials and conditions of use. Joints are either welded or screwed. COMPLIES

6.2.3 Flexible tubing

This Clause (6.2.3) applies to the connection of the fuel dispenser to the supply piping, but does not apply to the internal piping of the fuel dispenser.

Flexible tubing, piping or hose may be used, provided that the principles of Clauses 6.1 and 6.2.1 are met. Such tubing shall meet any necessary requirements with regard to compression, elongation, and angles of horizontal and vertical displacement.

A hose assembly shall be designed or shall have been tested to withstand at least 1.5 times the maximum allowable operating pressure, regardless of whether it is under pump pressure or at zero flow, and including dead-heading and system back-pressure.

There are no flexible connections to the pumping systems. NOT APPLICABLE

6.2.4 Transfer hose

A hose and hose assembly for petroleum products (except LP Gas) shall comply with AS 2683.
NOTE: Products other than petroleum may require specific hose materials or couplings, because of compatibility of materials, additional hazards or the like.

All transfer hoses associated with this installation comply with AS2683. COMPLIES

6.2.5 Vapour recovery piping

Any vapour recovery piping system for tank vehicle filling installations shall be designed so that when all pump-supplied tank vehicle filling provisions served by that vapour recovery system are in use simultaneously, the back-pressure on each tank vehicle does not exceed its normal operating pressure.

There is no vapour recovery system installed. NOT APPLICABLE

6.3 VALVES

6.3.1 System requirements

Sufficient valves shall be provided to permit proper operation of the system and to protect the installation. The following requirements apply:

a) A manually-operated tank or liquid outlet valve shall be located as close as possible to the shell of an above-ground tank.

b) A non-return valve shall be located in each tank-filling pipe close to the filling connection unless the levels of the filling connection, the downstream filling pipe, and the tank are such that backflow cannot occur when the filling hose has been disconnected. Where an anti-siphon opening is made in the filling pipe above the maximum liquid level in the tank, a non-return valve is not required.

Sufficient valves are provided to permit proper operation of the system and to protect the installation. The following requirements apply:

a) A manually-operated tank or liquid outlet valve is located as close as possible to the shell of the aboveground tank

b) A non-return valve is located in each tank-filling pipe close to the filling connection.

COMPLIES

6.3.2 Emergency shut-off provisions

Provision shall be made to shut off the flow of liquid quickly in an emergency—

a) from the storage tank to a consuming device; and

b) to a tank vehicle fill point.

Any manually operated valve or the actuating device for a remotely operated valve shall be located in a convenient and safe location and conspicuously marked with the words EMERGENCY LIQUID SHUT-OFF or EMERGENCY STOP.

There is no requirement for an emergency shut off point. There is no system from the storage tank to a consuming device. There are no tank vehicle fill points associated with this installation. COMPLIES

6.3.3 Valve selection

Any valve used for a flammable or combustible liquid shall comply with the following requirements:

a) For any valve that can be operated or closed by manual action, the distinction between the open and shut positions shall be obvious.

b) Any hand-operated valve having a handwheel, cross, tee or similar symmetrical handle, shall close by clockwise rotation, when viewed from the end of the spindle of the actuating device. A hand-lever operated valve shall be installed so that the lever is at right angles to the pipe when closed, and so that gravitational forces on the handle will not act in the direction of opening except where the valve is designed to fail-safe. The direction of closing shall be clearly marked.

c) The use of detachable handles for valves shall be avoided unless essential for security, for procedures, or for sequences. Any such handle shall not be removable unless the valve is at a safe setting and so indicated.

d) It is preferable that the valve type permits gland repacking to be achieved without having to remove the valve from its installed position.

e) Any valve whose failure in the event of fire could create a hazard shall be of either steel or a suitable grade of spheroidal graphite iron. The valve handle shall be of metal not inferior to the valve body in fire resistance.

f) Cast steel fire-safe valves shall be provided —
i) where any tank valve is below the liquid level of a tank of Categories 4, 5 or 6 containing flammable or combustible liquid; or
ii) where located in the transfer piping between marine tanker berths and storage tanks.

NOTE: If a cast steel valve incorporates no soft seals or other parts that could be affected by a fire, it may be considered to be 'fire-safe' and does not usually require a fire type test, (e.g. gate valves to API Std 600).

All valves used in this installation have the following features:-
a) The distinction between open and closed positions is obvious.
b) All hand operated valves are closed by clockwise rotation when viewed from the end of the spindle.
c) Valves with detachable handles are not used in this installation.
d) All valves used are of firesafe construction. COMPLIES

6.4 PUMPS

6.4.1 Pressure and temperature control

Where the discharge pipe of a pump can be shut off, provision shall be made to prevent the build-up of pressure or temperature in excess of the design capability of the pump and piping. The design of the system shall take into account the following:
a) A hydraulic relief valve shall not normally be provided with an isolating valve. Any such isolation valves, if installed, shall be arranged to be secured in the open position.
NOTES:
1 Pump bypasses may be installed to prevent local overheating. Isolation valves to serve hydraulic relief valves or pump bypasses are not recommended.
2 Discharge from a hydraulic relief valve should be returned to the supplying storage tank or returned to the pump inlet provided that the heat generated by such recirculation is within design limits.
b) The range of adjustment of any hydraulic relief valve shall be restricted to prevent excess pressure, or an excess-pressure relief valve shall be fitted.

There are no discharge pumps where pressures can build up in excess of the design pressure. NOT APPLICABLE

6.4.2 Emergency shut-off

An emergency shut-off device shall be provided on each pump. The shut-off device shall be readily accessible and its purpose clearly identified.

There are no pumps associated with this installation. COMPLIES

6.4.3 Pump drive

Clauses 3.4 and 3.5 shall apply to motors and engines for driving pumps.

Clause 3.3 applies to the pump motors. COMPLIES

6.5 HEATING OF LIQUIDS

6.5.1 Access for service

Critical components of the control system shall be removable without the need to drain any tank. The design, fixing and sealing of any insulation or lagging on pipes and tanks shall be such as to avoid the retention of moisture and to allow the removal of the insulation for inspection and maintenance purposes.

There is no heating of product on site. NOT APPLICABLE

SECTION 7 - FUEL DISPENSING

7.1	SCOPE OF SECTION
	This Section applies to sites at which flammable or combustible liquids are dispensed into the fuel tanks of vehicles, boats or other containers. It covers both private and retail installations, but does not apply to the bunkering of large vessels or the refuelling of aircraft. NOTE: The principles given in this Section may be applied to the refuelling of light aircraft.
	Combustible liquids are dispensed into tanks of vehicles; hence this section is applicable to this design. COMPLIES

7.2	GENERAL REQUIREMENTS
7.2.1	**Storage method** Any flammable or combustible liquid in quantities exceeding those dealt with in Section 2 shall be kept in package stores or tanks in accordance with Sections 3, 4 and 5 as appropriate.
	Combustible liquid quantities stored here are in excess of minor quantities and are stored in accordance with sections 3, 4 and 5 as appropriate. COMPLIES

7.2.2	**High-level tanks** Any tank which is so situated as to produce a gravity head at the dispenser shall be equipped with a fail-safe solenoid valve or other equally effective device which shuts off the supply at the tank outlet except when the dispenser is in use. Where the tank is either Category 1 or 2 and there is no metering dispenser, a manual shut-off valve shall be provided at the tank.
	The design of this aboveground tank produces a gravity head at the dispenser and is equipped with a fail-safe solenoid valve to shut off the supply at the tank outlet except when the dispenser is in use. COMPLIES

7.2.3	**Gaseous fuels** Where gaseous fuels for vehicles are stored, handled and dispensed on the premises, the following provisions shall be observed: a) AS/NZS 1596 for LP Gas. b) AS 3961 for LNG. c) AS 5092 for CNG.
	There are no Gas storages of any type on site. NOT APPLICABLE

7.2.4	**Emergency power cut-off** A clearly identified switch or circuit-breaker which will enable the power to be shut off to all dispensing units shall be provided at a location remote from any dispensing unit and easily accessible in an emergency. NOTE: Consideration should be given to incorporating a single emergency stop that would shut off all fuel dispensing.
	A circuit breaker is located at the switchboard and is clearly identified as being that for the dispensing system. COMPLIES

7.2.5	**Signs** A prominent sign on or near the dispenser shall be marked in letters at least 50 mm high as follows: STOP ENGINE—NO SMOKING The international symbol for 'smoking prohibited' may be used in lieu of the words 'no smoking'. The words 'no flames, pilot lights or mobile phones' may also be added.

A prominent sign in letters at least 50mm high "STOP ENGINE-NO SMOKING" is displayed at the dispensing area. COMPLIES

7.2.6 Hazardous zones

The hazardous zones for dispensers as defined in AS/NZS 60079.10.1 differentiate between petrol and LP Gas so care should be taken to consider the interrelation of the two zones where both fuels are being dispensed.

As only combustible liquids are dispensed on site, there are no overlapping hazardous zones. NOT APPLICABLE

7.3 DISPENSERS

7.3.1 General

The design, construction and testing of fuel dispensing equipment shall be in accordance with AS/NZS 2229.

The design, construction and testing of fuel dispensing equipment will be in accordance with AS/NZS 2229. INFORMATIVE ONLY

7.3.2 Location

A dispenser shall be located in accordance with the following requirements:

a) The location or protection shall be such as to minimize the possibility of damage from vehicles, boats or the like.

NOTE: In design, consideration should be given to limit/reduce the speed of vehicles entering the area by controls such as signage, speed reduction forecourt humps or other traffic management methods.

b) Any dispenser serving road vehicles with flammable liquids shall be so located that any vehicle is entirely on the premises while being fuelled, and no part of the dispenser housing is less than 4 m from the boundary. The location shall permit free air movement for the dispersal of vapours from refuelling.

NOTE: This distance may be measured around a vapour barrier.

c) Any dispenser for flammable liquid shall be located to comply with the following minimum separation distances:

i) From any above-ground flammable liquid storage or handling facility other than a dispenser—8 m.

ii) From any point where the bulk tank of a road tank vehicle or rail tank vehicle is being filled—15 m.

d) Notwithstanding Clause 7.3.2(b), where a dispenser is located inside a building, it shall comply with the following:

i) The dispenser shall be located within 1.5 metres of the vehicle entrance.

ii) The dispenser shall be used only for the supply of vehicle fuel to a vehicle or into a container that is located on the carriageway used by vehicles entering the building by that entrance.

iii) The nozzle shall comply with Clause 7.4.

iv) The carriageway and area within 1.5 m of the dispenser shall be graded so that any fuel spilled during any dispensing will flow directly out from and clear of the building. The spill shall be contained on the premises.

e) Any fixed, portable or mobile ignition source shall not be present within a hazardous zone for a dispenser as defined in AS/NZS 60079.10.1, except for a vehicle entering or leaving the dispensing area and personal equipment (e.g. hearing aids, key-ring torches, watches and pagers).

All combustible liquid dispensers are protected with bollards to minimise the possibility of impact with vehicles and located in a position that permits free air movement for the dispersal of vapours COMPLIES

7.3.3 Drainage

Any area on which a vehicle can stand while being fuelled shall be so graded that spilled liquid will flow away from any building, and will not flow off the site. Any interceptor or oil separator shall be readily accessible for inspection and cleaning.

Such interceptor or separator shall be able to contain a minimum of 50 L of hydrocarbon spill.

The fill area has been graded so any spilled liquid will flow into the pits and directed into the underground puraceptor which is capable of containing a minimum of 50L spill. This process prevents any spilled liquid from flowing towards any building or flowing off site. COMPLIES

7.3.4 Dispenser bypass

Where a dispenser is provided with a bypass return pipe, it shall be arranged to return the liquid to the tank from which it is being drawn.

There is no dispenser bypass. NOT APPLICABLE

7.3.5 Remote pumping systems

Where a flammable liquid is supplied to a dispensing installation by means of a pump that is not located at the dispenser, the following requirements shall apply:

a) Unless the pump is submerged in a tank, it shall be located above ground in the pen, suitably weather-protected, and not less than 2 m from any boundary of the premises or on-site protected place.

b) The pump control system shall permit the dispenser to operate only when a dispensing nozzle has been removed from its hanging bracket, and shall stop the pump after all of the nozzles supplied from that pump have been returned to their normal non-dispensing positions.

c) A valve incorporating a pipe-shear provision and automatic flow shut-off shall be installed at each pressurized dispenser inlet. This valve shall be securely attached to the ground. The shear provision shall be below or as near as possible to ground level.

d) All pipelines subject to pump pressure shall be hydrostatically tested to not less than twice the maximum shut off pressure of the pump unit prior to commissioning.

Pipeline integrity and leakage shall be monitored by—

i) hydrostatic testing at intervals of not more than two years; or

ii) leak detection equipment and inventory control; or

iii) other systems giving equivalent results.

NOTE: AS 4897 provides guidelines.

e) Any leak in a pressurized piping system shall be able to be readily detected.

There is no remote pumping system. NOT APPLICABLE

7.3.6 Unsupervised self-service systems

Any dispenser that is operated by a customer by means of currency or other means of payment, e.g. credit card, shall comply with the requirements of this Clause (7.3.6) as appropriate, and the following:

a) The dispenser hose shall be shorter than the distance from the dispenser to the nearest building or to the nearest boundary of an adjacent property.

b) The area around the dispenser and the payment unit shall be lit in accordance with Clause 3.6 at all times during which the unit is available for service.

c) The installation shall include an emergency shut-down device having the following functions or features:

i) When activated, the emergency device shall shut off the dispenser pump and transmit an alarm to a person or organization capable of responding. NOTE: It may also be used to release the access to the fire extinguishers (see Clause 11.9).

ii) It shall be readily accessible, and shall be integral with or adjacent to the currency or card receptor.

iii) It shall be protected from vandalism or unwarranted operation by a break-glass screen or equivalent.

iv) A notice shall be displayed, giving instructions on how to operate the device in the event of a major spill or fire.

This system is not operated by members of the public/customers by means of currency. COMPLIES

7.3.7	**Supervised self-service systems** Any installation where a dispenser is operated by a customer under the observation of central supervisor or attendant shall incorporate the following features: a) A control station or console, which shall be located within 40 m of each of the units, so that each unit's operation is visible to the attendant by direct vision or by means of mirrors, or other suitable means. b) A control console switch that can cut off the operation of all dispensers. c) A telephone adjacent to the control console. A list of emergency telephone numbers, including the fire brigade, ambulance services and other emergency responders shall be prominently displayed near the telephone. Dispensers shall not be operable unless an attendant is on duty at the control console, or the installation has been switched over to operate as an unsupervised self-service system. In the latter case Clause 7.3.6 shall apply.
	This system is not operated by members of the public/customers. NOT APPLICABLE

7.4	**DELIVERY HOSES AND NOZZLES**
7.4.1	**Nozzle design** Where fuel to the dispenser's delivery nozzle is supplied by a pumping system, the following features shall be incorporated: a) The nozzle shall incorporate a device which automatically shuts off fuel flow to that nozzle when the level of the liquid in the receiving vessel reaches the end of the nozzle. b) The nozzle shall be designed so that fuel flow to that nozzle is shut off, and remains shut off if the nozzle is dropped onto a non-resilient surface from a height of 250 mm or greater. c) The nozzle shall incorporate a safety device (safety cut-out attitude valve) so designed that the fuel flow to that nozzle is shut off and remains shut off if the nozzle spout is tilted above horizontal from its normal operating position. d) The nozzle on any dispenser which has a value or quantity preset facility incorporated into its operation shall not be provided with a latching device.
	The nozzle is designed with the following: a) The nozzle incorporates a device which automatically shuts off fuel flow to the nozzle when the level of liquid in the receiving vessel reaches the end of the nozzle. b) The nozzle is designed so that it shuts off and remains shut in the event the nozzle is dropped onto a non-resilient surface from a height of 250mm or greater. c) The nozzle incorporates a device designed so that the fuel flow to the nozzle is shut off and remains shut off if the nozzle spout is tilted above horizontal from its normal operating position. d) The dispenser does not have a value or quantity preset device. COMPLIES

7.4.2	**Customer-operated nozzles** The delivery nozzle for flammable liquids dispenser that is intended to be operated by a customer shall not have a latching device. No item, e.g. fuel cap, keys or any other device, shall be used to hold open a customer-operated nozzle.
	There are no flammable liquids being dispensed on site. NOT APPLICABLE

7.4.3	**Conductivity** The delivery hose and nozzle assembly shall be capable of dissipating any static electricity charge generated during filling.
	The hose and nozzle assembly is a commercially available system. It is assumed that it is capable of dissipating any static charge during filling. COMPLIES

7.4.4	**Hose Assembly** The dispensing hose assembly shall comply with AS 2683.
	The hose assembly is a commercially available system. It is assumed that it complies with AS 2683. COMPLIES

7.5	**MARINE DISPENSERS**
7.5.1	**Application** Installations for refuelling boats shall comply with the requirements of this Section (7) where relevant, unless varied by Clauses 7.5.2, 7.5.3, 7.5.4 and 7.5.5 below.
	There are no marine dispensers associated with this installation. NOT APPLICABLE

7.6	**OPERATIONS**
7.6.1	**Records** Inventory records of liquids received, stored and dispensed, shall be maintained and reconciled. Where any discrepancy in records indicates possible leakage, the installation shall be checked and any leaks found shall be rectified.
	Inventory records will be maintained and reconciled with any discrepancies investigated for the possibility of a leak. COMPLIES

7.6.2	**Procedures** Operating procedures shall take into account the following: a) The prevention of smoking or any other ignition sources within 3 m of any point where flammable liquid might be exposed, particularly when receiving or dispensing. b) The need to switch off a vehicle's engine while refuelling. c) Any possibility that vapour from a flammable liquid fill or vent pipe could reach an internal pilot flame on a campervan or caravan if the appliance vent has been badly located in relation to the filler (in such cases it is necessary to turn off the pilot before filling). d) The prevention of overfilling and spillage when storage tanks are being replenished. e) The maintenance of fill and dip caps in a liquid-tight condition. f) The suitability of containers being filled at dispensers for use, i.e. container condition and material, the presence of an effective cap, correct labelling. Containers shall not be filled when inside a vehicle compartment (see also Clause 7.6.3). g) Specific instructions that do not allow the filling of plastic containers that do not comply with AS/NZS 2906 or equivalent Standard. h) Risks when cleaning parts with flammable liquid. i) Procedures to be followed in the event of spillage, and particularly the spillage of flammable liquid on clothing. j) Risks when draining fuel tanks, particularly over inspection pits. k) Precautions for hot work on vehicle fuel tanks. l) Safety of electrical equipment used in pits. m) Floors shall not be washed with flammable liquid. n) Emergency clean-up equipment shall be available in case of spillage. o) Persons under the age of 15 years shall be prevented from operating fuel dispensers. p) Precautions for working in confined spaces. q) Training in the use of emergency equipment and maintenance of appropriate records.
	Operating procedures on site have been established to take into account all issues raised by this clause to maintain safe handling procedures of the combustible liquids during dispensing. COMPLIES

7.6.3	**Filling of containers with flammable liquids at dispensers** Flammable liquids shall not be filled from a service station's fuel dispenser into a container unless the capacity of the container is not greater than 25 L, and- a) the container complies with AS/NZS 2906 or equivalent Standard, or is substantially leakproof, metal, and has a tight-fitting closure; or b) the container is a suitable portable fuel tank for a boat.

NOTE: Suitable portable fuel tanks for boats may be filled in situ

Any container shall be on the ground whilst being filled, and not in a car boot or the back of a utility vehicle..

There are no flammable liquid storages onsite. NOT APPLICABLE

7.6.4 Filling of containers with combustible liquids at dispensers

Any container shall be leakproof and have a tightly fitting closure.

Combustible liquids are dispensed on site into vehicles only. Should combustible liquids be dispensed into a container, the container will be leakproof and have a tightly fitting closure. COMPLIES

SECTION 8 - TANK VEHICLE LOADING FACILITIES

8.1 SCOPE OF SECTION

This Section provides general requirements for installations where tank vehicles are filled, as well as, specific filling instructions. The requirements of this Section are additional to those of the ADG Code.

There is no facility for tank vehicle loading on this site. NOT APPLICABLE

SECTION 11 - FIRE PROTECTION

11.1 SCOPE OF SECTION

This Section sets out requirements and recommendations relating to the protection of storages of flammable and combustible liquids from fire, and for the fighting of any fire in such storages.

NOTES:

1 This Section does not provide for fire protection facilities at marine tanker loading and unloading berths, which are dealt with in AS 3846.

2 It is essential that the requirements of all regulatory authorities, including the fire authority, be observed.

The protection of an installation from fire is achieved primarily by good facility design and operational practices which ensure that the possibility of the outbreak of fire is minimized, together with the minimum installed fire protection equipment specified in this Section so that consequences are also minimised.

Fire Protection will be provided in accordance with this section for the aboveground combustible liquids facilities. COMPLIES

11.2 APPLICATION OF SECTION

Any building or site where flammable or combustible liquids are stored or handled, in quantities exceeding minor storage (see Section 2), shall be provided with fire protection in accordance with this Section. Each installation shall comply with the general requirements of Clause 11.3 and the specific requirements of such other Clauses as are appropriate to the particular situation.

For facilities located outside of the built environment – typically farms, rural agricultural operations, mining operations both in rural and remote areas, etc., where a destructive fire will not endanger persons on or off the site, will not endanger any property under other ownership, or will not have the potential to cause serious environmental damage, the fixed fire protection requirements specified in this section may be varied and/or reduced, subject to a risk assessment conducted with or agreed to by, the authority having jurisdiction.

When the flash point or quantity of liquid stored is changed, the fire protection shall be upgraded to satisfy the requirements of this Section as appropriate.

As this combustible liquid storage is in excess of minor quantities it is provided with fire protection in accordance with this section. COMPLIES

11.3 GENERAL REQUIREMENTS FOR FIRE PROTECTION EQUIPMENT

11.3.1 General

Fire protection systems shall be appropriate to the hazard and include consideration of adjoining activities and materials, so as not only to deal with incidents within the storage but also to reduce the potential for the liquids to become involved through the escalation of another incident.

Individual package stores and tanks within the boundaries of a single property may be treated as separate storages for the purpose of determining total fire protection requirements, provided that all parts of the total storage are physically separated from each other by at least the distances given in Table 4.1 or Table 5.4, as applicable.

The fire protection that has been chosen for this site is appropriate for the risk and hazards associated with the installations. COMPLIES

11.3.2 Equipment compatibility

Materials used in a fire protection system shall be suitable for the conditions of use and compatible with the liquids being stored. All firefighting media, appliances, equipment, components, hoses, connectors, booster connections, and the like shall be compatible with that of the local fire authority at all essential interfaces.
NOTE: Particular attention should be paid to provisions and procedures to cater for possible variations in the type of foam concentrate, mixing ratios, application methods and application rates.

All fire protection chosen is suitable for the conditions of use and the products stored. COMPLIES

11.3.3 Location of firefighting equipment

Any firefighting equipment shall be located so as to be reasonably adjacent to the risk being protected and accessible without undue danger in an emergency.

Fire fighting equipment is located so as to be reasonably adjacent to the risk being protected and accessible without undue danger in an emergency. COMPLIES

11.3.4 System integration

The fire protection facilities specified in this Section shall be either an independent system or integrated with other fire protection systems.
NOTE: Mutual aid in the form of a valved cross connection between neighbouring facilities to allow access to additional water supplies is acceptable, if approved by the relevant authority.

The fire protection facilities used here are specifically installed to protect this facility. COMPLIES

11.3.5 Weather protection

Any firefighting equipment that is susceptible to corrosion or degradation by weather, the environment, ultraviolet light, fumes and the like, shall be protected by a sheltered location or a protective enclosure, with the contents suitably labelled.

All fire fighting equipment installed for this facility is protected from the weather. COMPLIES

11.3.6 Labelling of firefighting equipment

All firefighting equipment shall be marked or labelled in accordance with the relevant Australian Standard. Other firefighting resources, such as water storage tanks, should be clearly identified.
NOTE: Advice may be sought from the fire authority.

All extinguishers are labelled in accordance with the relevant code. COMPLIES

11.3.7 System drawing illustrations

A layout plan showing the locations of all tanks, shut-off valves, pipelines, hydrants, and firefighting systems shall be provided and kept available for ready reference. Adequate wall-charts should be displayed in strategic control locations.

A layout plan showing the locations of all tank shut off valves, emergency stops and fire extinguishers is displayed near the installation in a strategic location. COMPLIES

11.3.8 Equipment and piping identification

Firefighting equipment and piping shall be provided with the following means of visual identification:

a) Water piping and valves within the foam pumphouse: R13—Signal Red.

b) Pumps, above-ground piping, and valves containing foam concentrate: B15—Mid Blue.

c) Above-ground foam solution lines and valves within the pumphouse: B25—Aqua.

d) Outside hydrants and firefighting equipment: colours as in Item (a) or (c) and the word WATER or FOAM, as appropriate.

e) Cabinets containing firefighting equipment: painted in accordance with Items a), b) or c), as appropriate.

f) Control points for water or foam: the word WATER or FOAM, as appropriate.

g) Sprinkler or Foam/Sprinkler system riser assemblies - colours as in Item (a) or (c) and the word WATER or FOAM, as appropriate.

NOTE: The colours specified are taken from AS 2700.

In addition to identifying piping colours, suitable labelling shall be provided as given in AS 1345.

All fire fighting equipment is provided with appropriate visual identification. COMPLIES

11.3.9 Impact protection

All equipment, piping and valves shall be adequately supported and protected, taking into consideration the potential for traffic damage and projectile impact during a fire.

All equipment, piping and valves are adequately supported and protected, taking into account the potential for traffic damage during a fire. COMPLIES

11.3.10 Maintenance of fire protection equipment

Fire protection systems and equipment shall be maintained in accordance with the relevant part of AS 1851.

In addition the following requirements shall apply to the maintenance of foam systems:

a) At least annually, all foam systems shall be thoroughly inspected and checked for proper operation. The inspection shall include the quality of the foam concentrate or premix solution quality or both. Where results deviate by more than 10% from the manufacturers specification or that documented in acceptance testing, remedial action shall be instigated.

b) The inspection report, with recommendations, shall be filed with the owner. The requirements for performance evaluation of foam concentrate or premix solution shall be in accordance with the maintenance requirements of NFPA 11.

c)Any foam discharged during system commissioning or testing shall be contained so as to prevent release to the environment.

NOTES:

1 The purpose of this inspection and testing is to ensure that the system is in full operating condition and that it remains in that condition until the next inspection.

2 Fixed discharge outlets equipped with frangible seals should be provided with suitable inspection means to permit proper maintenance and for inspection and replacement of vapour seals.

3 Appropriate non-fluorinated surrogate liquids should be used for testing as alternatives where possible.

The fire extinguishers are to be maintained in accordance with AS 1851. COMPLIES

11.4 PORTABLE FIRE EXTINGUISHERS

11.4.1 General

Fire extinguishers shall be provided in accordance with this Section as appropriate to the particular type of installation.

Any fire extinguisher shall comply with the appropriate Standard listed in Table 11.1, and shall be located and mounted in accordance with AS 2444.

The portable fire extinguishers installed for this installation are located and mounted in compliance with AS 2444. COMPLIES

11.4.2 Type and rating

The type and rating of any extinguisher required by this Standard shall be as follows:
a) Where the term 'powder-type extinguisher' is used it shall mean a portable powdertype fire extinguisher having a rating of at least 2A 60B(E).
NOTE: A capacity of 9 kg is recommended.
b) Where the term 'foam extinguisher' is used it shall mean a portable foam fire extinguisher having a rating of at least 2A 20B.
NOTES:
1 Fewer extinguishers may be provided in a specific area in order to reduce the total number of extinguishers nominated, provided that the overall rating is equivalent.
2 Although it is recognized that foam extinguishers cannot achieve a performance rating as high as is possible with other agents, foam is specified in certain applications where its characteristics are advantageous, e.g. ability to blanket spills, and to flow into corners otherwise difficult to reach. Nevertheless, substitution is permissible for rationalization, in which case the opportunity should be taken to raise the level of protection. Thus a 20B foam type could be replaced by a unit having a considerably more effective rating, e.g. 2A 60B.

Any powder type extinguishers have a rating of at least 2A 60B (E). COMPLIES

11.4.3 Limitations

Extinguishers shall be selected with the following criteria in mind:
a) Their suitability for use with the type of liquid on which it is intended to be used.
b) Alcohol-compatible foam shall be used for alcohol or other polar liquids.
c) Where powder-type and foam extinguishers are liable to be used together in an emergency, they shall be compatible.
NOTES:
1 Powder-type extinguishers have little cooling or quenching ability, so personnel should be aware of the potential for flashback or re-ignition.
2 Carbon dioxide can be adversely affected by wind, and so is more suitable for indoor and similar protected positions. Care needs to be taken in confined spaces.

The powder type fire extinguishers used here are suitable for use with C1 combustible liquids. COMPLIES

11.5 FIXED FIRE PROTECTION AND DETECTION SYSTEMS

11.5.1 General

Any fixed fire protection or detection system shall be designed and installed in accordance with the appropriate Standard as listed in Table 11.2. Where any requirement in this Standard is more onerous than the requirements of the appropriate Standard then the requirement of this Standard shall take precedence.
NOTE: Some Standards are not written for the prime purpose of protecting storages of flammable and combustible liquids, and the need to vary the requirements of such Standards is recognized. When consulting other Standards, care should be taken when selecting the appropriate portions of those Standards to be applied to the storage.

Detailed requirements and recommendations for foam systems and cooling water are provided in Clauses 11.14, 11.15 and 11.16.

Fixed fire protection facilities and detection systems are not required for this installation.
NOT APPLICABLE

11.6 FIRE PROTECTION REQUIREMENTS FOR PRODUCT PUMPS, MANIFOLDS AND HOSE CONNECTION POINTS

11.6.1 Product pumps

A pump installation for handling flammable or combustible liquids shall be provided with at least one powder-type extinguisher not less than 3 m nor more than 10 m from each risk being protected.

There are no product pumps, associated with this installation. NOT APPLICABLE

11.6.2 Manifolds and hose connection points

Except as otherwise required by this Section, a powder-type extinguisher shall be provided within 10 m of a hose connection point or a manifold.

There are no manifolds or hose connection points associated with this installation.
NOT APPLICABLE

11.7 FIRE EXTINGUISHER REQUIREMENTS FOR TANK VEHICLE TRANSFER AREAS

11.7.1 Location of extinguishers

The positions of extinguishers shall be chosen to optimize access in an emergency. The following considerations should be taken into account:

a) At least one powder-type extinguisher should be at ground level at each loading position. For a top-loading installation at least one additional powder-type extinguisher should be at the loading platform.

b) All foam type extinguishers should be at ground level within 10 m of the loading point.

c) Locations should be on approach or exit paths.

d) Access to any extinguisher should not be vulnerable to blockage by a fire.

The position of extinguishers was chosen to optimize access in an emergency. Extinguishers are at ground level and within 10m of the loading point. COMPLIES

11.7.2 Road tank vehicle loading areas

An installation for filling road tank vehicles with flammable liquid shall be provided with the following minimum fire protection:

a) For top loading, one powder-type extinguisher per vehicle loading position located on the platform plus one powder-type extinguisher for each set of access stairs.

b) For bottom loading, one powder-type extinguisher for each vehicle loading position.

c) In addition to Items (a) and (b), one foam extinguisher for every two vehicle loading positions or part thereof.

D) Where a road tank vehicle consists of more than one tank unit (e.g. a B-Double or road train), Clause 11.7.3 shall apply.

There are no facilities for road tank vehicle loading on this site. COMPLIES

11.7.3 Rail tank vehicle loading areas

An installation for filling rail tank vehicles with flammable liquid shall be provided with the following protection:

a) When filling a single tank vehicle, or two tank vehicles on parallel sidings from a common elevated platform, Clause 11.7.2(a) and 11.7.2(c) shall apply.

b) When filling two or more tank vehicles in line from a common platform, the following shall be provided:

i) At least one powder-type extinguisher for every 15 m or part thereof of platform length.

ii) One powder-type extinguisher and one foam extinguisher at the foot of each set of access steps to the platform.

c) Where bottom loading takes place, at least one powder-type extinguisher shall be provided for each loading point or group of loading points, plus one foam extinguisher for each two loading points or for each two groups of loading points.

There are no facilities for rail tank vehicle loading on this site. COMPLIES

11.7.4 Tank vehicle delivery locations

Any location at which a tank vehicle will unload flammable liquid shall be provided with at least one powder-type extinguisher per unloading point or grouped set of unloading points with a minimum of two powder-type extinguishers for the installation. NOTE: Where the location of the unloading area in relation to the storage renders it inadvisable to locate the extinguishers permanently at the tank vehicle standing area, they may be taken to that area for the unloading period.

For rail tank vehicle unloading, a minimum of one powder-type and one foam type extinguisher shall be provided for every two rail tank vehicle unloading positions.

The tank vehicles that deliver to this site carry fire extinguishers on board whare are located in an appropriate location should it be required during tank refilling. COMPLIES

11.8 FIRE PROTECTION REQUIREMENTS FOR PACKAGE STORAGE AND HANDLING AREAS

11.8.1 Application

This Clause (Clause 11.8) provides fire protection requirements for package storage and handling areas, as described in Section 4.

There are no package storage handling areas associated with this design.
NOT APPLICABLE

11.9 FIRE PROTECTION REQUIREMENTS FOR FUEL DISPENSING INSTALLATIONS

11.9.1 Vehicle refuelling stations

Fuel-dispensing installations for vehicles shall be provided with at least two powder-type extinguishers. For a private installation containing a single dispenser, one such powder-type extinguisher shall suffice where flammable liquid is dispensed. Extinguishers may be omitted where only combustible liquid is dispensed.

Combustible liquids are dispensed into vehicles on this site and whilst not required it is advised for fire extinguishers to be provided at the dispenser. The design incorporates two powder type extinguishers located at the tank as required by clause 11.12.4
COMPLIES

11.9.2 Refuelling berths for small craft

An installation for refuelling boats with flammable liquid shall be provided with the following fire protection equipment:
a) One powder-type extinguisher and one foam extinguisher per dispenser or group of dispensers and located no more than 10 m from a dispenser.
b) One hose reel on the side of the jetty, complying with Clause 11.5.3, the nozzle of which is capable of reaching the nozzle of each dispenser on the same jetty or wharf, when the dispenser hose is fully extended for normal refuelling. The reel shall be at least 3 m from any dispenser.

The fire protection equipment specified in Items (a) and (b) shall be located between the shore access and the dispenser.

This facility is not a refuelling berth for small crafts. NOT APPLICABLE

11.9.3 Refuelling installations for light aircraft

An installation for the refuelling of light aircraft (up to 15-seater planes) shall be provided with one powder-type extinguisher per dispenser or group of dispensers. Such an extinguisher shall be located within 10 m of the dispenser.

This facility is not a refuelling installation for light aircrafts. NOT APPLICABLE

11.9.4 Extinguisher access and security

At installations dispensing to the public, the extinguishers shall be accessible to the persons refuelling. Such extinguishers may be protected from vandalism or unauthorized access by a break-glass screen or an equivalent, such as a hatch that is opened by an emergency alarm or shut-off actuator.

The break-glass screen or similar device shall be prominently marked with instructions for gaining access to the extinguisher.

There are no extinguishers required by this clause. NOT APPLICABLE

11.9.5 Specific dispenser extinguishers

The extinguishers specified for fuel dispensers shall be additional to any extinguishers provided elsewhere on the site.

There are no extinguishers required for the fuel dispensing facility. NOT APPLICABLE

11.10 FIRE PROTECTION REQUIREMENTS FOR ABOVE-GROUND FIRERATED TANKS, TANKS UNDERGROUND OR IN CHAMBERS

Any tank that is fire-rated (see Clause 5.9.3), or installed underground or in a tank chamber may be operated without fire protection additional to that otherwise required for the site.

There are no above ground fire-rated tanks on site. NOT APPLICABLE

11.11 FIRE PROTECTION REQUIREMENTS FOR ABOVE-GROUND TANK STORAGE OF AGGREGATE CAPACITY LESS THAN 60 m3

11.11.1 Tanks within buildings

Where a tank containing flammable or C1 liquid is located within a building, but is not in a tank chamber, it shall be provided with at least one powder-type extinguisher located within 10 m of the tank and hydrant protection as specified in Clause 11.5.4 and Table 11.4..

The aggregate tank capacity exceeds 60,000L. NOT APPLICABLE

11.12 FIRE PROTECTION REQUIREMENTS FOR ABOVE-GROUND TANK STORAGE OF AGGREGATE CAPACITY 60 m3 TO 2000 m3

11.12.1 Flammable liquids

Where flammable liquid is stored with or without combustible liquid, the following requirements shall be provided, in addition to the provisions for any other storage or building on the site, unless exempted or varied by Clause 11.2:

a) For clusters of tanks, Clauses 11.13.2 and 11.16 shall apply.

b) At least one powder-type extinguisher and hose reel with foam.

c) Fire hydrants complying with Clause 11.5.4 and the following:

i) Suitable foam making equipment shall be provided, capable of producing 240 L/min (4 L/s) of foam solution at a minimum pressure of 400 kPa.

ii) Sufficient foam concentrate in containers to provide 20 minutes operation of the foam branchpipe in addition to any concentrate required for other purposes.

iii) Sufficient length of hose of at least 38 mm size, to reach the compound and any road or rail tanker loading point, from a hydrant from either of two directions at least 90° apart shall be available. Where hoses have to be joined, not more than one length shall be 38 mm size. Additional lengths shall be at least 65 mm size, but there shall be no more than two lengths of hose per hydrant outlet. Hydrants shall be not more than 60 m from the tank.

iv) The essential requirement is that satisfactory foam be generated, with an expansion ratio of at least 8:1.

d) Sufficient hydrants shall be provided in accordance with Clause 11.13.4.1(a).

e) The location of hydrants on the site shall be chosen on the basis of providing

effective cover for each compound and any road or rail tank loading point in accordance with Clause 11.5.4, under any foreseeable conditions of fire and wind.
This tank contains combustible liquids only. There are no flammable liquids stored here. NOT APPLICABLE

11.12.2 Flammable liquids associated with blending plants NOTE: See Clause 11.11.2.
This installation does not incorporate a blending plant. NOT APPLICABLE

11.12.3 Potable spirits NOTE: See Clause 11.11.2.
There are no potable spirits kept on site. NOT APPLICABLE

11.12.4 Class C1 liquid Where Class C1 liquid is stored without flammable liquid but with or without Class C2 liquid, the installation shall be provided with— a) a hose reel and foam-making equipment complying with Clause 11.5.3, for use where the water supply is adequate; or b) two powder-type fire extinguishers plus additional sets of fire extinguishers shall be provided for multiple tank installations, as required. The maximum travel distance to access a fire extinguisher shall not exceed 15m.
The aboveground combustible liquids tank with 90,000L capacity will be provided with fire protection in the form of two powder-type fire extinguishers. COMPLIES

11.12.5 Class C2 liquid Where only Class C2 liquid is stored, the normal fire protection provisions of the building or site shall be sufficient.
There are no C2 combustible liquid storages on site. NOT APPLICABLE

11.12.6 Cooling water Where any individual tank exceeds 500 m3 capacity, cooling water shall be provided where relevant. See Clause 11.15.
There are no tanks that exceed 500m3 so cooling water is not required. NOT APPLICABLE

DOCUMENT REFERENCES

1 State Environmental Planning Policy 33, Hazardous & Offensive Development Application Guidelines. – Department of Planning NSW, January 2011.
2 State Environmental Planning Policy 33, Hazardous & Offensive Development Application Guidelines. – Department of Planning NSW. Page 1, 1.2 the policy, last para
3 State Environmental Planning Policy 33, Hazardous & Offensive Development Application Guidelines. – Department of Planning NSW. Page 9, 4.2
4 Protection of the Environment Operations (Underground Petroleum Storage Systems) regulation 2014 division 1, clause 5 and 6

OTHER REFERENCES

Australian Standards:

AS 1940-2004	"The Storage & Handling of Flammable & Combustible Liquids"
AS/NZS 1596-2014	"Storage and Handling of LPG Gas"
AS 4897-2008	"The Design, Installation and Operation of Underground Petroleum Storage Tanks"
AS 3000-2007	"Electrical Wiring Rules".
AS/NZS 60079.10.1-2009	"Classification of Areas. Explosive gas atmospheres". Annex ZA "Examples of Hazardous Area Classification".
AS 2832.2-2003	"Cathodic Protection of Metals – Compact buried structures".
AS 2239-2003	"Galvanic (sacrificial) Anodes for Cathodic Protection".
AS/NZS 3788-2006	"Pressure Equipment – In-service inspection".
AS 4037-1999	"Pressure Equipment – Examination & testing".
AS/NZS 1841.5-2007	"Portable Fire Extinguishers".
AS 2444-2001	"Portable Fire Extinguishers and Fire Blankets". Select. & location.
AS 1692-2006	"Tanks for Flammable and Combustible liquids".

Codes of Practices:

Australian Code for the Transportation of Dangerous Goods by Road and Rail, Seventh edition.
NSW Code of Practice 2005 for Storage & Handling of Dangerous Goods.
NSW Work Health and Safety Act and Regs 2011.

Planning NSW Guidelines:

Hazardous and Offensive Development Application Guidelines - Applying SEPP 33
Hazardous and Offensive Development Application Guidelines - Multi-Level Risk Assessment
Hazardous Industry Planning Advisory Paper No. 4 - Risk Criteria for Land Use Safety Planning
Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis
Hazardous Industry Planning Advisory Paper No. 8 - Hazard and Operability Studies

Other Documentation:

Local Authorities requirements, NSW WorkCover and EPA Acts and Regulations.
Equipment Suppliers Specifications, Requirements and Instructions.
Fuel System Specifications and Drawings.
Site Specific drawings and suppliers specifications.

APPENDIX 1

SIGNAGE

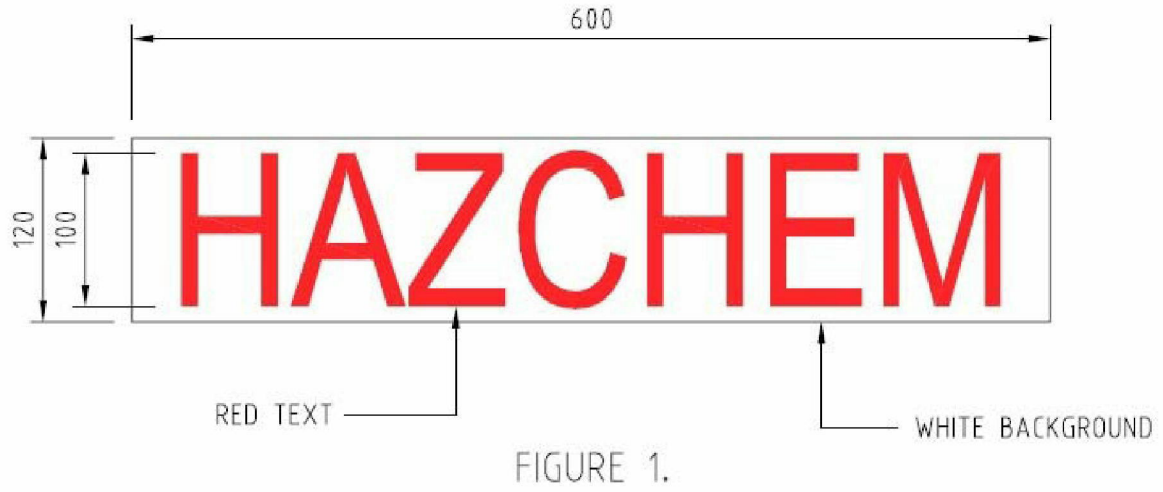


FIGURE 1.

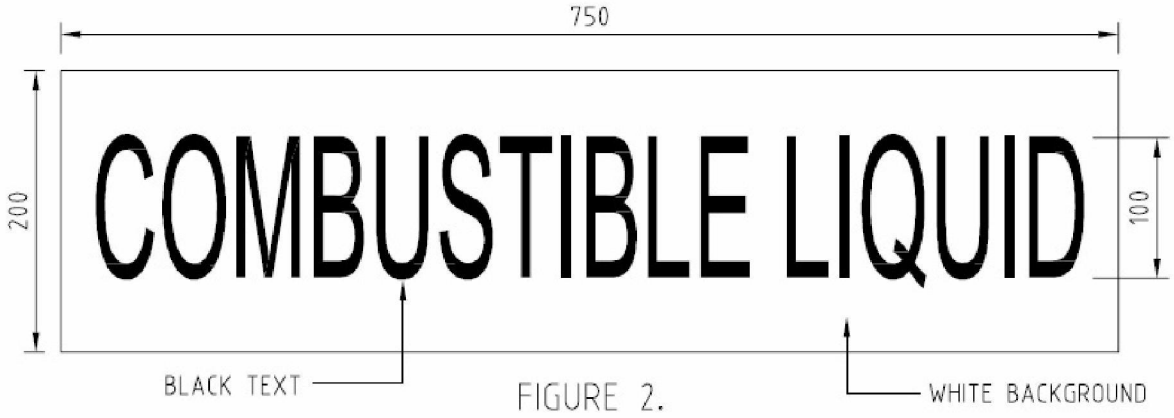


FIGURE 2.

Hazard Analysis

Project: Bulk Aboveground Diesel storage at FoodBoss Penrith NSW
Description/Activity: Dispensing Facility

Assessment Ref No: J1441-A203
Date: 13.11.2017

Likelihood (L)		Consequences (C)	
Rare	5	Insignificant	5
Unlikely	4	Minor	4
Moderate	3	Moderate	3
Likely	2	Major	2
Almost Certain	1	Extreme	1

Overall Risk Rating (L) x (C)

Score	Response Required
1 to 6	Immediate Action Required
7 to 14	Review Action Required ASAP
15 to 25	Acceptable risk - no need for action

Certification against AS1940 for Combustible Liquids Storage

No.	Hazard		(L) 1-->5	(C) 1-->5	(L)x(C)	Action Required (Y/N)
1	Overfill of tank	The combustible liquids tank is an aboveground doubled walled tank and has fill points fitted with liquid tight connections with 100nb camlocks or dry break couplings. The tank is fitted with an automatic flow limiting device, which reduces flow into the tanks by 98% when the SFL has been reached. Fire fighting equipment is provided for the tanks in accordance with AS 1940 and are located within a close proximity to the fill points.	4	4	16	N
2	Hose trip hazard	The tanker parking area is adjacent to the fill point in a nominated tanker parking area. The hose used is a small diameter pressure hose and is generally able to lie flat on the ground. The tanker driver uses warning signage during deliveries.	5	4	20	N
3	Fire at fill point	All delivery tankers carry at least a single powder type extinguisher which is available near the fill points during product delivery. Additional fire protection equipment is available within a close proximity. The filling arrangement for the end-of-line assembly comprising a no-return valve, manual shut-off valve and cap with witness hole installed or a dry break coupling.	5	3	15	N
4	Fire on site	The aboveground combustible liquids tank and dispensing installation are provided with fire protection in accordance with AS 1940. In the event of a fire the installation will be shut down at the main switch board or by any of the emergency stops fitted.	5	3	15	N
5	Leak in pipework	All pipework is contained within the front section of the tank. This areas have their own containment to prevent any leaks from contaminating soil or running off site.	5	4	20	N
6	Ruptured fill hose	Extremely unlikely event. The tank hoses are pressure tested and/or replaced regularly. The tanker is fitted with an emergency stop system. The tanker standing area is specifically set up for containment of spills.	4	4	16	N
7	Equipment wear and tear	Regular maintenance checks are carried out on the tank and their equipment to maintain that everything is in a safe and working condition. Delivery drivers report anything that requires rectification.	4	4	16	N
8	Vandalism of equipment	The tank is designed so all valves and fittings are secured from tampering.	4	4	16	N
9	Fire on adjoining property	Should a fire on an adjoining property impact the site the aboveground combustible liquids tank and dispensing installation will be shut down at the main switch board. The installation is provided with fire protection in accordance with AS 1940.	5	3	15	N

10	Vehicle overfill during dispensing	The dispensers installed at this site are equipped with a sensing device that's shuts down the flow of product when it reaches the tip of the nozzle. Clean up materials are located within close proximity of the dispensing area.	4	4	16	N
11	Collision between vehicle and tank	The tank and dispensing installation are protected from vehicular impact by with the assistance of bollards.	4	4	16	N
12	Use of mobile phone/transmitting devices	The site is fitted with warning signs advising customers of the risk of mobile phone and transmitting devices.	5	4	20	N
13	Staff misuse of equipment	The site is fitted with instructions indicating procedures for safe use of the dispensing equipment.	5	4	20	N
14	Vehicle overfill during dispensing	The dispensers installed at this site are equipped with a sensing device that's shuts down the flow of product when it reaches the tip of the nozzle. Clean up materials are located within close proximity of the dispensing area.	4	4	16	N

Hazard Analysis Summary

Project/Site: Bulk Aboveground Diesel storage at FoodBoss Penrith NSW
Description/Activity: Dispensing Facility

Assessment Ref No: J1441-A203
Date: 13.11.2017
Last Updated:

Note: This section of the hazard analysis is for the design of the combustible liquids dispensing system only and does not take into account any site issues which must be looked at regarding the combustible liquids storage being located elsewhere on site.

CONTROL MEASURES		IMPLEMENTATION		MONITOR & REVIEW	
Item Ref	Possible Control Measures	Responsibility and Action Required	Control Implemented Sign-off & Date	Planned Review Date	Review Sign-off & Date
	NA	NA			

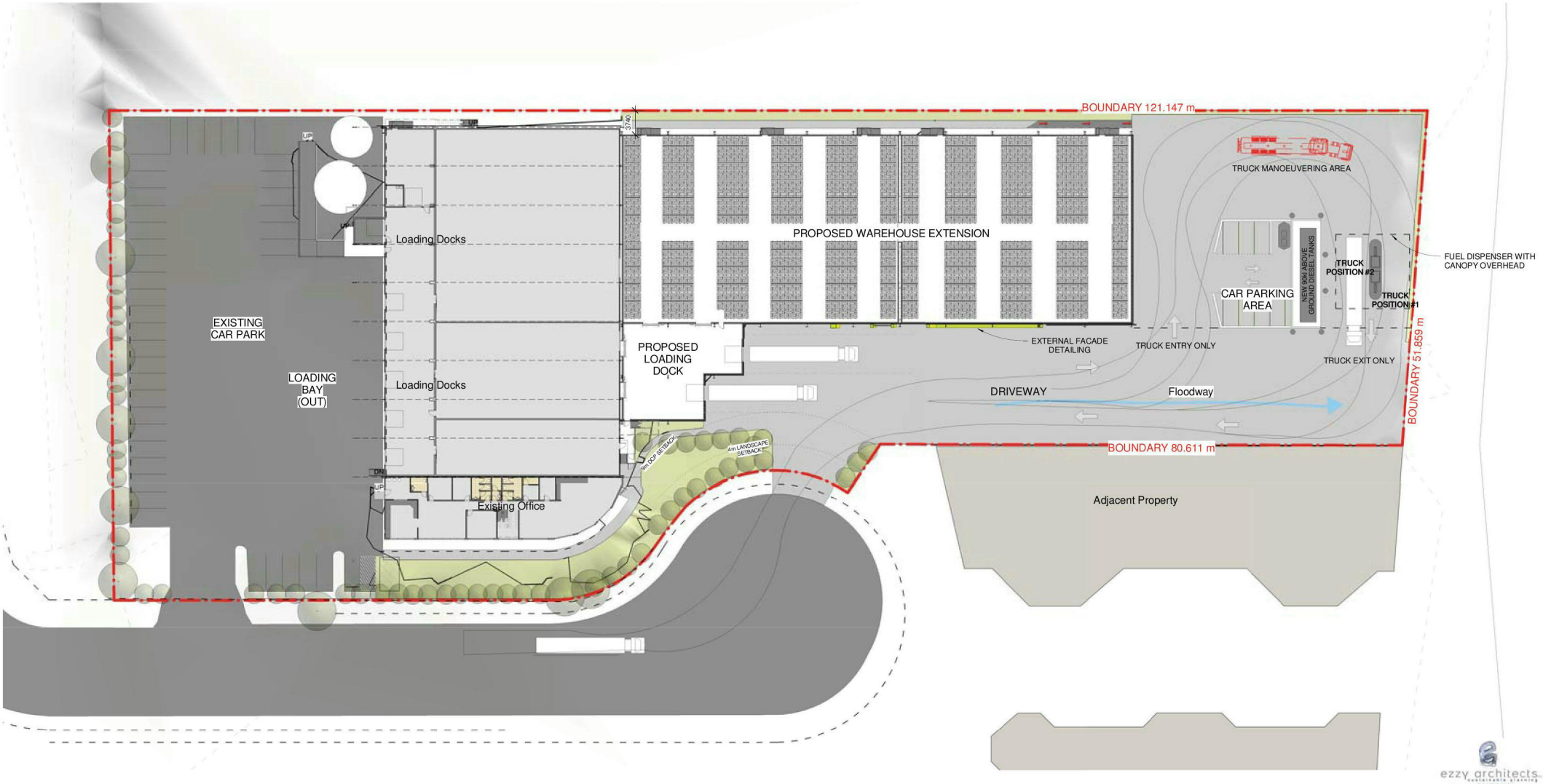
CONCLUSION/COMMENTS:

POST IMPLEMENTATION CHECKLIST REVIEW:

APPENDIX 3

PROPOSED INSTALLATION DRAWINGS

Drawing J1441-A204 "Truck Turning Circle"
Drawing J1441-A203 "Truck Refuelling Plan"



1 01 Truck Turning Circle
1 : 300

ezzy architects

SCALE 1 : 300 @ A1

North

REVISION SCHEDULE

No.	Description	Date

Expansion of Existing Industrial Facility

Alex Kmjulac

24-27 Lambridge Place, Penrith, 2750
Lot 11 & Lot 12 / DP 1087962

Truck Turning Circle

J1441

A204

DA Application

16/10/2017

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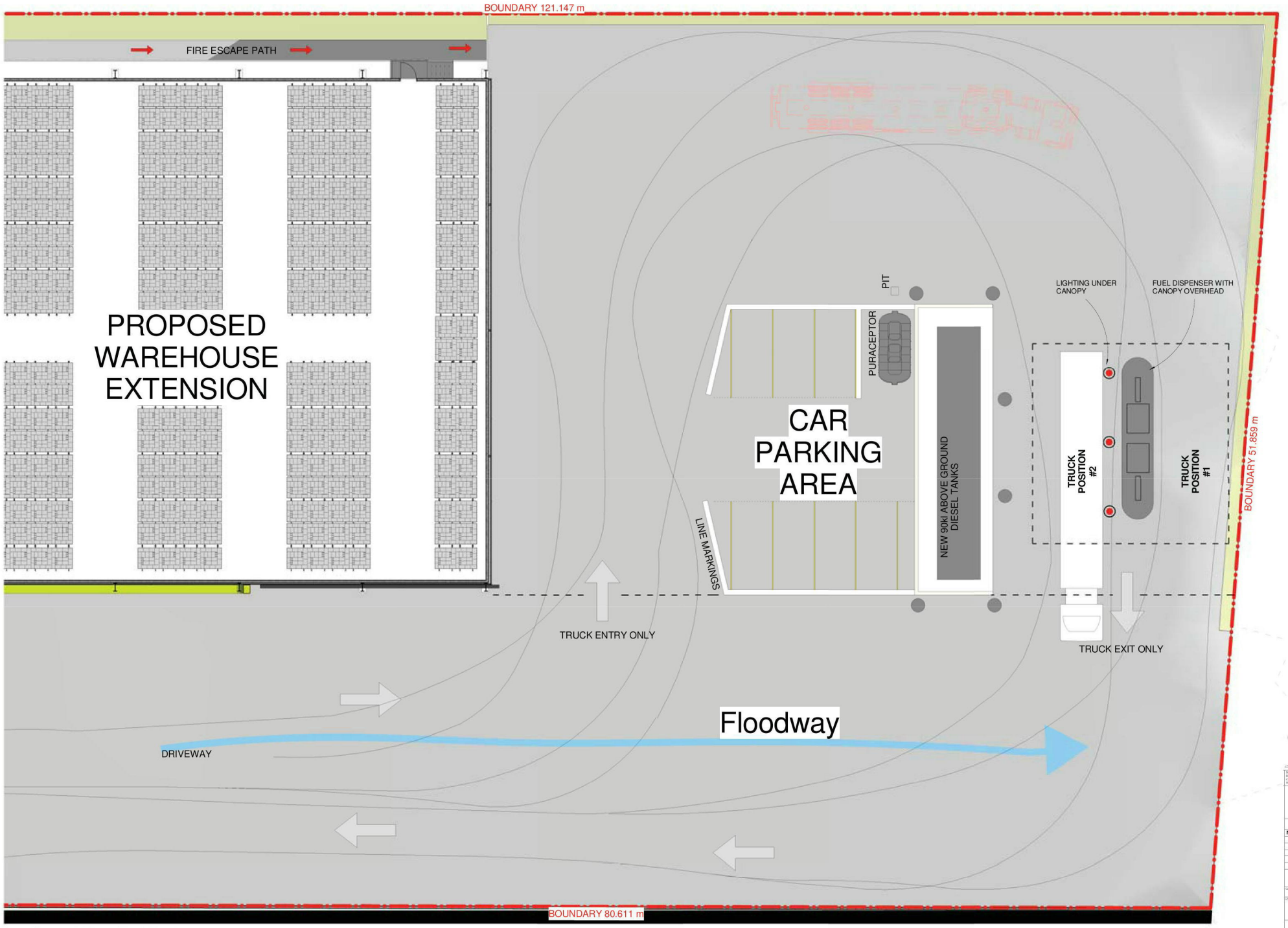

2 01 Ground Floor Fuel Tank
1 : 100

PRELIMINARY

ezzy architects

SCALE 1 : 100 @ A1

North

REVISION SCHEDULE

No.	Description	Date

Expansion of Existing Industrial Facility

Alex Kmjulac

24-27 Lambridge Place, Penrith, 2750. Lot 11 & Lot 12 / DP 1087962

Truck Refuelling Plan

J1441 | P.C | LE

A203 | DA Application | 16/10/2017

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