MULTI-LEVEL RISK ASSESSMENT

For

LEDA DEVELOPMENTS PTY. LTD.
ABN 61 003 919 613

At

Part Lot 7, DP 875447
Tweed Coast Road

CUDGEN- NSW
(KINGS FOREST)

5 November 2014

PREPARED BY: myros design pty. ltd.
ABN 89 087 239 601
Telephone: (02) 8824 7948 Facsimile: (02) 8824 7947
Mobile: 0412 605 843 E-mail: myros@tpg.com.au
CONTACT: ROLANDO FERREIRA

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Preamble:

The following report has been completed on behalf of Leda Developments Pty. Ltd. (LEDA), for the proposed development of a Fuel Dispensing Station, for public use, and at the site specified within. A Multi-Level Risk Assessment (MLRA) has been completed, the level of which has been determined from information supplied by Leda Developments Pty. Ltd. and their agents to myros design pty. ltd.

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Site Information

Site Location: Part Lot 7, DP 875447, Tweed Coast Road, **CUDGEN - NSW**

Reference Drawings: Proposed Site Layout Plan (Petrols & Diesel)

Storage: All Substances are stored in Double Wall Underground Storage Tanks.

Transportation: Hazardous Substances are transported to site by approved Petroleum Products Road Tankers.
Reference: Australian Code for the Transportation of Dangerous Goods by Road and Rail, 7th. Edition.

Number of deliveries: Expected number of deliveries annually will be less than 300.

Class 2.1 Hazardous Substances: Refer to Site Layout Plan & Land Use Plan.

Hazardous Material	Quantity (kL)	Classification & Package Group
Liquefied Petroleum Gas	30	2.1 PG --

Class 3 Hazardous Substances: Refer to Proposed Site Layout Plan.

Hazardous Material	Quantity (kL)	Classification & Package Group
Unleaded 91	60	3 PG II
Premium Unleaded Petrol 95	40	3 PG II
Premium Unleaded Petrol 98	40	3 PG II
Ethanol 10	50	3 PG II
Automotive Diesel Fuel	90	3 PG II**
Premium Automotive Diesel Fuel	30	3 PG II**
Total Class 3	**310 kL**	
Ad Blue	20	Not classified

** Combustible Liquid Class C1, treated as Class 3 PG II for assessment purposes, as it is stored together with petrols.

Minimum Boundary Distances: Distances from boundaries to hazardous substances filling and dispenser points are listed.

Class 3 Hazardous Substances: Refer to Proposed Site Layout Plan.

Boundary	Minimum Distances (in m)	
	Fill Point	Dispensers
North	4.69*	20.27
South	101.00	59.57
East	94.50	60.00
West	49.10	28.14

* Denotes remote filling / dispenser within potentially hazardous areas as determined by SEPP 33. Refer Threshold Screening section below.

Layout Approvals:

WorkCover New South Wales Dangerous Goods Notification will be required.
Site Layout Plan for Fuel System **will be assessed.** Dangerous Goods Site Layout Plan for Fuel System will be assessed and stamped by Rolando Ferreira, Accredited Dangerous Goods Consultant for Myros Design Pty Ltd in due course.
License for trade waste disposal to be applied for to Sydney Water or equivalent in country areas.

THRESHOLDS SCREENING –Applying SEPP 33

Storage Screening:

Fuel System – Petrol and Diesel Storage:

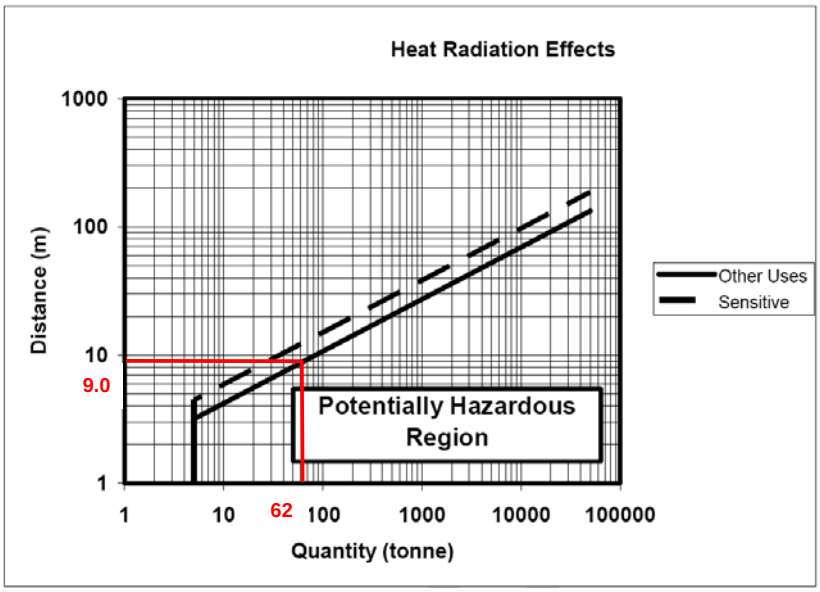
Total Storage Capacity: 310,000 litres. (310 kL), therefore 310 kL should be considered for screening purposes.

Since the fuel is stored under ground, the Screening Capacity becomes:

$$\text{Screening Capacity} = \frac{\text{Storage capacity (310)}}{5} = \mathbf{62\ kL}$$

The graph shown here is from the Hazardous and Offensive Development Application Guidelines.- "Applying SEPP 33", January 2011.

Figure 9: Class 3PGII and 3PGIII Flammable Liquids



For a screening quantity of **62 kL**, the minimum separation distance from the remote filling and dispenser points is **9.0 metres.**

Since there are site boundaries within this separation distance, the storage and dispensing of the fuel does not pass initial screening. Further analysis is required.

Transport Screening:

For substances of class 3 PG II, the screening value for cumulative vehicle movements per annum is 750. (Refer Applying SEPP 33 Table 2).

Since the expected number of deliveries is less than 300 per annum, transport threshold figures do not exceed required amount.

Refer Appendix A for Screening Procedure Summary.

Risk Classification:

The analysis will determine what level of further risk assessment is required. (Refer Appendix B for Multi-Level Risk Assessment diagram).

Classification of Type of activities and Inventories:

Since we are dealing with **Underground Fuel Storage** at service stations, and the total capacity of the site is 310 kL, therefore 310 kL should be considered for screening purposes, but since the fuel is stored under ground, the screening capacity becomes 310 divided by 5 = **62 kL.**

Reference No. 6 (Petrol & LPG) (Refer IAEA Table II)

Effect category is CII (Petrol & LPG) (Refer IAEA Table IV [a]).

Maximum Distance and Area of Effect:

From IAEA Table V, we get the following: PETROLS

Maximum Distance	=	50 – 100 m
Area, A=		1.5 ha

Population Distribution:

From IAEA Table VI: Population Density (*d*).
We need to estimate the number of people within the above region at any one time. Population density has been calculated for the LPG analysis for an area of 55 metres radius, which is very close to an hectare (ha), therefore we will use the same value:

Population density: d = 10.9 persons / ha.

Population Correction factor:

From IAEA Table VII: Population Correction Factor (f_A).
The Population Correction Factor is to determine what percentage of the area within a 100 m radius (for petrols) from the site is populated. Therefore:
Total area = $\pi \times r^2 = \pi \times 100^2 = 31{,}416\ m^2$ (for petrols).

Site Area = 10,833 m ² Population Correction Factor, f_A

$$f_A = \frac{\text{total area} - \text{site area}}{\text{total area}} = \frac{31416 - 10833}{31416} = \mathbf{0.655}$$

Mitigation Correction Factor:

From IAEA Table VIII, Correction factor for mitigation, f_m =1

Estimation of External Consequences:

$C_{a,s} = A \times d \times f_A \times f_m$ Thus: BII = 1.5 x 10.9 x 0.655 x 1 = **10.70** fatalities per accident.

Estimation of Probability of Major Accidents:

The probability number is given by the formula: $N_{i,s} = N^*_{i,s} + n_l + n_f + n_o + n_p$

Where: Average Probability Number, $N^*_{i,s}$ = 7 for Ref No.6. (Refer IAEA Table IX).

Correction Factor for:

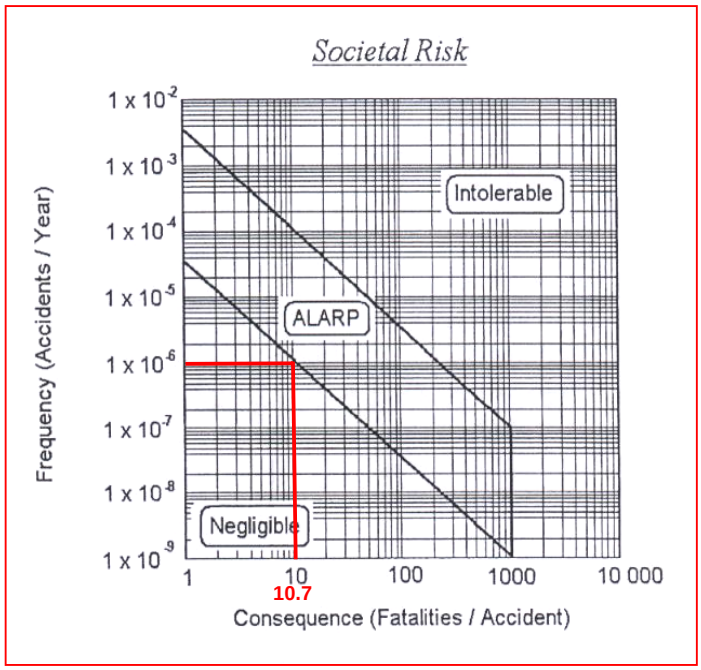
Loading/Unloading ops, n_l = -1	(Refer IAEA Table X (a))
Flammables, n_f = 0	(Refer IAEA Table XI)
Organisational Safety, n_o = 0	(Refer IAEA Table XII)
Wind Direction, n_p = 0	(Refer IAEA Table XIII)

Therefore, Probability Number: $N_{i,s}$ = 7 + -1 + 0 + 0 + 0 = **6**

And converting Probability Numbers into Frequency of Events per year, (Refer IAEA Table XIV):

P = 1 x 10 $^{-6}$

Level of Risk:



By intersecting the Frequency (**P = 1 x 10 $^{-6}$**) with the Consequence (**BII = 10.7**) in the graph above, we could see that the risk to society from the proposed development falls within the negligible area, and all possible measures shall be taken to ensure that the level of risk is kept as low as possible.

The steps to be undertaken by Leda Developments Pty. Ltd. (Leda) or their lessees to reduce the risk of an incident occurring have been included in Appendix C and forms part of the Preliminary Hazards Analysis.

CONCLUSION:

Plotting the frequency against consequence, it can be clearly seen that the societal risk is negligible. Therefore, only a level one qualitative Risk Analysis is required.
This analysis is referred to in Applying SEPP 33 as a Preliminary Hazard Analysis (PHA), which has been included as Appendix C.
All equipment must be installed to manufacturer's recommendations and must comply with all the relevant standards listed within.
Specific safety features of the site have been included in the PHA, including all monitoring procedures.

Further comments

Listed below are the minimum required separation distances for Fuel Systems (Petrols) to boundaries, together with references.

Fuels (Petrol & Diesel)	**Australian Standards & Clauses references**
☑ Fill point : 3 & 4 metres	AS 1940-2004, Clause 5.3.2(c) & AS/NZS 60079.10.1:2009 Annex ZA Clause 5.2.2 (c) & Clause 5.2.9 (c).
☑ Dispensers : 4 metres	AS 1940-2004, Clause 7.3.1(b) & AS/NZS 60079.10.1:2009 Annex ZA Clause 4.4.2.2 & Fig. ZA.4.

The design of this proposal meets and exceeds the above Australian Standard requirements. These distances can also be achieved if vapours barriers are installed, if required.

References:

Australian Standards:

AS1940 – 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 /NZS 3000 – 2007	"Electrical Installations (ANZ 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.

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. 1 - Industry emergency Planning Guidelines.
Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Study Guidelines
Hazardous Industry Planning Advisory Paper No 3 - Environmental Risk Impact Assessment Guidelines
Hazardous Industry Planning Advisory Paper No. 4 - Risk Criteria for Land Use Safety Planning
Hazardous Industry Planning Advisory Paper No. 5 - Hazard Audit Guidelines
Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis
Hazardous Industry Planning Advisory Paper No. 7 - Construction Safety Study Guidelines
Hazardous Industry Planning Advisory Paper No. 8 - Hazard and Operability Studies
Hazardous Industry Planning Advisory Paper No. 9 - Guidelines for the Development of Safety Management Systems
Hazardous Industry Locational Guidelines No. 1 Liquefied Petroleum Gas, Automotive Retail Outlets.

NSW EPA Guidelines:

Information Sheet 3 of Environmental Action for Service Stations. Forecourt Design, Operation & Maintenance.

Other Documentation:

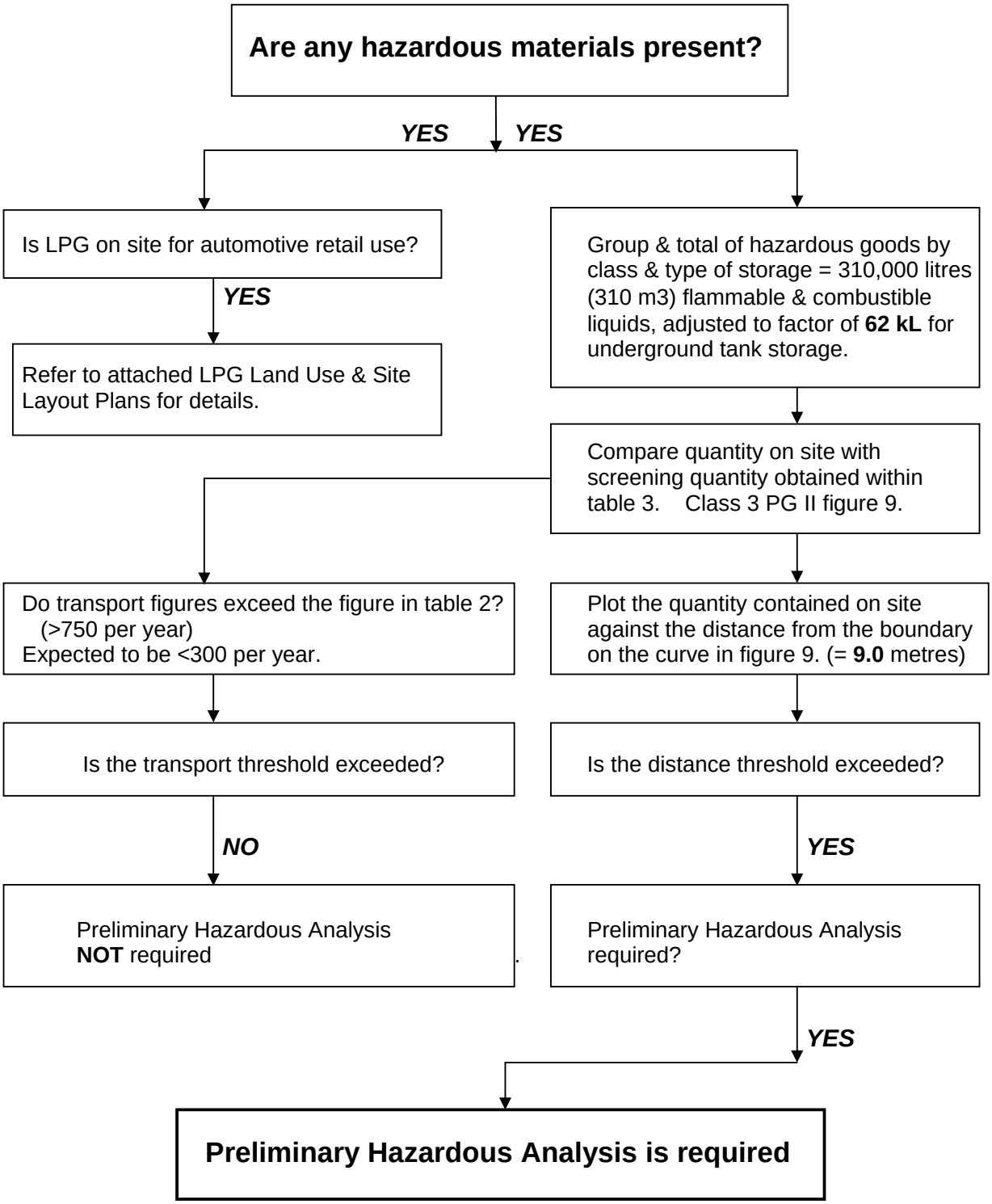
NSW Work Health & Safety Act 2011 and the Regulation of the same name dated 2011.
Local Authorities requirements, NSW WorkCover and EPA Acts and Regulations.
Equipment Suppliers Specifications, Requirements and Instructions.
Fuel System Specifications and Drawings.
Site Specific drawings and suppliers specifications.

APPENDIX “A”

SEPP 33

Risk Screening Procedure

SEP33 Risk Screening Procedure Summary Sheet



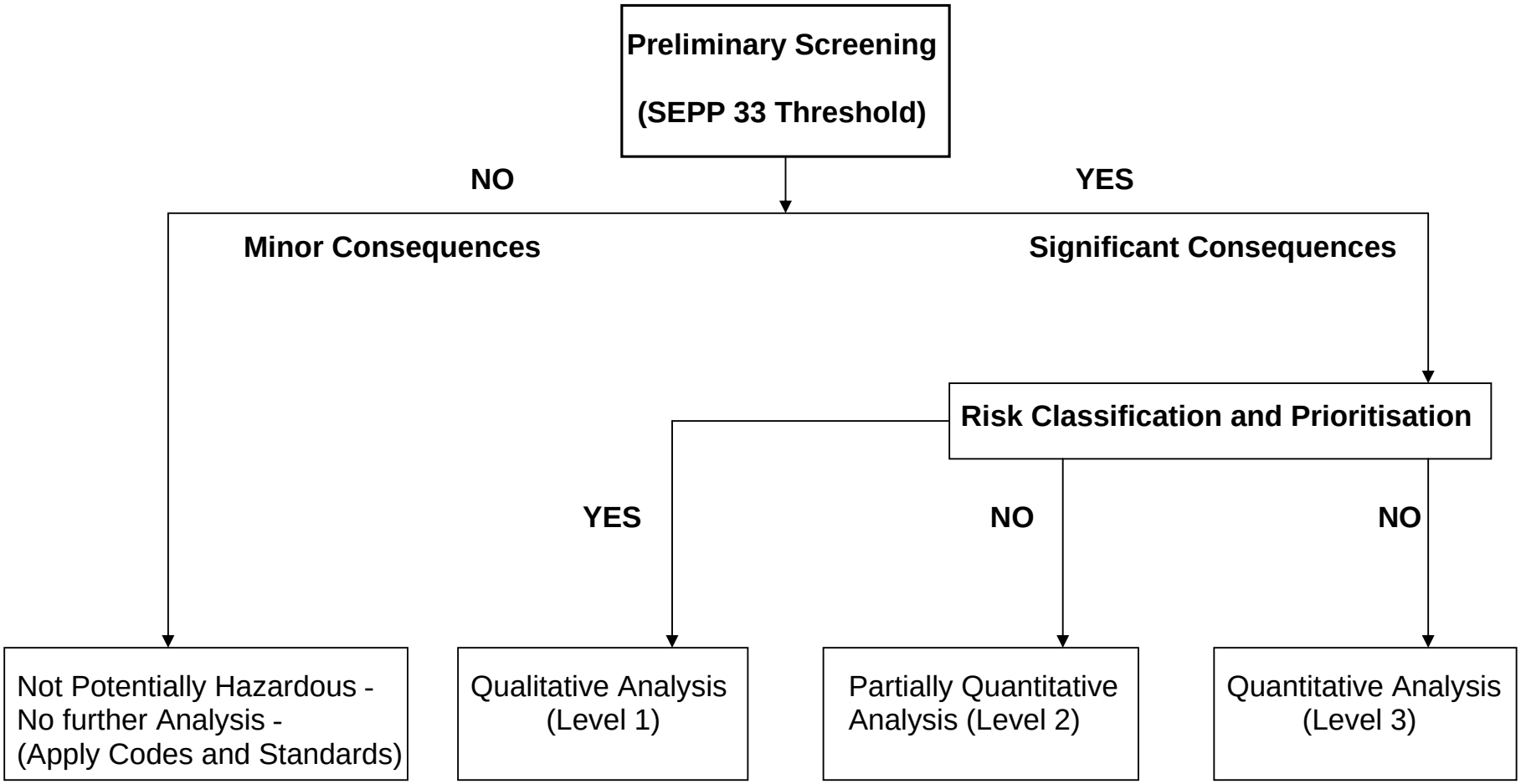
APPENDIX A

APPENDIX “B”

MULTI LEVEL RISK ASSESSMENT

Screening Thresholds

MULTI-LEVEL RISK ASSESSMENT



APPENDIX B

APPENDIX "C"

Preliminary Hazards Analysis and Summary

for

CUDGEN - NSW

5 November 2014

PREPARED BY: myros design pty. ltd.
ABN 89 087 239 601
Telephone: (02) 8824 7948 Facsimile: (02) 8824 7947
Mobile: 0412 605 843 E-mail: myros@tpg.com.au
CONTACT: ROLANDO FERREIRA MAIDGC

Purpose of Hazard Analysis

The main purpose for the development of the refueling facilities of the Service Station, is to provide an improved service to the motoring public by providing them with a facility to purchase a variety of fuels, prior or after using the other facilities.

To enable best practices for safe operation and environmental protection, the equipment will have the following features, protection devices and benefits:

All equipment will be designed and installed to the latest technology and techniques available to date from approved suppliers.

The design & installation of the underground petroleum storage system to comply with AS 4897 - 2008 and with Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulations 2008 and Protection of the Environment Operations (Clean Air) Amendment (Vapour Recovery) Regulation 2009 (only if required).
LPG installation will be reviewed separately at the end of this PHA.

Underground storage Tanks – Fuel

- 3 x Type 110 (110,000 litres nominal capacity) underground storage tanks, (one of the tanks split 60,000 / 50,000 litres, next one split 90,000 / 20,000 litres and the other split 40,000 / 40,000 / 30,000litres), with a manufacturers warranty of 30 years.
- Double walled fiberglass tank (Envirotank or Tank Solutions– double wall type) complete with a built-in liquid level monitory system. Alternatively steel tank shell with a separate steel shell wall of fiberglass outer shell, (Permatank – double wall type), complete with integral and permanent precision test system (PTS). Using a near perfect vacuum gauge to achieve a hermetic seal, this will monitor for any leaks that may occur in the steel tank shell.
- All tank outlet product fittings to be enclosed in one containment turret installed on the tank top, with any potential leaks from joints in pump and pipe work fittings being contained in the turret for safe and approved disposal methods.
- Tank farm area to be monitored for any petroleum leaks with two observation wells installed on opposite corners of tank excavation.
- Tank and pipe work system to have an automatic tank gauging system installed which will serve as a tank gauging system and a leak detection on the complete fuel system.

In tank Submersible Pump Units - Fuel.

- Submersible turbine pumps complete with mechanical leak detectors for fuel, to be installed inside tank containment turrets for ease of servicing, and any leaks are contained within the containment turrets for ease of servicing. Any fuel leaks detected by the leak detector will immediately shut down the fuel pumping system.

Underground Pipe Work – Fuel.

- Product delivery lines from tanks to dispensers to be Lined Polyethylene Flexible pipe (UPP or NUPI) type, with any joints being welded and or terminated inside tank containment turret and dispenser containment.
- Vent, vapour recovery, fill and syphon lines to be Lined Polyethylene Flexible Pipe (UPP or NUPI).
- All underground malleable fittings to be protected with Denso tape or corrosion protection.

Aboveground Fuel Vent Pipe Work.

To be galvanized steel and supported to specification.

- Vent terminations to be minimum 4.5 m high, with up draft vents caps (or as required by Regulations) and located to meet AS1940 – 2004 and AS/NZS 60079.10.1:2009 requirements.

Fuel Vapour Recovery System Stage 1

Underground tanks vent system to be connected to a vapour recovery system to return vapours from underground tanks into delivery vehicle tank vapour recovery system, during product deliveries from delivery vehicle.

Fuel Vapour Recovery System Stage 2

Underground pipework from all dispenser bases, falling back to one underground tank to eventually return vapours from cars via dispensers to underground tanks (only if required).

Overfill prevention on Fill line

Underground tanks to have overfill prevention valves to stop delivery of product if delivery vehicle tries to overfill during product deliveries.

Fuel Dispenser Units

To be 8 hose units to dispense Ethanol 10, Unleaded 91, Premium Unleaded 98 & 95, and Automotive Diesel Fuel (standard and premium) and located under a canopy of concrete pavement area and on site forecourt and to meet AS1940-2004.

- Dispenser units to have containment sumps fitted to all units to capture any leaks from fittings and joints, to prevent any soil and ground water contamination.
- Dispenser units to be protected from vehicle damage with steel bollards fitted near each unit on concrete forecourt area.
- Dispenser unit hoses to have automatic shut nozzles to prevent overfilling of vehicle fuel tanks.
- Underground pipe work near dispensers to be protected with impact shear valves being fitted in all product lines, in the event of a vehicle impacting on a dispenser, the impact valve will immediately stop the flow of product.

PA System

- PA system to be installed in the forecourt area and retail building to enable the site operator to communicate in the event of an emergency with client vehicles on the forecourt area.

Fuel Filling Points for Underground Tanks

- Filling Point to be a double containment box system installed to ensure that any minor spills from delivery hoses are captured in the inner box, and with a drain valve and pipe work to allow fuel to drain into an underground tank.
- Outer box protected with heavy duty galvanized steel lid to prevent damage from vehicles.
- Overfill prevention valves fitted into tank fill pipe to prevent accidental overfill of tanks.
- Overfill protection valves fitted into tank vent system to prevent accidental overfill of tanks.

Installation Comments

- All equipment to be installed to manufactures, suppliers and to Oil Company specifications, by accredited and experienced installing Contractors.
- All work to be tested, checked and certified by Fuel System Certifying Consultants.

Pavement Area

- To be concrete to Australian Standards with a pollution control drainage system incorporated to capture any spills on the forecourt area to a pollution control unit near the main building. Refer to site specific drawing and standard drawings.

Fuel Spill Control

- An environmental spill kit to be held outside main building for any small spills on forecourt area.

Fire protection

- Two (2) 4.5kg dry chemical fire extinguishers to be installed on canopy columns in the event of small fires on or near vehicles.
- One (1) 2.5 kg dry chemical fire extinguisher fitted inside building.

Pumps and Dispensers Emergency Stops

- Emergency stop switches fitted to both inside and outside of building, to shut down power to all dispensers in the event of spillage or fire.

Emergency Response

- A step by step emergency response Instructions, complete with telephone numbers and contacts, to be placed near site operator in building.

Safety Signage

- All dispensers to have mandatory safety signs, complete with instructions, fitted on canopy columns and dispensers.

Fuel and LPG Work Practices and Training Procedures

- All site staff to complete work practices and safety training with the manual kept on site for inspection and auditing by appropriate authorities.

Groundwater Monitoring Wells

- They will be installed; number and location will be determined by a duly qualified person on a site specific basis and to comply with the relevant authorities' requirements and Australian Standards.

Inspections and Certification of Works

- The works to be inspected and documented at the following stages:
  * Before and during underground tank installation, which included observing, checking methods and equipment employed to ensure correct installation to specifications and standards.
  * After underground tanks and pipe work installation which includes witnessing of the pressure integrity testing of tanks and pipe work to approved standard and specifications.
  * After submersible turbine pumps, leak detectors and dispensers are installed, including checking for leaks and correct operation of all fittings and pump systems inside underground tank turrets and dispenser containment sumps.

☐ Fuel System will be inspected at above mentioned stages by myros design pty. ltd., Consultants and Sub-Consultants.
☐ At the second & third stage an Equipment Integrity Test also will be carried out by accredited companies to comply with AS 4897 – 2008 & NSW Regulations.

Preliminary Hazards Analysis Summary for Cudgen - NSW		
Potential Incident	**Hazard Prevention Equipment**	**Hazard Response Procedures**
Underground Tanks Leak	Tank farm observation wells	Checked on a regular maintenance program
	Automatic tank gauging	Tanks constantly monitored by automatic tank gauging system
	Submersible pump & pipeline leak detector	If leak detected, pump system shuts down automatically
	Integral tank precision test system	Checked on a regular maintenance program
	Statistical Stock Control system	Daily stock control with automatic tank gauge system
Underground Pipe Leaks	All joints welded and / or terminate in tank turrets or dispenser sumps	Submersible pump system automatically shuts down when leak detected by electronic leak detector
	Product delivery lines installed with approved flexible materials	Submersible pump system automatically shuts down when leak detected by electronic leak detector
	Statistical stock control system	Daily stock control with automatic tank gauging system
Delivery vehicle hose leaks at underground tank fill point	Liquid retention spill system at tank	Leak captured into liquid retention spill system inner spill box and drains into tank via drain valve and pipe
Delivery vehicle overfills underground tanks	Overfill protection valves in vent system	Overfill valves close when excessive pressure builds up in vent system & prevent further filling of tanks
	Overfill prevention valves fitted into tank fill pipes	Overfill valves close when excessive pressure builds up in fill pipe & prevent further filling of tanks
Fuel spilt by customer at dispenser	Environmental Spill Kit	Spillage mopped up with spill kit
	PA communication system	Site manager advises customers via PA system
	Forecourt Drainage Pollution control	Spillage controlled and drained into pollution control system
	Automatic shut off nozzles	Nozzle automatically shuts off
Dispenser nozzle or hose leak	Emergency stop at Managers counter	Site Manager shuts off site with emergency stop
	PA communication system	Site Manager advises customers via PA system
	Forecourt drainage pollution control	Spillage controlled and drained into pollution control system
	Environmental Spill Kit	Spillage mopped up with spill kit

Preliminary Hazards Analysis Summary for Cudgen - NSW		
Potential Incident	**Hazard Prevention Equipment**	**Hazard Response Procedures**
Dispenser damaged by customer	Protection bollards in forecourt concrete	Bollards prevent vehicle damage to dispensers
	Under dispenser impact shear valve	Shear valve automatically shuts down fuel supply on vehicle impact
	Emergency stop at Site Manager counter	Site Manager shuts down site with emergency stop
	PA communication system	Site Manager advises customers via PA system
Fire at dispenser pumps	All equipment and electrical works petroleum industry approved and flameproof where required	Fire controlled initially on site by portable fire extinguishers and emergency services contacted if necessary
	Mandatory safety sign on forecourt canopy columns and main building	Emergency response instruction sheet on site
	Emergency stop at Site Manager counter & outside building	Site Manager shuts down site with emergency stop
	PA communication system	Site Manager advises customers via PA system
Fire at fuel filling point	2 x 4.5 kg dry chemical fire extinguishers at canopy columns and an additional inside building.	Fire controlled initially on site by portable fire extinguishers and emergency services contacted if necessary
	All equipment and electrical works petroleum industry approved and flameproof where required	Emergency response instruction sheet on site
	Air operated shut down valves on delivery tanker	Emergency response instruction sheet on site
	Emergency stop at site managers counter and outside on building wall	Site Manager advises customers via PA system
	PA communication system	Site Manager advises customers via PA system
	Approved firewall or vapour barrier (where required) to protect next door buildings	Fire wall to a Fire Resistance Level (FRL) of 240 / 240 / 240

LPG INSTALLATION SECTION

Description of proposed LPG installation

The proposed development comprises the installation of a 30,000 litres, nominal capacity, underground LPG vessel & install new dual dispensers for the retail sales of LPG to the public.

The filling connection for the tank will be remote from the vessel, but located close to the in-tank pump that will be located inside tank turret.

LPG tankers attending the site will enter and exit via Tweed Coast Road.

The remote filling connection for the tank will permit the tanker to safely enter and leave the site and be protected during the unloading operation from accidental impact damage from vehicles entering and/or leaving the service station.

The proposed development will provide a current state of the art technology LPG installation incorporating the latest in safety and design features applicable to the storage and retailing of automotive LPG.

This review covers the proposed LPG development in relation to the land use controls referred to in Clause 10.7 & Table 10.1 of AS/NZS 1596:2014 and its compliance with the technical controls of Section 1.3 of the Guidelines.

Land Use Controls (Refer to Site Layout & Land Use Plans)

The installation & operation of the service station, will be subject to two types of land use controls; separation distances & population limit areas as per “Locational Guidelines for the installation of LPG on Automotive Retail Outlets”, **now** incorporated in AS/NZS 1596:2008.
.
Minimum separation distances from defined uses are as per Table 9.1 of AS/NZS 1596:2008.
The three types of defined usage are: Sensitive, Residential & Commercial/Recreational.
The position and design of the tank installation takes into consideration the requirements of the guidelines & AS/NZS 1596, as follows:

Dispenser exclusion zone

There is one LPG dispenser proposed for the site and the 15 metres exclusion zones is clear of any residential dwellings or sensitive land uses. There is no commercial / recreational land use in the 15 metres exclusion zones & there is no sensitive land uses within 55 m radius.

Fill Point exclusion zone

The 15 metres exclusion zone around the fill point is clear of any residential land use, there is no commercial / recreational land use in the 10 metres radius & there is no sensitive land uses within 55 m radius.

Road Tanker Unloading Position

The 15 m exclusion zone around the road tanker standing area is clear of any residential land use, there is no commercial / recreational land use in the 10 metres radius & there is no sensitive land uses within 55 m radius.

Population Limit Area

The equivalent population limits are taken from within 55 m radius of the LPG fill point and the tanker unloading position.
Using the factors shown in Table 10.2 of AS/NZS 1596 : 2014 , the equivalent population is calculated in the following manner: (Refer Land Use Plan)

No.	Land Use	Occupancy Average	Occupancy Factor	Coverage Factor	Equivalent Population
1	Rural Landscape Vacant land	--	0.2	--	--
2	Tenant 1 To be confirmed	2	0.3	1.0	0.6
3	Tenant 2 To be confirmed	2	0.3	0.5	0.3
4	Proposed Car Parking	50	0.2	1.0	10.0
TOTAL					**10.9**

T Therefore, as the permissible equivalent population within the zone is **110**, the calculated figure for this proposal is below the maximum.

Our proposal falls well within this limitation.

Equipment

Underground Tank - LPG

- 1 x 30,000 litre underground steel tank protected with epoxy resin paint and cathodic protection system.
- Tank installed with concrete anchor, poured on site and fixed with holding down bolts.
- Backfill material to be approved and installed to meet cathodic protection system requirements and standards.

Cathodic Protection System

- A sacrificial anode system, complete with four (4) magnesium anodes, five (5) zinc reference electrodes, and one (1) permanent silver / silver chloride reference, electrical test units and electrical isolation flange kits.
- Designed for a minimum life of 20 years with 6 monthly inspections.

Underground Pipe Work – LPG

- All pipe work steel and welded on site to Australian Standard, protected by Denso tape wrapping and cathodic protection system.

LPG Dispenser Units

- To be 2 hose units to dispense LPG and located under the canopy in the fuel dispensing area and to meet AS/NZS 1596 : 2014.
- Dispenser unit hoses to have safety filling nozzles to prevent overfilling of vehicle tanks.
- Air operated safety system with nylon tubing to prevent accidental LPG escaping in the event of the dispenser being dislodged. In the event of fire the nylon tubing will burn and close down any air operated system.
- Dispenser units to be protected from vehicle damage with steel bollards fitted near each unit on concrete forecourt area.

Filling Point for LPG.

- To be located to meet AS/NZS 1596 : 2014 and AS/NZS 60079.10.1:2009 and be fitted with pressure relief valve system and emergency shut off switch.

In tank Submersible Pump Unit - LPG.

- Submersible turbine pump, to be installed inside tank containment turrets for ease of servicing, and any leaks are contained within the containment turret for ease of servicing.

Technical Controls

The proposed installation will comply with all aspects of the current edition of Australian / New Zealand Standard AS/NZS 1596:2014 “The Storage and Handling of LP Gas” and the plan is stamped as complying by myself, as an Accredited Dangerous Goods Consultant.

Each of the Guidelines nominated technical controls is reviewed in relation to the proposed development.

Dispenser Location

The 15 m exclusion zone for the dispenser does not encroach on any aboveground LPG tank since the vessel is underground, nor does it encroach into any residential dwelling.

Impact protection

Dispenser protected by 80 diameter bollards x 1200 high as specified.

Unloading position for LPG Tanker

The LPG tanker unloading position will be clearly visible to all vehicles entering and exiting the site thereby minimizing the possibility of accidental damage. The proximity of the tanker to the remote fill point ensures that the delivery hose will be close to the tanker and not at risk of being driven over by vehicles manoeuvring on the site.
The tanker unloading position will be clearly marked.
Parking positions will not be affected by this installation.

Tanker Access and Egress

The tanker unloading position has been selected to allow the truck to enter the site in a forward motion from Tweed Coast Road and then settle in the unloading position shown, with a clear unimpeded exit via driveway to Tweed Coast Road. No manoeuvring is required on site and the exit is clear of vehicle parking or refuelling areas.

Safety Management System

The Safety Management for the site includes site inspections and testing by Independent trained LPG specialists on a three monthly frequency. Woolworths staff also undertakes regular site inspections and equipment checks. The service station manager and his operators will be trained in the uses and properties of LPG and in emergency response procedures.

Drain valve

The tank drain valve is locked in the closed position with the outlet sealed by a blank flange bolted to the valve body.

Tank Connections

All tank connections are protected by pneumatically activated valves, excess flow valves and back check valves where required.

Remote shut down systems

The remote shutdown system features an electrical/pneumatic combination, which will close the liquid and vapour tank valves and the dispenser liquid valve.

At least three actuation points will be provided:

- One outside the sales building close to the entrance.
- One adjacent to the console in the sales area.
- One adjacent to the fill point.

An additional actuation point is located at the dispenser or nearby.

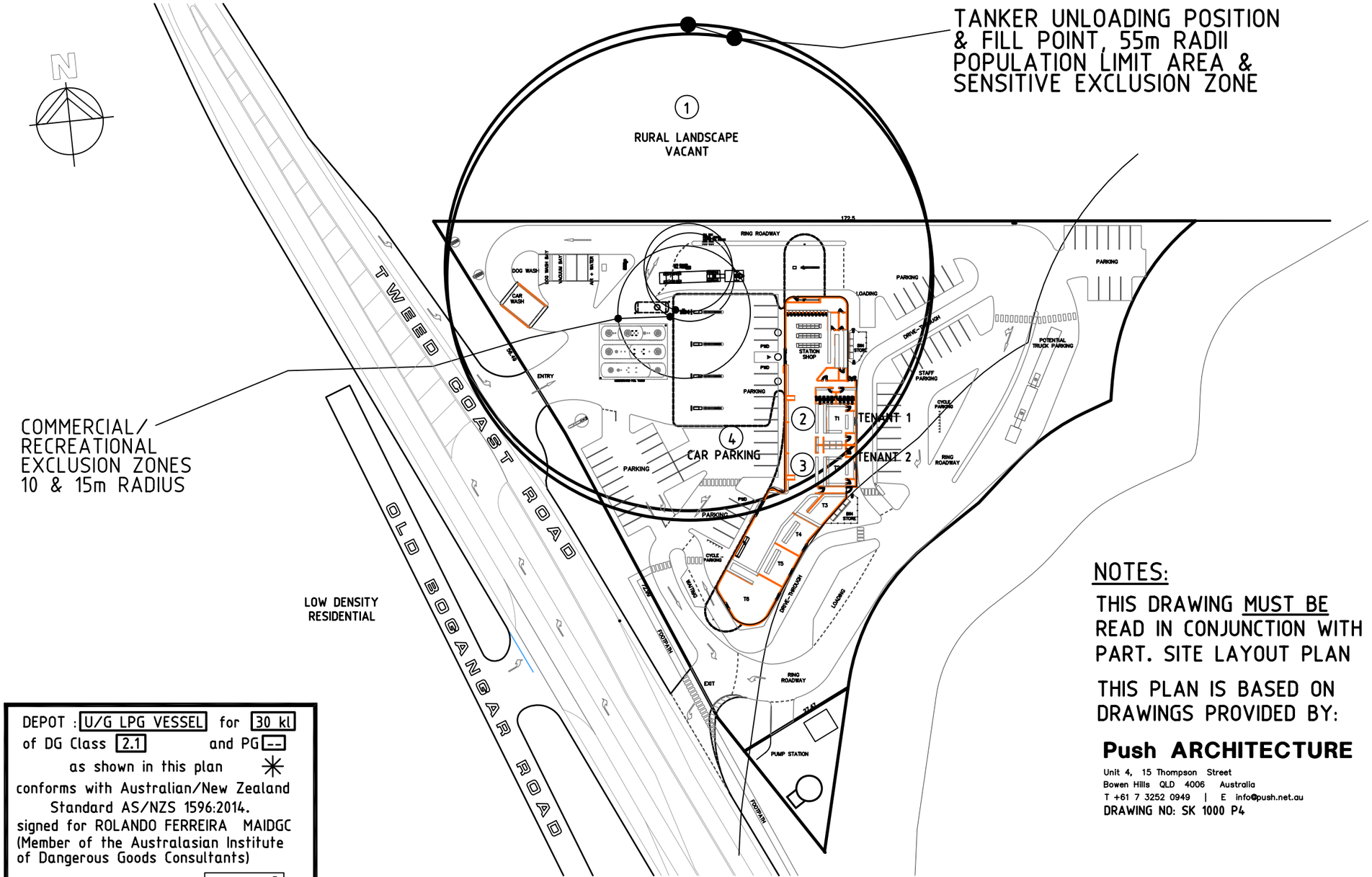
Other Technical Controls

ITEM	COMMENT
Brake interlock	ALL LPG tankers delivering to the site will be fitted with brake interlocks.
Fill Point	The fill point includes a manual ball valve complete with a back check valve.
Pump Pits	The pump is located inside the vessel & there will be a tank turret with a lockable cover.
Tanker Parking	No LPG tanker will be on site other than during delivery operations.
Delivery Frequency	LPG road tanker will be scheduled for two deliveries per week maximum.

CONCLUSIONS

The proposed development will produce an aesthetically pleasing LPG facility incorporating current state of the art technology in the storage and retailing of automotive LPG.

The development will satisfy the requirements of the WorkCover NSW Authority and be in accordance with Dept. of Planning and Infrastructure NSW (previously known as the Department of Urban Affairs and Planning)'s Guidelines for the installation of LPG on automotive retail outlets, **now** incorporated in AS/NZS 1596:2014.



DEPOT : U/G LPG VESSEL for 30 kl
of DG Class 2.1 and PG --
as shown in this plan ✳
conforms with Australian/New Zealand Standard AS/NZS 1596:2014.
signed for ROLANDO FERREIRA MAIDGC
(Member of the Australasian Institute of Dangerous Goods Consultants)

Date 05 / 11 / 14

✳ - U/G VESSEL INSTALLATION TO COMPLY WITH SECTIONS 6 & 7 OF AS/NZS 1596:2014.

✳ - LPG DISPENSER INSTALLATION TO COMPLY WITH SECTION 10 OF AS/NZS 1596:2014.

0 10 m 20 30 40 50

NOTES:

THIS DRAWING MUST BE READ IN CONJUNCTION WITH PART. SITE LAYOUT PLAN

THIS PLAN IS BASED ON DRAWINGS PROVIDED BY:

Push ARCHITECTURE
Unit 4, 15 Thompson Street
Bowen Hills QLD 4006 Australia
T +61 7 3252 0949 | E info@push.net.au
DRAWING NO: SK 1000 P4

POPULATION LIMIT AREA ANALYSIS

No.	LAND USE	Occupancy Average	Occupancy Factor	Coverage Factor	Equivalent Population
1	RURAL LANDSCAPE VACANT	--	0.2	--	--
2	TENANT 1 (TBA)	2	0.3	1.0	0.6
3	TENANT 2 (TBA)	2	0.3	0.5	0.3
4	CAR PARKING	50	0.2	1.0	10.0
TOTAL					10.9

CAD DRAWING DO NOT REVISE BY HAND

2487-M02	SITE LAYOUT PLAN
SK 1000 P4	LAYOUT PLAN

REFERENCE DRAWINGS

No.	AMENDMENT	DATE	DRN
A	INITIAL ISSUE	NOV.'14	RDF

NOTES
1. FIGURED DIMENSIONS SHALL BE USED IN PREFERENCE TO SCALED DIMENSIONS.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE.
3. THIS DRAWING MUST NOT BE REPRODUCED WITHOUT CONTACTING THE CONSULTANT FOR LATEST ISSUE.
4. THIS DRAWING IS THE PROPERTY OF MYROS DESIGN PTY. LTD. ABN 89 087 239 601. NOT TO BE REPRODUCED WITHOUT PERMISSION.
5. NUMERIC SCALE VALID FOR ORIGINAL HARD COPY ONLY. RECIPIENT OF DRAWINGS BY ELECTRONIC TRANSMISSION MUST VERIFY SCALE.

CONSULTANT
myros design pty. ltd.
A.B.N. 89 087 239 601 A.C.N. 087 239 601
28 SOFTWOOD AVE, BEAUMONT HILLS, NSW, 2155, AUSTRALIA
PHONE:(61 2) 8824 7948
FAX: (61 2) 8824 7947
MOBILE: 0412 605 843
E-MAIL: myros@tpg.com.au
R. D. FERREIRA
MAIDGC
Accredited Dangerous Goods Consultant

FOR AND ON BEHALF OF:
LEDA DEVELOPMENTS PTY. LTD.
A.B.N. 61 003 919 613
C/O PLANIT CONSULTING PTY. LTD.
P. O. BOX 1623,
KINGSCLIFF NSW 2487

CONSULTANTS PROJECT No.

LOCATION
CUDGEN - NSW
TWEED COAST ROAD
KING FOREST SERV. STN.

DRAWING TITLE
LAND USE PLAN
PROPOSED 30 kl U/G LPG VESSEL AND DUAL LPG DISPENSER

DRAWN RDF	CHECKED
DATE NOV.'14	PLOT DATE NOV.'14
SCALE 1:1000	SHEET SIZE A3
STATUS: DANGEROUS GOODS COMPLIANCE	

PROJECT No.	DRAWING No.	ISSUE No.
010814	2487-M01	A

LPG GENERAL NOTES:

A. NOTICES:

THE FOLLOWING NOTICES ARE TO BE PLACED AS SHOWN.

1. "FLAMMABLE GAS, NO SMOKING, NO FLAME" SIGN.
2. AUTOGAS FILLING INSTRUCTIONS.
3. DRIVER INSTRUCTION SIGNS AS PER APPENDIX E, AS/NZS 1596:2014 (SUPPLIED ON DISPENSER).
4. L.P.G. EMERGENCY PROCEDURE INSTRUCTIONS.
5. AT LEAST 3 EMERGENCY ACTUATORS ARE REQUIRED AND SHOULD BE LOCATED:
   a) ADJACENT TO THE FILL POINT
   b) NEXT TO CONSOLE IN SALES AREA &
   c) AT A REMOTE EXTERNAL LOCATION.
   ADDITIONAL ACTUATORS ARE LOCATED AT DISPENSERS
6. HAZCHEM WARNING SIGN.

B. MINIMUM FIRE PROTECTION:

1. TWO 4.5 kg 3A:80B:(E) DRY CHEMICAL FIRE EXTINGUISHERS (FE) OR EQUIVALENT; TO BE LOCATED IN ACCORDANCE WITH AS 2444.
2. A BASIC TAP WATER SUPPLY CAPABLE OF OPERATING A GARDEN HOSE.

C. NOTES:

1. INSTALLATION TO CONFORM TO AS/NZS 1596:2014, STORAGE & HANDLING OF LP GAS, AS 3000-2000 SAA WIRING RULES AND AS/NZS 60079.10.1:2009, CLASSIFICATION OF AREAS, ANNEX ZA, EXAMPLES OF HAZARDOUS AREA CLASSIFICATION.
2. DISPENSING ZONE TO BE LEVEL AND PAVED.
3. GALV. STEEL BOLLARDS TO STANDARD DETAILS TO BE INSTALLED WHERE REQUIRED BY REGULATIONS & AS SPECIFIED.
4. EMERGENCY STOP TO ISOLATE POWER SUPPLY TO PUMP WHEN ACTIVATED.
5. TYPE "A" (FLOWMETER) L.P.G. DISPENSER; A PROTECTED PLACE, A PUBLIC PLACE, A PIT OR OPENING INTO CLOSED DRAINS, SHALL NOT BE WITHIN THE HOSE REACH ZONE OF DISPENSER.
6. VESSEL TO BE MIN. OF 2000 FROM BOUNDARIES AND FILL POINT TO BE A MIN. OF 3000 FROM PUBLIC PLACE & 6000 FROM ADJACENT PROPERTIES.
7. VESSEL TO BE COVERED BY NOT LESS THAN 300 MIN. OF SAND SUPERIMPOSED WITH REINFORCED CONCRETE NOT LESS THAN 150 THK.
8. TANKER UNLOADING SHALL BE IN A POSITION THAT IN AN EMERGENCY IT CAN BE DRIVEN OR TOWED AWAY WITHOUT REVERSING.
9. PRESSURE RELIEF VENT (PRV) LOCATION TO COMPLY WITH CL.7.5.2 OF AS/NZS 1596:2014 & CL.ZA.6.5.2.4 OF AS/NZS 60079.10.1:2009.
10. THIS DRAWING IS INTENDED FOR GENERAL LAYOUT PURPOSES IN REFERENCE TO L.P.G. STORAGE ONLY AND IS NOT A CERTIFIED "AS BUILT" SITE PLAN.
11. ALL DIMENSIONS IN mm.

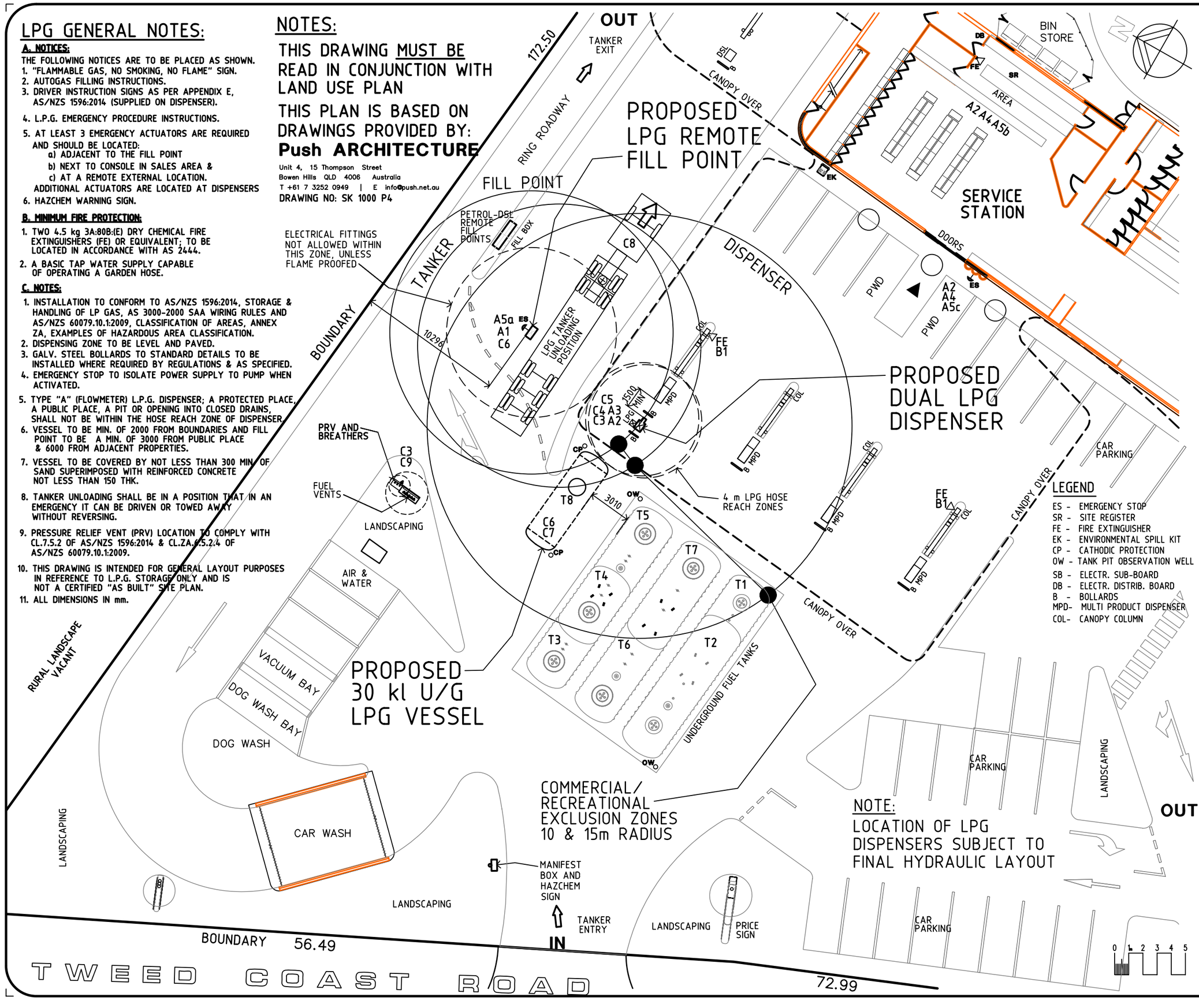
NOTES:

THIS DRAWING MUST BE READ IN CONJUNCTION WITH LAND USE PLAN

THIS PLAN IS BASED ON DRAWINGS PROVIDED BY:

Push ARCHITECTURE
Unit 4, 15 Thompson Street
Bowen Hills QLD 4006 Australia
T +61 7 3252 0949 | E info@push.net.au

DRAWING NO: SK 1000 P4



CAD DRAWING DO NOT REVISE BY HAND

2487-M01	LAND USE PLAN
SK 1000 P4	LAYOUT PLAN

REFERENCE DRAWINGS

A	INITIAL ISSUE	NOV.'14	RDF
No.	AMENDMENT	DATE	DRN

DEPOT : U/G LPG VESSEL for 30 kl of DG Class 2.1 and PG --
as shown in this plan ✳ conforms with Australian/New Zealand Standard AS/NZS 1596:2014.
signed for ROLANDO FERREIRA MAIDGC (Member of the Australasian Institute of Dangerous Goods Consultants)
Date 05./11./14.

✳ - U/G VESSEL INSTALLATION TO COMPLY WITH SECTIONS 6 & 7 OF AS/NZS 1596:2014.

✳ - LPG DISPENSER INSTALLATION TO COMPLY WITH SECTION 10 OF AS/NZS 1596:2014.

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CONSULTANT
myros design pty. ltd.
A.B.N. 89 087 239 601 A.C.N. 087 239 601
28 SOFTWOOD AVE, BEAUMONT HILLS, NSW, 2155, AUSTRALIA
PHONE:(61 2) 8824 7948
FAX: (61 2) 8824 7947
MOBILE: 0412 605 843
E-MAIL: myros@tpg.com.au
R. D. FERREIRA MAIDGC Accredited Dangerous Goods Consultant

FOR AND ON BEHALF OF:
LEDA DEVELOPMENTS PTY. LTD.
A.B.N. 61 003 919 613
C/O PLANIT CONSULTING PTY. LTD.
P. O. BOX 1623,
KINGSCLIFF NSW 2487

CONSULTANTS PROJECT No.

LOCATION
CUDGEN - NSW
TWEED COAST ROAD
KING FOREST SERV. STN.

DRAWING TITLE
PARTIAL SITE LAYOUT
PROPOSED 30 kl U/G LPG VESSEL AND DUAL LPG DISPENSER

DRAWN	RDF	CHECKED	
DATE	NOV.'14	PLOT DATE	NOV.'14
SCALE	1:250	SHEET SIZE	A3

STATUS: DANGEROUS GOODS COMPLIANCE

PROJECT No.	DRAWING No.	ISSUE No.
010814	2487-M01	A