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Environmental - Remediation - Engineering - Laboratories - Drilling

SEPP33 Preliminary Hazard Analysis

Part Lot 3 DP215949
1-21 Cranebrook Road, Cranebrook NSW

Prepared for

Service Station Developments & Construction Pty Ltd

22nd November 2017
ES6911/3

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REFERENCES

Australian Standards:
AS1692 – 2006, Tanks for Flammable and Combustible Liquids".
AS1940 – 2004, The Storage & Handling of Flammable & Combustible Liquids"
AS2239 – 2003, Galvanic (sacrificial) Anodes for Cathodic Protection.
AS2444 – 2001, Portable Fire Extinguishers and Fire Blankets. Select. & location.
AS2832.2 – 2003, Cathodic Protection of Metals – Compact buried structures.
AS3000 – 2000, Electrical Wiring Rules
AS4037 – 1999, Pressure Equipment – Examination & Testing
AS4897 – 2008, The Design, Installation and Operation of Underground Petroleum Storage Tanks
AS/NZ 1596: 2008, Storage and Handling of LPG Gas".
AS/NZ 1841.5: 2007, Portable Fire Extinguishers.
AS/NZ 3788: 2006, Pressure Equipment – In-service inspection.
AS/NZ 60079.10.1:2009, Classification of Areas. Explosive gas atmospheres
Annex ZA, Examples of Hazardous Area Classification.

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 Regulation 2011
NSW SafeWorks Storage and Handling of Dangerous Goods – Code of Practice 2005

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:
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.

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1.0 INTRODUCTION

Aargus Pty Ltd was appointed by Service Station Developments and Construction Pty Ltd to conduct a SEPP33 Preliminary Hazardous Analysis at Lot 3 DP215949, 1-21 Cranebrook Road, Cranebrook NSW (the "site"). The location and layout of the site is shown in Appendix A – Site location & Site Features.

The total site area is 3.63 hectares and is located at 1-21 Cranebrook Road, Cranebrook (on the corner with Londonderry Road). It currently includes an existing 10,780m^2 service station site including a 3,643m^2 landscape area and a 196m^2 covered verandah areas. The proposed development area is approximately 1.6 hectares, and includes a 836.5m^2 Store Retail Area within the southern portion of the site, a 158.5m^2 Car Service Centre within the north west portion of the site, a 317m^2 Store Area within the northern portion of the site, and a 534.5m^2 Food and Retail Premises with a Drive-Through service within the eastern portion of the site.

The proposed development also includes a first level residential dwelling upstairs from the Store Retail Centre.

The site was initially visited on the Monday 31st July 2012 and again on Friday 10th November 2017 by Aargus staff for inspection purposes to determine if any site changes had occurred since the initial inspection. No site changes was observed. All fieldwork and reporting was conducted in accordance with Aargus Fieldwork Protocols (Appendix C), the Workplace Health and Safety Act, and WorkCover Regulations.

The objective of this assessment is to prepare a SEPP33 Preliminary Hazard Analysis for the proposed re-development of the site.

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This assessment of an application for a potentially hazardous industry considers the following:

- The findings of a Preliminary Hazard Analysis;
- Relevant circulars or guidelines published by the Department of Planning;
- Alternatives and justification for the alternative chosen; and
- Any likely future use of the land surrounding the development.

Therefore, this analysis serves two main functions:

- To identify potential hazards involved in the proposal, and to ensure that the proposed safeguards are adequate; and
- To demonstrate that the proposal will not impose an unacceptable level of risk.

Our scope of works to undertake the project included the following information obtained from the proponent as well as fieldwork notes and observations:

- A list of all hazardous materials used in the proposed development and the quantity of each present;
- Dangerous goods classification for each material, including subsidiary classes;
- The mode of storage used (that is, bulk or packages/containers) and the maximum quantity stored or held on site;
- The distance of the stored material from the site boundary for any of the materials in dangerous goods classes 1.1, 2.1 and 3; and
- The average number of annual and weekly road movements of hazardous material to and from the facility, and the typical quantity in each load.

2.0 SITE INFORMATION

2.1 Site Identification

The site is located at 1-21 Cranebrook Road, Cranebrook NSW (corner with Londonderry Road). The site comprises of Lot 3 in DP 215949 in the Local Government Area of Penrith, the Parish of Castlereagh and County of Cumberland (refer to Appendix A – Site Location & Site Plan). The site is currently zoned **RU4 Rural Small Holdings** and the total area of investigation is approximately 1.6 hectares. The proposed new service station development site is located within the south eastern portion of the site.

2.2 Proposed Development

The proposed development involves the following:

- Proposed new site 10,780m^2
  - Landscape Area 3,643m^2
  - Covered Verandah Areas 175.6m^2
- Proposed new building 1,846.5m^2
  - Store Retail Area 836.5m^2
  - Car Service Centre 158.5m^2
  - Store Area 317m^2 and
  - Food and Retail Premises with a Drive-Through 534.5m^2.
- Underground storage tanks
  - 3 x new proposed 110,000L underground petrol tanks – the closest proposed tank (Tank 3) to the boundary has a 6.25m setback and a 6.25metre setback to the fill point for the tanks; and

- Retain 2 exiting fuel tanks on site 30,000L and 50,000L
- Decommissioning and removal of 3 existing fuel tanks on site 42,000L, 5,000L and 28,000L

- Fuel deliveries
  - Estimated fuel deliveries of approximately 693,750L per month
    - Vortex 98 – 120,250L
    - Vortex 95 – 84,500L
    - E10 – 58,500L
    - ULP – 175,500L
    - Diesel – 250,000L
    - ADBLUE – 5,000L

2.3 Identifying Potentially Hazardous Industry

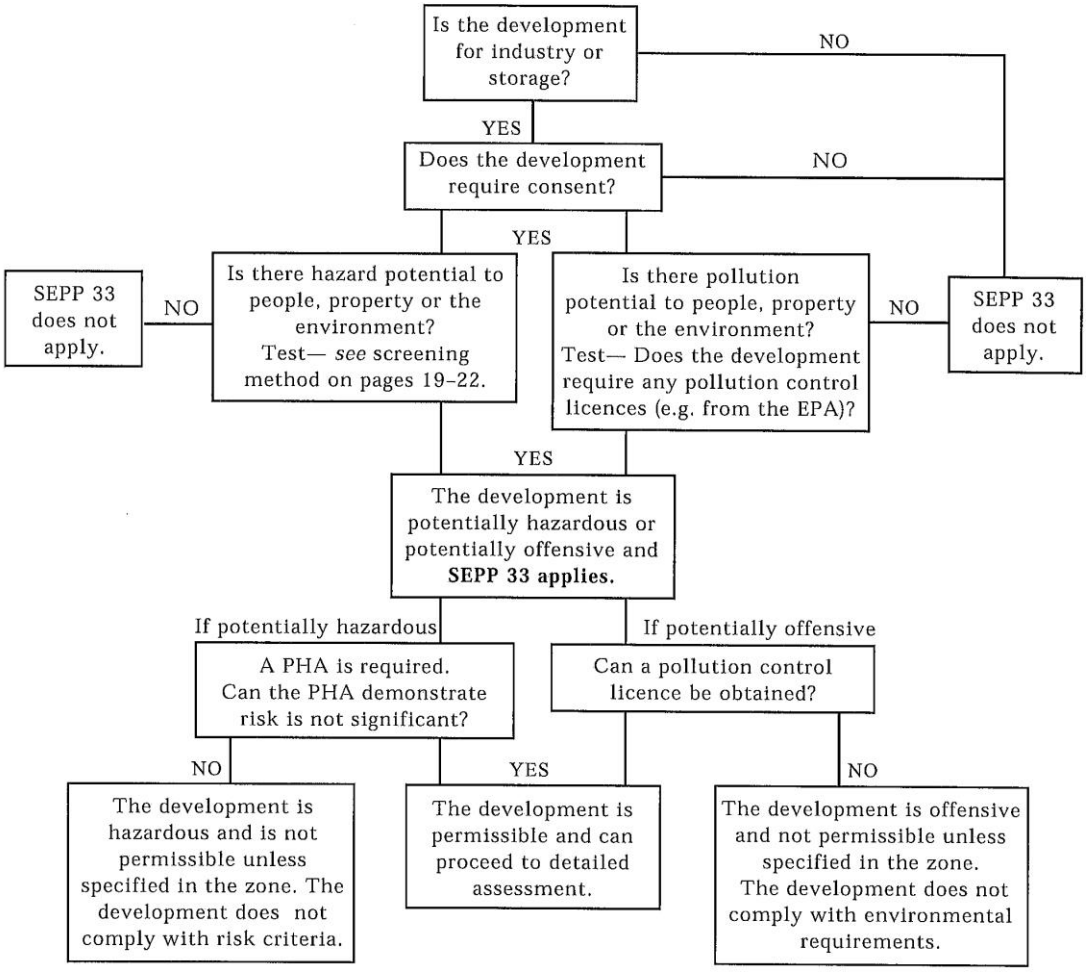
When determining the potential risk of the proposed development site in question, typically our assessment depended on five main factors:

- The properties of the substance(s) being handled or stored;
- The condition of storage or use;
- The quantity involved;
- The location with respect to the site boundary; and
- The surrounding land use.

2.4 The SEPP33 Process

The following Figure 1 provides a SEPP33 process.

Figure 1: The SEPP33 Process



3.0 POTENTIALLY HAZARDOUS ANALYSIS

3.1 Proposed Development

Service Station Developments and Construction Pty Ltd has submitted a proposed development application (DA-10/1209.03) for the demolition of existing building structures and construction of a new Store Retail Area, Car Service Centre, Store and Food & Drink Premises with a Drive Through, including car parking facilities, for the property located at Lot 3 DP 215949, 1-21 Cranebrook Road, Cranebrook NSW.

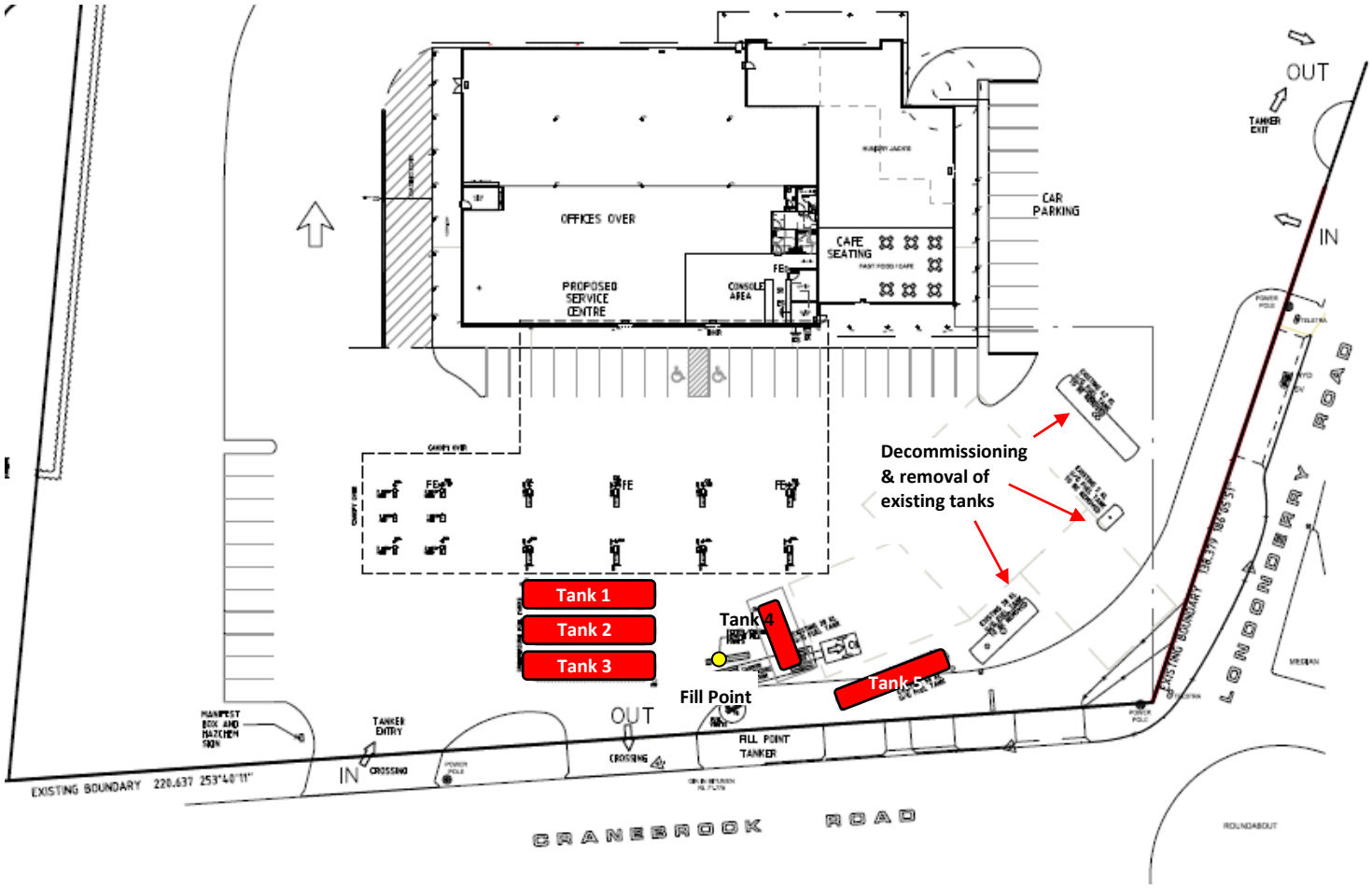
3.2 Proposed Underground Storage Tanks

The underground storage tanks will consist of the following materials:

Table 1: Proposed Underground Storage Tanks

Proposed Underground Tank	Identification & Material	Total Volume (L)	Location
Tank 1 (one compartment)	T2 - Diesel (110,000L)	110,000	SE area of site
Tank 2 (three compartments)	T1 - ADBLUE (22,000L) T3 - Premium Diesel (42,000L) T4 - ULP91 (43,000L)	107,000	SE area of site
Tank 3 (three compartments)	T5 - Ethanol 10 (40,000L) T6 - PULP95 (40,000L) T7 - PULP98 (30,000L)	110,000	SE area of site
Existing Underground Tank	**Material**	**Total Volume (L)**	**Location**
Tank 4 (one compartment)	T8 - ULP91 (30,000L)	30,000	SE area of site
Tank 5 (one compartment)	T9 - Ethanol 10 (50,000L)	50,000	SE area of site

Figure 2: Proposed Location of Underground Storage Tanks



Tank 1 – proposed new UST – 1 compartment, total volume 110,000L
Tank 2 – proposed new UST – 3 compartments, total volume 107,000L
Tank 3 – proposed new UST – 3 compartments, total volume 110,000L
Tank 4 – exiting UST – 1 compartment, total volume 30,000L
Tank 5 – existing UST – 1 compartment, total volume 50,000L

Decommissioning & removal of existing tanks 42,000L, 5,000L and 28,000L

Source: Appendix B – Drawing No. 2749-E50

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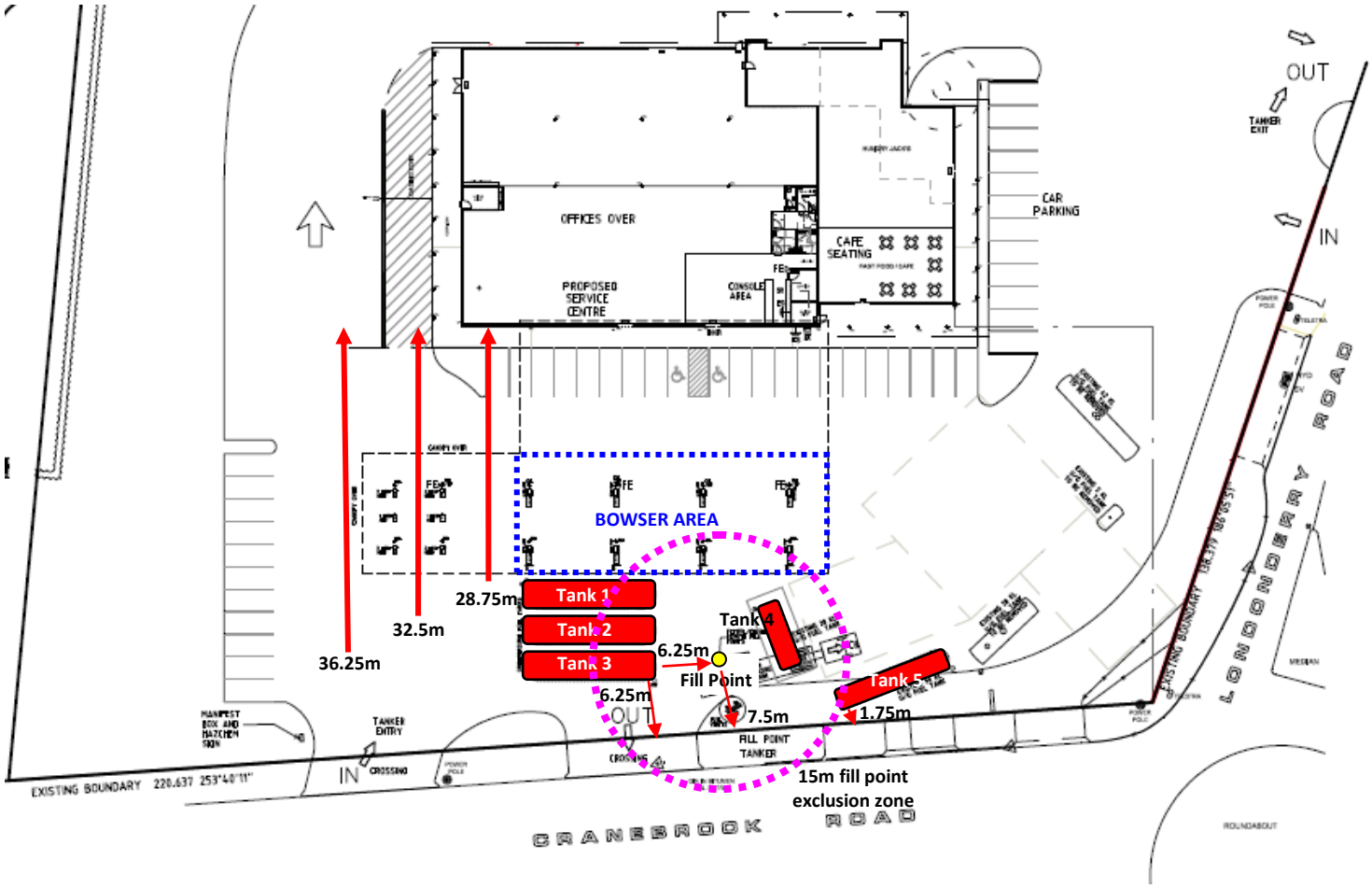
Figure 3: Proposed Distances of Underground Storage Tanks to Boundaries



Please note the following:

- Tank 5 is 1.75m from the southern boundary
- Tank 3 is 6.25m from the southern boundary
- Tank 1 is 28.75m from the proposed residential development
- Tank 2 is 32,5m from the proposed residential development
- Tank 3 is 36.25m from the proposed residential development
- Tanks 3 is 6.25m from filler point

Source: Appendix B – Drawing No. 2749-E50

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3.3 Materials transport information

The transport information for the materials held on site is as follows:

Table 2: Transportation Screening Thresholds

Material	Average Number loads per week	Load Size per week (L)	Load Size per month (L)
Vortex 98	1	27,750	120,250
Vortex 95	1	19,500	84,500
E10	1	13,500	58,500
ULP	1	40,500	175,500
Diesel	1	57,692.30	250,000
ADBLUE	1	1,153.85	5,000

If the proposal is found to be potentially hazardous with respect to transportation, a route evaluation study should be completed in accordance with the route selection guidelines prepared by the Department of Planning.

3.4 Tank / Fill Point Exclusion Zone

The tanker unloading position *(as seen in the proposed development diagram – see Appendix B)* has been selected to allow the truck to enter and exit the site in a forward motion, thus allowing the vehicle to exit the site quickly and in a forward motion in the event of an emergency. All turning paths have been designed to comply with recommended NSW Roads and Maritime Services guidelines.

Tank outlets should be protected by isolation valves which can be shut in the event of an emergency, a leak or routine maintenance. The liquid outlet, pump bypass and vapour lines should be protected by remotely actuated shutdown valves.

The 15m exclusion zone centred on the remote fill point and tanker unloading position encompasses no residential, commercial or sensitive land uses, as shown in Figure 3 above.

3.5 Material Classification

Using the SEPP 33 Guidelines: Dangerous Goods Code the following information is obtained regarding the site:

Table 3: Material Classification

Proposed Tank	Volume (L)	Volume (m^3)	Identification & Material	Classification
Tank 1 – one compartment (proposed new UST)	110,000	110	T2 - G10 Diesel (110,000L, 110m^3)	C1 *(Note 2)*
Tank 2 – three compartments (proposed new UST)	107,000	107	T1 - ADBLUE (22,000L, 22m^3) T3 - Premium Diesel (42,000L, 42m^3) T4 - ULP91 (43,000L, 43m^3)	C1 *(Note 2)* C1 *(Note 2)* 3-*PGII*(Note 1)*
Tank 3 – three compartments (proposed new UST)	110,000	110	T5 - Ethanol 10 (40,000L, 40m^3) T6 - PULP95 (40,000L, 40m^3) T7 - PULP98 (30,000L, 30m^3)	3-*PGII*(Note 1)* 3-*PGII*(Note 1)* 3-*PGII*(Note 1)*
Tank 4 – one compartment (existing UST)	30,000	30	T8 - ULP91 (30,000L, 30m^3)	3-*PGII*(Note 1)*
Tank 5 – one compartment (existing UST)	50,000	50	T9 - Ethanol 10 (50,000L, 50m^3)	3-*PGII*(Note 1)*

Note 1: Flammable Liquids: flashpoint of less than 23^{0}C and boiling point above 35^{0}C

Note 2: Combustible liquids: flashpoint above 61^{0}C but not exceeding 150^{0}C

3.6 Risk Screening Method

The risk screening method will therefore be performed on the following classifications:

Table 4: Risk Screening Method

Classification*	Volume (m^3)
C1	174
3-*PGII*	233

Please note that if class C1 and/or class C2 are present on site and stored with other flammable liquids, they are to be treated as class 3-PGIII. However, it is also stated within the SEPP 33 guidelines that if more than one subsidiary classification of a given class is stored in the same general area, assuming that the total of that class present is the most hazardous subclass present. In this case, class 3-PGII.

Therefore the materials are assessed as:

Table 5: Risk Screening Method Accumulative

Classification	Volume (m^3)
3-*PGII*	407

3.7 Screening Thresholds

In reference to the tables and graphs attached (see Appendix E) and using Table 1 (p. 21) of the SEPP 33 guidelines the following procedure is to be used for the proposed development:

Table 6: Screening Thresholds

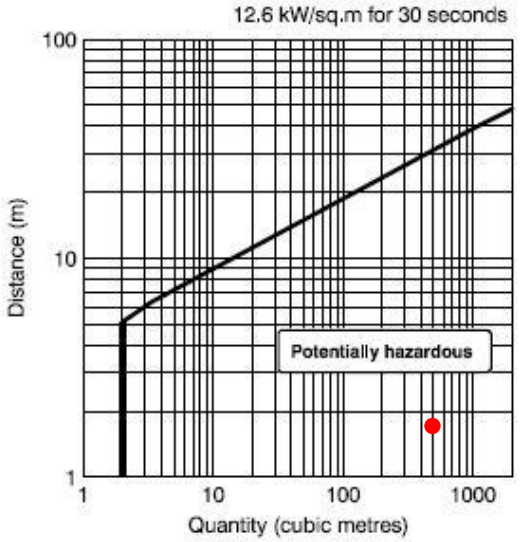
Classification	Volume (m^3)	Table refers to:
3-*PGII*	407	Figure 9

The table above provides the risk screening method to assist in determining whether the proposed development is potentially hazardous and thus affected by SEPP 33. If the quantity (volume) is below the minimum quantity in Table 1 of the SEPP 33 guidelines, then it is not potentially hazardous.

If the proposal is found to be potentially hazardous with respect to transportation, a route evaluation study should be completed in accordance with the route selection guidelines prepared by the Department of Planning.

Figure 4: SEPP33 Screening Thresholds

FIGURE 9. CLASS 3PGII AND PGIII FLAMMABLE LIQUIDS



- **Class 3PGII** - 407,000L (407m^3) Tank farm area – minimum distance from Cranebrook Road boundary 1.75m

TABLE 2. TRANSPORTATION SCREENING THRESHOLDS

Class	Vehicle Movements Cumulative Annual *or*	Peak Weekly	Minimum quantity* per load (tonnes) Bulk	Packages
1	*see* note	*see* note	*see* note	
2.1	>500	>30	2	5
2.3	>100	>6	1	2
3PGI	>500	>30	1	1
3PGII	>750	>45	3	10
3PGIII	>1000	>60	10	no limit
4.1	>200	>12	1	2
4.2	>100	>3	2	5
4.3	>200	>12	5	10
5	>500	>30	2	5
6.1	all	all	1	3
6.2	*see* note	*see* note	*see* note	
7	*see* note	*see* note	*see* note	
8	>500	>30	2	5
9	>1000	>60	no limit	

Note: *Where proposals include materials of class 1, 6.2 or 7, the Department of Planning should be contacted for advice. Classes used are those referred to in the Dangerous Goods Code and are explained in appendix 6.*
** If quantities are below this level, the potential risk is unlikely to be significant unless there are a large number of traffic movements.*

TABLE 3. SCREENING THRESHOLD QUANTITIES

Class	Screening Threshold	Description
1.2	5 tonnes	or are located within 100 m of a residential area
1.3	10 tonnes	or are located within 100 m of a residential area
2.1	(LPG only — not including automotive retail outlets)	
	16 m³	if stored above ground
	64 m³	if stored underground or mounded
2.3	5 tonnes	anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale
	1 tonne	chlorine and sulfur dioxide stored as liquefied gas in containers <100 kg
	2.5 tonnes	chlorine and sulphur dioxide stored as liquified gas in containers >100 kg
	100 kg	liquefied gas kept in or on premises
	10 m³	other poisonous gases (measured at metric standard conditions of 101.3 kPa at 15° C)
4.1	5 tonnes	
4.2	1 tonne	
4.3	1 tonne	
5.1	25 tonnes	ammonium nitrate — high density fertilizer grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary
	5 tonnes	ammonium nitrate — elsewhere
	2.5 tonnes	dry pool chlorine — if at a dedicated pool supply shop, in containers <30 kg
	1 tonne	dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg
	5 tonnes	any other class 5.1
5.2	10 tonnes/10 m³	
6.1(a)	0.5 tonnes/0.5 m³	
6.1(b)	2.5 tonnes/2.5 m³	
6.2	0.5 tonnes/0.5 m³	includes clinical waste
7	all	should demonstrate compliance with Australian codes
8	5 tonnes/5 m³	packaging group I
	25 tonnes/25 m³	packaging group II
	50 tonnes/50 m³	packaging group III

Note: *The classes used are those referred to in the Dangerous Goods Code and are explained in appendix 6*

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4.0 SUMMARY

4.1 Class 3-PGII:

For the purpose of screening, it has been established that the equivalent of 407m^3 of class 3-PGII is stored a minimum distance of 1.75m from the nearest boundary. From Figure 9, the 'screening distance' for 407m^3 is 30m. As the nearest boundary to the storage area is only 1.75m the proposal is ***potentially hazardous*** on the basis of flammability. We can recommend moving the tanks away from the Cranebrook Road boundary to a distance of ~ 20m in its current form (separating tanks from other tanks reduces radius requirements to nearest boundary). Alternatively, a Preliminary Hazard Assessment has been undertaken in section 5.

For class 3-PGII, there will be approximately six (6) deliveries per week (approximately 312 per year) of 8,325,000L. Whilst the quantity per load is enough to warrant consideration of the average weekly vehicle movements, six movement per week per fuel type is not enough to trigger a transport study as part of the preliminary hazard analysis.

It also should be noted that containers of an undisclosed volume of Hydraulic Brake Fluid, class 3-PGII is proposed to be stored within the workshop area of the proposed development site as part of the works process within the site. Due to the minimal distance from the nearest boundary (approx.>50m), this part of the proposal is ***not potentially hazardous.***

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5.0 PRELIMINARY HAZARD ANALYSIS

5.1 Threshold Screening

For a screening quantity of 407,000L, the minimum separation distance from the remote filling and dispenser points is 30 metres. Or if the 3 large tanks were moved away from the tank farm area, then the classification would be only 220,000L. For the purposes of this assessment, we will review the current situation.

Classification*	Volume (m^3)
C1	174
3-*PGII*	233

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.

5.2 Transport Screening

For class 3-PGII, there will be approximately six (6) deliveries per week (approximately 312 per year) of 8,325,000L. Whilst the quantity per load is enough to warrant consideration of the average weekly vehicle movements, six movement per week per fuel type is not enough to trigger a transport study as part of the preliminary hazard analysis.

For substances of class 3 PG II, the screening value for cumulative vehicle movements per annum is 750. (Refer Applying SEPP 33 Table 2 – Appendix C). Since the expected number of deliveries is approximately 312 per annum, transport threshold figures do not exceed required amount.

5.3 Risk Classification

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

5.4 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 407,000L, therefore 407,000L should be considered for screening purposes, but since the fuel is stored underground, the screening capacity becomes 407 divided by 5 = 81,400L.

Reference No. 6 (Petrol)	(Refer IAEA Table II)
Effect category is CII (Petrol)	(Refer IAEA Table IV [A])

5.5 Maximum Distance and Area of Effect

From IAEA Table V, we get the following: PETROLS

Maximum Distance	= 50 - 100m
Area A	= 1.5 ha

5.6 Population Distribution

Residence on site allows for an additional potential distance of 28.75m to nearest residence by tanks. We need to estimate the number of people within the above region at any one time. From IAEA Table VI, Population density for farmland area, scattered houses allowing for new business in the new complex.

- Population density: d = 15.0 persons / ha.

5.7 Population Correction factor

The Population Correction Factor is to determine what percentage of the area within a 100 metre radius (for petrol) from the site is populated.

Therefore: Total area = π x r^2 = π x 100^2 = 31,416 m^2 (for petrols).

Site Area = 36,000m^2 Population Correction Factor, fA

$$f_A = \frac{\text{total area – site area}}{\text{total area}} = \frac{31,416 - 36,000}{31,416} = 0.146$$

5.8 Mitigation Correction Factor

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

5.9 Estimation of External Consequences

$C_{a,s} = A \times d \times f_A \times f_m$ Thus: BII = 1.5 x 15 x 0.146 x 1 = 3.29 fatalities per accident.

5.10 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:

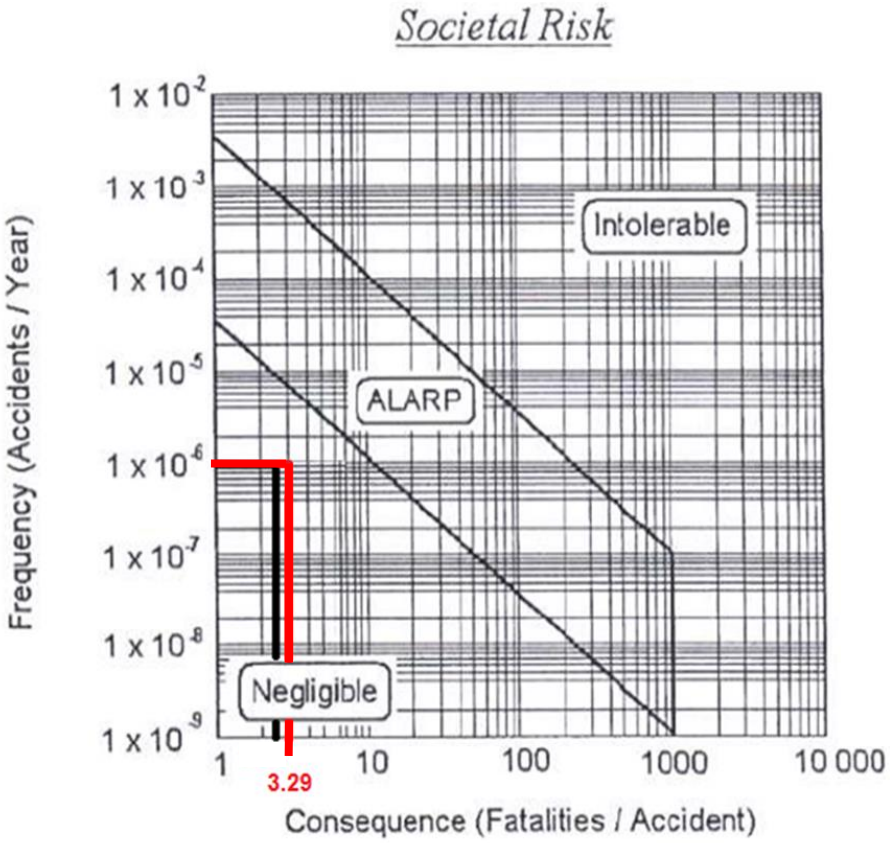
Loading, nl = -1	(Refer IAEA Table X {A})
Flammables, nf = 0	(Refer IAEA Table XI)
Organisational Safety, no = 0	(Refer IAEA Table XII)
Wind Direction, np = 0	(Refer IAEA Table XIII)

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):

$$P = 1 \times 10^{-6}$$

5.11 Level of Risk



By intersecting the Frequency (P = 1 x 10 $^{-6}$) with the Consequence (BII = 3.29) 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 the site owner or their lessees to reduce the risk of an incident occurring have been included below and forms part of the Preliminary Hazards Analysis. However, additional areas need to be added to provide an adequate risk management for residents at the site.

6.0 CONCLUSIONS

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 E.

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.

The design of this proposal meets and exceeds the above Australian Standard requirements.

6.1 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 Points: 3m	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: 4m	AS 1940-2004, Clause 7.3.1(b) & AS/NZS 60079.10.1:2009 Annex ZA Clause 4.4.2.2 & Fig. ZA.4

We would be pleased to provide further information on any aspects of this report.

For and on behalf of

Aargus Pty Ltd	**Reviewed By:**
[redacted]	
Con Kariotoglou	**Mark Kelly**
Project Manager / WHS Consultant	Environmental Manager

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RISK SCREENING PROCEDURE

SCREENING THRESHOLDS

PRELIMINARY HAZARDS ANALYSIS & SUMMARY

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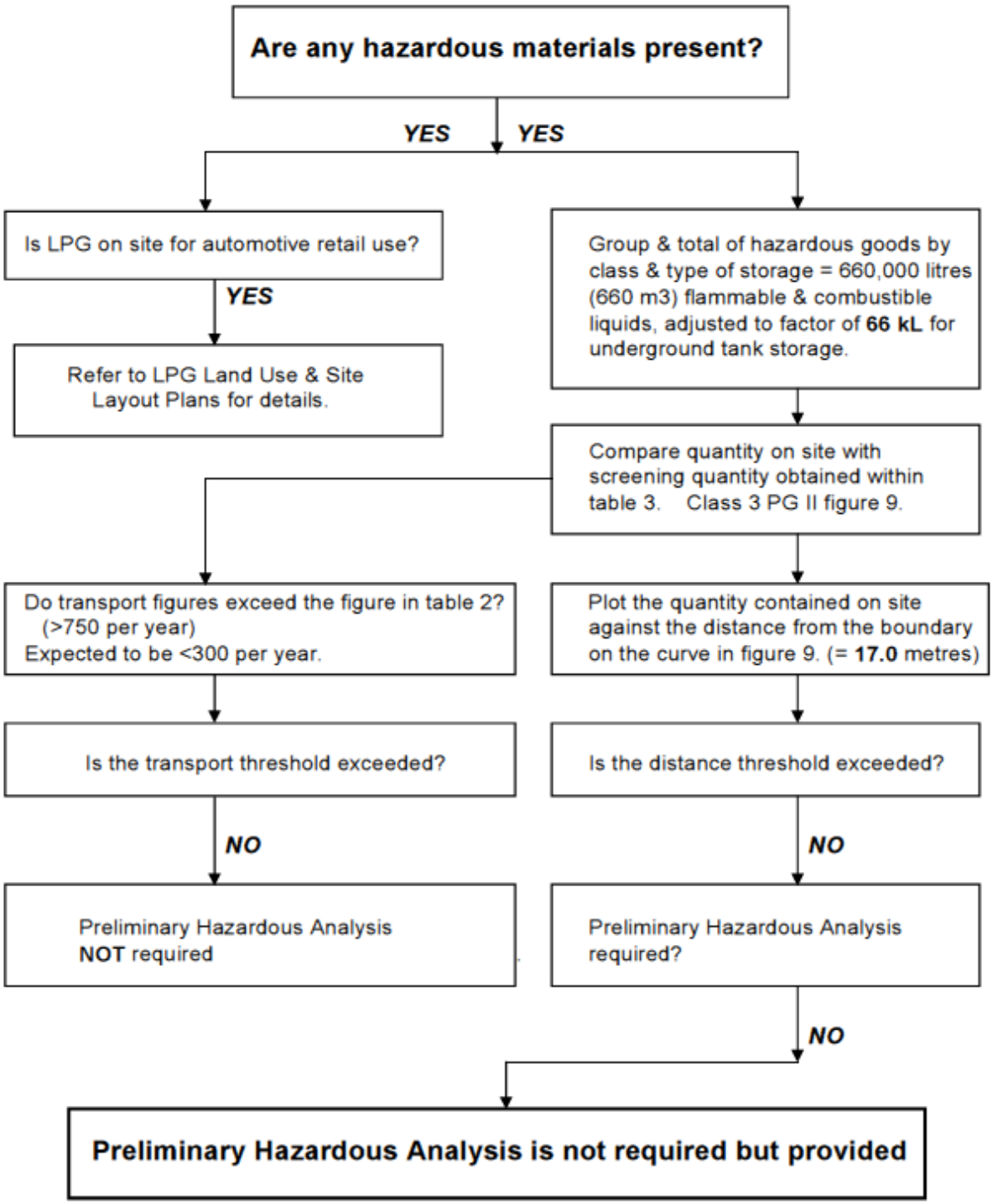
SEP33 Risk Screening Procedure Summary Sheet



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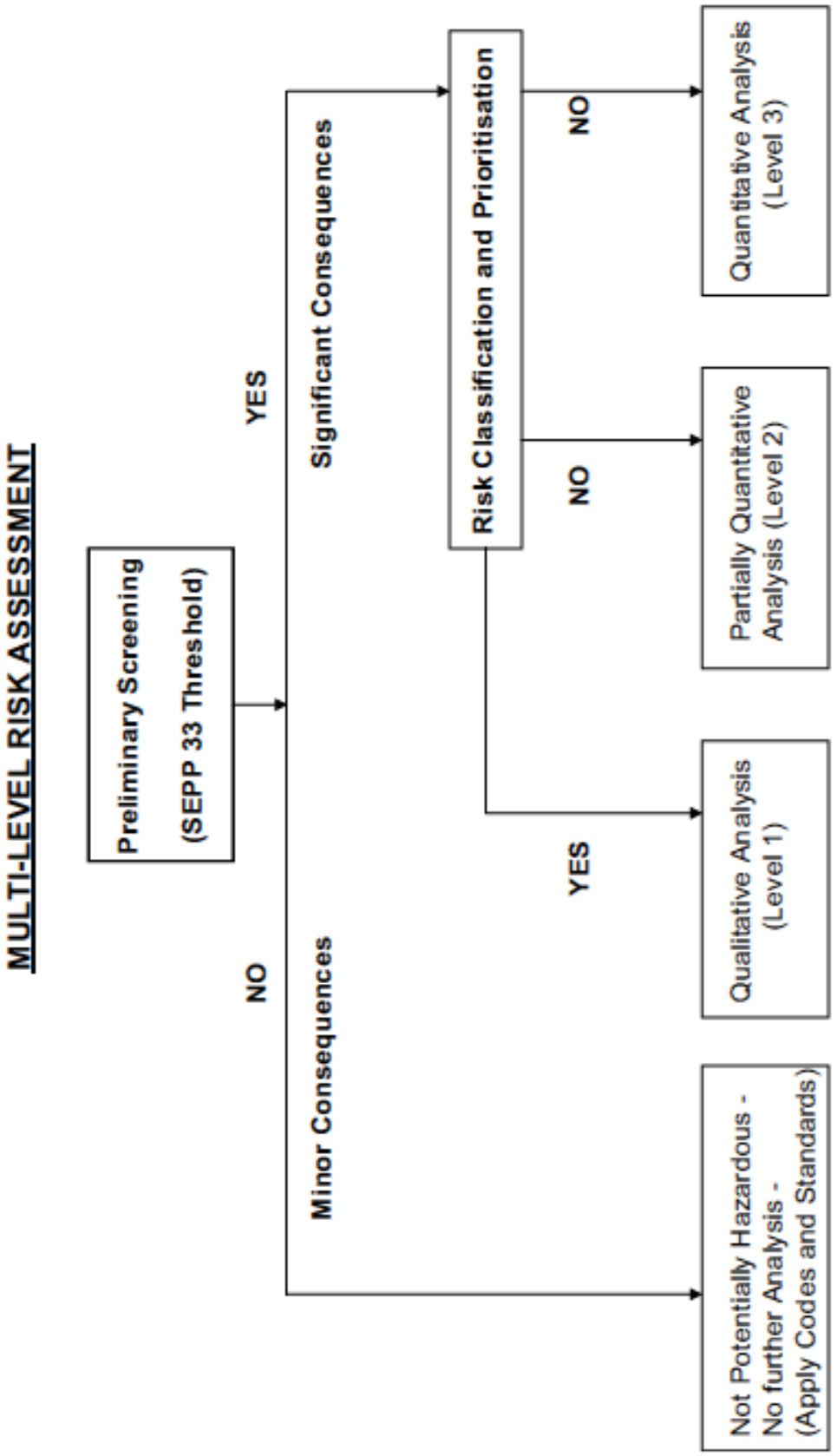

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Purpose of Hazard Analysis

The main purpose for the redevelopment or upgrading of the Service Centre, 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, 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.

Underground Storage Tanks – Fuel

- Underground storage tanks
    - 3 x proposed new 110,000L underground petrol tanks – the closest proposed tank (Tank 3) to the boundary has a 6.25m setback and a 6.25metre setback to the fill point for the tanks; and
    - Retain 2 exiting fuel tanks on site Tank 4 - 30,000L (7.5m setback from site boundary) and Tank 5 - 50,000L (1.75m setback from boundary).
- Double walled fiberglass tank (Envirotank or Fibretank Systems– 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 of 1m above the roof top of the residential premise, with up draft vents caps 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 petrol tanks. Not connected at this stage.

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 hose units to dispense Premium Unleaded 98 & 95, Ethanol 10 and Automotive Diesel Fuel and located under petrol canopy with concrete pavement area and on site forecourt and to meet AS1940-2004. The diesel dispensers will be hi-flow & ultra-high flow units and located under diesel canopy with concrete pavement area.

- 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, kiosk and residential common area to enable the site operator to communicate in the event of an emergency with client vehicles on the forecourt area and residents.

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 main building. Refer to site specific drawing and standard drawings

Fuel Spill Control

- An environmental spill kit to be held in console area 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.
- Two (2) 2.5 kg dry chemical fire extinguishers fitted inside the residential dwelling (and/or) sprinkler system in accordance with Australian Standards.

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 commercial building and within residential area.

Emergency Exit Points on Dwelling

Two entry/exit stairwells to be fire proofed with rated fire-doors and to not be blocked in case of emergencies. Site plans show adequate spacing between both exit points for the residential premise in case of emergency.

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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 Systems will need to be inspected by qualified consultants. Equipment Integrity Testing will also be required by accredited companies to comply with AS 4897 – 2008 & NSW Regulations.

Preliminary Hazards Analysis Summary for Cranebrook - NSW		
Potential Incident	**Hazard Prevention Equipment**	**Hazard Response Procedures**
Underground Tanks Leak	Tank farm monitoring 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

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Preliminary Hazards Analysis Summary for Cranebrook - 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

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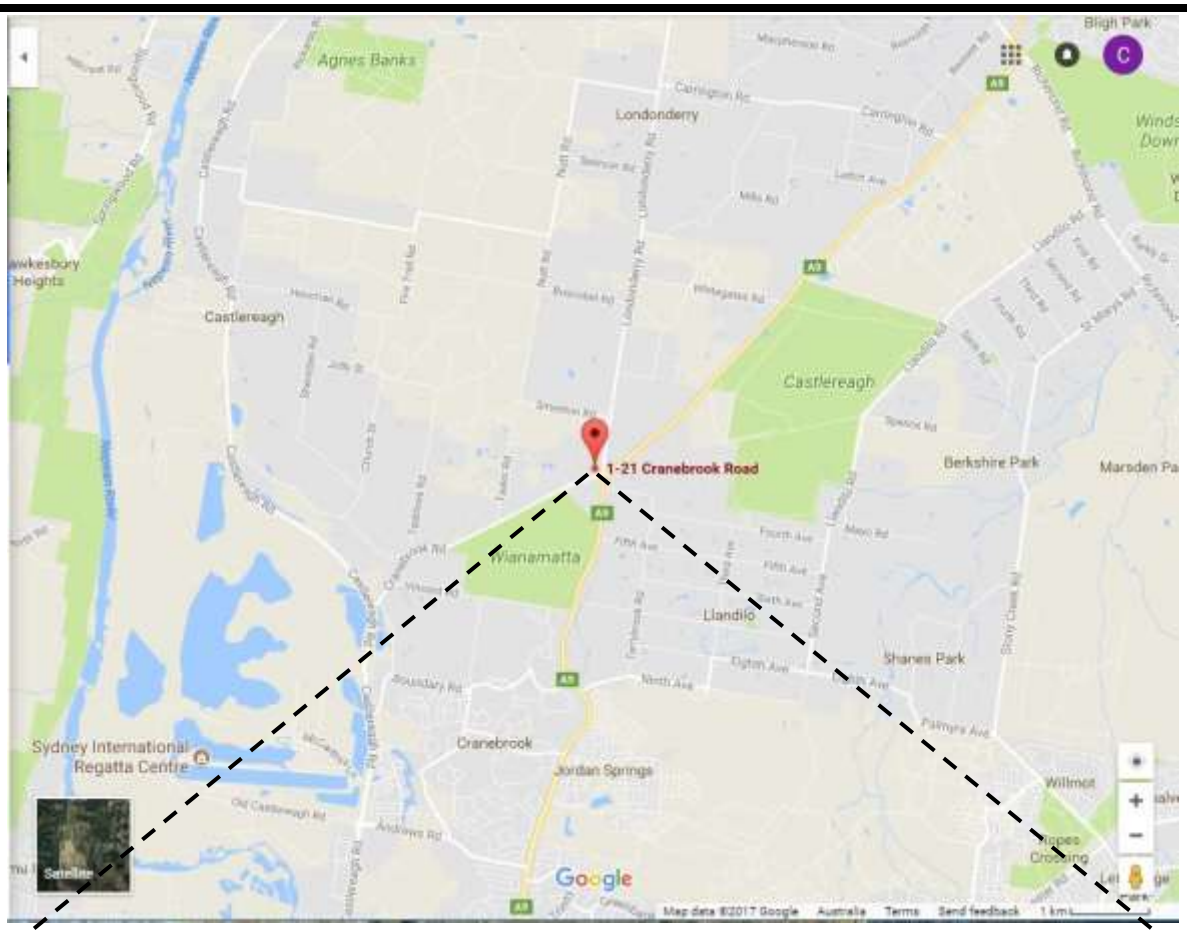
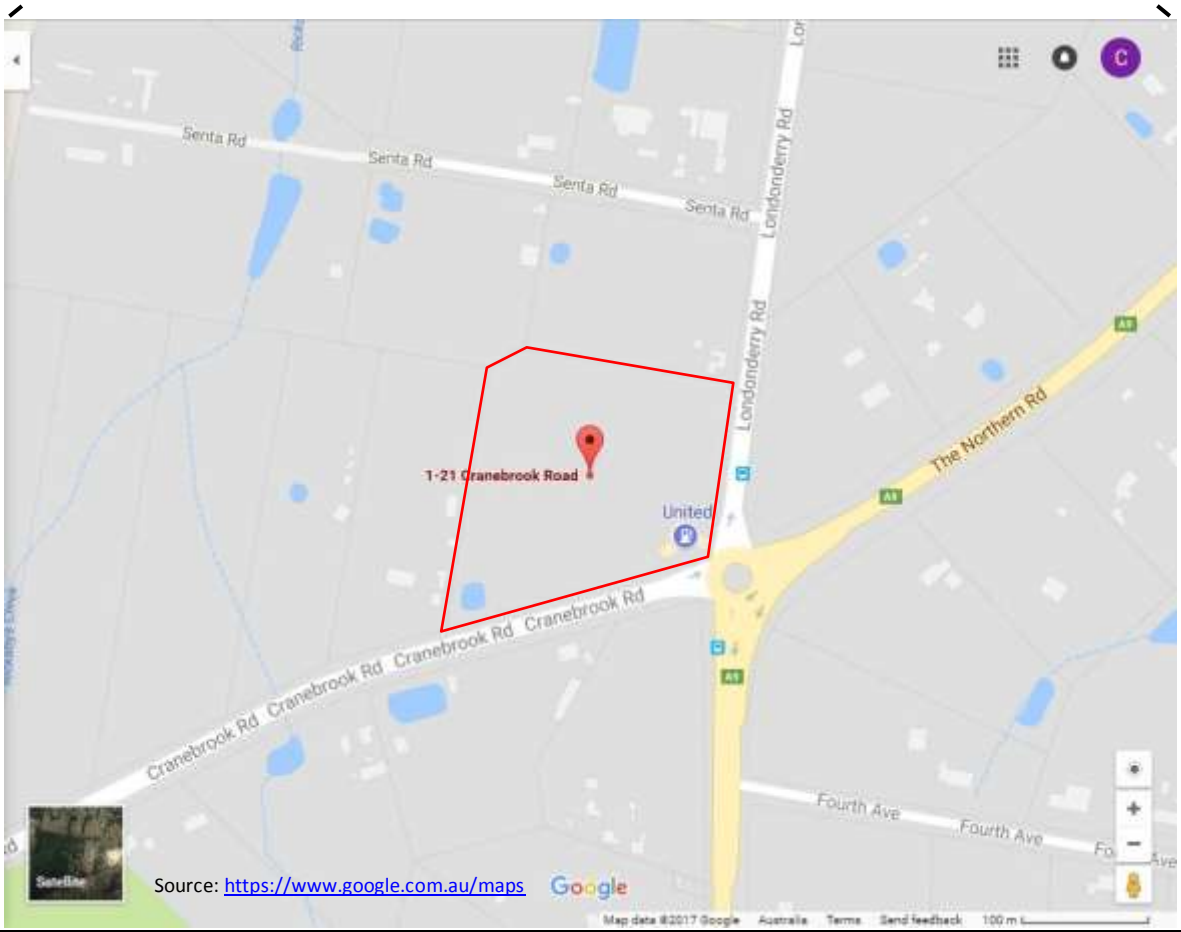
APPENDIX A

LOCATION MAP, SITE PLAN

SITE LOCALITY MAP





Source: https://www.google.com.au/maps

PROJECT DETAILS		DRAWING DETAILS			
Project Title	SEPP33 - Preliminary Hazard Analysis	**Figure No.**	1	**Rev No.**	0
Project No.	ES6911/3	**Scale**	As above	**Size**	A4
Client	Service Station Developments & Construction Pty Ltd	**Drawn by**	CK	**Date**	09.11.2017
Site Address	1-21 Cranebrook Road, Cranebrook NSW	**Approved by**	MK	**Date**	09.11.2017

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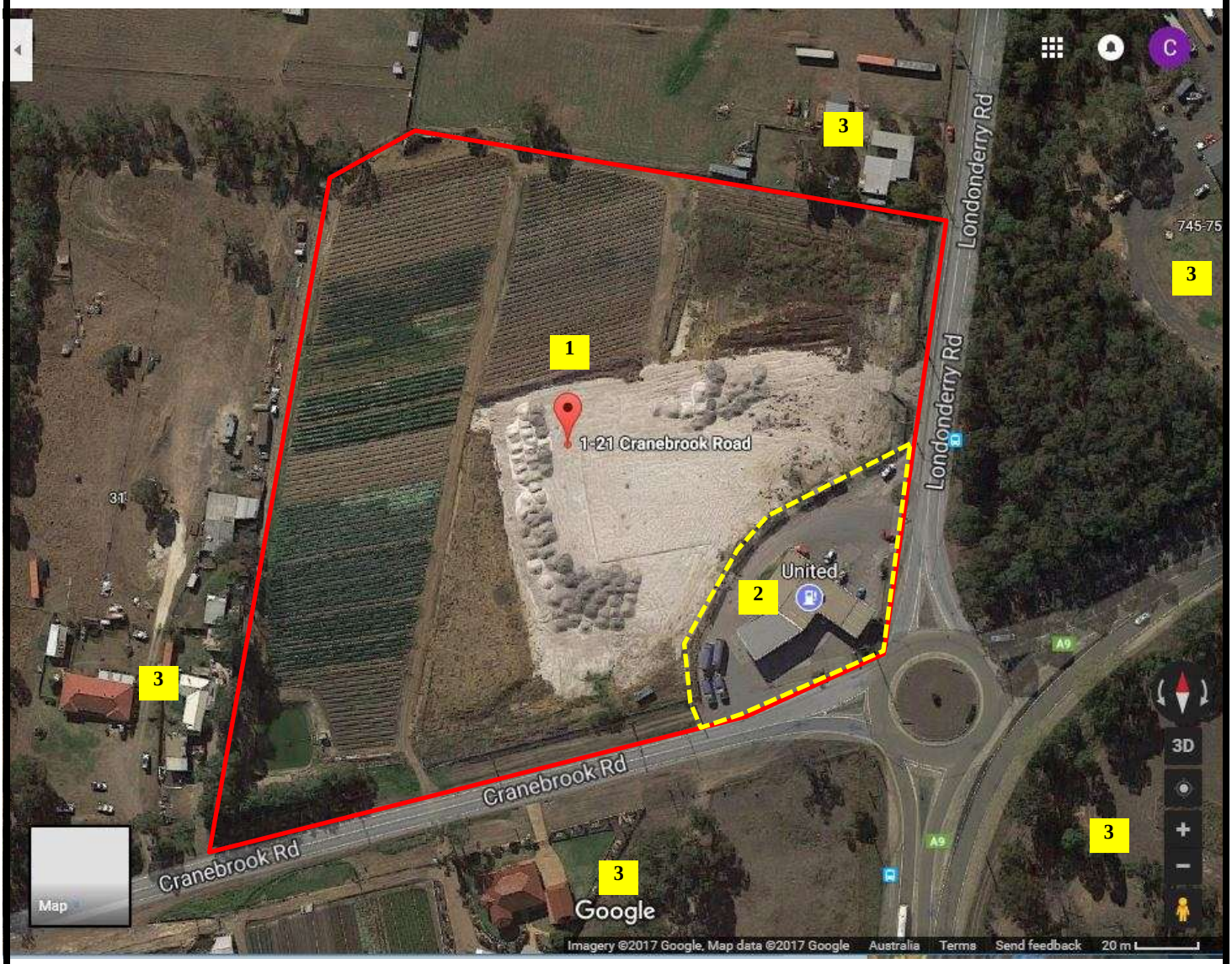
SITE FEATURES



LEGEND

1. 1-21 Cranebrook Road, Cranebrook
2. Proposed new development area (SE portion of the site)
3. Neighbouring Low Density Rural Residential properties

PROJECT DETAILS			DRAWING DETAILS			
Project Title	SEPP33 - Preliminary Hazard Analysis		**Figure No.**	2	**Rev No.**	0
Project No.	ES6911/3		**Scale**	As above	**Size**	A4
Client	Service Station Developments & Construction Pty Ltd		**Drawn by**	CK	**Date**	09.11.2017
Site Address	1-21 Cranebrook Road, Cranebrook NSW		**Approved by**	MK	**Date**	09.11.2017

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SITE PHOTOGRAPHS

Client:	Service Station Developments Pty Ltd
Project:	SEPP 33 Preliminary Hazard Analysis
Site Location:	1-21 Cranebrook Road, Cranebrook NSW
Job No.:	ES6911-3
Photos Taken By:	CK

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ACM = Asbestos Containing Materials

Photograph Nº 1

View of 1-21 Cranebrook Road, Cranebrook
Showing existing service station,
Looking north. Inspected on 10.11.2017

Photograph Nº 2

View of 1-21 Cranebrook Road, Cranebrook
Showing existing southern bowser area,
Looking northeast. Inspected on 10.11.2017

Photograph Nº 3

View of 1-21 Cranebrook Road, Cranebrook
Showing existing southern bowser area,
Looking northwest. Inspected on 10.11.2017

Photograph Nº 4

View of 1-21 Cranebrook Road, Cranebrook
Showing existing western bowser area,
Looking southeast. Inspected on 10.11.2017

Photograph Nº 5

View of 1-21 Cranebrook Road, Cranebrook
Showing existing western bowser area,

Photograph Nº 6

View of 1-21 Cranebrook Road, Cranebrook
Showing existing Keroscene bowser area,
Looking northwest. Inspected on 10.11.2017

SITE PHOTOGRAPHS

Client:	Service Station Developments Pty Ltd
Project:	SEPP 33 Preliminary Hazard Analysis
Site Location:	1-21 Cranebrook Road, Cranebrook NSW
Job No.:	ES6911-3
Photos Taken By:	CK

Aargus

ACM = Asbestos Containing Materials

Photograph Nº 7

View of 1-21 Cranebrook Road, Cranebrook
Showing existing vents pipes behind Keroscene bowser,
Looking southwest. Inspected on 10.11.2017

Photograph Nº 8

View of 1-21 Cranebrook Road, Cranebrook
Showing existing filler point
Looking southwest. Inspected on 10.11.2017

Photograph Nº 9

View of 1-21 Cranebrook Road, Cranebrook
Showing existing staining on surfaces adjacent to bowsers. Looking west. Inspected on 10.11.2017

Photograph Nº 10

View of 1-21 Cranebrook Road, Cranebrook
Showing existing eastern portion of the site,
Looking west. Inspected on 10.11.2017

Photograph Nº 11

View of 1-21 Cranebrook Road, Cranebrook
Showing existing northern portion of the site,

Photograph Nº 12

View of 1-21 Cranebrook Road, Cranebrook
Showing existing western portion of the site,
Looking north. Inspected on 10.11.2017

SITE PHOTOGRAPHS

Client:	Service Station Developments Pty Ltd
Project:	SEPP 33 Preliminary Hazard Analysis
Site Location:	1-21 Cranebrook Road, Cranebrook NSW
Job No.:	ES6911-3
Photos Taken By:	CK

Aargus

ACM = Asbestos Containing Materials

Photograph Nº 13

View of 1-21 Cranebrook Road, Cranebrook
Showing existing LPG storage tank area in front of retail store. Looking north. Inspected on 10.11.2017

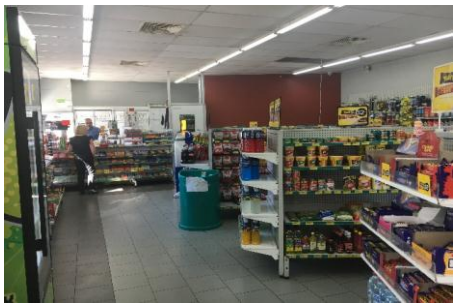
Photograph Nº 14

View of 1-21 Cranebrook Road, Cranebrook
Showing existing chlorine drum storage area in front of retails store. Looking northwest. Inspected on 10.11.2017

Photograph Nº 15

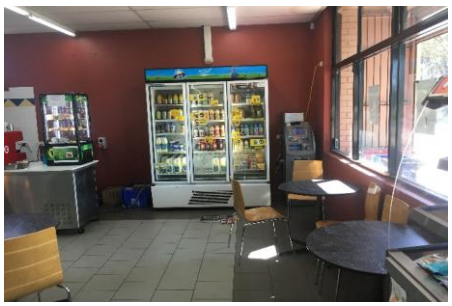
View of 1-21 Cranebrook Road, Cranebrook
Showing existing retail store
Looking southwest. Inspected on 10.11.2017

Photograph Nº 16



View of 1-21 Cranebrook Road, Cranebrook
Showing existing interior of retail store
Looking southwest. Inspected on 10.11.2017

Photograph Nº 17



View of 1-21 Cranebrook Road, Cranebrook
Showing existing interior of retail store

Photograph Nº 18

View of 1-21 Cranebrook Road, Cranebrook
Showing existing interior of retail store
Looking northwest. Inspected on 10.11.2017

APPENDIX B

PROPOSED DEVELOPMENT PLANS

PROPOSED SERVICE CENTRE

VERANDAH

CONSOLE AREA

SR

ES

OFFICE

DB

FE

OFFICES ENTRY

FAST FOOD / CAFE

3 x 100 DIA. ORANGE CONDUITS

DOOR

ES

EK

ELEC PIT

CAR PARKING

PROPOSED
1 No. SINGLE TYPE 110 AND
2 No. SPLIT COMPARTMENT TYPE 110 (23/43/43) & (40/40/30), U/G. DOUBLE WALL FIBREGLASS TANKS (TS TANKS SHOWN)
EXISTING
1 No. SINGLE TYPE 50 AND 1 No. SINGLE TYPE 30 U/G. TANKS, DOUBLE WALL FIBREGLASS

8 HOSE DISPENSERS TO BE GALLAGHER LX PULSE, DIESEL DISPENSERS TO BE GALLAGHER DUAL H/F, AD-BLUE DISPENSER TO BE GALLAGHER SINGLE HOSE.

CONDUITS TO BE FINALISED WITHIN PIT & TO BE IN A TRENCH 600 WIDE x 600 DEEP MIN. SHOWN DIAGRAMATICALLY ONLY

PROPOSED ELECTRICAL PIT, TERMINATE CONDUITS IN 1000 x 1000 x 1000 PIT (MIN. SIZE) PRIOR TO ENTRY INTO BUILDING/SWITCH BOARD, FINAL LOCATIONS TO BE DETERMINED ON SITE

NEW CANOPY OVER

5500

9990

21-22 2 HOSE UHFD

17-18 2 HOSE UHFD

26 1 HOSE ADB

25 1 HOSE ADB

23-24 2 HOSE UHFD

19-20 2 HOSE UHFD

8 HOSE MPD 13-14

8 HOSE MPD 9-10

8 HOSE MPD 5-6

8 HOSE MPD 1-2

8 HOSE MPD 15-16

8 HOSE MPD 11-12

8 HOSE MPD 7-8

8 HOSE MPD 3-4

CARS AREA

NEW CANOPY OVER

TRUCKS AREA

OW

T2 G10 DIESEL

ADBLUE T1

T3 ULT DIESEL

T4 ULP91

T5 ETHANOL10

PULP95 T6

T7 PULP98

NEW UNDERGROUND FUEL TANKS

FIBREGLASS OR STAINLESS STEEL AD-BLUE FILL BOX

FILL BOXES

ADBL 1 2 D 3 VR 4 5 6 7 8 9 PRD UE PVUE

PETROL/DIESEL REMOTE FILL POINTS. FINAL LOCATION TO BE DETERMINED ON SITE

VP VD VR

PRV AND BREATHERS

1.5 m HAZ. ZONE

FUEL VENTS.
VENT OUTLETS TO BE FINALISED 1500 FROM TOP OF FASCIA & 1500 FROM ANY ELECTRICALS (AS/NZS 60079.10.1:2009 ANNEX ZA CL ZA4.4.2.5a). MIN. HEIGHT 4500 ABOVE GROUND

LOCATION OF EXISTING U/G. TANKS ARE ASSUMED ONLY & TAKEN FROM SITE SURVEY

EXISTING 30 KL U/G FUEL TANK

T8 ULP91

EXISTING 50 KL U/G FUEL TANK

T9 E10

EXISTING CANOPY OVER

TANKER EXIT

OUT

LANDSCAPING

TANKER ENTRY

IN

CROSSING

POWER POLE

BOUNDARY

LANDSCAPING

OUT

CROSSING

CRANEBROOK ROAD

LEGEND

VP - VENT PETROLS
VD - VENT DIESEL
D - DIP
F - FILL
VR - VAPOUR RECOVERY
A - AUTO TANK GAUGING
BR- BRINE RESERVOIR
T - SUBMERSIBLE TURBINE PUMP
MPD - MULTI PRODUCT DISPENSER
OW - TANK EXCAVATION OBSERVATION WELL
ES - EMERGENCY STOP
SR - SITE REGISTER
FE - FIRE EXTINGUISHER
EK - ENVIRONMENTAL SPILL KIT
B - BOLLARDS

NOTES:

THIS PLAN IS BASED ON DRAWINGS PROVIDED BY:

CKDS ARCHITECTURE

CAD DRAWING DO NOT REVISE BY HAND

REFERENCE DRAWINGS

NOTE:
THIS DRAWING MUST BE READ IN CONJUNCTION WITH CONDUITS SCHEDULE DRAWING No. 2749-E51

PROJECT No. 1456
DRAWING No. A-003 ISSUE B

MATTHEW FREEBURN
LAND, ENGINEERING & MINING SURVEYOR
SUITE 2, 1st FLOOR, "SURVEYOR HOUSE",
2 CASTLEREAGH STREET
PENRITH 2750

DRAWING No. 30361 DET

FREEBURN SURVEYING

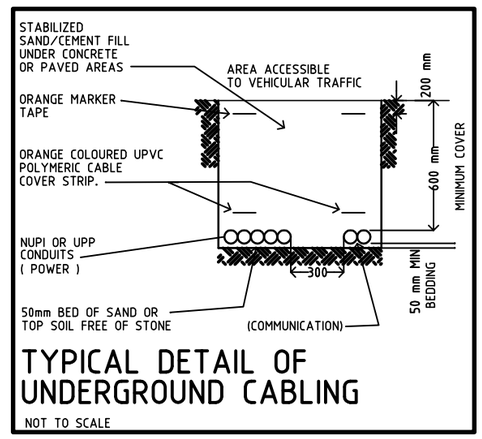
Telephone 02 4721 2289
Fax 02 4721 5646
email m.booyen@freeburnsurveyors.com
or matthew@freeburnsurveyors.com

GENERAL NOTES

1. MAINTAIN 300mm CLEARANCE BETWEEN POWER & COMMUNICATION (INCLUDING INTERCOMMUNICATION) CABLING WHERE POSSIBLE THIS SEPARATION IS CRITICAL FOR THE FUEL SYSTEM WHERE TOTAL NETWORK LENGTH IS GREATER THAN 300m.
2. CABLING SHALL BE INSTALLED IN CONDUIT WITHIN THE FILL MATERIAL UNDER THE FLOOR SLAB OF THE BUILDING.
3. CONDUITS THAT ENTER THE CABLE ENTRY PITS SHALL BE CAPPED OFF AT BOTH ENDS, TO AUSTRALIAN STANDARD REQUIREMENTS.
4. INTERCOMMUNICATION CABLING TO CANOPY ROOF CAVITY VIA THE CANOPY STRUCTURAL COLUMNS.
5. CANOPY LIGHTING CABLE TO CANOPY ROOF CAVITY VIA THE CANOPY STRUCTURAL COLUMNS.
6. LEAVE 2000mm OF CABLING COILED UP ABOVE GROUND LEVEL FOR TERMINATION & CONNECTION TO EQUIPMENT BY THE FUEL SYSTEM INSTALLER.
7. LEAVE 2000mm OF CABLING COILED UP AT RUN BOXES LOCATION FOR TERMINATION & CONNECTION BY FUEL SYSTEM INSTALLER.
8. BUILDER TO ALLOW TO INSTALL 3 x 100 DIAMETER ORANGE CONDUITS (MIN). FROM ELECTRICAL PIT TO FINAL SWITCHBOARD LOCATION.

U/G. FUEL TANKS ONLY

No.	PRODUCT	CAPACITY
T1	AD BLUE	22,000 L
T2	G10 DIESEL	110,000 L
T3	PREMIUM DIESEL	42,000 L
T4	UNLEADED91	43,000 L
T5	ETHANOL10	40,000 L
T6	PULP95	40,000 L
T7	PULP98	30,000 L
T8	UNLEADED91	30,000 L
T9	ETHANOL10	50,000 L



TYPICAL DETAIL OF UNDERGROUND CABLING

NOT TO SCALE

0 5 10
METRES

No.	AMENDMENT	DATE	DRN
B	AUTO LPG COMPONENT REMOVED	NOV.'17	RDF
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. AND NOT TO BE REPRODUCED WITHOUT PERMISSION.

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myros design pty. ltd.
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28 SOFTWOOD AVE, BEAUMONT HILLS, NSW, 2155, AUSTRALIA.
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MOBILE: 0412 605 843
E-MAIL: myros@tpg.com.au
R. D. FERREIRA
Accredited Dangerous Goods Consultant

FOR AND ON BEHALF OF:
SERVICE STATIONS DEV. & CONSTRUCTION PTY. LTD.
P.O. BOX 4081, WARRIMOO, NSW, 2774.

LOCATION OF PROJECT
CRANEBROOK-NSW
1-21 CRANEBROOK ROAD

DRAWING TITLE
FUEL SYSTEMS ELECTRICS
PUMP AND TANK LAYOUT
PROPOSED SERVICE CENTRE

DRAWN	RDF	CHECKED	
DATE	OCT.'14	PLOT DATE	NOV.'17
SCALE	1: 250	SHEET SIZE	A3
STATUS:	CONSTRUCTION & TENDER		
PROJECT No.	1014	DRAWING No.	2749-E50
ISSUE No.	B		

CAD DRAWING DO NOT REVISE BY HAND

2749-E50	FUEL SYSTEM ELECTRICS

REFERENCE DRAWINGS

ITEM	FUNCTION	FROM	TO	CONDUIT FROM PIT	CABLE
1	DISPENSERS–PETROL/DIESEL	MSB–VIA PIT	DISPENSER 1–2	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 3–4	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 5–6	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 7–8	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 9–10	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 11–12	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 13–14	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 15–16	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 17–18	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 19–20	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 21–22	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 23–24	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 25	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
		MSB–VIA PIT	DISPENSER 26	1x32mm OD NUPI	1x1.5mm² 10c+E PVC/PVC/ORG
1a	VAP. RECOVERY 2 – PETROL	ELECTRICAL PIT	DISPENSER 1–2	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 3–4	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 5–6	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 7–8	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 9–10	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 11–12	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 13–14	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	DISPENSER 15–16	1x32mm OD NUPI	1 x Belden 8760 shielded cable
1b	SPARE CONDUIT–PETROL/DIESEL	ELECTRICAL PIT	**TO ALL DISPENSERS**	1x32mm OD NUPI	**Draw wire only to all dispensers.**
2	SUBMERSIBLE TURBINE PUMPS	MSB–VIA PIT	TANK 2 G10 DIESEL STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 3 PREMIUM DIESEL STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 4 ULP91 STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 5 ETHANOL10 STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 6 PULP95 STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 7 PULP98 STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 8 ULP91 STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
		MSB–VIA PIT	TANK 9 ETHANOL10 STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
2a	PRESSURE LINE LEAK DETECTION	ELECTRICAL PIT	TANK 2 G10 DIESEL STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 3 PREMIUM DIESEL STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 4 ULP91 STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 5 ETHANOL10 STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 6 PULP95 STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 7 PULP98 STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 8 ULP91 STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	TANK 9 ETHANOL10 STP	1x32mm OD NUPI	1 x Belden 8760 shielded cable
2b	AUTOMATIC TANK GAUGING	ELECTRICAL PIT	VIA TANK 2 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	VIA TANK 3 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	VIA TANK 4 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	VIA TANK 5 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	VIA TANK 6 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	VIA TANK 7 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
		ELECTRICAL PIT	VIA TANK 9 TURRET TO FITT.	1x32mm OD NUPI	1 x Belden 8760 shielded cable
2c	AD BLU SUB PUMP ××	MSB–VIA PIT	TANK 1 AD–BLUE STP	1x32mm OD NUPI	1x2.5mm² 3c+E PVC/PVC/ORG
2d	ADBLUE SPARE CONDUIT	MSB–VIA PIT	TANK 1 AD–BLUE	1x32mm OD NUPI	✳Draw wire only.

THESE CONDUITS INSTALLED BY PUMP & TANK ELECTRICAL CONTRACTOR

CABLE SIZES MAY CHANGE DEPENDING ON DISPENSERS USED

CHANGE CABLES TO 3107 A IF GALLAGHER DISPENSERS USED

CABLE SIZES MAY CHANGE DEPENDING ON STP'S USED

U/G. TANKS ONLY

No.	PRODUCT	CAPACITY
T1	AD BLUE	22,000 L
T2	G10 DIESEL	110,000 L
T3	PREMIUM DIESEL	42,000 L
T4	UNLEADED91	43,000 L
T5	ETHANOL10	40,000 L
T6	PULP95	40,000 L
T7	PULP98	30,000 L
T8	UNLEADED91	30,000 L
T9	ETHANOL10	50,000 L

NOTE:
ALL EMERGENCY STOPS MUST BE "ALL FUELS" EMERGENCY STOPS

NOTE:
THIS DRAWING MUST BE READ IN CONJUNCTION WITH FUEL SYSTEM ELECTRICS DRAWING No.2749-E50

NOTE:
32 DIA. ELECTRICAL CONDUITS TO BE USED.
NUPI & UPP ONLY ARE ACCEPTABLE

NOTES

1 – Up to 2 functions are normally required under a standard Specification.
These are 1 – Automatic Tank Gauging &
2 – Pressure line leak detection (PLLD).
Each device requires it's own individual Beldon cable type 8760.

✳ Cables to be installed only if required by Client

2 – All conduits to be sealed properly at both ends.

3 – Spare conduits to dispensers, one for future leak detection.

×× - TO BE NOMINATED

THIS DRAWING MUST BE READ WITH E50-2 DRAWING

No.	AMENDMENT	DATE	DRN
B	LPG VESSEL REMOVED FROM LIST	NOV.'17	RDF
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
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Accredited Dangerous Goods Consultant

FOR AND ON BEHALF OF:
SERVICE STATIONS DEV. & CONSTRUCTION PTY. LTD.
P.O. BOX 4081, WARRIMOO, NSW, 2774.

LOCATION OF PROJECT
CRANEBROOK-NSW
1-21 CRANEBROOK ROAD

DRAWING TITLE
FUEL SYSTEM CONDUITS SCHEDULE 1
PUMP AND TANK LAYOUT
PROPOSED SERVICE STATION

DRAWN RDF		CHECKED	
DATE OCT.'14		PLOT DATE NOV.'17	
SCALE NTS		SHEET SIZE A3	
STATUS: CONSTRUCTION & TENDER			
PROJECT No. 1014	DRAWING No. 2749-E50-1	ISSUE No. B	

CAD DRAWING DO NOT REVISE BY HAND

2749-E50	FUEL SYSTEM ELECTRICS

REFERENCE DRAWINGS

U/G. TANKS ONLY

No.	PRODUCT	CAPACITY
T1	AD BLUE	22,000 L
T2	G10 DIESEL	110,000 L
T3	PREMIUM DIESEL	42,000 L
T4	UNLEADED91	43,000 L
T5	ETHANOL10	40,000 L
T6	PULP95	40,000 L
T7	PULP98	30,000 L
T8	UNLEADED91	30,000 L
T9	ETHANOL10	50,000 L

THESE CONDUITS INSTALLED BY PUMP & TANK ELECTRICAL CONTRACTOR

ITEM	FUNCTION	FROM	TO	CONDUIT FROM PIT	CABLE
3	INTERSTICE MONITOR ON TANK	ELECTRICAL PIT	TANK 2	1x32mm OD NUPI	✳ Draw wire only.
		ELECTRICAL PIT	TANKS 1, 3 AND 4	1x32mm OD NUPI	✳ Draw wire only.
		ELECTRICAL PIT	TANKS 5, 6 AND 7	1x32mm OD NUPI	✳ Draw wire only.
		ELECTRICAL PIT	TANK 8 & TANK 9 ✳✳	1x32mm OD NUPI	✳ Draw wire only.
3a	OBSERVATION WELLS	ELECTRICAL PIT	OBSERVATION WELL VIA T2	1x32mm OD NUPI	✳ Draw wire only.
		ELECTRICAL PIT	OBSERVATION WELL VIA T7	1x32mm OD NUPI	✳ Draw wire only.
		ELECTRICAL PIT	OBSERVATION WELL VIA T8	1x32mm OD NUPI	✳ Draw wire only.
		ELECTRICAL PIT	OBSERVATION WELL VIA T9	1x32mm OD NUPI	✳ Draw wire only.
4	EXTERNAL VENT PIPE	ELECTRICAL PIT	VENT PIPES	1x32mm OD NUPI	1 x Belden 8760 shielded cable

CABLES TO BE INSTALLED ONLY IF REQUIRED BY CLIENT

NOTE:
ALL EMERGENCY STOPS MUST BE "ALL FUELS" EMERGENCY STOPS

NOTE:
THIS DRAWING MUST BE READ IN CONJUNCTION WITH FUEL SYSTEM ELECTRICS DRAWING No.2749-E50

NOTE:
32 DIA. ELECTRICAL CONDUITS TO BE USED. NUPI & UPP ONLY ARE ACCEPTABLE

THIS DRAWING MUST BE READ WITH E50-1 DRAWING

NOTES

1 – Up to 2 functions are normally required under a standard Specification.
These are 1 – Automatic Tank Gauging &
2 – Pressure line leak detection (PLLD).
Each device requires it's own individual Beldon cable type 8760.

✳ Cables to be installed only if required by Client

2 – All conduits to be sealed properly at both ends.

3 – Spare conduits to dispensers, one for future leak detection.

✳✳ Conduits to existing tanks 8 & 9 maybe required if they are double wall fibreglass tanks.

No.	AMENDMENT	DATE	DRN
B	AUTO LPG COMPONENTS REMOVED	NOV.'17	RDF
A	INITIAL ISSUE	NOV.'14	RDF

NOTES
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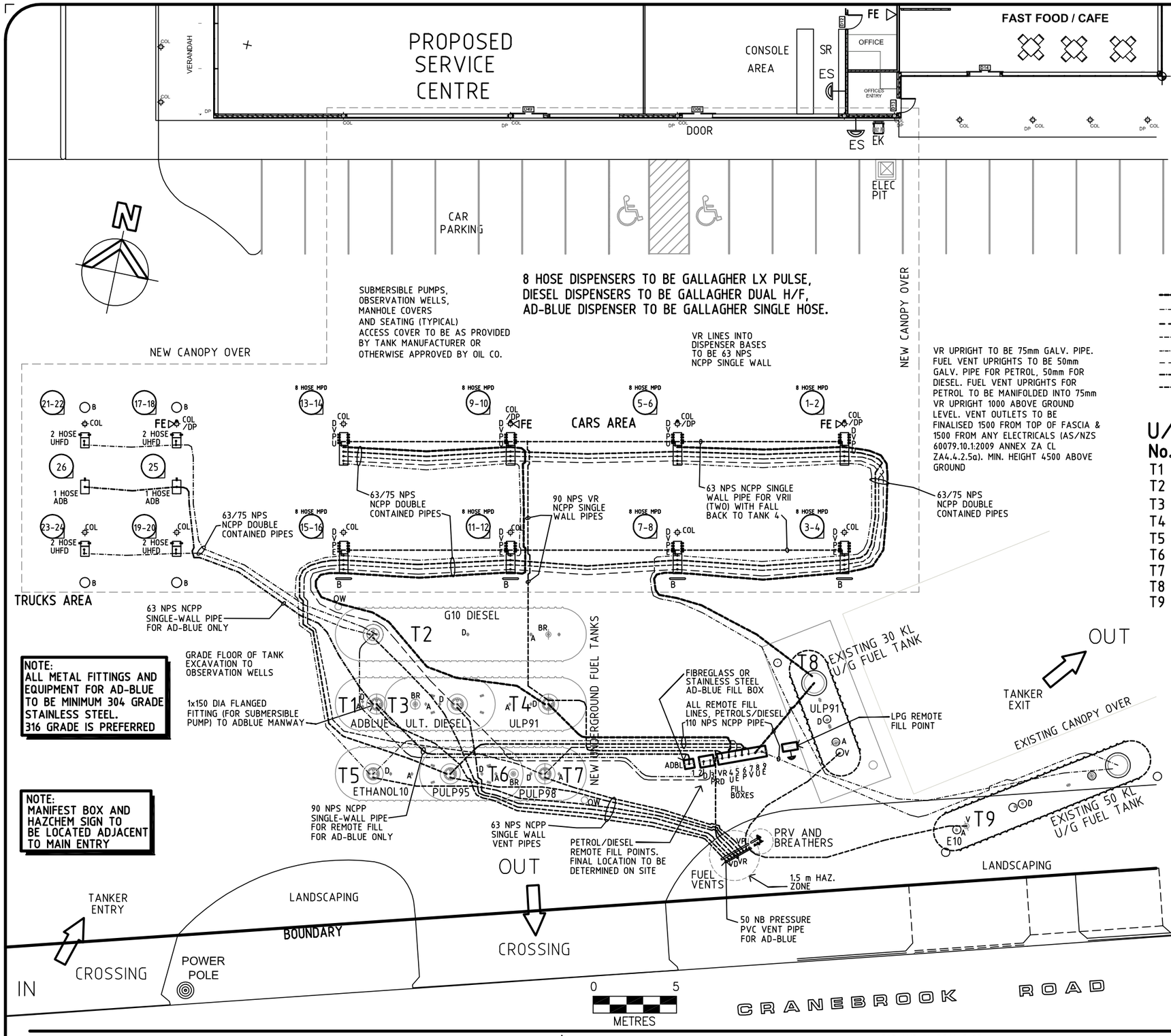
Accredited Dangerous Goods Consultant

FOR AND ON BEHALF OF:
SERVICE STATIONS DEV. & CONSTRUCTION PTY. LTD.
P.O. BOX 4081, WARRIMOO, NSW, 2774.

LOCATION OF PROJECT
CRANEBROOK-NSW
1-21 CRANEBROOK ROAD

DRAWING TITLE
FUEL SYSTEM CONDUITS SCHEDULE 2
PUMP AND TANK LAYOUT
PROPOSED SERVICE STATION

DRAWN RDF	CHECKED
DATE OCT.'14	PLOT DATE NOV.'17
SCALE NTS	SHEET SIZE A3
STATUS: CONSTRUCTION & TENDER	
PROJECT No. 1014	DRAWING No. 2749-E50-2 ISSUE No. B



NOTE:
ALL METAL FITTINGS AND EQUIPMENT FOR AD-BLUE TO BE MINIMUM 304 GRADE STAINLESS STEEL.
316 GRADE IS PREFERRED

NOTE:
MANIFEST BOX AND HAZCHEM SIGN TO BE LOCATED ADJACENT TO MAIN ENTRY

LEGEND

F - FILL
D - DIP
P - PLUG
VD - VENT DIESEL
V - VENT
A - AUTO TANK GAUGING
S - 2 WAY SYPHON
LD - LEAK DETECTOR
T - SUBMERSIBLE TURBINE PUMP
B - BOLLARDS
ADB - AD-BLUE DISPENSER
MPD - MULTI PRODUCT DISPENSER
UHFD - ULTRA HIGH-FLOW DIESEL DISPENSER
NCPP - NON CORRODIBLE PRODUCT PIPING SYSTEM
NPS - NOMINAL PIPE SIZE OUTSIDE DIAMETER
OW - EXCAVATION OBSERVATION WELL
ES - EMERGENCY STOP
SR - SITE REGISTER
FE - FIRE EXTINGUISHER
GWMW - GROUNDWATER MONITORING WELL
EK - ENVIRONMENTAL SPILL KIT

---U--- UNLEADED 91
---E--- ETHANOL10
---P--- PREMIUM UNLEADED 95 (PULP95)
---V--- PREMIUM UNLEADED 98 (PULP98)
---D--- DIESEL LINES
--VD-- PREMIUM DIESEL LINES
---A--- AD-BLUE LINES
---VR--- VENT/ VAPOUR RECOVERY LINES

U/G. FUEL TANKS ONLY

No.	PRODUCT	CAPACITY
T1	AD BLUE	22,000 L
T2	G10 DIESEL	110,000 L
T3	PREMIUM DIESEL	42,000 L
T4	UNLEADED91	43,000 L
T5	ETHANOL10	40,000 L
T6	PULP95	40,000 L
T7	PULP98	30,000 L
T8	UNLEADED91	30,000 L
T9	ETHANOL10	50,000 L

NOTE:
FUEL PIPING DRAWN AS A PRESSURE SYSTEM, USING NCPP PIPE TO COMPLY WITH CLASS A, EQUIPMENT LEVEL 1 OF AS 4897-2008

NOTE:
"NCPP" PIPING SYSTEM TO BE "PETROTECHNICK UPP" OR "NUPI SMARTFLEX" PIPING SYSTEM ONLY

CAD DRAWING DO NOT REVISE BY HAND

REFERENCE DRAWINGS

NOTES:

THIS DRAWING MUST BE READ WITH F02-2 DRAWING

THIS PLAN IS BASED ON DRAWINGS PROVIDED BY:

CKDS ARCHITECTURE

PROJECT No. 1456
DRAWING No. A-003 ISSUE B

MATTHEW FREEBURN
LAND, ENGINEERING & MINING SURVEYOR
SUITE 2, 1st FLOOR, "SURVEYOR HOUSE",
2 CASTLEREAGH STREET
PENRITH 2750

DRAWING No. 30361 DET

FREEBURN SURVEYING
Telephone 02 4721 2289
Fax 02 4721 5646
email m.bayan@freeburnsurveyors.com
or matthew@freeburnsurveyors.com

UNDER PUMP CONTAINMENT SUMPS INSTALLED TO NEW DISPENSERS

63/75 mm NCPP (SECONDARY CONTAINED) PRESSURE SUPPLY LINES TO ALL FUEL DISPENSERS

63 mm NCPP (NOT SECONDARY CONTAINED) PRESSURE SUPPLY LINES TO AD BLUE DISPENSERS

110mm NCPP FUEL FILL LINES (NOT SECONDARY CONTAINED)

90mm NCPP ADBLUE FILL LINE (NOT SECONDARY CONTAINED)

90mm NCPP VR STAGE 1 LINE (NOT SECONDARY CONTAINED)

63mm NCPP VR STAGE 2 LINE
90mm NCPP FROM MANIFOLD TO T4 TANK & TO VR1 LINE (NOT SECONDARY CONTAINED)

63mm NCPP DSL/PETROL VENT LINES (NOT SECONDARY CONTAINED)

LOCATION OF EXISTING U/G. TANKS ARE ASSUMED ONLY & TAKEN FROM SITE SURVEY

DEPOT No.	1	2	3	4	5	6	7	8	9
QUANTITY (kl)	23	110	43	43	40	40	30	30	50
of DG Class	-	C1	C1	3	3	3	3	3	3
and PG	-	-	-	II	II	II	II	II	II

as shown in this plan conforms with the NSW Occupational Health & Safety Amendment (Dangerous Goods) Act 2011 and Australian Standards AS 1940-2004 & AS 4897-2008
signed for ROLANDO FERREIRA MAIDGC
(Member of the Australasian Institute of Dangerous Goods Consultants)

Date 25 / 11 / 14

No.	AMENDMENT	DATE	DRN
B	AUTO LPG COMPONENT REMOVED	NOV.'17	RDF
A	INITIAL ISSUE	NOV.'14	RDF

NOTES
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LPG CONSULTANT
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R. D. FERREIRA
Accredited Dangerous Goods Consultant

FOR AND ON BEHALF OF:
SERVICE STATIONS DEV. & CONSTRUCTION PTY. LTD.
P.O. BOX 4081, WARRIMOO, NSW, 2774.

LOCATION OF PROJECT
CRANEBROOK-NSW
1-21 CRANEBROOK ROAD

DRAWING TITLE
DANGEROUS GOODS PARTIAL SITE LAYOUT
PUMP AND TANK LAYOUT
PROPOSED SERVICE CENTRE

DRAWN RDF	CHECKED
DATE OCT.'14	PLOT DATE NOV.'17
SCALE 1: 250	SHEET SIZE A3
STATUS: CONSTRUCTION & TENDER	
PROJECT No. 1014	DRAWING No. 2749-F02-1 ISSUE No. B

CAD DRAWING DO NOT REVISE BY HAND

REFERENCE DRAWINGS

NOTES:

THIS PLAN IS BASED ON DRAWING PROVIDED BY:

CKDS ARCHITECTURE

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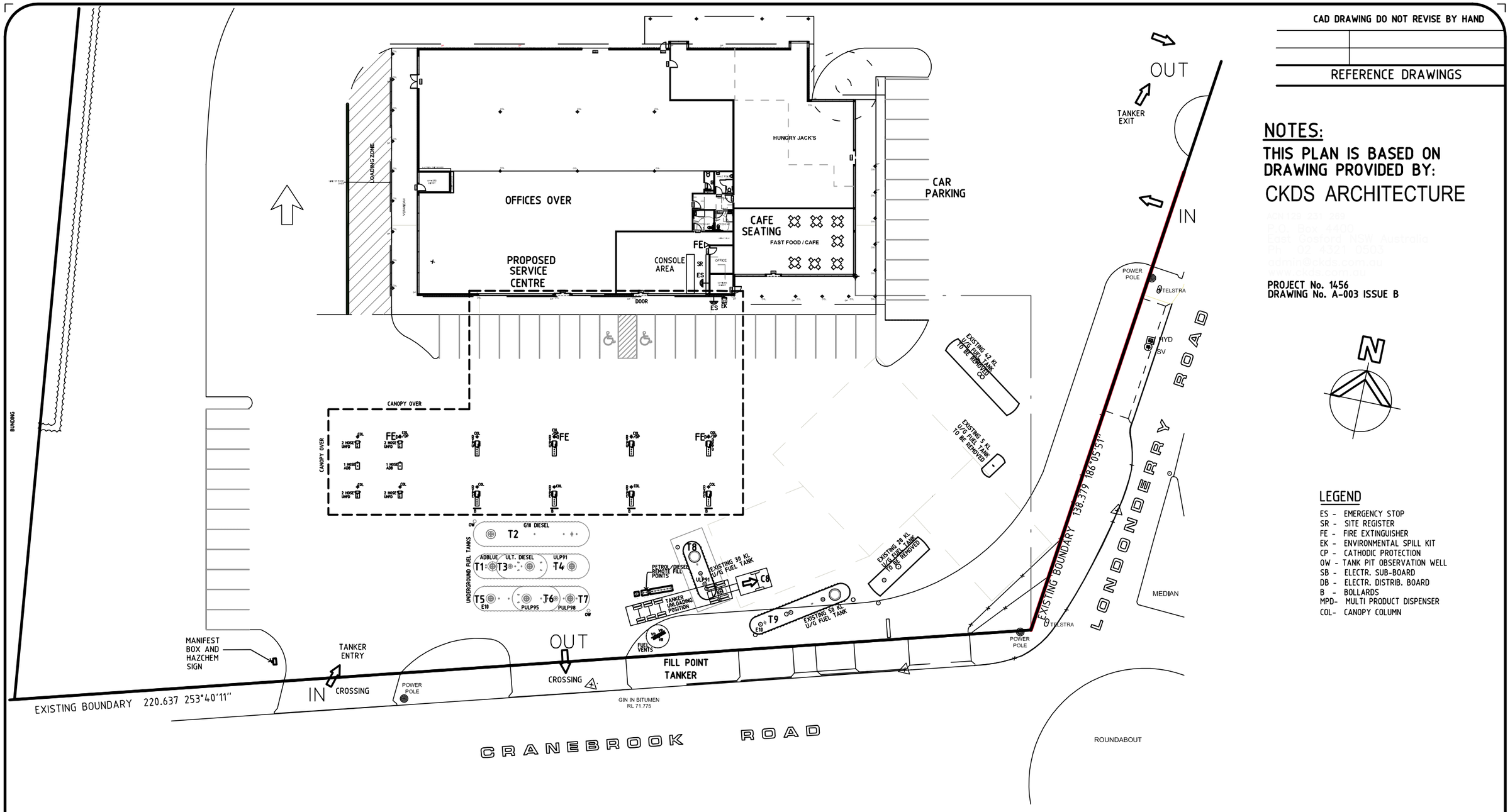
East Chatsw'd NSW Australia
Ph 02 9421 0505
cdmc@ckds.com.au
www.ckds.com.au

PROJECT No. 1456
DRAWING No. A-003 ISSUE B



LEGEND

ES - EMERGENCY STOP
SR - SITE REGISTER
FE - FIRE EXTINGUISHER
EK - ENVIRONMENTAL SPILL KIT
CP - CATHODIC PROTECTION
OW - TANK PIT OBSERVATION WELL
SB - ELECTR. SUB-BOARD
DB - ELECTR. DISTRIB. BOARD
B - BOLLARDS
MPD- MULTI PRODUCT DISPENSER
COL- CANOPY COLUMN

0 5 m 10 15 20 25

No.	AMENDMENT	DATE	DRN
B	GENERAL REVISION, LPG REMOVED	NOV.'17	RDF
A	INITIAL ISSUE	NOV.'14	RDF

NOTES
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LOCATION OF PROJECT
CRANEBROOK-NSW
1-21 CRANEBROOK ROAD

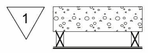
DRAWING TITLE
PARTIAL SITE LAYOUT
PROPOSED SERVICE CENTRE

DRAWN RDF		CHECKED	
DATE OCT.'14		PLOT DATE NOV.'17	
SCALE 1: 500		SHEET SIZE A3	
STATUS: CONSTRUCTION			
PROJECT No. 1014	DRAWING No. 2749-M02	ISSUE No. B	

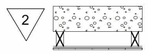
General Abbreviations

AHD	AUSTRALIAN HEIGHT DATUM
A/C	AIR CONDITIONING (REFER MECHANICAL DRAWINGS)
AP	ACCESS PANEL
B	BENCH
BL	BLOCK WORK
BOL	BOLLARD
BNCH	BENCH
CB	COLORBOND
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
COL	COLUMN
CONC.	CONCRETE
COS	CONFIRM ON SITE
CPT	CARPET
CT	CERAMIC TILE
CUPB	CUPBOARD
D	DOOR
DP	DOWN PIPE
E	EXTINGUISHER
FB	FACE BRICKWORK
FC	FIBRE CEMENT SHEETING
FCL	FINISHED CEILING LEVEL
FG	FIXED GLASS
FFL	FINISHED FLOOR LEVEL
FHR	FIRE HOSE REEL
FL	DOUBLE RECESSED FLUROSCENT LIGHT
FW	FLOOR WASTE
GD	GRATED DRAIN
GPO	POWER OUTLET
GR	GRAB RAIL
HA	HANDLE
HB	HAND BASIN
HC	HOSE COCK
HR	HAND RAIL
LP	LIGHT POLE
LC	LIGHT-WEIGHT CLADDING
LVR	LOUVRE WINDOW
M	MIRROR
MC	METAL CLADDING
MF	METAL FLASHING
MR	METAL ROOF SHEET
MRPB	MOISTURE RESISTANT PLASTERBOARD
OF	OVERFLOW
PB	PLASTER BOARD
PCP	PRE-CAST CONCRETE PANEL
PF	PAINT FINISH
PP	POWER POLE
RB	RENDERED BLOCKWORK
RD	RECESSED DOWNLIGHT
RS	ROLLER SHUTTER DOOR
RV	ROOF VENTILATION
SD	SMOKE DETECTOR
SDS	SOAP DISPENSER
SCD	SOLID CORE DOOR
SCT	SUSPENDED CEILING TILE
SG	SLIDING GLASS
SGD	SLIDING GLASS DOOR
SHWR	SHOWER
SK	SKIRTING
SNK	SINK
SP	DOWN PIPE SPREADER
SPB	SUSPENDED PLASTERBOARD
SPB*	SUSPENDED PLASTERBOARD. MOISTURE RESISTANT
STR	STORE
T	TIMBER
TPH	TOILET PAPER DISPENSER
TR	TOWEL RAIL
W	WASHING MACHINE
WL	WALL LIGHT

Wall Legend



EXTERNAL WALL
150mm PRE-CAST CONCRETE PANEL
90mm TIMBER STUDS
10mm PLASTERBOARD

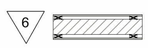


EXTERNAL WALL
150mm PRE-CAST CONCRETE PANEL
90mm TIMBER STUDS
10mm VILLABOARD
10mm CERAMIC TILES

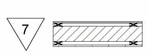
INTERNAL WALL
10mm IMPACT RESISTANT PLASTERBOARD
90mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm IMPACT RESISTANT PLASTERBOARD

INTERNAL WALL - BATHROOMS
10mm IMPACT RESISTANT PLASTERBOARD
90mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm CERAMIC TILE

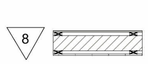
INTERNAL WALL - BATHROOMS
10mm IMPACT RESISTANT PLASTERBOARD
90mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm CERAMIC TILE



INTERNAL WALL
10mm IMPACT RESISTANT PLASTERBOARD
20mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
90mm BLOCKWORK
20mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm IMPACT RESISTANT PLASTERBOARD



INTERNAL WALL
10mm IMPACT RESISTANT PLASTERBOARD
20mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
90mm BLOCKWORK
20mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm CERAMIC TILE



INTERNAL WALL
10mm CERAMIC TILE
20mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
90mm BLOCKWORK
20mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm CERAMIC TILE

EXTERNAL WALL
10mm LIGHTWEIGHT CLADDING-PAINTED
90mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm IMPACT RESISTANT PLASTERBOARD

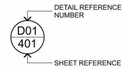
EXTERNAL WALL
10mm LIGHTWEIGHT CLADDING-PAINTED
90mm TIMBER FRAMED WALL, THERMAL INSULATION, SARKING
10mm CERAMIC TILE

NOTE: REFER TO SECTION J REPORT DOR
INSULATION REQUIREMENTS

Drawing Legend

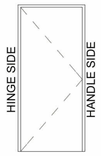
DOOR NUMBER

WINDOW NUMBER



DETAIL NUMBER

CEILING FINISH



DOOR IDENTIFICATION

Finishes Legend

FLOOR FINISHES

CONC
CONCRETE SLAB
WITH BROOM FINISH TO
SERVICE AREA

CT
CERAMIC TILE

CT-1
CERAMIC TILE 1

T
EXTERNAL TILE

WALL FINISHES

PCP-P
PRECAST CONCRETE PANEL
PAINT FINISH

FC-P
FIBRE CEMENT SHEETING ON WALL
SYSTEM
PAINT FINISH

LC
LIGHTWEIGHT CLADDING
PAINT FINISH

ROOF FINISHES

MR
COLORBOND METAL ROOFING

RCP/Electrical Legend

DOUBLE GPO

DATA

LIGHT SWITCH

LED OYSTER LIGHT

RECESSED DOWNLIGHT

EXTERNAL RECESSED DOWNLIGHT

RECESSED FLUORESCENT LIGHT

EMERGENCY EXIT SIGNAGE

DIFFUSER

FIRE EXTINGUISHER

PENRITH CITY COUNCIL
COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS

This plan / document relates to Development Consent: DA10/1209.03

Subject to the conditions outlined in the consent

Section 96

issue	revision	description	date	verified
A	-	SECTION 96	12.02.15	DE
A01	-	SECTION 96 ISSUE SET	20.05.15	DE

key plan

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Hydraulic Engineer

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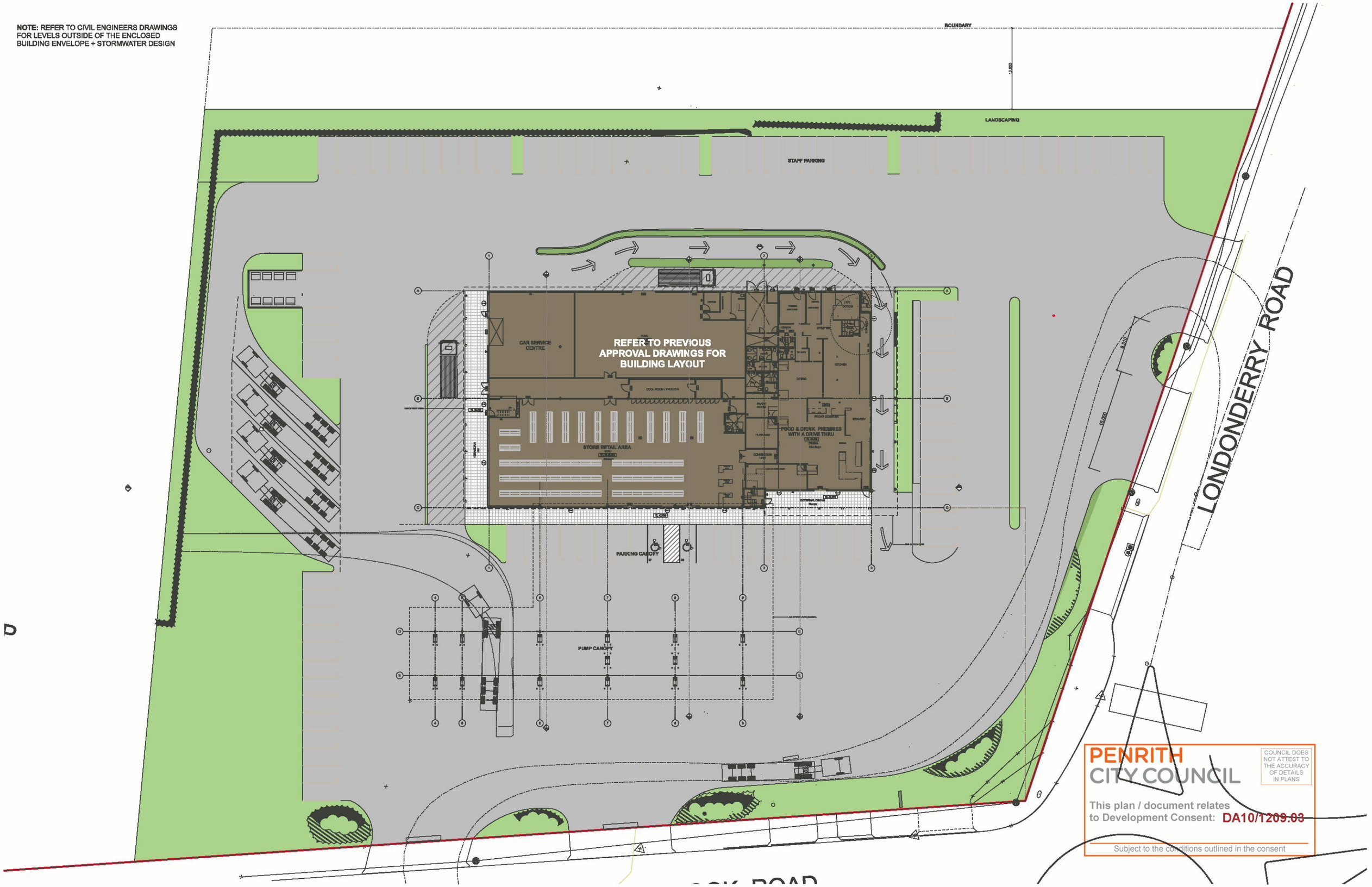
project
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

drawing title
Section 96
Legend Sheet

drawing scale	drawn	verified	date
N/A	FV	DE	09.09.14

project #	drawing #	issue
1456:	S96 -002	A01

NOTE: REFER TO CIVIL ENGINEERS DRAWINGS FOR LEVELS OUTSIDE OF THE ENCLOSED BUILDING ENVELOPE + STORMWATER DESIGN



PENRITH CITY COUNCIL

COUNCIL DOES NOT ATTEST TO THE ACCURACY OF DETAILS IN PLANS

This plan / document relates to Development Consent: DA10/1209.03

Subject to the conditions outlined in the consent

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e: 0405255437
earlx2architecture@gmail.com

Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, 2749, NSW
Lot 3 DP 215949

approx north confirm on site

drawing name: Site Plan
project #: 16-04 - Section 96 - DRAFT
scale: 1:250 @ A1
drawing #: A-011
revision: -02
date: 21/04/2016

CAR SERVICE CENTRE
CONC
RL 42.500
158.5sqm

STORE
CONC
RL 42.500
317sqm

STORE RETAIL AREA
CONC
FFL RL42.500
636.5sqm

FOOD & DRINK PREMISES WITH A DRIVE THRU
RL 42.500
DINING
534.5sqm²

EXTERNAL DINING
53sqm

PARKING CANOPY

OFFICE
KITCHENETTE
COOL ROOM / FREEZER
FREEZER
4800 X 3900
REFRIG.
4800 X 2300
DRY GOODS
CASHIER
MGR.
UTILITIES
CORRIDOR
FILTER ROOM
STAFF STORE
FEMALE
MALE
ACCESSIBLE
AIRLOCK
CLNR
TRAINING
KITCHEN
DINING
PARTY ROOM
PLAYLAND
CONNECTION LINK
SALES & SERVICE
FRONT COUNTER
SERVERY
LINE OF STAIR OVER
LINE OF ROOF OVER
POINT OF SALE
DRAINAGE STACKS
STAIRWELL
VERANDAH
DRIVE THRU
STORE ROOM
McDonalds
FOOD & DRINK PREMISES
STORE RETAIL AREA
MALE WC
ACC WC
ACC
FUEL SALES
WC'S
OFFICE/STAIRWELL
TO COL
TO DATUM POINT
RL 42.500
north point

Section 96

issue	revision	description	date	verified
A	-	SECTION 96	12.02.15	DE
A01	-	SECTION 96	02.03.15	DE
A02	-	SECTION 96	02.03.15	DE

key plan

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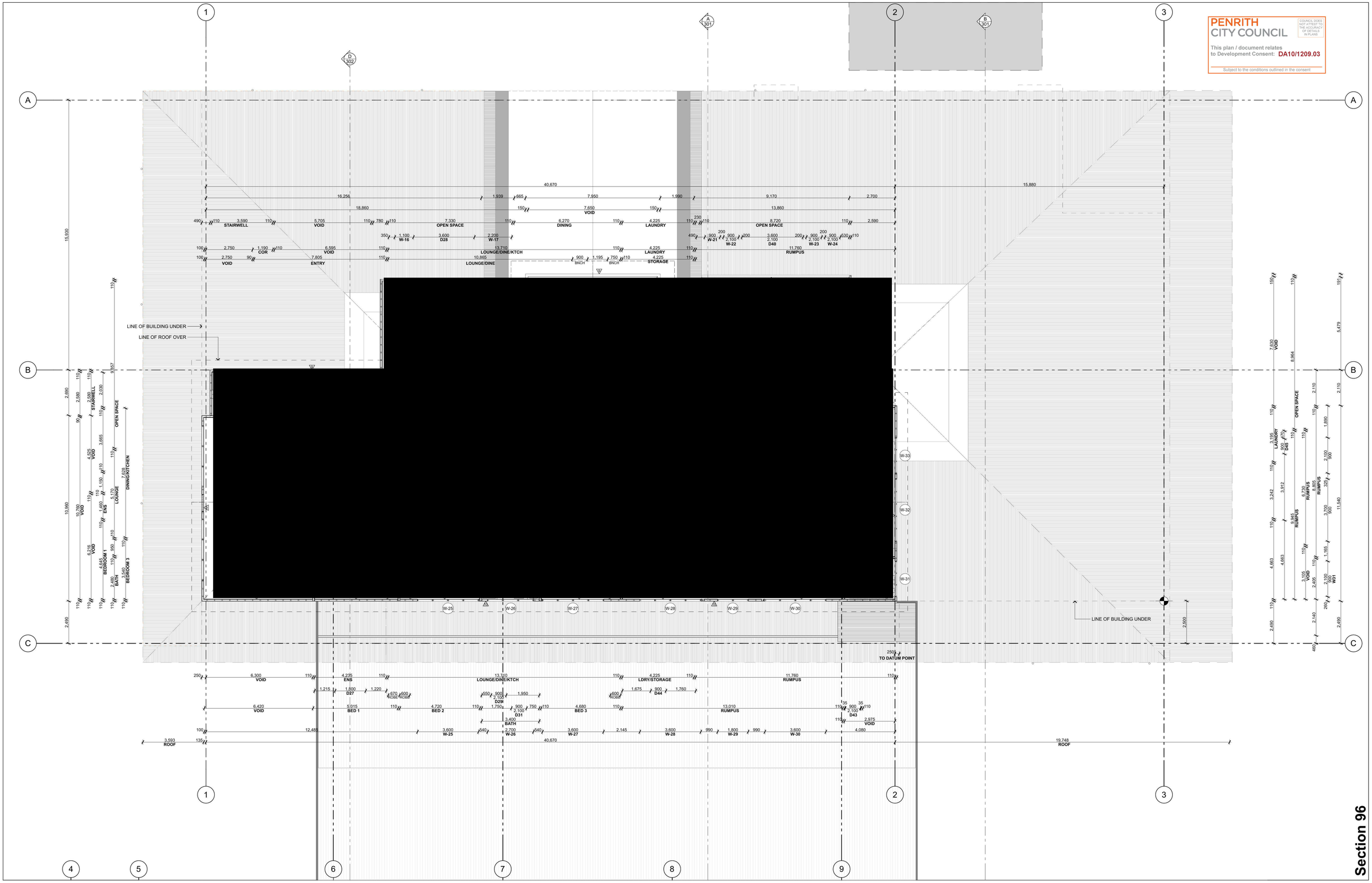
project
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

drawing title
Plans
Ground Floor Plan

drawing scale	drawn	verified	date
1:100 @A1	FV	DE	20/05/2015

project #	drawing #	issue
1456:	S96 -101	A02



issue	revision	description	date	verified
A	-	SECTION 96	12.02.15	DE

key plan — north point

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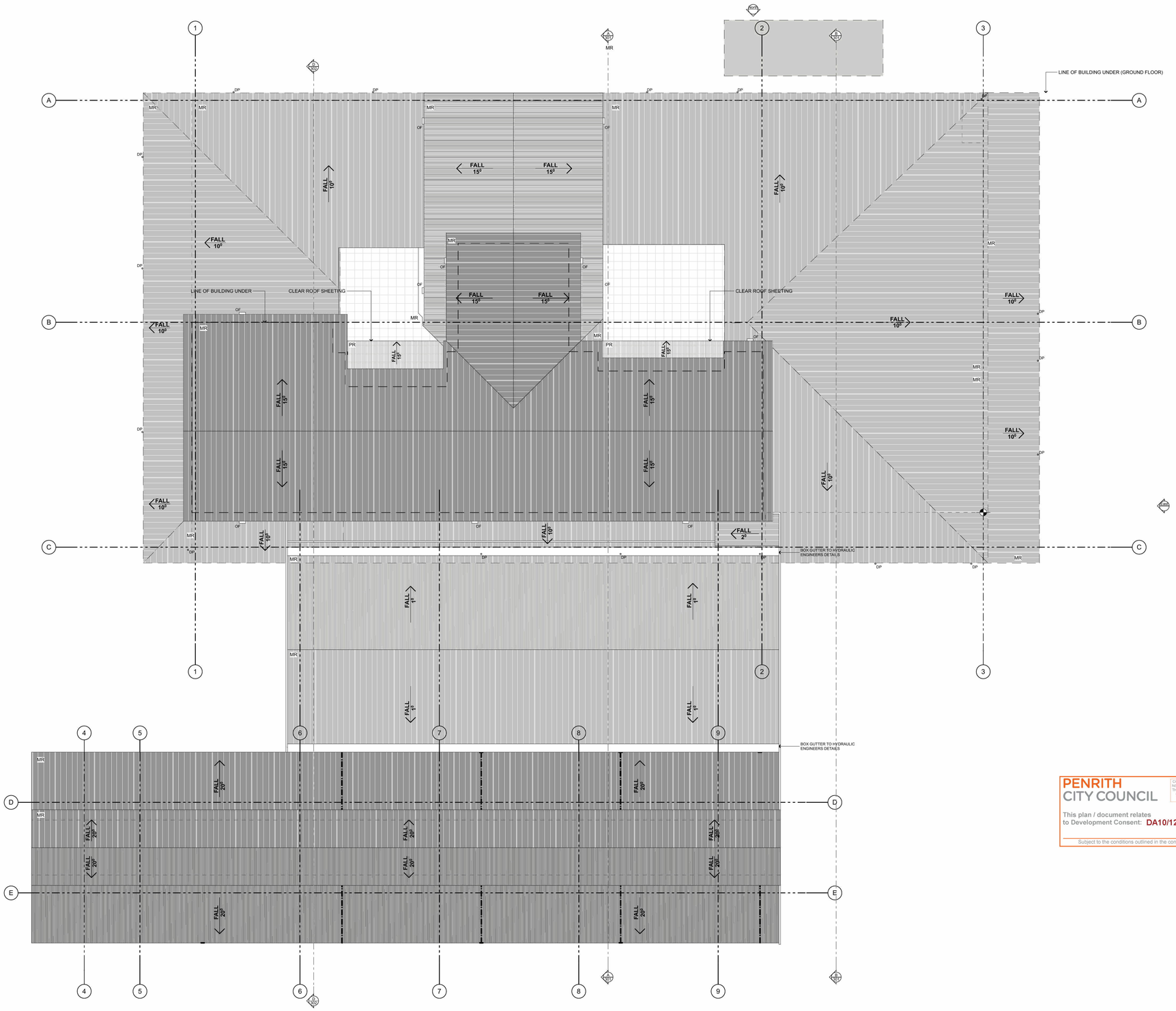
project
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

drawing title
Plans
First Floor Plan

drawing scale	drawn	verified	date
1:100 @A1	FV	DE	20/05/2015

project #	drawing #	issue
1456:	S96 -103	A



PENRITH CITY COUNCIL

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Subject to the conditions outlined in the consent

Section 96

issue	revision	description	date	verified
A	-	SECTION 96	12.02.15	DE

key plan

north point

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project

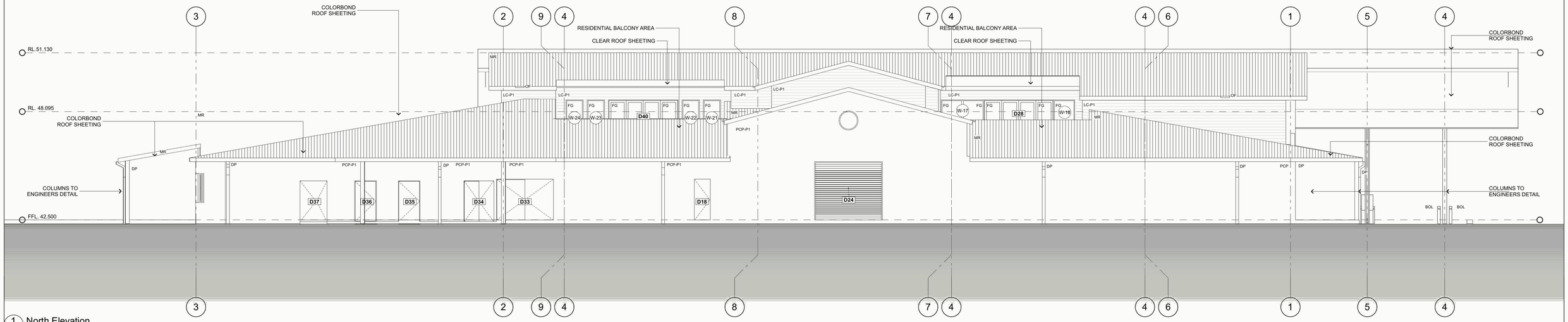
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

drawing title

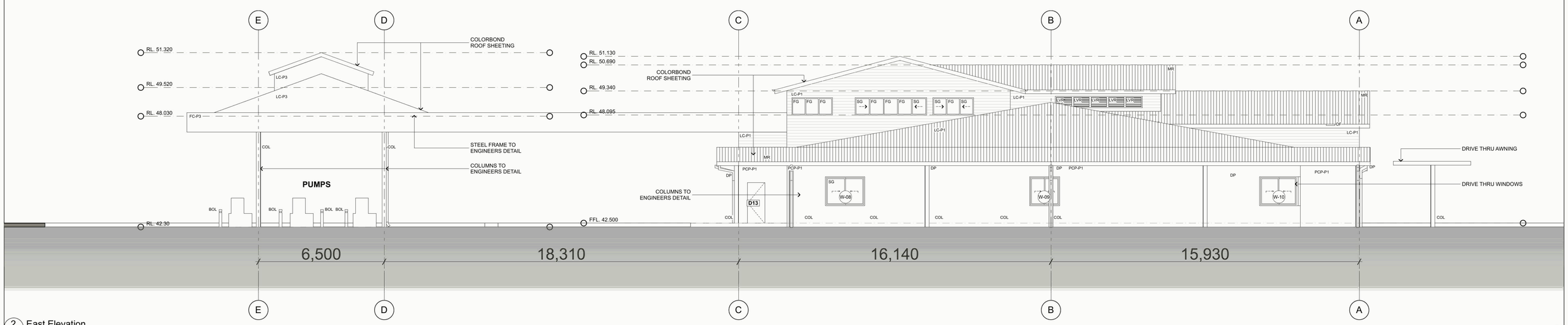
Plans
Roof Plan

drawing scale	drawn	verified	date
1:150 @A1	FV	DE	20/05/2015

project #	drawing #	issue
1456:	S96 -105	A



1 North Elevation
SCALE 1:100 @ A3



2 East Elevation
SCALE 1:100 @ A3

Section 96

PENRITH CITY COUNCIL
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A	-	SECTION 96	12.02.15	DE
A01	-	SECTION 96	02.03.15	DE
A02	-	SECTION 96	02.03.15	DE

key plan

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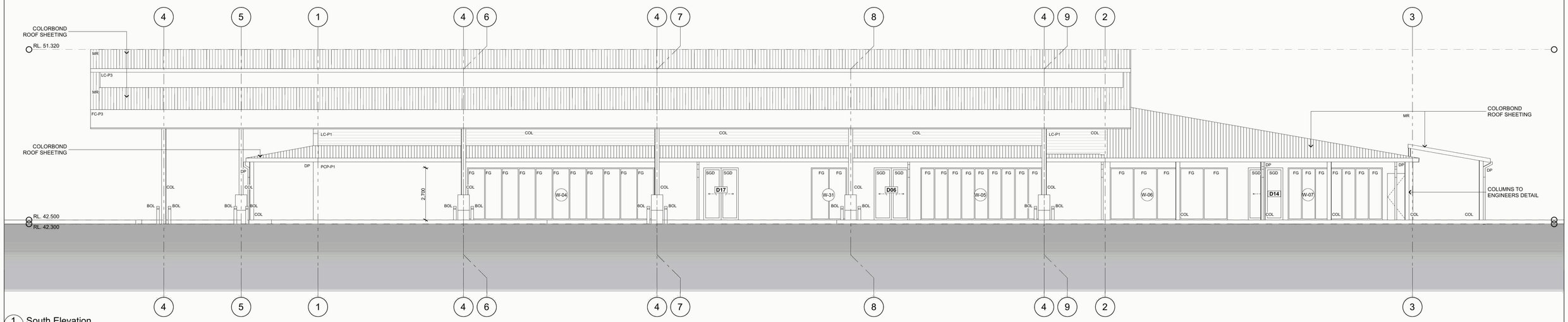
project
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

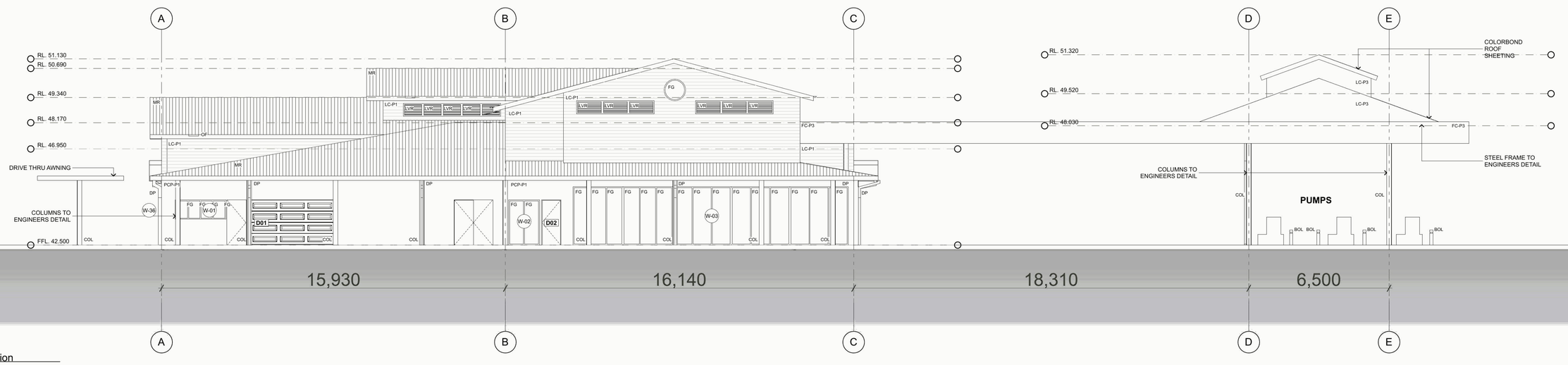
drawing title
Elevations
North / East

drawing scale	drawn	verified	date
1:100 @A1	FV	DE	20/05/2015

project #	drawing #	issue
1456:	S96 -201	A02



1 South Elevation
SCALE 1:100 @ A3



2 West Elevation
SCALE 1:100 @ A3

Section 96

PENRITH CITY COUNCIL
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issue	revision	description	date	verified
A	-	SECTION 96	12.02.15	DE

key plan

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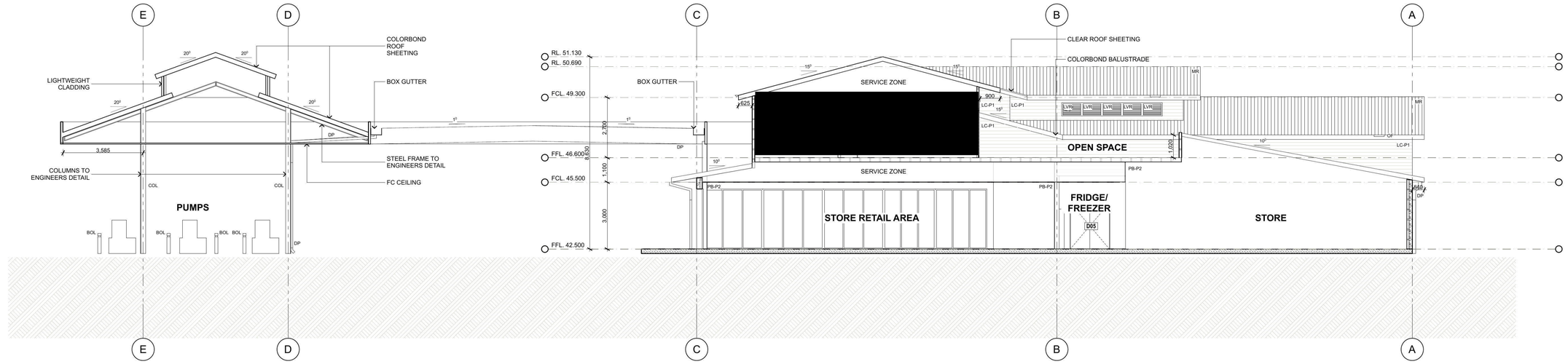
project
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

drawing title
Elevations
South / West

drawing scale	drawn	verified	date
1:100 @A1	FV	DE	20/05/2015
project #	**drawing #**		**issue**
1456:	**S96 -202**		**A**



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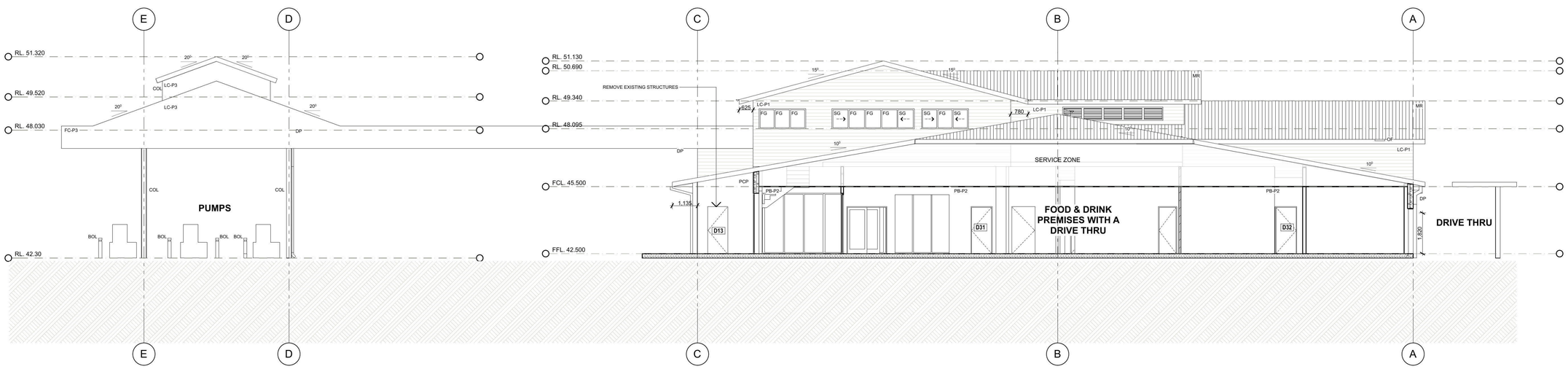
SCALE 1:100 @ A3



2 Section B
SCALE 1:100 @ A3

Section 96

PENRITH CITY COUNCIL
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issue	revision	description	date	verified
A	-	SECTION 96	12.02.15	DE
A01	-	SECTION 96	02.03.15	DE
A02	-	SECTION 96	02.03.15	DE

key plan

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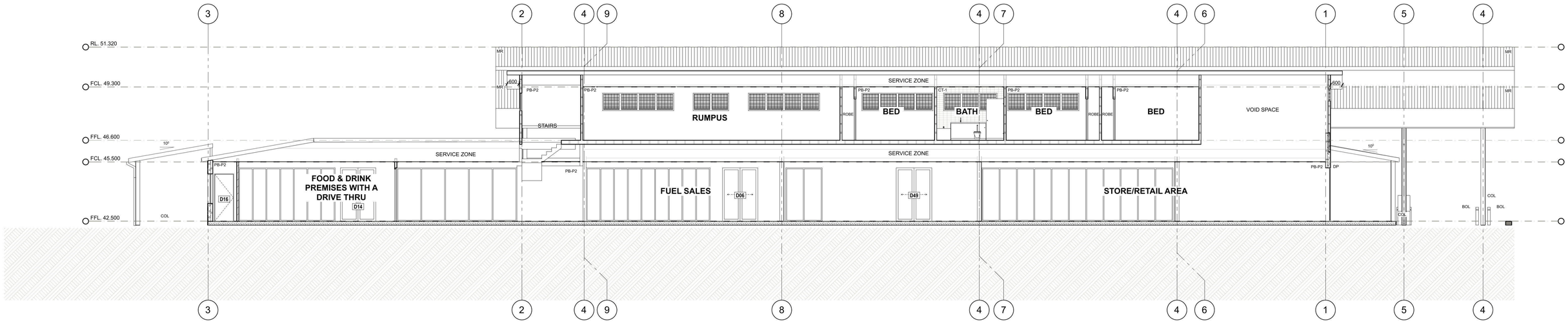
drawing title
Sections
Section

drawing scale	drawn	verified	date
1:100 @A1	FV	DE	20/05/2015

project #	drawing #	issue
1456:	S96 -301	A02



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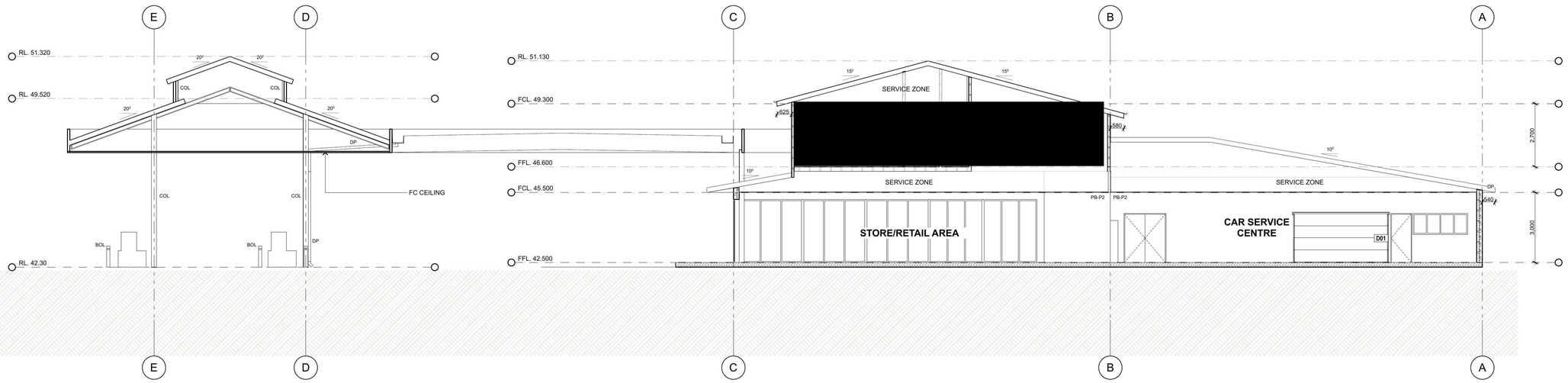
SCALE 1:100 @ A3



2 Section D
SCALE 1:100 @ A3

Section 96

PENRITH CITY COUNCIL
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A	-	SECTION 96	12.02.15	DE
A01	-	SECTION 96	02.03.15	DE

key plan

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project
Sgro Cranebrook Service Station
1-21 Cranebrook Rd Cranebrook, NSW 2749

drawing title
Sections
Sections

drawing scale	drawn	verified	date
1:100 @A1	FV	DE	20/05/2015
project #	drawing #		issue
1456:	S96 -302		A01

SERVICE STATION
LONDONDERRY ROAD, CRANEBROOK
HYDRAULIC SERVICES

GENERAL NOTES

G1. THESE GENERAL NOTES ARE RELEVANT TO ALL DRAWINGS IN THE HYDRAULIC SERVICES SET.

G2. THE NOTES ON THIS DRAWING ARE SUPPLEMENTARY TO AND DO NOT REPLACE THE SPECIFICATION TO WHICH THE CONTRACTOR MUST CONFORM.

G3. THE DRAWINGS INDICATE THE GENERAL HYDRAULICS LAYOUT AND ARE DIAGRAMATIC ONLY. INCORPORATE DIVERSIONS AND MINOR ADJUSTMENTS AS MAY BE NECESSARY TO COMPLETE THE WORKS.

G4. FOR PENETRATIONS THROUGH BEAMS AND FOOTINGS REFER TO STRUCTURAL ENGINEER'S DETAILS. ALL PENETRATIONS THROUGH FIRE RATED WALLS OR FLOORS SHALL BE APPROVED FIRE STOPPED. PROVIDE FIRE COLLARS TO ALL PENETRATIONS THROUGH PARTY WALLS, DUCTS, FLOORS, ETC.

G5. PRIOR TO FORMING OR CORING ANY PENETRATIONS, THE HYDRAULIC SERVICES CONTRACTOR SHALL CO-ORDINATE AND CONFIRM WITH THE BUILDER, STRUCTURAL CONCRETE CONTRACTOR AND ALL OTHER TRADES FOR THE LOCATION OF ALL PENETRATIONS.

G6. THE SERVICE DRAWINGS SHALL BE READ IN ACCORDANCE WITH ALL RELEVANT ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS, SPECIFICATIONS AND ANY WRITTEN INSTRUCTIONS ISSUED DURING THE COURSE OF THE WRITTEN INSTRUCTIONS ISSUED DURING THE COURSE OF THE CONTRACT. DISCREPANCIES SHALL BE REFERED TO THE ENGINEER FOR DECISION BEFORE PROCEEDING WITH WORK.

G7. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE DRAWING. REFER TO ARCHITECTS DIMENSIONAL DRAWINGS. VERIFY ALL DIMENSIONS ON SITE BEFORE PREPARATION OF SHOP DRAWINGS.

G8. SUBSTITUTES WILL NOT BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.

G9. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, THE CURRENT REVISION OF ALL SAA CODES, THE BUILDING CODE OF AUSTRALIA, LOCAL AUTHORITIES AND THE PROVISIONS OF THE CURRENT OCCUPATIONAL HEALTH AND SAFETY ACT.

G10. THE CONTRACTOR MUST ALLOW FOR ALL WORKS NECESSARY TO PROVIDE AN INSTALLATION WHICH IS COMPLETE AND COMPLYING WITH THE SCOPE, ITS INTENT AND ALL CODES AND STANDARDS.

G11. CONTRACTORS SHALL ENSURE THAT ALL LOCATIONS OF ALL UNDERGROUND SERVICES ARE IDENTIFIED AND CO-ORDINATED PRIOR TO COMMENCEMENT OF WORKS AND EXCAVATIONS.

G12. IT IS THE CONTRACTORS RESPONSIBILITY TO VISIT THE SITE BEFORE SUBMITTING A TENDER, TO VERIFY EXISTING CONDITIONS AND ANY ISSUES WHICH MAY IMPACT ON THE CONTRACT.

G13. THESE DRAWINGS ARE STRICTLY COPYRIGHT AND SHALL NOT BE COPIED OR AMENDED WITHOUT THE WRITTEN CONSENT OF NEIL LOWRY & ASSOCIATES.

G14. UNLESS NOTED OTHERWISE ON A PARTICULAR DRAWING THESE NOTES SHALL APPLY TO ALL DRAWINGS IN THE SET.

G15. ALL DIMENSIONS ARE IN mm UNO. DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

G16. THE STORMWATER PROPOSED WORKS DETAILED SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF COUNCIL, GENERALLY AS DETAILED HEREUNDER

G17. ALL EXISTING SERVICES SHALL BE VERIFIED FOR DEPTH AND HORIZONTAL POSITION BY PHYSICAL MEANS PRIOR TO EXCAVATION. ANY DESCREPANCIES SHALL BE BROUGHT TO THE SUPERINTENDANTS ATTENTION

G18. ALL WORK IS TO BE EXECUTED IN ACCORDANCE WITH AS/NZ3500 AND WITH THE LOCAL PLUMBING INSPECTORS REQUIREMENTS.

G19. LIAISON WITH AUTHORITIES OR OTHER CONTRACTORS WHO MAY BE AFFECTED BY THE WORKS.

G20. THE CONTRACTOR, SUBCONTRACTOR, THEIR AGENT, OR WHOMEVER IS RESPONSIBLE FOR THE WORKS WITHIN THESE DRAWINGS SHALL TAKE FULL RESPONSIBILITY FOR THE CONSTRUCTION OF THE WORKS AND THE PAYMENT OF ALL FEES TO THE RELEVANT AUTHORITIES.

G21. MARKED-UP PRINTS OF THE CONTRACT DRAWINGS SHALL BE AVAILABLE ON SITE AT ALL TIMES FOR PERUSAL AND BE ACCURATE TO THE WORKS AS EXECUTED.

G22. ALL WORKS TO BE CO-ORDINATED WITH THE PROJECT MANAGER TO ENSURE THAT THE NORMAL OPERATION OF THE FACILITY ARE NOT UNDULY INTERRUPTED.

G23. ALL SERVICES ARE TO BE CLEARLY LABELLED IN ACCORDANCE WITH AS1345.

WATER SERVICES

W1. ALL WATER SUPPLY SHALL COMPLY WITH AUSTRALIAN STANDARD AS/NZ ALL PARTS, THE BUILDING CODE OF AUSTRALIA AND OTHER AUTHORITIES OR REGULATIONS HAVING JURISDICTION OVER THE INSTALLATION. MAKE ALL APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES.

W2. ALL COPPER PIPEWORK SHALL BE HARD DRAWN COPPER TUBING TYPE 'B' CONFORMING TO AS1432.

W3. ALL PIPEWORK SHALL BE CONCEALED. WHERE PIPEWORK IS EXPOSED IT SHALL BE CHROME PLATED. ALL PIPEWORK THROUGH FIRE RATED WALLS OR FLOORS OR CEILING SHALL BE FIRE STOPPED.

W4. PIPE SUPPORTS SHALL BE INSTALLED PROGRESSIVELY AS PIPES ARE INSTALLED. SUPPORT SYSTEM SHALL BE DESIGNED TO SAFELY AND COMPLETELY SUPPORT THE WEIGHT OF PIPEWORK. PIPEWORK SHALL BE ADEQUATELY ANCHORED AT THRUST POINTS.

W5. ALL PIPEWORK SHALL BE AS INDICATED WITH DN15mm BRANCHES TO INDIVIDUAL FIXTURES UNLESS NOTED OTHERWISE. MAX. LENGTH OF DN15mm BRANCHES SHALL BE 2.0 METRES.

W6. DO NOT INSTALL PIPEWORK INTO SOUND INSULATED WALLS UNLESS OTHERWISE NOTED.

W7. CLOSET PAN CISTERNS SHALL BE PROVIDED WITH CHROME PLATED ISOLATION VALVES.

W8. WHERE PIPEWORK IS IN CONTACT WITH DISSIMILAR METALS, THE METALS SHALL BE INSULATED AGAINST BI-METAL CORROSION.

W9. ALL ISOLATION VALVES SHALL BE POSITIONED IN APPROVED LOCATIONS. VALVES LOCATED IN DUCTS OR WALLS SHALL BE POSITIONED BEHIND APPROVED TYPE ACCESS COVERS.

W10. HOSE TAPS SHALL BE 600mm ABOVE FINISHED SURFACE LEVEL, SHALL BE 20mm IN SIZE AND BE FITTED WITH ANTI-VANDAL TAPS AND APPROVED VACUUM BREAKERS.

W11. HOT WATER INSTALLATIONS TO ALL PERSONAL HYGIENE FIXTURES SHALL BE SET AT MAX. 50° CELSIUS. HOT WATER INSTALLATIONS TO ALL KITCHEN/LAUNDRY FIXTURES SHALL BE AT MIN 60° CELSIUS DELIVERY.

W12. HOT WATER UNITS SHALL BE INSTALLED TO STORE AT A MINIMUM OF 60° CELSIUS.

SEWERAGE

S1. ALL SEWERAGE SHALL COMPLY WITH AUSTRALIAN STANDARD AS/NZ3500, BCA AND OTHER AUTHORITIES OR REGULATIONS HAVING JURISDICTION OVER THE INSTALLATION. MAKE ALL NECESSARY APPLICATIONS AND PAY ALL ASSOCIATED FEES AND CHARGES.

S2. CO-ORDINATE WITH OTHER SERVICES CONTRACTORS BEFORE COMMENCING TO DETERMINE THE CORRECT CONSTRUCTION SEQUENCE.

S3. CONFIRM THE LOCATION AND LEVEL OF THE NOMINATED OUTLET BEFORE LAYING OF ANY DRAINS.

S4. PIPEWORK SHALL BE DN100mm UNLESS NOTED OTHERWISE. ALL PIPEWORK SHALL BE EQUAL TO OR GREATER THAN THE NOMINATED OUTLET SIZE OF THE FIXTURE, APPLIANCE OR TUNDISH.

S5. WASTE PIPES OF DN100 SHALL BE GRADED AT 1:60 MIN AND ALL OTHER PIPEWORK, LESS THAN DN100, SHALL BE GRADED AT 1:40. VENTS SHALL BE GRADED AT 1:80.

S6. WHERE PIPEWORK PENETRATES FIRE RATED WALLS, CEILINGS OR FLOORS, A FIRE STOP COLLAR SHALL BE INSTALLED. ALL WORK SHALL BE STRICTLY INSTALLED TO THE MANUFACTURER'S RECOMMENDATIONS. REFER TO THE SPECIFICATION FOR FURTHER DETAILS.

S7. ALL PIPEWORK SHALL BE ADEQUATELY SUPPORTED. SUPPORT SYSTEM SHALL BE DESIGNED TO SAFELY AND COMPLETELY SUPPORT THE WEIGHT OF PIPEWORK AND ASSOCIATED WORK. SUPPORT SYSTEM SHALL BE INSTALLED IMMEDIATELY ON PIPE INSTALLATION AND ALLOWANCE FOR EXPANSION PROVIDED.

S8. PIPEWORK SHALL BE CONSTRUCTED OF UNPLASTICIZED POLYVINAL CHLORIDE (UPVC), U.N.O. PIPEWORK RECEIVING HOT DISCHARGES SHALL BE CONSTRUCTED OF HIGH DENSITY POLYTHENE (PE-HD).

S9. ALL PIPEWORK SHALL BE CONCEALED IN WALLS, CEILING SPACE OR DUCTS UNLESS NOTED OTHERWISE.

S10. PIPEWORK SHALL BE STATIC TESTED PROGRESSIVELY TO ENSURE NO LEAKS. REFER TO SPECIFICATION.

S11. WHERE FLOOR WASTE GULLIES ARE INDICATED, THE FLOORS SHALL BE GRADED TOWARDS THE OUTLET.

S12. TUNDISHES SHALL BE INSTALLED TO RECEIVE MECHANICAL PLANT WASTE AND BE CONNECTED ABOVE WASTE TRAPS WHERE DETAILED ON MECHANICAL ENGINEERS DRAWING. DISCHARGE TO TUNDISHES SHALL BE 25mm ABOVE THE TUNDISH EDGE AND BE LOCATED IN AN ACCESSIBLE POSITION.

STORMWATER

SW1. ALL PIPES & FITTINGS FOR STORMWATER DRAINAGE SHALL BE AS FOLLOWS UNO ON THE DRAWINGS:

UNPLASTISIZED POLYVINYL CHLORIDE (UPVC) WITH SOLVENT WELDED JOINTS FOR DRAINAGE UP TO 300mm

FIBRE REINFORCED CEMENT WITH RUBBER RINGS FOR PIPE DIAMETERS GREATER THAN 300mm UNO

REINFORCED CONCRETE WHERE REQUIRED BY AS3500 FOR EXCESSIVE DEPTH

INSTALL IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS

SW2. ALL INGROUND DRAINAGE PIPEWORK SERVING DOWNPIPES SHALL BE MINIMUM 100mm DIAMETER UNO

SW3. ALL GRATED DRAINS SHALL BE 225mm WIDTH IN TRAFFICABLE AREAS UNO

SW4. BEDDING MATERIAL SHALL CONSIST OF IMPORTED FILL ONLY. THICKNESS OF BEDDING LAYER SHALL BE 75mm IN O.T.R. & 200mm IN ROCK

EMBED ALL PIPES WITH IMPORTED FILL. PROVIDE 200mm SIDE SUPPORT & 150mm OVERLAY ABOVE PIPE CROWN

SW5. TRENCH FILL ABOVE THE EMBEDMENT ZONE TO THE UNDERSIDE OF THE ROAD PAVEMENT OR FOOTWAY FILL MATERIAL SHALL BE AS FOLLOWS:

UNDER ROADWAY:

TRENCH FILL MATERIAL SHALL CONSIST OF IMPORTED FILL AS SPECIFIED OR EITHER HIGH GRADE COMPACTION SAND OR APPROVED CRUSHED ROAD GRAVEL CONFORMING TO RTA FORM 3051 OR SIMILAR

OTHER THAN ROADWAY:

TRENCH FILL MATERIAL EXCAVATED SHALL CONSIST OF SELECT FILL AS SPECIFIED & SHALL NOT CONTAIN MORE THAN 20% OF STONES OF SIZE BETWEEN 25mm & 150mm AND NONE LARGER THAN 150mm. PRIOR TO USE OF THE EXCAVATED MATERIAL IT SHALL BE INSPECTED & APPROVED BY THE CONSULTANT

SW6. COMPACT BEDDING, EMBEDMENT & TRENCH FILL MATERIALS AS FOLLOWS:

EMBEDMENT:

TRENCH FILL:

SW7. FOR GRANULAR MATERIAL (NON-COHESIVE SOILS) THE DENSITY INDEX (ID) SHALL BE NOT LESS THAN 85%

SW8. FOR NON-GRANULAR FILL MATERIAL (COHESIVE SOILS) THE DRY DENSITY RATIO (RD) SHALL BE NOT LESS THAN 95%

RESTORE ALL TRAFFIC AREAS PER STRUCTURAL ENGINEERS DETAILS OR OTHERWISE AS REQUIRED BY COUNCIL

FOR ALL SURFACES OTHER THAN IN TRAFFIC AREAS RESTORE DISTURBED SURFACES TO PRE-EXISTING CONDITIONS UNO ON ARCHITECTURAL OR LANDSCAPE ARCHITECTS DRAWINGS & COMPACT AS SPECIFIED

SW9. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS3500 PART 3 AS FOLLOWS, UNO:

1% FOR 100 DIAMETER
0.5% FOR 150 & 225 DIAMETER
0.4% FOR 300mm DIAMETER
0.35% FOR 375mm DIAMETER

SW10. PIPES SHALL BE TRUE TO GRADES SHOWN & ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT

SW11. MINIMUM DEPTH OF COVER SHALL BE:
300mm FOR NON-TRAFFICABLE AREAS
450mm FOR TRAFFICABLE AREAS
600mm FOR HEAVY VEHICLE TRAFFIC AREAS

BED ALL PIPES FIRMLY & EVENLY ONTO IMPORTED BEDDING FILL MATERIAL

LOCTATIONS & FIXING OF PIPEWORK SHALL BE SUBJECT TO CO-ORDINATION WITH OTHER DESIGN DISCIPLINES E.G. PENETRATIONS THROUGH CONCRETE ELEMENTS

LEGEND

EXISTING / PROPOSED

- STORMWATER MAIN
- EXISTING SERVICE TO BE REMOVED
- SEWER DRAIN
- FIRE HYDRANT
- COLD WATER
- TEMPERED HOT WATER
- NATURAL GAS
- HOT WATER FLOW
- HOT WATER RETURN
- WARM WATER
- RAIN WATER
- VENT PIPE

H03 REFER TO DWG FOR CONTINUATION

t/a
SERVICE ID
SIZE
t/b

- CLEAROUT
- DOWN PIPE
- GRATED DRAIN
- BOX GUTTER SUMP
- INSPECTION OPENING
- TUNDISH POINT
- FLOOR WASTE
- SERVICE RISER
- SERVICE DROPPER
- FIRE HYDRANT
- ISOLATION VALVE
- METER OF WATER OR GAS
- BUCKET TRAP FLOOR WASTE
- ISOLATION VALVE BELOW GROUND WITH CI. PATH BOX COVER
- TEMPERING VALVE
- PUMP
- SEWER MAIN HOLE
- FIRE HOSE REEL
- THERMOSTATIC MIXING VALVE
- HYDRANT BOOSTER ASSEMBLY
- Y STRAINER
- DOUBLE BOWL CONNECTOR HOSE TAP

ABBREVIATIONS

AFFL	ABOVE FINISHED FLOOR LEVEL
B	BASIN
BT	BOUNDARY TRAP
BT/FW	BUCKET TRAP FLOOR WASTE
BWU	BOILING WATER UNIT
BRO	BALCONY RAINWATER OUTLET
CO	CLEAROUT (RODDING POINT)
CS	CLEANERS SINK
CW	COLD WATER
CWM	CLOTHES WASHING MACHINE
DB	DISABLED BASIN
DBC	DOUBLE BOWL CONNECTOR
DP	DOWNPIPE
DTU	DRAINAGE TURN UP
DWC	DISABLED WC
ED	ELEVATED DRAINAGE
EJ	EXPANSION JOINT
exDP	EXISTING DP
exSTW	EXISTING STORMWATER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FW	FLOOR WASTE
GD	GRATED DRAIN
GM	GAS METER
H/L	HIGH LEVEL
HP	HIGH POINT
HT	HOSE TAP
HW	HOT WATER
HWF	HOT WATER FLOW
HWR	HOT WATER RETURN
HWH	HOT WATER HEATER
IL	INVERT LEVEL
IO	INSPECTION OPENING
NP HT	NON POTABLE HOSE TAP
OF	OVERFLOW
ORG	OVERFLOW RELIEF GULLY
PDO	PLANTER DRAIN OUTLET
PLV	PRESSURE LIMITING VALVE
RL	REDUCED LEVEL
RPZ	REDUCED PRESSURE ZONE
RWO	RAINWATER OUTLET
RWT	RAINWATER TANK
SK	SINK
STW	STORM WATER
SWP	STORMWATER PIT
TD	TUNDISH
THW	TEMPERED HOT WATER
THV	THERMOSTATIC MIXING VALVE
TTD	TRAPPED TUNDISH
UR	URINAL
URMBC	URINAL MICROWAVE CONTROL BEAM
VP	VENT PIPE
WC	WATER CLOSET
WM	WATER METER
XHDT	EXTRA HEAVY DUTY TRENCH GRATE
WW	WARM WATER

DRAWING LIST

		SCALE
HS01	STORMWATER CONCEPT - COVER SHEET & LEGEND	N.T.S.
HS02	SITE PLAN - HYDRAULIC SERVICES	1:250
HS03	GROUND FLOOR - SANITARY PLUMBING & DRAINAGE	1:100
HS04	GROUND FLOOR - WATER & GAS SERVICES	1:100
HS05	FIRST FLOOR - SANITARY PLUMBING & DRAINAGE	1:100
HS06	FIRST FLOOR - WATER & GAS SERVICES	1:100
HS07	ROOF PLAN - HYDRAULIC SERVICES	1:150
HS08	STORMWATER CONNECTION - HYDRAULIC SERVICES	1:750
HS09	DETAIL SHEET - HYDRAULIC SERVICES	NTS
HS10	CALCULATION SHEET - HYDRAULIC SERVICES	NTS

THE ABOVE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATION, ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL ENGINEERING AND KITCHEN DRAWINGS.

A1 SHEET

PENRITH CITY COUNCIL
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No.	REVISIONS/ISSUE	DATE	BY	CHECKED
A	TENDER ISSUE	28.10.14	NL	NL

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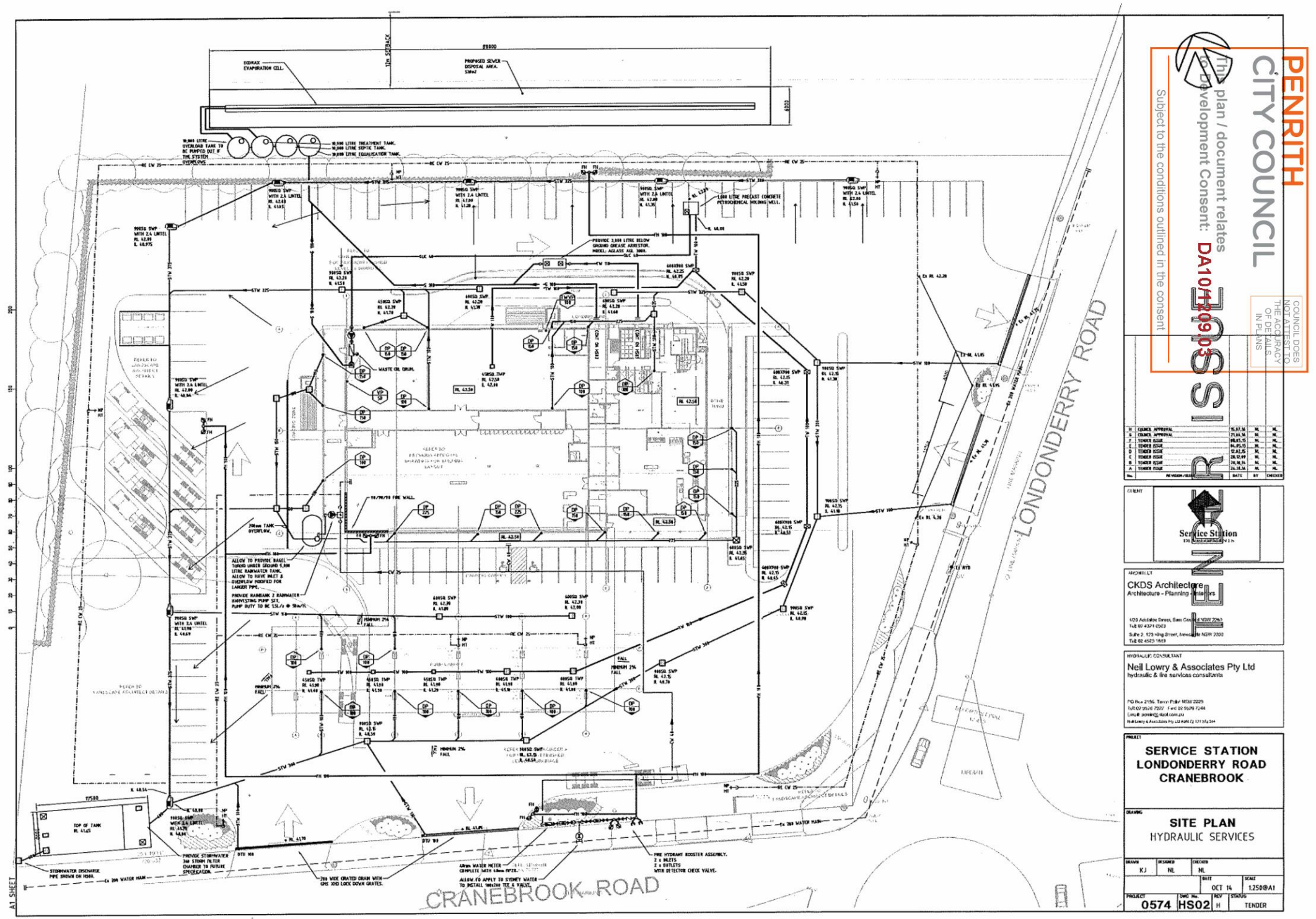
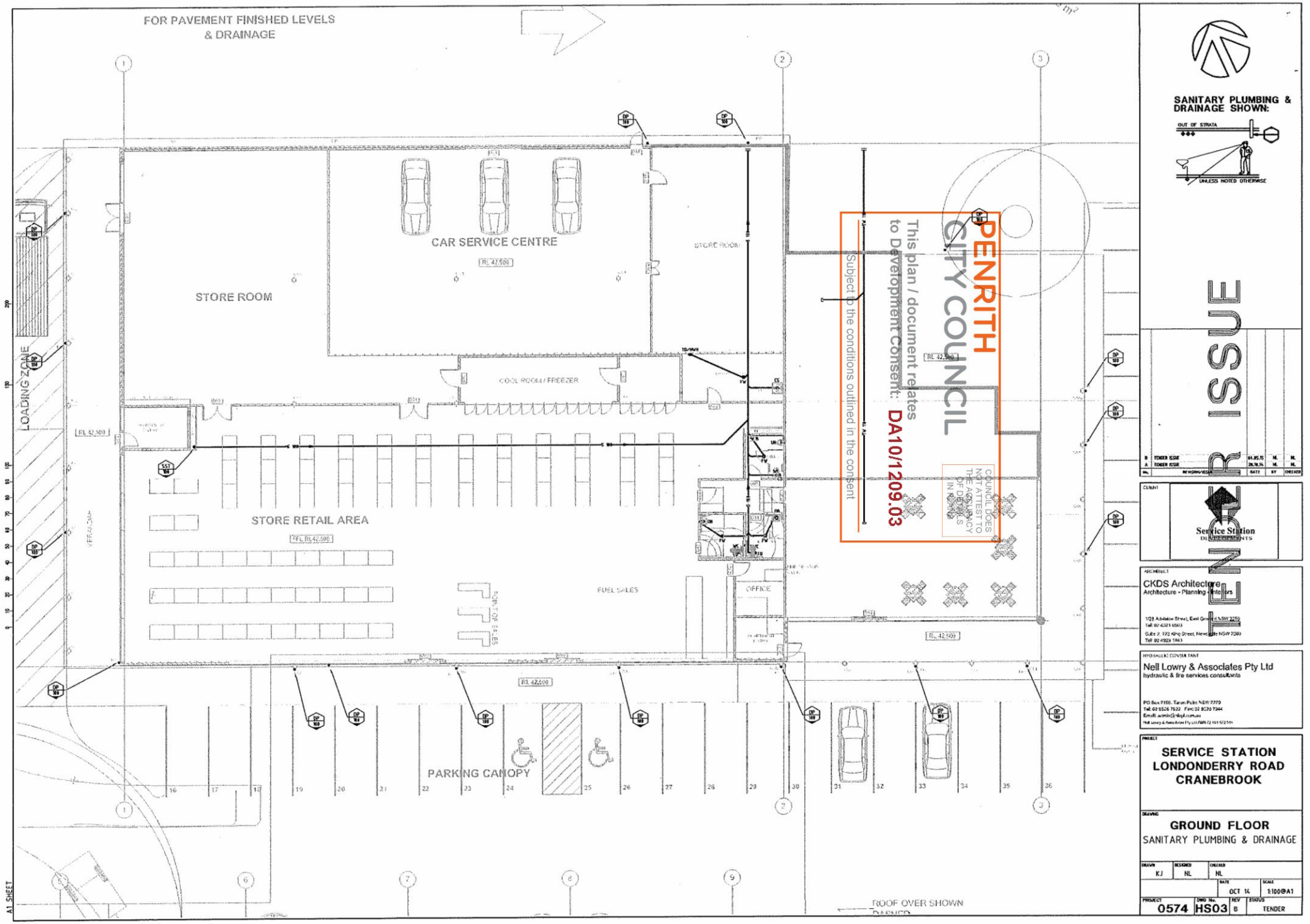
PROJECT
SERVICE STATION
LONDONDERRY ROAD
CRANEBROOK

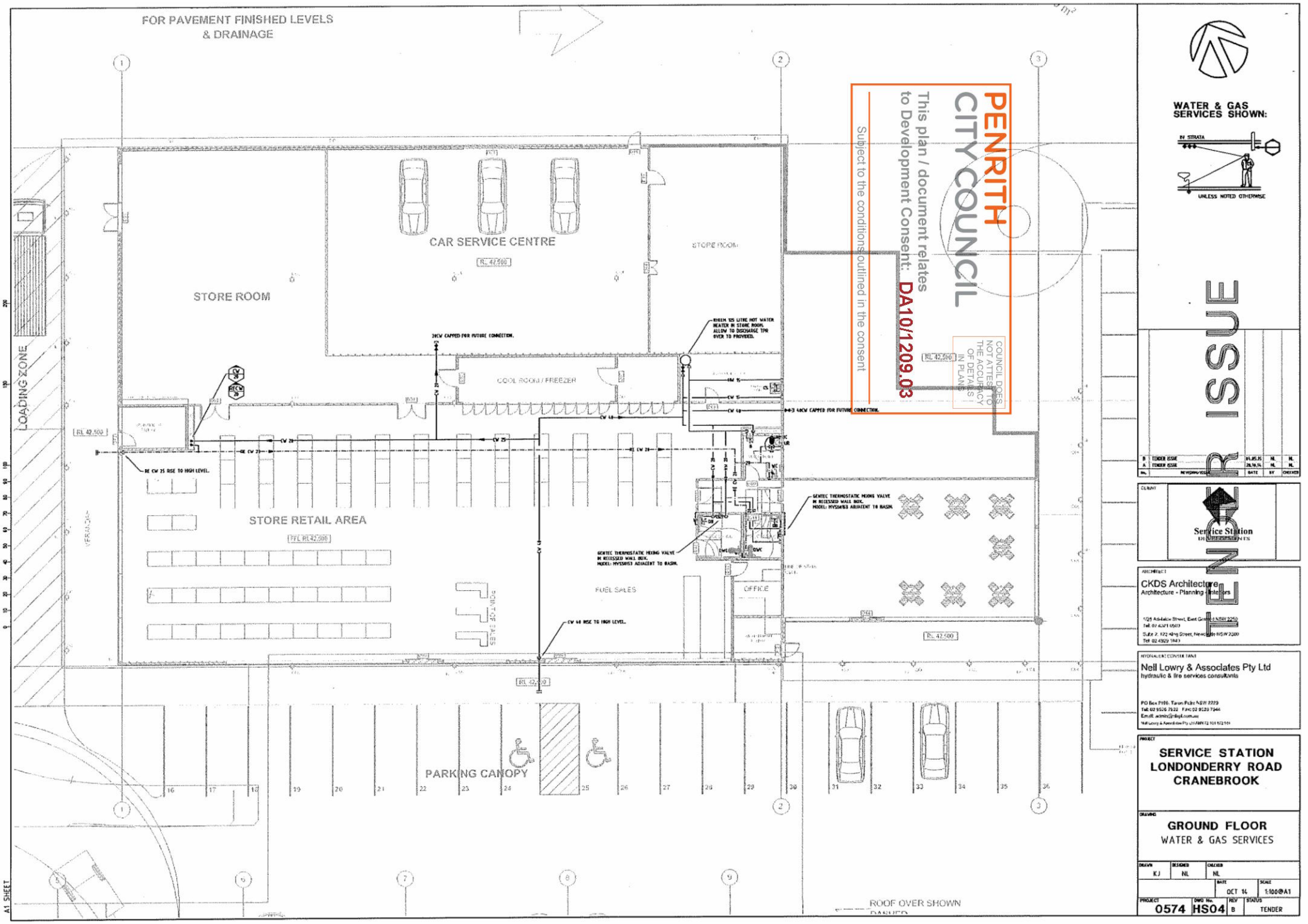
DRAWING
COVER SHEET & LEGEND
HYDRAULIC SERVICES

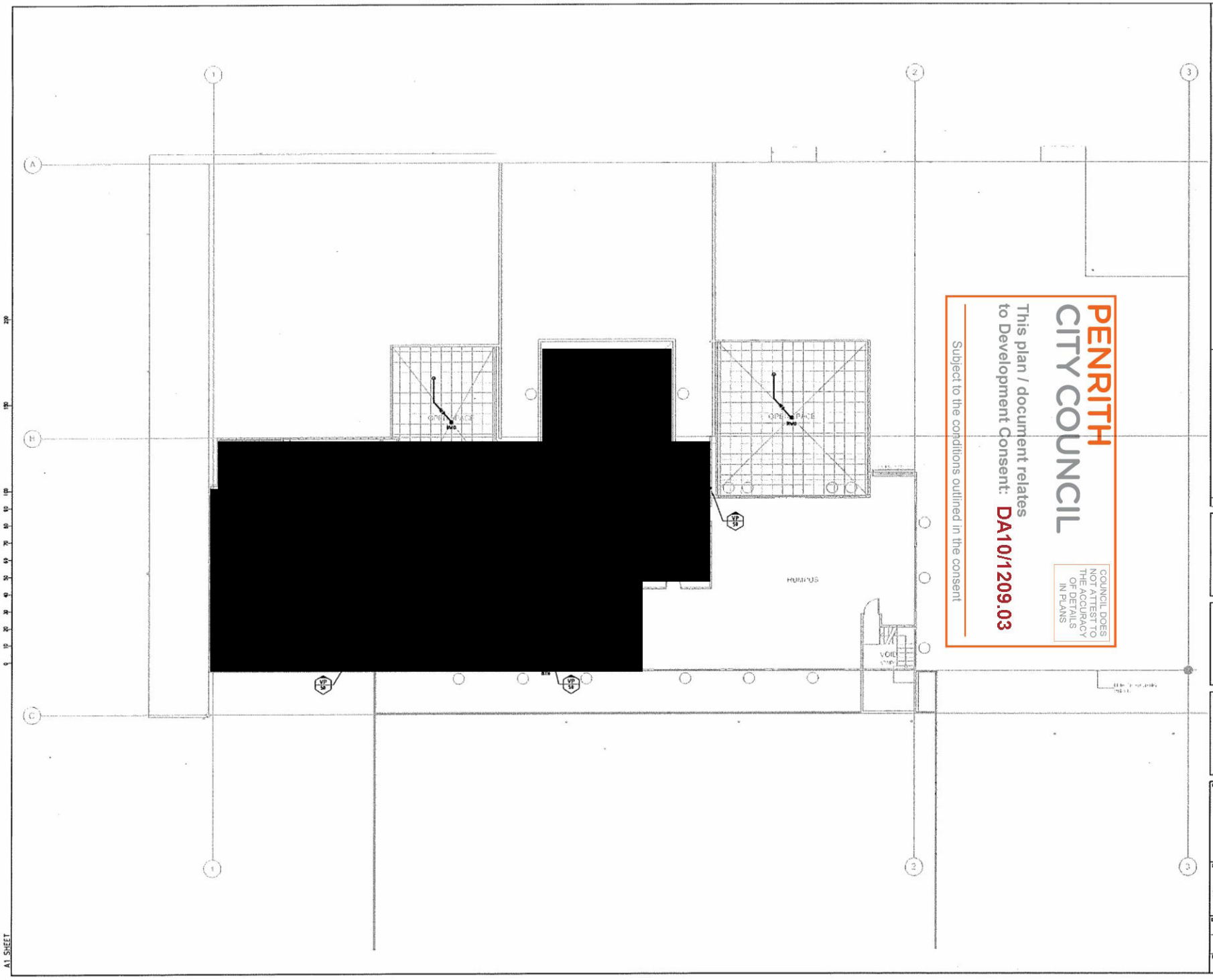
DRAWN	DESIGNED	CHECKED	DATE	SCALE
KJ	NL	NL	OCT 14	N.T.S.

PROJECT	DWG No.	REV	STATUS
0574	HS01	A	TENDER









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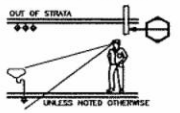
SANITARY PLUMBING & DRAINAGE SHOWN:



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PROJECT

SERVICE STATION
LONDONDERRY ROAD
CRANEBROOK

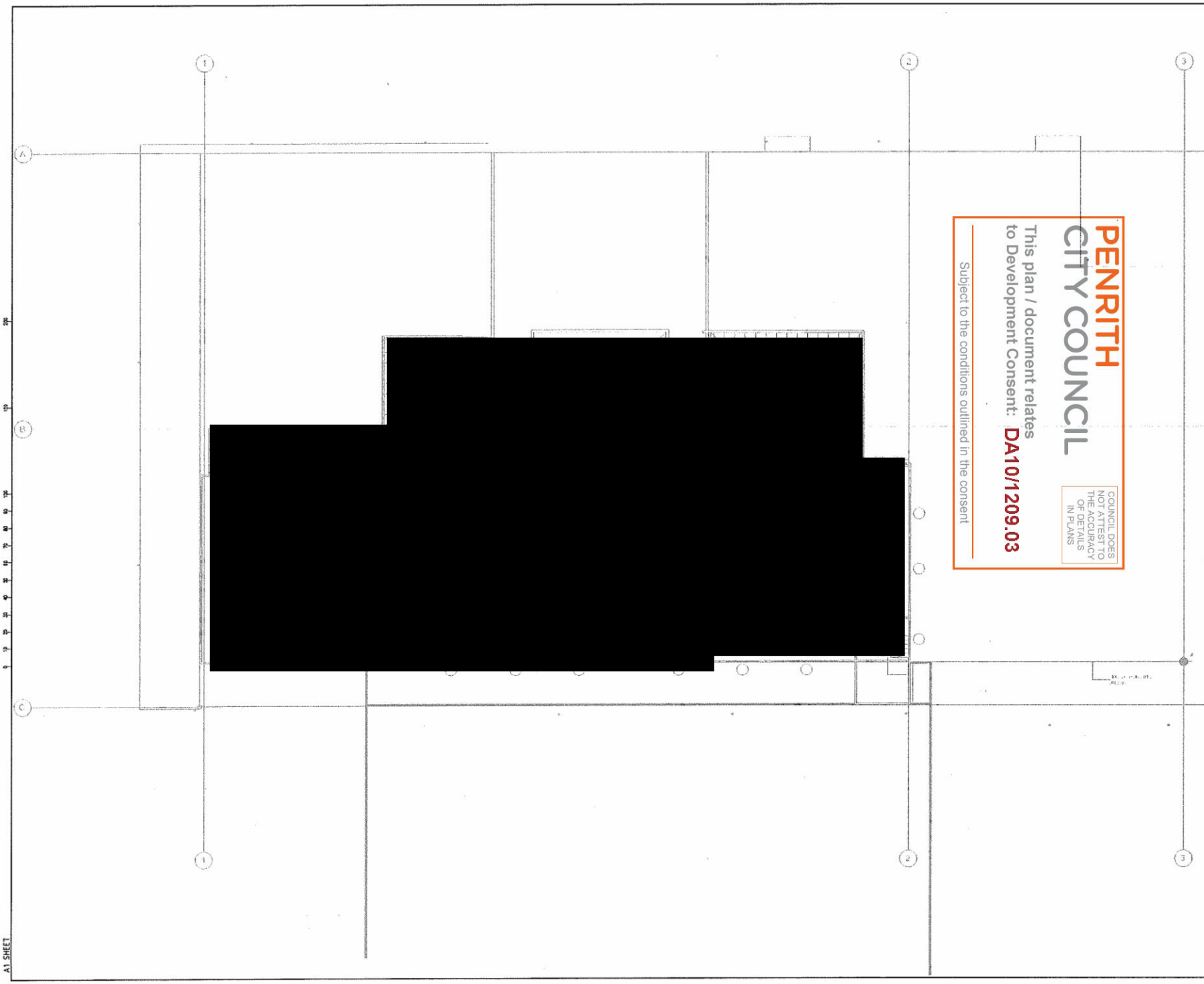
DRAWING

FIRST FLOOR
SANITARY PLUMBING & DRAINAGE

DRAWN	DESIGNED	CHECKED	DATE	SCALE
KJ	NL	NL	OCT 14	1:100@A1

PROJECT	DWG No.	REV	STATUS
0574	HS05	A	TENDER

A1 SHEET



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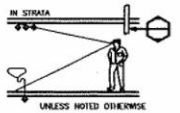
WATER & GAS SERVICES SHOWN:



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PROJECT
SERVICE STATION
LONDONDERRY ROAD
CRANEBROOK

DRAWING
FIRST FLOOR
WATER & GAS SERVICES

DRAWN	DESIGNED	CHECKED
KJ	NL	NL

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0574	HS06	A	TENDER

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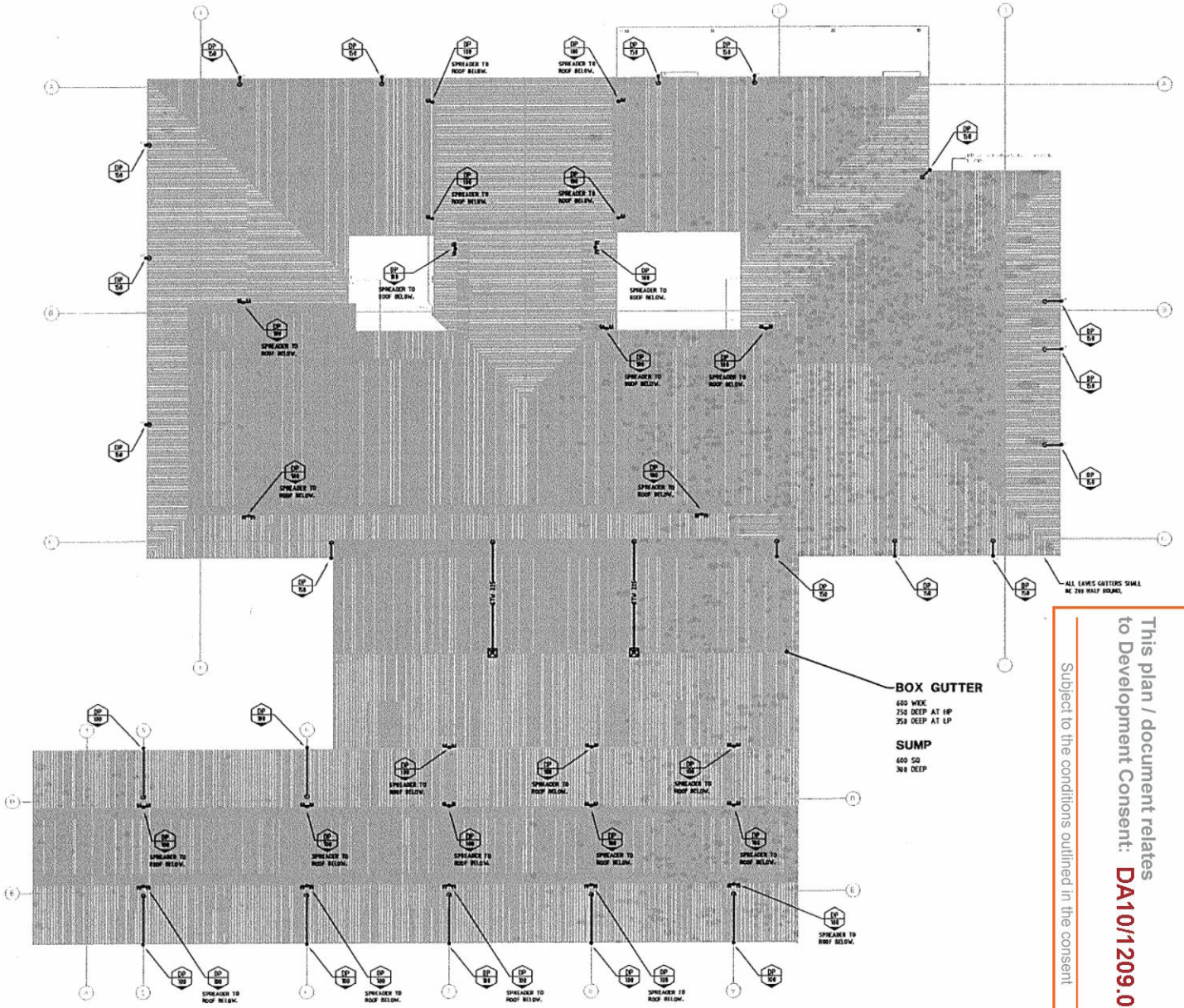

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B	TENDER ISSUE	28.10.14	NL	NL
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PROJECT
SERVICE STATION
LONDONDERRY ROAD
CRANEBROOK

DRAWING
ROOF PLAN
HYDRAULIC SERVICES

DRAWN	DESIGNED	CHECKED
KJ	NL	NL

DATE: OCT 14 | SCALE: 1:150@A1

PROJECT	DWG No.	REV	STATUS
0574	HS07	B	TENDER

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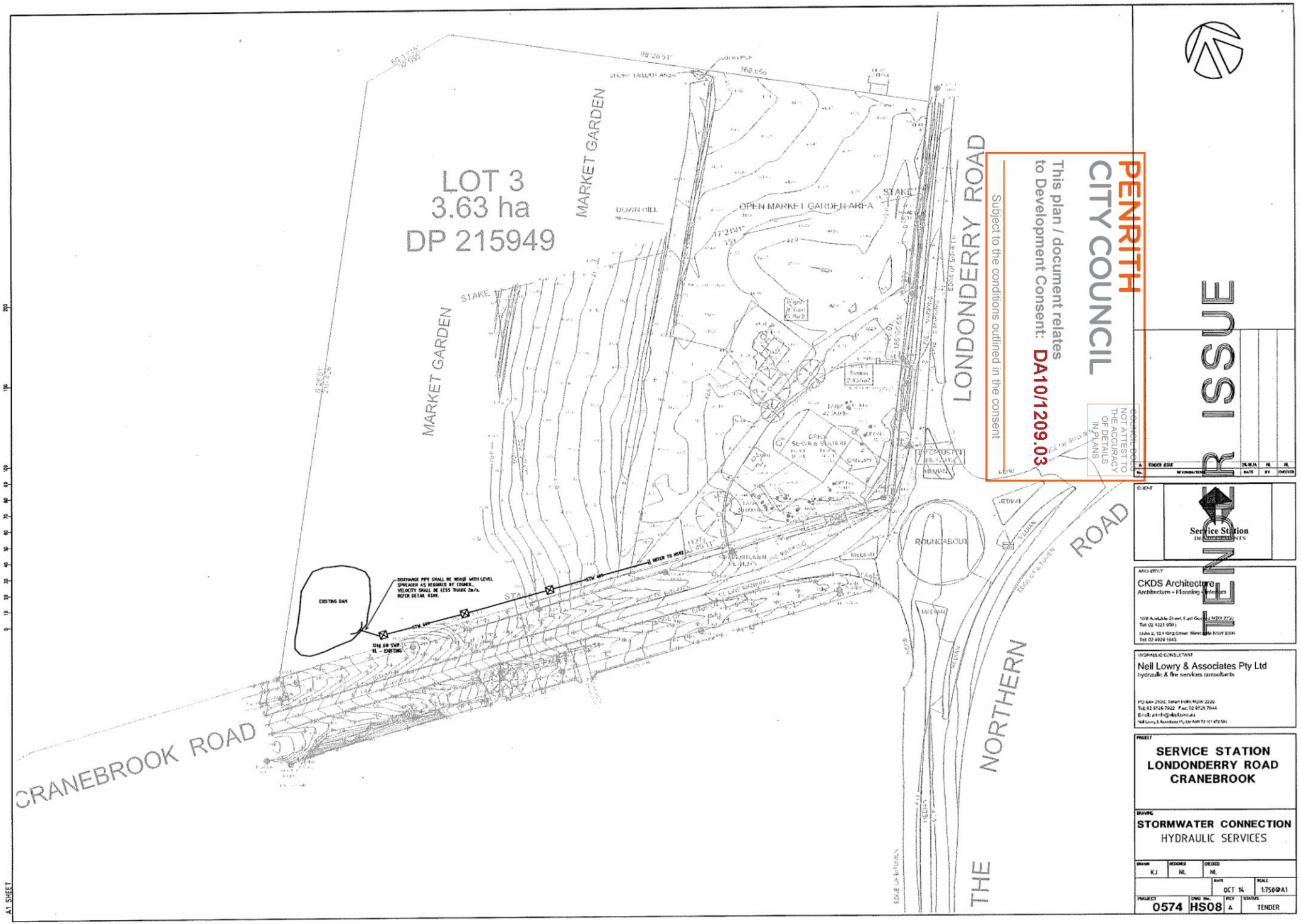

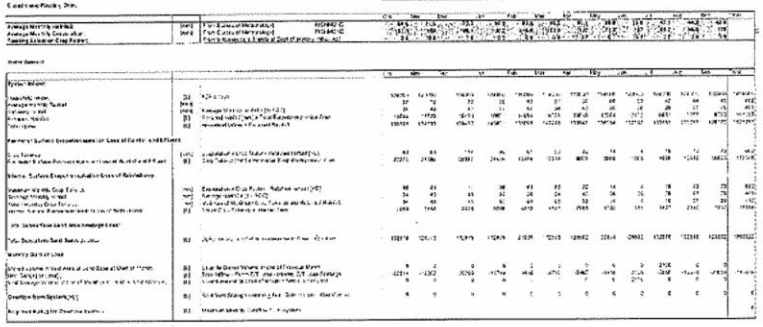

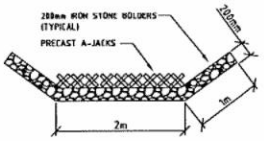

TYPICAL SECTION THROUGH RENO MATTRESS

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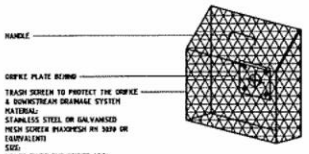

REMOVEABLE TRASH SCREEN

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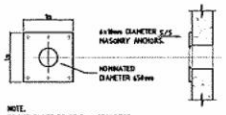

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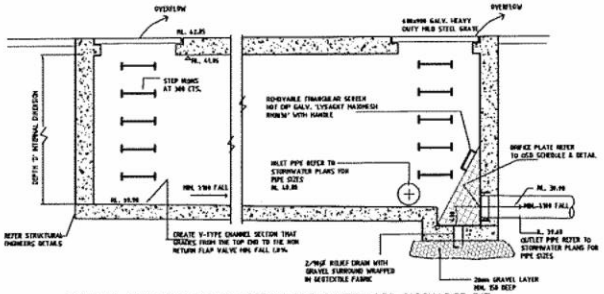

TYPICAL OSD TANK CROSS SECTION AND CONTROLLED DISCHARGE PIT

* REFER TO OSD TANK SCHEDULE TABLE FOR SIZES AND STORMWATER PLANS FOR TANK LOCATIONS ON SITE.

OSD TANK SCHEDULE

OSD TANK REFERENCE	OSD TANK CAPACITY REQUIRED	OSD TANK ACTUAL CAPACITY	DIMENSION 'W' TANK WIDTH	DIMENSION 'L' TANK LENGTH	DIMENSION 'D' TANK DEPTH	WEIR 'W' CLEARANCE	ORIFICE Ø 'X'
TANK 'A'	84m3	85.75m3	7.0	17.5	0.70	N/A	65.0

NOTE: ALL DIMENSIONS ARE IN m UNLESS NOTED OTHERWISE

FOR ISSUE

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PROJECT

SERVICE STATION
LONDONDERRY ROAD
CRANEBROOK

DRAWING

DETAIL SHEET
HYDRAULIC SERVICES

DRAWN	DESIGNED	CHECKED	DATE	SCALE
KJ	NL	NL	OCT 14	NTS@A1

PROJECT	DWG No.	REV	STATUS
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A1 SHEET

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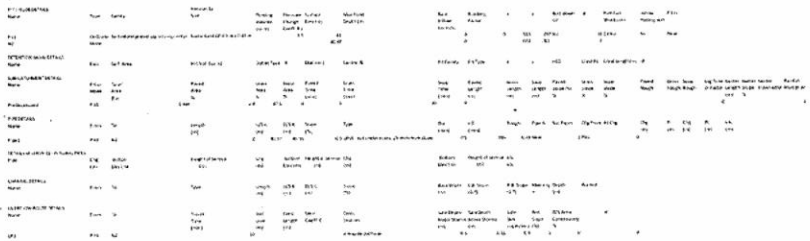

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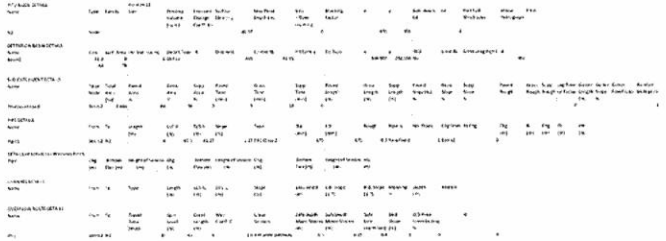

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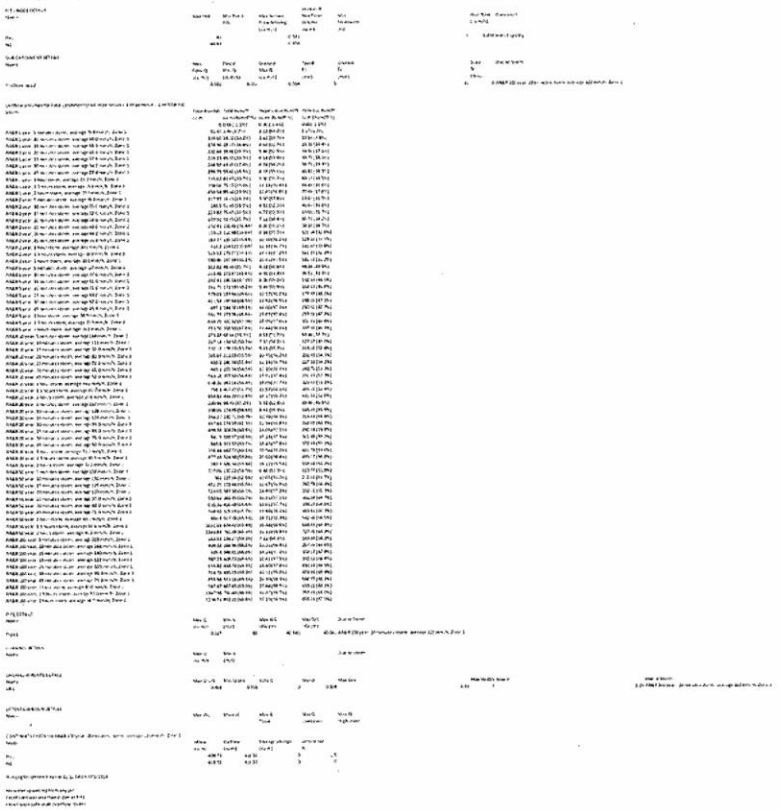

POST DEVELOPED RESULTS

PENRITH CITY COUNCIL

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A1 SHEET

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PROJECT

SERVICE STATION
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CRANEBROOK

DRAWING

CALCULATION SHEET
HYDRAULIC SERVICES

DRAWN	DESIGNED	CHECKED
KJ	NL	NL

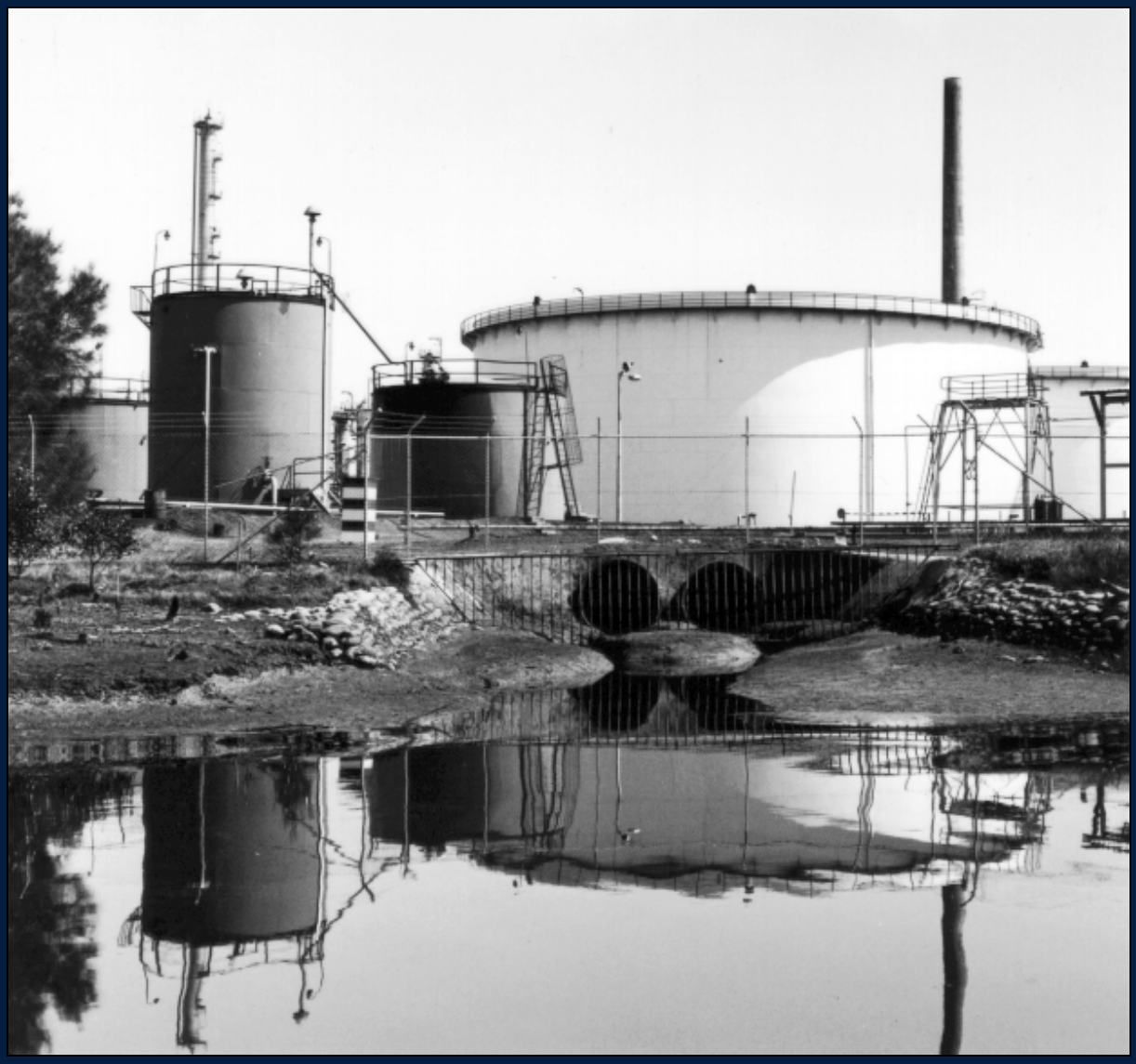
DATE	SCALE
OCT 14	NTS@A1

PROJECT	DWG No.	REV	STATUS
0574	HS10	A	DA ISSUE

APPENDIX C

DEPARTMENT OF URBAN AFFAIRS AND PLANNING APPLYING SEPP 33

Applying SEPP 33



HAZARDOUS AND OFFENSIVE DEVELOPMENT APPLICATION GUIDELINES

Department of Urban Affairs and Planning

Applying SEPP 33

HAZARDOUS AND OFFENSIVE DEVELOPMENT
APPLICATION GUIDELINES

Department of Urban Affairs and Planning

NOTE

In 1995 the Department of Planning changed its name to the Department of Urban Affairs and Planning. References in the text to Department of Planning should now read Department of Urban Affairs and Planning; Director should now read Director-General; and Minister for Planning should now read Minister for Urban Affairs and Planning.

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94/41
Cover photo by G. Hicks

DISCLAIMER

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Introduction

PURPOSE

State Environmental Planning Policy No. 33 — Hazardous and Offensive Development (SEPP 33) was gazetted on 13 March 1992. These guidelines have been prepared to provide advice on interpreting and implementing the policy.

They have been written principally for councils who must act as consent authorities for development affected by the policy. The guidelines are also likely to be useful to industry, consultants and other government agencies. The guidelines mainly assist in identifying developments which should be considered under SEPP 33, and on the broad assessment requirements of the policy.

An earlier version of the guidelines was released in 1993 and was supported by a series of information seminars. These revised guidelines have been prepared to reflect the concerns raised in those seminars and a question and answer format has been chosen to respond to the issues raised.

THE POLICY

SEPP 33 represents a fundamentally new approach to planning and assessing proposals for industrial development. Through the policy, the permissibility of an industrial proposal is linked to its safety and pollution control performance. While SEPP 33 is an enabling instrument (that is, it allows for the development of industry) it also aims to ensure that the merits of proposals are properly assessed (in relation to off-site risk and offence) before being determined.

By providing for merit-based assessment, the policy overcomes the limitations of previous definitions — in which a use was considered hazardous or offensive on the basis of a particular type of industry, in isolation. The merit-based approach ensures that locational and design considerations are an integral part of the assessment process.

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.

SCOPE AND APPLICATION

SEPP 33 applies to any proposals which fall under the policy's definition of 'potentially hazardous industry' or 'potentially offensive industry'. 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. **These guidelines assist councils and proponents to establish whether a development proposal would fit into such definitions and hence, come under the provisions of the policy.**

For development proposals classified as 'potentially hazardous industry' the policy establishes a comprehensive test by way of a preliminary hazard analysis (PHA) to determine the risk to people, property and the environment *at the proposed location and in the presence of controls*. Should such risk exceed the criteria of acceptability, the development is classified as 'hazardous industry' and may not be permissible within most industrial zonings in NSW.

For developments identified as 'potentially offensive industry', the minimum test for such developments is meeting the requirements for licensing by the Environment Protection Authority. If a development cannot obtain the necessary pollution control licences, then it may be classified as 'offensive industry', and may not be permissible in most industrial zonings.

These guidelines and accompanying appendices cover the following key issues:

- knowing when SEPP 33 applies (p. 3–6);
- SEPP 33 administrative requirements (p. 7–10);
- assessing applications under SEPP 33 (p. 11–15);
- identifying a potentially hazardous development (p. 19–22);
- what is required of a PHA and guidelines for assessing a PHA (p. 31–33);
- appropriate conditions of consent for developments under SEPP 33 (p. 34, 35).

Application

DOES SEPP 33 APPLY ?

This section provides advice to consent authorities on deciding whether SEPP 33 applies to a proposal and how to apply the new definitions the policy introduces.

Question 2.1 — How do I determine whether SEPP 33 applies to a proposal?

Consent authorities should firstly consider whether the proposed use falls within the definition of 'industry' adopted by the planning instrument which applies.

Once a proposal is identified *as* an industry, consent authorities need to consider:

- Does the proposal require development consent?
- Is the proposal 'potentially hazardous industry'?
- Is the proposal 'potentially offensive industry'?

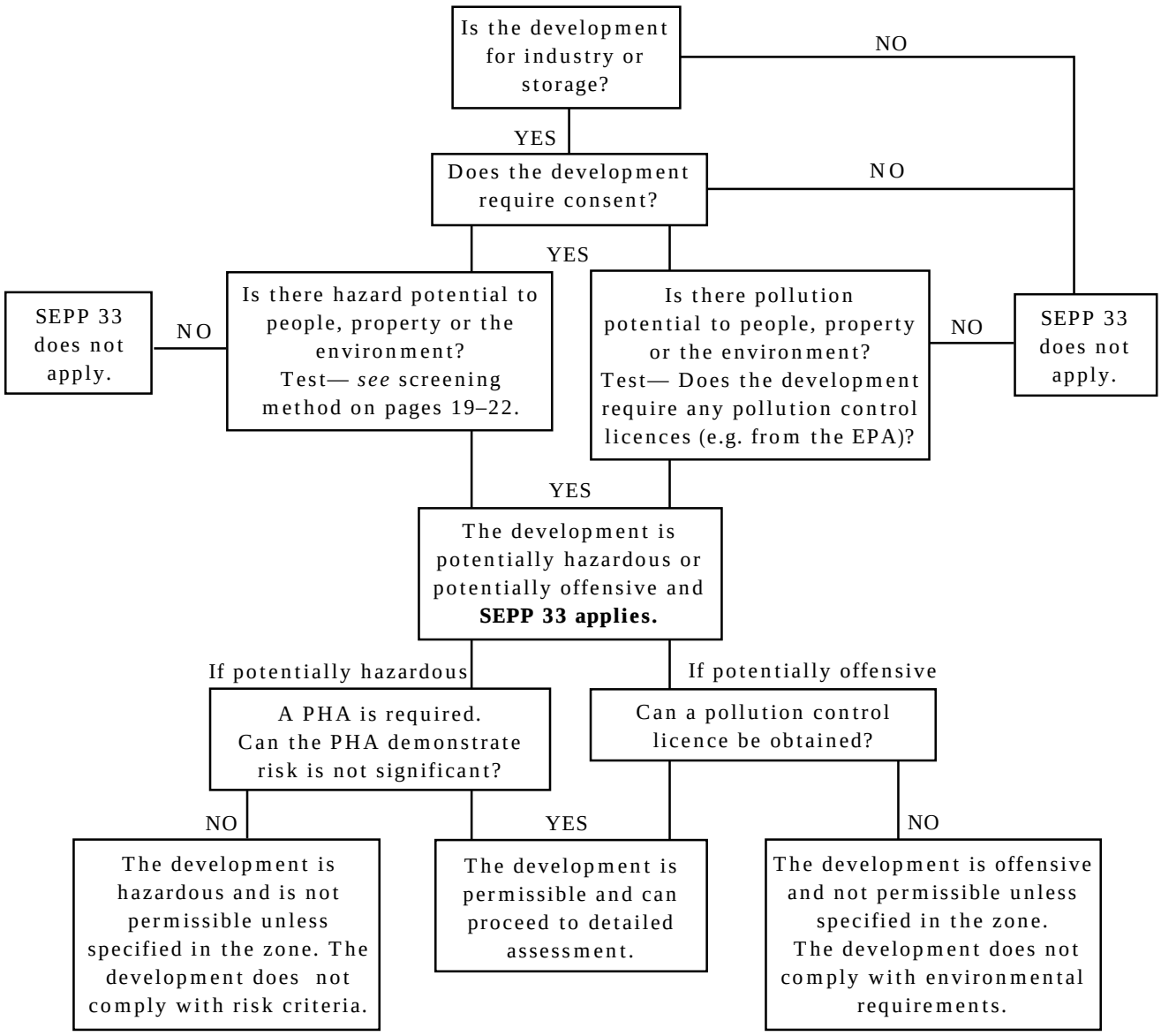
For the purposes of SEPP 33, it should be noted that a hazardous storage establishment may be included in the definition of potentially hazardous industry. Similarly, an offensive storage establishment may be included in the definition of potentially offensive industry.

SEPP 33 will apply if a proposal for an industrial development requires consent, and it is either potentially hazardous industry or potentially offensive industry (or both). Figure 1 indicates the procedure for determining if SEPP 33 applies and the associated assessment process.

Question 2.2 — What supporting information should I seek in order to determine if a proposal is 'potentially hazardous industry' and therefore within SEPP 33?

The Department of Planning has developed a risk screening procedure to assist in determining whether a development proposal falls within the definition of potentially hazardous industry.

FIGURE 1. THE SEPP 33 PROCESS



This procedure is based on the quantity of dangerous goods involved in the proposal and, in some cases, the distance of these materials from the site boundary. The identification procedure for potentially hazardous industry is explained on pages 19–22.

Some basic information about the proposal is required to apply the risk screening method. The information which should be obtained from the applicant (at the earliest opportunity) is shown in appendix 1, and discussed on pages 19–22.

Question 2.3 — What is the difference between 'potentially hazardous industry' and 'hazardous industry'?

A 'hazardous industry' under SEPP 33 is one which, when all locational, technical, operational and organisational safeguards are employed continues to pose a significant risk. *A proposal can not be considered a hazardous industry unless it is first identified as potentially hazardous industry* and subjected to the assessment requirements of SEPP 33.

The requirements include an assessment of the preliminary hazard analysis (PHA) submitted with the development application. If the assessment of the PHA finds the proposal is a hazardous industry then, unless it can be modified or relocated, it does not meet the risk criteria for acceptability.

Question 2.4 — What information do I need to determine if a proposal is 'potentially offensive industry' and therefore within SEPP 33?

In deciding if a proposal is 'potentially offensive industry' consent authorities need to determine whether, in the absence of safeguards, the proposal would emit a polluting discharge which would cause a significant level of offence.

It is recommended the following be considered:

- Does the proposal require a licence under any pollution control legislation administered by the Environment Protection Authority (EPA)? If so, the proposal should be considered potentially offensive.
- Does the proposal require any pollution control approval pursuant to any legislation or by-laws administered by council?
- If such a pollution control licence or approval is not required, does the proposal cause offence having regard to the sensitivity of the receiving environment? This will in many cases be a matter for judgement. Consent authorities are advised to consult with the EPA and take into account their views.

Question 2.5 — What is the difference between 'potentially offensive industry' and 'offensive industry'?

An 'offensive industry' is one which, even when controls are used, has emissions which result in a significant level of offence. *Before a proposal is identified as offensive industry it must first be identified as potentially offensive industry* and subjected to the assessment and exhibition requirements of SEPP 33.

The assessment should demonstrate that the offence can be controlled to a level which is not significant. Typically, the level of offence would not be considered significant if relevant EPA (or any other relevant pollution control) licences can be obtained; that is, if the EPA (or other licensing authority) is willing to issue a licence under its pollution control legislation. If the proposal does not require licensing, the consent authority should use its own judgement as to whether the level of offence can be controlled to a level which is not significant. This is discussed further in question 5.3.

Procedures

WHAT ARE THE PROCEDURAL REQUIREMENTS WHEN SEPP 33 APPLIES?

This section provides advice on the procedural requirements for SEPP 33 (questions 3.1 and 3.2); and on matters to be considered for developments affected by SEPP 33 as specified in clause 13 of the policy (questions 3.3 to 3.6).

Question 3.1 — If SEPP 33 applies, what general procedures apply?

Administrative procedures for developments affected by SEPP 33 are shown in figures 2 and 3. There is some variation in the requirements for developments affected by SEPP 33 which are also designated (schedule 3, Environmental Planning and Assessment Regulation 1994). The exhibition procedures for designated development override those of SEPP 33, and third party appeal rights still apply.

Question 3.2 — What are the notification and consultation requirements under SEPP 33?

SEPP 33 requires that:

- public notice be given of the development application (DA) (at least once for non-designated development and twice for designated development);
- the DA and supporting documentation be publicly exhibited (for a minimum period of 30 days for designated development and 14 days for non-designated);
- during the period of exhibition the public is able to make submissions;
- the consent authority must seek the views of relevant government authorities.

Question 3.3 — What circulars or guidelines published by the Department of Planning should be considered?

For the purposes of SEPP 33 the publications regarded as relevant are:

- Hazardous Industry Planning Advisory Paper (HIPAP) series
  HIPAP No. 1 — Industry Emergency Planning Guidelines
  HIPAP No. 2 — Fire Safety Study Guidelines
  HIPAP No. 3 — Environmental Risk Impact Assessment Guidelines
  HIPAP No. 4 — Risk Criteria for Land Use Safety Planning
  HIPAP No. 5 — Hazard Audit Guidelines
  HIPAP No. 6 — Guidelines for Hazard Analysis
  HIPAP No. 7 — Construction Safety Study Guidelines
  HIPAP No. 8 — HAZOP Guidelines
  HIPAP No. 9 — Safety Management
- *LPG Automotive Retail Outlets — Locational Guidelines*
- *Contaminated Land — Planning Guidelines for Contaminated Land.*
  (The above documents are explained in more detail in appendix 3.)
- *Applying SEPP 33 — Hazardous and Offensive Development Application Guidelines* (this document).

The following documents presently being prepared will also be relevant when they are issued:

- Route Selection Guidelines
- Multilevel risk assessment.

Question 3.4 — What government authorities should be consulted?

For most cases, consent authorities should consult with the Environment Protection Authority, NSW Fire Brigades, NSW WorkCover Authority and, where transport impacts may be important, the Roads and Traffic Authority. Consultation with other authorities may also be required depending upon the specific circumstances of a proposal.

Question 3.5 — How should the issue of 'alternatives' be considered?

The matter should be considered in much the same way as for designated development. Alternatives could include:

- sites
- processes
- sources of materials
- site layouts
- transport routes and modes.

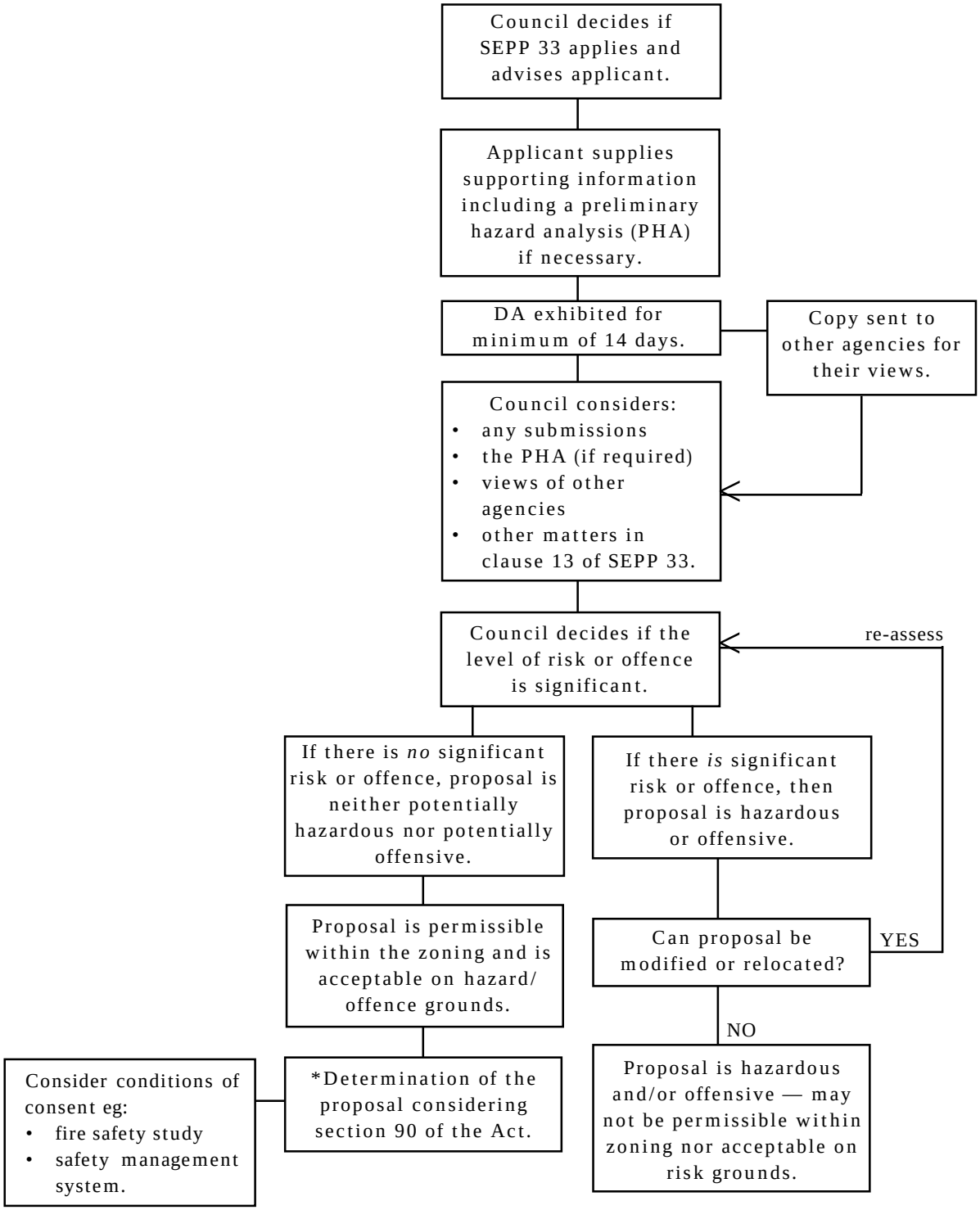
The extent to which other options should be considered depends on factors such as the feasibility of the alternatives and the level of impact involved with the preferred alternative. Consent authorities should ensure there is some locational justification of the preferred alternative.

Question 3.6 — How should the issue of the likely future use of the land surrounding the development be considered?

Consent authorities should consider the matter in the same way as they would an application for designated development. Particular issues to note are:

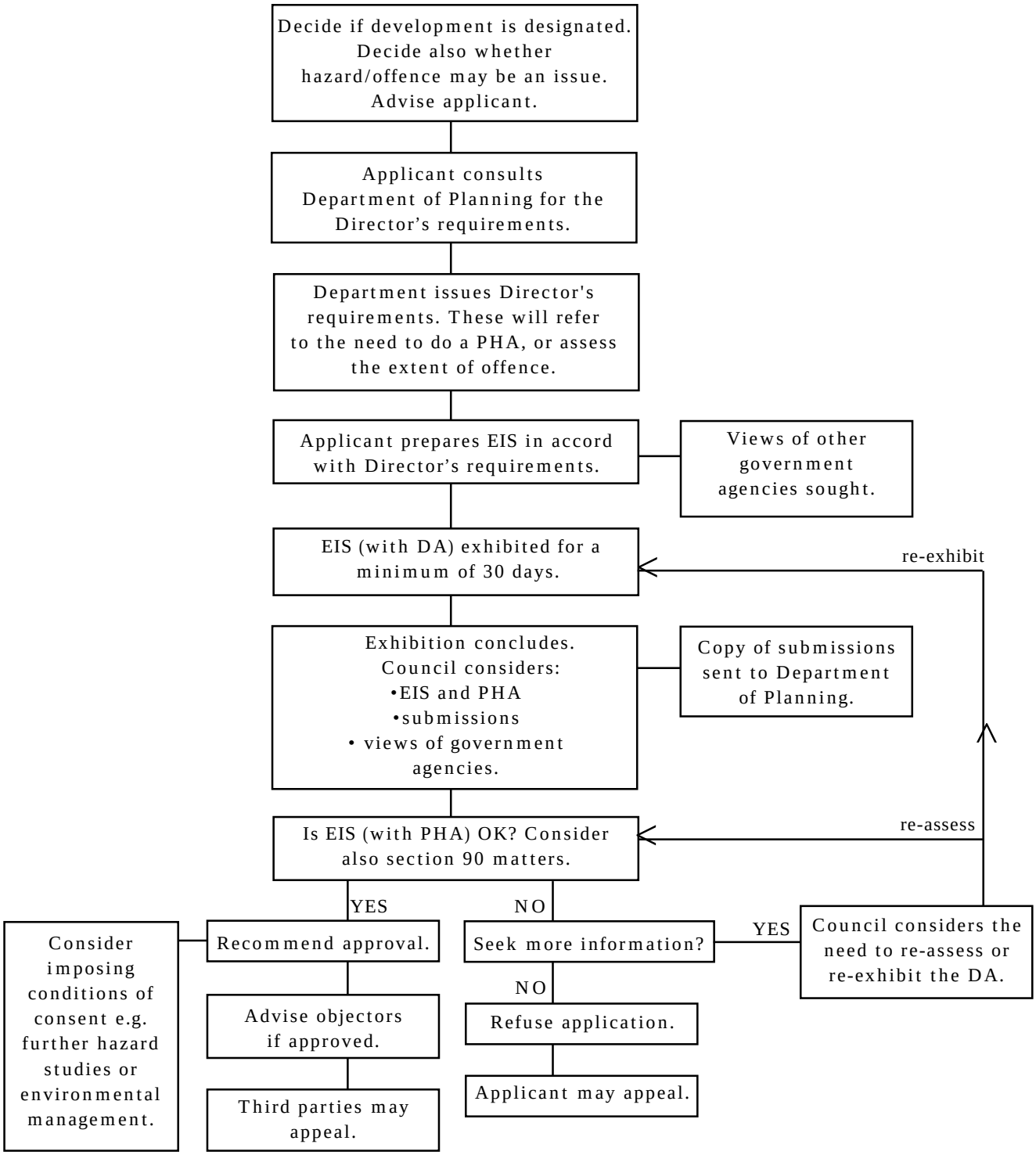
- any intensification of cumulative risk
- the likelihood of land sterilisation
- the suitability of adjoining land zonings
- the likely future use of adjoining land.

FIGURE 2. SEPP 33 PROCEDURAL REQUIREMENTS FOR NON-DESIGNATED DEVELOPMENT



** Note: It is recommended that council give preliminary consideration to section 90 matters at an early stage in the process, so that the proposal can be determined as quickly as is possible. Refer also to question 6.13 for further discussion on this matter.*

FIGURE 3. SEPP 33 PROCEDURAL REQUIREMENTS FOR DESIGNATED DEVELOPMENT



Assessing Hazard

HOW TO ASSESS A POTENTIALLY HAZARDOUS INDUSTRY

SEPP 33 requires the preparation of a preliminary hazard analysis (PHA) for potentially hazardous industry. This section includes specific guidance on the policy's requirements.

Question 4.1 — What matters must be considered when assessing an application for a potentially hazardous industry?

The assessment of an application for a potentially hazardous industry should consider:

- the findings of a preliminary hazard analysis;
- relevant circulars or guidelines published by the Department of Planning;
- alternatives and justification for the alternative chosen;
- any likely future use of the land surrounding the development.

Question 4.2 — What should the PHA do? Do the requirements vary according to the circumstances of the proposal?

The PHA should enable the consent authority to make a judgement about the level of risk involved in a proposal, and its acceptability. It should allow the consent authority to decide if the level of risk exceeds criteria for acceptability (thus indicating that the proposal is a hazardous industry) or whether the level of risk can be managed (so that the proposal is acceptable on hazard grounds).

The PHA may be done either *quantitatively* or *qualitatively*, depending on the circumstances of the proposal and its location. The level and extent of qualitative or quantitative assessment will depend on the nature and scale of the development and, as importantly, its proposed location in relation to surrounding land uses and the natural environment.

It would be expected that a significant number of PHAs could be done either qualitatively or semi-quantitatively.

A qualitative PHA may be sufficient in the following circumstances:

- where the materials are relatively non-hazardous (for example, corrosive substances and some classes of flammables);
- where there are no major worst-case consequences;
- where the technical and management safeguards are self-evident and readily implemented;
- where the surrounding land uses are relatively non-sensitive.

Appendix 4 provides guidance on the requirements and assessment of PHAs. The department will publish detailed guidelines on multi-level risk assessment which will provide further advice on this issue.

Question 4.3 — How does a consent authority determine if the risk from a proposal is acceptable?

If the PHA includes a *quantified* risk assessment, the risks need to be assessed against the criteria which have been developed by the department.

If the risk posed by the development exceeds those criteria, the level of risk is not acceptable, and the development is a hazardous industry.

If the PHA has been done on a *qualitative* basis, the consent authority must judge whether the level of risk is being managed appropriately, with reference to the proposed safeguards. For proposals involving risk to the biophysical environment, qualitative judgements must be made taking into account such matters as:

- the particular qualities of the environment;
- the nature of the hazards;
- the reversibility of any impact.

Appendix 4 provides further information on assessing risk to the biophysical environment.

Question 4.4 — What can a consent authority do to ensure the ongoing acceptability of a potentially hazardous industry?

If, following the assessment of a PHA and other considerations, council considers that the proposal can proceed, it should consider imposing the standard hazard conditions drafted by the department. These conditions will help ensure the ongoing safety of an industrial development. They are explained in more detail in appendix 5.

Assessing Offence

HOW TO ASSESS A POTENTIALLY OFFENSIVE INDUSTRY

This section provides specific information on the implications of SEPP 33 to a potentially offensive industry.

Question 5.1 — What supporting information should be supplied with a development application for a potentially offensive industry?

Consent authorities should seek information from the applicant on the quantity and nature of any discharges, and the significance of the offence likely to be caused by the development, having regard to the nature of the surrounding land use and the proposed controls. The need for any licences from the Environment Protection Authority (EPA) should also be ascertained.

Question 5.2 — Do any specific considerations apply in the assessment of a potentially offensive industry?

The key consideration in the assessment of a potentially offensive industry is that the consent authority is satisfied there are adequate safeguards to ensure emissions from a facility can be controlled to a level at which they are not significant. An important factor in making this judgement is the view of the EPA (for those proposals requiring a pollution control licence under EPA legislation). If the EPA considers that its licence requirements can be met, then the proposal is not likely to be 'offensive industry'.

Question 5.3 — Is compliance with EPA licence requirements sufficient to demonstrate that a proposal is not 'offensive industry'?

In most cases, compliance with EPA requirements should be sufficient to demonstrate that a proposal is not an offensive industry. In some cases depending on surrounding land uses, and

particularly for proposals which do not require an EPA licence, consent authorities should also consider:

- Do any other authorities need to license the proposal? For example, for some proposals the Department of Health or the local water authority may be required to license emissions. Some pollution control approval may also be required under legislation or by-laws administered by council.
- Can conditions be attached to further reduce the level of offence? Conditions which might be appropriate could include (depending upon circumstances):
  - restricting hours of operation
  - ensuring adequate separation distances to surrounding land uses.

If, after considering these matters, the consent authority considers that the level of offence will not be significant, then the proposal should not be refused for reasons due to offence.

Common Queries

RESPONSES TO COMMON QUERIES ABOUT THE POLICY

Question 6.1 — What are the implications of SEPP 33 for an existing development?

SEPP 33 does not apply to existing developments unless a new development application (DA) is required for the site. Such a DA could involve the modification of the existing facilities, the construction of new facilities or the commencement of new uses.

If the proposed use or modifications are considered potentially hazardous or potentially offensive *in their own right*, then SEPP 33 applies.

For potentially hazardous developments, hazards relating to external causes as well as those from the development itself must be addressed. Any preliminary hazard analysis would therefore need to consider hazards from the existing facility.

SEPP 33 would *also* apply if the proposed modifications are not potentially hazardous in themselves, but *interact with the existing facility* in such a way that cumulative hazards (or offence) from the existing facility may be significantly increased. This may in many cases be a matter for judgement by the consent authority.

Question 6.2 — In which land use zones are potentially hazardous industry and potentially offensive industry permitted?

Potentially hazardous industry and potentially offensive industry are permitted in zones where industry or storage establishments are permitted. (Where industry or storage establishments are, as a class of development, prohibited by the land use table, potentially hazardous industry or potentially offensive industry is not permitted.)

The implication of SEPP 33 in situations where industrial development is permissible is that a merit-based assessment is required for DAs for potentially hazardous or potentially offensive industry. It does not necessarily mean that a use can be located in the zone, but that the merits of the particular proposal must be assessed. This assessment must occur before it can be refused or approved on public safety or environmental impact grounds; or for any other matter included in section 90 of the *Environmental Planning and Assessment Act 1979*.

Question 6.3 — What are the implications of the policy for zones which presently permit hazardous or offensive industry?

The SEPP 33 assessment principles should apply to all proposals for potentially hazardous industry or potentially offensive industry, irrespective of whether hazardous or offensive industry is permitted or prohibited under a planning instrument.

Where consent is required, a DA must be lodged with the consent authority for its consideration. If after assessment, the risk level is determined as not significant (or the level of offence is found to be acceptable), then the development is neither hazardous nor offensive (and hence permissible and acceptable on safety or environmental grounds).

If the level of risk or offence is found to be significant, then the proposal may be neither permissible nor acceptable. In making its final decision on the DA a consent authority will have to take into account all matters under section 90 of the Act.

Question 6.4 — What are the implications of SEPP 33 for development subject to Part 5 of the Act?

SEPP 33 applies only to proposals which fall within Part 4 of the Act (that is, those proposals which require development consent). However, if a Part 5 determining authority considers that an assessment of hazard or offence is relevant to its environmental considerations of a proposal, it could use the assessment procedure included in SEPP 33 to assess these issues.

Question 6.5 — Does SEPP 33 apply to rural industry, such as cattle feedlots and similar development?

Whether SEPP 33 applies to a particular proposal depends upon whether the proposal falls within the definition of 'industry' as defined in the planning instrument which applies.

Developments such as cattle feedlots may not fit within this definition (for example, where they are separately defined as 'animal establishments', 'rural industry' or something similar). It is, however, a matter for the consent authority to interpret its own planning instruments in deciding whether any proposal is affected by SEPP 33.

Should the consent authority decide that SEPP 33 does not apply to a development because it is not an 'industry', the degree of hazard or offence should still be considered as a matter under section 90 of the Act. In such cases, the SEPP 33 methodology may still be applicable, even if the policy itself does not *strictly* apply.

Question 6.6 — Should the policy be referred to on section 149 certificates?

The Minister for Planning has not specifically directed that the SEPP 33 be referred to on section 149 certificates. This is because the policy refers to types of development rather than specific parcels of land. The advertising requirements of SEPP 33 have been included to ensure that the public receives adequate notification of developments affected by the policy.

Question 6.7 — Can a schedule of industries and types of development affected by SEPP 33 be provided?

It is not appropriate to provide a schedule of uses. SEPP 33 is a move away from a prescriptive approach, which designates proposals as hazardous or offensive based upon particular types of industry, towards a merit-based assessment based upon the performance of a proposal at its particular location.

Consent authorities need to consider the details and merits of each proposal in deciding if a particular use should be subject to the policy.

Question 6.8 — Should the terms 'potentially hazardous industry' and 'potentially offensive industry' be included in land use tables in planning instruments?

These terms should not be included in planning instruments because:

- if such uses are prohibited (in industrial zones), then this avoids the merit-based assessment principle;
- if such a use is specifically permitted, it could lead to a hazardous industry being permitted (because the definition of 'potentially hazardous industry' also includes hazardous industry).

Question 6.9 — Should the consent authority refuse applications for potentially hazardous industry or potentially offensive industry?

If the zoning of the land permits development for industry, an application should not be refused by council simply because it is identified as potentially hazardous or potentially offensive. Such an application should be assessed in accordance with SEPP 33. If, after assessment, it is shown to be hazardous industry or offensive industry, the development may not be permissible within the zoning unless specifically stated.

Whether or not the development is acceptable on risk grounds, councils will also have to consider other factors in making their decisions.

Question 6.10 — How are existing or continuing use rights affected by SEPP 33?

SEPP 33 could apply in situations where an operation is being carried out under existing use rights and a development application has been lodged to vary the existing use. The normal provisions relating to existing use would still apply.

Question 6.11 — For what purpose should the risk screening method described on pages 19–22 be used?

The risk screening method is suggested simply as a procedure for deciding if a proposal is 'potentially hazardous industry' under SEPP 33. It should *not* be used for:

- making decisions about the suitability of a proposal;
- making a comparison against any criteria or standard relating to risk acceptability;
- risk management.

Question 6.12 — Does the term 'potentially hazardous industry' mean that such an industry is hazardous or noxious?

If an industry is identified as a potentially hazardous industry, it does not necessarily mean that it is actually hazardous. It simply means that the merits of the proposal are required to be assessed.

Question 6.13 — How can delays in processing applications under SEPP 33 be avoided?

The assessment of development applications need not be delayed because of the additional requirements of SEPP 33. To assist in the prompt processing of applications subject to the policy, consent authorities are advised to:

- ascertain at an early stage whether SEPP 33 applies. It is recommended consent authorities obtain from the applicant the information listed in appendix 1, as soon as practicable, and apply the screening procedure outlined on pages 19–22;
- obtain the views of relevant public authorities as early as possible;
- use *parallel processing* — that is, while the DA (and accompanying preliminary hazard analysis, if necessary) is on exhibition, ensure that other relevant section 90 matters are addressed. In this way, consent authorities need then only assess the PHA and the matters raised in the submissions when the exhibition is complete.

Risk Screening

HOW TO IDENTIFY POTENTIALLY HAZARDOUS INDUSTRY

This section provides a risk screening method to assist consent authorities in determining whether a proposed development is potentially hazardous and thus affected by SEPP 33. The procedure is outlined in figure 4 (*see* foldout p. 21). A worked example is included in appendix 7 to help in understanding and applying risk screening.

Definitions

The following definitions are used throughout this section:

class — means the classification number assigned to a dangerous good to indicate its most significant type of risk

hazardous materials — are substances falling within the classification of the *Australian Code for Transportation of Dangerous Goods by Road and Rail* (Dangerous Goods Code). The classifications are summarised in appendix 6

intermediate — means a partly processed substance formed during a manufacturing process which is neither unconverted raw material nor a finished product

LPG — is Liquefied Petroleum Gas as defined in Australian Standard AS1596

subsidiary risk — the classification number(s) indicating other significant types of risk(s) in addition to the primary classification of a substance.

The following steps explain how to determine if a proposed facility is potentially hazardous using the risk screening method. Further details of the method are provided in appendix 2.

Collate Information
The following information should be obtained from the proponent:

- a list of all the hazardous materials used in the proposed development and the quantity of each present. If the proposed development is an addition or modification to an existing operation, the proponent should list all hazardous materials on the site which are in proximity to the proposed development;
- dangerous goods classification for each material, including subsidiary class(es);
- the mode of storage used (that is, bulk or packages/containers) and the maximum quantity stored or held on site;
- the distance of the stored material from the site boundary for any of the materials in dangerous goods classes 1.1, 2.1 and 3;
  Note: *Where liquids are contained in a bunded area, the distance is measured from the bund wall rather than from the tank. For materials stored in underground tanks, the distance is measured from the above ground filling/dispensing point.*
- the average number of annual and weekly road movements of hazardous material to and from the facility, and the typical quantity in each load.

The following information must also be taken into account:

- LPG, as defined in *AS1596 — LP Gas Storage and Handling*, though classified as a flammable gas (2.1), it is treated separately for screening purposes and should not be grouped with the other class 2.1 flammable gases.
  Note: *LPG automotive retail outlets fall within SEPP 33 but procedures for dealing with them are not covered in these guidelines. The required PHA should demonstrate to the consent authority compliance with the Department of Planning publication* Hazardous Industry Locational Guidelines No 1 — Liquefied Petroleum Gas Automotive Retail Outlets.
- If class C1 and/or class C2 are present on site and are stored in a separate bund or within a storage area where they are the only flammable liquid present they are not considered to be potentially hazardous. If, however, they are stored with other flammable liquids, that is, class 3PGI, II or III, then they are to be treated as class 3PGIII, because under these circumstances they may contribute fuel to a fire.

Identify Hazardous Materials and the Type of Hazard
Determine the quantities of all *classes* of hazardous materials listed in the development application and, if the proposed development is part of an existing plant, any adjacent inventory. Ensure that both the main class and any subsidiary classes obtained from the Dangerous Goods Code or from information provided in the Material Safety Data Sheets are noted so that all relevant hazards are considered.

Group and Total by Class, Activity and Location
Where several hazardous materials of the same class are kept on site in the same general location, *total the quantities by class and activity* (that is, total all quantities of each class stored in bulk then separately total the quantities of each class stored in packages/containers).

Table 1 provides the basis for the grouping. *Do not add underground and above ground storage together* — these must always be treated separately. If the proposed development is an extension to an existing site, include those inventories on the existing site that are adjacent to the proposed development.

If more than one subsidiary class of a given class is stored in the same general area, assume the total of that class present is the most hazardous subsidiary class present (for example, if 3PGI and 3PGII are present, add these together and assume the equivalent total is of 3PGI).

Measure the distance of the material group to the nearest boundary. The distance is to be measured from those materials in the group located closest to the boundary.

Compare with Screening Threshold
Provided on the following page and in the foldout section is a series of tables and graphs which can be used to determine screening thresholds — quantities below which it can be assumed there is unlikely to be a significant off-site risk.

Table 1 indicates the graph and/or table to be used. Hazardous materials with more than one possible classification should be considered under each classification.

TABLE 1. SCREENING METHOD TO BE USED

Class	Method to Use/Minimum Quantity
1.1	**Use graph at figure 5 if greater than 100 kg**
1.2–1.3	**table 3**
2.1 — pressurised (excluding LPG)	**figure 6 graph if greater than 5 m^3**
2.1 — liquefied (pressure) (excluding LPG)	**figure 7 graph if greater than 1 m^3**
LPG (above ground)	**table 3**
LPG (underground)	**table 3**
2.3	**table 3**
3PGI	**figure 8 graph if greater than 1 m^3**
3PGII	**figure 9 graph if greater than 2 m^3**
3PGIII	**figure 9 graph if greater than 2 m^3**
4	**table 3**
5	**table 3**
6	**table 3**
7	**table 3**
8	**table 3**

Note: *Classes 1.4, 1.5, 1.6, 2.2, 7 and 9 are excluded from the risk screening. Classes used are those referred to in the Dangerous Goods Code and are explained in appendix 6.*

If table 1 indicates that a graph is to be used:
If the quantity is below the minimum quantity in table 1, then it is not potentially hazardous and there is no need to use the graph.

Using the appropriate graph, plot the group total quantity against the distance from the nearest boundary. If the point lies below the screening threshold line, the proposed development is potentially hazardous.

For class 3 materials only, if storage is *underground*, the capacity of the tank should be divided by five prior to assessing it against the screening threshold.

If table 1 indicates that table 3 is to be used:
If the quantity is in excess of the quantity listed in table 3, the development is potentially hazardous.

Repeat this procedure until all hazardous materials have been assessed.

Consider Transportation Issues
The proposed development may be potentially hazardous if the number of generated traffic movements (for significant quantities of hazardous materials entering or leaving the site) are above the annual or weekly cumulative vehicle movements shown in table 2.

If the proposal is found to be potentially hazardous with respect to transportation, a route evaluation study should be completed in accordance with the route selection guidelines prepared by the Department of Planning.

TABLE 2. TRANSPORTATION SCREENING THRESHOLDS

	Vehicle Movements			**Minimum quantity* per load (tonnes)**	
	Cumulative		Peak		
Class	Annual	*or*	Weekly	Bulk	Packages
1	*see* note		*see* note	*see* note	
2.1	>500		>30	2	5
2.3	>100		>6	1	2
3PGI	>500		>30	1	1
3PGII	>750		>45	3	10
3PGIII	>1000		>60	10	no limit
4.1	>200		>12	1	2
4.2	>100		>3	2	5
4.3	>200		>12	5	10
5	>500		>30	2	5
6.1	all		all	1	3
6.2	*see* note		*see* note	*see* note	
7	*see* note		*see* note	*see* note	
8	>500		>30	2	5
9	>1000		>60	no limit	

Note: *Where proposals include materials of class 1, 6.2 or 7, the Department of Planning should be contacted for advice. Classes used are those referred to in the Dangerous Goods Code and are explained in appendix 6.*
** If quantities are below this level, the potential risk is unlikely to be significant unless there are a large number of traffic movements.*

Determine Whether SEPP 33 Applies
If any of the above tests result in a screening threshold being exceeded, the proposed development should be considered potentially hazardous and SEPP 33 will apply. In such cases, a preliminary hazard analysis (PHA) is required to be submitted with the development application. The PHA should be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 — Guidelines for Hazard Analysis.* An outline of the preparation and assessment of a PHA is given in appendix 4.

Appendices

APPENDIX 1 — CHECKLIST OF INFORMATION REQUIRED TO USE THE RISK SCREENING METHOD

Date/Reference number: .....

Proposal: .....

.....

.....

Site: .....

.....

Information to be provided to the consent authority prior to lodgement of development application.

The applicant is required to indicate:

- ☐ all hazardous substances involved in the proposed development —
  include raw materials, intermediates, and products
- ☐ dangerous goods classifications (including all subsidiary classes) for all dangerous goods held on site
- ☐ quantities of hazardous substances involved in the proposed development
- ☐ if developing an existing site, all existing hazardous substances and their quantities
- ☐ types of activities the hazardous substances are involved in (storage, processing, etc.)
- ☐ distance from the boundary for each hazardous substance
- ☐ annual number of deliveries of hazardous substances to and from the facility
- ☐ site layout plan showing proposed development and any existing development on site
- ☐ are any dangerous goods licences required? If so, for which substances
- ☐ are any EPA licences required? If so, which ones.

Summary comments .....

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Recommendations .....

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APPENDIX 2 — HOW TO IDENTIFY POTENTIALLY HAZARDOUS INDUSTRY

Provided below is an explanation of the risk screening method outlined on pages 19–22 of the main document.

Introduction

Potential risk typically depends on five main factors:

- the properties of the substance(s) being handled or stored;
- the conditions of storage or use;
- the quantity involved;
- the location with respect to the site boundary;
- the surrounding land use.

The procedure for considering whether a proposed development is potentially hazardous using the risk screening method is outlined in figure 4 (*see* foldout p. 21). It primarily considers the first four of the above factors.

Risk screening is based on an estimate of the consequences of fire, explosion or toxic release from material(s) being handled. It takes into account information from the proponent on the properties of the material(s), quantity, type of storage or use, and location. A series of graphs and tables are provided to assist in this estimation.

Conservative assumptions are used throughout to simplify the assessment process. For this reason, the results from an evaluation should not be used beyond the purpose of these guidelines. In particular, as risk levels are indicative only, they should not be used as a basis for withholding development consent. Development consent would need to be refused on hazards grounds only where the subsequent risk assessment was unable to demonstrate that there was no significant risk.

While the concept of potential hazard within SEPP 33 covers risks to the biophysical environment as well as to the public, the approach contained in this section only applies to atypical risks to the public, since assessment of possible risk to the biophysical environment is a complex issue not readily lending itself to a screening procedure.

Examples are included throughout this section to help in understanding and applying the procedure. A fully worked example is contained in appendix 7.

Appendix 1 contains a check list of information that the consent authority should obtain from the proponent in order to assess whether or not the proposed development is potentially hazardous. The assessment requires classifying substances in accordance with the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (Dangerous Goods Code). The classification is summarised in appendix 6. If SEPP 33 does apply, the development application should be accompanied by a preliminary hazard analysis (PHA).

HOW TO DETERMINE IF A PROPOSED FACILITY IS POTENTIALLY HAZARDOUS

The first step is to determine the type and quantity of hazardous materials present and how they are used or stored on site. Once this information has been collated, quantities of materials of similar risk and activity are grouped and totalled. A graph and/or table is then used to determine whether the quantities represent a potential hazard and thus require further assessment. Table 1 (p. 21) indicates which graph and/or table is to be used to consider a particular class. These steps in the procedure are outlined in *figure 4* (*see* foldout p. 21) and are detailed below.

Collate Information

The proponent should provide the following information:

- a list of all the hazardous materials used in the proposed development and the quantity of each present. This should include all hazardous materials relating to the development which are stored on site, including any raw materials, intermediates and products. The proponent should also indicate if the proposed development is an addition or modification to an existing operation. If it is, the proponent should list all hazardous materials on the site which are in proximity to the proposed development;
- dangerous goods classification for each material;
- the mode of storage used (bulk or packages/containers) and the maximum quantity stored or held on site;

Example 1. How to Read the Australian Dangerous Goods Code
The following is a selection of four substances from the Code.

Each page of the Code is headed by a series of column numbers. The meaning of each number is shown here.

Anhydrous ammonia should be treated as a class 2.3 — toxic gas and a class 8 — corrosive substance.

If the site contains anhydrous hydrazine the proposed development should assess this as class 3PGI — flammable liquid, class 6.1 (a) — poisonous (toxic) substance and class 8 — corrosive substances.

Brake fluid, is classed as a flammable liquid with a packaging group of II or III. Packaging group II as described in the Dangerous Goods Code is the more hazardous of the two. Therefore the more conservative approach would be to assume that brake fluid is a class 3PGII.

Methyl formate is classed as a flammable liquid packaging group I.

1	2	3	4	5*	6*	7
UN Number	Correct Shipping Name	Class	Subsidiary Risk	Hazchem Code	Emergency Guide	Packaging Group
1005	AMMONIA, ANHYDROUS, LIQUEFIED or AMMONIA SOLUTIONS, relative density less than 0.880 at 15°C in water, with more than 50% ammonia	2.3	8	2PE	2B3	
2029	HYDRAZINE, ANHYDROUS or HYDRAZINE, AQUEOUS SOLUTIONS with more than 64% hydrazine, by mass	3 8	6.1(a)	2PE	3A5	I
1118	BRAKE FLUID, hydraulic	3		3[Y]	3A1	II or III
1243	METHYL FORMATE	3		3YE	3A3	I

Note: * *For the purposes of SEPP 33 columns 5 and 6 are not relevant.*
The Dangerous Goods Code is summarised in appendix 6.

- the distance of the stored material from the site boundary for any of the materials in dangerous goods classes 1.1, 2.1 and 3;
  Note: *Where liquids are contained in a bunded area, distance should be measured from the bund wall rather than from the tank. For materials stored in underground tanks, the distance from the above ground filling/dispensing point is measured.*
- the average number of annual and weekly road movements of hazardous material to and from the facility, and the typical quantity in each load.

In collating information the following additional considerations apply:

- LPG as defined in Australian Standard *AS1596 — LP Gas Storage and Handling* may be a combination of propane, butane, propylene and/or butylene. Though a member of dangerous goods class 2.1, is treated separately for screening purposes and should not be grouped with the other class 2.1 flammable gases.
  Note: *LPG automotive retail outlets fall within SEPP 33 but procedures for dealing with them are not covered in these guidelines. Consent authorities are referred to the NSW Department of Planning publication* Hazardous Industry Locational Guidelines No 1 — Liquefied Petroleum Gas Automotive Retail Outlets.
- If class C1 and/or class C2 are present on site and stored in a separate bund (or within a storage area where they are the only flammable liquid present), they are not considered to be potentially hazardous. If, however, they are stored with other flammable liquids (that is, class 3PGI, II or III) then they are to be treated as class 3PGIII — because under these circumstances they may contribute fuel to a fire.

Identify Hazardous Materials and the Type of Hazard
Determine the quantities of all classes of hazardous materials listed in the development application and, if the proposed development is part of an existing plant, any adjacent inventory. Ensure that both the main class and any subsidiary classes obtained from the Dangerous Goods Code or from information provided in the Material Safety Data Sheets are noted so that all relevant hazards are considered.

Example 2. Identify the Type of Hazard
DoP Chemicals has submitted a development application in which one of the chemicals to be held on-site is 5 m^3 hydrazine.

From the Dangerous Goods Code, as detailed in example 1, hydrazine has the following dangerous goods classification:

hydrazine	3PGI	6.1(a)	8

Hydrazine is classified as a flammable liquid with packaging group I (class 3PGI), a toxic substance (class 6.1(a)) and a corrosive substance (class 8). Therefore the possible risk from hydrazine may be manifested in any of these three ways. In order to account for this in the risk screening method the consent authority should assume that the development application actually contains the following for 5 m^3 hydrazine:

5 m^3 class 3PGI
5 m^3 class 6.1(a)
5 m^3 class 8

In this example a risk could arise out of either flammability, toxicity or corrosiveness, depending on the location.

Group and Total by Class, Activity and Location
Where several hazardous materials of the same class are kept on site in the same general location, *total the quantities by class and activity* (that is, total all quantities of each class stored in bulk then separately total the quantities of each class stored in packages/containers).

Table 1 (p. 21) provided the basis for the grouping. *Do not add underground and above ground storage together* — these must always be treated separately. If the proposed development is an extension to an existing site, include those inventories on the existing site that are adjacent to the proposed development.

If more than one subsidiary class of a given class is stored in the same general area, assume the total of that class present is the most hazardous subclass present (for example, if 3PGI and 3PGII are present, add these together and assume the equivalent total is of 3PGI).

Measure the distance of the material group to the nearest boundary. The distance is to be measured from those materials in the group located closest to the boundary.

Example 3. Group and Total by Class
The full development application for DoP Chemicals actually contains the following materials:

Quantity	Material	Classifications			
Above ground and stored in the same general area:					
5 m^3	hydrazine		3PGI	6.1(a)	8
5 m^3	anhydrous ammonia	2.3			8
10 m^3	methyl formate		3PGI		
4.5 m^3	LPG	2.1			
and stored below ground:					
50 m^3	LPG	2.1			

The class 3 materials are all 3PGI, the most highly flammable subclass. The LPG storages can not be added together as one facility is located above ground, the other underground. This leads to the following grouping:

Classification	Quantity
2.1 LPG	4.5 m^3 (above ground)
2.1 LPG	50 m^3 (underground)
2.3	5 m^3
3PGI	15 m^3
6.1(a)	5 m^3
8	10 m^3

Compare with Screening Threshold
The series of tables and graphs provided on page 21 and in the foldout are used to determine screening thresholds — quantities below which it can be assumed there is unlikely to be a significant off-site risk.

Table 1 indicates the graph and/or table to be used. The table is based on the dangerous goods classification assigned to each material. As noted in the previous step, hazardous materials with more than one possible classification should be considered under each classification.

For materials where the effect of distance is not clearly defined (for example class 8 corrosives) the screening threshold quantity is included in a table. For those materials which have a predominant fire and/or explosive risk, graphs indicating quantity versus distance relationships are used to calculate the threshold.

If table 1 indicates that a graph is to be used:
If the quantity is below the minimum quantity in table 1, then the amount is unlikely to represent a significant risk; and therefore is not potentially hazardous.

Using the appropriate graph, plot the group total quantity against the distance from the nearest boundary. If the point lies below the screening threshold line, the proposed development is potentially hazardous.

For class 3 materials only, if storage is *underground,* the capacity of the tank should be divided by five prior to assessing against the screening threshold. This adjustment takes into account the generally lower fire and explosion risk of flammable liquids posed by underground installations.

If table 1 indicates that table 3 is to be used:
Using table 3, if the quantity is in excess of the quantity listed in the table, the proposal is potentially hazardous.

Repeat this procedure until all hazardous materials have been assessed.

In using the screening method some classes of dangerous goods are excluded from the risk screening. The classes, and the reason for their exclusion are:

Class 1.4–1.6 — are explosives defined as having no significant hazard in storage, as any effects are largely contained within the packages. Their manufacture is designated development as defined in schedule 3 of the Environmental Planning and Assessment Regulation 1994.
Class 2.2 — are nonflammable, nontoxic gases and are not considered to be potentially hazardous with respect to off-site risk.
Class 7 — covers radioactive substances which are adequately covered by national regulations and guidelines. The consent authority may wish to require details of compliance.
Class 9 — are miscellaneous dangerous goods, which pose little threat to people or property. They may be substances which pose an environmental hazard, and the consent authority should consider whether or not a potential for environmental harm exists.

Example 4. Compare with Screening Threshold
The DoP Chemicals development application (from the previous example), contained the following classifications located in the same general area at a minimum of 20 m from the site boundary. From table 1 the following information is obtained:

Classification	Quantity	Table 1 refers to
2.1 LPG (above ground)	4.5 m^3	table 3
2.1 LPG (underground)	50 m^3	table 3
2.3	5 m^3	table 3
3PGI	15 m^3	figure 8 (as greater than 1 m^3)
6.1(a)	5 m^3	table 3
8	10 m^3	table 3

Class 2.1 LPG (above ground):
The development application indicates that the proposal involves 4.5 m^3 of LPG stored above ground. From table 3, if there is less than a total of 16 m^3 stored above ground, the proposal *is not potentially hazardous.*

Class 2.1 LPG (underground):
The development application indicates that the proposal involves 50 m^3 of LPG stored underground. From table 3, if there is less than 64 m^3 stored underground or mounded, the proposal *is not potentially hazardous.*

Class 2.3:
The development application indicates that the proposal involves 5 m^3 of class 2.3. From table 3, above 20 m^3 of 'other' class 2.3 material is potentially hazardous. Therefore this *is not potentially hazardous.*

Class 3PGI:
The development application indicates that the proposal involves 15 m^3 of class 3PGI. From figure 8 (*see* foldout), as there was more than 1 m^3 on site, the 'screening distance' for 15 m^3 was determined to be approximately 12 m from the boundary. The development application indicates that the storage area is a minimum of 20 m from the site boundary. Therefore this *is not potentially hazardous.*

Class 6.1(a):
The development application indicates that the proposal involves 5 m^3 of class 6.1(a). From table 3, above 1 m^3 is considered potentially hazardous. Therefore this *is potentially hazardous.*

Class 8:
The development application indicates that the proposal involves 10 m^3 of corrosive materials (class 8). From the Dangerous Goods Code, as this was a subsidiary risk for both materials, assume conservatively the most severe case (therefore assume class 8PGI). From table 3, above 5 m^3 is considered potentially hazardous. Therefore this *is potentially hazardous.*

Therefore DoP Chemicals *are potentially hazardous* with respect to toxicity (class 6.1(a)) and corrosiveness (class 8)).

Consider Transportation Issues
The proposed development may also be potentially hazardous if the number of generated traffic movements for significant quantities of hazardous materials entering or leaving the site is above the cumulative annual or peak weekly vehicle movements in table 2 (p. 21).

If the proposed development is found to be potentially hazardous with respect to transportation, a route evaluation study should be completed in accordance with the route selection guidelines prepared by the Department of Planning.

Determine Whether SEPP 33 Applies
If any of the above tests results in a screening threshold being exceeded, the proposed development should be considered potentially hazardous and SEPP 33 will apply.

In such cases, a preliminary hazard analysis (PHA) is required to be submitted with the development application. The PHA should be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 — Guidelines for Hazard Analysis.* An outline of the preparation and assessment of a PHA is given in appendix 4.

It should be noted that the screening procedure is conservative and should not lead to the conclusion that the development is hazardous. Rather, it indicates there may be significant *potential* for harm, so, further analysis of the risk is required (as provided in the PHA).

APPENDIX 3 — PUBLICATIONS BY THE DEPARTMENT OF PLANNING WHICH ARE RELEVANT TO SEPP 33

Clause 13(a) of SEPP 33 requires the consent authority to consider 'current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development'. Pursuant to this clause, the following publications should be considered in the consent authority's determination:

HIPAP No. 1 — Industry Emergency Planning Guidelines

This document provides guidance in preparing emergency plans for premises which process, store or transport hazardous substances. All such activities must have such plans, and they should be tailored to the specific needs and hazards managed at each premise.

HIPAP No. 2 — Fire Safety Study Guidelines

This document provides advice on carrying out fire safety studies, which are required as part of an overall safety assessment.

HIPAP No. 3 — Environmental Risk Impact Assessment Guidelines

HIPAP No. 3 outlines the safety planning requirements for industrial development including land use safety requirements for siting hazardous industry. It also describes the studies required as part of the department's seven stage approval process, which was described earlier in these guidelines.

HIPAP No. 4 — Risk Criteria for Land Use Safety Planning

HIPAP No. 4 will be particularly relevant to consent authorities when assessing the level of risk of proposed developments, and in determining their significance. The guidelines suggest risk assessment criteria to consider when assessing the land use safety implications of potentially hazardous development.

HIPAP No. 5 — Hazard Audit Guidelines

Hazard audits are an integral part of the environmental risk assessment process for potentially hazardous development. They are required to be carried out routinely for the life of a development. HIPAP No. 5 provides guidance on the nature and content of hazard audits and the requirements for audit reports.

HIPAP No. 6 — Guidelines for Hazard Analysis

HIPAP No. 6 will be particularly useful in preparing and assessing the preliminary hazard analysis required to support development applications for potentially hazardous industry. HIPAP No. 6 provides information on hazard analysis principles and methods.

HIPAP No. 7 — Construction Safety Study Guidelines

Construction safety is an important element of the department's seven stage approval process. HIPAP No. 7 has two main purposes:

- to ensure that risk levels during the construction period of an affected development are acceptable; and
- to ensure the plant operates safely during commissioning and throughout its life.

HIPAP No. 8 — HAZOP Guidelines

A Hazard and Operability study (HAZOP) identifies potential hazards and operational problems in terms of plant design and human error by the comprehensive and systematic scrutiny of the facility. The procedure uses flow/process and instrumentation diagrams (P&IDs) and in most cases 'guide words'.

HIPAP No. 9 — Safety Management

Assurance of the ongoing safety of process plants and storage facilities is provided through a well documented and thoroughly implemented Safety Management System (SMS). HIPAP No. 9 describes safety management principles and their implementation in formal SMS.

LPG Automotive Retail Outlets — Locational Guidelines

This document specifies locational criteria and technical controls for automotive LPG retail outlets. The locational criteria are determined in reference to nearby land uses, and the quantity of LPG involved.

Contaminated Land — Planning Guidelines for Contaminated Land

These guidelines alert consent authorities to the need to consider the possibility of contamination of land in its planning and development control process, and provides guidance to the consent authority.

APPENDIX 4 — GUIDANCE ON THE PRELIMINARY HAZARD ANALYSIS

This appendix provides guidance on the scope of a preliminary hazard analysis (PHA), and how it should be assessed.

Preliminary Hazard Analysis

Clause 12 of SEPP 33 specifies for development applications for 'potentially hazardous industry' a PHA must be prepared. The PHA should be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 — Guidelines for Hazard Analysis* published by the Department of Planning.

The PHA serves two main functions:

- to identify potential hazards involved in the proposal, and to ensure that the proposed safeguards are adequate;
- to demonstrate that the proposal will not impose an unacceptable level of risk.

The risk assessment can be done either quantitatively and/or qualitatively, depending upon the circumstances of the proposal.

Matters for Inclusion in a PHA

The PHA should include all relevant information to enable the consent authority to decide if the risk associated with a proposal is significant (and is hence 'hazardous industry' or whether it can be controlled to a level that it is not significant.

It should be noted that two papers in the department's Hazardous Industry Planning Advisory Paper (HIPAP) series are particularly relevant to the principles of hazard analysis. They are *HIPAP No. 4 — Risk Criteria for Landuse Safety Planning* and *HIPAP No. 6 — Guidelines for Hazard Analysis.* Consent authorities should become familiar with these publications.

Types of Risk Assessment

It is important to note that not all PHAs involve, or should involve, a full risk quantification. The level and extent of qualitative or quantitative assessment will depend on the nature and scale of the development proposal and, as importantly, its proposed location in relation to surrounding land uses and natural environment. It would be expected that a significant number of PHAs could be done either qualitatively, or semi-quantitatively.

Use of Qualitative PHAs

It is considered that a qualitative PHA may be sufficient in the following circumstances:

- where the materials are relatively non-hazardous (for example, corrosive substances, and some classes of flammables);
- where the quantities of materials used are relatively small;
- where there are no worst case major consequences;
- where the technical and management safeguards are self-evident and readily implemented;
- where the surrounding land uses are relatively non-sensitive.

In these cases, it may be appropriate for a PHA to be relatively simple. Such a PHA should:

- identify the types and quantities of all dangerous goods to be used;
- describe the storage/processing activities that will involve these materials;
- identify accident scenarios and hazardous incidents that could occur. (In some cases, it would also be appropriate to include consequence distances for hazardous events. A PHA that includes this type of information is known as a semi-quantitative PHA);
- consider surrounding land uses (identify any nearby uses of particular sensitivity);
- identify safeguards that can be adopted (including technical, operational and organisational), and assess their adequacy (having regard to the above matters).

A sound qualitative PHA which addresses the above matters could, for some proposals, provide the consent authority with sufficient information to form a judgement about the level of risk involved in a particular proposal.

Use of Quantitative PHAs

For other proposals it is more appropriate to carry out a quantitative PHA. A quantitative PHA would include all the matters addressed in a qualitative PHA. In addition, it should proceed to a full risk quantification, by analysing the consequences of hazardous incidents, their frequencies, and calculating risk contours.

A quantified risk assessment would be desirable in the following circumstances:

- when the materials used are relatively hazardous and/or used in relatively large quantities;
- when there are likely to be serious potential consequences from a hazardous event, even after obvious safeguards have been put in place.

For those proposals requiring a quantified risk assessment or QRA, the PHA must demonstrate that the risk level conforms to the criteria established in HIPAP No. 4. However, it should be noted that HIPAP No. 4 does provide for some flexibility in deciding whether a certain risk level is acceptable.

The PHA should be prepared in accordance with the HIPAP No. 6. (This paper, and other relevant circulars and guidelines are outlined in appendix 3). Risk levels included in HIPAP No. 4 assume the PHA methodology described in HIPAP No. 6. For this reason *both papers should be used together* in the preparation and the assessment of the PHA. If the methodology differs, full justification and description and assumptions should be stated.

The risk assessment process detailed in HIPAP No. 6 also includes reference to societal risk. Societal risk is generally only a relevant consideration for major development proposals in which potential consequences could affect large numbers of people. Where appropriate, a consideration of societal risk should be included in the PHA.

Assessing a PHA

The objective of assessing a PHA is to come to an informed decision as to whether (or not) a particular proposal involves a significant risk. As indicated in SEPP 33 a 'hazardous industry' is one which imposes a significant risk when all safeguards are included. A 'potentially hazardous industry' is one which, when all safeguards are operating, imposes a risk level which is not significant. Information concerning the principles of hazard analysis is provided in the series of HIPAPs prepared by the department.

Listed below are matters that the consent authority could consider when assessing PHAs. It should be noted the following points apply only to PHAs for relatively minor proposals. They may not apply to PHAs prepared for complex proposals (perhaps most designated developments). They are intended, mainly, to apply to developments involving relatively minor quantities of dangerous goods and which, because of SEPP 33, now require the preparation of a qualitative or perhaps semi-quantitative PHA.

In assessing these types of PHA, it is recommended that the consent authority consider the following:

- How far the proposed distance to the site boundary falls below the required separation distance. The difference between the required and intended separation distance represents the distance that the consequences of a hazardous incident may impinge on adjoining land. The greater this distance, then the more safeguards are usually needed to control the consequences to these exposed areas.
- The nature of the hazards involved, and how predictable they are. There are three main types of hazards: fire, explosion and toxic release. Generally the consequences from fire and explosion hazards are more predictable than hazards involving toxic substances.
- The safeguards (both technical and management) available to mitigate the hazards, and if such safeguards are reasonably evident, do they appear likely to work? For example, bunding is all that is generally required to mitigate the hazards involved in storage of corrosive substances. Fire protection or prevention systems (such as an adequate fire fighting system, or the construction of a fire wall) are generally effective in reducing the consequence distance (and hence the hazard caused by fire).
- The surrounding land uses, and whether an incident will result in significant consequences, or whether there is anything that might require special precautions or further hazard mitigation measures.
- Whether there are existing codes, standards or guidelines that apply, and whether the proposal complies with these standards.
- Whether conditions of consent can be included to mitigate the hazard potential of a proposal.

For some of the proposals affected by SEPP 33, it is possible that after considering the above matters, the consent authority could reasonably form a view as to whether the proposal can proceed on hazard grounds.

Assessment of Risk to the Biophysical Environment

The procedure for identifying a potentially hazardous industry outlined on pages 19–22 does *not* include an assessment of its risk to the biophysical environment. The consent authority should judge the level of potential risk to the environment based on such factors as:

- the particular qualities of the environment (for example, the likely presence of rare or threatened species, water courses, etc.);
- the nature of the hazards that the environment will be exposed to, and the likely consequences should such hazards occur;
- the likely response of the environment to such a hazard, and the reversibility of any hazardous impact.

In the case of the biophysical environment, fire and explosion hazards are of less relevance when compared to the effect of these hazards on people. Acute and chronic toxicity impacts are those which must be chiefly addressed. There is, generally, less concern over the effect on individual plants or animals; the main concern is instead with whole systems or populations.

The assessment of the ultimate effects from toxic releases into the natural ecosystem is difficult, particularly in the case of atypical accidental releases. Data is limited and factors influencing the outcome are variable and complex. There may be no immediate loss of plants or animals or other observable effects from single releases, but there may be cumulative and synergistic effects. It is therefore appropriate to ensure that a thorough review of available data is undertaken and the best available information is used in the assessment process.

In many cases, it may not be possible or practicable to establish the final impact of any particular release. It may be appropriate in such circumstances to assess the likelihood of identified concentrations occurring in the air, water or soil. Where such intermediate criteria are used, the assessment should err on the conservative side.

Because of the complexities of such assessment and case-to-case differences, it is inappropriate to specify hard and fast criteria. The acceptability of the risk will ultimately depend on the value of the potentially affected area or system to the local community and wider society. For example, where a rare or endangered ecosystem or species is involved, a much lower risk level is necessary than where the potentially exposed area or system is degraded and/or common.

Relevant factors in the capacity of a population or ecosystem to recover include the extent of other stresses and the possibility of re-population of affected areas.

In assessing the significance of any risk to the environment, it should also be borne in mind that in most cases where there is an environmental risk, there will also be an individual risk (to people). As higher importance is attached to public risk, and because the risk criteria are in any case conservative, it is likely that, if the risk to people is found to be acceptable, then the environmental risk could also be tolerated.

For those rare cases in which the environmental risk is judged to be more important than public risk (as in areas isolated from people or areas of environmental significance) the consent authority may wish to obtain more information about the significance of the environment. It would also be necessary to consider safeguards that could be applied to reduce risk. For example, environmental risk due to a leak of corrosive liquids could be significantly reduced by appropriate bunding.

For environmentally sensitive areas, the suggested criteria for assessing risk relates to the potential effects of an accidental emission on the long-term viability of the ecosystem or any species within it. The criteria may be expressed as follows:

- Industrial developments should not be sited in proximity to sensitive natural environments where *the effects (consequences) of the more likely accidental emissions may threaten the long-term viability of the ecosystem or any species within it.*
- Industrial developments should not be sited in proximity to sensitive natural environments where *the likelihood (probability) of impacts which may threaten the long-term viability of the ecosystem (or any species within it) is not substantially lower than the background level of threat to the ecosystem.*

APPENDIX 5 — THE STANDARD HAZARD CONDITIONS

In considering conditions of consent for a proposal for a potentially hazardous industry, a consent authority may wish to consider imposing the standard hazard conditions recommended by the Department of Planning. These conditions address the ongoing safety of a development, and require potential hazards to be specifically addressed.

Care should be exercised in applying these conditions. For major proposals, it may be appropriate to apply all the standard conditions. For other proposals, only some of the conditions may be relevant. As an example, it would not be appropriate to require a fire safety study in cases where there are essentially no flammable materials used as part of the development.

It would be expected that the conditions which would be applied most frequently would be the emergency plan, a safety management system and a hazard audit. Several of the publications prepared by the Department of Planning are relevant and are referred to in appendix 3.

Condition 1

At least one month prior to the commencement of construction of the proposed development except for preliminary works that will not be affected by study results, or within such further period as the Director of Planning or her nominee (the Director) may agree, the applicant shall prepare and submit for the approval of the Director the following studies.

(a) Construction Safety Study

A construction safety study, incorporating comprehensive identification of potentially hazardous incidents that could arise during the demolition, construction and commissioning of the proposed development and setting out organisational and operational safeguards proposed to be implemented to address those incidents (including changes to the construction program). Further, the applicant shall comply with the reasonable requirements of the Director in respect of the implementation of any measures, arising from the subject approval, during the construction phase. The plan, should be prepared in accordance with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 7 — Construction Safety Study Guidelines.*

(b) Hazard and Operability Study

A Hazard and Operability study (HAZOP) for the proposed development to be carried out at the applicant's expense and chaired by an independent qualified person approved by the Director.

(c) Final Hazard Analysis

A hazard analysis and risk assessment of the detailed design layout of the proposed development as well as the existing development to be prepared at the applicant's expense. The analysis should be prepared in accordance with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 6 — Guidelines for Hazard Analysis.*

(d) Fire Safety Study

A fire safety study for the proposed development and all existing operations on site. This study shall cover all aspects detailed in the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 2 — Fire Safety Study Guidelines.* This study shall also be submitted for the approval of the New South Wales Fire Brigades.

(e) Transport of Hazardous Materials

Arrangements covering the transport of hazardous materials including details of routes to be used for the movement of trucks. Further, the applicant shall enter into contractual arrangements with contract drivers to require the use of routes determined under this condition except where necessary for local deliveries.

Condition 2

At least two months prior to the commencement of operation of the proposed development, or within such further period as the Director may agree, the applicant shall prepare and submit for the approval of the Director.

(a) Emergency Plan

A comprehensive emergency plan and detailed emergency procedures in respect of the existing and proposed development. This plan should include detailed procedures for the safety of people in areas outside the development. The plan should be accordance with the Department of Planning's *Hazardous Industry Planning*

Advisory Paper No. 1 — Industry Emergency Planning Guidelines.

(b) Safety Management System
A comprehensive safety management system, covering all operations on-site and associated transport activities involving hazardous materials. The system should clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to procedures. Records must be kept on-site and should be available for inspection by the Director upon request. Further details of the requirements for the safety management system are available from the Department of Planning.

Condition 3
Incident Reporting
Within 24 hours of any incident or near incident with actual or potential significant off-site impacts on people or the biophysical environment, a report shall be supplied to the Department of Planning outlining the basic facts. A further detailed report shall be prepared and submitted following investigations of the causes and identification of necessary additional preventative measures.

Condition 4
Hazard Audit
Twelve months after the commencement of operations of the proposed development or within such further period as the Director may agree, the applicant shall carry out a comprehensive hazard audit of the proposed development and submit a report on the audit to the Director. This audit is to be carried out at the applicant's expense by a duly qualified independent person or team to be approved by the Director. Further audits will be required every three years or as may be requested by the Director. Hazard audits shall be carried out in accordance with the Department of Planning's *Hazardous Industry Planning Advisory Paper No. 5 — Hazard Audit Guidelines.*

Condition 5
Compliance
The applicant shall comply with all the reasonable requirements of the Director in respect of the implementation of any measures arising from the approvals given in respect to the above conditions, within such time as the Director may agree. Such compliance shall be prior to the commencement of operations of the proposed development and shall bring to the Director's or nominee's notice, those matters which the applicant considers may require further investigation. Further, that upon the receipt of the Director's or nominee's reasonable instructions, the applicant shall proceed to implement those instructions to the satisfaction of the Director or nominee within such time as the Director or nominee may approve.

APPENDIX 6 — SUMMARY OF THE DANGEROUS GOODS CODE CLASSIFICATIONS

Dangerous goods are classified into nine classes according to the predominant type of risk involved. A full description of these classifications is contained within the *Australian Code for the Transportation of Dangerous Goods by Road and Rail* (Dangerous Goods Code) and the relevant Australian Standards. The following list gives a brief summary of these classifications:

CLASS 1 — EXPLOSIVES

Substances or articles used to produce explosions or pyrotechnic effects.
Note: explosives do not have packaging groups.

***Class 1.1* —** substances and articles which have a mass explosion hazard (that is one which effects virtually the entire load almost instantly).
Examples: blasting explosives, TNT, ANFO, Powergel, Tovex, HE primers and boosters and gun (black) powder.

***Class 1.2* —** substances and articles which have a projection hazard but not a mass explosion hazard.
Examples: bombs, grenades, rockets and some pyrotechnics.

Class 1.3 — substances and articles which have a fire hazard (either with a minor blast hazard or a minor projection hazard, or both; but not a mass explosion hazard). This class comprises substances and articles which:

- give rise to considerable radiant heat, or
- burn one after another, producing minor blast or projection effects; or both.

Examples: propellant powder, some display fireworks, shotgun and rifle powder (when so classified).

***Class 1.4* —** substances or articles which present no significant hazard. The class comprises those which present only a small hazard in the event of ignition. The effects are largely confined to the package, and no projection of fragments of appreciable size or range is to be expected.
Examples: toy fireworks, safety cartridges.

***Class 1.5* —** very insensitive substances which have a mass explosion hazard.
Examples: proprietary explosives such as Powergel Gold.

Class 1.6 — extremely insensitive articles which do not have a mass explosion hazard. This class comprises articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

CLASS 2 — GASES: COMPRESSED, LIQUEFIED OR DISSOLVED UNDER PRESSURE

This class comprises compressed gases, liquefied gases, gases in solution, refrigerated liquefied gases, mixtures of one or more gases with one or more vapours or substances of other classes, articles charged with a gas; tellurium hexafluroide and aerosols of capacity greater than 1 litre.
Note: class 2 gases do not have packaging groups.

Class 2.1 — flammable gases (gases which ignite on contact with an ignition source).
Examples: acetylene, hydrogen, LPG.

***Class 2.2* —** nonflammable, non toxic gases: gases which are neither flammable nor poisonous whether compressed or cryogenic.
Examples: oxygen, nitrogen, medical air.

***Class 2.3* —** poisonous gases: gases liable to cause death or serious injury if inhaled.
Examples: ammonia, chlorine.

CLASS 3 — FLAMMABLE LIQUIDS

Class 3 comprises liquids capable of being ignited and burning. The old classes of 3.1 and 3.2 no longer apply. Packaging groups (PG) have replaced these old sub-classifications.

***PGI* —** highly flammable liquids: boiling point below 35° C.
Examples: diethyl ether, carbon disulfide.

***PGII* —** flammable liquids: flashpoint of less than 23° C and boiling point above 35° C.
Examples: petrol, acetone, methylated spirits.

***PGIII* —** liquids: flashpoint above 23° C but not exceeding 61° C and boiling point greater than 35° C.
Examples: kerosene, mineral turpentine.

Combustible liquids are any liquid other than a flammable liquid that has a flashpoint, and that has a fire point less than its boiling point. These materials are not classified within the Dangerous Goods Code. The information regarding these materials must be obtained from the proponent.

C1 — combustible liquids: flashpoint above 61° C but not exceeding 150° C.
Example: diesel.

C2 — combustible liquids: flashpoint above 150° C.
Examples: lubricating oil, peanut oil.

CLASS 4 — FLAMMABLE SOLIDS SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION AND SUBSTANCES WHICH IN CONTACT WITH WATER EMIT FLAMMABLE GASES
Class 4.1 — flammable solids, substances which are readily combustible and may catch fire through friction, self-reactive and related substances and desensitized explosives.
Examples: nitrocellulose, red phosphorus, matches.

Class 4.2 — substances which spontaneously combust, that is, pyrophoric and self-heating substances.
Examples: aluminium alkyls, white phosphorus.

Class 4.3 — substances which in contact with water emit flammable gases: certain substances in contact with water may emit flammable gases that can form explosive mixtures in air, or emit toxic fumes.
Examples: sodium, calcium carbide, aluminium phosphide.

CLASS 5— OXIDISING AGENTS AND ORGANIC PEROXIDES
Class 5.1 — oxidising agents: substances which, although not necessarily combustible, may readily liberate oxygen, or be the cause of oxidation processes. As a result they may start a fire in other materials or stimulate the combustion of other materials thereby increasing the violence of a fire.
Examples: ammonium nitrate, hydrogen peroxide, calcium hypochlorite (dry pool chlorine).

Class 5.2 — organic peroxides: substances which are combustible, act as oxidising substances and may be liable to explosive decomposition. In either liquid or solid form they may react dangerously with other substances. Most will burn rapidly and are sensitive to impact or friction.
Examples: dibenzoyl peroxides, cumyl hydroperoxide.

CLASS 6 — POISONOUS (TOXIC) AND INFECTIOUS SUBSTANCES
Class 6.1(a) — poisonous (toxic) substances of packaging groups (PG) I or II: substances which are liable to cause death or serious injury to human health if swallowed, inhaled or by skin contact.
Examples: sodium cyanide, some lead compounds.

Class 6.1(b) — harmful (toxic) substances of packaging group (PG) III: substances which are harmful to human health if swallowed, inhaled or by skin contact.
Example: low toxicity pesticides.

Class 6.2 — infectious substances: substances containing viable micro-organisms including a bacterium, virus, rickettsia, parasite, fungus, or a recombinant, hybrid or mutant, that are known or reasonably believed to cause disease in humans or animals.
Example: vaccines, pathology specimens.

CLASS 7 — RADIOACTIVE SUBSTANCES
Class 7 — materials or combinations of materials which spontaneously emit radiation.
Examples: uranium hexafluoride, radioisotopes.

CLASS 8 — CORROSIVE SUBSTANCES
Class 8 — substances which by chemical action, will cause severe damage when in contact with living tissue, or in the case of leakage will materially damage or even destroy other goods.
Examples: hydrochloric acid, sodium hydroxide.

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS
Class 9 — substances and articles which present dangers not covered by other classes.
Examples: aerosols, polyester beads.

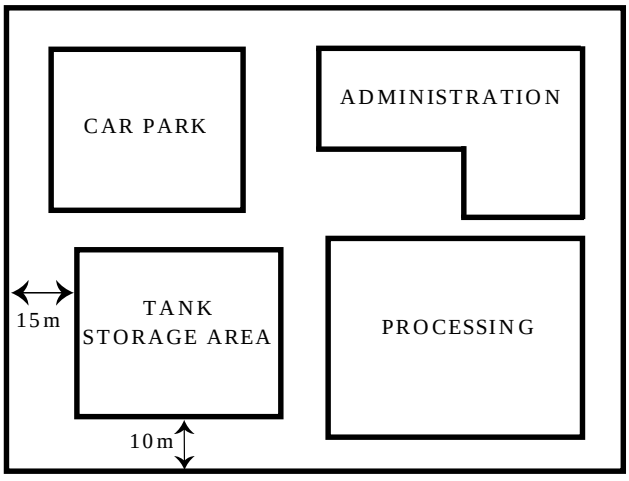
APPENDIX 7 — IS IT POTENTIALLY HAZARDOUS? A WORKED EXAMPLE

This example demonstrates the use of the risk screening method as set out on pages 19–22. The chemicals used, the plant layout and storage conditions are not indicative of industry in New South Wales. There has been no check of the storage distances or conditions against relevant Australian Standards or dangerous goods regulations.

DoP Chemicals has submitted a development application for a tank farm with four above ground tanks, as indicated in the figure below.

The tanks consist of the following materials:

Tank	Quantity	Material
Tank 1	20 m^3	diesel
Tank 2	50 m^3	ethanol (100%)
Tank 3	4 m^3	methylchlorosilane (pressurised)
Tank 4	5 m^3	corn starch



Transport information for the materials held on site is as follows:

	average number loads per week	load size (tonnes)
diesel	1	10
ethanol	5	5
methylchlorosilane	0.5	20
cornstarch	1	9

DOES SEPP 33 APPLY TO THIS PROPOSED DEVELOPMENT?

Fixed site

Using the Dangerous Goods Code the following information is obtained regarding the site:

Tank	Quantity	Material	Classification
1	20 m^3	diesel	C1 *(note 1)*
2	50 m^3	ethanol	3PGII or 3PGIII *(note 2)*
3	4 m^3	methylchlorosilane	2.3, 2.1, 8 *(note 3)*
4	5 m^3	corn starch	no dangerous goods classification *(note 4)*

Note 1: Diesel is not listed in the Dangerous Goods Code, in fact no combustible liquids are contained within the code. Consent authorities in requesting Material Safety Data Sheets (MSDS) will be able to ascertain the flash point of liquids. From the MSDS for diesel, the flashpoint is 65° C. From the summary contained within appendix 6, combustible liquid classification C1 has a flashpoint above 61° C but not exceeding 150° C. Therefore diesel is a class C1 flammable liquid.

Note 2: Ethanol is classified as a class 3PGII or a class 3PGIII depending on the quantity of water in solution. As this example contains 100% ethanol, the classification is 3PGII.

Note 3: Tank 3 contains methylchlorosilane which has the following classifications: 2.3 (toxic gas), 2.1 (flammable gas) and 8 (corrosive). For the purposes of the screening method this material will need to be assessed under each of these classifications.

Note 4: Cornstarch has no classification, so for the risk screening method this material is ignored.

The risk screening method will therefore be performed on the following classifications:

Classification	Quantity
2.1	4 m^3
2.3	4 m^3
3PGII	50 m^3
C1	20 m^3
8	4 m^3

As previously explained (p. 20), if class C1 and/or class C2 are present on site and stored with other flammable liquids, they are to be treated as class 3PGIII. Therefore, in this example they would normally be treated as class 3PGIII. However, it is also stated that if more than one subsidiary classification of a given class is stored in the same general area, assume the total of that class present is the most hazardous subclass present. In this case class 3PGII.

Therefore the materials should be assessed as:

Classification	Quantity
2.1	4 m^3
2.3	4 m^3
3PGII	70 m^3
8	4 m^3

Using table 1 (p. 21) the following procedure is to be used for the proposed development:

Classification	Quantity	Table 1 refers to
2.1 (pressurised)	4 m^3	figure 6
2.3	4 m^3	table 3
3PGII	70 m^3	figure 9
8	4 m^3	table 3

The following is an extract of the relevant sections of table 3 (*see* foldout p. 21):

Extract — Table 3. Screening Threshold Quantities

Class	Threshold Quantity	Description
2.3	10 m^3	other poisonous gases (measured at metric standard conditions of 101.3 kPa at 15°C)
8	5 tonnes/5 m^3	packaging group I
	25 tonnes/25 m^3	packaging group II
	50 tonnes/50 m^3	packaging group III

Note: The classes used are those of the Dangerous Goods Code and are explained in appendix 6.

Figures 10 and 11 utilise copies of the two graphs required (figures 6 and 9).

FIGURE 10. AN EXAMPLE USING FIGURE 6 CLASS 2.1 FLAMMABLE GASES PRESSURISED (EXCLUDING LPG)

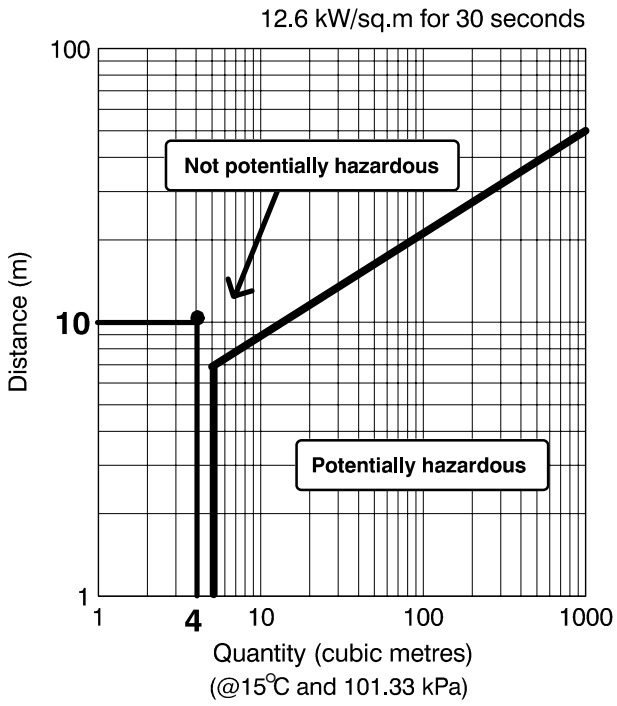
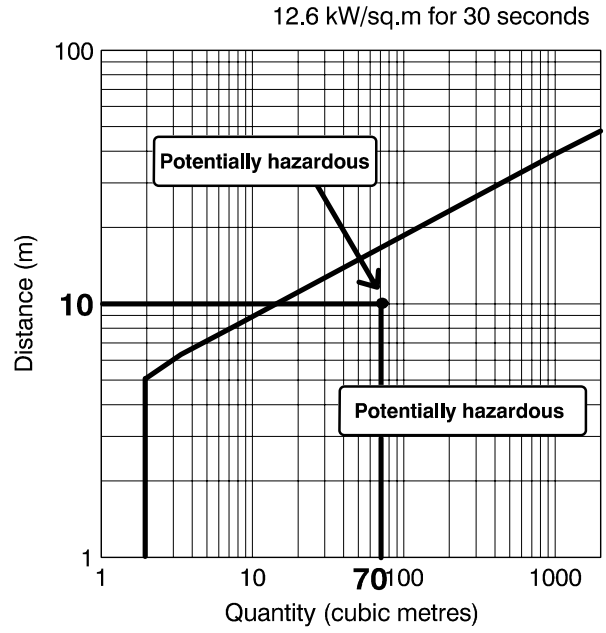


FIGURE 11. AN EXAMPLE USING FIGURE 9 CLASS 3PGII AND PGIII FLAMMABLE LIQUIDS



Based on the information contained within the development application the following conclusions can be drawn:

Class 2.1 (flammable gases):
There will be 4 m^3 of flammable gas stored under pressure at a distance of 10 m from the boundary. From figure 6, the 'screening distance' for 4 m^3 of class 2.1 does not trigger SEPP 33. The class 2.1 component of the proposal is *not potentially hazardous.*

Class 2.3 (toxic gases):
There will be 4 m^3 of toxic gas. From table 3, above 10 m^3 is potentially hazardous. Therefore, this component is also *not potentially hazardous.*

Class 3PGII (flammable liquids):
For the purpose of screening, it has been established that the equivalent of 70 m^3 of class 3PGII is stored a distance of 10 m from the nearest boundary. From figure 9, the 'screening distance' for 70 m^3 is 17 m. As the nearest boundary to the storage area is only 10 m the proposal *is potentially hazardous* on the basis of flammability.

Class 8 (corrosives):
There will be 4 m^3 of corrosive material. As the material is corrosive as a subsidiary risk, the packaging group was not given in the Dangerous Goods Code. A conservative assumption would be to assume the most corrosive subclass, that is, packaging group I. The 'screening threshold' for packaging group I is 5 m^3 therefore this component is *not potentially hazardous.*

The analysis indicates that the proposal is potentially hazardous as the class 3PGII were found to exceed the screening threshold. Therefore ***the site is potentially hazardous*** and ***SEPP 33 applies.*** Because the screening indicated fire as having the greatest potential for off-site harm, the preliminary hazard analysis and its assessment should particularly address this issue.

Transport Issues
Table 2 (p. 21) contains the transportation screening thresholds for use in ascertaining whether a transport route study is required as part of the preliminary hazard analysis.

The following is an extract of the relevant sections from table 2:

Extract — Table 2. Transportation Screening Thresholds

	Vehicle Movements			Minimum quantity per load (tonnes)	
Class	Cumulative Annual	or	Peak Weekly	Bulk	Packages
2.1	>500		>30	2	5
2.3	>100		>6	1	2
3PGII	>750		>45	3	10
3PGIII	>1000		>60	10	no limit
8	>500		>30	2	5

Class 2.1:
There will be approximately 0.5 deliveries per week (approximately 26 per year) of class 2.1, each delivery containing approximately 20 tonnes. From table 2, the delivery frequency is not sufficient to exceed the threshold and therefore does not trigger a transport study.

Class 2.3:
Again, there will be approximately 0.5 deliveries per week (approximately 26 per year) with each delivery containing 20 tonnes. From table 2, the quantity per delivery for class 2.3 is not sufficient to exceed the threshold and therefore does not trigger a transport study.

Class 3PGII:
For class 3PGII, there will be approximately one delivery per week (approximately 52 per year) of 10 tonnes. Whilst the quantity per load is enough to warrant consideration of the average weekly vehicle movements, one movement per week is not enough to trigger a transport study as part of the preliminary hazard analysis.

The analysis indicates therefore, that the proposed development ***is potentially hazardous and a preliminary hazard analysis is required under SEPP 33.*** From a screening of the transportation expected from the proposal, the ***PHA does not require a transport study.***

APPENDIX 8 — THE POLICY

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

STATE ENVIRONMENTAL PLANNING POLICY NO. 33 —
HAZARDOUS AND OFFENSIVE DEVELOPMENT

HIS Excellency the Governor, with the advice of the Executive Council, and in pursuance of section 39 of the Environmental Planning and Assessment Act 1979, has been pleased to make the State environmental planning policy set forth hereunder in accordance with the recommendation made by the Minister for Planning. (89–2754)

Minister for Planning.
Sydney, 11 March, 1992.

PART 1 — PRELIMINARY

Citation

1. This Policy may be cited as State Environmental Planning Policy No. 33 — Hazardous and Offensive Development.

Aims, objectives etc.

2. This Policy aims:

(a) to amend the definitions of hazardous and offensive industries where used in environmental planning instruments; and

(b) to render ineffective a provision of any environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Policy; and

(c) to require development consent for hazardous or offensive development proposed to be carried out in the Western Division; and

(d) to ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account; and

(e) to ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact; and

(f) to require the advertising of applications to carry out any such development.

Definitions of 'potentially hazardous industry' and 'potentially offensive industry'

3. In this Policy:

'potentially hazardous industry' means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment, and includes a hazardous industry and a hazardous storage establishment;

'potentially offensive industry' means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.

Other definitions

4. (1) In this Policy:

'hazardous industry' means a development for the purposes of an industry which, when the development is in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the

development from existing or likely future development on other land in the locality), would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment;

'hazardous storage establishment' means any establishment where goods, materials or products are stored which, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the establishment from existing or likely future development on the other land in the locality), would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment;

'offensive industry' means a development for the purposes of an industry which, when the development is in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the development from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land in the locality;

'offensive storage establishment' means any establishment where goods, materials or products are stored which, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the establishment from existing or likely future development on other land in the locality), would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land in the locality;

'the Act' means the Environmental Planning and Assessment Act 1979.

(2) A reference in this Policy to circulars or guidelines published by the Department of Planning is a reference to circulars or guidelines so published and available for inspection by the public on request at the offices of the Department.

Land to which Policy applies

5. This Policy applies to the State.

Relationship with other environmental planning instruments

6. In the event of an inconsistency between this Policy and another environmental planning instrument (whether made before, on or after the date on which this Policy takes effect) this Policy prevails to the extent of the inconsistency.

PART 2 — HAZARDOUS OR OFFENSIVE DEVELOPMENT

New definitions of 'hazardous industry' and 'offensive industry'

7. In an environmental planning instrument (whether made before, on, or after the date on which this Policy takes effect) a reference to:

(a) an offensive or hazardous industry, however defined in that instrument, is to be taken to be a reference to development for the purposes of an industry (as defined in that instrument) that is a hazardous industry or an offensive industry within the meaning of clause 4; and

(b) an offensive industry, however defined in that instrument, is to be taken to be a reference to development for the purposes of an industry (as defined in that instrument) that is an offensive industry within the meaning of clause 4; and

(c) a hazardous industry, however defined in that instrument, is to be taken to be a reference to development for the purposes of an industry (as defined in that instrument) that is a hazardous industry within the meaning of clause 4.

Consideration of Departmental guidelines

8. In determining whether a development is:

(a) a hazardous storage establishment, hazardous industry or other potentially hazardous industry; or

(b) an offensive storage establishment, offensive industry or other potentially offensive industry,

consideration must be given to current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development.

Storage facilities
9. A provision of an environmental planning instrument which prohibits the carrying out of development for the purposes of, or purposes which include, a storage facility (however the storage facility may be described or referred to in the instrument) on the ground that the storage facility is offensive or hazardous has no effect unless the storage facility is a hazardous storage establishment or an offensive storage establishment as defined in this Policy.

Western Division — development consent required
10. (1) This clause applies to development defined in clause 3 or 4 which is carried out or proposed to be carried out on land within the Western Division.

(2) A person may not carry out such development except with the consent of:
(a) the council of the area, if the land concerned is within a local government area; or
(b) the Western Lands Commissioner, in any other case.

(3) Nothing in this clause authorises the carrying out of such development if the development is not otherwise permitted.

(4) In this clause, 'Western Division' has the same meaning as in the Western Lands Act 1901.

PART 3 — POTENTIALLY HAZARDOUS OR POTENTIALLY OFFENSIVE DEVELOPMENT
Development to which Part 3 applies
11. (1) This Part applies to:

(a) development for the purposes of a potentially hazardous industry and
(b) development for the purposes of a potentially offensive industry; and
(c) development notified, for the purposes of this Part, by the Director in the Gazette as being a potentially hazardous or potentially offensive development.

(2) This Part does not apply to development the subject of a development application made before the date on which this Policy takes effect.

Preparation of preliminary hazard analysis
12. A person who proposes to make a development application to carry out development for the purposes of a potentially hazardous industry must prepare (or cause to be prepared) a preliminary hazard analysis in accordance with the current circulars or guidelines published by the Department of Planning and submit the analysis with the development application.

Matters for consideration by consent authorities
13. In determining an application to carry out development to which this Part applies, the consent authority must consider (in addition to any other matters specified in the Act or in an environmental planning instrument applying to the development):

(a) current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development; and

(b) whether any public authority should be consulted concerning any environmental and land use safety requirements with which the development should comply; and

(c) in the case of development for the purpose of a potentially hazardous industry — a preliminary hazard analysis prepared by or on behalf of the applicant; and

(d) any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application); and

(e) any likely future use of the land surrounding the development.

Advertising of application
14. Pursuant to section 30(4) of the Act, the provisions of sections 84, 85, 86, 87(1) and 90 of the Act apply to and in respect of development to

which this Part applies in the same way as those provisions apply to and in respect of designated development.

NOTE

TABLE OF PROVISIONS

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3. Definitions of ‘potentially hazardous industry’ and ‘potentially offensive industry’
4. Other definitions
5. Land to which Policy applies
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PART 2 — HAZARDOUS OR OFFENSIVE DEVELOPMENT

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8. Consideration of Departmental guidelines
9. Storage facilities
10. Western Division — development consent required

PART 3 — POTENTIALLY HAZARDOUS OR POTENTIALLY OFFENSIVE DEVELOPMENT

11. Development to which Part 3 applies
12. Preparation of preliminary hazard analysis
13. Matters for consideration by consent authorities
14. Advertising of applications

TABLE 3. SCREENING THRESHOLD QUANTITIES

Class	Screening Threshold	Description
1.2	5 tonnes	or are located within 100 m of a residential area
1.3	10 tonnes	or are located within 100 m of a residential area
2.1	(LPG only — not including automotive retail outlets)	
	16 m^3	if stored above ground
	64 m^3	if stored underground or mounded
2.3	5 tonnes	anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale
	1 tonne	chlorine and sulfur dioxide stored as liquefied gas in containers <100 kg
	2.5 tonnes	chlorine and sulphur dioxide stored as liquified gas in containers >100 kg
	100 kg	liquefied gas kept in or on premises
	10 m^3	other poisonous gases (measured at metric standard conditions of 101.3 kPa at 15° C)
4.1	5 tonnes	
4.2	1 tonne	
4.3	1 tonne	
5.1	25 tonnes	ammonium nitrate — high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary
	5 tonnes	ammonium nitrate — elsewhere
	2.5 tonnes	dry pool chlorine — if at a dedicated pool supply shop, in containers <30 kg
	1 tonne	dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg
	5 tonnes	any other class 5.1
5.2	10 tonnes/10 m^3	
6.1(a)	0.5 tonnes/0.5 m^3	
6.1(b)	2.5 tonnes/2.5 m^3	
6.2	0.5 tonnes/0.5 m^3	includes clinical waste
7	all	should demonstrate compliance with Australian codes
8	5 tonnes/5 m^3	packaging group I
	25 tonnes/25 m^3	packaging group II
	50 tonnes/50 m^3	packaging group III

Note: *The classes used are those referred to in the Dangerous Goods Code and are explained in appendix 6.*

FIGURE 5. CLASS 1.1 EXPLOSIVES

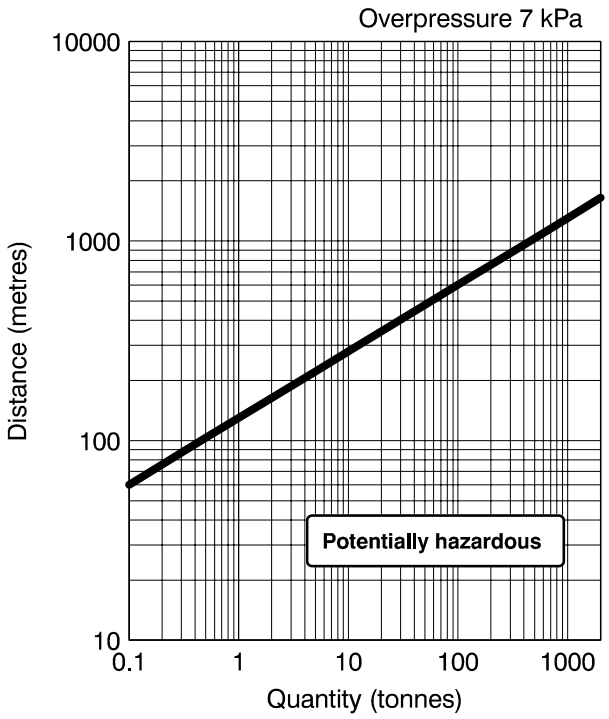


FIGURE 8. CLASS 3PGI FLAMMABLE LIQUIDS

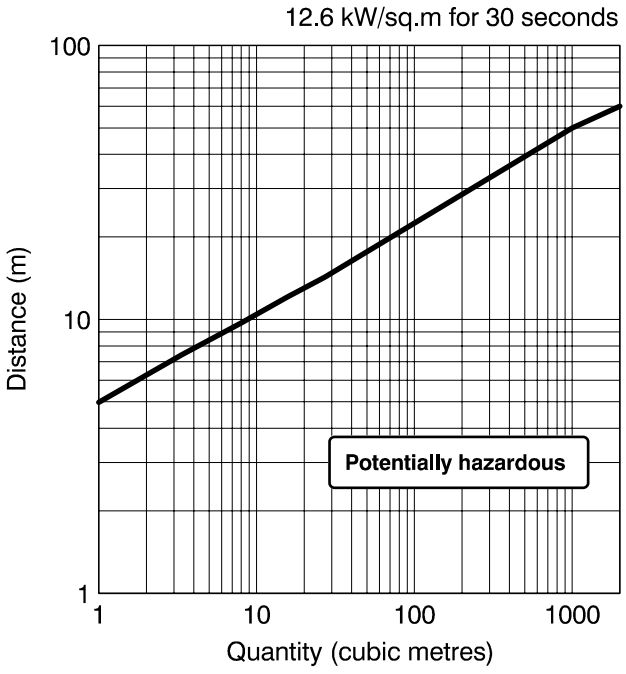


FIGURE 6. CLASS 2.1 FLAMMABLE GASES PRESSURISED (EXCLUDING LPG)

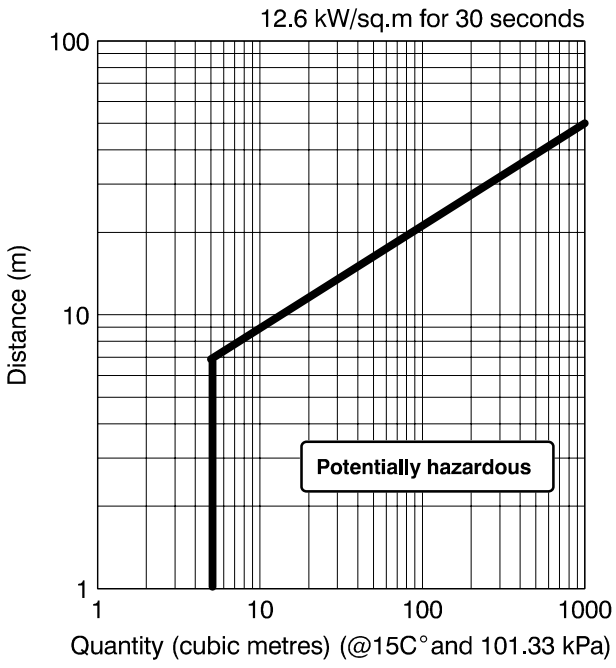


FIGURE 7. CLASS 2.1 FLAMMABLE GASES LIQUEFIED UNDER PRESSURE (EXCLUDING LPG)

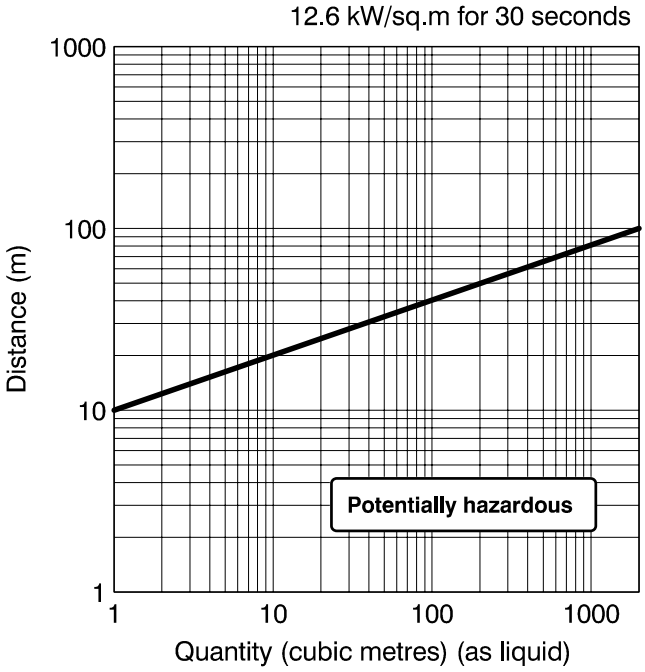


FIGURE 9. CLASS 3PGII AND PGIII FLAMMABLE LIQUIDS

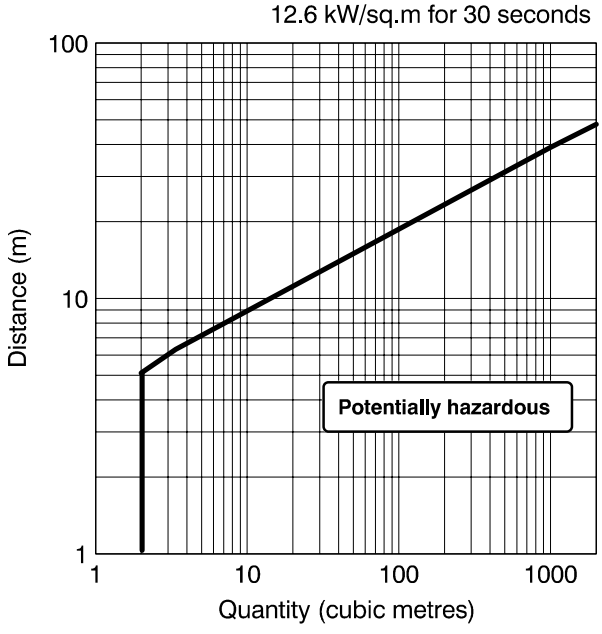
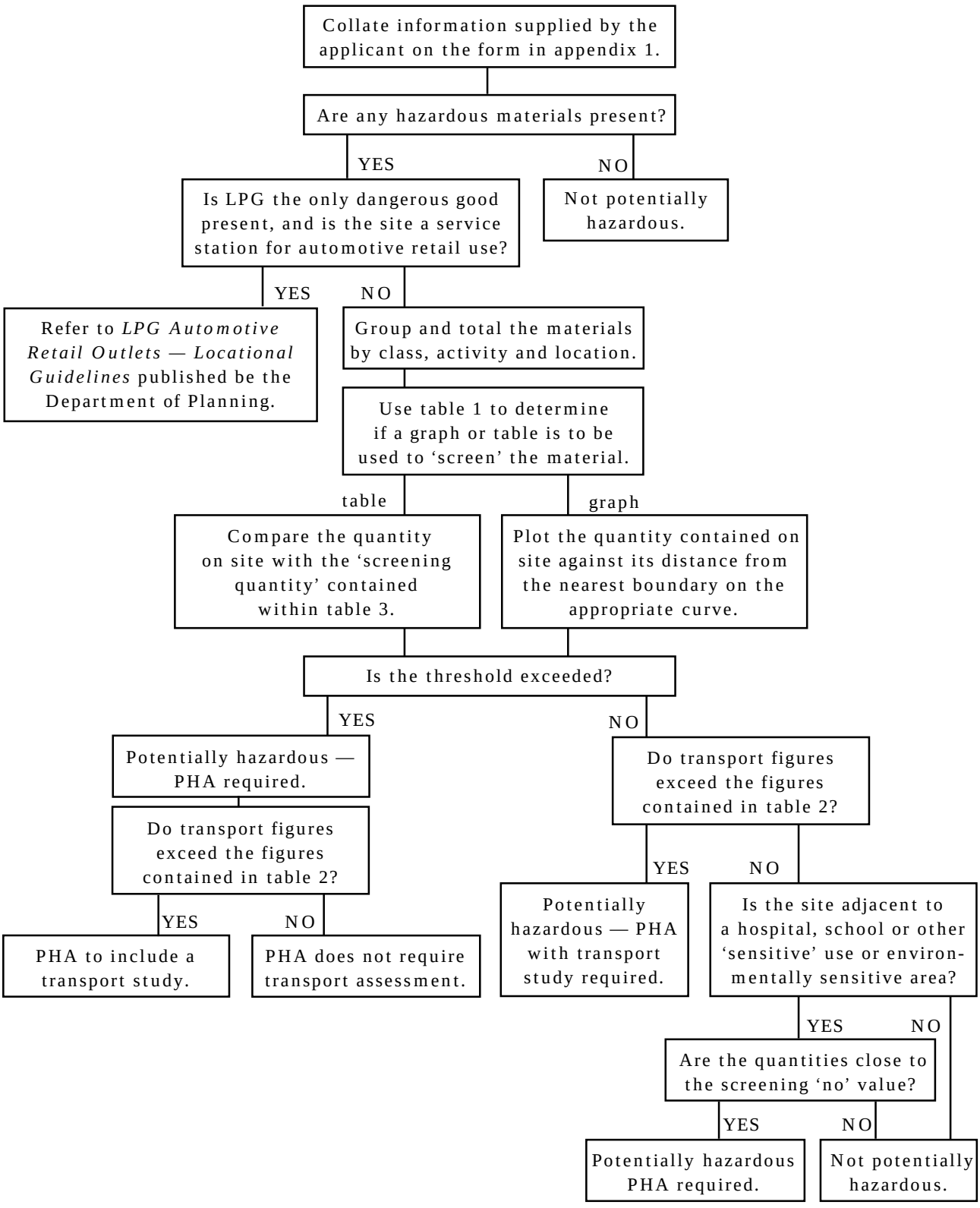


FIGURE 4. RISK SCREENING PROCEDURE



APPENDIX D

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL REPORT

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL SITE ASSESSMENT

These notes have been prepared by Aargus (Australia) Pty Ltd and its associated companies using guidelines prepared by ASFE (The Association) of Engineering Firms Practising in the Geo-sciences. They are offered to help you in the interpretation of your Environmental Site Assessment (ESA) reports.

REASONS FOR CONDUCTING AN ESA

ESA's are typically, though not exclusively, carried out in the following circumstances:

- as pre-acquisition assessments, on behalf of either purchaser or vender, when a property is to be sold;
- as pre-development assessments, when a property or area of land is to be redeveloped or have its use changed for example, from a factory to a residential subdivision;
- as pre-development assessments of greenfield sites, to establish "baseline" conditions and assess environmental, geological and hydrological constraints to the development of, for example, a landfill; and
- as audits of the environmental effects of an ongoing operation.

Each of these circumstances requires a specific approach to the assessment of soil and groundwater contamination. In all cases however, the objective is to identify and if possible quantify the risks that unrecognised **c**ontamination poses to the proposed activity. Such risks may be both financial, for example, cleanup costs or limitations on site use, and physical, for example, health risks to site users or the public.

THE LIMITATIONS OF AN ESA

Although the information provided by an ESA could reduce exposure to such risks, no ESA, however, diligently carried out can eliminate them. Even a rigorous professional assessment may fail to detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled.

AN ESA REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS

Your environmental report should not be used:

- when the nature of the proposed development is changed, for example, if a residential development is proposed instead of a commercial one;
- when the size or configuration of the proposed development is altered;
- when the location or orientation of the proposed structure is modified;
- when there is a change of ownership
- or for application to an adjacent site.

To help avoid costly problems, refer to your consultant to determine how any factors, which have changed subsequent to the date of the report, may affect its recommendations.

ESA "FINDINGS" ARE PROFESSIONAL ESTIMATES

Site assessment identifies actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists who then render an opinion about overall subsurface conditions, the nature and extent of contamination, its likely impact on the proposed development and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to help minimise its impact. For this reason owners should retain the services of their consultants

through the development stage, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

SUBSURFACE CONDITIONS CAN CHANGE

Natural processes and the activity of man change subsurface conditions. As an ESA report is based on conditions, which existed at the time of subsurface exploration, decisions should not be based on an ESA report whose adequacy may have been affected by time. Speak with the consultant to learn if additional tests are advisable.

ESA SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS

Every study and ESA report is prepared in response to a specific brief to meet the specific needs of specific individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor, or even some other consulting civil engineer. Other persons should not use a report for any purpose, or by the client for a different purpose. No individual other than the client should apply a report even apparently for its intended purpose without first conferring with the consultant. No person should apply a report for any purpose other than that originally contemplated without first conferring with the consultant.

AN ESA REPORT IS SUBJECT TO MISINTERPRETATION

Costly problems can occur when design professionals develop their plans based on misinterpretations of an ESA. To help avoid these problems, the environmental consultant should be retained to work with appropriate design professionals to explain relevant findings and to review the adequacy of their plans and specifications relative to contamination issues.

LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT

Final borehole or test pit logs are developed by environmental scientists, engineers or geologists based upon their interpretation of field logs (assembled by site personnel) and laboratory evaluation of field samples. Only final logs customarily included in our reports. These logs should not under any circumstances be redrawn for inclusion in site remediation or other design drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimise the possibility of contractors misinterpreting the logs during bid preparation. When this occurs, delays, disputes and unanticipated costs are the all-too-frequent result.

To reduce the likelihood of boring log misinterpretation, the complete report must be available to persons or organisations involved in the project, such as contractors, for their use. Those who o not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing all the available information to persons and organisations such as contractors helps prevent costly construction problems and the adversarial attitudes that may aggravate them to disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY

Because an ESA is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in transmittals. These are not exculpatory clauses designed to foist liabilities onto some other party. Rather, they are definitive clauses that identify where your consultant’s responsibilities begin and end. Their use helps all parties involved recognise their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your ESA report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.