# Hazardous Materials
# SEPP 33 Assessment

Byron Shire Central Hospital
Lot 100 DP 1140936
Ewingsdale Road, Ewingsdale

HEALTH SCIENCE ENVIROMENTAL EDUCATION
ENVIRONMENTAL AUDITOR

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# SEPP 33 Assessment

## Byron Shire Central Hospital
## Lot 100 DP 1140936
## Ewingsdale Road, Ewingsdale

Prepared for: Health Infrastructure
Version: FINAL
Date: 1 August 2014
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# Executive Summary

*Tim Fitzroy & Associates* has been engaged by Health Infrastructure to undertake an assessment in accordance with State Environmental Planning Policy No. 33 — Hazardous and Offensive Development (SEPP 33) in relation to hazardous materials associated with the proposed Byron Shire Central Hospital.

SEPP 33 applies to any proposals which fall under the policy's definition of 'potentially hazardous 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 to people, property or the environment. Such activities would be defined as potentially hazardous.

*Applying SEPP 33* guidelines (Department of Planning, 2011) provide a risk screening method to determine whether a proposed development is potentially hazardous and thus affected by SEPP 33.

It is proposed that the following hazardous materials will be stored on site for use in the operation of the proposed hospital:

- a 4,500L LPG (Liquefied Petroleum Gas) storage tank
- 50L of diesel fuel for the diesel fire pumps
- VIE 3,000 vessel of liquid oxygen
- cylinders of medical oxygen gas for backup supply
- cylinders of medical air
- cylinders of medical nitrous oxide
- cylinders of medical carbon dioxide.

The medical gases are excluded from the risk screening and therefore these materials are not considered potentially hazardous with respect to SEPP 33.

The relatively small quantities of LPG and diesel fuel are below screening threshold quantities outlined in the *Applying SEPP 33* guidelines, therefore the quantities are not considered potentially hazardous with respect to SEPP 33.

The number of generated traffic movements associated with delivery of the materials are less than the transportation screening threshold outlined in the *Applying SEPP 33* guidelines. Therefore the transportation of the materials is not considered potentially hazardous.

As hazardous materials associated with the development did not trigger the screening thresholds for quantities of materials nor transportation movements, the development is not considered potentially hazardous and therefore SEPP 33 does not apply.

Nevertheless, the safety management regime for the materials should be based on observance of standard engineering codes and standards.

# 1. Introduction

*Tim Fitzroy & Associates* has been engaged by Health Infrastructure to undertake an assessment in accordance with State Environmental Planning Policy No. 33 — Hazardous and Offensive Development (SEPP 33) in relation to hazardous materials associated with the proposed Byron Shire Central Hospital.

SEPP 33 applies to any proposals which fall under the policy's definition of 'potentially hazardous 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 to people, property or the environment. Such activities would be defined as potentially hazardous.

The aim of SEPP 33 is to ensure that only those proposals which are suitably located, and able to demonstrate that they can be built and operated with an adequate level of safety and pollution control, can proceed.

*Applying SEPP 33* guidelines (Department of Planning, 2011) provide a risk screening method to determine whether a proposed development is potentially hazardous and thus affected by SEPP 33. This risk screening process is described in **Section 2** for the proposed development.

## 1.1 Site Information

The site is located at Lot 100 DP 1140936, Ewingsdale Road, Ewingsdale. The site is approximately 5 km north west of the centre of Byron Bay and approximately 1 km east of the northern interchange with the Pacific Highway. The site adjoins the rural residential area of Ewingsdale, an Essential Energy substation and depot installation and the Holcim concrete batching plant. The area of the proposed hospital grounds is in the order of 6 ha while the actual footprint of the building envelope is approximately 2.5 ha.

A site locality diagram is provided in **Illustration 1.1**.

The site terrain is gently undulating with a small unnamed creek along the eastern boundary of the site. The creek flows in a northerly direction to Simpsons Creek.

A broad representation of land use is found in the locality of the subject site. Land to the north of the subject site comprises dispersed rural settlement, with low-scale cattle grazing being the predominant agricultural use.

The rural residential area of Ewingsdale is located immediately to the south of the subject site, containing approximately 160 dwellings located in lots ranging in size from 2,000 $m^2$ to 5,000 $m^2$. A school is located to the south-east of this rural-residential area.

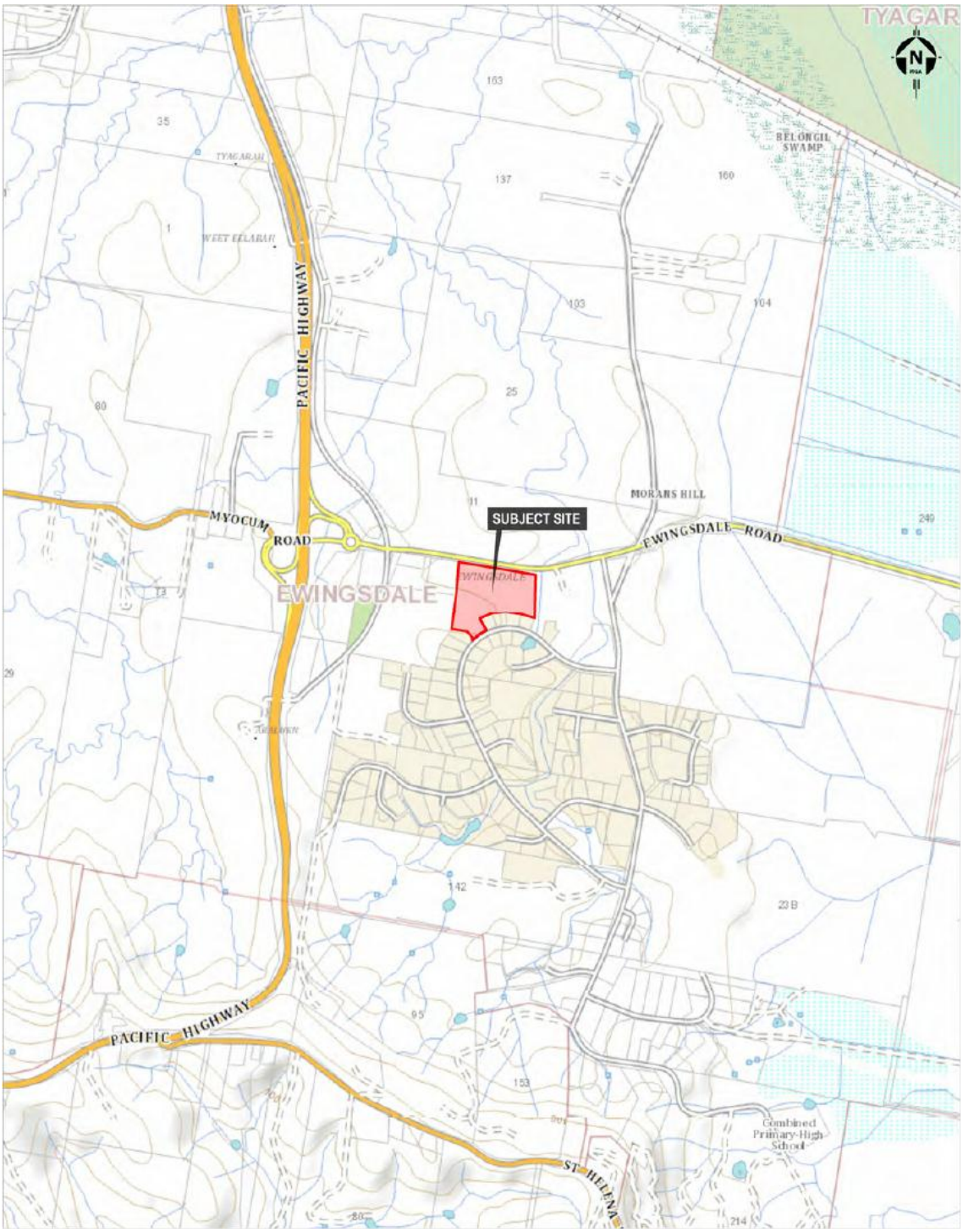



**Illustration 1.1 Site Locality**

## 1.2 Proposal

The proposal involves construction of a hospital including associated roadworks and carparking facilities, water storage facilities and gas storage facilities and other minor associated infrastructure. A site plan of the proposal is shown in **Appendix A**.

## 1.3 Hazardous Materials Associated with the Proposal

It is proposed that the following hazardous materials will be stored on site for use in the operation of the proposed hospital:

- a 4,500L LPG (Liquefied Petroleum Gas) storage tank which on average will distribute approximately 1,200 litres per day to the hospital
- 50L of diesel fuel for the fire pumps to provide 4 hours of pumping
- VIE 3,000 vessel of liquid oxygen (vacuum insulated evaporator vessel with a volume of approximately 2,460m$^3$)
- 2 x packs of 15 cylinders (400nman15) of medical oxygen gas for backup supply
- 4 x G size cylinders of medical air
- 2 x G size cylinders of medical nitrous oxide
- 1 x G size cylinders of medical carbon dioxide

# 2. SEPP 33 Risk Screening

*Applying SEPP 33* guidelines (Department of Planning, 2011) provide a risk screening method to determine whether a proposed development is potentially hazardous and thus affected by SEPP 33. The screening method is based on broad estimates of the possible off-site effects or consequences from hazardous materials present on site. Potential risk typically depends on five main factors:

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

## 2.1 Material Properties

**Table 2.1** summarises the following details of the hazardous materials that will be stored on site for use in the operation of the proposed hospital:

- Quantity of stored material
- Class of material in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (Dangerous Goods Code)
- Packing group. Packing groups are used to indicate the degree of danger associated with the transport of dangerous goods of a given class: Group I relates to substances presenting a high danger; Group II for medium danger; and Group III a low danger. It should be noted that packing groups are not assigned to classes 1, 2 and 7 or to Divisions 5.2, 6.2 or self reactive substances of Division 4.1.

**Table 2.1 Materials Details**

| *Hazardous Material* | *Quantity* | *Class* | *Packing Group* |
|---|---|---|---|
| LPG (liquefied petroleum gas) | 4,500L | 2.1 | n/a |
| Diesel | 50L | 3 | III |
| Liquid oxygen | 2,460m$^3$ | 2.2 | n/a |
| Oxygen – compressed gas | 3,000kg | 2.2 | n/a |
| Medical air | 260kg / 30,000L | 2.2 | n/a |
| Medical nitrous oxide | 190kg / 15,000L | 2.2 | n/a |
| Medical carbon dioxide | 75kg / 7,500L | 2.2 | n/a |

The location of the stored hazardous materials is summarised on **Table 2.2** and shown in the site plan in **Appendix A**.

### Table 2.3 Location of Stored Materials

| *Hazardous Material* | *Class* | *Location* |
|---|---|---|
| LPG | 2.1 | Above-ground / external to buildings. Sited in south-west part of site |
| Diesel | 3 PG III | Above-ground / external to buildings. Sited in south-west part of site at water storage tanks for use of fire pumps |
| Liquid oxygen | 2.2 | Above-ground / external to buildings. Sited near secondary site entrance road |
| Oxygen – compressed gas | 2.2 | Located internally within the lower ground level in the 'Medical Gas Bottled' compound (19m²) as shown on Site Plan in **Appendix A** |
| Medical air | 2.2 | |
| Medical nitrous oxide | 2.2 | |
| Medical carbon dioxide | 2.2 | |

The relevant screening method to be used for each material is based on Table 1 in *Applying SEPP 33* (NSW Department of Planning, 2011) which is duplicated in **Table 2.3** in this report. Based on **Table 2.3** the following screening methods or quantities have been used:

- LPG (Class 2.1) – the method references Table 3 of *Applying SEPP 33* (duplicated in **Table 2.4** in this report), which indicates that the screening threshold for above ground LPG is 10 tonne or 16m$^3$. The quantity associated with the development is only 4,500L or 4.5m$^3$, therefore the threshold is not triggered and the quantity is not considered potentially hazardous
- Diesel (Class 3 PG III) – the method references Figure 9 graph of *Applying SEPP 33* if greater than 5 tonne. The quantity associated with the development is only approximately 50L, therefore the threshold is not triggered and the quantity is not considered potentially hazardous
- Liquid oxygen (Class 2.2) – Table 2.2 notes indicate that Class 2.2 materials are excluded from the risk screening
- Oxygen compressed gas, medical air, medical nitrous oxide, and medical carbon dioxide are also Class 2.2, and therefore excluded from the risk screening.

**Table 2.3 Screening Method to be Used - Applying SEPP 33**

| 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 100 kg |
| 2.1 — liquefied (pressure) (excluding LPG) | Figure 7 graph if greater than 500 kg |
| LPG (above ground) | table 3 |
| LPG (underground) | table 3 |
| 2.3 | table 3 |
| 3PGI | Figure 8 graph if greater than 2 tonne |
| 3PGII | Figure 9 graph if greater than 5 tonne |
| 3PGIII | Figure 9 graph if greater than 5 tonne |
| 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.*

**Source: NSW Department of Planning, 2011**

**Table 2.4 General Screening Threshold Quantities - Applying SEPP 33**

| Class | Screening Threshold | Description |
|---|---|---|
| 1.2 | 5 tonne | or are located within 100 m of a residential area |
| 1.3 | 10 tonne | or are located within 100 m of a residential area |
| 2.1 | (LPG only — not including automotive retail outlets[1]) | |
| | 10 tonne or16 $m^3$ | if stored above ground |
| | 40 tonne or 64 $m^3$ | if stored underground or mounded |

**Source: NSW Department of Planning, 2011**

## 2.2 Transportation of Materials

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) is above the annual or weekly cumulative vehicle movements shown in Table 2 of *Applying SEPP 33* (duplicated in **Table 2.5** in this report).

It is estimated that deliveries to the site for LPG (Class 2.1) will be up to 3 times per week or 156 times per year based on usage estimates of 1,200L per day. This annual figure is significantly less than the threshold shown in Table 2.5, therefore the transportation of this material is not considered potentially hazardous.

The will be negligible deliveries for diesel as this is only required for use of the fire-fighting water booster pumps. Given the threshold for weekly movements is 60, the transportation of this material is not considered potentially hazardous.

It is envisaged that deliveries for medical gases will be no more than 3 times per week or 156 times per year. However, Class 2.2 materials are excluded from the risk screening.

## 2.3 Summary of Risk Screening

The materials associated with the development did not trigger the screening thresholds for quantities nor transportation movements and therefore the development is not considered potentially hazardous and therefore SEPP 33 does not apply.

The safety management regime for the materials is based on observance of standard engineering codes and standards such as:

- AS/NZS 1596:2008, The storage and handling of LP Gas
- AS 4332-2004, The storage and handling of gases in cylinders.
- AS/NZS 4645, Gas distribution networks Series
- AS 4289-1995, Oxygen and acetylene gas reticulation systems.
- AS 2896-1998, Medical gas systems – Installation and testing of non-flammable medical gas pipeline systems.
- AS 1940-2004, The storage and handling of flammable and combustible liquids provides

**Table 2.5 Transportation Screening Thresholds - Applying SEPP 33**

| | Vehicle Movements | | Minimum quantity* per load (tonne) | |
|---|---|---|---|---|
| | 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 7.*

** If quantities are below this level, the potential risk is unlikely to be significant unless the number of traffic movements is high.*

**Source: NSW Department of Planning, 2011**

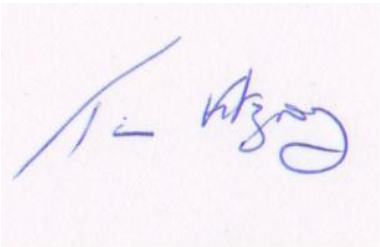
# 3. Conclusions and Recommendations

A risk screening assessment of hazardous materials has been undertaken for the proposed development in accordance with *Applying SEPP 33* guidelines (Department of Planning, 2011).

The hazardous materials associated with the development did not trigger the screening thresholds for quantities of materials nor transportation movements and therefore the development is not considered potentially hazardous and therefore SEPP 33 does not apply.

Nevertheless, the safety management regime for the materials should be based on observance of standard engineering codes and standards.

This report has been prepared by Tim Fitzroy of *Tim Fitzroy & Associates.*



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Environmental Health Scientist

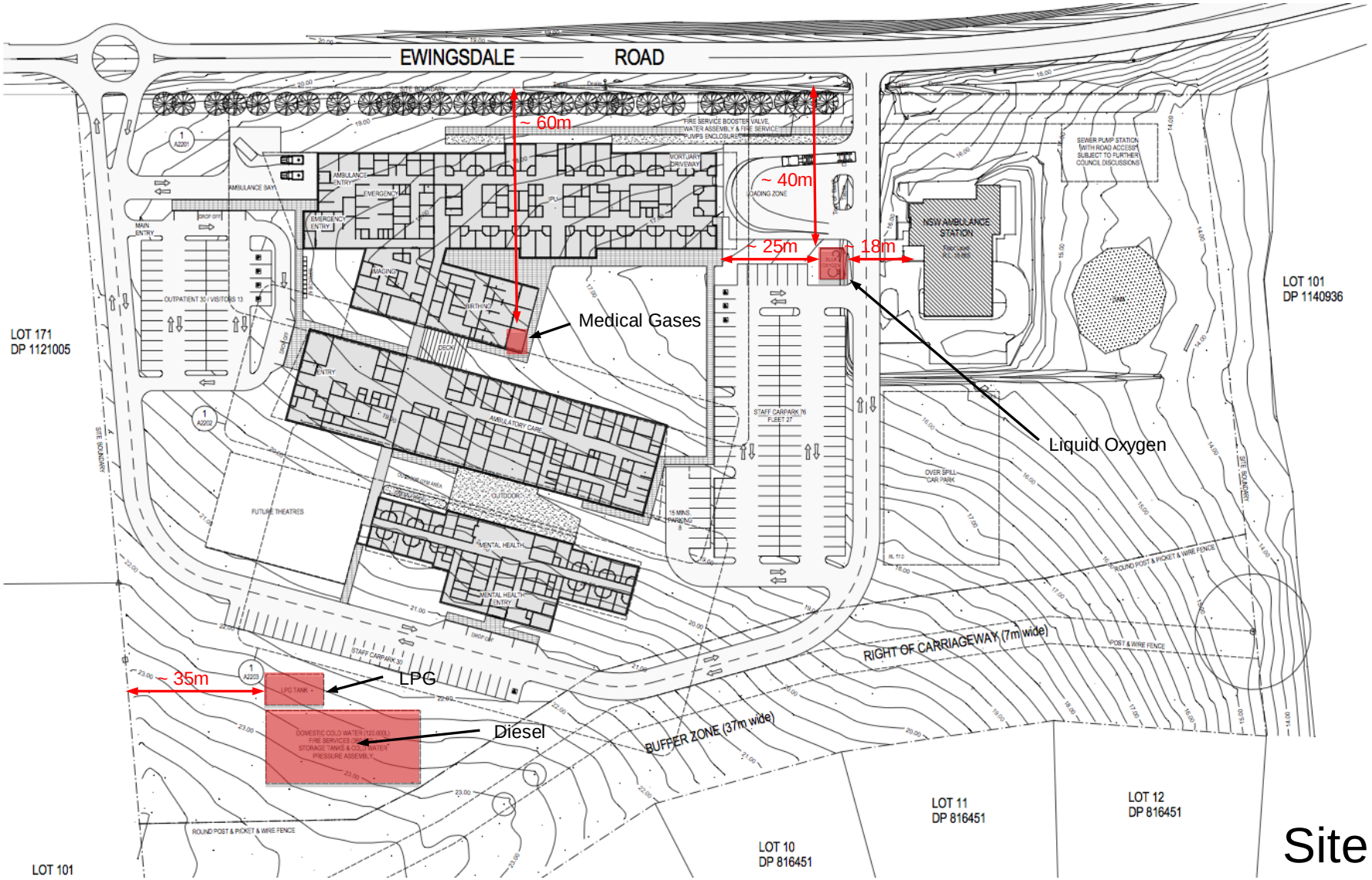
# References

National Transport Commission, 2014. *Australian Dangerous Goods Code*. 2014 Electronic Version of the 7th Edition version 7.3

NSW Department of Planning, 2011. *Applying SEPP 33. Hazardous and Offensive Development Application Guidelines.* January 2011.

# Copyright and Usage

# A Site Plan


EWINGSDALE ROAD
~ 60m
~ 40m
~ 25m
18m
Medical Gases
Liquid Oxygen
LPG
Diesel
~ 35m
RIGHT OF CARRIAGEWAY (7m wide)
BUFFER ZONE (37m wide)
LOT 171
DP 1121005
LOT 101
DP 1140936
LOT 101
LOT 10
DP 816451
LOT 11
DP 816451
LOT 12
DP 816451
NSW AMBULANCE STATION
SEWER PUMP STATION WITH ROAD ACCESS SUBJECT TO FURTHER COUNCIL DISCUSSIONS
FUTURE THEATRES
AMBULATORY CARE
MENTAL HEALTH
STAFF CARPARK 76 FLEET 27
STAFF CARPARK 30
OVER SPILL CAR PARK
ROUND POST & PICKET & WIRE FENCE
POST & WIRE FENCE
SITE BOUNDARY

# Site Plan