Riskcon engineering

State Environmental Planning Policy (Resilience and Hazards)

Lot 1, 295 Cormorant Road, Kooragang

Brown Commercial Builders Pty Limited
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Brown Commercial Builders Pty Limited

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Rev	Date	Remarks	Prepared By	Reviewed By
A	5 March 2025	Draft issue for comment	Renton Parker	Jason Costa
0	6 March 2025	Issued final		

Executive Summary

Background

Brown Commercial Builders Pty Limited (BCB) have been engaged to construct industrial industrial-storage units at 295 Cormorant Road, Kooragang, NSW. An initial risk screening was conducted of the site for input by the Department of Planning, Housing, and Infrastructure (DPHI) which resulted in additional queries to be addressed in an updated document pertaining to the site and the acceptable risk criteria from the surrounding land uses in accordance with the Hazardous Industry Planning Advisory Paper (HIPAP) No. 10.

BCB on behalf of the proposed operator has engaged Riskcon Engineering Pty Ltd (Riskcon) to prepare an assessment of the development and review the potential impacts from the surrounding land uses to confirm whether the development is acceptable for the proposed location.

Conclusions

A review of the quantities of DGs stored at the proposed facility and the associated vehicle movements was conducted and compared to the threshold quantities outlined in Applying SEPP 33. As the site is not proposed to store in materials classified as DGs, the thresholds are not exceeded and thus SEPP-RH does not apply to the facility.

As there are existing operations around the proposed development that store and handle DGs, these were reviewed to determine whether there was the potential for the industrial-storage facility to be exposed to unacceptable risk in accordance with HIPAP No. 10. A review of the adjacent service station indiated the potenital for offsite impact was negligible based on a State Environemtnal Planning Policy – Resilience & Hazards (SEPP-RH) screening assessment and thus was excluded from further assessment.

The adjacent Elgas facility was found to exceed the SEPP-RH thresholds; hence, it was necessary to review the findings of the PHA against the acceptable risk criteria in HIPAP No. 10. Based on this review, ti was found that the risks from the Elgas facility would not result in unacceptable risk at the industrial-storage facility if it were to be approved.

Based on the assessments conducted, it is considered that the proposed industrial-storage development is acceptable for the land use.

Recommendations

The following recommendations have been made:

- Dangerous goods materials shall not be stored at the industrial-storage facility.

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Abbreviations

Abbreviation	Description
ADG	Australian Dangerous Goods Code
CBD	Central Business District
DGs	Dangerous Goods
LPG	Liquefied Petroleum Gas
PG	Packing Group
PHA	Preliminary Hazard Analysis
RH	Resilience & Hazards
SEPP	State Environmental Planning Policy

1.0 Introduction

1.1 Background

Brown Commercial Builders Pty Limited (BCB) have been engaged to construct industrial industrial-storage units at 295 Cormorant Road, Kooragang, NSW. An initial risk screening was conducted of the site for input by the Department of Planning, Housing, and Infrastructure (DPHI) which resulted in additional queries to be addressed in an updated document pertaining to the site and the acceptable risk criteria from the surrounding land uses in accordance with the Hazardous Industry Planning Advisory Paper (HIPAP) No. 10.

BCB on behalf of the proposed operator has engaged Riskcon Engineering Pty Ltd (Riskcon) to prepare an assessment of the development and review the potential impacts from the surrounding land uses to confirm whether the development is acceptable for the proposed location.

1.2 Scope of Services

The scope of work is to prepare a SEPP-RH assessment for the proposed industrial-storage facility alogn with a reivew of the potential impacts from the surrounding land uses in accordance with the Hazardous Industry Plannign Advisory Paper (HIPAP) No. 10 (Ref. [1]). The assessment does not include any other sites nor the preparation of any additional planning studies should they be required.

2.0 Methodology

2.1 General Methodology

The methodology used in this assessment is as follows:

- Review the types and proposed quantities of DGs to be stored at the site.
- Compare the quantities of DGs the threshold quantities listed in “Applying SEPP 33 – Hazardous and Offensive Development” (Ref. [2]) to identify whether the storage location or quantity triggers SEPP-RH.
- Review the likely vehicular movements involving DGs and compare against the applicable thresholds detailed in Applying SEPP 33 (Ref. [2]).
- Report on the findings of the SEPP-RH assessment.

2.2 Application of Chapter 3 of the State Environmental Planning Policy – Resilience & Hazards

State Environmental Planning Policy (Resilience and Hazards) 2021 (which now includes the former SEPP 33) has been developed under the Environmental Planning and Assesment Act 1979 to control potentially hazardous and offensive developments and to ensure appropriate safety features are installed at a faclity to ensure the risks to surrounding land uses is minimised.

The policy includes a guideline that assists government and industry alike in determining whether SEPP-RH applies to a specific development. The guideline, “Applying SEPP 33 - Hazardous and Offensive Developments” (Ref. [2]) provides a list of threshold levels, for the storage of DGs, above which the regulator considers the DG storage to be potentially hazardous. In the event the threshold levels are exceeded, SEPP-RH applies and a Preliminary Hazard Analysis (PHA) is required, followed by a series of hazard analysis studies stipulated by the Department of Planning and Environment in the conditions of consent.

2.3 Data taken from “Applying SEPP 33”

Figure 2-1, extracted from “Applying SEPP 33” provides details on the application of Figures or Tables from the same document to determine the applied screening Threshold (Ref. [2]).

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

Figure 2-1: Screening Method to be Used

Table 3 from “Applying SEPP 33” has been extracted and is shown in **Figure 2-2**.

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
2.3	5 tonne	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 tonne	chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg
	100 kg	liquefied gas kept in or on premises
	100 kg	other poisonous gases
4.1	5 tonne	
4.2	1 tonne	
4.3	1 tonne	
5.1	25 tonne	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 tonne	ammonium nitrate — elsewhere
	2.5 tonne	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 tonne	any other class 5.1
5.2	10 tonne	
6.1	0.5 tonne	packing group I
	2.5 tonne	packing groups II and III
6.2	0.5 tonne	includes clinical waste
7	all	should demonstrate compliance with Australian codes
8	5 tonne	packing group I
	25 tonne	packing group II
	50 tonne	packing group III

Figure 2-2: General Screening Threshold Quantities

Transportation screen thresholds have been provided in **Figure 2-3**, based on Table 2 from Ref. ([2]).

	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	

Figure 2-3: Transportation Screening Thresholds

2.4 HIPAP No. 10 Review

The site is surrounded by other operations that store and handle materials classified as Dangerous Goods (DGs); hence, it is necessary to review the potential impact of these sites on the proposed site to confirm that the accumulation of risk does not exceed the acceptable thresholds in HIPAP No. 10 (Ref. [1]) or that the surrounding uses do not pose an unacceptable risk on the proposed development.

3.0 Project Description

3.1 Site Description

The proposed industrial-storage facility is located at 295 Cormorant Road, Kooragang. The site is located 13 km drive from the Newcastle Central Business District (CBD). The location of site relative to Newcastle Central Business District (CBD) is shown in **Figure 3-1.**

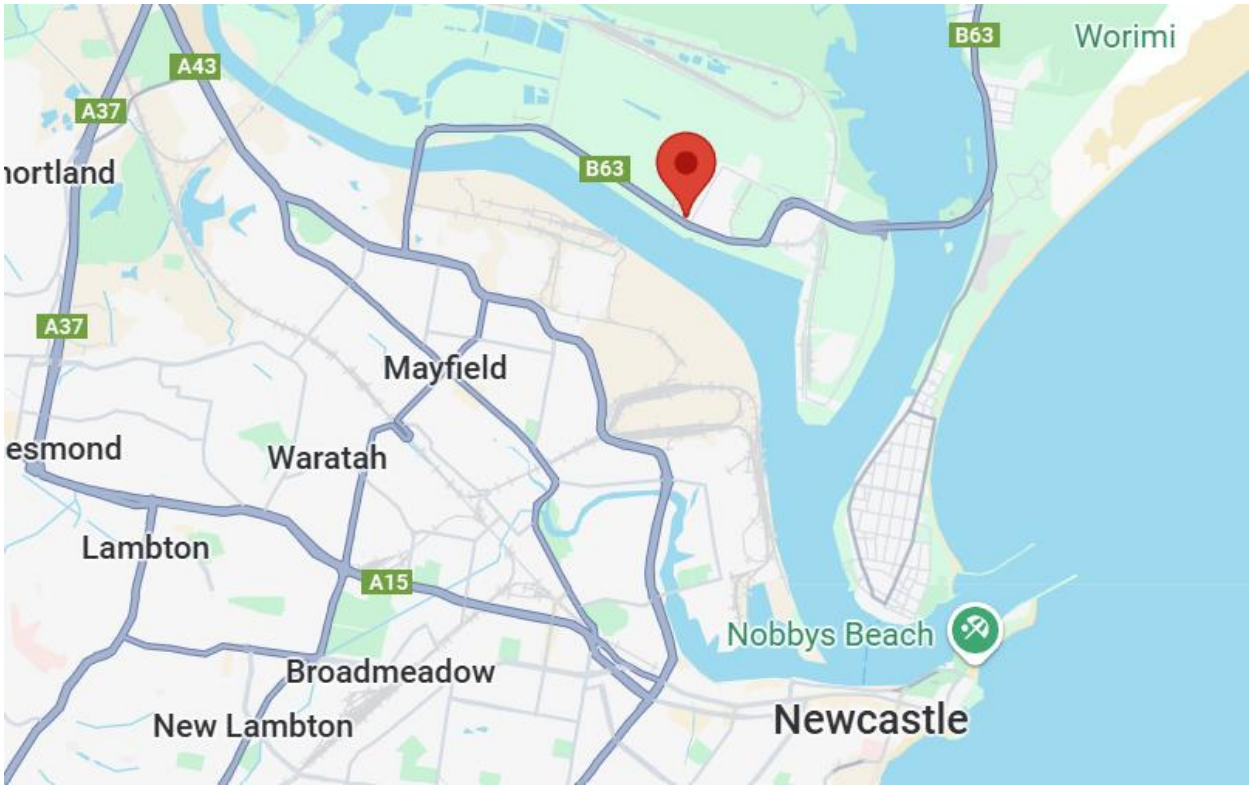

Figure 3-1: Site Location Relative to Newcastle CBD (source: Google Maps)

3.2 Adjacent Land Uses

The site is surrounded by the following land uses:

- North: Elgas (Gas filling and storage facility)
- East: Shell Reddy Express (Service Station), KFC (Restaurant), and Baywash Newcastle (Car Wash)
- South: Port of Newcastle coal loading facility
- West: Undeveloped land / railway line

3.3 Site Description

The proposed industrial-storage facility is composed of eighteen (18) storage units. The units are grouped into two rows with a central roadway separating the units. Access to the site is through the access way of the service station adjacent to the site.

The total site area is approximately 2,623 m^2 and the units range in area from 77 m^2 to 136 m^2. The facility will be used for the storage of goods by tenants leasing storage space within the facility.

The facility does not accept the storage of DGs; hence, the potential risk profile from the facility on the surrounding uses is considered negligible as no DGs are stored.

The layout of the site is showing the arrangement of the industrial-storage units is provided in **Figure 3-2**.

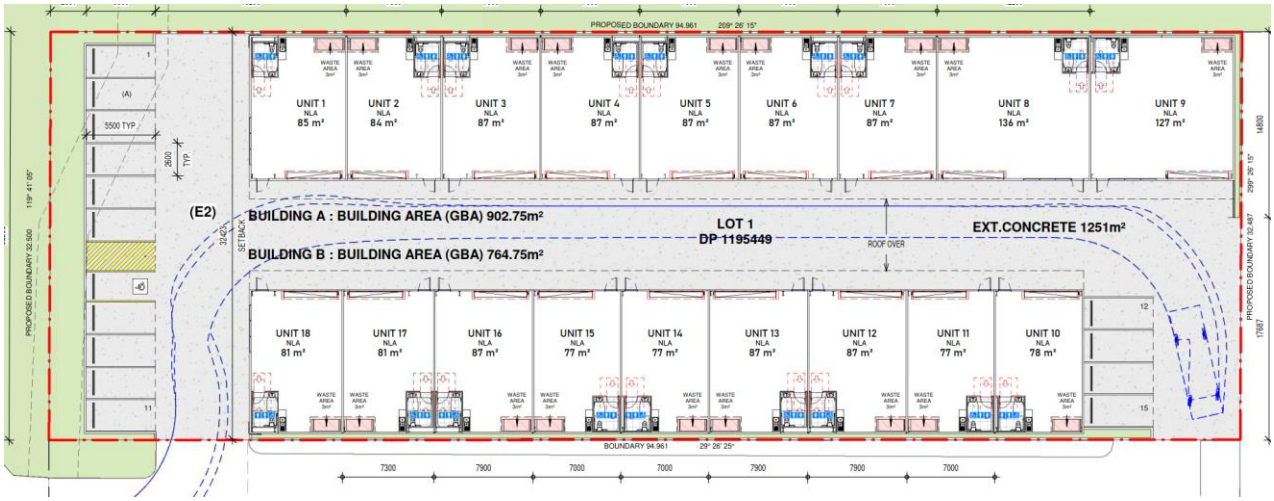

Figure 3-2: Layout of Industrial-Storage Units

3.4 Quantities of Dangerous Goods Stored and Handled

As noted the site does not store materials classified as DGs.

4.0 SEPP-RH Review

4.1 Assessment of Hazards

4.1.1 Storage

The site does not store materials classified as DGs. Therefore, the site does ot exceed the thresholds contained within Chapter 3 of the State Environemtnal Planning Policy – Resilience & Hazards (SEPP-RH) and thus does not pose a hazard to the surroudning land uses and SEPP-RH does not apply.

4.1.2 Transport

The site does not store DGs; hence, these are not transported. Subsequently, the site does not exceed the transport thresholds for DGs; hence, SEPP-RH does not apply.

4.2 Assessment of Offense

The site is used for the storage of non-DG goods and does not undertake any processing or manufacture. Therefore, the potential for the site to cause offense is considered negligible.

5.0 HIPAP 10 Review

5.1 Introduction

Where a site stores or handles materials classified as DGs there is the potential for that site to impose a risk on the surrounding land uses. Where the quantities stored are below the thresholds in SEPP-RH the offsite risk is taken to be negligible; however, where the quantities are exceeded it is necessary to demonstrate that the risks do not exceed the acceptable thresholds. Where a facility that exceeds the threshold is already in operation and a proponent proposed a new development in proximity to the existing development, this can create a land use conflict where the approval of the development may retrospectively result in the new development being exposed to unacceptable risk posed by the existing facility.

Where such an incident arises, it is necessary for the proponent to demonstrate that the approval of their development does not result in unacceptable risk from the existing surrounding operations. HIPAP No. 10 provides a methodology and criteria for defining the risks on the new development.

Provided in this section is a review of existing operations in the surrounding area.

5.2 Adjacent Land Use Review

A review of the surrounding land uses indicates that the following facilities that store materials classified as DGs are present:

- Elgas
- Shell Reddy Express Service Station

The storage and operations at these sites have been reviewed in further detail in the following subsections.

5.2.1 Elgas

The DG quantities stored at the Elgas site have been extracted from the Preliminary Hazard Analysis (PHA) prepared by Arriscar Pty Limited in document J-000250-ELG-PHA (Revision 0) and summarised in **Table 5-1**.

Table 5-1: Quantities of DGs Stored and Handled at Elgas

Class	Description	Vessel	Storage Quantity
2.2	Nitrogen	G-sized cylinders	100 L
2.1	Liquefied Petroleum Gas	Aboveground Tank	100,000 kL
2.1		Cylinder store*	94 tonnes^
2.1		Bobtail tanker	6 tonnes
2.1			9 tonnes
2.1		Cylinder trucks	10 tonnes

*Range of cylinders from 8.5 kg, 15 kg, 18 kg, 45 kg

^Maximum seasonable variability

Based on the quantities stored, this site exceeded the SEPP-RH thresholds and thus the PHA was prepared to assess the potential for offsite risk.

5.2.2 Shell Reddy Express Service Station

The DG quantities stored at the service centre are summarised in **Table 5-2**.

Table 5-2: Quantities of DGs Stored and Handled at Shell Reddy Express

Class	Description	Vessel	Tank ID	Storage Quantity (L)
2.1	Liquefied Petroleum Gas	Underground Tank	-	17,000 L
3(II)	Petrol	Underground Tank	1	30,000
3(II)			2	80,000
3(II)			3	30,000
C1	Diesel	Underground Tank	4	30,000
C1			5	50,000
C1			6	110,000

While diesel is not subject to SEPP-RH, the diesel in Tanks 4 and 5 are part of a multi-compartment tank with the petrol and thus has been included as a flammable liquid for assessment. The diesel stored in Tank 6 is stored separately and is treated solely as diesel and is thus not assessable.

The total volume of flammable liquid that is assessable is 220,000 L. Under the notes accompanying Table 1 of “Applying SEPP 33” (Ref. [2]) indicates that for underground storage the total volume may be divided by 5. Thus, the assessable volume is 44,000 L. The density of petrol is approximately 800 kg/m^3; hence, the total mass is 44,000 x 0.8 = 35,200 kg.

Based on 35,200 kg, the separation required is 7 m to industrial uses and 10 m to sensitive uses as shown in **Figure 5-1**. The separation distance is measured from the underground tank fill points to the proposed development exceeds 10 m; hence, SEPP-RH would not apply.

Class	Description	PG	Quantity		Does SEPP Apply? (Y/N)
			Stored	SEPP Threshold	
2.1	LPG	N/A	17,000 L	64,000 L	N
3	Flammable liquids	II	35,200 kg	**Figure 5-1**	N

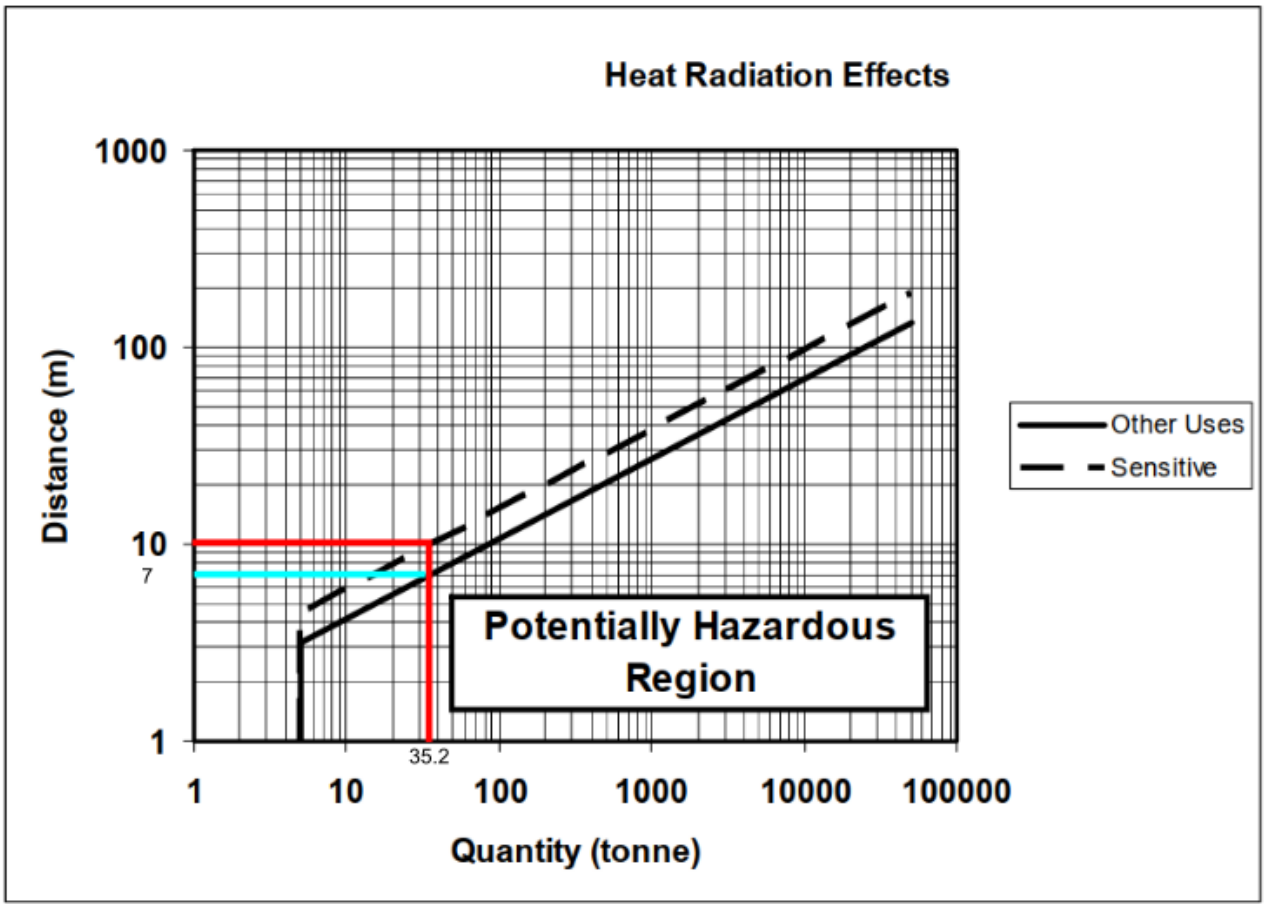

Figure 5-1: Underground Tank Screening Distances

5.3 HIPAP 10 Assessment

5.3.1 Introduction

As Elgas exceeds SEPP-RH and a PHA was required, it is necessary to review whether the approval of the industrial-storage development would result in unacceptable risks to the industrial-storage as required by HIPAP No. 10.

5.3.2 Risk Criteria

HIPAP 10 provides a range of acceptable risk criteria as summarised in **Table 5-3**. The proposed industrial-storage facility is industrial land use; hence, the acceptable risk criteria adopted for the site is $50x10^{-6}$ p.a.

Table 5-3: Acceptable Risk Criteria for Land Use Planning

Description of Land Use	Designation	Criteria (per year)
Hospitals, childcare facilities, and old age housing	Sensitive	$0.5x10^{-6}$
Residential developments and places of continuous occupancy such as hotels and tourist resorts	Residential	$1.0x10^{-6}$
Sporting complexes and active open space areas	Recreational	$10x10^{-6}$
Target for site boundary	Industrial	$50x10^{-6}$
Injury risk – Radiant heat > 4.7 kW/m^2	Residential	$1.0x10^{-6}$

Description of Land Use	Designation	Criteria (per year)
	Sensitive	
Injury risk – Explosion overpressure >7 kPa	Residential	$1.0x10^{-6}$
	Sensitive	
Risk of property damage / escalation > 23 kW/m^2	-	$50x10^{-6}$
Risk of property damage > 14 kPa	-	$50x10^{-6}$
Toxic exposure – injury	Residential	$10x10^{-6}$
	Sensitive	
Toxic exposure - irritation	Residential	$50x10^{-6}$
	Sensitive	

5.3.3 Assessment

Each of the applicable criteria have been reviewed in **Table 5-4**. **Figure 5-2** has been extracted from the Arriscar PHA to assist in reviewing the risk criteria.

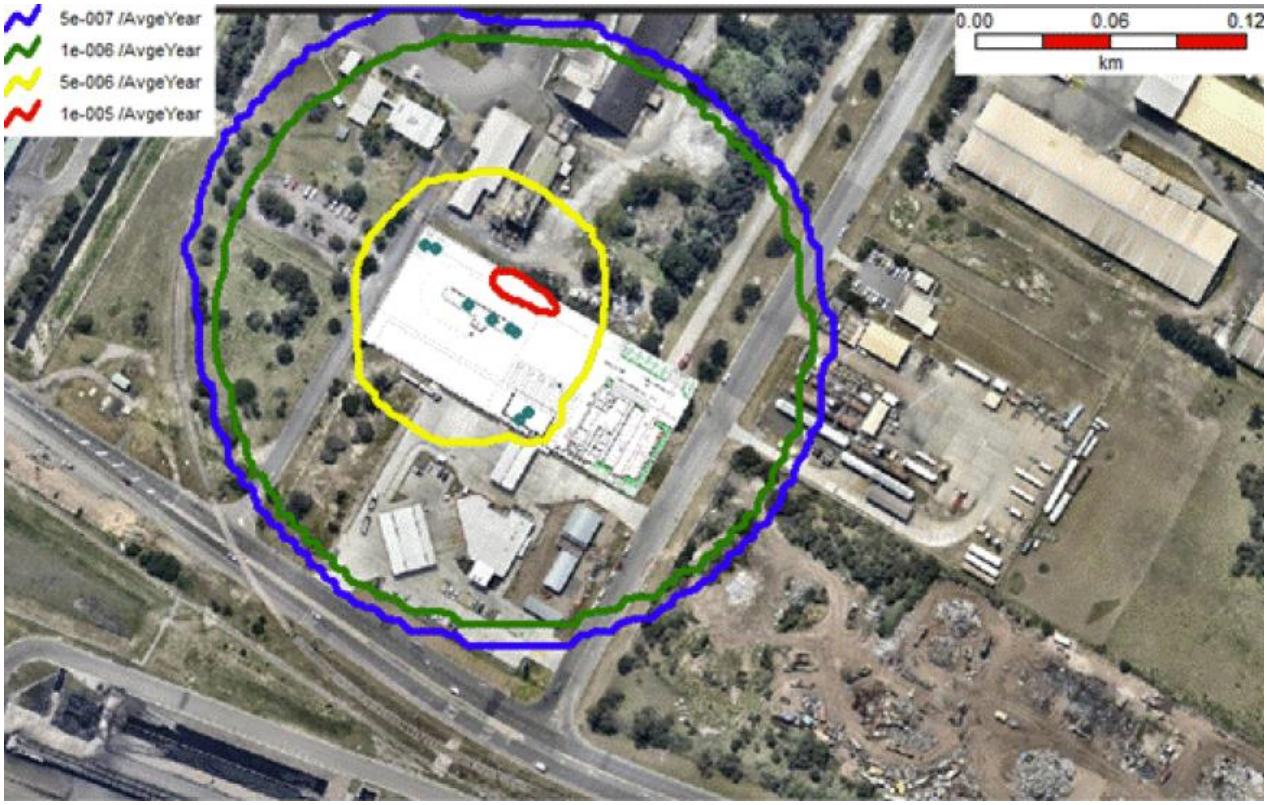

Figure 5-2: Fatality Risk Contours from Elgas PHA

Based on the assessment the risk criteria impacting the industrial-storage unit are not unacceptable and thus approval of the industrial-storage development would not result in an unacceptable risk at the industrial-storage site based on the existing Elgas operations.

Table 5-4: Review of Elgas PHA Impacts on Industrial-storage Units

Description of Land Use	Designation	Criteria (per year)	Assessment	Compliant (Y/N)
Hospitals, childcare facilities, and old age housing	Sensitive	$0.5x10^{-6}$	The industrial-storage is not a hospital, childcare or old age facility	n/a
Residential developments and places of continuous occupancy such as hotels and tourist resorts	Residential	$1.0x10^{-6}$	The industrial-storage is not residential, a hotel or a tourist resort	n/a
Sporting complexes and active open space areas	Recreational	$10x10^{-6}$	The industrial-storage is not a sporting complex nor active open space	n/a
Industrial sites	Industrial	$50x10^{-6}$	The site is defined as industrial. From **Figure 5-2**, the industrial-storage facility is impacted by the $0.5x10^{-6}$, $1x10^{-6}$ and $5x10^{-6}$ contours which are all below the $50x10^{-6}$ criteria.	Y
Injury risk – Radiant heat > 4.7 kW/m^2	Residential	$1.0x10^{-6}$	The industrial-storage is not residential land use.	n/a
	Sensitive		The industrial-storage is not a sensitive land use.	n/a
Injury risk – Explosion overpressure >7 kPa	Residential	$1.0x10^{-6}$	The industrial-storage is not residential land use.	n/a
	Sensitive		The industrial-storage is not a sensitive land use.	n/a
Risk of property damage / escalation > 23 kW/m^2	-	$50x10^{-6}$	From the PHA, radiant heat above 23 kW/m^2 was not generated.	Y
Risk of property damage > 14 kPa	-	$50x10^{-6}$	From the PHA, overpressure above 14 kPa was not generated.	Y
Toxic exposure – injury	Residential	$10x10^{-6}$	There are no toxic gases stored or handled.	n/a
	Sensitive		There are no toxic gases stored or handled.	n/a
Toxic exposure - irritation	Residential	$50x10^{-6}$	There are no toxic gases stored or handled.	n/a
	Sensitive		There are no toxic gases stored or handled.	n/a

6.0 Conclusion and Recommendations

6.1 Conclusions

A review of the quantities of DGs stored at the proposed facility and the associated vehicle movements was conducted and compared to the threshold quantities outlined in Applying SEPP 33. As the site is not proposed to store in materials classified as DGs, the thresholds are not exceeded and thus SEPP-RH does not apply to the facility.

As there are existing operations around the proposed development that store and handle DGs, these were reviewed to determine whether there was the potential for the industrial-storage facility to be exposed to unacceptable risk in accordance with HIPAP No. 10. A review of the adjacent service station indiated the potenital for offsite impact was negligible based on a State Environemtnal Planning Policy – Resilience & Hazards (SEPP-RH) screening assessment and thus was excluded from further assessment.

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Based on the assessments conducted, it is considered that the proposed industrial-storage development is acceptable for the land use.

6.2 Recommendations

The following recommendations have been made:

- Dangerous goods materials shall not be stored at the industrial-storage facility.

7.0 References

[1] Department of Planning, Housing, and Infrastructure, “Hazardous Industry Planning Advisory Paper No. 10 - Land Use Safety Planning,” Department of Planning, Housing, and Infrastructure, Sydney, 2011.

[2] Department of Planning, “Applying SEPP 33,” Department of Planning, Sydney, 2011.