

Kurraba Group

September 2024

Preliminary Risk Screening SEPP Resilience and Hazards

100 Botany Road - Life
Science Development

wsp



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Preliminary Risk Screening
SEPP Resilience and Hazards
100 Botany Road - Life Science Development

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We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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1 Introduction

1.1 Background

This Preliminary Risk Screening SEPP Resilience and Hazards has been prepared on behalf of the Kurraba Group (the Proponent) by WSP. It is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of a State Significant Development Application (SSDA) SSD-63067458 for the construction of a new health research facility located at 74-108 Botany Road and 86-100 Wyndham Street, Alexandria (herein referred to as 100 Botany Road or the site).

The primary purpose of this preliminary risk screening is to determine the potential for risks due to proposed dangerous goods stored on the site and the impact of an incident to the building, its occupants, and surrounding areas.

1.1.1 *About Kurraba Group*

Kurraba Group (Kurraba) is the Proponent of the SSDA for the proposed new health research facility. Kurraba's sole aim is to be Australia and New Zealand's leading and trusted life science focussed developer. Kurraba's investment portfolio focuses on innovation, future focused real estate, as demanded by the health and life science sector.

1.1.2 *Site description*

The site is located at 74-108 Botany Road and 86-100 Wyndham Street, Alexandria (commonly referred to as 100 Botany Road). The site is made up of six (6) different allotments has a total approximate area of 5,350.6m². The following lots make up the site:

- Lot 2 DP 136012
- Lot 11 DP 219505
- Lot 11 DP 135914
- Lot 2 DP 659166
- Lot 1 DP 510091
- Lot 3 DP 1146614

The site has a frontage to Botany Road to the east and Wyndham Street to the west. Part of Wyndham Lane runs through the middle of the site.

The site forms part of the recently rezoned Botany Road Precinct, which will be transformed into a vibrant mixed-use precinct that will accommodate employment growth in the Redfern-Waterloo area. The site is opposite the Waterloo Metro Station and its future over station development which is currently under construction.

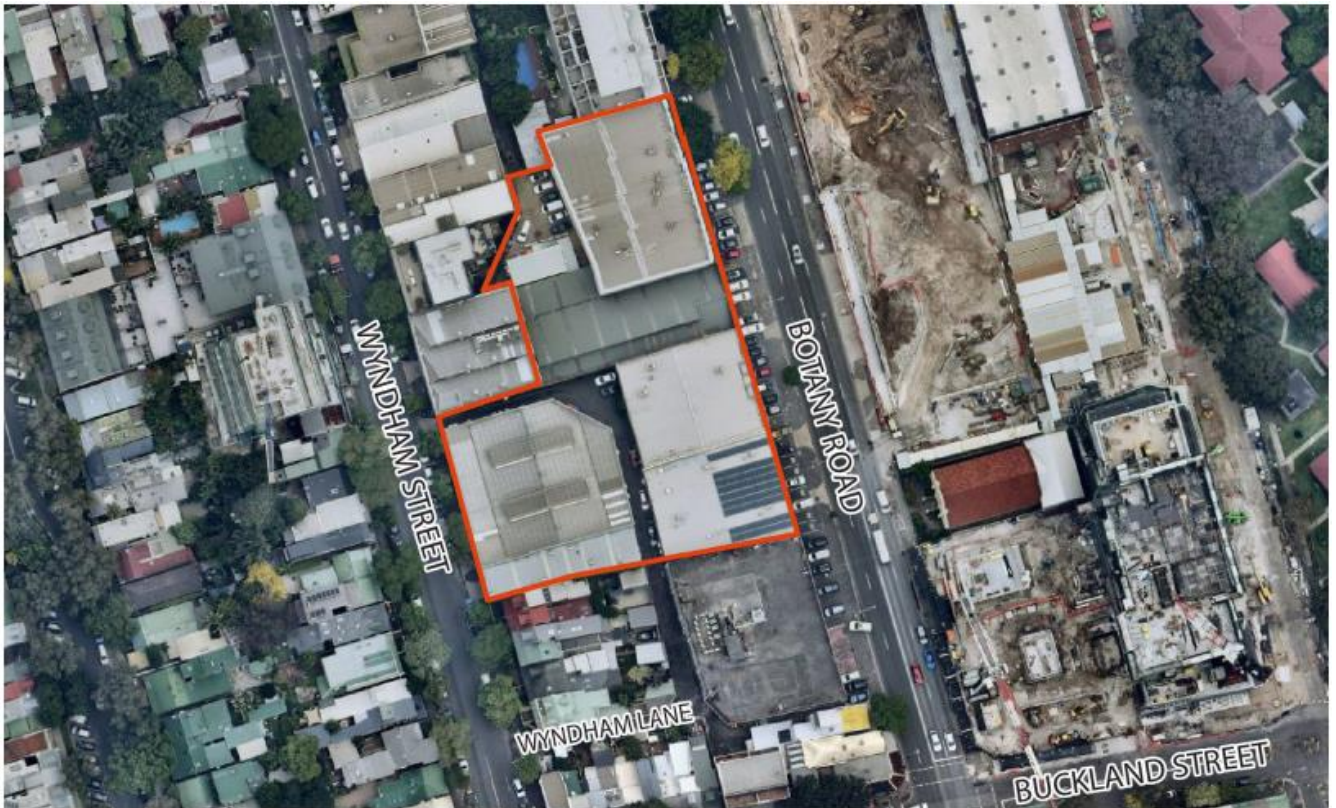


Figure 1 Aerial Photograph of Site

Source: Nearmap, Ethos Urban

1.1.3 Proposed development

The proposed development will seek consent for the redevelopment of 100 Botany Road for a new health research facility. Specifically, the SSDA seek approval for:

- Demolition of all existing buildings, site preparation and remediation works.
- Bulk excavation to create two (2) levels of basement with access from Wyndham Street, including allowance for a below ground Proton Therapy Cancer Treatment Centre, car parking, loading and services.
- Construction and use of two (2) new health research buildings. One (1) building is proposed along Botany Road which has a stepped built form between seven (7) storeys to the south and eleven (11) storeys to the north. One (1) building is proposed along Wyndham Street which is five (5) storeys. The two (2) buildings will include the following:
 - Ground floor lobby and retail uses fronting Botany Road and Wyndham Street.
 - Proton Therapy patient lobby from Wyndham Street.
 - Various laboratories, write up areas and office spaces.
 - A series of outdoor landscaped terraces within the Botany Road building.
 - One (1) rooftop plant level on each building.
- Landscaping and public domain works including:
 - Construction and extension of Wyndham Lane as a shared laneway.

- Construction of a pedestrian network including two (2) pathways from Botany Road and an east-west through-site link.
- Extension and augmentation of services and utilities to the development, as required.

1.1.4 Secretary's Environmental Assessment Requirements

In accordance with section 4.39 of the *Environmental Planning & Assessment Act 1979* (EP&A Act), Secretary's Environmental Assessment Requirements (SEARs) for SSD-63067458 were issued on 16 January 2024. This report has been prepared to respond to the relevant issued SEARs, as set out in Table 1.1 below.

Table 1.1 Secretary's Environmental Assessment Requirements

SEAR	Response / Location in report
Where there are dangerous goods and hazardous materials associated with the development provide a preliminary risk screening in accordance with Chapter 3 of SEPP (Resilience and Hazards) 2021.	Preliminary risk screening detailed in Section 5, with the methodology found in Section 3.2.
Where required by SEPP (Resilience and Hazards) 2021, provide a Preliminary Hazard Analysis prepared in accordance with Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis and Multi-Level Risk Assessment.	Based on available information and the Preliminary Risk Screening, a Preliminary Hazard Analysis is not required.
If the development is adjacent to or on land in a pipeline corridor, report on consultation outcomes with the operator of the pipeline, and prepare a hazard analysis.	The development is not reported to be on or adjacent to land with a high-pressure pipeline as described in the State Environmental Planning Policy (Infrastructure) 2007 (Division 9, Subdivision 2).

2 Legislative and policy context

2.1 Legislation

2.1.1 *Environmental Planning and Assessment Act 1979*

The EP&A Act and Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) establish a framework for the assessment and approval of developments in NSW. They also provide for the making of environmental planning instruments, including state environmental planning policies (SEPPs) and local environmental plans (LEPs), which determine the permissibility and approval pathway for development proposals and form a part of the environmental assessment process.

2.1.2 *State Environmental Planning Policy (Resilience and Hazards) 2021*

In 2022, the State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) repealed and superseded the State Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33). Chapter 3 of the Resilience and Hazards SEPP provides a framework for identifying and assessing hazardous and offensive development.

The Resilience and Hazards SEPP defines potentially hazardous industry as a development which if it were to operate without employing any measures to reduce or minimise its impact in the locality, may pose a significant risk in relation to human health, life or property, or to the biophysical environment.

Under clause 3.7 of the Resilience and Hazards SEPP, “*In determining whether a development is a hazardous storage establishment, hazardous industry or other potentially hazardous industry, consideration must be given to current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development*”. One of the applicable circulars to the project is the former NSW Department of Planning (DoP) document *Hazardous and Offensive Development Application Guidelines – Applying SEPP 33* (DoP, 2011a) (Applying SEPP 33).

A preliminary risk screening in accordance with Applying SEPP 33 would indicate if the development is potentially hazardous. Under clause 3.11 of the Resilience and Hazards SEPP, potentially hazardous developments are required to prepare “*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*”.

2.2 Policy, standards and guidelines

2.2.1 *Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 (DoP, 2011a)*

Applying SEPP 33 provides advice on interpreting and implementing the repealed SEPP 33 (now the Resilience and Hazards SEPP). The guidelines mainly assist in identifying developments which should be considered under SEPP 33, and on the broad assessment requirements of the Resilience and Hazards SEPP. The guidelines provide a process for determining whether a development would be a potentially hazardous industry. A screening assessment of this project has been undertaken in accordance with these guidelines.

2.2.2 *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis (DoP, 2011b)*

The *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis* (DoP, 2011b) guideline assists stakeholders in implementing an integrated hazards-related assessment process for potentially hazardous developments. The guideline provides guidance on the general approach recommended for hazard analysis and details the requirements for reports to be submitted to government authorities.

2.2.3 *Assessment Guideline – Multi-Level Risk Assessment (DoP, 2011)*

The *Assessment Guideline – Multi-Level Risk Assessment* (DoP, 2011) provides guidance on the requirements for risk assessment, where the level and extent of the analysis reflects the nature, scale and location of each development. The guidelines propose a graded or multi-level framework aimed at ensuring a consistent approach. The objective is to progress the analysis and its assessment only as far as is needed to demonstrate that the operation being studied does not or would not pose a significant risk to surrounding land uses. This may be achieved by using a combination of qualitative and quantitative approaches.

3 Methodology

3.1 Overview of approach

This chapter describes the methods used to assess potential hazards and risks of the project associated with hazardous materials and dangerous goods. The methodology used for this assessment generally follows the process outlined in Applying SEPP 33 as shown in Figure 3.1. The methodology involved:

- risk screening of hazardous materials and dangerous goods

This assessment focuses on operation of the project and hazardous materials and dangerous good proposed to be installed and stored in the operation area.

This assessment does not constitute a construction safety study and does not include a detailed identification and assessment of construction and commissioning risks outside of the transportation of dangerous goods to site, or any required site work health and safety (WHS) management systems. The use and types of dangerous goods and hazardous materials used during construction are temporary and variable. Any risk of hazardous materials used would be conducted as part of a standard Construction Environmental Management Plan.

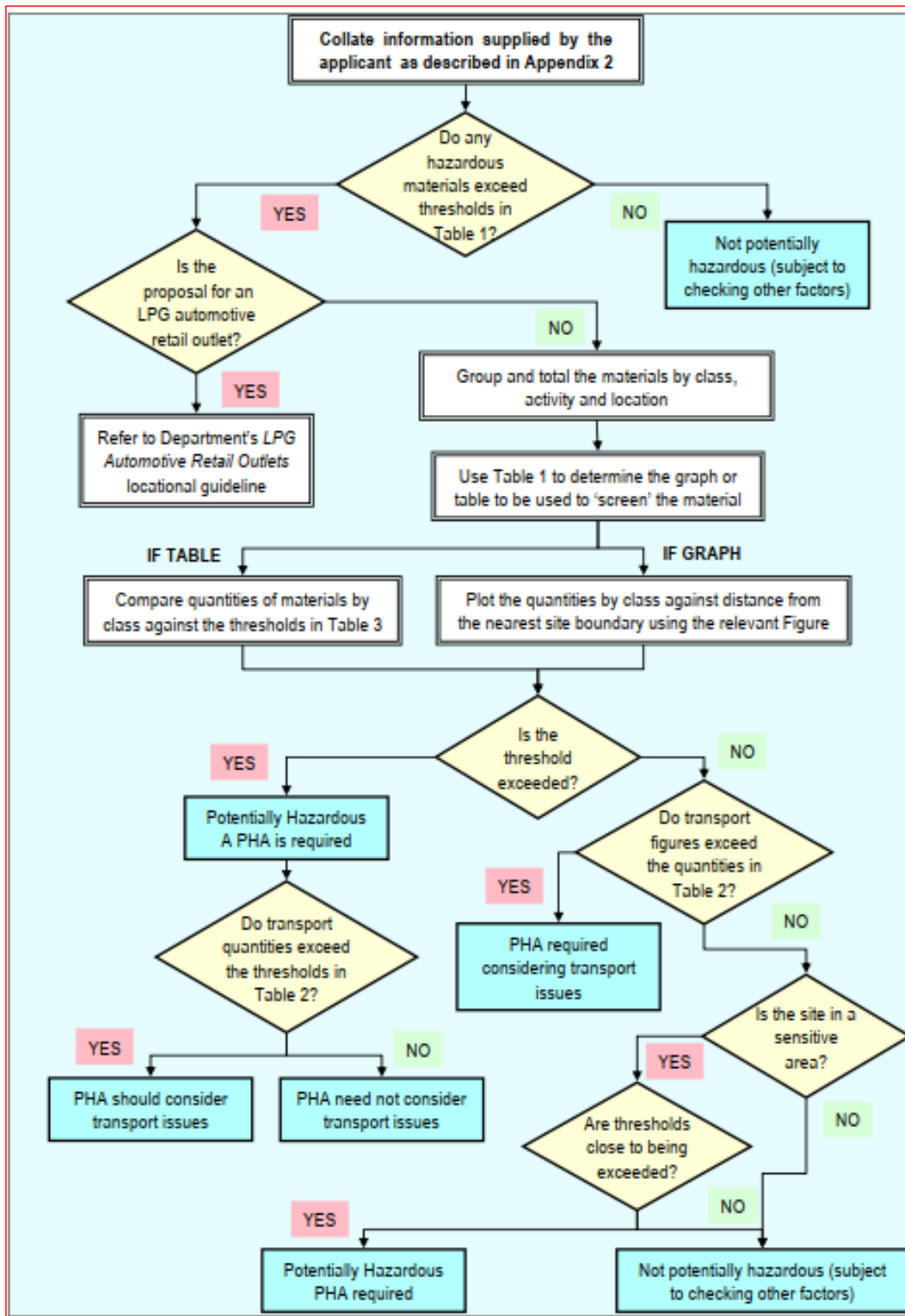


Figure 3.1 Applying SEPP 33 assessment process as depicted in *Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 (DoP, 2011a)*.

3.2 Risk screening method

Applying SEPP 33 deals with hazardous materials, which are substances falling within the classification of the Australian Code for Transportation of Dangerous Goods by Road and Rail (National Transport Commission, 2023). These materials are separated into classes with a classification number assigned to a dangerous good to indicate its most significant type of risk. Packing groups, where relevant, are used to indicate the degree of danger associated with the transport of dangerous goods of a given class:

- packing group I – Substances presenting high danger
- packing group II – Substances presenting medium danger
- packing group III – Substances presenting low danger.

A risk screening assessment was undertaken using the methods outlined in Section 7 of *Applying SEPP 33*. The risk screening involved reviewing the quantities and types of dangerous goods and hazardous materials that would be stored and handled on-site during the operational phase and the frequency of transport of these materials against the screening threshold quantities defined in *Applying SEPP 33*.

The risk screening methodology in *Applying SEPP 33* involves:

- collating project information including:
 - a list of all the hazardous materials proposed to be stored on-site
 - dangerous goods classification for each material, including subsidiary class(es) and packing groups
 - the mode of storage used (above ground or underground) and the maximum quantity stored or held on-site
 - site layout plan and a locality plan showing the nearest residential property (sensitive receiver)
 - 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
 - the average number of annual and weekly road movements of hazardous material to and from the facility, and the typical quantity in each load (movement of materials during the construction phase for storage during operation were included)
- determining the quantities of all classes of hazardous materials identified. Where several hazardous materials of the same class are kept on-site in the same general location, quantities were totalled by class and activity
- comparing the hazardous materials quantities and transport movements to the thresholds provided in Table 1 and 2 and Appendix 4 of the *Applying SEPP 33*
- determining if the project should be considered potentially hazardous depending on whether the screening thresholds are exceeded and therefore if a Preliminary Hazard Analysis (PHA) is required.

4 Risk screening

4.1 Dangerous goods and hazardous materials for operation

During standard operational activities, multiple dangerous goods and hazardous materials would be stored on site. Due to the flexible nature of this site and the potential for occupation by a varied group of stakeholders, an exact list of dangerous goods that will be stored on site is unable to be obtained or forecasted as it can vary depending on activity and research. However, there is base-building support infrastructure designed to support the laboratories as they develop, which also places limitation and restriction on unnecessary dangerous goods that need to be used within the facility. As such, in order to adapt the SEPP to a flexible workplace model, several dangerous goods have been noted to be stored on the site, this document has assumed that the maximum volume on site falls below the general screening threshold quantities, as outlined in Applying SEPP 33.

Table 4.1 Dangerous goods proposed to be stored during operation

Material	Purpose	Dangerous goods class
Oxygen gas (O ₂)*	Clinical (Proton therapy) and R&D scope	2.2 – Flammable gas 5.1 – Oxidising substance
Sodium hydroxide (NaOH)	Cleaning and disinfection	8 – Corrosive
Sodium hypochlorite (NaOCl)	Cleaning and disinfection	8 – Corrosive
Diesel fuel (combustible liquid)	Fuel for generator	9 – Miscellaneous
Hydrogen gas (H ₂)	Clinical (Proton therapy) and R&D scope	2.1 – Flammable gas

* Compressed oxygen contains a subsidiary risk and falls under multiple dangerous goods classifications.

It is noted that the proposed inventory does not include chemicals or dangerous goods requiring a licence under the Dangerous Goods (Explosive) Regulations or the Dangerous Goods (HCDG) Regulation.

4.2 Screening assessment of dangerous goods and hazardous materials in project operation

The proposed inventory of dangerous goods in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2023) is provided in Table 4.2. The information contained in the table compares the total storage quantity of the required dangerous goods classes against the storage screening thresholds in Applying SEPP 33. The dangerous goods to be stored on the site were grouped into their respective classes. If more than one packing group was present in a class, it was assumed that the total amount for that class was the more hazardous packing group. In an effort to provide clarity and given the adaptive nature of the site, dangerous goods of most class were included to establish the threshold quantity, and thus the maximum quantity considered in this risk screening. Class 1 Explosives were not considered to be likely on this site, while Class 7 Radioactive materials should be reviewed independently to this document.

Dangerous Good Classes 2.2 and 9 are excluded from the risk screening as per Applying SEPP 33. Class 2.2 goods are non-flammable, non-toxic gases and are not considered to be potentially hazardous with respect to off-site risk. Class 9 goods are miscellaneous dangerous goods, which pose minimal threat to people or property. Class 7 radioactive materials

are covered by national guidelines and regulations, and all storage of these materials must comply with Australian Codes, thus were also excluded from Table 4.2.

Table 4.2 Dangerous goods classes in storage (thresholds)

Substance	Class	Packing group	Total quantity stored on site (L)	Threshold quantity	SEPP 33 threshold finding
Hydrogen gas (H ₂)	2.1	N/A	N/A	0.1 tonne	Below, based on assumed quantities to be stored
Oxygen gas (O ₂)	5.1	N/A	N/A	5 tonne	Below, based on assumed quantities to be stored
Sodium hydroxide (NaOH)	8	II	N/A	25 tonne	Below, based on assumed quantities to be stored
Sodium hypochlorite (NaOCl)	8	III	N/A	50 tonne	Below, based on assumed quantities to be stored
Anhydrous ammonia	2.3	N/A	N/A	5 tonne	Below, based on assumed quantities to be stored
Other toxic gases	2.3	N/A	N/A	100 kg	Below, based on assumed quantities to be stored.
Flammable liquids	3	I	N/A	2 tonne	Below, based on assumed quantities to be stored
		II or III	N/A	5 tonne	Below, based on assumed quantities to be stored
Flammable solids, self-reactive substances and solid desensitised explosives	4.1	N/A	N/A	5 tonne	Below, based on assumed quantities to be stored
Substances liable to spontaneous combustion	4.2	N/A	N/A	1 tonne	Below, based on assumed quantities to be stored
Substances which in contact with water emit flammable gases	4.3	N/A	N/A	1 tonne	Below, based on assumed quantities to be stored
Organic peroxides	5.2	N/A	N/A	10 tonne	Below, based on assumed quantities to be stored

Substance	Class	Packing group	Total quantity stored on site (L)	Threshold quantity	SEPP 33 threshold finding
Toxic substances	6.1	I	N/A	0.5 tonne	Below, based on assumed quantities to be stored.
		II or III	N/A	2.5 tonne	Below, based on assumed quantities to be stored
Infectious substances, including clinical waste	6.2	N/A	N/A	0.5 tonne	Below, based on assumed quantities to be stored

Given the site is still in the design stages and construction has not yet started, dangerous goods quantities to be stored on site are unable to be accurately provided. As such, the threshold volumes for each class of dangerous good have been provided and at this stage it is presumed that storage volumes above these thresholds will not be exceeded. Note that restrictions will be imposed on total quantities that can be stored within the building by tenants to ensure thresholds are not exceeded. If a tenant is required to store levels above any of these threshold limits for the site, they will be required to consider existing quantities and applications under the SEPP, which may include a Preliminary Hazard Analysis.

When storing dangerous goods on site, attention should be given to Schedule 11 in the NSW Work Health and Safety Regulations 2017 to assess whether the placard and manifest volumes for substances stored on site are exceeded.

4.3 Dangerous goods transport screening

The project may be deemed potentially hazardous if the traffic movements for significant quantities of dangerous goods entering and leaving the site, are above the cumulative vehicle movements thresholds in the Applying SEPP 33. If quantities are below the thresholds, the potential risk is unlikely to be significant unless the number of traffic movements is high.

The threshold for weekly vehicle movements and cumulative yearly movements, as well as the thresholds for bulk and packages goods quantities are detailed in Table 4.3. Given the site is not yet in operation and will have varying occupants and stakeholders with different requirements for dangerous goods transfer, the vehicle movements are unable to be calculated, however given the limited storage and types of expected operations (PC2/3 research laboratories) large deliveries are considered to be very unusual. For the purposes of this risk screening, and to provide assurance to the validity of the assessment, it has been assumed that the threshold quantities listed in Table 4.3 will not be exceeded.

Table 4.3 Dangerous goods vehicle movement thresholds

Substance	Class	SEPP 33 threshold vehicle movements (per week and annual cumulative)	SEPP 33 threshold minimum quantities (per load in bulk)	SEPP 33 threshold minimum quantities (per load in packages)
Flammable gas	2.1	<30 per week with no more than 500 per year	2 tonne	5 tonne
Toxic gas	2.3	<6 per week with no more than 100 per year	1 tonne	2 tonne
Flammable liquid	3, PG I	<30 per week with no more than 500 per year	1 tonne	1 tonne
	3, PG II	<45 per week with no more than 750 per year	3 tonne	10 tonne
	3, PG II	<60 per week with no more than 1000 per year	10 tonne	Unlimited
Flammable solids, self-reactive substances and solid desensitised explosives	4.1	<12 per week with no more than 200 per year	1 tonne	2 tonne
Substances liable to spontaneous combustion	4.2	<3 per week with no more than 100 per year	2 tonne	5 tonne
Substances which in contact with water emit flammable gases	4.3	<12 per week with no more than 200 per year	5 tonne	10 tonne

Substance	Class	SEPP 33 threshold vehicle movements (per week and annual cumulative)	SEPP 33 threshold minimum quantities (per load in bulk)	SEPP 33 threshold minimum quantities (per load in packages)
Oxidising substances or organic peroxides	5	<30 per week with no more than 500 per year	2 tonne	5 tonne
Toxic substances	6.1	All vehicle movements are above	1 tonne	3 tonne
Infectious substances	6.2	NSW Department of Planning should be contacted for advice		
Corrosive	8	<30 per week with no more than 500 per year	2 tonne	5 tonne
Miscellaneous	9	<60 per week with no more than 1000 per year	Unlimited	Unlimited

4.4 Mitigation measures

The follow section provides recommended mitigation measures for potential impacts on the proposed development. The structure of mitigation measures is based on DPIE’s hierarchy of approaches for managing impacts identified in the *Draft Environmental Impact Assessment Guidance Series* as:

- **Performance based measure (Pe):** identify performance criteria that must be complied with to achieve an appropriate environmental outcome but do not specify how the outcome is to be achieved.
- **Prescriptive measure (Pr):** require action to be taken or specify something that must not be done.
- **Management based measure (Ma):** identify one or more management objectives that must be achieved through the implementation of a management plan.

Following the implementation of appropriate mitigation measures as recommended, it is determined that the proposal will not result in any significant adverse impacts on the surrounding environment. The level of risk was assessed by considering the potential impacts of the proposed development prior to the application of any mitigation or management measures. Risk comprises the likelihood of an event occurring and the consequence of that event, see Table 4.4 for definitions. The risk levels, taking into account the likelihood and potential consequence, were derived using the risk matrix shown in Table 4.5. Potential impacts from the proposed development are presented in Table 4.6.

Table 4.4 Definition of likelihood and consequence

Likelihood		Consequence	
A	Almost certain	1	Widespread and/or irreversible impact
B	Likely	2	Extensive but reversible (within two years) impact or irreversible local impact
C	Possible	3	Local, acceptable or reversible impact
D	Unlikely	4	Local, reversible, short term (<3 months) impact
E	Rare	5	Local, reversible, short term (<1 months) impact

Table 4.5 Risk matrix

Consequence	Likelihood				
	A	B	C	D	E
1	High	High	Medium	Low	Very low
2	High	High	Medium	Low	Very low
3	Medium	Medium	Medium	Low	Very low
4	Low	Low	Low	Low	Very low
5	Very low	Very low	Very low	Very low	Very low

Table 4.6 Recommended mitigation approach and measures

Potential impact	Stage of project	Likelihood	Consequence	Risk level	Approach	Mitigation measure	Residual impact
Storage of dangerous goods above SEPP 33 threshold limits	Operation	D	5	Very low	Overall dangerous goods storage volumes to be monitored by building management in accordance with SEPP 33 threshold limits. If thresholds are required to be exceeded by tenants or other stakeholders, a Preliminary Hazard Analysis should be conducted. Available storage volumes to be regulated by the size of storage cabinets, gas storage rooms or other dangerous goods storage areas, including any infectious waste.	Pr / Ma	Very low
Transport of dangerous goods above SEPP 33 threshold limits	Construction and Operation	C	5	Very low	Dangerous goods transport volumes to be monitored by building management in accordance with SEPP 33 threshold limits. If thresholds are required to be exceeded by tenants or other stakeholders, a Preliminary Hazard Analysis should be conducted. Transport volumes to be prearranged and scheduled to avoid potential exceedances.	Pr / Ma	Very low

4.5 Preliminary risk screening summary

While accurate storage quantities for different classes of dangerous goods are difficult to predict at this stage of the project, this preliminary risk screening has made the assumption that no threshold quantities will be exceeded. In many cases, the threshold quantities are quite large and over one (1) tonne of material, which is unlikely to be exceeded in a non-manufacturing or non-industrial facility. Similarly with transport quantity thresholds, an exceedance of the vehicle movement threshold would involve a minimum of one (1) delivery per day (for toxic gasses), but more commonly, over five (5) deliveries per day and with each delivery containing one (1) tonne of material. This frequency and volume would not be expected during normal operation of the facility. Therefore, the project is not considered a potentially hazardous development under the Resilience and Hazards SEPP.

However, given this risk screening includes several assumptions, an assessment of delivery frequency and storage volumes should be undertaken, following the flow chart in Figure 3.1, if any stakeholder or tenant requires additional material to support their research activities. In these cases, if the risk screening threshold for dangerous goods storage, outlined in Table 4.2, or dangerous goods transport, outlined in Table 4.3, is exceeded, the site would be considered potentially hazardous under the Resilience and Hazards SEPP, and a Preliminary Hazard Analysis would be required.

In order to limit the potential requirement for a Preliminary Hazard Analysis, dangerous goods volumes should be managed carefully to ensure threshold quantities are not exceeded, unless approval has been provided under the Resilience and Hazards SEPP provisions. It is advised that restrictions on dangerous goods cabinets, compressed gas stores or other storage areas are in place for each tenancy to limit the potential volume able to be stored.

5 References

Department of Urban Affairs & Planning, (1994), State Environmental Planning Policy No.33 – Hazardous and Offensive Development, New South Wales Government.

NSW Department of Planning (DoP), (2011a) *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33*, New South Wales Government.

DoP (2011b), *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis*, New South Wales Government.

DoP (2011c), *Hazardous Industry Planning Advisory Papers No. 4 – Risk Criteria for Land Use Safety Planning*, New South Wales Government.

DoP (2011d) *Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Study guideline*, New South Wales Government.

NSW Department of Planning and Infrastructure (2011), *Assessment Guideline – Multi-Level Risk Assessment*

National Transport Commission (2023), *Australian Code for Transportation of Dangerous Goods by Road and Rail*.

6 Limitations

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