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THE KING'S SCHOOL

PRELIMINARY HAZARD ANALYSIS FOR THE REDEVELOPMENT OF THE KING'S SCHOOL FOLLOWING CHAPTER 3 OF THE STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021 GUIDELINES

REPORT VERSION – 1.4

CETEC REFERENCE: P22110103

DATE: 17 OCTOBER 2023

Prepared By:

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THE KING'S SCHOOL

The King's School
87-129 Pennant Hills Road, North Parramatta NSW 2151

CETEC
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CONSULTANT:	REPORT COMMISIONED BY:
CETEC Pty Ltd **Dangerous Goods Consultancy** 3/216 Willoughby Road, St Leonards, NSW 2065	**The King's School** 87-129 Pennant Hills Road, North Parramatta NSW 2151

PROJECT:	CETEC REF:	CLIENT REF:	ISSUE
Redevelopment of The King's School	**P22110103**	**-**	**1.4**

AMD	DESCRIPTION	INT	REVIEWED	DATE
0.1	DRAFT Chapter 3 - Environmental Planning Policy (Resilience and Hazards) 2021 Guidelines Report for Comment	PDS	VG	23/05/2023
1	Environmental Planning Policy (Resilience and Hazards) 2021 Chapter 3 Assessment Report for the SSDA of the Science, Technology, Engineering, Arts and Maths Building.	PDS	VG	24/05/2023
1.1	Updated Chapter 3 Environmental Planning Policy (Resilience and Hazards) 2021 Guidelines Report incorporating client comments	PDS	VG	06/07/2023
1.2	Updated document due to text disappearing following generation of PDF file.	PDS	VG	07/07/2023
1.3	Update of document, including updates to Master Plans and other project related documentation.	PDS	VG	17/08/2023
1.4	Update of document, incorporating further comments.	PDS	VG	17/10/2023

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1. KEY SSDA DETAILS

Applicant	The King's School
Application Number	SSD-48497708
Project Name	Concept and Stage 1 application for the redevelopment of the King's School
Project Description	*Refer to standardised Executive Summary below*
Address	87-129 Pennant Hills Road, North Parramatta NSW 2151
Site (total area)	Approx. 115 ha
Legal Description	Lot A in DP 329288 Lot 10 in DP 812772 Lot 1 in DP 57491 Lot 1 in DP 64765 Lot 1 in DP 59169 Lot A in DP 321595 Lot 1 in DP 581960 Lot B in DP 329288 Lot 2 in DP 235857
Zones	SP2: Infrastructure R2: Low Density Residential

1.1. PROPOSED DEVELOPMENT EXECUTIVE SUMMARY

This State Significant Development Application (SSDA) seeks consent for the staged redevelopment of The King's School, including:

- Concept Proposal for the provision of new and upgraded facilities, including:
    - Building envelope for a new Sports Pavilion within the western sports field precinct (subject to further detailed approval).
    - Building envelope for a new Boarding House within the northern residential precinct to the north of the Doyle Sports Fields and adjacent building envelope for Staff Quarters (subject to further detailed approval).
    - Building envelope for a new Day Boy House between Dalmas House and Burkitt House, including the associated relocation of Ryrie Road (subject to further detailed approval).
    - Earthworks and the associated demolition of existing buildings and structures, and removal of trees and landscaping.
    - Staged increase in staff and student numbers.

- Detailed Stage 1 works (as outlined below).

- Detailed Stage 1 works, including:
  - Earthworks and the associated demolition and existing buildings and structures.
  - Traffic upgrade works including the construction of a new vehicular entrance into the site from Masons Drive, new drop-off pick up facilities, internal access roads and increased car parking and bus parking.
  - The construction of a new Staff Residence Building comprising residences for staff and their families within the Senior School Boarding Precinct.
  - The construction of a new building for Science, Technology, Engineering, Arts and Maths (the 'STEAM building') within the Senior School and associated landscaping.
  - The staged construction of new buildings required to upgrade the Preparatory School, including:
    - Construction of a new Performing Arts and Music Centre comprising a dedicated performance space and music practice rooms to the northwest of Horrocks Road.
    - Construction of a new General Learning Unit building comprising additional classrooms / general learning spaces adjacent to the existing dam.
    - Upgrades to pedestrian access throughout the school.
    - Staged increase in staff and student numbers.
  - The removal and replacement of trees and associated landscaping.

2. INTRODUCTION TO STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS)

2.1. BACKGROUND

This development will incorporate the upgrading of current facilities and increase teaching space and amenities with an increased floorplate, across seven buildings.

The State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) consolidates and repeals the provisions of the following 3 SEPPs:

1. SEPP (Coastal Management) 2018 (Coastal Management SEPP).
2. CHAPTER 3 OF THE RH SEPP – Hazardous and Offensive Development (CHAPTER 3 OF THE RH SEPP).
3. SEPP 55 – Remediation of Land (SEPP 55).

These changes are part of a broader administrative consolidation of then SEPPs. No policy changes have been made to this consolidation. The SEPP consolidation does not change the legal effect of the existing SEPPs, with section 30A of the Interpretation Act 1987 applying to the transferred provisions. The SEPP consolidation is administrative in nature. It has been undertaken in accordance with section 3.22 of the Environmental Planning and Assessment Act 1979. The Resilience and Hazards SEPP:

- Transfers most existing provisions from the 3 SEPPs (as shown above) being consolidated into chapters 2, 3 and 4. Chapter 1 contains the preliminary information and commencement details.
- Repeals the 3 SEPPs being consolidated.

The Resilience and Hazards SEPP incorporates provisions from the SEPPs being consolidated as follows:

- 'Chapter 2 - Coastal Management' contains planning provisions from the Coastal Management SEPP for land use planning within the coastal zone consistent with the Coastal Management Act 2016.
- 'Chapter 3 – Hazardous and Offensive Development' contains planning provisions from CHAPTER 3 OF THE RH SEPP to manage hazardous and offensive development.'Chapter 4 – Remediation of land' contains planning provisions from SEPP 55, which provides a state-wide planning framework for the remediation of contaminated land and to minimise the risk of harm.

This report responds to Chapter 3 of the RH State Environmental Planning Policy (Resilience and Hazards) 2021 Guidelines.

NOTE: from here on, the Chapter 3 of the RH State Environmental Planning Policy (Resilience and Hazards) 2021 Guidelines will be described as CHAPTER 3 OF THE RH SEPP.

Therefore, this report will form part the Environmental Assessment and details the Preliminary Hazard Analysis undertaken for the proposed building following the guidelines and methodology as detailed within NSW

Planning & Environment document titled '*Hazardous and Offensive Development - Application Guidelines, Applying CHAPTER 3 OF THE RH SEPP*'.[1]

2.2. PURPOSE OF THIS POLICY

The State Environmental Planning Policy (Resilience and Hazards) 2021 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 developments affected by this policy. The guidelines are also useful for industry, consultants, and other government agencies to determine and assist in identifying developments which should be considered under the State Environmental Planning Policy (Resilience and Hazards) 2021 guidelines, and on the broad assessment requirements of the policy.

2.3. APPLYING STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021 GUIDELINES TO DETERMINE IF IT IS APPLICABLE

2.3.1. CHAPTER 2 - COASTAL MANAGEMENT

Under the State Environmental Planning Policy (Resilience and Hazards) 2021, aims from Chapter 2 is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016, including the management objectives for each coastal management area, by:

- Managing development in the coastal zone and protecting the environmental assets of the coast.
- Establishing a framework for land use planning to guide decision-making in the coastal zone.
- Mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the Coastal Management Act 2016.

2.3.2. CHAPTER 3 - HAZARDOUS AND OFFENSIVE DEVELOPMENT

This Chapter aims to:

- Amend the definitions of hazardous and offensive industries used in environmental planning instruments.
- 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 Chapter.
- Require development consent for hazardous or offensive development proposed to be carried out in the Western Division.
- 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.
- 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

1 http://www.planning.nsw.gov.au/Policy-and-Legislation/~/media/3609822D91344221BA542D764921CFC6.ashx

offensive and to impose conditions to reduce or minimise any adverse impact.

- Require the advertising of applications to carry out any such development.

Therefore, Chapter 3 of the State Environmental Planning Policy (Resilience and Hazards) 2021 will apply if a proposal for a 'development' requires consent, and it is either a potentially hazardous industry, a potentially offensive industry, or in some instances both. Figure 1 indicates the procedure for determining if CHAPTER 3 OF THE RH SEPP applies to a development application, while Figure 2 outlines the associated assessment process for a typical Part 4 local development.

In this instance, as the development is considered to be a "State Significant Development Application" and will be using hazardous chemicals, it could be defined as a hazardous and offensive development, therefore this assessment will be further discussed in subsequent sections of this report.

2.3.3. CHAPTER 4 – REMEDIATION OF LAND

The object of this Chapter is to provide for a Statewide planning approach to the remediation of contaminated land. In particular, this Chapter aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment:

- By specifying when consent is required, and when it is not required, for a remediation work.
- By specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular.
- By requiring that a remediation work meet certain standards and notification requirements.

Figure 1: CHAPTER 3 OF THE RH SEPP Process Taken from CHAPTER 3 OF THE RH SEPP Document[1]

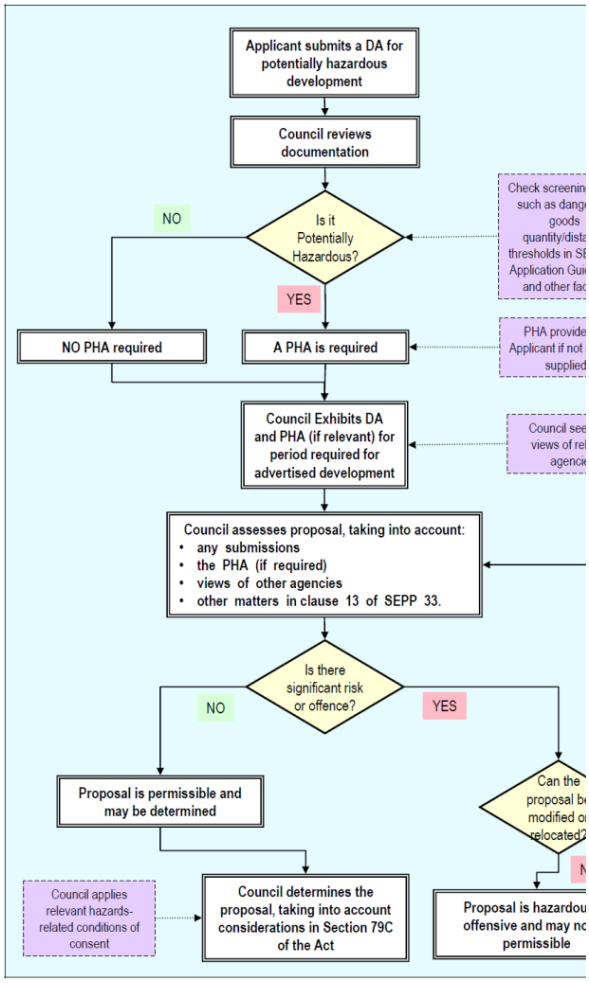
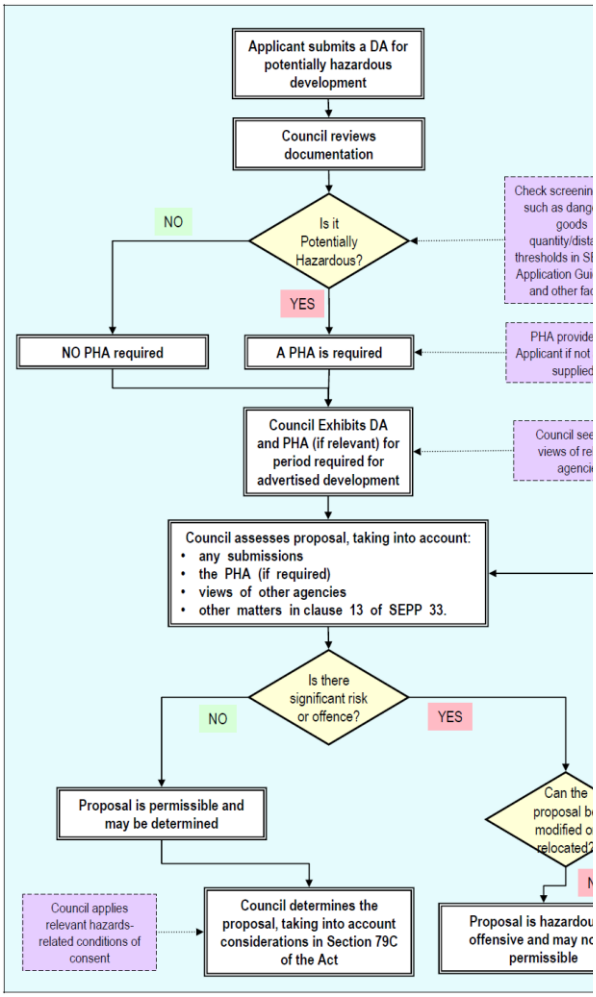


Figure 2: Procedural Requirements for Non-Designated Development Taken from CHAPTER 3 OF THE RH SEPP Document[1]



3. SCOPE AND AIM OF STUDY

CETEC's scope, as requested by the client, was for CETEC to conduct a Hazard and Risk assessment as described within the SEARS (refer to masterplan scope of the SSDA submission, the Masterplan 1 drawing below and Appendix B for all documentation):

- Where there are dangerous goods and hazardous materials associated with the development provide preliminary risk screening in accordance with Chapter 3 of SEPP (Resilience and Hazards) 2021.
- Where required by Chapter 3 of 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.

Therefore CETEC's scope of works is limited to the requirements of only addressing Chapter 3 of the State Environmental Planning Policy (Resilience and Hazards) 2021 guidelines for the development proposal, incorporating:

- Upgrades to the Preparatory School.
- The new Sports Pavilion adjacent to the western sports field precinct.
- The new Boarding House for up to 85 boarders and new staff housing.
- The Day Boy House for Year 7 students.
- The relocation of Ryrie Road (an internal road).
- The building for Science, Technology, Engineering, Arts and Maths (the 'STEAM building').

3.1. CHAPTER 3 - HAZARDOUS AND OFFENSIVE DEVELOPMENT

The objective of this assessment is to present the hazards and risks associated with the proposed development through the evaluation of the likelihood and consequences of an event through the identified hazards, the risks to the immediate community with the proposed refurbishment and compared to the NSW Department of Planning risk criteria. These criteria are detailed in the CHAPTER 3 OF THE RH SEPP document "Hazardous and Offensive Development Application Guidelines: Applying CHAPTER 3 OF THE RH SEPP" (NSW Department of Planning, 2011) under the "Multi-Level Risk Assessment Approach". Any hazard analysis will be conducted according to the Department of Planning's HIPAP No. 6 document entitled "Hazard Analysis".

The scope of this report includes the following:

- Systematic identification and documentation of conceivable hazards based on information supplied and relevant experience from similar projects.
- Establishment of the consequence of each identified hazard and determination of any offsite effects. Note: this process is quantitative based on current and proposed future expectations, actual impacts can be finalised following design finalisation, plume modelling and/or calculations as appropriate and if required.
- Where offsite effects are identified, the frequency of occurrence is determined based on historical data for the site.
- Proposed risk reduction measures as deemed necessary will also be recommended and applied to the analysis.

Masterplan 1: Masterplan showing proposed works.

3.2. How to Identify a Potentially Hazardous Industry

The following points and Figure 1 demonstrate how to determine if a proposed facility is hazardous using the risk screening method (Appendix 4 of the CHAPTER 3 OF THE RH SEPP document[1]). The information required to determine this is highlighted below:

- A list of all the hazardous materials to be used in the future proposed development and the quantity of each present. Note: if the proposed development is an addition or modification to an existing building, all hazardous materials on the site which are in proximity to the new development are to also to be included in the assessment.
- Dangerous goods classification for each material, including subsidiary class(es) are to be determined and documented.
- The mode of storage used (bulk or packages/containers) and the maximum quantity stored or held on site.
- The distance of stored material to the site boundary for any of the materials in dangerous goods Classes 1.1 (explosives with mass explosion hazard), 2.1 (flammable gases) and 3 (flammable liquids) must be determined.
- The average number of annual and weekly road movements of hazardous material to and from the site, including the typical quantity in each load.

From the above collated information, it is then possible to determine if the site will be considered hazardous or an offensive site under CHAPTER 3 OF THE RH SEPP methodology.

3.3. Identifying Maximum Chemical Storage Volumes to be Stored

Prior to applying the CHAPTER 3 OF THE RH SEPP methodology and analysis for determining if the site will be considered hazardous or offensive, determination of the chemical volumes proposed onsite will need to be considered. As this building will be considered to be a STEM facility housing teaching facilities and equipment, guidance from *AS 2243.2-2021 Safety in laboratories - Part 2 Chemical Aspects and Storage* will be sought as the mentioned Australian Standard would be the most applicable for determining maximum acceptable chemical storage volumes within this type of facility either in Bulk or in Minor storage volumes. That is, the guidance from *AS 2243.2-2021 Safety in laboratories - Part 2 Chemical Aspects and Storage* will be applied to determine maximum acceptable chemical volumes for the site if appropriate information is not available.

However, where possible, CETEC will use data from facility managers which would detail daily, weekly and/or yearly delivery/collection volumes of the various chemicals, load volumes for these deliveries and any other additional information which is applicable to this assessment. Although, where this information is not available, CETEC may obtain guidance from *AS 2243.2-2021 Safety in laboratories - Part 2 Chemical Aspects and Storage* to ascertain maximum allowable chemical storage volumes for this type of building, such as:

- Minor storage – these are hazardous substances which are intended to be used for the day-to-day

needs and generally would be stored on shelving above workbenches or within dedicated areas.

- Chemical cabinet storage – these are hazardous substances which are stored in larger volumes and are located within a dedicated Dangerous Goods chemical cabinet.
- Bulk chemical storage – these are chemicals which are stored in bulk within a dedicated enclosure, either within the building or detached from the building.

Following *Table 2* of *AS 2243.2-2021 Safety in laboratories - Part 2 Chemical Aspects and Storage* (Chemicals permitted to be stored in a laboratory other than in a chemical storage cabinet), the following maximum chemical volumes would be permitted to be stored within each teaching space (refer to Figure 3):

Figure 3: Table 2 – Maximum Storage Quantities taken from AS 2243.2[2]

Table 2 — Maximum storage quantities

Laboratory (see Notes 1,2,3)	Mixed class chemical storage in a laboratory shall not exceed 250 kg with the following conditions: (a) No more than 25 kg or PG 1. (b) Class 3 Flammable liquids shall not exceed the following: (i) 50 L per 50 m^2 of floor space, or 50 L in a room of up to 50 m^2 of floor space for PG I or PG II. (ii) 100 L per 50 m^2 of floor space for PG III. (iii) 200 L total for C1 and C2 combustible liquids. (iv) The limit for any manufactured product is the same as for a liquid of the same Packing Group.
Mixed class chemical storage	< 250 kg or 250 L with the following conditions: (a) No more than 25 kg of PG 1. (b) Class 3 Flammable liquids shall not exceed minor storage provisions for "laboratory" in AS 1940.
Chemical storage cabinets	< 50 kg each for Classes 3, 4.1, 4.3, 5, 6.1 and 8 Maximum 3 cabinets at 3 m apart in a 250 m^2 area
Internal fire rated store	2000 kg mixed dangerous goods Segregation based on AS 3833
External store	Segregation based on AS 3833
Where more than one type of dangerous goods are kept in a cabinet, such goods shall be compatible (AS/NZS 3833:2007 Clause 5.10.1). If the compatibility of the goods being kept cannot be fully ascertained from the available technical information, each class shall be kept in a separate cabinet, except that Class 3 and 4.1 and combustible liquids may be store in the same cabinet. (AS/NZS 3833:2007 Clause 5.10.1.)	
NOTE 1 This Table is intended to cater for the day-to-day working stock in the laboratory. If these quantities are to be exceeded, it will be necessary to install a cabinet or major store facility according to the scale needed. NOTE 2 Laboratories that are constructed, operated and equipped in the form of a flammable liquid storage room, and are used for the analysis of flammable liquids being processed, are exempt from this Table. NOTE 3 Materials being analysed, used, mixed, blended or reacted upon on laboratory benches or in fume cupboards are exempt from the limitations of this Table.	
NOTE 4 Where more than one type of dangerous goods are kept in a cabinet, such goods shall be compatible (AS 3833.5.10.1). NOTE 5 If the compatibility of the goods being kept cannot be fully ascertained from the available technical information, each class shall be kept in a separate cabinet, except that Class 3 and 4.1 and combustible liquids may be store in the same cabinet. (AS 3833.5.10.1).	

When considering chemical storage within dedicated chemical cabinets, the following Clauses apply as

2 AS 2243.2-2021 Safety in laboratories - Part 2 Chemical Aspects – page 41.

referenced from *AS 2243.2-2021*.

7.3.3.1 Cabinet storage capacity

The capacity of any chemical storage cabinet used in a laboratory to store chemicals of Classes 4.1, 4.2, 4.3, 5.1 or 5.2 shall not exceed 50 L. For other chemicals, the capacity shall not exceed 250 L.

7.3.3.2 Separation

Within a radius of 10 m, measured from any one cabinet, the cabinet storage capacity aggregated for all cabinets in that radius shall not exceed 250 L or 250 kg, including no more than 10 L or 10 kg each of dangerous goods of Classes 4.1, 4.2, 4.3, 5.1 or 5.2 that are classified as PG I. The radius shall be measured horizontally through intervening walls, unless those walls are able to prevent the spreading of a fire of the magnitude that could be expected to result from the contents of the cabinet(s).

Further to the above, chemicals stored in bulk within a dedicated internal chemical store are limited to 2000 L/Kg following construction/performance requirements from AS 3833 and/or AS 1940.

4. SITE AND SPATIAL REQUIREMENTS

4.1. SITE LOCATION AND SURROUNDING AREAS

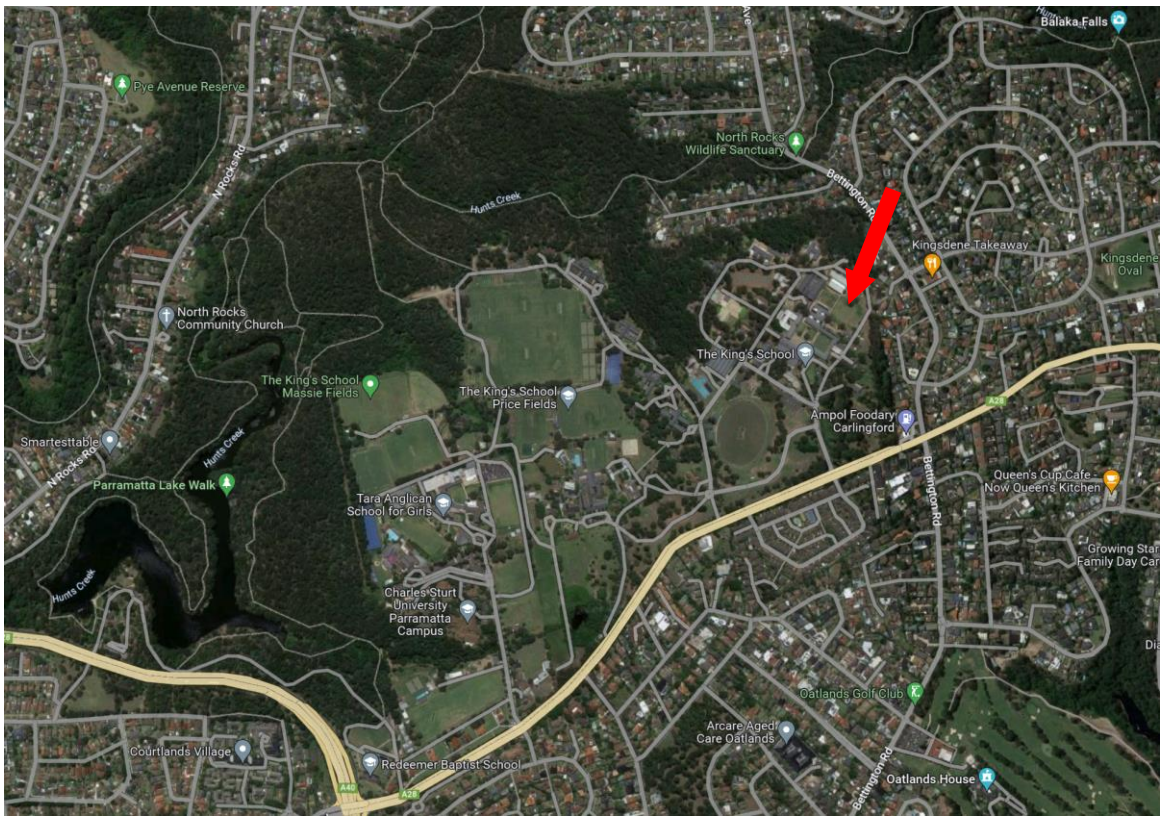
The proposed site is located at 87-129 Pennant Hills Road, North Parramatta NSW 2151. The site is located North of Pennant Hills Rd and just east of James Ruse Drive, with residential dwellings to the east and south and parkland to the north and west of the site, refer to Figure 4.

The proposed development will encompass a number of buildings, however, only the new proposed STEAM Building will house dangerous goods which will be used in teaching classes. Therefore this report will concentrate on the new STEAM Building and other areas, however, it will predominately exclude other areas such as the new Staff Residence Building, new Sports Pavilion, new Boarding House, etc., as these areas will not be housing dangerous goods and as such are excluded from this assessment and only the STEAM Building will be considered.

NOTE: CETEC has also considered the pool area as there will be a bulk storage of pool related chemicals.

The proposed new STEAM building, is located to the just west of the property perimeter in between The King's School Cadet Corps HQ and Q-Store and The King's School Quadrangle with Russell Rd being the closest access point, refer to the RED arrow in Figure 4. Currently the proposed facility would be located approx. 60-70 metres from residential properties to the east.

Figure 4: Location of the proposed development (red arrow)



4.2. CURRENT VOLUMES OF DANGEROUS GOODS/HAZARDOUS SUBSTANCES

Following the requirements of Chapter 3 of the State Environmental Planning Policy (Resilience and Hazards) 2021, Table 1 below indicates which hazardous materials form part of this assessment to determine if the proposal is hazardous, offensive or both. Therefore the information, as received from the client is documented within Table 1.

Table 1: Collated Volumes of Chemicals Being Stored Currently

Dangerous Goods Class	Current Maximum Storage Volume (L or Kg)
1.1	N/A
1.2-1.3	N/A
2.1 (pressurised, excluding LPG)	20
2.1 (liquefied pressure, excluding LPG)	N/A
LPG (above ground)	527
LPG (underground)	N/A
2.3	N/A
3 (PGI)	N/A
3 (PGII)	215.75
3 (PGIII)	108.8
4	N/A
5	0.25
6	9
7	N/A
8	3469

4.3. LIMITATIONS TO THIS ASSESSMENT

This assessment was conducted based on the information as provided by the client. The data presented in the Table within this report is based on information as supplied with no modification from CETEC. For areas where information was not available, extrapolation from the data available was conducted. Therefore the data presented in this report, is in our opinion, a best guess from the expected usage of the required chemicals and the available data.

Onsite, the greatest use of chemical is liquid pool chlorine and carbon dioxide, which is used in the pool area and is only delivered when required as a top-up to current volumes held onsite. Delivery frequency is also dependent on time of year, e.g. school holidays, swimming carnivals, etc. However as indicated by the client, on average, a delivery once every two months can be expected. In terms of all other chemicals, these are generally

used in classes and on average a larger delivery is expected once or twice per terms to cover all items which are required for these teaching classes. When referencing “larger deliveries”, these volumes are typically a few tins, can or containers.

5. REVIEWING CHAPTER 3 OF SEPP (RESILENCE & HAZARDS) 2021 TO DETERMINE APPLICABILITY

Since the 1980s, the New South Wales Department of Planning has promoted and implemented an integrated approach to the assessment and control of potentially hazardous development. The approach has been designed to ensure that safety issues are thoroughly assessed during the planning and design phases of a facility and that controls are put in place to give assurance that it can be operated safely throughout its life.

Applying CHAPTER 3 OF THE RH SEPP included a screening method, based on the quantities of Dangerous Goods on a site, to assist in determining if a development is likely to be a potentially hazardous industry. However, the screening method was not intended to be applied in isolation.

5.1. SCOPE AND APPLICATION

CHAPTER 3 OF THE RH SEPP 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 are to 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.

5.2. DOES CHAPTER 3 OF SEPP (RESILENCE & HAZARDS) 2021APPLY?

Firstly, consideration whether the proposed use falls within the definition of 'industry' as adopted by the planning instrument applies to this proposal or whether it is a 'storage establishment'. To determine whether this proposal falls within the definition of 'industry' or 'storage establishment', collation of site chemical storage and usage data is collated and compared to the following tables. If the collated data agrees with any of the tabulated limits, then the proposal is considered to be a Hazardous and/or Offensive Development.

5.2.1. SCREENING METHOD

Table 2 below and within a series of graphs and tables, (refer to Figure 6, Table 3 and Table 4), provide the required information to which the facility/development is assessed against. Quantities below those identified in the tables and graphs can be assumed to give an unlikely significant off-site risk and therefore will not make the proposed site/development a Hazardous and/or Offensive Development.

Further to this, Table 3 offers another consideration which is required to be assessed to determine if the site could be considered a Hazardous and/or an Offensive Development. This assessment is conducted by the assessment of the expected number of Dangerous Goods deliveries to the site over the year, week, or load volumes.

Currently Figure 6 graphs the minimum acceptable distance the proposed development can be to the neighbouring properties for the development to not be considered a Hazardous and/or Offensive Development.

Note that, residential properties would be considered a '*sensitive*' dwelling, further to this, CETEC has also included hospitals into this definition.

Table 2: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Table 1

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 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.*

Table 3: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Table 2

Table 2: Transportation Screening Thresholds

	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.*

Figure 5: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Figure 5

Figure 5: Class 1.1 Explosives

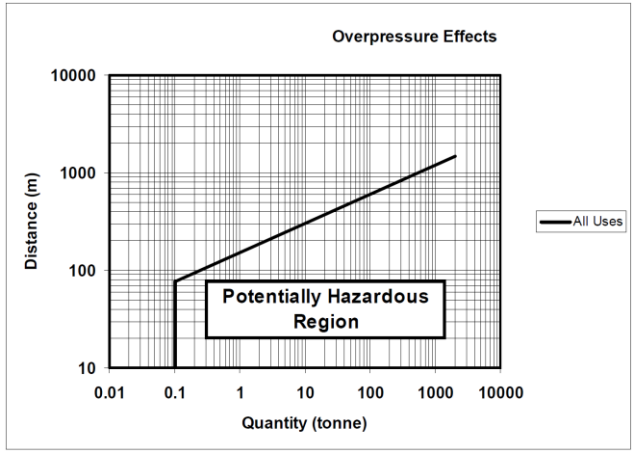


Figure 6: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Figure 6

Figure 6: Class 2.1 Flammable Gases Pressurised (Excluding LPG)

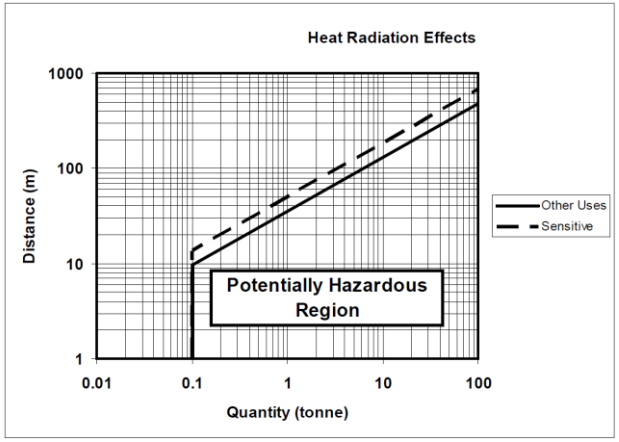


Figure 7: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Figure 7

Figure 7: Class 2.1 Flammable Gases Liquefied Under Pressure (Excluding LPG)

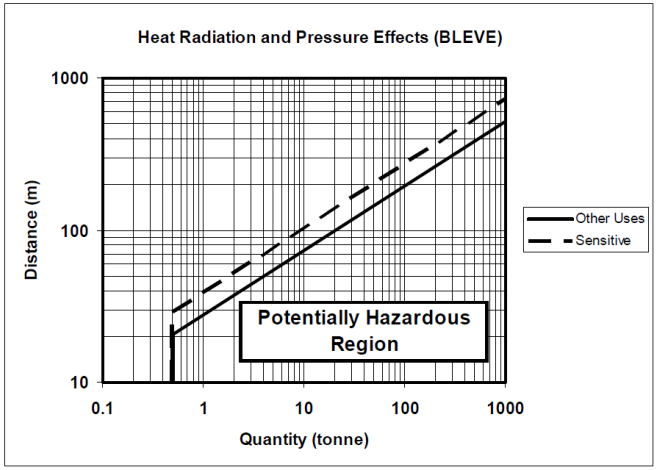


Figure 8: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Figure 8

Figure 8: Class 3PGI Flammable Liquids

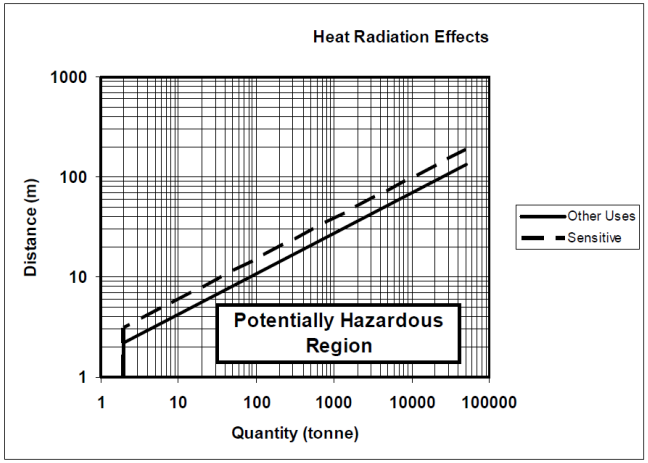


Figure 9: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Figure 9

Figure 9: Class 3PGII and 3PGIII Flammable Liquids

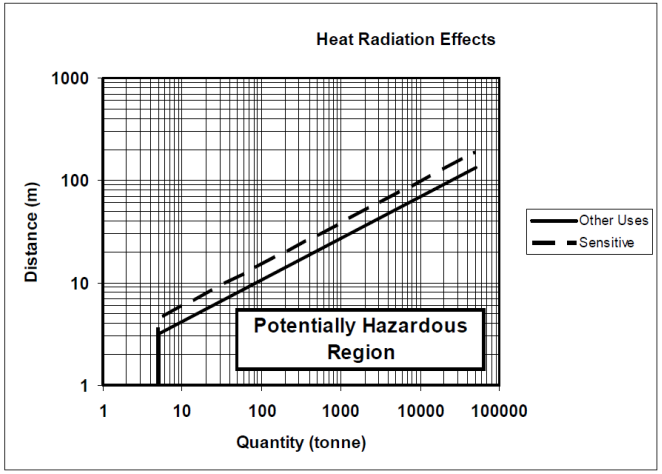


Table 4: Screen clip taken from CHAPTER 3 OF THE RH SEPP – Table 3

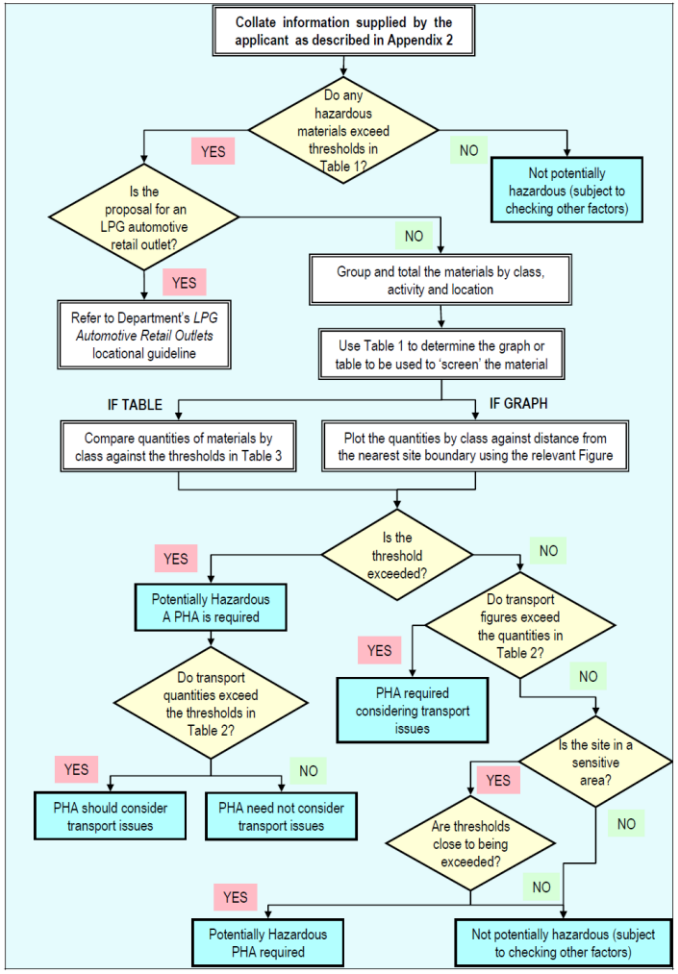
Table 3: General Screening Threshold Quantities

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

Note: *The classes used are those referred to in the Australian Dangerous Goods Code and are explained in Appendix 7.*

Figure 10: Screen Clip taken from CHAPTER 3 OF THE RH SEPP Document – Figure 4.

Figure 4: Risk Screening Procedure



5.3. IDENTIFY POTENTIALLY HAZARDOUS INDUSTRY

To identify a *Potentially Hazardous Industry*, a preliminary risk screen is conducted and the procedure is outlined in '*Figure 4*' of the CHAPTER 3 OF THE RH SEPP document, refer to Figure 10. Based on this the following information is collated:

- A chemical manifest/list of all hazardous materials used in the proposed development and the quantity of each present.
- Dangerous goods classification for each material, including subsidiary class(es).
- The mode of storage used (e.g. 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.
- The average number of annual and weekly road movements of hazardous material to and from the facility, and the typical quantity in each load.

5.3.1. SCREENING METHOD

Below CETEC has conducted a preliminary assessment in Table format to determine if CHAPTER 3 OF THE RH SEPP applies to this development and if it could be considered a Hazardous and/or an Offensive Development.

5.3.2. ASSESSMENT – CHEMICALS IN BULK STORAGE

Class	Referencing Source	Minimum Quantity (Kg)[3]	Proposed Storage (L / Kg)	Exceeded?	Finding
1.1	Table 1, Table 2 and Figure 5	100 Kg	N/A	No	Not stored/used onsite.
1.2	Table 1, Table 2 and Table 3	5 tonnes, or are located within 100 m of a residential area	N/A	No	Not stored/used onsite.
1.3	Table 1, Table 2 and Table 3	10 tonnes, or are located within 100 m of a residential area	N/A	No	Not stored/used onsite.
2.1 (pressurised, excluding LPG)	Table 1, Table 2 and Figure 6	100 Kg	20	No	Below threshold limit.
2.1 (liquefied, excluding LPG)	Table 1, Table 2	500 Kg	N/A	No	Not stored/used onsite.
LPG (above ground)	Table 1, Table 2 and Table 3	10 tonne or 16 m^3	527	No	Below threshold limit
LPG (below ground)	Table 1, Table 2 and Table 3	40 tonne or 64 m^3	N/A	No	Not stored/used onsite.
2.3	Table 1, Table 2 and Table 3	5 tonnes, anhydrous ammonia	N/A	No	Not stored/used onsite.
2.3	Table 1, Table 2 and Table 3	1 tonne, chlorine and sulphur dioxide stored as liquefied gas in containers <100 kg	N/A	No	Not stored/used onsite.
2.3	Table 1, Table 2 and Table 3	2.5 tonnes, chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg	N/A	No	Not stored/used onsite.

3 Mass was calculated based on the volume multiplied by the density.

Class	Referencing Source	Minimum Quantity (Kg)[3]	Proposed Storage (L / Kg)	Exceeded?	Finding
2.3	Table 1, Table 2 and Table 3	100 (liquefied gas kept in or on premises)	N/A	No	Not stored/used onsite.
2.3	Table 1, Table 2 and Table 3	100 (other poisonous gases)	N/A	No	Not stored/used onsite.
3 (PGI)	Table 1, Table 2 and Figure 8	2,000	N/A	No	Not stored/used onsite.
3 (PGII)	Table 1, Table 2 and Figure 9	5,000	215.75	No	Below threshold limits.
3 (PGIII)	Table 1, Table 2 and Figure 9	5,000	108.8	No	Below threshold limits.
4.1	Table 1, Table 2 and Table 3	5,000	N/A	No	Not stored/used onsite.
4.2	Table 1, Table 2 and Table 3	1,000	N/A	No	Not stored/used onsite.
4.3	Table 1, Table 2 and Table 3	1,000	N/A	No	Not stored/used onsite.
5.1	Table 1, Table 2 and Table 3	25,000 (ammonium nitrate, high density fertiliser grade kept on land zoned rural where rural industry is carried out)	N/A	No	Not stored/used onsite.
5.1	Table 1, Table 2 and Table 3	5,000 (ammonium nitrate — elsewhere)	N/A	No	Not stored/used onsite.
5.1	Table 1, Table 2 and Table 3	2,500 (dry pool chlorine, if at a dedicated pool supply shop in containers <30 kg)	N/A	No	Not stored/used onsite. Sodium hypochlorite solution is used in the pool, refer to Class 8, PG II

Class	Referencing Source	Minimum Quantity (Kg)[3]	Proposed Storage (L / Kg)	Exceeded?	Finding
					below.
5.1	Table 1, Table 2 and Table 3	1,000 (dry pool chlorine, if at a dedicated pool supply shop in containers >30 kg)	N/A	No	Not stored/used onsite. Sodium hypochlorite solution is used in the pool, refer to Class 8, PG II below.
5.1	Table 1, Table 2 and Table 3	5,000 (any other class 5.1)	0.25	No	Below threshold limits.
5.2	Table 1, Table 2 and Table 3	10,000	N/A	No	Not stored/used onsite.
6.1	Table 1, Table 2 and Table 3	6.1 (PGI) – 500	N/A	No	Not stored/used onsite.
6.1	Table 1, Table 2 and Table 3	6.1 (PGII & PGIII) – 2,500	9	No	Below threshold limits.
6.2	Table 1, Table 2 and Table 3	6.2[4] – 500	N/A	No	Not stored/used onsite.
7	Table 1, Table 2 and Table 3	All	N/A	No	Not stored/used onsite.
8	Table 1, Table 2 and Table 3	PGI – 5,000	N/A	No	Not stored/used onsite.
8	Table 1, Table 2 and Table 3	PGII – 25,000	3461	No	Below threshold limits.
8	Table 1, Table 2 and Table 3	PGIII – 50,000	8	No	Below threshold limits.

4 This quantity is the average per waste pick up.

5.3.3. ASSESSMENT – TRANSPORTATION CONSIDERATIONS

In conducting this assessment, the expected number of vehicles movements that occur onsite for deliveries and removals of waste also needs to be assessed. Based on this and the information as provided by the client, (see Appendix A), the aggregate annual volume of deliveries, which usually occur on a daily, weekly, or monthly basis depending on the items being delivered or picked up is summarised below. The data also aggregate package volume and estimated by CETEC container volumes based on site observations. Therefore, CETEC has estimated the following information as detailed below.

Based on a normal delivery scenario as indicated by the client, the following deliveries occur;

- Liquid pool chlorine is delivered on an as-needed basis which on average occurs every 2 months and the volume is typically to top-up the liquid chlorine pool tank.
- In terms of chemical to be used within the facility, the volumes held are quite small and typically would be purchased to last a single term.
- The volumes of chemicals needed are also dependent on classes and which subjects are being taught, therefore the required delivery of these items becomes varied but usually occurs at the beginning or towards the end of each term.

	Number of Vehicle Movements, (i.e. deliveries and pickups)				Minimum Quantity per Load (tonnes)			
Class	**Cumulative Annual**	**Expected to be Exceeded**	**Peak Weekly**	**Expected to be Exceeded**	**Bulk**	**Expected to be Exceeded**	**Package**	**Expected to be Exceeded**
1	All	N/A	All	N/A	All	N/A	-	N/A
2.1	> 500	No	> 30	No	2	No	5	No
2.3	> 100	N/A	> 6	N/A	1	N/A	2	N/A
3 - PGI	> 500	N/A	> 30	N/A	1	N/A	1	N/A
3 - PGII	> 750	No	> 45	No	3	No	10	No
3 - PGIII	> 1,000	No	> 60	No	10	No	No Limit	No
4.1	> 200	N/A	> 12	N/A	1	N/A	2	N/A
4.2	> 100	N/A	> 3	N/A	2	N/A	5	N/A
4.3	> 200	N/A	> 12	N/A	5	N/A	10	N/A
5	> 500	No	> 30	No	2	No	5	No
6.1	All	No	All	No	1	No	3	No
6.2	See Note	N/A	See Note	N/A	See Note	N/A	N/A	N/A
8	> 500	No	> 60	No	2	No	5	No

NOTE: As indicated in the CHAPTER 3 OF THE RH SEPP Guidelines, “Where proposals include materials of Class 6.2, the Department of Planning should be contacted for advice.”

5.3.4. FINAL EVALUATION

Therefore based on the preliminary assessment within Sections 5.3.2 and 5.3.3, the limits have not been exceeded for any chemical classes or vehicles movements.

In addition to this, the proposed development is mainly to consolidate a number of different classrooms into a new facility. This consolidation is to allow for the upgrading of current facilities and provide state-of-the -art facilities for the student. Overall, although classes may grow in the number of students, the growth will not result in the doubling or tripling of the required chemical volumes. However, even if chemical volumes were to double, they would still remain under the threshold limits, which also includes the delivery schedule.

Dangerous Goods Class	Expected Future Storage Volume (L or Kg)	CHAPTER 3 OF THE RH SEPP Minimum Quantity (Kg)
1.1	N/A	100
1.2-1.3	N/A	5 tonnes (1.2), 10 tonnes (1.3)
2.1 (pressurised, excluding LPG)	20	100
2.1 (liquefied pressure, excluding LPG)	N/A	500
LPG (above ground)	527	10 tonnes
LPG (underground)	N/A	40 tonnes
2.3	N/A	100 (other poisonous gases)
3 (PGI)	N/A	2000
3 (PGII)	215.75	5000
3 (PGIII)	108.8	5000
4	N/A	5000 (4.1), 1000 (4.2), 1000 (4.3)
5	0.25	5000 (any other class 5.1), 10000 (5.2)
6	9	500 (PGI), 2500 (PGII & PGIII)
7	N/A	All
8	3469	5000 (PGI), 25000 (PGII), 50000 (PGIII)

6. STUDY METHODOLOGY – RISK ASSESSMENT

6.1. INTRODUCTION TO METHODOLOGY

The methodology for the PHA is well established and documented in Australia utilising the criteria as detailed in the Department of Planning's HIPAP No 6 (Guidelines for Hazard Analysis) and HIPAP No 4 (Risk Criteria for Land Use Planning, Ref 2). These documents describe the methodology and criteria to be used in PHAs, as required by the NSW Department of Planning for major 'potentially hazardous' developments.

As per HIPAP No 6, there are five (5) stages in the risk assessment, which are;

Stage 1: **Hazard Identification** – The review of potential hazards associated with all hazardous goods to be stored and used onsite, including their transportation to and from the site.

The hazard identification also includes identification of potential incidents and their impact on neighbouring areas, including public spaces and buildings and private buildings. Once identified, possible mitigating strategies to minimise the likelihood of the incident and/or decrease the impact on the public are then considered.

Stage 2: **Consequence and Effect Analysis** – The consequences of identified hazards are assessed using current risk assessment techniques with consideration of known exposure standards and known correlations between exposure and health effects. In addition, potential impacts on neighbouring properties and to the local environment are considered.

Stage 3: **Frequency Analysis** – In consideration of potential incidents for which significant effects have been identified, whether to people, property or the neighbouring external environment, the frequency of occurrence is estimated or evaluated based on historical data.

Stage 4: **Quantitative Risk Analysis** – The combination of a potential consequence (such as death or injury) combined with the estimated frequency of an event results in the risk from the event,

i.e. *Risk = Consequence x Frequency*

The risk is therefore obtained by adding together the results from the risk calculations for each incident and the results from the risk analysis are presented in three forms;

- Individual fatality risk.
- Injury or irritation risk.
- Societal risk.

The risk results are then assessed against the guidelines adopted by the NSW Department of Planning.

Stage 5: **Risk Reduction** – Where possible, risk reduction measures are identified throughout the course of the study in the form of recommendations. If adopted, future risk assessment calculations can be modified accordingly.

6.2. RISK CRITERIA

Having determined the risks from a proposed development, it must then be compared to acceptable criteria in order to assess whether or not the risk level is acceptable. If not acceptable, then specific risk mitigating measures must be developed and incorporated to reduce the risk to an acceptable level. Where no measures are found, then the development is not compatible with the surrounding environment and land uses.

7. HAZARD ANALYSIS

7.1. HAZARD IDENTIFICATION – SUMMARY OF HAZARDOUS GOODS ONSITE

For the nature of the building, the foreseeable dangerous goods that could be supplied, stored, and used onsite are listed in Table 5. The list is comprehensive, as it's envisaged that several of the laboratories used by research staff to conduct research while other areas will be used to conduct analytical activities, possibly resulting in a very wide range of hazardous substances being stored and used on site.

It should be noted that the Australian Standards cited in Table 5 are still current, and generally the current edition of the standard would be followed. The standards should not be considered in isolation from the current legislation in NSW. In any case, incompatibilities with the legislation are rare. The NSW Work Health and Safety Regulation (2011), hereafter referred to as the 'WHS Regulation', requires businesses or organisations to assess risk and to minimise risk accordingly. It includes specific provisions for chemicals, including "scheduled" chemicals, chemicals containing lead and specifically listed carcinogenic substances. The use of any of these substances' triggers specific requirements in the legislation. Australian Standards are not part of the legislation, but their implementation represents best practice and would be expected to be looked on favourably in a court of law.

Table 5: Substances which could be stored and used within these classes.

Building activity	Associated chemical and/or hazard class	Comments on requirements and storage restrictions
Compressed gases in laboratory spaces: supply, storage & handling	Classes 2.1, 2.2 and 2.2-5.1	Storage and handling on site will be dictated by the requirements of AS 2243.2 and AS 4332 (most requirements are in AS 4332).
Flammable liquids: supply, storage & handling	Class 3 liquids	Storage and handling on site will be dictated by the requirements of AS 2243.2 and AS 1940.
Oxidising substances: supply, storage & handling	Class 5.1 substances	Storage and handling on site will be dictated by the requirements of AS 2243.10 and AS 4326.
Toxic substances: supply, storage & handling	Class 6.1 substances	Storage and handling on site will be dictated by the requirements of AS 2243.10 and AS 4452, and with various state and federal regulations.
Corrosive substances: supply, storage & handling	Class 8 substances	Storage and handling on site will be dictated by the requirements of AS 2243.10 and AS 3780.
Miscellaneous dangerous goods: supply, storage & handling	Class 9 substances	Storage and handling on site will be dictated by the requirements of AS 2243.2 and AS 4681.

7.2. SUMMARY OF RISK DUE TO IDENTIFIED HAZARDS

Although there is a large number of identified hazards onsite, overall these hazards can be grouped into the following main categories assuming any incident occurs within the confines of the building;

- Reticulation services line rupture – Depending on the gases being reticulated, fire, explosion, asphyxiation, or varying levels of toxicity to people may result.
- Gases (Classes 2.1 and 2.2) – Depending on where the gas usage is occurring or where the gas is being stored, fire, explosion, asphyxiation may result.
- Class 3 substances (i.e. flammable liquids) – Depending on where storage or usage is occurring, fire, explosion, or varying levels of toxicity to people may result. There are containment issues to be considered in the event of a flammable liquids fire, and
- Class 5.1 substances (oxidising agents) – Depending on where storage or usage is occurring, fire, increased risk of explosion may result. Final outcomes will be dependent on the type of oxidising substances in use.
- Class 6.1 (toxic) substances – Depending on where storage or usage is occurring, they confer varying levels of toxicity danger to personnel. Only acute toxicity counts towards this classification, but chronic toxicity also poses hazards when substances are handled regularly.
- Class 8 (corrosive) substances – Depending on where storage or usage is occurring, varying levels of

danger to personnel may result, depending on the degree of corrosiveness towards human tissue and on the toxicity of the substance. Final outcomes will depend on the types of corrosive agents being used. Class 8 substances are subject to a wide range of incompatibilities both with other corrosive substances and with other dangerous goods classes. The majority of Class 8 chemicals is the liquid pool chlorine used in the pool area.

- Class 9 substances – these are described as miscellaneous dangerous goods and include a high proportion of substances that are environmentally hazardous, of which a high proportion of those are aquatic or marine pollutants and would constitute an environmental hazard in the event of a major loss of containment.

7.3. HAZARD IDENTIFICATION AND MITIGATION

Table 6 below provides a summary of the hazardous incidents identified onsite and potential initial mitigating features which may be implemented to reduce their overall risk outcome.

Table 6: Risk Assessment of Foreseeable Scenarios

Event	Cause/Comment	**Category of consequence (bold);** Description of hazards(s)	Likelihood of Event
Chemical Storage and Laboratory Areas/ Usage (Classes 3 to 9, including sub. classes)			
Class 3: Accidental spillage or breakage of containers	Human error, shelving failure.	**Consequence: Minor** Spillage results in generation of flammable vapours: FIRE OR EXPLOSION, resulting in injury. Volumes held and stored are quite small.	**Likelihood: Rare** Human error and/or user inexperience may result in a human induced event. Likelihood is "Rare" based on assumption that mitigation would include use of mechanical ventilation within store, and hazardous zone assignments within store would further reduce probability of ignition.
All classes, but particularly Class 5.1 and Class 8: Accidental breakages resulting in spillage and mixing of 2 or more incompatible chemicals within chemical storage area.	Human error, shelving failure.	**Consequence: Minor** Spillage results in incompatible chemicals reacting, with generation of toxic and corrosive fumes; MINOR INJURIES. Volumes held and stored are quite small.	**Likelihood: Rare** Human error and/or user inexperience may result in a human induced event; this would require incompatible chemicals to be spilt together, "Rare" assumes that mechanical ventilation would greatly reduce the probability that resulting vapours would reach highly toxic or hazardous levels. The change of mixing of chemicals #would be further reduced by storing incompatible chemicals within dedicated chemical cabinets or different stores.
As above, but with consequences outside of building	Delivery vehicle accident, accidental dropping of containers within loading dock area.	**Consequence: Insignificant** Spillage results in complaints from personnel in neighbouring surrounding building. The expected volumes to be delivered would be quite small.	**Likelihood: Rare** Complaints would be likely only in the event that the reaction products generate strong odours

Event	Cause/Comment	**Category of consequence (bold);** Description of hazards(s)	Likelihood of Event
Class 6.1 and Class 8: Accidental spillage or breakage of containers	Human error, shelving failure.	**Consequence: Minor** The corrosiveness and/or toxicity of the spilt liquid and any vapours produced lead to toxic health effects and damage to human tissue; INJURIES REQUIRING HOSPITALISATION. Within the classroom areas, the volumes expected to be delivered are quite small. Greater volumes of class 8 would be expected to be delivered for the pool area, however, deliveries are conducted by experts and they have their normal SWMS to comply with regulated requirements for dangerous goods deliveries.	**Likelihood: Unlikely** Mixing of chemicals resulting in undue risk would be low because chemicals would be stored within dedicated chemical cabinets or stores.
Class 5.1: Accidental spillage of chemical within laboratories, liquid contacts organic material such as fabric or an oxidisable substance	Human error, shelving failure.	**Consequence: Insignificant** Spillage not fully cleaned up and organic material later catches fire, resulting in building fire. INJURIES REQUIRING HOSPITALISATION, PROPERTY DAMAGE. Volumes expected to be delivered are very small.	**Likelihood: Rare** Human error and/or user inexperience may result in a human induced event. Fires of this nature are rare but known to occur.
Class 5.1, 6.1 or 8: Accidental breakage of glass container within laboratories, with injury to person and contact with substance that's corrosive to skin,	Human error, shelving failure.	**Consequence: Minor** Person ruptures skin while trying to clean up spillage, neglecting to use appropriate PPE due to inexperience; INJURY REQUIRING HOSPITALISATION. Volumes expected to be delivered are very small.	**Likelihood: Rare** Human error and/or user inexperience may result in a human induced event.
Multiple classes: Two chemicals are deliberately mixed, leading to unintended and violent reaction	Human error, shelving failure.	**Consequence: Minor** The sudden nature and violence of the reaction lead to injury and property damage. INJURIES REQUIRING HOSPITALISATION, PROPERTY DAMAGE. Working volumes are very small.	**Likelihood: Unlikely** Human error and/or user inexperience may result in a human induced event.
As above, but with consequences outside of building	Delivery vehicle accident, accidental dropping of containers within loading dock area.	**Consequence: Insignificant** Unintentionally violent chemical reaction results in complaints from personnel in neighbouring surrounding building. Volumes expected to be delivered are very small.	**Likelihood: Rare** Complaints would be likely only in the event that the reaction products generate strong odours
Transportation of Dangerous Goods to and from the building			
Accident onsite while goods are being delivered to site	Human error.	**Consequence: Moderate** Gas cylinders, cryogenic liquid vessels may become damaged. Breakage of glass containers holding chemicals. Release of toxic, flammable or oxygen depleting gases into the surrounding area.	**Likelihood: Unlikely** The dangerous goods transport company would follow their procedures and protocols which would be in compliance to the ADG Code.

7.4. CALCULATION OF RISK

Risk is the likelihood of any defined adverse outcome due to a hazardous event. Risk can be defined for any of the final outcomes of an event as detailed in Table 6 by the effect of the consequences coupled with the associated likelihood. As the adverse outcome can take many forms, particularly in the case of effects on the biophysical environment, risks can be expressed in a number of different ways. Within this report, the Risk has been documented in Table 8 using the risk assessment table in Table 7.

Based on the risk assessment results as detailed in Table 8, result greater than 'LOW' will require further risk mitigating hardware to mitigate any potential adverse event or reduce its impact. This section of the assessment now only applied to the proposed changes to the building.

Table 7: Risk Assessment Table

Likelihood	Consequences					
		Insignificant Minor problem, easily handled by normal day to day process.	**Minor** Some disruption possible. Injuries may result, hospitalisation generally not required, can be treated with first aid onsite.	**Moderate** Significant time & resources required. Moderate injuries, may require hospitalisation.	**Major** Operations severely damaged. Severe injuries.	**Catastrophic** Business survival at risk. Death.
	Almost Certain (>90%)	**High**	**High**	**Extreme**	**Extreme**	**Extreme**
	Likely (50 - 90%)	**Moderate**	**High**	**High**	**Extreme**	**Extreme**
	Moderate (10 - 50%)	**Low**	**Moderate**	**High**	**Extreme**	**Extreme**
	Unlikely (3 - 10%)	**Low**	**Low**	**Moderate**	**High**	**Extreme**
	Rare (<3%)	**Low**	**Low**	**Moderate**	**High**	**High**

Table 8: Risk Assessment Outcome

Event	Consequence Rating	Likelihood Rating	Overall Risk	Required Mitigating Strategies
Chemical Storage and Laboratory Areas/ Usage (Classes 3 to 9, excluding 6.2 & 7, including sub. Classes)				
Class 3: Accidental spillage or breakage of containers, resulting in fire or explosion with FATALITY	**Minor**	**Rare**	**Low**	• Design chemical storage areas as per the requirements of AS 2243.2, incorporating further requirements from AS 1940, i.e. fire separation, ventilation requirements, etc. • Incorporate minimum firefighting requirements as per AS 1940. • Ensure flammable liquids store has containment area that's designed as per the requirements of AS 1940, thus supplying minimum bunding requirements so that all foreseeable spills are contained. • For areas where flammable vapours may result, ensure hazard zoning as per the requirements of AS 60079.10.1 are incorporated clearly documenting ZONE type, Gas Group, Temperature Class. • Ensure that all flammable liquids are suitably stored, even those which are only subsidiary Class 3
All classes, but particularly Class 5.1 and Class 8: Accidental breakages resulting in spillage and mixing of 2 or more incompatible chemicals within chemical storage area. SERIOUS INJURIES	**Minor**	**Rare**	**Low**	• Design chemical storage areas incorporating segregation and separation to minimise unwanted chemical mixing, i.e. Class 3 chemicals to be separated from Class 8 and 6.1. Class 6.1 chemicals to be segregated from Class 8 chemicals. • Ensure pool chlorine deliveries are conducted in a safe manner where the delivery truck/company follow all appropriate legislation/regulation relating to transportation of dangerous goods.
As above, but with consequences outside of building COMPLAINTS FROM PERSONNEL IN SURROUNDING BUILDINGS	**Insignificant**	**Rare**	**Low**	As above, but additionally: • Ensure exhaust from chemical storage areas exhaust at an appropriate location, ideal locations may require investigation. However, as a minimum it should comply with AS 1940 and AS/NZS 1668 requirements.
Class 6.1 and Class 8: Accidental spillage or breakage of containers, leads to INJURIES REQUIRING HOSPITALISATION	**Minor**	**Unlikely**	**Low**	• Careful assessment of each course of action and use of appropriate PPE to minimise probability of a spillage of toxic and corrosive chemicals
Class 5.1: Accidental spillage of chemical within laboratories, liquid contacts organic material such as fabric or an oxidisable substance, resulting in INJURY REQUIRING HOSPITALISATION	**Insignificant**	**Rare**	**Low**	• Training of all personnel to increase awareness of the potential of oxidising agents to lead to fires, with reference to AS 4326.

Event	Consequence Rating	Likelihood Rating	Overall Risk	Required Mitigating Strategies
Class 5.1, 6.1 or 8: Accidental breakage of glass container within laboratories, with injury to person and contact with substance that's corrosive to skin,	**Minor**	**Rare**	**Low**	• Careful assessment of each course of action and use of appropriate PPE to minimise probability of the breakage of a glass vessel containing of toxic, oxidising, or corrosive chemicals
Multiple classes: Two chemicals are deliberately mixed, leading to unintended and violent reaction, resulting in INJURY REQUIRING HOSPITALISATION & PROPERTY DAMAGE	**Minor**	**Unlikely**	**Low**	• Careful assessment of risk of uncontrolled reaction prior to mixing chemicals; of appropriate PPE to minimise probability of injury
As above, but with consequences outside of building COMPLAINTS FROM PERSONNEL IN SURROUNDING BUILDINGS	**Insignificant**	**Rare**	**Low**	As above, but additionally: • Ensure exhaust from chemical storage areas exhaust at an appropriate location, ideal locations may require investigation through AERMOD, AUSPLUME or physical modelling of wind and building infrastructure
Transportation of Dangerous Goods to and from the building				
Loss of containment of dangerous goods onsite while goods are being delivered to site	**Moderate**	**Unlikely**	**Moderate**	• Ensure that all deliveries to site are conducted by approved suppliers which hold all relevant licensing as per the Australian Dangerous Goods Code, Dangerous Goods (Road and Rail Transport) Act 2008 and Dangerous Goods (Road and Rail Transport) Regulation 2014. • Ensure appropriate spill kits are available and that all facility staff who may be in attendance are trained in their use, and in how to react to a loss of containment. • Ensure the design of the loading dock provides ample space for ease of truck movements. • Ensure that spilt material is not allowed to enter waterways and that it's not somehow flushed or moved into a public place where members of the public may be exposed to it. • Ensure that the company delivering the dangerous goods has a safety management system that includes procedures for clean-ups and incident management; where spills occur on facility premises, the facility staff should be in control of the clean-up process.

8. POTENTIAL HAZARDOUS INCIDENTS AND THEIR CONTROLS

As detailed in the risk assessment above (Table 8), safety management systems have been recommended to reduce the risk from potentially hazardous installations, these mitigating strategies will employ design requirements as detailed in various Australian Standards and a combination of engineered solutions including, hardware and software packages. It is essential to ensure that hardware systems and software procedures used are reliable and of the highest quality in order to ensure safe operation of the facility under all circumstances.

8.1. GENERAL HARDWARE SAFEGUARDS

Hardware safeguards include factors such as laboratory design, layout of equipment and instrumentation, and compliance with relevant codes, technical standards, and industry best practice.

All systems handling dangerous goods will comply with the following Acts, Regulations and Codes and Australian Standards in their latest editions. Below are listed some of the most relevant for laboratory design and construction:

- NSW Work Health and Safety Act (2011) and NSW Work Health and Safety Regulation (2011)
- NSW Dangerous Goods (Road and Rail Transport) Act 2008 and NSW Dangerous Goods (Road and Rail Transport) Regulation 2014
- Gene Technology Act (2000) and Gene Technology Regulations (2001)
- AS/NZS 2982 Laboratory design and construction.
- AS/NZS 2243.1 Safety in laboratories – Planning and operational aspects.
- AS 2243.2 Safety in laboratories - Part 2 Chemical Aspects and Storage.
- AS/NZS 5601.1 Gas Installations – General Installations
- AS 4332 The storage and handling of gases in cylinders
- AS/NZS 60079.10.1 Explosive atmospheres - Classification of areas - Explosive gas atmospheres.
- AS/NZS 60079.17 Explosive atmospheres - Electrical installations inspection and maintenance.
- AS/NZS 60079.14 Explosive atmospheres - Electrical installations design selection and erection.

8.2. SPECIFIC HARDWARE SAFEGUARDS

8.2.1. GAS LEAKAGE

Various Australian Standards set out minimum standards for pipelines in which flammable, oxidising, toxic or non-hazardous gases are reticulated. These give detailed requirements for the design, construction, and operation of the pipelines for the various classes of gases.

The proposed safeguards for the supply pipelines are detailed below. The safeguards have been grouped together under the potential hazardous events associated with the pipeline.

- External Interference – Such interference may be due to collisions from vehicles or sabotage of the installation. This potential is minimised through the fact that all gas services will be clearly labelled and protected by collision bollards (if stored externally) or within dedicated enclosures. Further to this, any external installation will be protected by security fencing or within a dedicated secure enclosure.
- Construction Defects / Material Failure – These events may be due to poor workmanship or quality of material. Gas leaks due to material failure are minimised by initially testing gas systems as per the requirements of AS 4037 (these tests include the stability and quality of joints). The potential for gas leaks is further minimised by the installation of pressure release valves which are designed to release pressure at a known level below the failure point of equipment.
- Corrosion of piping – Although corrosion of piping may be possible in the lifetime of the installation, all exposed piping would be subject to ongoing monitoring and maintenance regimes as per manufacturer's requirements or as detailed in relevant Australian Standards.
- Oxygen depletion / Toxic and/or Flammable gas accumulation – In areas where gas accumulation can occur, appropriate oxygen depletion or toxic/flammable gas sensing devices are to be installed. An appropriate risk assessment must be conducted to elucidate appropriate sensors, alarming levels, and location for installation. When cylinders are not in use, cylinders are to be stored within a dedicated gas enclosure external to the building or within a dedicated area.
- Oxygen enrichment or build-up of oxidising gases – Oxygen enrichment can greatly increase the risk of fires. Where oxygen is used the sensors should also be capable of warning against oxygen enrichment; in the case of oxidising gases, appropriate sensors should be installed. When cylinders are not in use, cylinders are to be stored within a dedicated gas enclosure external to the building or within a dedicated area.

8.2.2. CHEMICAL STORAGE, USE, SPILLS OR FIRES

The appropriate Australian Standards for the storage of chemicals within a research or teaching facility include the AS/NZS 2243 series (several of which are already listed in Section 8.1), including other storage and handling standards relating to dangerous goods which are listed below:

- AS/NZS 1940 The storage and handling of flammable and combustible liquids.

- AS/NZS 4332 The storage and handling of gases in cylinders.
- AS/NZS 5026 The storage and handling of Class 4 dangerous goods.
- AS/NZS 4326 The storage and handling of oxidizing agents.
- AS/NZS 4452 The storage and handling of toxic substances.
- AS 3780 The storage and handling of corrosive substances.
- AS/NZS 4681The storage and handling of Class 9 (miscellaneous) dangerous goods and articles.
- AS/NZS 1216 Class labels for dangerous goods.
- AS 1668.2 The use of ventilation and air-conditioning in buildings. Part 2: Mechanical ventilation in buildings

Although the above standards may not be the most appropriate standards for the storage of these chemicals within this facility (due to their small volumes), the intent and guidance within the above standards is recommended to be followed as the above standards set out storage requirements for dangerous goods, including constructions requirements for chemical stores, ventilation requirements, maximum allowable volumes in storage and in use, recommended procedures to mitigate spills and minimum firefighting requirements.

The proposed safeguards for these storage and usage areas are detailed below when considering potential hazardous events associated with the type of storage or use.

- Human error, spills, and vapour generation – For volatile chemicals which are accidently spilt due to human error (e.g. accidental dropping of containers) the resulting spilt liquids can generate vapours which may be toxic or flammable in nature. The vapour pressure of many liquids (ethanol for instance) will lie within the explosive range of that vapour and in the absence of effective ventilation the spillage can create a hazardous atmosphere above the liquid. A means to mitigate the risk to occupants is to ventilate the area to maintain an environment which is suitable for personnel to implement corrective actions to either clean up the spill or alert others to the incident. As detailed in the standards above, safety devices that are implemented in laboratory or chemical store design include:
    - Emergency buttons to alert security or safety officers.
    - Gas or vapour sensors, which when triggered, alert security or safety officers.
    - Emergency ventilation.
    - Spill kits to aid in clean-up.
- Flammable vapour generation – For areas where flammable liquids are used, spills of these chemicals can generate flammable vapours which can cause flash fires or explosions. This also includes the use of flammable gases. However, when considering the ‘fire triangle’, the three items that are required to cause a fire or explosion are oxygen, fuel, and an ignition source. The two items above which can be controlled through engineering mitigating devices are flammable vapour generation and ignition sources. Therefore, these areas will be ventilated as per AS 1940 and AS 1668.2 and all ignition sources

will be assessed following the requirements of AS 60079.10.1. That is all areas where flammable liquids are used will be mapped in terms of their flammable areas (known as hazardous zones, as defined in AS 60079.10.1) and all electrical items which fall within the defined hazard zones will be engineered to meet the requirements of the applicable standards of the AS 60079 series.

- Fires from spills – All areas where chemicals are being used may possess a small potential for fires. This risk is mitigated through the installation of various firefighting devices as per relevant codes and Australian Standards, these firefighting devices will include:
    - Fire sprinklers.
    - Fire hose reels.
    - Fire extinguishers.
    - Fire blankets.

  Therefore, although a risk of fire is always present there will be a number of mitigating strategies which will be applied to meet BCA requirements such as fire compartmentation, firefighting devices, etc.

- Containment of flammable liquid spills – areas where flammable liquids are stored will require appropriate containment of any flammable liquid spill and will need to be constructed to the requirements of AS 1940. Areas where these chemicals are used will need to comply with the requirements of AS 2243.2.
- Containment of corrosive liquid spills – areas where flammable liquids are stored will require appropriate containment of any flammable liquid spill and will need to be constructed to the requirements of AS 3780. Areas where these chemicals are used will need to comply with the requirements of AS 2243.2.
- Storage of Class 5.1 dangerous goods (i.e. oxidising substances) – areas where oxidising agents are stored will require appropriate containment and will need to be constructed to the requirements of AS 2714 and/or AS 2243.2. Areas where these chemicals are used will need to comply with the requirements of AS 2243.2.
- Storage of Class 6.1 dangerous goods (i.e. toxic substances) – areas where oxidising agents are stored will require appropriate containment and will need to be constructed to the requirements of AS/NZS 4452 and/or AS 2243.2. Areas where these chemicals are used will need to comply with the requirements of AS 2243.2.
- Although not mentioned within this report, classes may use aluminium sheeting within their robotics classes, it is noteworthy to mention that if aluminium is ground or cut into a fine powder there is a risk of fire due to combustible dusts. Therefore, housekeeping is important to reduce the accumulation of aluminium dust.

9. CONCLUSION

In reviewing the new proposal and the conditions as detailed within the State Environmental Planning Policy (Resilience and Hazards) 2021 guidelines where 'Chapter 2 - Coastal Management', 'Chapter 3 – Hazardous and Offensive Development' and 'Chapter 4 – Remediation of land' form part of the assessment, it was determined and requested that CETEC only provide an assessment covering Chapter 3 to this assessment. Therefore a "Hazardous and Offensive Development" assessment was conducted and based on the assessment and as detailed in Sections 3.3.1 and 3.3.2, no limits of chemical storages currently have been exceeded and projecting into the future with expected facility occupant growth/consolidation, CETEC is of the opinion that the facility/development will not be considered to be a Hazardous and Offensive Development.

That is, this proposed development, which includes:

- Upgrades to the Preparatory School.
- The new Sports Pavilion adjacent to the western sports field precinct.
- Staged increase in staff and student numbers.
- The Day Boy House for Year 7 students.
- The relocation of Ryrie Road (an internal road).
- The building for Science, Technology, Engineering, Arts and Maths (the 'STEAM building').

Will NOT be considered to be a Hazardous and Offensive Development due to the proposed low volume of chemicals to be used onsite into the future.

Note that this assessment excludes all household cleaning type products as they expected volumes onsite, and the type of such materials would not add any additional risk to this development.

The main hazard associated with the proposed project is associated with the storage and handling of Dangerous Goods of Classes 2 to 9. As documented in Table 8, the *Risk Assessment Outcomes*, there are a number of risk scenarios which have been found to be LOW or MODERATE in this assessment (assuming no engineering controls are implemented), however, practically it would be expected that the impact to the external environment, i.e. the neighbouring environment would be minimal given that chemical volumes onsite are minor. Further impacts to the local environment, building occupants and building structure can be further reduced by the implementation of appropriate design requirements as detailed in Table 8 and those as required by the Building Code Of Australia. However, the major social impact from an incident onsite would be through the injury of staff or students, and this would need to considered, and addressed by the school board to aid in minimising reputational damage.

Therefore in Summary of this assessment, **this proposal Is Not Considered a Hazardous and Offensive Development**.

9.1. RECOMMENDATIONS POST-DEVELOPMENT CONSENT

This report documents a number of risks and hazards associated with the identified chemicals which will be used within the building and broadly identifies potential risk mitigating strategies which can be applied to decrease the risk. This report doesn't risk assess user requirements, chemical usage within classes or any other engineering risk mitigating controls that may be required to mitigate the hazards associated with the nature of the work to be conducted within the building.

Therefore, teachers and staff will need to risk assess the classes and tasks which the students are to perform to ensure that risk has been mitigated as far as practical and where appropriate, ensure appropriate measure are in place to control the hazards.

APPENDIX A – DOCUMENTS PROVIDED BY THE CLIENT

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Merit Bayer	40 litres	White Oval	A	3	No GHS		Jul 2019	N	111
Yates Surrender	10 litres	White Oval	A	1	Danger		May 2020	Y	11
Quali Pro Evolution	2 litres	White Oval	A	2	Danger		Feb 2018	Y	
Segway	3 Litres	White Oval	A	2	No GHS		Jan 2021		
Xtron Herbicide	1kg	White Oval	A	1	Warning		Nov 2018	Y	
Heritage Maxx Syngenta Azoxy 95(generic)	20 litres	White Oval	A	2	No GHS		Sep 2021	N	N/A
Monument Syngenta	2 litre	White Oval	A	1	Warning		Oct 2021	Y	111
Pao check Campbell	5 litres	White Oval	A	1	Danger		Nov 2021		

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Proplant Campbell	20 litre	White Oval	A	2	N/a	N/a	Nov 2021	N	N/a
Smackdown turf culture	1litre	White Oval	A	1	Warning	 http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjQsZat4IPOAhWKF5QKHWgiCYkQjRwIBw&url=http://www.unece.org/trans/danger/publi/ghs/pictograms.ht	Feb 2020	N	

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
						ml&psig=AFQjCNG3EAEsWkeyZ-Dl2LtfDldqg1QljA&ust=1469162654592871  			
Barrricade Syngenta	30 litres	White Oval	A	1	N/a		Aug 2021	N	
Destiny Bayer	500grams	White Oval	A	1	Warning		Sept 2020	Y	111
Turf Culture Coliseum Herbicide	400grams	White Oval	A	1	Warning		Jul 2019	Y	111
Crowbar	20 litres	Wanderers	A	3	Danger		Jul 2021	Y	

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Matrix	5 litres	White Oval	A	1	N/A		Jun 2019	N	
Dedicate	6 litres	White Oval	A	2	Warning		Jun 2020	Y	
Waldo	5 litre	White Oval	A	3	Warning		Feb 2021	N	111
Reserve Stressguard	60 litres	White Oval	A	2	Danger		May 2021	Y	
Triumph	11 litres	White Oval	A	1	Warning		June 2022	N	
Thiram liquid (Barmac)	50L	White Oval	A	2	Warning		Aug 2018	N	111
Marvel cc (Adama)	40L	White Oval	A	3	Warning		Apr 2018	N	
Pronamide (Amgrow)	5L	Wanderers	A	1	Warning		Mar 2021	N	

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Tempo Extra	10L	White Oval	A	3	Warning		Feb 2021	Y	
Medallion	10L	White Oval	A	2			Oct 2021	N	
Tribute	3L	White Oval	A	1	Danger		Jul 2021	N	
Specticle	2L	White Oval	A	1	Warning		Jun 2020	Y	
Pennmag Syngenta	40 litres	White Oval	A	3	Warning		Oct 2022	N	N/a
Indemnify	1L	White Oval	A	3			Aug 2018	N	111
Apollo miticide	5L	White Oval	A	3			Jan 2021	N	111
Impala Fungicide	20L	White Oval	A	2	Warning		Feb 2021	Y	111
Compel pro insecticide	40L	White Oval/Wanderers	A	3	Danger	 	Feb 2020	Y	111
Thumper Insecticide	5L	White Oval	A	1	Warning		Jan 2020	N	
Chief Topflow	15L	White Oval	A	2	Warning		Sep 2019	Y	111

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Fostetyl 800	17.5kg	White Oval		1	Warning		Dec 2019	N	
Casper	1kg	White Oval	A	1			Aug 2021	N	111
Nominee	1L	White Oval	A	1			May 2021	N	111
Bannermaxx	20L	White Oval	A	3	Danger		Oct 2021	N	111
Shrapnel	15L	White Oval		2			Aug 2020	N	
Initiator Tablets	750gram	White Oval	A	3			April 2021	Y	111
Starane Advanced	5L	Wanderers	A	2	Warning		Sep 2021	Y	
Task Force	20L	Wanderers							
Spearhead Bayer	40 litres	Wanderers	A	1	Danger		Oct 2022	N	111
Pennmag Syngenta	40 litres	Wanderers	A	3	Warning		Oct 2022	N	N/a
Drive XL	5 Litres	Wanderers	A	1	Warning		July 2020	N	N/a
Columbus	10 litres	Wanderers	A	3	Warning		Jun 2019	N	

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Methar tri Kombi	50 litres	Wanderers	A	1	Warning		Nov 2021	N	
Sedge Hammer	1L	Wanderers	A	2	Warning		Aug 2019	N	
Acelepryn	25L	Wanderers	A	3			Aug 2021	N	
Grazon Extra	5L	Wanderers	A	2	Warning		Sep 2021	N	111
Numchuck Quad herbicide	20L	Wanderers	A	3	Warning		Oct 2017	Y	111
Monopoly Herbicide	10L	Wanderers	A	1	Danger		Oct 2018	Y	
Pronamide (Amgrow)	5L	Wanderers	A	1	Warning		Mar 2021	N	

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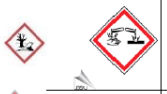
PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Air Neutralizer(Aerosol-6000)	24 Cans	Main cleaner store	Warning		June 2020	N	n/a
Airlift Jellybean	2L	Main cleaner store			Sept 2021	N	n/a
Breakaway	5L	Main cleaner store	Danger		Sept 2021	N	n/a
Bowline	5L	Main cleaner Store	Warning		July 2020	N	n/a
Whitemist Hand and Body Wash	50L	Main cleaner Store	Warning		June 2018		n/a
Descaler	5L	Main cleaner store	Danger		Sept 2021	Y	111
Hydrovap Gum	10L	Main cleaner Store	Danger		Jan 2019	N	n/a
Apeel	5L	Main Cleaner store	Warning		Sept 2021	N	n/a
Citrafresh	5L	Main Cleaner Store	Warning		Sept 2021	N	n/a
Crossfire	5L	Main cleaner store	Danger		Sept 2021	Y	111
Cyndan algae Died B	5L	Main cleaner Store	No GHS		Jan 2017	N	n/a

 irritant  corrosive to metals  carcinogen  flammable  aquatic

 toxicity(acute,chronic) acute toxicity(severe)

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PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Cyndan Bird Ban Gel	5L	Main cleaner Store	Danger		July 2019	N	n/a
Hospiplus Foam soap	25L	Main cleaner store	No GHS		July 2021	N	n/a
Fibresoft Prespray	5L	Main cleaner store	Warning		Sept 2021	N	n/a
G.O.E.	1L	Main cleaner store	N/a		Sept 2021	N	n/a
Halo Fast Dry	5L	Main cleaner store	None		Sept 2021	N	n/a
Oven & Grill Cleaner	5L	Main cleaner store	Danger		Sept 2021	Y	11
Odaban E	5L	Main cleaner store	Danger		Sept 2021	N	n/a
Liquid Gold	5L	Main cleaner store	Warning		Sept 2021	N	N/a
Natra Kleen All Purpose Cleaner	5L	Main Cleaner store	Non Hazardous		July 2019	N	n/a
Natra Kleen Commercial Grade Disinfectant/Sanitizer	40L	Main Cleaner Store	Non Hazardous		July 2019	N	n/a
Peerless tung oil seal	5L	Main cleaner store	Danger		Feb 2022	Y	111
Power Plus	10kg	Main cleaner store	Danger		Sept 2021	N	n/a
Protectme Textile	10L	Main cleaner store	Non hazardous		April 2022	N	n/a

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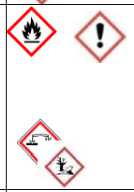
PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Punch	15L	Main cleaner store	Danger		Sept 2021	Y	11
Spitfire Lavender	10L	Main Cleaner store	Danger		Sept 2021	N	n/a
Tork Premium Soap Hair & Body S1	10L	Science centre store	Warning		Mar 2020	N	n/a
Tork Premium Soap Mild S1	10L	Science centre store	Danger		Feb 2018	N	n/a
Turf culture 80 sc insecticide	5L	Main Cleaner Store	Warning		Mar 2019	N	111
Tanners Choice Shampoo	1L	Main cleaner store	Danger		Sept 2021	N	n/a
Tanners Choice Protector	1L	Main cleaner store	Danger		Sept 2021	Y	111
Spillfix universal organic absorbent	4 x 50l	Main cleaner store	No GHS		Oct 2018	N	

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PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Spill station Bio waste spill kit	4 PACK	Main cleaner store	Warning		March2018	N	n/a
Zoono Germfree24 hand sanitiser	10L	Main cleaner store	No GHS		June 2018	N	n/a
Browning treatment	500ml	Main cleaner store	Danger		Sept 2021	N	n/a
Coffee Break	500ml	Main cleaner store	Danger		Sept 2021	N	n/a
Grease Release	500ml	Main cleaner store	Danger		Sept 2021	Y	11
Soy Clean graffiti remover	500ml	Main cleaner store	Danger		Sept 2021	N	n/a
Sensation	500ml	Main cleaner store	Danger		Sept 2021	N	n/a
Trusty	500ml	Main cleaner store	Danger		Sept 2021	N	n/a
Unbelievable	500ml	Main cleaner store	Warning		Sept 2021	N	n/a
Viraclean	25L	Main cleaner store	None		April 2020	N	n/a

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PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
3M Hi Track Spray Adhesive 76	3 x 700g	Upstairs w/s	A	1	Danger		Jan 2013	Y	n/a
ABS Edgeband Cleaner		Upstairs w/s	A	1	DANGER		Sept 2019	Y	11
Aerogard Tropical Strength Insect Repellent Aerosol	600ml	Upstairs w/s	A	1	Danger		Oct 2014	N	n/a
CRC 2087 Bright Zinc Aerosol	6x350g	Upstairs w/s	A	1	No GHS		April 2010	Y	n/a
Dulux dura max	2 x 300g	Upstairs w/s	A	1					
Dulux metalshield Epoxy enamel gloss	2 x 300g	Upstairs w/s	A	1	No GHS		Sept 2014	Y	111
Fomofill	750ml	Upstairs w/s	A	1	Danger		June 2014		
Feast Watson Scandinavian oil	2 litres	Upstairs w/s	A	1	Danger		Jan 2013	Y	111
Galmet Rustpaint (all colours)	4 litres	Upstairs W/S	A	1	Danger		Mar 2014	N	n/a
Diggers Kersosene	4 litres	Upstairs w/s	A	1	Danger		Jan 2013	Y	111

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
									
Diggers Methylated spirits 100%	5 litres	Upstairs w/s	A	1	Danger		April 2011	Y	11
Diggers Mineral Turpentine	5 litres	Upstairs w/s	A	1	Danger		Jan 2013	Y	111
Polypak Line marker – all colours	6 x 500g	Upstairs w/s	A	1	No GHS		Oct 2013	Y	n/a
Thinners	4 litres	Upstairs w/s	A	1	Danger		Nov 2013	Y	11
WD-40 Aerosol	12	Upstairs w/s	A	1	Warning		Jan 2013	Y	n/a0
378-Line Dulux Super enamel Semi Gloss	4 litres	Upstairs w/s	A	2	No GHS		April 2010	Y	111
381-Line Dulux Super enamel High gloss Enamel	3 x 4litres	Upstairs w/s	A	2	No GHS		Dec 2014	Y	111
Berger Jet Dry	4 litres	Upstairs w/s	A	2	No GHS		May 2010	Y	111
Cabot Deck Exterior Stain	4 litres	Upstairs W/S	A	2	No GHS		Oct 2009	Y	111
Degreaser	20 litres	Upstairs w/s	A	2	Warning		Mar 2014	N	n/a

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Dulux Super Enamel High Gloss	13 litres	Upstairs w/s	A	2	No GHS		Dec 2014	Y	111
Feast Watson traditional Timber Oil	5 litres	Upstairs w/s	A	2	Danger		Jan 2013	Y	111
CRC 5045 So Easy	6 x 350g	Upstairs w/s	A	3	No GHS		April 2010	N	n/a
Contact Tac 205	4 litres	Upstairs w/s	A	3	Danger		Jan 2013	Y	11
Selleys Liquid Nails	600ml	Upstairs w/s	A	3	No GHS		Mar 2013	N	11
Reckitt Mortein Do it Yourself Control Bomb Aerosol		Upstairs w/s	A	3	Danger		Feb 2014	N	n/a
2 stroke Lawn Mower Oil	4 litres	Upstairs W/S	A	4	No GHS		May 2014	Y	n/a
Unleaded petrol	5 litres	Upstairs w/s	A	4	Danger		June 2014	Y	11
Talon Rat and Mouse Killer	4x60grm pkts	Upstairs w/s	B	5	N/a		June 2010	N	n/a
Wasp Killer	4 x 350grm	Upstairs w/s	B	5	Warning		Jan 2010	Y	111
Dulux Aquanamel (semigloss& gloss)	6 litres	Downstairs w/s	C	1			Jan 2013		

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
Megapoxy Part a & Part B	2 litre	Downstairs w/s	C	1	Warning		Jan 2013		
564-Line Wash & Wear 101 Advance Low Sheen	77 litres	Downstairs w/s	C	2	No GHS		April 2010	N	n/a
624-Line Dulux Wash and Wear Interior Low Sheen Acrylic	10 litres	Downstairs w/s	C	2	No GHS		April 2010	N	n/a
Cabot Aqauadeck	14 litres	Downstairs w/s	C	2&3	n/a		Jan 2013	N	n/a
Dulux wash and wear(101) (low sheen,semigloss,matte	80 litres	Downstairs w/s	C	2,3 & 5	No GHS		April 2010	N	n/a
577 – Line Wash & Wear 101 Advanced Flat	4 litres	Downstairs w/s	C	3	No GHS		April 2010	N	n/a
607-Line Dulux Wash and Wear Interior Flat Acrylic	10 litres	Downstairs w/s	C	3	No GHS		April 2010	N	n/a
Cabot Cabothane Clear	4 litres	Downstairs W/S	C	3	No GHS		July 2011	Y	111
603-Line Dulux Weathershield Exterior gloss	10 litres	Downstairs w/s	C	4	No GHS		April 2010	N	n/a
Dulux Weathershield (gloss & low sheen)	29 litres	Downstairs w/s	C	4 & 5	No GHS		April 2010	N	n/a
601-Line Dulux Weathershield Exterior Low Sheen	10 litres	Downstairs w/s	C	5	No GHS		April 2010	N	n/a
Taubmans 3 in 1 Prep	10litres	Downstairs w/s	C	5	N/a		Jan 2013	N	n/a
Caltex Valvoline passenger car motor oil	20L	Downstairs corrosive	D	1			No AUS SDS avail		
Sodium Hypochlorite Solution (10-		Downstairs	D	1	No GHS		Jan 2013	Y	111

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PACK GROUP
15%) available chlorine		w/s corrosive							
Acetylene (BOC)	12 sm^3	Downstairs w/s			No GHS		Mar 2010	Y	n/a
Liquefied Petroleum Gas (LP Gas) Elgas	380kg	Outside w/s			No GHS		Jan 2013	N	n/a
Oxygen, Compresses (BOC)	16sm^3	Downstairs			No GHS		Mar 2013	Y	n/a

PRODUCT NAME	MAX QTY HELD	LOCATION WHERE STORED	CABINET NUMBER	SHELF NUMBER	GHS SIGNAL WORD	GHS PICTOGRAM	SDS DATE	DG	PG
Calcium Chloride	200KG	Store A			Warning		Jan 2015	N	n/a
Carbon Dioxide	1 Tank	Outside			Warning		Mar 2015	Y	n/a
Sodium Bicarbonate	200kg	Store A			N/a		Sept 2016	N	n/a
Sodium Hypochlorite Solution	3000ltr	Plant room sen pool			Danger		May 2018	Y	111
Cyanuric Acid	100kgs	Store A			Warning		Aug 2015	N	n/a
Hydrochloric Acid					Danger		Sept 2017	Y	11

Gas Cylinder Store													
CHEMICAL SUBSTANCE	**BRAND**	**Product Code (BOC)**	**Cylinder Size**	**# of Containers**	**Volume**	**Total Volume (m3)**	**GHS Signal Word**	**GHS Pictogram**	**DG Class**	DG Packaging Group	**SDS Brand**	SDS Issue date	**USER CODE**
Acetylene	BOC	#001	E	1	3.2	3.2	DANGER	Flammables/Gas Cylinder	2.1	NA	BOC	Aug-20	TCH
Acetylene	BOC	#001	D	1	1.6	1.6	DANGER	Flammables/Gas Cylinder	2.1	NA	BOC	Aug-20	TCH
Argon	BOC	#004	D2	2	2	4	WARNING	Gas Cylinder	2.2	NA	BOC	Aug-20	TCH
Argon	BOC	#004	E2	2	4.1	8.2	WARNING	Gas Cylinder	2.2	NA	BOC	Aug-20	TCH
Argoshield	BOC	#016	E2	7	4.1	28.7	WARNING	Gas Cylinder	2.2	NA	BOC	Aug-20	
Oxygen Gas	BOC	#076	E	2	4.1	8.2	DANGER	Oxidising/Gas Cylinder	2.2, 5.1	NA	BOC	Aug-20	7 to 12
Oxygen Gas	BOC	#076	D2	1	1.6	1.6	DANGER	Oxidising/Gas Cylinder	2.2, 5.1	NA	BOC	Aug-20	7 to 12
Propane	BOC	#087	9	4	16.7	66.8	DANGER	Flammables/Gas Cylinder	2.1	NA	BOC	Aug-20	11 to 12
LPG	BOC	#087	0.4	10	0.74	7.4	DANGER	Flammables/Gas Cylinder	2.1	NA	BOC	Aug-20	11 to 12

Materials Preparation Area												
CHEMICAL SUBSTANCE	**BRAND**	**Location**	**# of Containers**	**Volume (Litres)**	**Total QTY (Litres)**	**GHS Signal Word**	**GHS Pictogram**	**DG Class**	DG Packaging Group	**SDS Brand**	SDS Issue date	**USER CODE**
Green Synthetic Cutting Fluid	Tool Mate		2	20	40			Non-Flammable			Aug-20	
Aquadhere	Selleys		2	4	8			Non-Flammable			Aug-20	
Roof and Gutter Sealant	Parfix		4	0.3	1.2			Non-Flammable			Aug-20	

Year 12 Wood Store												

CHEMICAL SUBSTANCE	BRAND	Location	# of Containers	Volume (Litres)	Total QTY (Litres)	GHS Signal Word	GHS Pictogram	DG Class	DG Packaging Group	SDS Brand	SDS Issue date	USER CODE
X55 Solvent (Petroleum Spirit)	Ajax Chem	Bottom Shelf	1	20	20			Flammable			Aug-20	
ShellaWax	Beaut Polishes	Top Shelf	1	0.5	0.5			Flammable			Aug-20	
Enviro-Stripper	Bostik	Top Shelf	1	1	1			Flammable			Aug-20	
Stain & Varnish (Golden Oak)	British Paints	Top Shelf	1	0.25	0.25			Flammable			Aug-20	
Polyeurathane Cabothane clear (oil) - satin	Cabots	Top Shelf	1	4	4			Flammable			Aug-20	
Enamel Thinners	Diggers	Top Shelf	1	4	4			Flammable			Aug-20	
Methylated Spirits	Diggers	Bottom Shelf	1	4	4			Flammable			Aug-20	
Mineral Turpentine	Diggers	Bottom Shelf	2	2	4			Flammable			Aug-20	
1 Step Prep	Dulux	Top Shelf	1	4	4			Non-Flammable			Aug-20	
Duthin 120	Dulux	Bottom Shelf	1	20	20			Flammable			Aug-20	
Semi Gloss Water Based Enamel	Dulux	Top Shelf	1	4	4			Non-Flammable			Aug-20	
Wash and Wear	Dulux	Top Shelf	1	4	4			Non-Flammable			Aug-20	
Artificial grass adhesive	Dunlop	Top Shelf	1	1	1			Flammable			Aug-20	
French Polish	Feast Watson	Top Shelf	1	0.25	0.25			Flammable			Aug-20	
Liming Solution (White)	Feast Watson	Top Shelf	1	0.5	0.5			Flammable			Aug-20	

Prooftint Stain - Traditional	Feast Watson	Top Shelf	1	1	1			Flammable			Aug-20	
Linseed Oil	Liberion	Bottom Shelf	1	20	20			Flammable			Aug-20	
Mirocat PC 3220/30	Mirotone	Bottom Shelf	1	20	20			Flammable			Aug-20	
Mirocat PC 3244	Mirotone	Bottom Shelf	1	20	20			Flammable			Aug-20	
Burnishing Oil (hard)	Organ Oil	Top Shelf	1	4	4			Flammable			Aug-20	
General Purpose Thinners	SCA	Top Shelf	1	4	4			Flammable			Aug-20	
Isolac Sanding Sealer	Wattyl	Top Shelf	1	4	4			Flammable			Aug-20	
Maxiwood Laquer (30% Low Satin)	Wattyl	Bottom Shelf	1	20	20			Flammable			Aug-20	
Rediseal	Wattyl	Top Shelf	1	20	20			Flammable			Aug-20	
Stylwood Laquer (30% Gloss)	Wattyl	Bottom Shelf	1	4	4			Flammable			Aug-20	
Stylwood Laquer (30% Low Satin)	Wattyl	Bottom Shelf	1	20	20			Flammable			Aug-20	
Stylwood Laquer (70% Gloss)	Wattyl	Bottom Shelf	1	20	20			Flammable			Aug-20	
Thinners L700	Wattyl	Top Shelf	1	4	4			Flammable			Aug-20	
Citronella Lamp Torch Oil	Wax Works	Bottom Shelf	1	4	4			Flammable			Aug-20	

Food Tech												
CHEMICAL SUBSTANCE	**BRAND**	**Location**	**# of Containers**	**Volume (Litres)**	**Total QTY**	**GHS Signa**	**GHS Pictogram**	**DG Class**	DG Packaging Group	**SDS Brand**	SDS Issue date	**USER CODE**

					(Litres)	l Word						
Powerball dishwashing tablets	Finish	FT1	1	1	1			Non-Flammable			Aug-20	
Ultra Rinse Aid (for dishwasher)	Coles	FT1	2	0.25	0.5			Non-Flammable			Aug-20	
Dishwashing liquid	Morning Fresh	FT1	4	0.25	1			Non-Flammable			Aug-20	
Floor Cleaner	White King	FT1	2	2	4			8			Aug-20	
Cream cleanser	Ajax	FT1	4	0.25	1			Non-Flammable			Aug-20	

Year 12 Metal Store												
CHEMICAL SUBSTANCE	**BRAND**	**Location**	**# of Containers**	**Volume (Litres)**	**Total QTY (Litres)**	**GHS Signal Word**	**GHS Pictogram**	**DG Class**	DG Packaging Group	**SDS Brand**	SDS Issue date	**USER CODE**
Clear Topcoat	Auto one	Top Shelf	1	1	1			Flammable			Aug-20	
Havoline 20W-50 engine oil	Caltex	Top Shelf	1	4	4			Flammable			Aug-20	
15W-40 Motor Oil	Castrol	Top Shelf	1	1	1			Flammable			Aug-20	
20W-50 Motor Oil	Castrol	Top Shelf	1	1	1			Flammable			Aug-20	
GTX2	Castrol	Top Shelf	1	1	1			Flammable			Aug-20	
Rear Axle Oil	Castrol	Top Shelf	1	1	1			Flammable			Aug-20	
Kerosene	Diggers	Bottom Shelf	1	20	20			Flammable			Aug-20	
Epoxy Metalshield	Dulux	Top Shelf	1	0.5	0.5			Flammable			Aug-20	

Super Enamel	Dulux	Top Shelf	1	1	1			Flammable			Aug-20	
Spray & Mark	Dy-Mark	3rd Shelf	1	0.5	0.5			Flammable			Aug-20	
Penetrol	Flood Australia	3rd Shelf	1	0.95	0.95			Flammable			Aug-20	
Petroleum Jelly	Golden Fleece	Top Shelf	2	0.5	1			Flammable			Aug-20	
Wash and Wax	Mechanix	3rd Shelf	1	2	2			Non-Flammable			Aug-20	
15W-50 engine oil	Mobil	Top Shelf	1	5	5			Flammable			Aug-20	
Degreaser (Aerosol)	Motortech	Top Shelf	2	0.4	0.8			Flammable			Aug-20	
Rustfighter 215	Performance Coatings	3rd Shelf	1	4	4			Flammable			Aug-20	
Compressor Oil	Pilot	Top Shelf	2	1	2			Flammable			Aug-20	
Fiddly Bits	PPG Coatings	3rd Shelf	12	0.25	3			Flammable			Aug-20	
RP7	Selleys	Top Shelf	1	0.3	0.3			Flammable			Aug-20	
Enamel	Septone	Top Shelf	1	0.5	0.5			Flammable			Aug-20	
Lock Lubricant	WD-40	3rd Shelf	1	0.184	0.184			Flammable			Aug-20	
Epoxy Enamel (Rust Guard)	White Knight	Top Shelf	10	4	40			Flammable			Aug-20	
Epoxy Enamel (Rust Guard)	White Knight	Top Shelf	6	1	6			Flammable			Aug-20	
Epoxy Enamel (Rust Guard)	White Knight	Top Shelf	1	0.5	0.5			Flammable			Aug-20	

Epoxy Enamel (Strokes)	White Knight	Top Shelf	6	0.1	0.6			Flammable			Aug-20	
Pot Belly Black	White Knight	Top Shelf	1	0.5	0.5			Flammable			Aug-20	
Rust Guard Metal Primer	White Knight	Top Shelf	1	0.5	0.5			Flammable			Aug-20	
SLS etch Primer	White Knight	Top Shelf	1	4	4			Flammable			Aug-20	
SLS etch Primer	White Knight	Top Shelf	1	1	1			Flammable			Aug-20	
True Bite Primer	White Knight	Top Shelf	1	4	4			Flammable			Aug-20	

Corrosive Cabinet												
CHEMICAL SUBSTANCE	**BRAND**	**Location**	**# of Containers**	**Volume (Litres)**	**Total QTY (Litres)**	**GHS Signal Word**	**GHS Pictogram**	**DG Class**	DG Packaging Group	**SDS Brand**	SDS Issue date	**USER CODE**
Ammonium Persulphate		Top Shelf	1	0.25	0.25			DG Class 8			Aug-20	
Flux - copper brass	Cigweld	2nd Shelf	2	0.5	1			none			Aug-20	
Enviro-Stripper	Bostik	Top Shelf	1	1	1			Flammable			Aug-20	
Flux - Silver Brazing	Cigweld	2nd Shelf	2	0.4	0.8			DG Class 8			Aug-20	
Paint Stripper	Diggers	3rd Shelf	1	4	4			Toxic			Aug-20	
Rust and Stain Cleaner	Diggers	Bottom Shelf	1	2	2			DG Class 8			Aug-20	
Rust Buster	Bondall	Bottom Shelf	1	4	4			DG Class 8			Aug-20	
Rust Converter	Ferropro	Bottom Shelf	1	1	1	1		DG Class 8			Aug-20	

S-Weld	Callington	2nd Shelf	1	1	1			DG Class 8			Aug-20	
Soldering Fluid (Bakers)	Consolidated Alloys	2nd Shelf	1	1	1			DG Class 8			Aug-20	

APPENDIX B – MASTERPLAN DOCUMENTATION

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