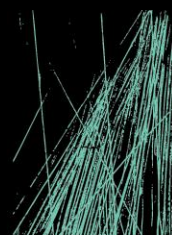


PRELIMINARY DANGEROUS GOODS SCREENING REPORT

MURWILLUMBAH EDUCATION CAMPUS
STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSDA)
SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)



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DOCUMENT CONTROL SHEET

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1 EXECUTIVE SUMMARY

Department of Education NSW is the applicant for the proposed Redevelopment of the Murwillumbah Education Campus, 86 Riverview Street, Murwillumbah NSW.

The proposal is for a State Significant Development (SSD) for the purposes of the Environmental Planning and Assessment Act 1979 (EP&A Act) and clause 14(a) of Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (SEPP SRD) as it involves development for the purposes of a hospital with a capital investment value in excess of \$30 million.

1.1 PROJECT BRIEF

The Murwillumbah Education Campus development, involves the co-location of Murwillumbah Primary School, Murwillumbah East Primary School, Murwillumbah High School, and Wollumbin High School, to establish a new primary school and a new high school as part of the same education campus.

The project will include the following scope of works within the SSD application:

- Demolition of Building E
- All inground slabs, pathways, hardstands and footings including those to buildings B, C, D, G, H, M, P, S, AW and AZ
- Associated ground works required to facilitate the construction of new buildings and landscaped areas
- Construction of new Buildings 1, 2, 3 and 4:
 - Building 1 – New public school building comprising general learning spaces, administration, canteen, School Support Unit (SSU) and library;
 - Building 2 – Hall building including a public school hall, out of school hours care (OSHC) facilities, high school hall/gymnasium and other spaces for physical education and creative and performing arts (CAPA);
 - Building 3 – New high school building including the following facilities; general and specialist learning spaces, SSU, and library.
 - Building 4 – New high school building including the following facilities; science, support, administration and canteen;
- Refurbish Building A for DoE offices and school community health facilities along with associated access requirements. Building A is a locally listed heritage building and will be retained and refurbished;
- Refurbishment of Building F to provide learning space for agricultural education;
- Retention of existing AY.
- Creation of new public school and high school outdoor learning spaces to support future focused learning outcomes;
- New landscaping and embellishment of outdoor playgrounds;
- Civil and infrastructure works; and
- Kiss n drop and parking off Nullum Street

1.2 EARLY CONTRACTOR INVOLVEMENT (ECI)

Built are engaged as the Early Contractor Involvement (ECI) Head Contractor for the Murwillumbah Education Campus. The Client for the project will be School Infrastructure NSW as an Agent of the Department of Education NSW, and the Principal's Representative on the project is MACE Australia.

1.3 SSDA SEARS RELEVANCE

In preparing this report, the following SEARs General Requirements, Key Issues, and Agency's Advice letters have been addressed:

20. Hazards and Risk

- *Provide a preliminary risk screening regarding all dangerous goods and hazardous materials associated with the development.*
- *A Preliminary Hazard Analysis, if required where the development includes handling or storage of dangerous or hazardous materials.*

2 INTRODUCTION

2.1 PURPOSE

Under this scope, JHA has been engaged by Built Construction to conduct a preliminary screening assessment of Dangerous Goods (DG) associated with the proposed Murwillumbah Education Campus Development.

The purpose of this report is to respond to relevant criteria identified in the State Significant Development Application (SSDA) / Secretary's Environmental Assessment Requirements (SEARs) submission.

2.2 LIMITATIONS

The information, assumptions and assessment contained within this report is based solely upon information provided to JHA by Built Construction, which includes:

- Concept Design Documentation
- Murwillumbah High School Chemical registers 2021
- Murwillumbah High School manifest Agriculture register
- DoE Chemical Safety Documentation.

The preparation of this SSDA SEARs DG Screening Report serves as a starting point and should not be considered a comprehensive Dangerous Goods Assessment for the proposed Development.

The purpose of this report is to conduct a preliminary screening of DG stored onsite, in order to satisfy the requirements set-out for the SSDA and demonstrate a commitment to the appropriate planning and implementation in accordance with relevant Regulations, Standards and Guidelines.

2.3 PROJECT SCOPE OVERVIEW

The proposed Murwillumbah Education Campus development seeks to amalgamate five schools into the existing Murwillumbah High School site:

- Murwillumbah High School
- Wollumbin High School
- Murwillumbah Public School
- Murwillumbah East Public School
- Murwillumbah South Infants School



Figure 1 Existing Site Layout – excerpt from 100% Electrical Concept Design Report



Figure 2 Proposed Site Plan

3 PROJECT DANGEROUS GOODS PLANNING & OBLIGATIONS

3.1 OVERVIEW

The management of hazardous chemicals and procedures regarding the storage and handling of Dangerous Goods (DG) is crucial to the ongoing safety and operations of any laboratory / workshop or other space utilising hazardous chemicals. Such DG includes but is not limited to: Class 2 flammable or non-flammable gases, Class 3 flammable liquids, Class 5 oxidising agents, Class 8 corrosive chemicals.

Flammable gases and liquids play a key role in the design, management and operations of laboratories, as these chemicals can create an explosive atmosphere (or hazardous area). If not appropriately planned, designed, stored and handled, flammable goods give rise to the potential for explosions and/or fires. The purpose of a classification in accordance with AS/NZS 60079.10 is to assist the facility owner/operator(s) in maintaining the integrity of the electrical apparatus and equipment within designated hazardous zones to meet the requirements of AS/NZS 3000 and AS/NZS 60079.14.

3.2 REFERENCED DOCUMENTS

1. NSW Work Health and Safety Regulation 2017
2. Managing risks of hazardous chemicals in the workplace Code of code of practice;
3. Australian Standard AS/NZS 60079.10.1 Classification of areas
4. Australian Standard AS4332: The Storage and Handling of Gases in Cylinders
5. AS 1940: The storage and handling of flammable and combustible liquids
6. AS/NZS 4681: The storage and handling of Class 9 (miscellaneous) dangerous goods and articles
7. AS/NZS 3833: The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers.
8. AS 4326: The storage and handling of oxidising agents
9. AS 1020: The control of undesirable static electricity
10. DoE Specialised Guidelines for Required Chemical Systems & Registers V1
11. DoE Chemical safety fact sheet- Globally Harmonised System of Classification (GHS) Health and Safety Directorate V1
12. DoE Chemical Safety in Schools Health and Safety Directorate V2
13. DoE How to Approach Chemical Safety V1
14. ChemWatch Gold FFX Health and Safety Directorate V2
15. DoE Safety and Risk Management Plan Template V2

3.3 REGULATORY FRAMEWORK

NSW Work Health and Safety Regulation 2017 Chapter 7, Part 7.1 'Hazardous Chemicals' *"applies to:*

- a) *the use, handling and storage of hazardous chemicals at a workplace and the generation of hazardous substances at a workplace, and*
- b) *a pipeline used to convey a hazardous chemical."*

Division 5 'Control of Risk' of Chapter 7 provides a high level framework for the supply, storage and handling of Dangerous Chemicals; and the obligations of the Persons Conducting Businesses or Undertakings (PCBU) under the following subsections:

- Subdivision 1 General obligations relating to the management of risk
- Subdivision 2 Spills and damage
- Subdivision 3 Emergency plans and safety equipment
- Subdivision 4 Storage and handling systems

3.4 PERSONS CONDUCTING BUSINESSES OR UNDERTAKINGS (PCBU)

The Persons Conducting Businesses or Undertakings (PCBU) are ultimately responsible for meeting the obligations set out in NSW Work Health and Safety Regulation 2017.

During the site enabling, demolition and construction phases onsite it, is anticipated that the head contractor (Built) will serve as the primary PCBU and shall be responsible for the:

1. Identification, storage, handling and/or disposal of existing clients' DG onsite within existing buildings under the current project scope, which is:
 - a. Scheduled for safe removal from site and disposal
 - b. Scheduled for relocation and storage onsite during demolition and construction phases
2. Identification, storage, handling and/or disposal of DG required onsite to facilitate demolition and construction works
3. The planning, design, installation and handover of DG and associated infrastructure for the proposed Murwillumbah Education Campus Development.

Upon completion and handover of the project, the client's authorised representatives' for the site will serve as the PCBU.

3.5 RISK MANAGEMENT

There are a number of ways to control the risks associated with hazardous chemicals, with application of the Hierarchy of Controls serving as a widely utilised protocol.

Control measures are ranked and applied from the highest level of protection and reliability to the lowest.

Elimination should always be the aim in the first instance. Where this is not reasonably practicable, the risk must be minimised by using one or more of the approaches that follow in descending order:

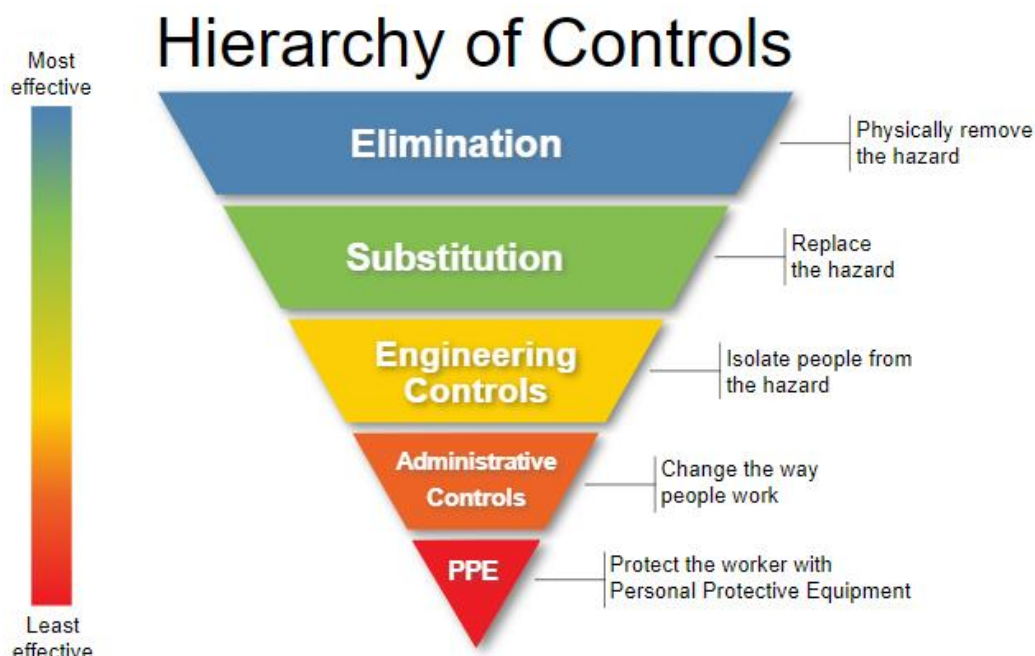


Figure 3 Hierarchy of Control - Infographic by the USA NIOSH

Administrative control measures and PPE (secondary Controls) rely upon the actions of personnel and their willingness to adhere to the control and processes in place. For this reason, these two measures should serve as a last resort when applying the Hierarchy of Controls.

As designers have limited capacity to influence the ongoing application of administrative controls and the use of PPE, their scope of risk management in Safety in Design is limited to the development of substitution, isolation or engineering controls (primary Controls).

3.6 DANGEROUS GOODS

As part of the site redevelopment, Built Construction, in consultation with the client, shall develop and implement appropriate risk management strategies to facilitate the planning, design, storage, handling and processing of DG onsite, both during and post site redevelopment.

In consultation with the client, and in accordance with the 'NSW DoE Specialised Guidelines for Required Chemical Systems & Registers' the following shall be undertaken during the project design and construction phases:

1. Appoint a Chemical Safety In Schools (CSIS) coordinator (PCBU), and during the Design and Construction phases, a nominated Project PCBU for Built Construction
2. Develop appropriate procedures for:
 - purchase of chemicals
 - storage of chemicals
 - use of chemicals
 - what to do in emergencies
 - disposal of chemicals
3. Provide staff with access to CSIS package and Safety Data Sheets
4. Establish and maintain a chemical register
5. Provide access to risk assessment information
6. Arrange appropriate training for all staff
7. Plan how to manage contractors bringing chemicals on site.

3.7 PLANNING DURING THE DESIGN DEVELOPMENT PHASE

During Design Development a detailed DG Planning Report is to be produced to assist the architect and builder in the planning and establishment of compliant DG Storage, reticulation, handling, processing and disposal practices.

3.8 STORAGE STRATEGIES

Existing and DG onsite is understood to be currently stored within three primary stores within the Campus (covered further below). In order to facilitate proposed demolition, construction and ultimately client operations, all DG onsite is to be installed within a suitably designed and constructed Chemical Store (or stores), with smaller Chemical Cabinets and/or cages to be established locally to preparation and application spaces. DG anticipated to be utilised onsite fall within the following categories:

- Class 2.1 Flammable Gases
- Class 2.2 Non-flammable / non-toxic gases
- Class 3 Flammable Liquids
- Class 4.1 Flammable Solids
- Class 4.2 Spontaneously Combustible
- Class 4.3 Dangerous when wet
- Class 5.1 Oxidising Agents
- Class 6 Toxic Substances
- Class 8 Corrosives
- Class 9 Miscellaneous Dangerous Goods

Hazardous chemicals are delivered by road transport to the campus via a nominated good receiving area, before being transferred into chemical storage cabinets and/or shelves within the nominated Chemical Store or stores.

Small quantities can then be transferred on a needs basis into smaller Chemical Cabinets and/or cages to be established locally to preparation and application spaces.

Decanting within laboratories is to occur in accordance with AS/NZS 2243.10 within Fume Cabinets in the preparation areas used for this purpose.

In order to mitigate risks associated with unsupervised student access to DG, hazardous chemicals may only be stored in the teaching area's associated Preparation Rooms in chemical storage cabinets.

3.9 SPECIFIC STORAGE STRATEGIES OVERVIEW

Each DG Class comes with its own associated risks.

3.9.1 CLASS 2.1 GASES

Class 2.1 gases represent elements which, when mixed with air in certain proportions, will form an explosive gas atmosphere.

Minor quantities of Class 2.1 such as aerosols can be stored on dedicated shelves.

Where larger quantities are to be stored, they should be enclosed within a dedicated Class 2.1 Storage Cage, as this will aid in ventilation around the containers.



Figure 4 Aerosols Only Cage

Should larger compressed gas cylinders be required on site, these shall be stored within a bulk lockable Storage Cage, with the conduct of a HazAn and Hazardous Area Classification to occur.

3.9.2 CLASS 3 LIQUIDS

Class 3 liquids are capable of producing a flammable vapour under any foreseeable operating conditions.

It is proposed that Class 3 liquids be installed within dedicated Flammable Storage Cabinets. Subject to the quantities proposed onsite at any time, this could be in a larger central 250L Storage Cabinet, with smaller Cabinets distributed throughout the Campus for daily use.



Figure 5 250L Flammable Storage Cabinet - Storemasta

3.9.3 GLASS 4 SOLIDS

As stated on the Australian Institute of Dangerous Goods Consultants Website:

"Class 4 is divided into three divisions as follows:

Division 4.1 Flammable solids

Solids which, under conditions encountered in transport, are readily combustible or may cause or contribute to fire through friction; self-reactive substances which are liable to undergo a strongly exothermic reaction; solid desensitized explosives which may explode if not diluted sufficiently;

Division 4.2 Substances liable to spontaneous combustion

Substances which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air, and being then liable to catch fire;

Division 4.3 Substances which in contact with water emit flammable gases

Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities."

Noting the minor quantities for Class 4 solids existing and anticipated for use onsite, it is proposed that these materials can be stored within a dedicated Minor Class 4 Storage shelf or within a small dedicated Storage Cabinet.

3.9.4 CLASS 5 OXIDISING AGENTS

Class 5 Oxidising Agents are chemicals which give rise to oxygen during reaction, thereby increasing the risks associated with combustion where other potentially flammable or explosive elements are present.

It is proposed that Class 5 chemicals be installed within a dedicated Storage Cabinet which is adequately segregated from other DG in accordance with AS/NZS 3833.

3.9.5 CLASS 6 TOXIC SUBSTANCES

Toxic substances are those with the potential to cause death, serious injury or to harm if swallowed, inhaled or in some cases by direct skin contact.

3.9.6 CLASS 8 CORROSIVES

Corrosives are substances which, through chemical action, can cause varying levels of damage when in contact with living tissue.

3.9.7 CLASS 9 MISCELLANEOUS DANGEROUS GOODS

Class 9 chemicals are miscellaneous dangerous goods which do not fall in any of the previous categories, but still constitute dangerous goods which can prove harmful to persons, other living organisms and/or the environment

3.9.8 CLASS 6, 8, 9 STORAGE

It is proposed that these materials be co-located within a central storage areas, with consideration to the segregation requirements of AS/NZS 3833.

3.10 ADDITIONAL REQUIREMENTS

Additional requirements to be planned and implemented as the project progresses are:

- Ventilation,
- Fire protection,
- Signage,
- Local emergency showers and/or eye wash stations
- Segregation

The principles and protocols around these items will be further developed in consultation with Built Construction, the client, and other key stakeholders.

Purpose built containers and cabinets (such as those from Storemasta) provide the benefit of:

- *"A spill containment sump in the floor of the container to catch spills*
- *Louvered walls to disperse hazardous vapours into the outside atmosphere*
- *Non-combustible construction to provide structural integrity in the event of a fire*
- *Dangerous goods signage to warn workers of hazardous chemicals".*

3.11 SEGREGATION BETWEEN DIFFERENT CLASSES OF DG

Dangerous Goods above minor quantities are to be segregated according to the below Table from AS/NZS 3833 The Storage and Handling of Mixed Classes of Dangerous Goods.

	CLASS	2	3	4	5	6	8
COMPRESSED GASES	2.1 Flammable	Compatible	KEEP APART	Segregate from	Segregate from	Segregate from	Segregate from
	2.2 Non-flammable/non-toxic	KEEP APART	Compatible	KEEP APART	Segregation may be necessary	Segregation may be necessary	Segregation may be necessary
FLAMMABLE LIQUIDS (and Combustible liquids)	3	Segregate from	KEEP APART	Compatible	KEEP APART	Segregate from	Segregate from
	4	Segregate from	Segregation may be necessary	KEEP APART	Compatible	KEEP APART	Segregation may be necessary
FLAMMABLE SOLIDS	4.1 Flammable solids	Segregate from	Segregation may be necessary	KEEP APART	Compatible	KEEP APART	Segregation may be necessary
	4.2 Spontaneously combustible	Segregate from	Segregation may be necessary	KEEP APART	Compatible	KEEP APART	Segregation may be necessary
OXIDISING SUBSTANCES	5.1 Oxidising agents	Segregate from	Segregation may be necessary	Segregate from	Segregate from	KEEP APART	KEEP APART
	5.2 Organic peroxides	ISOLATE	Segregation may be necessary	ISOLATE	ISOLATE	Segregation may be necessary	Segregation may be necessary
TOXIC SUBSTANCES	6	KEEP APART	Segregation may be necessary	KEEP APART	KEEP APART	Segregation may be necessary	Segregation may be necessary
	8	KEEP APART	KEEP APART	KEEP APART	KEEP APART	Segregation may be necessary	Segregation may be necessary
CORROSIVE SUBSTANCES	9	KEEP APART	KEEP APART	KEEP APART	KEEP APART	KEEP APART	KEEP APART
	10	KEEP APART	KEEP APART	KEEP APART	KEEP APART	KEEP APART	KEEP APART

LEGEND

	Dangerous goods of the same Class should be compatible; consult MSDS or suppliers about requirements for individual substances		Dangerous goods of the same Class could be incompatible or react dangerously. consult the MSDS or suppliers about requirements for individual substances		Segregation of these Classes may be necessary. Consult the MSDS or supplier
	Dangerous Goods of these Classes should be kept apart by at least 3m. Consult the MSDS or supplier		These combinations of Dangerous Goods should be segregated by at least 5m and kept in separate compounds or building compartments.		This requirement applies to organic peroxides, for which dedicated stores or storage cabinets are recommended. Adequate separation from other buildings and boundaries is required.

Figure 6 Segregation Table from AS/NZS 3833

3.12 HAZARDOUS AREAS

Where flammable goods (Class 3, Class 2.1) are stored and handled, a site specific Hazard Analysis (HazAn) shall be undertaken; and where required, a Hazardous Area Classification (HAC) or Classifications in accordance with AS/NZS 60079.10 developed.

3.12.1 RESPONSIBILITY FOR CLASSIFICATION

In accordance with AS/NZS 3000 Clause 7.7.2.1 Responsibility for Classification: *"The responsibility for classification of a hazardous area rests with the persons or parties in control of the installation."*

3.12.2 HAZARDOUS AREA DEFINITION

A **Hazardous Area** is defined in AS/NZS 60079.0 Clause 3.2 and AS/NZS 3000 Clause 7.7.2.2 as:

"area in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of electrical apparatus".

An **explosive atmosphere** is defined in AS/NZS 60079.0 as:

"mixture with air, under atmospheric conditions, of flammable substances in the form of gas vapour, dust, fibres, or flyings which, after ignition, permits self-sustaining flame propagation".

AS/NZS 60079.10.1 deals with the assessment and potential classification of Hazardous areas associated with flammable gases and vapours.

3.12.3 CLASSIFICATION OBJECTIVES

Area classification is a method of analysing and classifying the environment where explosive gas atmospheres may occur so as to facilitate the proper selection and installation of equipment to be used safely in that environment. The classification also takes into account the ignition characteristics of the gas or vapour such as ignition energy (gas group) and ignition temperature (temperature class).

3.12.4 HAZARDOUS ZONING

Hazardous areas are assessed and classified based on the likelihood, frequency and duration of flammable vapour/gas/air mixtures occurring. The following classification zones apply in reference to the methodology presented in AS/NZS 60079.10.1:

Zone 0: *An area in which an explosive gas atmosphere is present continuously or for long periods or frequently.*

Zone 1: *An area in which an explosive gas atmosphere is likely to occur in normal operation occasionally.*

Zone 2: *An area in which an explosive gas atmosphere is not likely to occur in normal operation but, if it does occur, it will exist for a short period only.*

3.12.5 APPLICATION TO PROJECT

It is anticipated that a HazAn and potential subsequent HAC will be required for the following spaces as part of project delivery, handover and ongoing client operations:

- Existing bulk LPG tank
- Bulk storage of flammable goods, including any centralised locations, as well as local Flammable Storage Cabinets and cages
- 'Wet' laboratories benchtops, floors and fume cupboards in which flammable goods are utilised.

3.13 OPERATIONAL CONSIDERATIONS

Safe handling of DG is dependant largely upon the application of Secondary Measures – Administrative control measures and PPE. This means that safe handling is dependent on the development of and adherence to robust safe dangerous goods handling practices. These safe work methods are required to ensure the use of the dangerous goods facilities comply with the appropriate standards and meet regulatory requirements; and most importantly achieving a level of risk for students, staff and visitors that is assessed as low, As Far As Is Reasonably Practicable (AFAIRP).

The implemented risk management strategies associated with storage and handling of each DG Class need to address the entire process, from Delivery and storage, to potential decanting and chemical usage in operations and learns, through to appropriate disposal.

While larger (20L containers) provide the perceived benefit of simplified storage and potentially reduced regularity of restocking, they also bring about additional risks associated with decanting and spill containment. Therefore, as far as practicable, it is recommended that chemicals be procured and stored in smaller <1L closed containers. In the case of flammable liquids, this can also reduce the likelihood of Hazardous Areas being present or induced through storage and potential spillage of larger quantities.

4 EXISTING DG ONSITE

4.1 BIOLOGY

4.1.1 REGISTERED DG

JHA has been supplied with an Excel Chemical Register for the chemicals stored within existing Chemical Store D29 for use by the Biology Department. Refer to Appendix A for the supplied Chemical Register.

The register contains DG of various classes, including:

- Class 3 Flammable Liquids
- Class 4.1 Flammable Solids
- Class 5.1 Oxidising Agents
- Class 6 Toxic Substances
- Class 8 Corrosives
- Class 9 Miscellaneous Dangerous Goods

Based on assessment of the Chemical Register, the maximum container size is 1080ml.

Existing Building D is scheduled for Demolition under a separate package of works. Therefore, all associated DG will have been relocated to a temporary storage facility onsite; or else appropriately disposed of.

4.1.2 IMPACT OF DEMOLITION / CONSTRUCTION WORKS

Ultimately, it is anticipated that this existing DG will be utilised in the newly constructed science facility. All DG planning to be undertaken to ensure adequate storage and handling procedures are in place.

4.2 SCIENCE

4.2.1 REGISTERED DG

JHA has been supplied with an Excel Chemical Register for the chemicals stored within existing Chemical Store S2 for use by the Science Department. Refer to Appendix B for the supplied Chemical Register.

The register contains DG of various classes, including:

- Class 3 Flammable Liquids
- Class 4.1 Flammable Solids
- Class 4.2 Spontaneously Combustible
- Class 4.3 Dangerous when wet
- Class 5.1 Oxidising Agents
- Class 6 Toxic Substances
- Class 8 Corrosives
- Class 9 Miscellaneous Dangerous Goods

Existing Building S is scheduled for Demolition under a separate package of works. Therefore, all associated DG will have been relocated to a temporary storage facility onsite; or else appropriately disposed of.

4.2.2 IMPACT OF DEMOLITION / CONSTRUCTION WORKS

Ultimately, it is anticipated that this existing DG will be utilised in the newly constructed science facility. All DG planning to be undertaken to ensure adequate storage and handling procedures are in place.

4.3 AGRICULTURE

4.3.1 REGISTERED DG

JHA has been supplied with an Excel Chemical Register for the chemicals stored within existing Farm Chemical Store for use by the Agriculture Department. Refer to Appendix C for the supplied Chemical Register.

The register contains DG of various classes, including:

- Class 2.1 Flammable Gases
- Class 2.2 Non-flammable / non-toxic gases
- Class 3 Flammable Liquids
- Class 4.1 Flammable Solids
- Class 5.1 Oxidising Agents
- Class 6 Toxic Substances
- Class 8 Corrosives
- Class 9 Miscellaneous Dangerous Goods

As the project progresses, a detailed assessment of the existing Chemical Register and audit of the existing store is to be undertaken to fully categorise all DG in accordance with Australian Standards, as well as with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

4.3.2 IMPACT OF DEMOLITION / CONSTRUCTION WORKS

Building F is still in good working order and is proposed to be refurbished for this project.

At this Stage, it is understood that the client will want to retain the existing chemicals stored on site for eventual use in the refurbished Building F (agriculture). Therefore, at temporary means of safe storage needs to be implemented for the duration of the Redevelopment Program.

It is anticipated that Built Construction will liaise with the client to establish a suitable location for temporary installation within either an approved DG Store, and/or a series of approved Dangerous Goods Cabinets or storage units.

4.4 POTENTIAL FOR SITE BULK DG CONSOLIDATION

Subject to the development of Staging during forthcoming Design and Planning Phases, a permanent central location could be established for the bulk consolidation of the School's DG. This could either constitute a bespoke DG Store or an approved purpose built Container.

This would potentially simplify the ongoing management of DG storage and delivery, with smaller quantities to be housed within the local cabinets.

Each department could then establish smaller DG cabinets for various class in the local vicinity of operations.

4.5 DISPOSAL OF EXISTING DG

Any existing DG onsite which is identified for disposal shall be handled, transported and disposed of in accordance with Australian Standards and NSW Regulations and Guidelines.

4.6 BULK LPG TANK

4.6.1 GENERAL

There is an existing bulk LPG tank onsite, which is enclosed within a lockable compound.

At the time of preparing this report, JHA understands that the intention is to retain this existing tank.

4.6.2 HAZARDOUS AREA

In order to effectively coordinate works around the tank, a Hazardous Area Classification (HAC) should be undertaken during the design phases. This is critical to establish hazardous zones (exclusion zones) associated with both the tank compound and with tanker delivery.

At this stage, the classification of the facility may occur under either a separate REF scope. Otherwise, it shall be undertaken as part of the main works associated with this SSDA submission.



Figure 7 Existing Bulk LPG Tank Compound

4.6.3 IMPACT OF DEMOLITION / CONSTRUCTION WORKS

Adequate planning is to occur for proposed site access, demolition and construction works, to work around the existing compound, while adhering to any establish hazardous zones, for which potential ignition sources must be excluded.

Upgrades and/or augmentation to building LPG supply lines will be established during the forthcoming design phases.

5 CONCLUSION

This Report serves as a starting point for the appropriate planning and implementation of strategies associated with Dangerous Goods required to support the client's operations.

As the design progresses, consideration of Department of Educations "Chemical Safety in Schools" will be incorporated into the project. Therefore, based on the scope of this project and the above screening, an additional Preliminary hazard analysis (PHA) is not required for the proposed project.

APPENDIX A – EXISTING BIOLOGY CHEMICAL REGISTER

Chemical Store D29

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity Jun-20
A					
Acetone (see propanone)	3.9.2020	1090	3	Flammable Cub	1080ml
Aluminium Potassium Sulphate	26.9.19	13539		B2	257g
Aluminium sulfate	26.9.19	12185		B2	534g
Ammonium Carbonate	4.2.16	10045		A2	189g
Ammonium Chloride	27.6.17	10048		A3	0g
Ammonium ferrous Sulfate	13.3.19	10450		B2	134g
B					
Barium Chloride	27.6.17	1564-3	6.1	A3	165ml
Barium Hydroxide	27.6.17	1564-5	8	C1	55g
Barium Sulfate	27.6.17	13887		B2	400g
Benedicts reagent	1.11.19	25-7160	9	B1	60ml
Boric Acid	24.1.16	10059		C1	449g
Butan-1-o/l/n-butyl alcohol	1.11.19	5066-74	3	Flammable Cub	300ml
Butan-2-o/l/sec-butyl alcohol	13.3.19	1120-4	3	Flammable Cub	500ml
Butane lighter gas		1011-1		C4	280ml (1 can)
C					
Calcium Carbonate/Marble Chips	23.8.19	10063		C3 & A2	100g & 800g
Calcium Chloride	1.5.19	20922		A3	256g
Calcium Nitrate	27.8.19	1454	5.1	B1	162g
Calcium/ Calcium Metal	9.12.19	24537	4.3	A1	20g
Carbon Powder / Carbon Activated	18.12.18	1362-1	4.2	A2	270g
Charcoal Powder, activated	27.6.17	1362-2		C2	50g
Citric Acid	2.3.19	100685		C1	34g
Cobalt Chloride - paper	21.12.17	32-0446	6.1	A3	1 pack
Copper Carbonate	27.6.17	5003-02		A2	200g
Copper Chloride II	25.2.17	2802	8	A3	247g
Copper Nitrate	6.10.19	1477-7	5.1	B1	500g
Copper Sulfate	27.6.17	11428	9	A2	930g
Cyclohexanol	13.8.16	22559		Flammable Cub	250ml
E					
Ethanol (absolute alcohol)	22.2.18	1170-1	3	Flammable Cub	9 Litres
Ethyl Acetate	12.4.19	1173	3	Flammable Cub	250ml
F					
Ferric chloride/Iron (III) Chloride	#####	1773		A3	250g
Ferric Nitrate/Iron III Nitrate	27.6.17	1466		B1	500g
Fixative wrokable Mat	NA			C4	450ml (1 can)
Formaldehyde	1.1.16	85016	8	Flammable Cub	300ml
G					
Gelatin	27.6.17	13583		A1	200g
Glucose syrup	3.1.18	10096		C3	500g
Glycerol/glycerin	17.3.18	198-5		A1	160ml
H					
Hydrochloric Acid 0.1M	27.9.19	8732209	8	C1	225ml
Hexane	8.4.18	1208-1	3	Flammable Cub	100ml
I					
Iron / filings, metal, powder, wire	3.10.17	10223	4.1	A1	25g
K					
Kerosene	3.8.16	1223	3	Flammable Cub	1 Litre
L					

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity Jun-20
Lead / sheets, foil, shot	3.8.16	21953		A1	93g
Lead chloride	27.8.19	13594	6.1	A3	150g
Lead nitrate	27.6.17	1469	5.1	B1	256g
M					
Magnesium carbonate	8.5.19	13601		A2	250g
Magnesium ribbon	27.6.17	1869-1	4.1	C2	75g
Magnesium sulfate/Epson salts	17.10.19	11347		B2	20g
Methyl acetate/ethanate	27.6.17	1231	3	Flammable Cub	300ml
Methylated spirits	19.4.18	20184	3	Flammable Cub	18.2L
Methylpropan 1-ol / tert-butylalcohol	14.4.18	21829	3	Flammable Cub	350ml
Methylpropan 1-ol / iso-butylalcohol	27.6.17	1212	3	Flammable Cub	100ml
Mineral Turpentine	1.11.19	6059-23	3	Flammable Cub	4 Litres
N					
Nickel (II) Carbonate	27.8.19	11640	9	A2	152g
P					
Pentanol/Pentan-1-02/amy alcohol	27.6.17	1105-1	3	Flammable Cub	500ml
Pepsin	4.12.17	21966		A1	69g
Potassium carbonate	13.12.18	10204		A2	137g
Potassium chloride	9.12.19	10205		A3	280g
Potassium Dihydrogen Orthophosphate	24.1.16	10486			606g
Potassium hydroxide	27.6.17	1813	8	C1	500g
Potassium iodide	5.9.18	10471		B3	181g
Potassium permanganate	9.10.19	1490	5.1	A1	100g
Propan-1-01 / propanol / propylalcohol	27.6.17	1274	3	Flammable Cub	575ml
Propan-2-01/iso propylalcohol	1.11.19	6064-99	3	Flammable Cub	600ml
Propionaldehyde/propanal	4.12.17	1275	3	Flammable Cub	300ml
S					
Silica Gel Self indicating	10.4.15	10451			29.46g
Slicon Powder	27.8.19	35061		C1	70g
Sodium chloride	2.7.19	10461		A3	500g
Sodium Bicarbonate/Baking Soda	4.10.19	10448		A2	60g
Sodium Hydroxide	3.3.19	1823	8	C1	523g
Sodium Nitrate	21.9.19	1498	5.1	B1	250g
Sodium silicate solution	1.11.19	4712-37		A3	500ml
Sodium sulfate/sulphate	15.9.16	10458		B2	303g
Sodium tetraborate (borax)	27.6.17	18-1461		A1	287g
Starch	21.8.19	32346		A1	100g
Sulfur	17.9.15	1350	4.1	C1	468g
U					
Universal indicator	1.11.19	6923942	3	B3	165ml
W					
Water - Distilled	27.6.17	10000		B2	2 Litres
Z					
Zinc dust / powder	27.6.17	1436-2	4.3	A1	279g
Zinc nitrate	27.6.17	1514	5.1	B1	114g
Zinc sulfate	27.8.19	21905	9	B2	48g

APPENDIX B – MAIN CHEMICAL STORE CHEMICAL REGISTER

Chemical Store S2

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
A					
Acetic Acid, Glacial	27.6.17	2789-3	8	Red 3.3	500ml
Aceto Orcein Stain B.S.	1.11.19	28-2589	8	Orange 5.4	700ml
Acetone/Propanone	3.9.2020	1090	3	Flammable Cub	950ml
Acid Di-Sodium Salt/EDTA Disodium Salt	11.9.19	21852		Red 2.3	500g
Agar 1000	29.6.18	29-3295		Orange 4.5	900g
Alizarine Yellow/ Ellegaic Acid	13.2.18	17156		Orange 5.4	40g
Aluminium Chloride	5.7.19	1726	8	Red 2.2	490g
Aluminium Foil	11.4.18	7575-45		Orange 4.2	3 Pieces
Aluminium Oxide	22.10.17	10019		Orange 5.3	160g
Aluminium potassium sulphate	26.9.19	13539		Orange 4.2	200g
Aluminium powder, uncoated	27.6.17	1396	4.3	Red 2.2	100g
Aluminium sulfate	26.9.19	12185		Orange 4.2	600g
Ammonia	13.3.19	35051	8	Red Floor.2	2700ml
Ammonium Acetate	27.6.17	10043		Orange 2.4	450g
Ammonium Carbonate	3.9.2020	10045		Orange 2.2	400g
Ammonium Chloride	27.6.17	10048		Orange 3.2	500g
Ammonium Dichromate	4.12.17	1439	5.1	Orange 2.2	460g
Ammonium dihydrogen phosphate/Ammonium phosphate dibasic/Diammonium phosphate	31.8.19	10051		Orange 2.4	480g
Ammonium Ferrous Sulfate / Iron II ammonium sulfate	13.3.19	10450		Orange 4.3	400g
Ammonium Molybdate	3.9.2020	10049-1		Orange 2.4	100g
Ammonium Nitrate	27.6.17	1942	5.1	Orange 3.1	300g
Ammonium Oxalate	27.6.17	2449-1	6.1	Orange 5.1	60g
Ammonium Sulfate/Gran-Am	1.11.19	30-4022		Orange 4.3	350g
Ammonium Thiocyanate	27.6.17	10054		Orange 2.4	400g
Amyl Alcohol (normal)	1.11.19	1105-2	3	Flammable Cub	400ml
Aniline Blue	1.11.19	62507		Orange 5.4	8g
Antimony metal	10.6.2020	2871	6.1	Orange 5.1	70g
Ascorbic Acid	27.6.17	21835	4.2	Orange 2.4	50g
B					
Barium Carbonate	27.6.17	22560	6.1	Orange 2.2	250g
Barium Chloride	27.6.17	1564-3	6.1	Orange 5.1	400g
Barium Hydroxide	27.6.17	1564-5	8	Red 3.3	450g
Barium Nitrate	27.6.17	1446	5.1	Orange 3.1	600g
Barium Sulfate	27.6.17	13887		Orange 4.3	250g
Belt Cleaner	1.11.19	3298027	3	Flammable Cub	200ml
Benedicts reagent	1.11.19	25-7160	9	Orange 2.4	500ml
Benzoic Acid	30.7.16	10056		Red 2.3	250g
Bismuth carbonate	27.6.17	46217		Orange 2.2	150g
Borax Solution	1.11.19	3721836	8	Orange 2.4	450ml
Boric Acid	3.9.2020	10059		Red 2.3	850g
Bromine	27.6.17	1744-1	8	Red 2.2	7ml
Bromine Water	7.3.2020	7577-94		Old Fridge	425ml
Bromothymol Blue	15.8.2020	10213		Flammable Cub	300ml
Bromothymol Blue	15.8.202	10213		Orange 5.4	5g
Butan-1-o/l/n-butyl alcohol	1.11.19	5066-74	3	Flammable Cub	900ml
Butan-2-o/l/sec-butyl alcohol	13.3.19	1120-4	3	Flammable Cub	800ml

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
Butyric Acid	5.3.18	2820	8	Red 3.3	20ml
C					
Calcium Acetate	27.6.17	13556		Orange 2.4	150g
Calcium Ascorbate/Vitamin C Powder	27.6.17	69389		Orange 2.4	30g
Calcium carbide	27.6.17	1402	4.3	Red 2.1	800g
Calcium Carbonate/Marble Chips	23.8.19	10063		Orange 1 & 2	4.5kg
Calcium Chloride	1.5.19	20922		Orange 3.2	2.3kg
Calcium Fluoride	27.6.17	10630		Orange 1.4	140g
Calcium Hydrogen Orthophosphate	27.6.17	17418		Orange	650g
Calcium hydrogen phosphate/ calcium Phosphate Dibasic	16.3.19	18347		Orange 2.4	550g
Calcium hydroxide/slaked lime	27.6.17	10064	8	Red 1.2	700g
Calcium Hypochlorate/bleaching powder	27.6.17	1748-1	5.1	Orange 2.1	700g
Calcium Nitrate	21.4.2020	1454	5.1	Orange 3.1	1400g
Calcium oxide/lime	17.9.18	1910		Orange 1.1	1000g
Calcium Sulfur/Plaster of paris	1.11.19	25413		Prep book case	2.1kg
Calcium/ Calcium Metal	9.12.19	24537	4.3	Red 2.1	80g
Canada Balsam	20.2.17	48176	3	Orange 2.4	30g
Carbon Powder/Acivated Carbon	18.12.18	1362-1	4.2	Red 3.1	250g
Carmine	27.6.17	15956		Orange 5.4	5g
Caster Oil	31.3.2020	10067		Orange Floor.5	150ml
Castrol Handy Oil	1.11.19	13710		Orange Floor.5	100ml
Charcoal Powder	27.6.17	1362-2	4.2	Red 3.4	300g
Chromic Acetate	27.6.17	56287-1		Orange 2.4	600g
Chromic Sulfate	4.12.17	24538	8	Orange 4.3	600g
Citric Acid	2.3.19	100685		Red 2.3	200g
Cobalt Chloride	21.12.17	13675	6.1	Orange 3.3	35g
Cobalt Nitrate	1.11.19	4600-20	5.1	Orange 3.1	60g
Coconut Oil	10.10.19	31017		Orange Floor.5	1000g
Congo Red/C.I. Direct Red 28, Disodium Slat	27.8.19	10228	9	Orange 5.4	4g
Copper (I) Oxide	27.6.17	24539	9	Orange 5.3	200g
Copper (II) Oxide / Cupric Oxide Powder	27.6.17	21849	9	Orange 5.3	875g
Copper (S)	26.8.19	10072		Prep book case	
Copper Carbonate	27.6.17	5003-02		Orange 2.2	500g
Copper Chloride II	25.2.17	2802	8	Red 2.2	400g
Copper Nitrate	6.10.19	1477-7	5.1	Orange 3.1	450g
Copper Reagent/ Beneicts Qualitative Reagent	NA	7109542		Orange 2.5	800ml
Copper Sulfate (Anhydrous)	27.6.17	11428	9	Orange 4.2	100g
Copper Sulfate (Pentahydrate)	3.9.2020	10073	9	Orange 4.2	4kg
CRC 2-26	1.11.19	6140-99		Flammable Cub	100ml
Crystal Violet	27.6.17	60084-3		Orange 5.4	5g
Ctirc Acid	2.3.19	100685		Prep book case	500g
Cyclohexane	27.6.17	1145	3	Flammable Cub	500ml
Cyclohexanol	13.8.16	22559		Flammable Cub	1000ml
Cyclohexanone	5.9.18	1915	3	Flammable Cub	500ml
Cyclohexene	17.12.18	2256	3	Flammable Cub	200ml
D					
Diethanolamine (synthesis grade)	9.12.19	2491-3		Orange 3.5	1000ml
Diethylamine (for synthesis)	21.9.19	1154	3	Flammable Cub	500ml
Di-Sodium Hydrogen Orthophosphate/Sodium Phosphate, monobasic, anhydrous	1.11.19	85366		Orange 4.4	600g
E					
Eisen (III) Nitrate/Ferric Nitrate	13.3.19	1466		Orange 4.1	220g
Eosin	27.6.17	18454		Orange 5.5	20g
Ethanol/ethyl alcohol/absoulte alcohol	22.2.18	1170-1	3	Flammable Cub	700ml

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
Ethyl Acetate	12.4.19	1173	3	Flammable Cub	500ml
Ethylene glycol/radiator antifreeze	15.11.19	10084		Orange 5.4	30ml
F					
Fehlings solution 1	1.11.19	16-4570	9	Red 5.3	1050ml
Fehlings solution 2	1.11.19	8807-44	8	Red 5.4	500ml
Ferric Oxide	27.6.17	10253		Orange 5.3	600g
Ferric Sulphate	27.6.17	10086		Orange 4.3	400g
Ferrous Sulphide	9.12.19	13575	9	Orange 3.4	280g
Film Developer	4.12.17	3242369		Red 3	800ml
Formaldehyde	3.9.2020	85016	8	Flamable Cub	450ml
Formic Acid/methanoc acid	9.12.19	1779	8	Red 4.3	500ml
G					
Gelatin	27.6.17	13583		Orange 2.5	80g
Glucose	3.1.18	10096		Orange 2.5	1500g
Glucose	3.1.18	10096		Prep book case	1kg
Glycerol/glycerin	17.3.18	1987-5		Orange 5.5	9L
Golden Fleece/ Soft white parafin/ Parafin wax fume	27.6.17	54332		Orange 5.6	100g
Graphite	5.10.19	10065		Orange 2.5	20g
Grease, silicone	1.11.19	62025		Orange Floor.5	80g
H					
Hexane	8.4.18	1208-1	3	Flammable Cub	200ml
Hexene	27.6.17	2370	3	Flammable Cub	100ml
Hydrochloric acid <4M	NA		8	Red 4.5	800ml
Hydrochloric acid >10M, 32%	27.9.19	1789	8	Red 4.4	4000ml
Hydrochloric acid >4M	1.11.19	8732209	8	Red 4.5	800ml
Hydrogen Peroxide 20%-50%	1.11.19	31-0555	5.1	S2 Prep fridge	3.08L
Hydrogen Peroxide 3%	1.11.19	28-0682		S2 Prep fridge	1020ml
Hydrogen peroxide 6%	24.3.2020	28-0683		S2 Prep fridge	600ml
I					
Indigo carmine/ C.I. Acid Blue 74	6.4.19	17615		Orange 5.4	27g
Indicator Stop Bath	6.10.2020	22266	8	Red 3.3	850ml
Iodine	15.12.18	1759-3	8	Red 2.2 & Red 5.3	50g
Iron / filings, metal, powder, wire	3.10.17	10223	4.1	Orange 2.5	570g
Iron II sulfate /ferrous	4.12.19	10092		Orange 4.3	1740gm
Iron III chloride / ferric	4.12.17	1773	8	Red 2.2	500g
Iron III oxide / brown	1.11.19	18-9983		Orange 5.3	800g
Iron nitrate III	13.9.19	1466	5.1	Orange 4.1	280g
K					
Kerosene	3.8.16	1223	3	Flammable Cub	200ml
L					
Latex	27.6.17	35756		0	300ml
Lead / sheets, foil, shot	4.12.18	21953		Orange 3.4	900g
Lead acetate	5.9.18	12264	6.1	Orange 5.1	110g
Lead carbonate	27.6.17	22016	6.1	Orange 5.1	160g
Lead chloride	27.8.19	13594	6.1	Orange 5.1	300g
Lead Dioxide / Lead oxide IV /	5.3.18	1872	6.1	Orange 2.1	900g
Lead nitrate	27.6.17	1469	5.1	Orange 3.1	500g
Lead oxide /lead monoxide	10.7.16	4061-16	6.1	Orange 5.3	900g
Lead tetroxide / Red Lead	5.3.18	25611	6.1	Orange 5.3	1400g
Leishman stain	27.6.17	24972		Orange 5.4	14g
Lithium carbonate	27.6.17	21861		Orange2.3	425g
Lithium hydroxide	5.3.18	2680	8	Red 3.2	150g
Litmus	27.6.17	25029-1		Orange 5.4	80g

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
M					
Magnesium carbonate	8.5.19	13601		Orange 2.3	400g
Magnesium chloride	5.5.16	10491	6.4	Orange 3.3	1500g
Magnesium nitrate	27.6.17	1474	5.1	Orange 3.1	400g
Magnesium oxide	27.4.18	10217		Orange 5.3	300g
Magnesium ribbon	27.6.17	1869-1	4.1	Red 2.1	75g
Magnesium sulfate/Epson salts	17.10.19	11347		Orange 4.3	1000g
Magneson I	1.11.19	4692-15		Orange 3.4	60g
Manganese chloride	27.6.17	21863	6.1	Orange 3.3	860g
Manganese oxide/dioxide	27.8.19	10492	5.1	Orange 3.4	950g
Manganese sulfate	27.6.17	10215	9	Orange 4.3	400g
Mercury decontaminant	1.11.19	7313368	8	Orange 3.4	1000g
Mercury II oxide/ Murcuric Oxide	27.6.17	1641	6.1	Orange 5.1	200g
Mercury, elemental	3.9.2020	2809	8	Red 1.1	500g
Methanol 40%	1.11.19	7124818	3	Flamable Cub	500ml
Methanol/methyl alcohol	26.4.19	1230	3	Flamable Cub	1500ml
Methyl acetate/ethanate	27.6.17	1231	3	Flamable Cub	1000ml
Methyl blue / C.I. Acid Blue 93, disodium salt	6.4.19	21962		Orange 5.4	28g
Methyl cellulose/Methylcellulose	13.11.17	21961		Orange 3.4	600g
Methyl orange	27.6.17	10210	6.1	Orange 5.4	38g
Methyl red	5.9.18	10610	9	Orange 5.4	7g
Methyl salicylate /oil of wintergreen	28.9.16	2810-10	9	Red 2.2	1000ml
Methyl violet	27.6.17	57792		Orange 5.4	8g
Methylated spirits	19.4.18	20184	3	Flamable Cub	2.5 L
Methylene blue	28.4.2020	21865		Red 4.3	300ml
Methylpropan 1-ol / tert-butylalcohol / tertiary butanol	14.4.18	21829	3	Flamable Cub	800ml
Methylpropan 1-ol / iso-butylalcohol	27.6.17	1212	3	Flamable Cub	1
Mineral Turpentine	1.11.19	25426	3	Flamable Cub	200ml
N					
Naphthalene flakes/mothballs	27.6.17	1334-2	4.1	Red 2.3	230g
Neutral red / C.I. Basic Red 5	27.6.17	17583	9	Orange 5.4	10g
Nickel (II) Carbonate	27.8.19	11640	9	Orange 2.3	140g
Nickel (II) Nitrate	6.12.18	2725		Orange 3.1	240g
Nickel chloride	9.12.19	11642	6.1	Orange 5.1	600g
Ninhydrin	27.6.17	21963		Orange 3.4	1g
Nipagin/ Ethyl Paraben	5.3.18	46260	9	Orange 2.3	50g
Nitric acid <4M	9.12.19	2031	8	Red 4.5	~800ml
Nitric acid >4M <.2M	9.12.19	2031	8	Red 4.5	~400ml
Nitric acid 68%	5.5.2020	100175	8	Red Floor.4	700ml
O					
Octanol /Octan-1-OL	27.6.17	15591	9	Flamable Cub	400ml
Oil – canola	31.3.2020	17223		Prep book case	2.1L
Oleic acid	2.4.16	12322		Red 4.3	700ml
Orange indicator	1.11.19	31-0924		Orange 5.4	10g
Orecin powder	27.6.17	48246		Orange 5.4	6g
Oxalic acid	27.6.17	2449-2	8	Red 2.3	40g
Oxalic Acid , saturated	27.6.17	2449-2	8	Red 2.3	100ml
P					
Paradichlorobenzene/ 1-4 Dichlorbezene	16.3.19	1592	9	Red 2.3	200g
Paraffin - liquid	27.6.17	113495		Orange Floor.5	9L
Paraffin - wax	27.6.17	11994		Orange 5.5	2Kg
Pentanol/Pentan-1-02/amy alcohol / 1-pentanol	27.6.17	1105-1	3	Flammable Cub	900ml
Pepsin	4.12.17	21966		Orange 3.4	80g

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
Peptone	9.12.19	51727		Orange 4.5	500g
Perlite	27.8.19	19912		Prep book case	1000g
Petroleum jelly	1.11.19	29-0795		Orange 5.5	900g
Phenol red	15.8.2020	10207		Orange 5.4	7g
Phenolphthalein	27.6.17	10203		Flammable Cub	350ml
Phosphate/phosphate rock/ Fluapatite	27.6.17	4152-46		Orange 4.5	100g
Phosphorous red / brown	27.6.17	1338	4.1	Red 1.1	100g/liquid
Polyvinyl Alcohol	30.7.19	1896-3		Orange 3.4	80g
Potassium bromide	4.4.16	21871		Orange 3.4	250g
Potassium carbonate	13.12.18	10204		Orange 2.3	450g
Potassium chloride	9.12.19	10205		Orange 3.3	900g
Potassium chromate	27.8.19	2811-6	5.1	Orange 5.1	200g
Potassium dichromate	27.6.17	1479-1	6.1	Orange 2.1	4000g
Potassium Dichromate, acidified	1.11.19	4843-87		Red 2.4	100ml
Potassium dihydrogen phosphate/Potassium dihydrogen orthophosphate	27.6.17	10487		Orange 3.5	600g
Potassium ferricyanide	27.5.18	21872		Orange 3.4	2400g
Potassium ferrocyanide	28.5.18	21974	9	Orange 3.4	100g
Potassium hydrogen oxalate	27.6.17	25847	6.1	Orange 3.5	80g
Potassium hydrogen phosphate/ Potassium Phosphate Dibasic	3.9.2020	10486		Orange 4.5	800g
Potassium hydrogen phthalate	27.9.19	10495		Orange 3.5	100g
Potassium hydrogen Sulfate / Potassium bisulfate	1.11.19	2509	8	Red 2.2	400g
Potassium hydroxide	27.6.17	1813	8	Red 3.2	1100g
Potassium iodate	27.6.17	10496	5.1	Orange 3.5	300g
Potassium iodide	5.9.18	10471		Orange 3.5	500g
Potassium nitrate	5.10.19	1486	5.1	Orange 3.3	200g
Potassium oxalate	3.9.2020	21976	6.1	Orange 5.1	500g
Potassium permanganate/condy's crystal	19.10.19	1490	5.1	Orange 2.1	300g
Potassium sodium tartrate/rochelle salt	27.6.17	10484		Orange 3.5	1100g
Potassium sulfate	19.10.18	21977		Orange 4.3	1500g
Potassium thiocyanate	27.6.17	21978		Orange 4.5	470g
Propan-1-01 / propanol / propylalcohol / n-propanol	27.6.17	1274	3	Flamable Cub	700ml
Propan-2-01/iso propylalcohol	1.11.19	6064-99	3	Flamable Cub	2.15L
Propionaldehyde/propanal	4.12.17	1275	3	Flamable Cub	1000ml
Propionic acid	27.6.17	1848-2	8	Red 4.3	800ml
PVC Adhesive	1.11.19	4522-25	6.1	Orange Floor.4	4L
Pyrogallol	27.6.17	10483	6.1	Red 2.4	60g
Q					
Quinine sulfate	8.6.19	17490	6.1	Orange 1.5	6g
R					
Radioactive material	1.11.19	15290	7	Orange 1.5	Yes
Raw Linseed Oil	1.11.19	15-5235		Orange 5.5	500ml
S					
Safranin	1.11.19	4692-24	3	Orange 5.4	65g
Salicylic acid	29.7.19	12143		Red 3.3	740ml
Silicon – powder	27.8.19	35061	4.1	Orange 3.5	190g
Silicon dioxide/silica gel / Silica Gel Self indicating	5.10.19	10474		Orange 3.5	2640g
Silicon powder (amorphous)	27.6.17	10451		Red 3.1	250g
Silver acetate	27.6.17	48469	9	Orange 3.5	20g
Silver nitrate	27.6.17	1493	5.1	Orange 4.1	10g
Soda lime	27.6.17	1907	8	Red 2	200g
Sodium acetate	4.12.17	21883		Orange 4.4	800g

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
Sodium Bicarbonate/ Sodium hydrogen carbonate/baking soda	4.10.19	10448		Orange 2.3	800g
Sodium bromide	26.5.17	21884		Orange 4.4	225g
Sodium carbonate / Soda Ash	26.9.19	10252		Orange 2.3	2kg
Sodium chloride	2.7.19	10461		Orange 3.3	900g
Sodium chromate	11.4.16	16182	6.1	Orange 5.1	650g
Sodium dichromate	27.8.19	1479-2	6.1	Orange 4.4	400g
Sodium dihydrogen phosphate / Sodium dihydrogen orthophosphate	1.11.19	85366		Orange 4.4	380g
Sodium dithionite	27.8.19	1384	4.2	Red 2.1	250g
Sodium fluoride	5.9.18	1690-1	6.1	Orange 1.4	680g
Sodium hydrogen phosphate	27.6.17	22576		Orange 4.4	225g
Sodium hydroxide/caustic soda	3.3.19	1823	8	Red 3.2	4kg
Sodium iodide	27.6.19	13638		Orange 4.4	120g
Sodium metabisulfite	26.2.19	21889		Orange 4.4	100g
Sodium metal	4.12.18	1428	4.3	Red 4.1	480g
Sodium nitrate	21.9.19	1498	5.1	Orange 4.1	400g
Sodium oxalate	1.11.19	32-3771	8	Orange 5.2	200g
Sodium phosphate tribasic / Trisodium phosphate	27.6.17	10505	8	Orange 4.5	500g
Sodium polyacrylate	5.2.19	13886		Bookcase	500g
Sodium silicate solution	3.4.2020	4712-37		Orange 4.4	7000ml
Sodium sulfate/sulphate	15.9.16	10458		Orange 4.3	380g
Sodium sulfite	21.3.18	21891		Orange 4.4	1100g
Sodium Sulphite, anhydrous	21.3.18	21891		Orange 4.3	1000g
Sodium thiosulfate	27.6.17	21894	9	Orange 4.4	300g
Stannous Chloride	4.12.19	20893	8	Orange 3.3	600g
Starch	21.8.19	32346		Orange 4.4	500g
Stearic acid	17.10.19	10493		Red 3.3	200g
Strontium carbonate	27.8.19	21895		Orange 2.3	400g
Strontium chloride	31.12.16	21896		Orange 3.3	570g
Strontium nitrate	27.6.17	1507	5.1	Orange 4.1	250g
Sudan III	27.6.17	7585-42		Orange 5.4	5g
Sulfur	23.3.2020	1350	4.1	Red 3.1	580g
Sulfuric acid concentrate	27.6.17	1830	8	Red Floor.4	2500ml
Sulfuric acid<10M>4M	27.6.17	NA	8	Red 5.4	250ml
Sulfuric acid<4M.0.5M	27.6.17	NA	8	Red 5.4	1700ml
T					
Talc	27.8.19	10454		S2 prep book case	455g
Tartaric acid	5.3.19	12134		Prep book case	100g
Thymol	29.6.2020	22001	8	Orange 4.5	200g
Tin / metal, foil, granulated	5.12.18	21900		Orange 4.5	300g
Toluene	20.11.16	1294	3	Orange 5.5	80ml
Toluidine blue	27.6.17	17228		Orange 5.4	70ml + 25g
Trypsin	27.6.17	22003		Orange 5.5	5g
U					
Universal indicator	14.2.19	6923942	3	Flamable Cub	750ml
Urea	27.6.17	21902		Orange 4.5	1000g
V					
Vaccum Pump Oil	1.11.19	3992177		Orange Floor.5	1000ml
W					
Wax (candle and bees)	27.6.17	35358		Orange 5.5	
X					
Xylene/Xylol	20.1.18	1307-3	3	Flamable Cub	50ml

Chemical name	SDS Date	Chemwatch No.	DG Class	Shelf No.	Quantity June 21
Z					
Zinc / metal, foil granular	10.12.18	10447	4.3	Orange 4.5	1400g
Zinc Carbonate	27.6.17	19422		Orange 2.3	300g
Zinc dust / powder	27.6.17	1436-2	4.3	Red 2.2	500g
Zinc nitrate	27.6.17	1514	5.1	Orange 4.1	450g
Zinc oxide	16.10.19	22544	9	Orange 5.3	580g
Zinc sulfate	27.8.19	21905	9	Orange 4.3	300g

APPENDIX C – AGRICULTURE CHEMICAL REGISTER

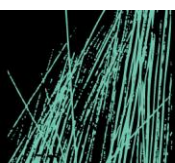
Farm Chemical Store

Chemical name	SDS Date	Chemwatch No.	DG Class	Location	Quantity 2021
A					
Pharmachem Pharmachemical Antiseptic dusting powder	10.9.2020	11-74807		Farm	200g
Apple Cider Vinegar	1.11.19	32-1885		Farm	20ml
BOC Alu Shield Heavy/ Aerosol Bandage	1.11.19	6559-79		Farm	
Protec all purpose thinner	1.11.19	5506-42		Farm	750ml
Ausmectin Cattle Pour-On	1.11.19	4866-26		Farm	1.25L
Armor All wash and wax car wash	1.11.19	8544-25		Farm	NONE
B					
Johnsons Baby Massage Oil	1.11.19	66588		Farm	500ml
Bayer Basta Non-Selective Herbicide/Basta Herbicide	1.11.19	37-1820		Farm	8L
Betadine Antiseptic Solution	1.11.19	14153		Farm	500ml
Garden King Bindi Clover Killer/ Bindi & Clover Killer	1.11.19	1024678		Farm	200ml
C					
Catchmaster Brand Products (Insect and Rodent glue traps and monitors)	1.11.19	40-6056		Farm	Yes
Cattle Coat Organica/ Buffalo Fly Control	N/A	N/A		Farm	20L
Richgro Caterpillar, Grasshopper & Millipede Insecticide	1.11.19	6978572		Farm	250ml
Cetrigen Antibacterial Wound Spray	1.11.19	4606-7		Farm	20ml
Nufarm Chloropyrifos 500EC Insecticide	2.1.2020	69838		Farm	500ml
Ianotec Australia Citra-Force Aerosol/ Citra-force Aerosol	31.1.2020	67-0268		Farm	150g
Cobbett Codacide Oil/ Codacide Organic Oil	1.11.19	7576-35		Farm	3L
Copper (II) Sulfate Solution	1.11.19	4842-07		Farm	500ml
Cydectin Pour on, Plus Fluke	3.9.2020	42-5592		Farm	2L
D					
Troy Iodin Spray & Wound Dressing/ Debrisol Enzyme Wound Pump Spray - Terramycin	1.11.19	21-7870		Farm	300ml
Demineralised Water	27.6.17	10000		Farm	1L
Linseed Oil	9.5.2020	10701		Farm	1L
Palmolive Ultra Dish Washing liquid - Hand - Lemon Extract/ Dishwashing Liquid	1.11.19	9274889		Farm	1.5L
E					
Organic Crop Eco-oil/ Eco-oil Insecticide	1.11.19	7096-60		Farm	500ml
EnviroSafe Fly Attractant Lure	1.11.19	6095-50		Farm	4 Packs
Expoxy yellow paint	4.2.16	NA		Farm	
F					
Coles Flying Insect Killer Fast Knockdown 300g/ Flying Insect Killer	1.11.19	5245-13		Farm	5 cans
G					
Glysohate 360 Herbicide/ Glysohate Weedkill	1.11.19	8037-46		Farm	5L

Chemical name	SDS Date	Chemwatch No.	DG Class	Location	Quantity 2021
Dow Grazon Extra Herbicide	2.11.2020	4237220		Farm	5L
I					
Merial Ivomec Oral Liquid (Finsihed Product)/ Ivomec Oral, Sheep	4.11.19	11-62695		Farm	60ml
K					
Nufarm Kamba M Selective Herbicide	3.9.2020	50886		Farm	3L
Kerosene	15.4.2021	1223		Farm	3L
L					
Yates Leaf Curl Copper Fungicide Spray	1.11.19	3725588		Farm	200g
Bleach Liquid/Bleach	30.12.2020	4586-34		Farm	5L
Liquid Paraffin	1.11.19	2388786		Farm	20ml
M					
Dermacare Malaseb Medicated Shampoo	1.11.19	8132-27		Farm	10ml
Chemspray Malathon Insecticide	1.11.19	7098-17		Farm	30ml
Pharmachem Pharmahemical Maldison-50 Insecticide	1.11.19	24-4000		Farm	80ml
eChem Metsulfuron-methyl WG Herbicide	3.9.2020	3724574		Farm	250g
Envirogreen Garden King Multipest S-C-C	1.11.19	1024697		Farm	100g
N					
Intervet Coopers Nilverm Pig & Poultry Wormer	1.11.19	3643051		Farm	200ml
Nucidol/Diazinon	21.11.16	16800		Farm	500ml
P					
Searles Paspalum, Nutgrass & Clover Selective Killer	1.11.19	7062-33		Farm	500ml
Inca Pestene Insect Powder	15.4.2021	4882-86		Farm	1.5 cans
Piperazine	11.8.18	2579		Farm	200ml
R					
Farnam Companies Repel-X	1.11.19	28-4489		Farm	5L
S					
Seasol Liquid Seaweed Concentrate	1.11.19	6008-75		Farm	3L
Snow white petroleum jelly	27.6.17	11962		Farm	NONE
Scotts Australian Lawn Builder Regular/ Soil Builder	15.4.2021	7152-11		Farm	1L
Stinger herbicide	2.4.2020	9304821		Farm	NONE
Inca Sulpha-Quin Concentrate (for coccidiosis)	1.11.19	3729088		Farm	
PCT Surefire Fivestar Insecticide	15.4.2021	7214606		Farm	
T					
Toromec LV Pour-On Cattle	Jun-17	N/A		Farm	2L
Yates Thrive All purpose Hose-On	26.6.2021	3591644		Farm	1kg
V					
Petroleum jelly	1.11.19	4879-85		Farm	1 jar
Yates Hortico Derris Vegetable Dust	15.4.2021	65857		Farm	600g
Volume Hair Spray Maximum Hold	1.11.19	4899-62		Farm	

Chemical name	SDS Date	Chemwatch No.	DG Class	Location	Quantity 2021
Vytrate Scour Treatment	1.11.19	4813-75		Farm	
Virbamec Oral Sheep					
W					
Wart Ointment, salicylic acid ointment	1.11.19	27-1237		Farm	
Weed Master Herbicide	1.11.19	6505-36		Farm	
white oil concentrate insecticide	27.6.17	15959		Farm	
White vinegar	21.11.19	4631-69		Farm	
Z					
Zero weed spray	1.11.19	16-7833		Farm	

APPENDIX D – JHA TEAM



LUKE WHEELER | ASSOCIATE

A passionate and highly motivated Electrical Engineer, Luke is experienced in electrical design and project delivery across a variety of sectors, including Defence, Health Infrastructure, Aged Care, Education, Government and Commercial Infrastructure.

Together with his building services and site infrastructure expertise, Luke brings significant experience in Hazardous Areas & Explosives Areas classification and design. Luke also brings previous practical experience as an electrician in the construction industry.



QUALIFICATIONS

- Bachelor of Engineering (Electrical) Hons, UTS
- Supervisor Certificate (Licensed Electrician)

CERTIFICATIONS

- Hazardous Areas Classification and Design
- Installation and Maintenance of Electrical Equipment in Hazardous Areas (EEHA)

KEY PROJECT EXPERIENCE

Project: PFAS Groundwater treatment Facilities Infrastructure: RAAF Base Tindal, RAAF Base Williamtown.

Scope: Design & construction of 2 PFAS Groundwater Treatment Systems at Tindal and augmentation of existing systems at Williamtown.

Role: Electrical infrastructure design; earthing, bonding and lighting protection systems design; hazardous areas design review and certification.

Project: Defence National Hazardous Areas Survey & Compliance Project.

Scope: National program - Identification and management of Hazardous Areas and Explosives Areas

Role: Hazardous and explosives areas identification, classification and inspection; technical review role; rectification planning.

Project: New Air Combat Capability (NACC), RAAF Williamtown, NSW.

Scope: Facilities and infrastructure for the NACC NSW.

Role: Electrical design; Development of the Hazardous and Explosives Areas Electrical Specification.

Project: BP Naval Base Service Station.

SCOPE: DESIGN AND CONSTRUCTION OF A NEW SERVICE STATION.

ROLE: PRE-HANDOVER COMPLIANCE INSPECTION; REMEDIATION IDENTIFICATION.

Project: Costco Petrol Station, Moorabbin VIC.

Scope: Construction of new commercial fueling station.

Role: Hazardous area classification, electrical design.

Project: UNSW ANFF and Mining Engineering Laboratories.

Scope: Facility upgrade.

Role: Hazardous area classification.

Project: HMAS Stirling Redevelopment Project Stage 3A.

Scope: Design and construction of base dangerous goods facilities.

Role: Hazardous Areas electrical design.

Project: Defence Establishment Orchard Hills Surface Weapons Complex Explosives Area Classification.

Scope: Assessment, classification and equipment inspection.

Role: Facilities classification and inspection.

Project: Defence Fuel Installation (DFI) Upgrade, HMAS Albatross NSW.

Scope: Upgrade of DFI facility infrastructure.

Role: Peer review of contractor D&C electrical documentation.

Project: Rio Tinto West Angelas Aerodrome Refueling Facility.

Scope: Facility upgrade.

Role: Earthing, bonding and lightning protection design.

Project: Orora Paper Mill Botany – Wastewater Treatment Plant

Scope: New wastewater treatment facility.

Role: Third party visual inspection of construction works.

TIAN SONG | DIRECTOR/SENIOR MECHANICAL ENGINEER

Tian is a chartered mechanical engineer with RPEQ and NPER endorsement. Tian has a broad range of experience within the building services industry, specializing in mechanical services HVAC design and other specialist services including medical gas, reverse osmosis dialysis water systems, pneumatic tube, oil/lubricant systems, and compressed air systems. His project experience include leading the mechanical design on the \$500M Cairns Base Hospital Redevelopment, with the design period over 3 years.

Tian has a strong focus on leading and working collaboratively within project teams to develop robust and well thought out engineering solutions.



QUALIFICATIONS

BEng (Hons I)

AFFILIATIONS

MIEAust, CPEng, NER

RPEQ, AIDGC, NT Building Practitioner

KEY PROJECT EXPERIENCE

- 17 Construction Squadron Relocation and Workshop Facilities, Amberley, QLD – Dangerous Goods & Hazardous Area Consultant
- 21 Construction Squadron Relocation and Workshop Facilities, Amberley, QLD – Dangerous Goods & Hazardous Area Consultant
- Enhanced Land Force Stage 2 Phase B, 8 & 9 Royal Australian Regiment (RAR) Precinct, Enoggera, QLD – Dangerous Goods & Hazardous Area Consultant
- Enhanced Land Force Stage 2 Phase B, 2 Construction Engineer Regiment (CER) Precinct, Enoggera, QLD – Dangerous Goods & Hazardous Area Consultant
- Australian Light Armoured Vehicle (ASLAV) Simulator Facility, Darwin, NT – Dangerous Goods & Hazardous Area Consultant
- Brisbane Girls Grammar School Science Precinct – Dangerous Goods & Hazardous Area Consultant
- University of Queensland Sir William MacGregor Laboratory Refurbishment – Dangerous Goods & Hazardous Area Consultant
- University of Queensland Skerman Laboratory Refurbishment – Dangerous Goods & Hazardous Area Consultant
- QLD Tafe Ashmore Plumbing Tower – Dangerous Goods & Hazardous Area Consultant
- Joint Logistics Unit (JLU) NQ Workshop Facilities, Townsville, QLD – Dangerous Goods & Hazardous Area Consultant