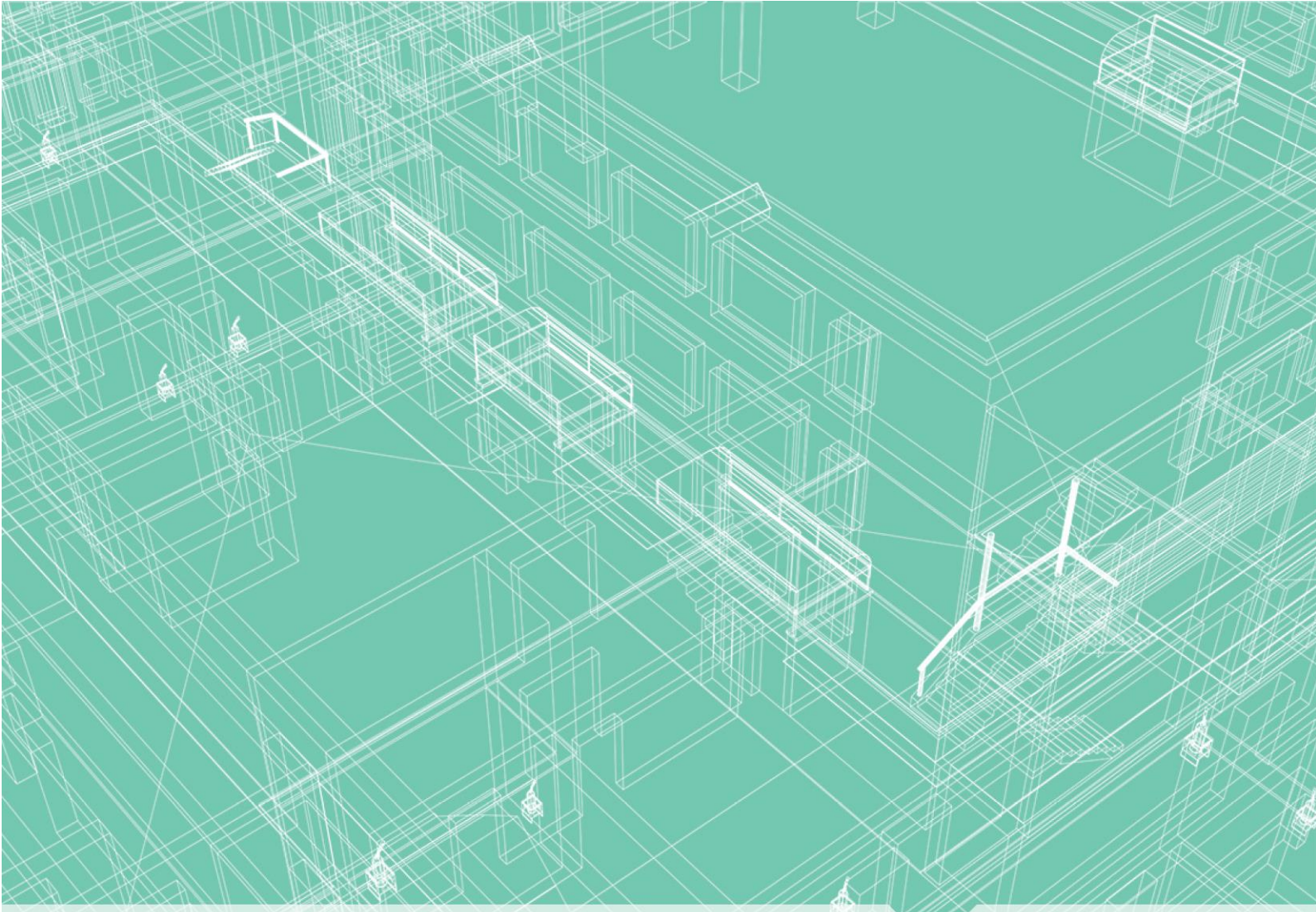

PRELIMINARY DANGEROUS GOODS SCREENING REPORT

HAMMONDCARE GREENWICH
STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSDA)
SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)

JHA

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DOCUMENT CONTROL SHEET

Title	SSDA SEARs Preliminary Screening Report – Dangerous Goods (DG)
Project Name	HammondCare Greenwich Redevelopment
Project Number	210031
Description	Report
Key Contact	Luke Wheeler

Prepared By

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TSA	REV	A	B	C						
	DATE	25/02/2022	07/04/2022	05/05/2022						

CONTENTS

1 EXECUTIVE SUMMARY

This Services Infrastructure report is submitted to the Department of Planning, Industry and Environment (DPIE) in support of a State Significant Development Application (SSD-13619238) for the redevelopment of Greenwich Hospital into an integrated hospital and seniors living facility on land identified as 97-115 River Road, Greenwich (the site). The extent of the site is shown below.

The subject proposal is for the detailed design and construction of the facility following its concept approval under SSD-8699. Specifically, SSD-13619238 seeks approval for the following:

- Demolition of the existing hospital building and associated facilities at the site;
- *Construction of a new hospital facility and integrated healthcare campus comprising of hospital, residential aged care, seniors housing, overnight respite, across:*
  - *A new main hospital building up to RL 80.0;*
  - *Two new seniors living buildings, Northern building up to RL 56.36, and Southern building up to RL 60.65;*
  - *A new respite care building up to RL 56.9;*
- Construction of associated site facilities and services, including pedestrian and vehicular access and basement parking;
- Site landscaping and infrastructure works; and
- Preservation of Pallister House which will continue to host dementia care and administrative functions.

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), the Secretary's Environmental Assessment Requirements (SEARs) for SSD-13619238 were issued on 24 February, 2021. This report has been prepared to respond to the following SEARs:

1.1 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 TSA to conduct a preliminary screening assessment of Dangerous Goods (DG) associated with the proposed HammondCare Greewich 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 TSA, which includes:

- Concept Design Documentation
- Available client Chemical Registers for the existing site
- Proposal for 2-off bulk diesel storage tanks to support stand-by diesel generator operation
- Proposed oxygen tanks on site (size E, G, 3 x 12 packs)
- Anticipated DG chemical required to support operations at a site of this nature
- Requirement for bulk storage and reticulation of medical gases.

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

- Demolition of the existing hospital building and associated facilities at the site;
- Construction of a new hospital facility and integrated healthcare uses and services, including:
    - A new 7 storey main hospital building;
    - Two new 5-6 storey serviced self-care housing buildings (Serviced Seniors Living)
    - A new 2-3 storey respite care building;
- Construction of associated site facilities and services, including pedestrian and vehicular access and basement parking;
- Site landscaping and infrastructure works; and
- Preservation of Pallister House which will continue to host dementia care and administrative functions.

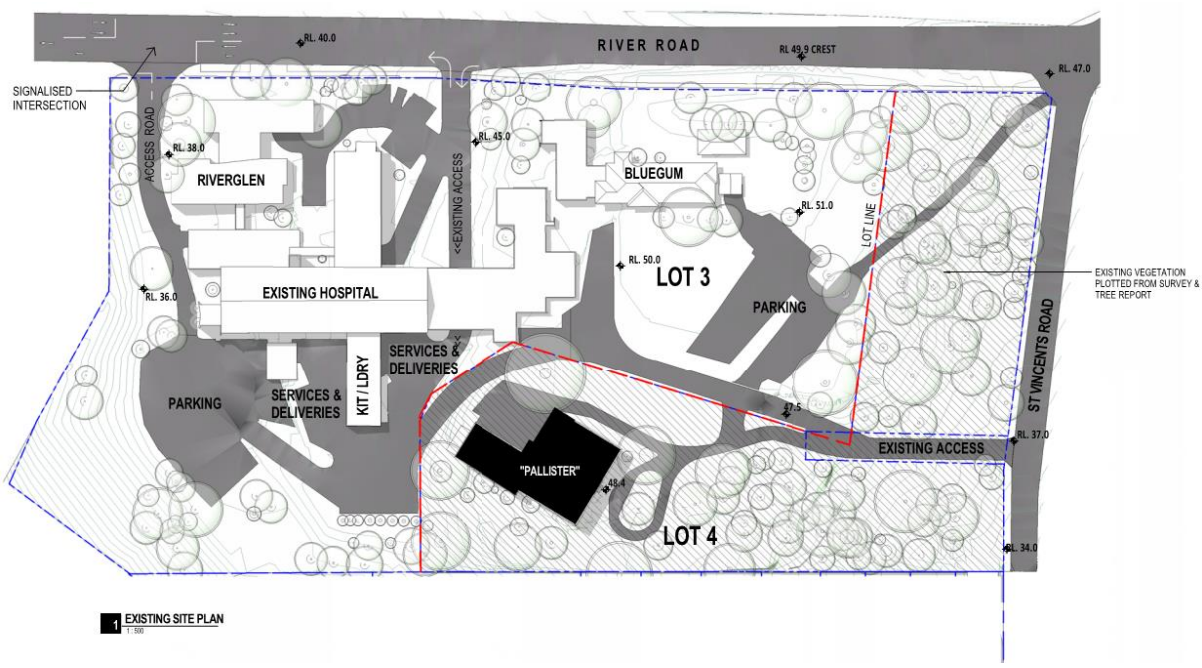

Figure 1 Existing Site Layout

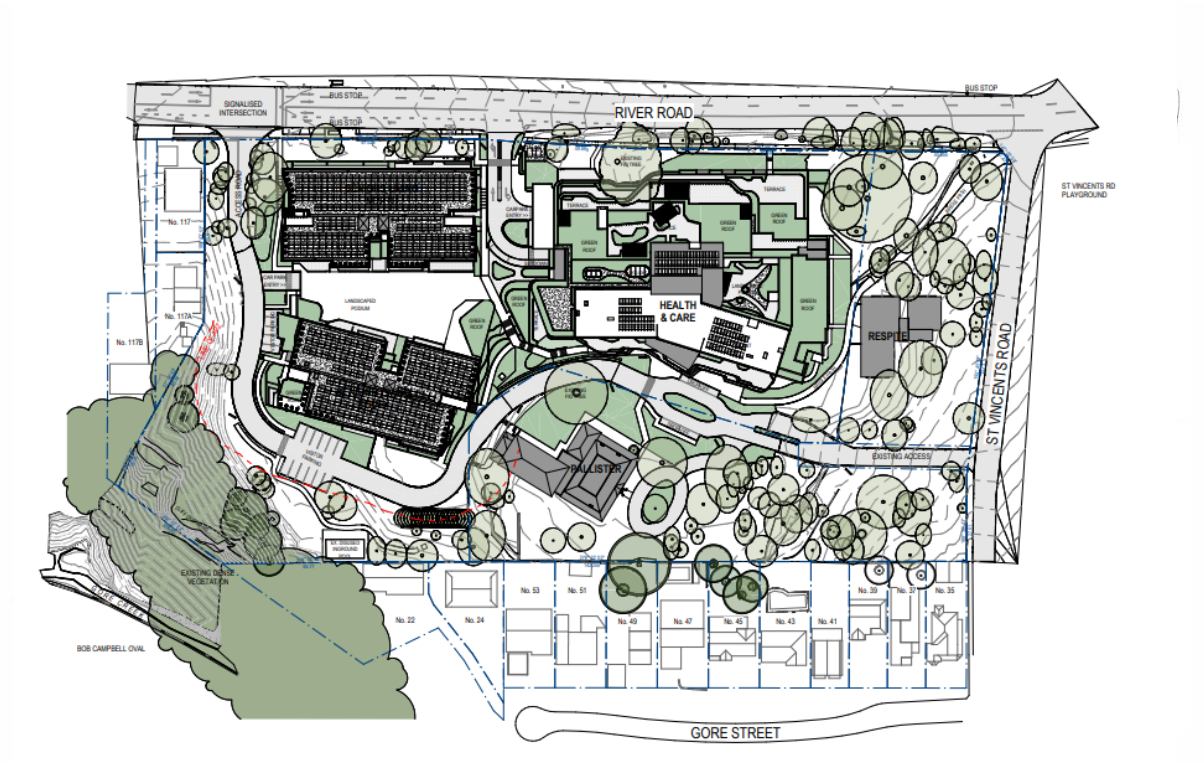

Figure 2 Proposed Site Plan

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 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. AS1894 - 1997 - The storage and handling of non-flammable cryogenic and refrigerated liquids
11. Australian-Code-for-the-Transport-of-Dangerous-Goods-by-Road&Rail-7.6
12. ChemWatch Gold FFX Health and Safety Directorate V2
13. Engineering Services Guidelines.

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 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 Campus Development.

Upon completion and handover of the project, the client's authorised representatives' for the site will assume responsibility as the campus PCBU(s).

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:

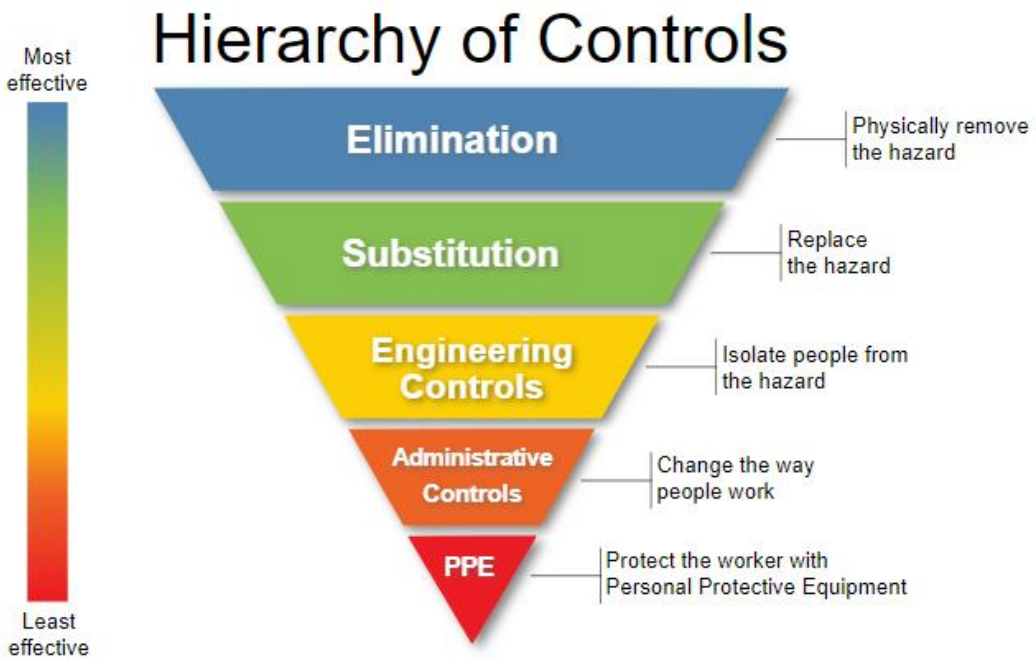

Figure 3 Hierarchy of Control - Infographic by the USA NIOSH

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, the project team and/or contractor, 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, the following shall be undertaken during the project design and construction phases:

1. Appoint a client Person or Persons Conducting Businesses or Undertakings (PCBU), and during the Design and Construction phases, a nominated Project PCBU for the head contractor
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 a number of designated chemical stores and/or purpose built storage cabinets/cages. 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 5.1 Oxidising Agents
- Class 6 Toxic Substances
- Class 8 Corrosives
- Class 9 Miscellaneous Dangerous Goods

It is anticipated that hazardous chemicals are to be 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 is to occur in accordance with AS/NZS 2243.10 within Fume Cabinets in the preparation areas used for this purpose.

The above is applicable to operations both during the demolition and construction phases, as well as under operations ultimately to be conducted by the client's end-users.

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 anticipated for use onsite, it is proposed that these materials can be stored within a dedicated Minor Class 4 Storage shelve 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, there-by 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 the project design team, project manager, 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.

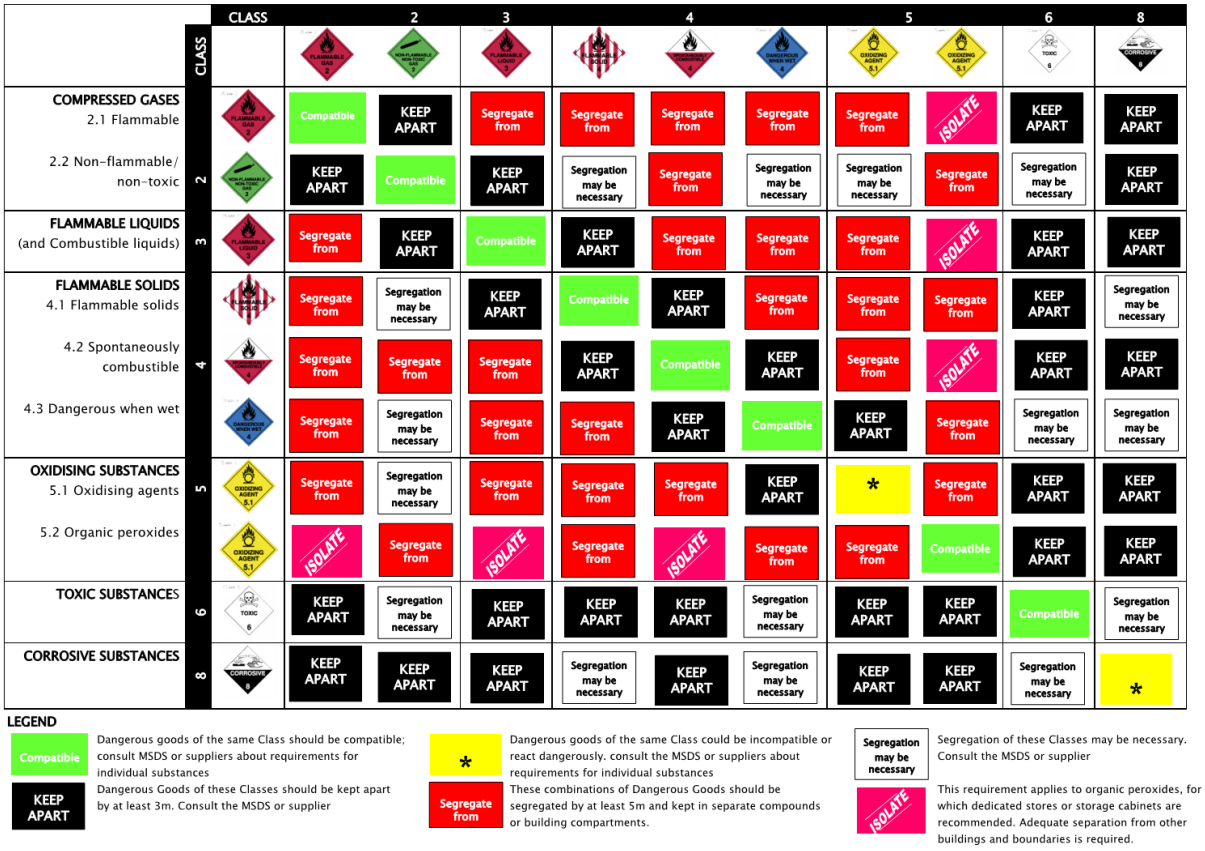

Figure 6 Segregation Table from AS/NZS 3833

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:

- 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.

3.14 BULK DIESEL STORAGE TANKS, DAY TANKS AND ASSOCIATED INFRASTRUCTURE

Where permanent stand-by power generation is installed the ESG calls for 24-hours back-up supply, which would necessitates a site storage tank.

While above ground bulk storage tanks are more economical, it is anticipated that underground tank(s) will be preferred for the development.

The generator fuel system will be complete with fill point, vent pipe, fuel pipe lines, filtration system, pumps, monitoring and alarm annunciation. Pumps shall be configured as N+1 for fuel transfer from the bulk tank to the day tanks.

A fill point, located in an area accessible by heavy vehicles is required for diesel refill will also be required for each tank.

The design selection and siting of bulk diesel storage tanks, as well as associated infrastructure shall be undertaken in strict accordance with the requirements set-out in AS 1940 The storage and handling of flammable and combustible liquids. Requirements include, but are not limited to:

- Ventilation,
- Fire protection,
- Signage,
- Local emergency showers and/or eye wash stations
- Segregation from building elements and other materials.

The principles and protocols around these items will be further developed in consultation with the project design team, project manager, the client, and other key stakeholders.

3.15 MEDICAL GASES BULK STORAGE COMPOUND

It is anticipated that a bulk storage compound will be establish for containment of medical gases, from which respective gases will be reticulated throughout the campus. The compound shall be sisted, constructed and configured in strict accordance with the requirements set-out in

- ESG,
- AS4332: The Storage and Handling of Gases in Cylinders
- AS/NZS 4681: The storage and handling of Class 9 (miscellaneous) dangerous goods and articles
- 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

Requirements include, but are not limited to:

- Ventilation,
- Fire protection,
- Signage,
- Local emergency showers and/or eye wash stations
- Segregation from building elements and other materials.

The principles and protocols around these items will be further developed in consultation with the project design team, project manager, the client, and other key stakeholders.

4 EXISTING DG ONSITE

4.1.1 REGISTERED DG

JHA has been supplied with an Excel Chemical Register for the chemicals stored and utilised onsite.

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
- Non-dangerous goods

As the project progresses into Schematic Design, 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).

4.1.2 IMPACT OF DEMOLITION / CONSTRUCTION WORKS

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

It is anticipated that the contractor 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.

Class 3 Flammable Liquids shall be stored within an approved Flammable Storage Cabinet(s).

Class 2.1 Gases should be stored within an approved Gas Cage.

4.2 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 client's bulk 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.

4.3 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.

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, this report should be expanded upon to provide a comprehensive Dangerous Goods Report for the project. This may also entail the Conduct of detailed Hazard Analysis' and/or Hazardous Area Classifications (HAC).

APPENDIX A – 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