SAFE DESIGN AUSTRALIA

safety starts with design

# SAFE DESIGN REPORT


## PROJECT DETAILS

| | |
|---|---|
| PROJECT NAME | The Cottage Administration Fitout |
| PROJECT ADDRESS | 10 Missenden Road, Camperdown |
| PROJECT REFERENCE | SCR 11846 |
| DESIGNER | True North Architects |
| CLIENT | St Johns College |
| PREPARED BY | Rebekah Colman |
| DATE | 3 December 2014 |



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## CONTENTS



**ATTACHMENTS**
Attachment 1 – Design Evaluation
Attachment 2 – SDA Stamped Reference Plans – Project No.: JOHNS-14B, Date: 22.09.14, Revision DA2, Drawing No.: DD0-01, DD1-01, DD1-02, DD1-03, DD1-04, DD1-05, DD2-01, DD3-01, DD4-01 and DD5-01.



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# BACKGROUND

## Purpose of the Safe Design Report

The purpose of this Safe Design Report is to specify the hazards relating to the architectural component of the design of this structure that create a risk to the health and safety of persons who are to carry out any construction work on the structure. The report also covers hazards associated with other stages of the lifecycle of the structure when it is used as or at a workplace including demolition of the components of the existing structure that are included in the Designers' scope, the use for the purpose for which it is designed, maintenance and repair, and demolition of additions and alterations at the end of the life cycle of the structure.

## Who Should Receive the Safe Design Report?

The Designer has a statutory duty to provide a report on the potential hazards relating to the construction to the client who is required under the regulation to pass the report on to the Principal Contractor. This information detailing how the structure has been designed to be without risk to health and safety, should also be given to each person who is provided with the design for the purpose of giving effect to it. The Designer must also, on request, supply this information to anyone who constructs, uses, maintains or demolishes that structure.

## Legislation

The NSW Work Health and Safety Act 2011 requires that a Person Conducting a Business or Undertaking (PCBU) that designs a structure and the person who commissions that structure that will be used as a workplace must ensure that the structure is without risks to health and safety so far as is reasonably practicable. The Designer also has a duty under the Act to provide information to each person who is issued with the design documents, indicating the purpose of the structure, the results of any analyses, testing or calculations, and any conditions necessary to ensure that the structure is without risks to health and safety.

The NSW Work Health and Safety Regulations 2011 require the Designer to provide a written safety report to the client. The Client then has a responsibility to provide this safe design report to the Principal Contractor. All parties have a duty to consult with each other to ensure communication of this information.

The Code of Practice defines a Designer as a Person Conducting a Business or Undertaking whose profession involves them in:

> *Preparing sketches, plans or drawings for a structure, including variations to a plan or changes to a structure and making decisions for incorporation into a design that may affect the health or safety of persons who construct use or carry out other activities in relation to that structure.*

Designers can include:

> *Architects, building designers, landscape designers, interior designers, builders, town planners, engineers that design part of the structure (e.g. mechanical, structural, civil, electric, hydraulic), services and plant designers and persons specifying how alteration or demolition work is carried out. If a builder or other person changes a design they then take on the role of Designer.*

## Consultation

Under Section 46-49 of the NSW WHS Act 2011, Designers are required to consult with other duty holders. This includes, but is not limited to, the Client, Principal Contractor and construction workers (if known), other Designers such as engineers, landscape, interior and plant designers, employers and workers (or their WHS representative) who will use the proposed structure that is being designed, and any other duty holders specified in the Act.

The above persons also have a duty to consult with the Designer and to provide the Designer with any information that could improve the safety of the structure being designed.

Consultation is an important component in identifying any hazards for the proposed structure. Safe Design Australia has also consulted with persons including the Designer, Engineers and Client (through the Designer), electricity suppliers, products suppliers, WorkCover NSW and Safe Work Australia.

This report should be read in conjunction with the other Designers' safe design reports.



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## DESIGN PROFILE

### Purpose of the Structure

This structure is designed to be student accommodation and administration offices, classes 3 and 5 under the NCC 2014.

### Site Description

The structure is located within an existing Sydney University campus in inner city Sydney. It is adjacent to Missenden Road and shares a service driveway with St John College.

### Design Description

The design is for additions and alterations to an existing two storey structure. The current living and dining areas on the ground level will be converted to administration offices including a meeting room and kitchenette. The upper level will remain student accommodation with separate access. Works include:

- Demolition of internal and external walls, fittings and finishes.
- Demolition of a pergola and external slab.
- Construction of new walls, fittings and finishes.
- Ground floor additions comprising a meeting room, office and PWD toilet.


*Site location*

Note: this image has been sourced from Google Earth and may not reflect current conditions.



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## SYSTEMATIC RISK MANAGEMENT PROCESS

The following process has been used to identify and manage hazards and risks associated with this design.


*Systematic approach to integrating design and risk management*
*Adapted from Code of Practice: Safe Design of Structures*



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## Hazard Identification

A number of methods are used to identify the hazards for designs including:

- Consultation with the Designer
- Review of plans, designs and images
- A knowledge of common hazards for particular types of structures
- Review of WHS data in the construction industry
- Consultation with service providers
- Consultation with product suppliers

## Hazard Evaluation

A hazard evaluation template was used to assess and evaluate all of the identified hazards according to their relevance to the project. A complete list of all the hazards evaluated during construction, maintenance, use and demolition at end of life is available in Attachment 1- Design Evaluation.

## Recognised Standards

'Recognised Standard' as referred to in the report and the flow chart above apply to hazards that are covered by Legislation, Codes of Practice, Australian Standards or Industry Guidelines. These hazards do not require a risk management process unless the hazard can be further improved through design or the recognised standard is inadequate to address the potential hazard.

A list of recognised standards applied to this project has been provided at the end of this report.



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## Risk Assessment

The following risk assessment matrix has been used to assess risks associated with the identified hazards. The risks are assessed before any controls are applied (raw risk level) and then reassessed using any applicable recognised standard first and any additional design control measures (revised risk level).

| **Likelihood**<br>How likely is it to happen | **Consequences:**<br>How severely it hurts someone (if it happens) | | | | |
|---|---|---|---|---|---|
| | **Insignificant**<br>(no injuries) | **Minor**<br>(first aid treatment only; spillage contained at site) | **Moderate**<br>(medical treatment; spillage contained but with outside help) | **Major**<br>(extensive injuries loss of production) | **Catastrophic**<br>(death; toxic release of chemicals) |
| **Almost certain**<br>expected in most circumstances | **2<br>M** | **3<br>H** | **4<br>A** | **4<br>A** | **4<br>A** |
| **Likely**<br>will occur in most circumstances | **2<br>M** | **3<br>H** | **3<br>H** | **4<br>A** | **4<br>A** |
| **Possible**<br>might occur at some time | **1<br>L** | **2<br>M** | **3<br>H** | **4<br>A** | **4<br>A** |
| **Unlikely**<br>could occur at some time | **1<br>L** | **1<br>L** | **2<br>M** | **3<br>H** | **4<br>A** |
| **Rare**<br>may occur, only in exceptional circumstances | **1<br>L** | **1<br>L** | **2<br>M** | **3<br>H** | **3<br>H** |

| **Score and Statement** | | **Action** |
|---|---|---|
| **4<br>A** | **Acute** | ACT NOW – do something about the risks immediately. Requires immediate attention. |
| **3<br>H** | **High** | Highest management attention is required, action plans and management responsibility specified. |
| **2<br>M** | **Moderate** | Manage by specific monitoring or response procedures, with management responsibility specified. |
| **1<br>L** | **Low** | Manage by routine procedures, unlikely to need specific application of resources. |

(Based on Table 6.6 of HB 436:2004 Risk Management Guidelines)

## The Hierarchy of Risk Control

The methods for controlling risks are ranked from the highest level of protection and reliability to the lowest. This ranking is known as the *hierarchy of risk control.*

Work Health and Safety Regulations require duty holders to work through the hierarchy below to choose the control that most effectively eliminates or minimizes the risk in the circumstances.

**Elimination**
**Substitution**
**Isolation**
**Engineering**
**Administrative**
**Personal Protective Equipment** (Safe Work Australia, 2012)

For further information on the hierarchy of risk control please refer to *How to manage Work Health and Safety Risks Code of Practice 2011, WorkCover NSW.*



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## RISK REGISTER

Safe Design Australia have evaluated the design and detailed the proposed control measures below.

This assessment covers the Demolition of parts of the existing buildings, Construction, Maintenance and Repair, Use for the purpose for which it was designed and Demolition of alterations and additions at end of the life cycle of the structure.

*Example Risk Register*

**Site Hazards**

| Hazard Category | Detail of Hazard | Raw Risk Level | Standard Applies* | Existing and Recommended Control Measures | Revised Risk Level | Action |
|---|---|---|---|---|---|---|
| Electrical | Overhead power lines.<br>Potential for interference with cranes and other mobile plant. | 4 Acute | Y | The location of overhead power lines has been indicated on the plans.<br>Recommend obtaining safety advice from electricity provider if work is to occur close to assets.<br>Works on or near energised electrical installations or services are defined as high risk construction work. Contractor must prepare a safe work method statement (SWMS) before commencing works. | 3 High | Principal/ Maintenance/ Demolition Contractor |

* Refer to Recognised Standard References

- **Hazard Category and Detail of Hazard** – covers hazard categories assessed and provides details of identified hazard. A full list of the hazard categories assessed can be found in Attachment 1: Design Evaluation.
- **Raw Risk Level –** shows risk level from the hazard specified without any controls applied.
- **Standard Applies –** applies a recognised standard to the hazard if available.
- **Existing and Recommended Control Measures –** details **existing control measures** that have been implemented by the Designer to eliminate or minimise the hazard **(in black font).** This section also provides **recommendations** of controls that may further reduce the risk level of the hazard **(in blue font).** Control measures have been ranked in order of effectiveness based on the hierarchy of risk control (previous page) with the most effective presented first.
- **Revised Risk Level –** shows residual risk level with recognised standard and Designers existing and recommended controls applied. Those items with higher revised risk levels should be noted by the builder and the PCBU at the workplace and appropriately managed.
- **Action-** identifies those responsible for addressing the recommendations. These recommendations include residual risks that may not have been eliminated or minimised through design.

**Additional hazards that have recognised standard controls have not been detailed. This assessment focuses on those hazards within the control of the Designer or those where a recognised standard is inadequate and on alerting persons constructing, operating and maintaining the structure of any residual risk from the design stage.**



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## Site Hazards

**These hazards apply to Construction, Maintenance & Repair and Demolition at End of Life sections**

| Index No | Hazard Category | Detail of Hazard | Raw Risk Level | Standard Applies* | Existing and Recommended Control Measures | Revised Risk Level | Action |
|---|---|---|---|---|---|---|---|
| S1.1 | Access and Egress | Access to the sites is through the university campus.<br>Potential for construction traffic to strike students, staff or visitors. | 4 Acute | Y | The site is on the outer edge of the university campus with easy access.<br>Recommend scheduling work to minimise disruption to students (e.g. university holidays).<br>Contractor to develop a detailed traffic management plan for the site. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S1.2 | | The site is within an operational university.<br>Potential for students and public to access the site resulting in injury. | 4 Acute | Y | Recommend scheduling work to minimise disruption to students (e.g. university holidays).<br>Recommend adequate barriers and/or fencing during works to prevent unauthorised entry to the site. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S1.3 | | Access to the site is on a high traffic road.<br>Potential for collisions with vehicles. | 4 Acute | Y | Recommended Contractor provides a traffic management plan for the site | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S2.1 | Adjoining Areas | The site is within an operational university.<br>Potential for persons using adjoining areas to be injured. | 4 Acute | Y | Recommend scheduling work to minimise disruption to students (e.g. university holidays).<br>Recommend a traffic management plan for site be provided showing how operational university areas can be safely accessed.<br>Recommend that works are controlled and maintained within the site boundaries. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S2.2 | | A bus stop is immediately adjacent to the site on Missenden Road.<br>Potential for injury to persons accessing the bus stop. | 4 Acute | Y | Works can be maintained within the site and should not impact people using the bus stop. | 1 Low | |
| S2.3 | | The site is within an operational university.<br>Potential for noise and dust to impact on occupants in nearby buildings. | 3 High | Y | Recommend the Contractor consult with the university to minimise disruption. | 2 Mod | Principal/ Maintenance/ Demolition Contractor<br>Client |
| S7.1 | Crane Operation | Contact with overhead power lines along Missenden Road. | 4 Acute | Y | See Electrical hazard category (S9.2) below. | 3 High | |
| S7.2 | | Falling objects striking pedestrian and vehicles while using cranes to load and unload material. | 4 Acute | Y | Contractor to ensure safe access and protection for pedestrians and vehicles.<br>Consider crane location in relation to crane boom safely operating over adjoining areas. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S9.1 | Electrical | Works on or near energised electrical installations or services are defined as high risk construction work. | 4 Acute | Y | Contractor must prepare a safe work method statement (SWMS) prior to commencing works. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S9.2 | | Overhead power lines on Missenden Road.<br>Potential for interference with cranes and other mobile plant. | 4 Acute | Y | There is room on site for deliveries and temporary location of a small crane if required.<br>Recommend obtaining safety advice from electricity provider if work is to occur close to assets. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S9.3 | | Contact with onsite underground power. | 4 Acute | Y | Confirm location of any underground power prior to any ground works commencing.<br>Recommend obtaining safety advice from electricity provider if work is to occur close to assets. | 3 High | Principal/ Maintenance/ Demolition Contractor |



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## Site Hazards

**These hazards apply to Construction, Maintenance & Repair and Demolition at End of Life sections**

| Index No | Hazard Category | Detail of Hazard | Raw Risk Level | Standard Applies* | Existing and Recommended Control Measures | Revised Risk Level | Action |
|---|---|---|---|---|---|---|---|
| S19.1 | Mobile Plant | Work carried out where there is movement of powered mobile plant is considered high risk construction work. | 4 Acute | Y | **Applies to all mobile plant hazards below.** Contractor must prepare a safe work method statement (SWMS) prior to commencing works. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S19.2 | | Contact with overhead power lines along Missenden Street. | 4 Acute | Y | Refer to Electrical hazard category above (S9.2). | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S19.3 | | Crane and other mobile plant operating on services pits. Potential for instability or tipping. | 4 Acute | Y | Contractor to confirm location of services pits and provide this information to mobile plant and crane operators. | 3 High | Principal/ Maintenance/ Demolition Contractor |
| S20.1 | Noise | Noise from works affecting persons in adjacent structures. | 3 High | Y | Follow DA conditions regarding hours of works. Recommend consultation with the Client to inform them of expected noise levels and times. | 2 Mod | Principal/ Demolition Contractor |
| S30.1 | Underground Services | Contact with underground services, including: electricity, gas, telecommunications, sewer, water and stormwater. | 4 Acute | Y | Minimal ground work required in the design. Confirm location of essential services prior to any ground works commencing. | 3 High | Principal/ Maintenance/ Demolition Contractor |

* Refer to Recognised Standard References



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## Construction (including demolition of existing)

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|---|---|---|---|---|---|---|---|
| C2.1 | Adjoining Areas | The adjacent onsite buildings will remain operational during construction.<br>Potential for injury to students, staff and visitors. | 4 Acute | | Ensure that operational areas are adequately excluded from areas under construction. | 3 High | Principal Contractor |
| C2.2 | | Small site with limited space for onsite parking or storage.<br>Potential for people in the vicinity to be injured by traffic and materials not contained on the site. | 4 Acute | | A builders' compound is available for use for storage of materials and equipment.<br>Recommend the Contractor develop a site management plan including determining material and waste storage as well as loading and unloading and vehicle parking. | 3 High | Principal Contractor |
| C9.1 | Electrical | Contact with power in the existing building where parts of the building are operational during construction. | 4 Acute | Y | Recommend isolating the power supply to the existing building and utilising a separate construction power supply. | 3 High | Principal Contractor |
| C9.2 | | Adequate power for construction.<br>Potential for overloading of existing power supply. | 3 High | | Recommend the Contractor ensures a dedicated construction power supply is available. | 2 Mod | Principal Contractor |
| C15.1 | Hazardous Substances | Cutting of masonry blocks.<br>Potential inhalation of silica. | 4 Acute | | Recommend minimising dust exposure such as:<br>• avoiding cutting where possible (have pre-cut blocks delivered)<br>• working in a well-ventilated areas<br>• using Personal Protective Equipment (PPE)<br>Follow the recommendations in the product safety data sheet (SDS). | 3 High | Principal Contractor |
| C15.2 | | Exposure to chemical termite treatment. | 4 Acute | Y | Recommend use of physical or low toxicity termite barriers where appropriate. | 3 High | Principal Contractor |
| C15.3 | | Treated timber used in construction (treated timber selected for durability). | 4 Acute | Y | Consider using less hazardous treated timber (e.g. alternatives to CCA treated).<br>Follow the recommendations in the product safety data sheet (SDS) including working in a well-ventilated area and using personal protective equipment (PPE). | 3 High | Principal Contractor |
| C15.4 | | Fibre Cement used in construction – inhalation of silica dust and contact with sealant (fibre cement selected for durability and low maintenance requirements). | 4 Acute | | Follow the recommendations in the product Safety Data Sheet including working in a well-ventilated area and using Personal Protective Equipment. | 3 High | Principal Contractor |
| C15.5 | | Gas in existing structure.<br>Damage to pipes, gas leaks leading to inhalation or explosion hazards. | 4 Acute | Y | Location of gas has been indicated on the plans.<br>Ensure gas is properly decommissioned ensuring no gas remains in the lines prior to commencing works.<br>Work carried out on or near gas is considered high risk construction work. Contractor must prepare a safe work method statement (SWMS) prior to commencing works. | 1 Low | Principal Contractor |
| C15.6 | | Glass fibres and volatile organic compounds (VOC) fumes from insulation. | 3 High | Y | Recommend specifying foil, polyester, natural product or fibre-bio-soluble insulation where possible. | 1 Low | Designer |



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## Construction (including demolition of existing)

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|---|---|---|---|---|---|---|---|
| C15.7 | Hazardous Substances | VOC fumes from paints and other coatings. | 3 High | Y | Recommend specifying the use of no VOC paints where possible.<br>Recommend specifying the use of low VOC adhesives and finishes where possible.<br>Recommend specifying the use of low VOC carpets. | 1 Low | Designer |
| C15.8 | | VOC fumes from internal joinery | 3 High | Y | Recommend specifying the use of no or low emission materials for internal joinery. | 1 Low | Designer |
| C28.1 | Structural Stability | Alteration to load bearing structures including demolition of brickwork to make new external openings.<br>Potential collapse and weakening of the existing structure. | 4 Acute | Y | Recommend that Principal Contractor provide propping and support and obtain onsite advice from Engineer as required.<br>Structural elements to be demolished are considered high risk construction work. Contractor must prepare a safe work method statement (SWMS) before undergoing works. | 3 High | Principal Contractor<br>Structural Engineer |
| C32.1 | Work at Height | Work at height is considered to be high risk construction work when falls greater than 2 metres are possible.<br>Demolition and construction of roof, walls and ceiling. | 4 Acute | Y | Roof pitches are below the critical angle of 26°.<br>Recommend the use of appropriate edge protection and fall protection particularly where falls of greater than 2m are possible. Refer to AS4994 for specific requirements.<br>Contractor must prepare a safe work method statement (SWMS) prior to commencing work that involves a risk of falling more than 2 metres. | 3 High | Principal Contractor |
| C32.2 | | Falling through the polycarbonate sheeting during demolition. | 4 Acute | Y | Polycarbonate sheeting is non-trafficable.<br>Follow manufacturer's recommendation and note that polycarbonate may become brittle with age and exposure.<br>Recommend use of appropriate fall protection and edge protection while working at heights. | 3 High | Principal Contractor |

* Refer to Recognised Standard References



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|---|---|---|---|---|---|---|---|
| U1.1 | Access and Egress | Access for persons with disabilities. | 3 High | Y | Ramp access and a PWD toilet is provided to the offices.<br>PWD student accommodation is provided elsewhere in the college. | 1 Low | |
| U3.1 | Amenities and Facilities | Amenities and facilities for workers and students.<br>Potential for inadequate facilities. | 3 High | Y | A kitchenette and toilet are provided for staff use.<br>Bathrooms are provided for student use upstairs.<br>Other student amenities including kitchen and living areas are provided in the adjoining structure.<br>Recommend that these be provided in accordance with Code of Practice - Managing the Work Environment and Facilities. | 1 Low | Designer |
| U11.1 | Ergonomics and Space | Sitting for long periods undertaking office work and computer based tasks.<br>Potential for musculoskeletal injuries other adverse health effects. | 3 High | | Recommend consider alternatives to seated work stations. E.g. standing workstations.<br>Consider height adjustable equipment where possible to allow tailoring to the individual worker. | 2 Mod | Designer<br>Client |
| U15.1 | Hazardous Substances | Gas assets.<br>Potential for gas leaks and asphyxiation. | 4 Acute | Y | Recommend that gas equipment is located in well-lit, draught free area.<br>Recommend gas shut off valves be provided and staff trained in their use. | 3 High | Designer<br>Operator |
| U15.2 | | Chemicals used in workplace | 4 Acute | Y | Dedicated cleaners stores are provided elsewhere in the College. | 3 High | |
| U17.1 | Lighting and Ventilation | Inadequate lighting for task. | 3 High | Y | Recommend that all artificial lighting complies with AS 1680. | 1 Low | Designer |
| U17.2 | | Inadequate ventilation. | 3 High | Y | Recommend that air conditioning system complies with AS 1668.2. | 1 Low | Designer |
| U18.1 | Manual Tasks | Transport and loading and unloading of materials and equipment to and from vehicles. | 4 Acute | Y | Temporary parking is provided immediately adjacent to the ramp entrance. | 2 Mod | |
| U18.2 | | Opening and closing large operable partitions. | 3 High | Y | Recommend researching and selecting partitions for ease of operation. | 1 Low | Designer |
| U20.1 | Noise | Noise from offices impacting on student accommodation above. | 3 High | Y | Consider the use of additional acoustic insulation between levels. | 1 Low | Designer |
| U24.1 | Security | After hours entry | 4 Acute | | Security lighting is provided to the entries and paths, including up-lighting of blades walls.<br>Entries are approached from 90°, providing good visibility.<br>Open fencing is provided to minimise hiding places.<br>Ensure planting and landscaping do not pose security hazards (hiding places, obscuring visibility). | 3 High | Operator |
| U25.1 | Slips, Trips and Falls | Slipping on floor surfaces. | 4 Acute | Y | Recommend specifying slip resistant floor surfaces throughout the workplace, including external paths. | 2 Mod | Designer |



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|---|---|---|---|---|---|---|---|
| U25.2 | Slips, Trips and Falls | Slipping on ramps and external surfaces with build-up of algae etc. | 4 Acute | Y | Recommend surfaces be selected to discourage growth of algae or other biological matter that may pose a slip hazard including selection of materials or finishes.<br>Recommend including regular maintenance in maintenance plan. | 2 Mod | Designer<br>Client |
| U29.1 | Traffic and Pedestrian Management and Loading | Entries are adjacent to the service access.<br>Potential for vehicles to collide with pedestrians. | 4 Acute | | Bollards are provided to provide physical separation between pedestrian and vehicle areas.<br>The entry ramp is designed to prevent wheeled objects rolling into vehicle areas. | 3 High | |
| U29.2 | | Landscaping elements obscuring traffic sight lines | 4 Acute | | Ensure visibility is maintained and document maintenance procedure in maintenance plan. | 2 Mod | Landscape Designer<br>Operator |

* Refer to Recognised Standard References



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## Maintenance and Repairs

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|---|---|---|---|---|---|---|---|
| M9.1 | Electrical | Services may be hidden e.g. in the floor or behind walls in the building.<br>Potential injury from contact with power. | 4 Acute | Y | Maintain isolation procedures. | 3 High | Maintenance Contractor |
| M13.1 | Fire and Emergency | Maintenance work - penetrations in fire separation walls. | 4 Acute | Y | Recommend that fire separation walls are indicated on plans and a copy kept with the maintenance plan.<br>Recommend that any work involving fire separation walls be undertaken in consultation with a Fire Safety Consultant. | 1 Low | Designer<br>Client |
| M15.1 | Hazardous Substances | Reticulated gas and lines.<br>Damage to pipes, gas leaks leading to inhalation or explosion hazards. | 4 Acute | Y | Recommend that Designer indicate location of gas lines and existing gas points on the plans.<br>Ensure that a maintenance shut-off valve is available on every gas appliance.<br>Confirm location of gas pipes prior to commencing maintenance works. Include maintenance requirements in maintenance manual. | 3 High | Designer<br>Operator<br>Maintenance Contractor |
| M15.2 | | Hazardous substances are present in the building including:<br>• Termite treatments<br>• Treated timber<br>• Glasswool insulation | 3 High | | Recommend that Contractors use appropriate Personal Protective Equipment when working with, on or around hazardous substances. | 2 Mod | Maintenance Contractor |
| M15.3 | | The storage of chemicals used in workplace. | 4 Acute | Y | A cleaner's store is provided elsewhere in the college. | 3 High | Designer |
| M32.1 | Work at Height | The following are hazards involving working at height for maintenance. | 4 Acute | Y | **Applies to all work at height hazards below:**<br>Recommend the Contractor use appropriate fall protection and edge protection when working at heights. Refer to AS4994 Temporary Edge Protection for specific requirements. | 3 High | Maintenance Contractor |
| M32.2 | | Maintenance and repairs on the roof.<br>Potential to fall. | 4 Acute | Y | Roof pitches are below the critical angle of 26°.<br>Roof pitches are below the angle of 10°.<br>The roof is designed to require minimal maintenance (including upper level windows are able to be cleaned from inside the structure).<br>Contractor must manage the risk of falling in accordance with part 4.4 of the WHS Regulation.<br>Recommend the use of appropriate edge and fall protection while working on the roof. Refer to AS4994 Temporary Edge Protection and Refer to the Code of Practice for Managing the Risks of Falls at Workplaces for specific requirements. | 3 High | Maintenance Contractor |
| M32.3 | | Falling through the skylight when conducting roof work. | 4 Acute | Y | Maintain exclusion zones. | 3 High | Maintenance Contractor |

* Refer to Recognised Standard References



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## Demolition (of additions and alterations at end of life)

| Index no | Hazard Category | Detail of Hazard | Raw Risk Level | Standard Applies* | Existing and Recommended Control Measures | Revised Risk Level | Action |
|---|---|---|---|---|---|---|---|
| DE9.1 | Electrical | Demolition near energised electrical services is considered high risk construction work. | 4 Acute | Y | Contractor must prepare a safe work method statement (SWMS) prior to commencing works. | 3 High | Demolition Contractor |
| DE9.2 | | Contact with power to and within the building. | 4 Acute | Y | Maintain isolation procedures.<br>Recommend isolating the power supply to the building and utilising a separate demolition power supply. | 3 High | Demolition Contractor |
| DE15.1 | Hazardous Substances | Hazardous materials located in the building including synthetic mineral fibres, fibre cement, termite treatments and treated timber. | 4 Acute | Y | Recommend the preparation of a Demolition Management Plan at the time of demolition including the handling of these hazardous substances. | 3 High | Demolition Contractor |
| DE15.2 | | Demolition on or near gas lines. | 4 Acute | | Recommend Designer indicate location of services on the plans. Contractor to confirm locations with DBYD or similar service.<br>Work carried out on or near gas is considered high risk construction work. Contractor must prepare a safe work method statement (SWMS) prior to commencing works. | 3 High | Designer<br>Demolition Contractor |
| DE28.1 | Structural Stability | Building not constructed as per design.<br>Potential for hazards associated with contractor being unaware of final construction techniques. | 4 Acute | Y | Recommend the Principal Contractor submit co-ordinated 'As Built 'drawings to client, at construction completion. This information should be made available to the Demolition Contractor.<br>If as-built drawings are not available or the structure has been damaged or weakened recommend then a competent person conduct an engineering investigation and produce an engineering investigation report as per the Code of Practice. | 1 Low | Principal Contractor<br>Demolition Contractor<br>Structural Engineer |
| DE32.1 | Work at Height | Work at height is considered to be high risk construction work when falls greater than 2 metres are possible.<br>Demolition of internal and external structures at height. | 4 Acute | Y | Roof pitch is below the critical angle of 26°.<br>Recommend the use of appropriate edge protection and fall protection particularly where falls of greater than 2m are possible. Refer to AS4994 for specific requirements.<br>Contractor must prepare a safe work method statement (SWMS) prior to commencing work that involves a risk of falling more than 2 metres. | 3 High | Demolition Contractor |
| DE32.2 | | Falling through the skylight located when demolishing roof. | 4 Acute | Y | Maintain exclusion zones. | 3 High | Demolition Contractor |

* Refer to Recognised Standard References



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## RECOGNISED STANDARD REFERENCES

These recognised standard references are referred to in the risk register. Recognised standards should be followed during construction as indicated. Note: this list is not exhaustive.

| Hazard | Reference |
|---|---|
| Access and Egress | Traffic management in workplaces: Draft Code of Practice 2013, Safe Work Australia<br>Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>Scaffolds and scaffolding work: Draft Code of Practice 2012, Safe Work Australia<br>AS 1428.1 Design for access and mobility<br>AS 2601 The demolition of structures |
| Adjoining Areas | Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>Traffic management in workplaces: Draft Code of Practice 2013, Safe Work Australia<br>AS 2601 The demolition of structures |
| Amenities and Facilities | Amenities for construction work: Code of Practice 1997, WorkCover NSW<br>Managing the work environment and facilities: Code of Practice 2011, WorkCover NSW<br>AS 1428.1 Design for access and mobility |
| Crane Operation | Cranes: Draft Code of Practice 2013, Safe Work Australia<br>Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>Working in the vicinity of overhead and underground electrical lines: draft Code of Practice 2012, Safe Work Australia<br>Managing the risks of plant in the workplace: Code of Practice 2014, WorkCover NSW<br>AS 1418 (set) Cranes, hoists and winches<br>AS 2550 (set) Cranes, hoists and winches – safe use<br>AS 4991 Lifting devices |
| Electrical | Managing electrical risks in the workplace: Code of Practice 2014, WorkCover NSW<br>Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>Work near overhead power lines: Code of Practice 2006, WorkCover NSW<br>Working in the vicinity of overhead and underground electrical lines: Draft Code of Practice 2012, Safe Work Australia<br>AS 3012 Electrical installations – Construction and demolition sites<br>AS 3000 Electrical installations (wiring rules)<br>AS 2601 The demolition of structures |
| Ergonomics and Space | Managing the work environment and facilities: Code of Practice 2011, WorkCover NSW |
| Fire and Emergency | National Construction Code of Australia Part 3.7 |
| Hazardous Substances | National Code of Practice for the safe use of synthetic mineral fibres [NOHSC:2006(1990)]<br>Managing risks of hazardous chemicals in the workplace: Code of Practice 2014, WorkCover NSW<br>Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition Work: Code of Practice 2014, WorkCover NSW<br>Australia and New Zealand, Refrigerant handling: Code of Practice 2007 – parts 1 and 2<br>Draft Code of Practice for Flammable Refrigerants, 2013, AIRAH<br>AS 3999 Thermal insulation of dwellings - bulk insulation - installation requirements<br>AS 5605 Guide to the safe use of preservative - treated timber (interim standard)<br>AS 3660 Termite management<br>AS 1940 The storage and handling of flammable and combustible liquids<br>AS 5601 Gas installations<br>AS 1715 Selection, use and maintenance of respiratory protective equipment<br>AS 1716 Respiratory protective devices<br>AS 2601 The demolition of structures |
| Lighting and Ventilation | AS 1680 Code of Practice for interior lighting and the visual environment<br>AS 1668.2 The use of ventilation and air conditioning in buildings |
| Manual Tasks | Hazardous manual tasks: Code of Practice 2011, WorkCover NSW<br>Construction work: Code of Practice 2014, WorkCover NSW<br>Managing risks in construction work: Code of Practice 2012, Safe Work Australia |
| Mobile Plant | Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>Managing the risks of plant in the workplace: Code of Practice 2014, WorkCover NSW |



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| Hazard | Reference |
|---|---|
| Noise | Managing noise and preventing hearing loss at work: Code of Practice 2011, WorkCover NSW<br>AS 2107 Acoustics: Recommended Design Sound Levels and Reverberation Times for Building Interiors |
| Security | AS 4806 (set) CCTV Set |
| Slips Trips and Falls | Construction work: Code of Practice 2014, WorkCover NSW<br>Excavation work Code of Practice 2014, WorkCover NSW<br>Managing the risk of falls in the workplace: Code of Practice 2011, WorkCover NSW<br>AS 4586 Slip resistance classification of pedestrian surface materials<br>AS 4663 Slip resistance measurement of existing pedestrian surfaces<br>AS 1319 Safety signs for the occupational environment |
| Structural Stability | Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>AS 2601 The demolition of structures<br>AS 1170 Structural design actions |
| Underground Services | Construction work: Code of Practice 2014, WorkCover NSW<br>Demolition work: Code of Practice 2014, WorkCover NSW<br>Working in the vicinity of overhead and underground electrical lines: Draft Code of Practice 2012, Safe Work Australia |
| Work at Height | Managing the risk of falls in the workplace: Code of Practice 2011,WorkCover NSW<br>Construction work: Code of Practice 2014, WorkCover NSW<br>AS 4994 Temporary edge protection |



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## REFERENCES

Work Australia. (2011). How to Manage Work and Safety Risks Code of Practice.

WorkCover NSW (2014). Safe Design of Structures Code of Practice.

Standards Australia. (2004).HB 436:2004, Handbook Risk Management Guidelines: Companion to AS/NZS 4360:2004. Sydney: Standards Australia.

Work Health and Safety Act 2011 (NSW) (Austl.)

Work Health and Safety Regulation 2011 (NSW) (Austl.)

Australia wide statistics, Safe Work Australia.

http://www.safeworkaustralia.gov.au/sites/swa/statistics/pages/statistics

Australia wide construction industry information, Safe Work Australia.

http://www.safeworkaustralia.gov.au/sites/swa/whs-information/construction/pages/construction



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## ATTACHMENT 1 – DESIGN EVALUATION

These hazard categories have been used as prompts to identify hazards according to their relevance to the project.

| Item Ref | Hazard Category Assessed | Site | Demolition of Existing | Construction | Use for Purpose | Repairs and Maintenance | Demolition (End of Life) |
|---|---|---|---|---|---|---|---|
| 1.0 | Access And Egress | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2.0 | Adjoining Areas | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3.0 | Amenities and Facilities | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 4.0 | Biological | | | | ✓ | ✓ | |
| 5.0 | Climatic Conditions | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6.0 | Confined Spaces | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 7.0 | Crane Operation | ✓ | ✓ | ✓ | | ✓ | ✓ |
| 8.0 | Earthworks | ✓ | ✓ | ✓ | | | |
| 9.0 | Electrical | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 10.0 | Entrapment | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 11.0 | Ergonomics and Space | | | | ✓ | | |
| 12.0 | Falling Objects | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 13.0 | Fire and Emergency | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 14.0 | Formwork | | ✓ | ✓ | | | ✓ |
| 15.0 | Hazardous Substances | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 16.0 | Heat Sources | | | | ✓ | | |
| 17.0 | Lighting and Ventilation | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 18.0 | Manual Tasks | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 19.0 | Mobile Plant | ✓ | ✓ | ✓ | | ✓ | ✓ |
| 20.0 | Noise | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 21.0 | Precast Concrete | | ✓ | ✓ | | | ✓ |
| 22.0 | Psychological | | | | ✓ | | |
| 23.0 | Radiation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 24.0 | Security | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 25.0 | Slips, Trips and Falls | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 26.0 | Specialised Plant and Equipment | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 27.0 | Stepping on or Striking Against Objects | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 28.0 | Structural Stability | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 29.0 | Traffic and Pedestrian Management and Loading | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 30.0 | Underground Services | ✓ | ✓ | ✓ | | ✓ | ✓ |
| 31.0 | Vibration | | ✓ | ✓ | | | |
| 32.0 | Work at Height | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 33.0 | Work Near Water | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 34.0 | Other Workplace Issues | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



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