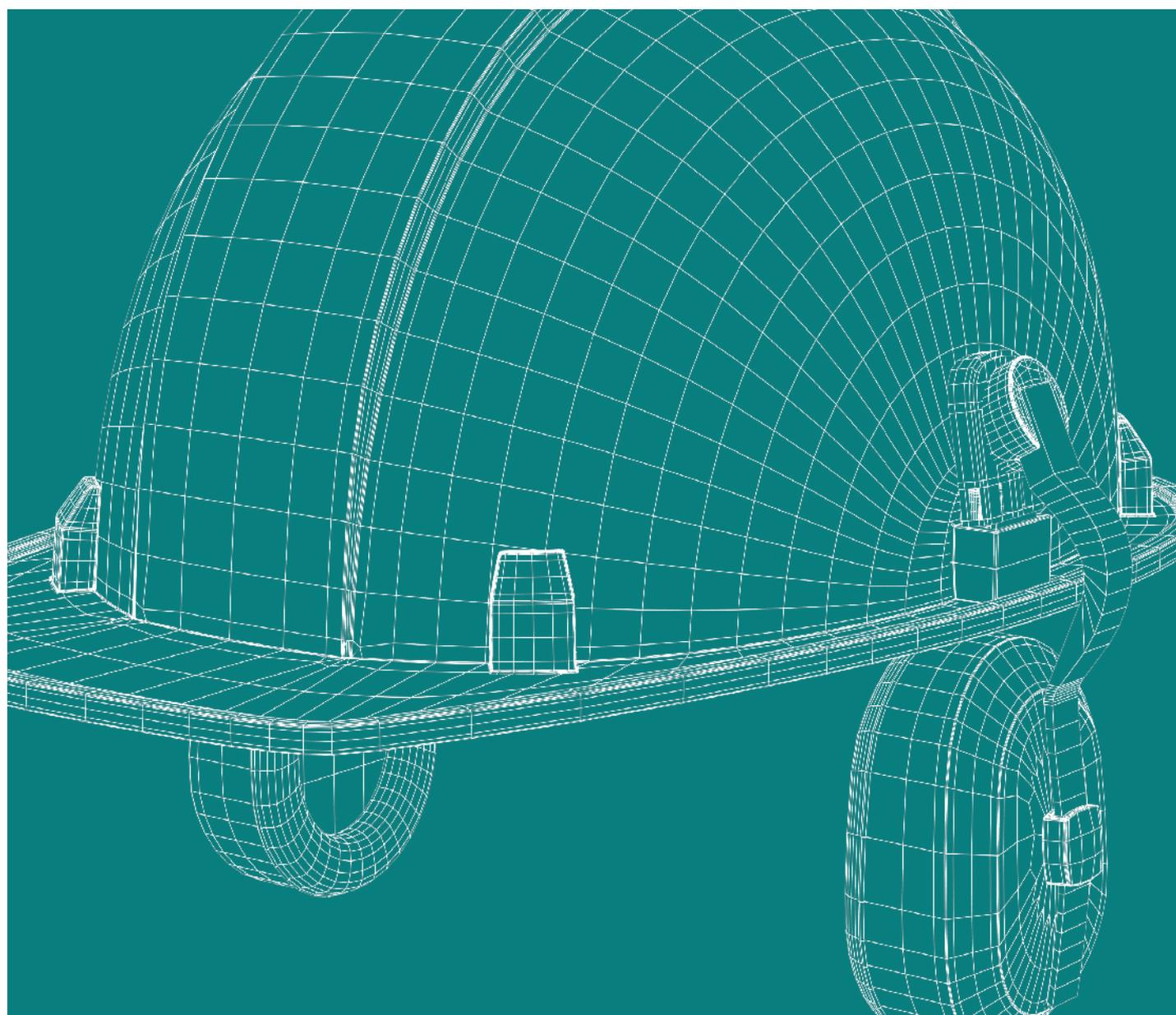


2.0

Health and Safety by Design



Health and Safety Design Guidelines

The design guidelines have been developed to provide a greater level of certainty for all stakeholders when CIAL embark on developing a new commercial asset – the focus is to deliver on our three core business pillars of Stronger Business, Kaitiaki and Enhancing Customer Journeys.

This document outlines CIAL's Health and Safety by design requirements for commercial projects with the aim of providing safe outcomes across design, delivery, operation, maintenance, modification and demolition of assets.

Championing the South Island

OUR MISSION

To be a champion airport, acknowledged at home and abroad as the engine room of the South Island's social and economic prosperity

Being a Champion Airport is built on three pillars:

BUILDING A STRONGER BUSINESS

Together we work to make this organisation even more successful and enduring, with strong commercial returns. We do it because that benefits everyone in our place—especially the people and businesses that call it home.



ENHANCING CUSTOMER JOURNEYS

Customers are at the centre of everything we do, so we do everything we can to make their experience all it can be. We challenge ourselves to think about all that's possible, embracing innovative thinking and wise investment. We keep our airport terminal and wider campus one that welcomes, inspires and engages.



BEING GREAT KAITIAKI

We've been given a special responsibility for our place in the world, and we take that seriously. We embrace the Māori concept of Kaitiakitanga (responsibility, care and guardianship). We are especially focused on safety, security and the sustainable use of our natural resources.



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2.1 OBJECTIVE

The purpose of this section is to outline the health and safety by design requirements for developments undertaken for CIAL.

Eliminating health and safety risks through design makes good business sense. This section of the guidelines is intended to ensure that considerations are made during the design phase to ensure upstream PCBU duties are met and that, so far as is reasonably practical, structures and plant are without risks to health and safety for their life cycle including design, construction, operation or use, maintenance and decommissioning.

2.1.1 SCOPE

This section describes the practical requirements of parties involved in the design of structures or plant for CIAL to design and deliver safe and healthy constructions. The requirements outlined apply to all fixed or movable, temporary or permanent structures and include the following:

- Buildings
- Towers
- Frameworks
- Pipelines
- Roads and bridges
- Pavements
- Underground works
- Operational plant.

2.2 DESIGN PRACTICES

2.2.1 WHOLE-OF-LIFE CONSIDERATIONS

Risks to health and safety must be considered for the whole life of the building, structure or plant, from design through construction, operation/use, maintenance and finally demolition.

International research illustrates that considering the health and safety risks at the design stage is important for the following reasons:

- Good design can result in significant reductions in work-related ill-health and injuries.
- Good design reduces damage to property and the environment and the related costs.
- Good design enhances the health, wellbeing and productivity of workers.
- The most effective risk control measure – eliminating hazards – is often cheaper and more practicable to achieve at the design or planning stage than managing risks later in the life cycle.
- The design of plant or structures contributes to a significant proportion of work-related injuries, and solutions already exist for many of those design problems.
- It is more efficient and effective to manage risk in the design phase than to retrofit health and safety solutions.
- Design based on health and safety by design principles can reduce the need for retrofitting, personal protective equipment, health monitoring, exposure monitoring and maintenance.
- Good design can help generate controls to minimise the risk for self-harm opportunities from public and workers.

2.3 REFERENCES

The governing reference for this section of the guidelines is the Model Code of Practice: Safe Design of Structures (Safe Work Australia).

Other references include:

- An Introduction to Health and Safety by Design: An Introduction (WorkSafe New Zealand, August 2018)
- Design for Safety in Buildings and Other Structures (IPENZ Safety in Design Guidance Note No. 7, 2006)
- Injury Prevention Through Environmental Design (IPTED)
- Crime Prevention Through Environmental Design (CPTED)

2.4 ROLES AND RESPONSIBILITIES

In addition to their primary duties under Health and Safety at Work Act (HSWA), there are further duties for upstream persons conducting a business or undertaking (PCBUs) who are designers. Generally, the more influence and control a PCBU has over a health and safety matter, the more responsibility they are likely to have in making sure, so far as is reasonably practicable, that structures and plant are without health and safety risks.

2.4.1 SENIOR DECISION MAKERS

Senior managers' decisions greatly influence design outcomes that may have significant health and safety implications. It is important that the extent and nature of the implications guide decisions in order to ensure ongoing compliance with legal requirements and internal company policies. The decision makers are responsible for the following:

- Engaging designers, project managers and construction contractors who are competent to deliver safe and healthy designs, structures and facilities.
- Consulting, cooperating and coordinating with the designer/design team so far as is reasonably practicable.
- Consideration of health and safety impacts for all construction or demolition projects.
- Ensuring so far as reasonably practicable that decisions defining budget and programme schedule do not introduce unacceptable health and safety risks to any stage of the structure life cycle.
- Consulting where possible with the workforce to ensure that the design of structures and facilities is fit for purpose and considers life cycle health and safety implications.
- Regular review of risk controls throughout the life cycle of the plant or structure to end of life.

2.4.2 PROJECT MANAGERS

Project managers are responsible for setting up forums/ opportunities to enable consultation, coordination and cooperation with the decision makers, those who have control of construction works and all designers involved.

2.4.3 DESIGNERS

The definition of a designer in this section aligns with section 39 of the HSWA and includes anybody contributing sketches, plans or drawings for a project or anybody with the overall responsibility for the design of structures, plant or facilities. Designers include but are not limited to architects, engineers, building surveyors, interior designers and landscape designers. The definition of designer also extends to include anybody who:

- alters a design without consultation of the original designer
- makes decisions on a design that may impact the health, safety or environment of those who construct, use or carry out activity in relation to the structure
- designs critical features such as structure, ventilation, electrical or fire systems
- designs temporary works including but not limited to scaffolding, formwork, temporary support structures and sheet piling.

Designers are in a strong position to make work healthy and safe from the start of the design process and are responsible for the following:

- Defining the scope of design works as closely as possible.
- Identifying features of design essential to safe construction, operation/use, maintenance or demolition of the structure or plant. Deleting any essential features for project cost or timeline reasons is not acceptable.
- Providing information to the manufacturer/constructor about the purpose of the plant or structure, the results of any calculations and testing to make sure that risks are eliminated or minimised so far as is reasonably practicable and any conditions necessary to make sure that risks are eliminated or minimised so far as is reasonably practicable when used for its designed purpose or when being inspected, cleaned, maintained or repaired.
- Reviewing options for methods of construction, operation, maintenance, demolition and disposal to ensure health and safety and environment are prioritised.

- Reviewing materials used with regard to health and safety for those who construct, occupy, operate or demolish/discard of structures being designed.
- Producing and maintaining a discipline-specific safety in design register for the project being designed. This register shall be completed on the attached CIAL safety in design register.
- Applying standard processes to identify and assess potential health, safety and environmental hazards across the full life cycle of structures that they design, influence or modify.
- Designing structures to eliminate where possible or alternatively minimise the risk associated with identified hazards.
- Consulting, coordinating and cooperating on design activities with those who have control of project management and construction works, as well as other designers involved.

2.4.4 CONSTRUCTION CONTRACTORS

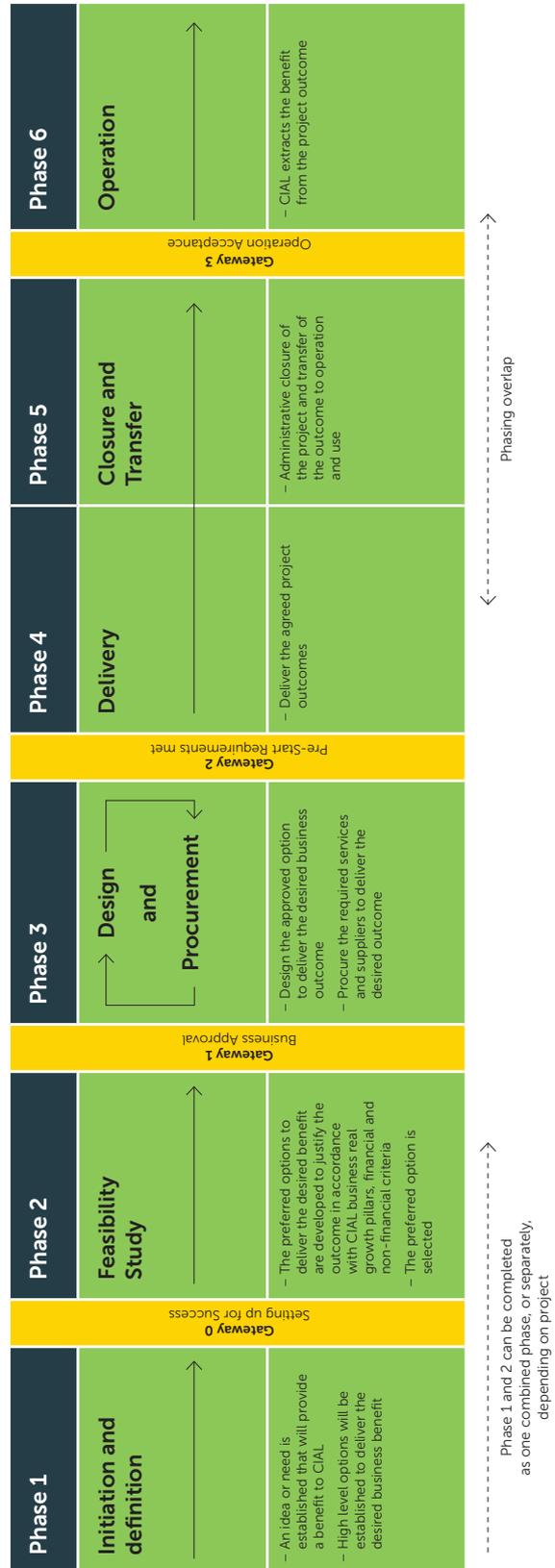
The responsibilities of construction contractors are defined by the scope of work they are appointed to deliver. All construction contractors have duties to ensure that the construction work for which they are responsible is planned and managed in a way that eliminates or minimises any health and safety risks so far as is reasonably practicable.

In particular, construction contractors are responsible to:

- participate in design review meetings as requested
- review designs and identify opportunities to improve the design to eliminate or minimise potential construction health and safety risk associated with construction of design elements
- alert the client or principal contractor to any health and safety risks associated with the design or changes to the design as they are identified in the course of delivering the works.

2.5 SAFE DESIGN PROCESS

The safe design process shall follow the CIAL project management framework.



2.5.1

PHASES 1 AND 2: INITIATION AND DEFINITION/FEASIBILITY STUDY

2.5.1.1

Information gathering, concept and business case

- Include a section in the project concept report showing health and safety considerations for proposed and potential scope and complexity. As a minimum, this may include reference to:
 - any unique hazards considered to the specific development
 - high-consequence hazards, including hazardous or dangerous goods
 - pedestrian/vehicle access and separation
 - site and access needs – space, security, storage.

2.5.2

PHASE 3: DESIGN AND PROCUREMENT

2.5.2.1

Procurement

- The competency of the designer shall be assessed during the procurement process based on:
 - confirmed minimum 'safe design' skills and competencies
 - knowledge of health and safety legislation, codes of practice and other regulatory requirements
 - understanding of intended purpose of structure/project
 - knowledge of risk management processes
 - knowledge of technical design standards
 - appreciation and consideration of construction methods and their impact on the design
 - ability to apply data relating to human factors.
- The procurement process shall follow standard CIAL contractor procurement processes and also:
 - clearly communicate the expectations of the delivery of the structure with respect to safe design practices
 - provide sufficient health, safety and environmental risk information to communicate the scope and complexity of the risks and control options selected.

2.5.2.2

Detailed design

- Identify legislation, codes of practice and standards with which the design must comply and outline how the proposed design will comply.
- Schedule a project design risk workshop on a scale relative to the project scope and complexity.
- Review the detailed project design for hazards and possible risks.
- Ensure the design refers to recognised design standards.
- Identify design hazards, assess risks and develop potential control options. Particularly consider hazards and risks associated with:
 - designs with atypical features that present specific hazards during construction and are unique to the design
 - surrounding land use and proximity to adjacent property or roads
 - impact on shared or public spaces – site boundaries, streets, road reserves etc.
 - construction near or over other structures
 - high-consequence hazards, including hazardous or dangerous goods and electrical installations
 - systems of work – prefabrication, materials, staging and coordination with other works
 - pedestrian/vehicle access and separation
 - site and access needs – space, security, storage
 - high-risk activities including working at heights, confined spaces, live electrical systems etc.
 - consideration of environmental conditions including weather, seismicity, noise etc.
 - emergency procedures.
 - Incorporate risk control options into the detailed design.
- Confirm minimum skill and competency requirements for the project design and delivery team (health, safety and environmental).
- Identify critical features in the design that are essential to safe operation of the facility.
- Ensure that all products specified are manufactured or produced under safe and healthy conditions.
- Include consideration of the potential for use as a means of access for self-harm and controls to eliminate this hazard in design.

2.5.3 PHASE 4: DELIVERY

2.5.3.1 Construction pre-start

- The outcome from Phase 3 shall be clearly described to the delivery agent via a pre-start meeting.

2.5.3.2 Project delivery

- The outcomes and mitigation measures developed during Phase 3 shall be reviewed progressively throughout delivery to ensure the mitigation measures are implemented.

2.5.4 PHASE 5: CLOSURE AND TRANSFER

2.5.4.1 Completion and handover

- Parties involved in the design and build process shall review:
 - issues arising during commissioning with regards to health and safety
 - hazard and risk levels arising as a result of deviation from the original design or changes in intended use
 - project learnings that can be incorporated into future safe design processes.

2.5.5 PHASE 6: OPERATION

2.5.5.1 Operation

- Include a health, safety and environmental section within the building handover documentation.

2.5.5.2 Maintenance

- Ensure that operation and maintenance (O&M) manuals are prepared for all building services and architecture to ensure that the maintenance team can clearly identify maintenance items.
- O&M manuals shall include a section outlining any site-specific design items that impact the health or safety of maintenance operations.

2.5.5.3 Modification

- Modification to buildings and services shall be undertaken in such a way that additional hazards and risks are not created on site where possible.
- Any modifications shall include update of any safety systems or access requirements to associated areas in order to comply with the most up-to-date health and safety legislation.

2.5.5.4 Demolition

- Ensure the demolition process is undertaken as safely as practicable.
- All materials removed from the structure shall be recycled where possible.
- Decommission building services safely and in accordance with relevant standards.

2.6 DESIGN SAFETY REPORT

The designer shall provide a written design safety report generally in line with the example included in Appendix 2A. The report shall cover but not but not be limited to;

- the purpose of the structure/plant as communicated by the client in the project brief
- the parties consulted in undertaking the design
- the hazards and risks identified during the design process and control measures incorporated into the design specifically in relation to:
 - any hazardous materials specified in the design
 - any unusual or typical feature requiring specific attention during construction and manufacture
 - any features of the design that present specific risks
- the recommended control measures for any foreseeable activities (e.g. operation, maintenance, repair, dismantling, demolition, disposal) to be carried out during the life of the structure/plant when used for its intended purpose.

APPENDIX 2A: EXAMPLE DESIGN SAFETY REPORT

See following pages.

Design Safety Report

Prepared:	
Approved:	

Document History			
Revision	Date	Notes	Distribution

Contents

1. Background

2. Project Description

3. Consultation

4. Safety in Design Documentation

4.1 Health and Safety Risk (Appendix A)

4.2 Structural Design Features Report (Refer Separate Document)

4.3 Fire Report (Refer Separate Document)

4.4 Specification (Refer Separate Document)

1.0 Background

We are the Lead Consultant for this project. We have been involved in the project from concept .

The Health and Safety at Work Act 2015 (The Act) requires that all buildings, so far as reasonably practicable, are designed to be without risks to the health and safety of persons carrying out a reasonably foreseeable activity throughout the life-cycle of the building including persons who :

- Construct the building
- Use or visit the building
- Maintain the building
- Dispose of the building

In addition, the Act requires that the designer of the building, or part of the building, must consult, co-operate and co-ordinate with other Persons Conducting Business or Undertakings (PCBUs) and designers owing overlapping duties and must also give specific health and safety information to each person who is provided with the design, concerning;

- Each purpose for which the building was designed.
- Any conditions necessary to ensure that the building is without risks to the health and safety of persons carrying out reasonably foreseeable activities throughout the buildings lifecycle.

In compiling this report, we have assessed the specific and unusual workplace hazards which have been identified by the design team, and have recommended control measures to manage those risks. We have assumed that the usual workplace hazards (i.e. those that are common to all buildings and construction sites) are already sufficiently managed through the standard practice throughout the duration of their engagement. engagement of competent and qualified contractors and subcontractors who work to industry.

This report should be read in conjunction with the Building Design Features Report.

2.0 Project Description

The purpose of this building is for the storage and distribution of goods.

The building consists of portal frames supporting roofing and purlins together with steel clad walls with part height concrete wall panels. There are a number of unique safety risks associated with this type of construction .

There are also risks that are standard to all construction sites, such as working with power tools and working at height. While this report is not required to address normal risks, the builder should take all necessary steps to minimise these normal risks.

3.0 Consultation

The design for this building has been completed in consultation with the following people and organisations:

Client: CIAL

Tenant:

Contractor:

Architectural Designer:

Structural Engineer:

Civil Engineer:

Fire Engineer:

Electrical Engineer:

HVAC Engineer:

We recommend that this report be further distributed by CIAL to all other parties who may be involved in this project, including but not limited to Contractor, Subcontractor, Future Owners, Maintenance/Cleaning Contractors, etc:

4.0 Safety in Design Documentation

The following pages contain a summary of our assessment of the identified risks inherent in this project. The following is a brief description of the terminology used in the following pages:

Hazard:

A source of potential damage, harm or adverse effects, which could be realised under certain conditions.

Risk:

The chance or probability of damage, harm or adverse effects exposed to a hazard.

Inherent control measure:

A method of reducing risk which is already in place or is already required by an existing code, legislation or standard of practice.

Likelihood:

The likelihood of a risk being realised.

Consequence :

The resultant damage, harm or adverse effect which may be suffered if a risk is realised.

Inherent risk rating:

A rating given to a risk, based on the likelihood of that risk occurring and the severity of the consequence, given the inherent control measures already in place (See table below).

Additional control measure:

A recommended method of reducing the inherent risk rating. Additional control measures can reduce either the likelihood (L) of the risk occurring, or the severity of the consequences (C)

Residual risk rating :

A rating given to a risk, based on the likelihood of that risk occurring and the severity of the consequence, upon implementation of the additional control measures recommended.

The following table illustrated how risk ratings have been derived:

		Consequence:				
		Insignificant (No injuries)	Minor (First aid treatment only)	Moderate	Major (Extensive injuries)	Catastrophic
Likelihood:	Almost Certain (Expected in most)	High	High	Extreme	Extreme	(Medical treatment)
	Likely (Will occur in most)	Moderate	High	High	Extreme	Extreme
	Possible (Might occur at)	Low	Moderate	High	Extreme	Extreme
	Unlikely (Could occur at)	Low	Low	Moderate	High	Extreme
	Rare (May occur but only in exceptional)	Low	Low	Moderate	High	High

Extreme:	Act now. Do something about the risk immediately. These risks require urgent attention.
High:	These risks urgently require the highest available management decision.
Moderate:	Management instructions regarding the risk should be followed.
Low:	OK for now. Record and review if equipment/people/materials/work processes or procedures change.

CIAL 5x5 RISK MATRIX

Risk Dimension	Insignificant	Minor	Moderate	Major	Catastrophic
People Health & Safety	First Aid or equivalent only	Medical Treatment Injury (requiring medical intervention off site)	Lost Time Injury (One full missed shift as a result of the accident)	Permanent Disability or Serious Harm (being trauma injury; acute illness or injury; or chronic or serious occupational illness of injury)	Individual or multiple fatalities
Operations	No material disruption (0-15 minutes approx)	Minor disruption affecting a small number of people (15-60 minutes approx for that small group)	A disruption affecting more than one group (15-60 minutes plus approx of disruption for more than one group)	Significant impact on a large number of people or groups	Unable to function
Reputation / Brand	Non headline exposure	Non headline exposure; clear fault and settled quickly	Medium impact on credibility and exposure	Headline profile; loss of credibility; potential for prosecution; compliance failure	Maximum high level exposure; prosecution; Ministerial censure
Assets	No impact or less than \$20,000. Asset can function normally	Impact of less than \$500,000. Asset able to function but not to full level	Impact of up to \$1 Million. Intermittent impact on Asset performance	Impact of between \$1 Million up to \$5 Million. Severe effect on Asset performance	Upwards of \$5 Million impact, or unable to function
Compliance <i>A condition, activity or process that does not conform/comply with internal policy, procedure or process or breaches regulatory requirements</i>	Isolated occurrences of non-conformances by company and/or individual staff members with no material impact	A non-conformance leading to minor impact in business or operational performance	A non-conformance with moderate impact in operational or business performance (or potential thereof)	A non-compliance with major impact in business or operational performance (or potential thereof), resulting in possible regulatory intervention	Loss of AOC/regulatory approvals and extensive disruption to services and business over an extended period. Significant company liability
Security <i>Entities or individuals that possess the capability, motivation and intent to pose a credible threat to the business</i>	Incidents requiring staff intervention, or resulting in a delay <3 mins	Incidents where the situation is quickly and successfully controlled by staff, delay <15 mins	Incidents where the matter is dealt with and a formal warning is issued	Incidents where intervention is required by staff and/or authorities. Includes disruptive protest action, unauthorised occupation of premises, runway incursion by protesters, act of unlawful interference	Intentional attack on aircraft, airport offices or other facilities using weapons designed to inflict injury, cause major damage or disrupt the operations (ie: IT cyber-attack)
Environmental Sustainability <i>Fuel usage, waste management, energy use, environmental compliance, emissions to air, land and water</i>	No environmental impact or financial consequences	Minor environmental issues; on site release immediately contained; minor financial implications	Moderate emissions to off site, pollutants to air/land/water, overuse/unnecessary depletion of resources, remediation cost involved; no consent or breach of consent conditions	Contamination remediated with minimal long term effect. Significant emissions or pollutants that can be contained, managed or controlled. A non-compliance resulting in possible regulatory intervention	Extensive release of contaminants or emissions to off site, uncontained, immediate and long term serious environmental damage
Completion of a Programme or Capital Project / Change Management	No time delay with the initiative but will incur a minimal decrease in benefits realised or increased cost	Minor delay with the initiative and/or minor decrease in benefits realised or increased cost	Substantial delays with the initiative and/or decrease in benefits realised or increased additional cost	Severe delays with the initiative and/or significant decrease in benefits realised or additional costs approaching unacceptable limits	Failure to realise benefits which adversely affects several segments and/or has an unacceptable level of additional cost
Impact on Op Ex / Op Rev	<3%	3 – 5%	5 - 10%	10 - 20%	20% +
CONSEQUENCES – SEVERITY					
LIKELIHOOD	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
Frequently <i>Happens (or is expected to occur) daily or weekly in this location</i>	L₈	M₁₄	C₂₀	C₂₂	C₂₅
Likely <i>Happens (or is expected to occur) monthly in this location</i>	L₇	M₁₀	M₁₅	C₂₁	C₂₄
Possible <i>Will occur in some circumstances and has happened in the company before (every 1-5 years)</i>	L₃	M₉	M₁₂	M₁₇	C₂₃
Unlikely <i>Could occur in some circumstances (every 5-50 years) and is known in the industry</i>	L₂	L₅	M₁₁	M₁₆	C₁₉
Rare <i>Could occur but only in exceptional circumstances, possible in the industry (50 years +)</i>	L₁	L₄	L₆	M₁₃	M₁₈
KEY: Risk Level					
LOW (range from 1 – 8)			MODERATE (range from 9 - 18)	CRITICAL (range from 19 -25)	

V 1.0 04 May 2016

APPENDIX A

Health and Safety Risk Assessment

SID – Risk Assessment

Project Name:

File Number:

Date:

Revision:

REF #	CATEGORY	HAZARD	RISK	INHERENT CONTROLS	RESIDUAL LIKELIHOOD	RESIDUAL CONSEQUENCE	RESIDUAL RISK RATING	ADDITIONAL CONTROLS	RESIDUAL LIKELIHOOD	RESIDUAL CONSEQUENCE	RESIDUAL RISK RATING	TASK & RESPONSIBILITY
1	CONSTRUCTION	Truck may be contaminated. Site classified as a Category 1 contaminated site.	Exposure of workers to a hazardous substance.	A Contaminated Site Management Plan has been prepared and implemented. The site is still classified as Category 1.	Possible	Minor	EXTREME	Trucking shows it is not contaminated.	Rare	Minor	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1.
2	CONSTRUCTION	Deep foundation excavations	Collapse person/equipment fall in	Limit the depth of foundations to 1500mm or less where necessary to provide stability.	Possible	Moderate	HIGH	The Contractor shall backfill, support, secure excavations at all times. Contractor shall specific task instructions when working near excavations.	Rare	Moderate	Moderate	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
3	CONSTRUCTION	Installation of precast and/or in-situ panels	Collapse during erection	Panel are to be lifted and lowered. Equipment and procedures for the working at height as per the project.	Unlikely	Catastrophic	EXTREME	The Contractor shall be experienced in the erection of precast and/or in-situ panels. Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.	Rare	Catastrophic	HIGH	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
4	CONSTRUCTION	Stability of precast panels during construction	Collapse of precast panels during construction	Panel are to be lifted and lowered. Equipment and procedures for the working at height as per the project.	Unlikely	Catastrophic	EXTREME	Contractor to provide a precast panel erection design. NBS 1170 for stability of the panels during construction.	Rare	Catastrophic	HIGH	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
5	CONSTRUCTION	Working at height	Fall from height	Working at height is a common task. Equipment and procedures for the working at height as per the project.	Rare	Major	HIGH	Design the structure so that large sections of the roof can be constructed at ground level and lifted into position.	Rare	Major	HIGH	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
6	CONSTRUCTION	Stability of structure elements during erection	Collapse of structure during erection	7 year post-tension connections. Expert reviewed design and construction for the type of structure.	Unlikely	Catastrophic	EXTREME	The structure shall be designed and constructed in accordance with NBS 1170 and shall comply with the 'Prevent Concept' and 'Prevent Concept'.	Rare	Catastrophic	HIGH	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
7	CONSTRUCTION	Corrosion dust and 300 dm water main beneath building	Damage during foundation excavation	Building has been set back from expected ground position.	Unlikely	Moderate	MODERATE	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Moderate	MODERATE	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
8	CONSTRUCTION	Subsided foundations. Workers in unsafe hole	Collapse of hole into participants	Well known risk that workers can enter a hole greater than 1.5m depth without shoring.	Rare	Major	HIGH	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Major	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
9	OPERATION & OCCUPATION	Prevent fire environment	Person gets trapped inside	The building shall be designed in accordance with the 'Prevent Concept' and 'Prevent Concept'.	Possible	Major	EXTREME	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Major	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
10	OPERATION & OCCUPATION	Potential safety valve, warehouse and coolroom	Collision between person and toilet	Facilities should have a HSE procedure to deal with pedestrians within the warehouse and coolroom.	Possible	Major	EXTREME	The HSE procedure shall be designed and constructed in accordance with the 'Prevent Concept' and 'Prevent Concept'.	Rare	Major	MODERATE	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
11	OPERATION & OCCUPATION	Limited warning available to others before a forklift drives through a rigid fire door	Collision between forklift and other users	Facilities should have a HSE procedure to deal with pedestrians within the warehouse and coolroom.	Possible	Major	EXTREME	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Major	HIGH	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
12	OPERATION & OCCUPATION	Collision with door head/jambs, particularly in P for both	Damage to insulated panel structure	Contractor shall be to be aware of and limit mass height of panels.	Likely	Minor	HIGH	The risk has been discussed with the manufacturer. The lowest height of the panels shall be 2.2m. The lowest height of the panels shall be 2.2m. The lowest height of the panels shall be 2.2m.	Unlikely	Minor	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
13	OPERATION & OCCUPATION	Overloading	Structural damage (building)	The floor shall be designed in accordance with NZS 1170 for the building use and loading being provided by the floor.	Possible	Moderate	HIGH	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Moderate	MODERATE	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
14	OPERATION & OCCUPATION	Structural damage (building)	Fall from roof	Building designed in accordance with the NZ Building Code.	Rare	Major	HIGH	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Major	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
15	ONGOING MAINTENANCE	Roof access - no fall arrest system provided in design	Fall from roof	No roof access provided	Rare	Catastrophic	HIGH	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Catastrophic	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
16	ONGOING MAINTENANCE	Cleaning warehouse external gutters	Fall	Gutters accessible by mobile access plant.	Unlikely	Minor	HIGH	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Minor	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
17	ONGOING MAINTENANCE	Cleaning canopy gutter	Fall	Canopy gutters accessible by mobile access plant.	Unlikely	Minor	HIGH	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Minor	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
18	ONGOING MAINTENANCE	Cleaning office internal gutter	Fall	Office gutters accessible by mobile access plant.	Possible	Minor	EXTREME	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Minor	HIGH	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.
19	IN USE (REACTOR)	Collapse of building elements during demolition	Injury of workers	Contractor shall be to be aware of and limit mass height of panels.	Unlikely	Catastrophic	EXTREME	Contractor to provide a design for the contractor to locate them prior to excavation.	Rare	Catastrophic	LOW	Work to limit the origin of contaminants to less than 100m from the site. The Contractor shall describe, record or record the site in the Contract documents if the site is still classified as Category 1. The Contractor shall ensure that the project is completed in accordance with the 'Prevent Concept' and 'Prevent Concept'.

IMPORTANT NOTE: A number of the items listed above have a residual rating of HIGH due to the severity of the potential consequences. These will require appropriate consultation between the Contractor and the Client to manage these risks. By conducting their maintenance with the project, all parties acknowledge and accept these risks.