

Auckland City Rail Link



SOLETANCHE BACHY

Downer

CRL Partners

Health & Safety Management Plan

AT/DSBJV CRL C1 – PRO – HSMP – 001 – MP - 0716

Revision: 4.0

COMMERCIAL IN CONFIDENCE

Health and Safety Management Plan

This is a subordinate management plan to be used in conjunction with the Project Execution Plan

City Rail Link Construction Works C1

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TABLE OF CONTENTS

1 PURPOSE	5
2 SCOPE	5
2.1 Battery Limits.....	6
2.2 Exclusions	6
2.3 Scope of Services	6
3 PROJECT MANAGEMENT FRAMEWORK	9
4 REFERENCED DOCUMENTS	11
5 DEFINITIONS	13
6 SAFETY MANAGEMENT OVERVIEW	14
6.1 Project Health & Safety Management Principles	14
6.2 Downer Soletanche Bachy Project Safety & Health Objectives	14
6.3 Regulatory Environment.....	15
6.4 Key Performance Indicators (KPIs)	16
6.5 Management Commitment	16
7 HEALTH & SAFETY SYSTEM	17
7.1 Cardinal Rules	17
7.2 Risk Management	18
7.3 Critical Risks.....	20
8 HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROL	21
9 CONSTRUCTION PACK PLANNING	22
9.1 Construction Pack Master Plan	23
9.2 DRAFT Construction Pack	23
9.3 Construction Methodology Workshop	23
9.4 PRELIMINARY Construction Pack	23
9.5 "IFC" Construction Pack	24
9.6 JSEA Sign-on	24
9.7 Crew Briefing (formerly Job Start Briefing)	24
9.8 Construction Pack Information Boxes	24
10 COMMUNICATION	24
10.1 Safety Inductions	25
10.2 Site Muster.....	27
10.3 Crew Briefings.....	27
10.4 Toolbox Meetings	27
10.5 Safety Meetings	28
10.6 Safety Alerts.....	28
10.7 Project Health & Safety Committee	28
10.8 Stakeholder Communication	28

11 INCIDENT MANAGEMENT, REPORTING, & INVESTIGATION	29
11.1 Definitions.....	29
11.2 Incident Reporting & Investigation	30
11.3 Incident Investigation Report Communication.....	31
11.4 Drug & Alcohol Testing.....	31
11.5 Injury Management	32
11.6 First Aid Management	32
12 EMERGENCY PREPAREDNESS & RESPONSE	32
13 TRAINING & DEVELOPMENT	32
13.1 Training and Qualifications.....	32
13.2 Plant Operator Competency	33
13.3 Project Inductions.....	33
13.4 Competence/ Training Matrix	33
13.5 Site Authorisations	33
14 SUBCONTRACTOR REQUIREMENTS	33
15 INSPECTIONS AND AUDITS	34
15.1 Inspection & Audit Schedule	34
16 OCCUPATIONAL HEALTH CONTROLS	34
16.1 Pre-Employment Medical Screening.....	34
16.2 Fitness for Work.....	35
16.3 Fatigue.....	35
16.4 Smoking.....	35
16.5 Noise 35	
16.6 Hazardous & Other Substances/ Materials	36
16.7 Airborne Chemical Hazards	37
16.8 Personal Hygiene.....	37
16.9 Heat Stress.....	37
16.10 Cold Conditions	38
16.11 Outdoor Conditions	38
17 GENERAL SITE SAFETY CONTROLS	39
17.1 Office Safety	39
17.2 Mobile Phones & Media Devices	39
17.3 Personal Protective Equipment (PPE)	40
17.4 Security	40
17.5 Working Alone.....	40
17.6 Housekeeping	40
17.7 Mobile Equipment & Light Vehicles.....	41
17.8 Fire Protection	41
18 GENERAL CONSTRUCTION –HAZARD CONTROL	42

18.1	Hazard Control Guidance.....	42
18.2	Authority to Work / Permit to Work Permit (ATW / PTW)	43
18.3	Plant Pedestrian Interaction.....	44
18.4	Hot Work.....	44
18.5	Confined Spaces.....	45
18.6	Isolation of Energy Sources.....	45
18.7	Electrical Work	46
18.8	Working at Heights	48
18.9	Fall Protection Equipment.....	49
18.10	Scaffolding.....	49
18.11	Ladders.....	50
18.12	Mobile Elevated Work Platforms (EWP)	50
18.13	Man Box/ Man Cage/ Lift Basket	51
18.14	Working on Roofs.....	51
18.15	Barriers or Barricading.....	52
18.16	Hand & Power Tools	52
18.17	Portable Electrical Equipment	52
18.18	Explosive Actuated Hand Tools	53
18.19	Pressurised Equipment	53
18.20	Cranes & Lifting Equipment.....	54
18.21	Loading & Offloading Vehicles	56
18.22	Civil Earthworks	56
18.23	Excavation & Penetrations (Ground Disturbance)	57
18.24	Concrete Work	57
18.25	Cable Stands for cable drums/rolls.....	58
18.26	Electrical Welding	58
18.27	Oxy Acetylene Welding & Cutting	58
18.28	Temporary Structures (above and below ground)	59
18.29	Manual Handling.....	61
19	SPECIALIST CONSTRUCTION HAZARD CONTROL	61
19.1	Diaphragm Wall.....	61
19.2	Jet Grouting Works.....	62
19.3	Mini Piling Works.....	62
20	SAFETY IN DESIGN	63
21	MANAGEMENT & CONTROL OF DOCUMENTS	64
ANNEX A	– PROJECT ROLES & RESPONSIBILITIES.....	67

1 PURPOSE

This plan defines the Health and Safety principles, processes, procedures, systems, tools, and templates implemented for use throughout the duration of the project.

This plan is subordinate to the Project Execution Plan (PEP) which has been developed to:

- Provide for achievement of all the requirements of the contract; and
- Support the Project Team to achieve the objectives of the project.

2 SCOPE

This plan is to be used for Stage 3 – Construction of the City Rail Link Early Works Contract 1

The following are a summary of the key physical components of the scope of work for the project is taken from the Project Execution Plan...

Separable Portion 1 – Temporary Accommodation GL

- Construction and fit-out of the above ground temporary accommodation. This includes the modification of all associated existing services/utilities and the installation of all associated new services/utilities as required to undertake construction and maintain station functionality throughout. Maintaining functionality includes the staged change-over of all ticketing, passenger and retail facilities from the Chief Post Office to the temporary accommodation whilst maintaining acceptable levels of service and minimising disruption throughout.
- At completion of this Separable Portion, AT takes occupancy of Temporary Accommodation GL.

Separable Portion 2 – Temporary Accommodation B2

- Construction of the temporary accommodation within level B2 including the modification of all associated existing services/utilities and the installation of all associated new services/utilities as required to undertake construction and maintain station functionality throughout. This temporary accommodation is to be undertaken in a live environment and is required to be staged in order to enable construction whilst maintaining acceptable levels of service and minimising disruption to the station.
- At completion of this Separable Portion, AT takes occupancy of Temporary Accommodation B2.

Separable Portion 3 – Rail Tunnels

- All works associated with the construction of the rail running tunnels within the Chief Post Office) and beneath Lower Queen Street inclusive of backfilling (to underside of subbase) and reinstatement of all areas above and adjacent to the rail tunnels. It also includes the reinstatement and making good of all floors of the Chief Post Office; the required fit-out of all new passenger, public and retail areas; the transition of the of all ticketing, passenger and retail facilities from the temporary accommodation to the refurbished Chief Post Office; and the modification of all temporary and permanent services/utilities as required. This transition from the temporary accommodation to the Chief Post Office is to be completed and staged to maintain acceptable levels of service and minimising disruption throughout.
- At completion of this Separable Portion, AT takes occupancy of CPO building.

Separable Portion 4 – Removal of Temporary Accommodation GL

- All works associated with the construction of the rail running tunnels within the other areas of Britomart Station (i.e. the areas other than the Chief Post Office) and the reinstatement of all areas above and adjacent to these rail tunnels; the demolition and removal of the above

ground temporary accommodation and the reinstatement of the associated areas; the modification/removal of all temporary services/utilities and the modification/installation of all permanent services. It also includes the removal of temporary stairs from Britomart Station and the reinstatement of the associated areas.

- At completion of this Separable Portion, AT takes occupancy of all remaining areas Britomart Station.

Separable Portion 5 – Urban Realm

- Construction of the streetscape and public realm to the areas adjacent to Britomart Station, inclusive of hard and soft landscaping, art installations and road upgrades (from underside of subbase).

At completion of this Separable Portion, AT takes possession of all urban realm areas.

For more information refer to the scope of work for the project.

2.1 Battery Limits

The following are a summary of the battery limits for the project:

- Works as identified under the contract and itemized in the schedule of price,
- As per Separable Portion 1 to 5 detailed in chapter 8.1,
- To the limit with Precinct Development in Lower Queen Street and as per work interface defined,
- To the limit with Britomart Station B2 level and as per work interface defined,
- Works are base built only.

The detailed description of each battery limit is included in the scope of work for the project.

2.2 Exclusions

The following are a summary of the exclusions from the scope of work:

- Design of permanent works
- Design of temporary works apart from the one described in chapter “F9.2 Contractors Design Scope” from Section F (contract appendix 13).

The detailed description of each exclusion is included in the scope of work for the project.

2.3 Scope of Services

The scope of services for the Project Team includes the following activities within the defined battery limits:

- Project management, including the management and control of budget (costs), schedule, design, procurement, quality, risk, resources, stakeholders, safety and the environment
- Procurement and logistics of equipment, bulk materials and consumables
- Construction equipment transport, crange and logistics for the project
- Provision of all labour, plant, equipment, supervision and all other items necessary to perform the work as detailed under the contract, typically for:
 - surveys
 - earthworks
 - piling/ piers and detailed civil works

Health & Safety Management Plan

CRL C1 Early Works
 AT/DSBJV CRL C1 PRO – HSMP – 001 – MP - 0217

- structural, mechanical and piping (including small bore piping)
- supply and installation of high voltage (HV) and low voltage (LV) electrical works
- Additional general points.

This Safety Management Plan provides detail of safety management for the contract works and where applicable includes work associated with asbestos, demolition, contaminated materials/soil in compliance with the relevant regulations.

The target audiences for this plan are Project Managers, Safety Managers, Design Professionals, Construction Professionals, Sub Contractors and other PCBU's.

As this plan is also a deliverable under the contract, the target audience is extended to the Client's Project Management Team as necessary to verify the contract requirement has been adequately fulfilled.

The following table is an extract of requirements in the contract directly relate to safety management.

The means of fulfilling these requirements are addressed in the relevant sections of this plan.

Project Specific Requirements				
Cat 1	Cat 2	Clause No.	Clause Title	Précis of Key Points
deliverables	safety	F13	H&S Management Plan	The key activities and deliverables include, but are not restricted to, the following: H&S Management Plan.



Health & Safety Management Plan

CRL C1 Early Works

AT/DSBJV CRL C1 PRO – HSMP – 001 – MP - 0217



HEALTH & SAFETY POLICY

Our goal is Zero Harm. This means that we will care for and protect our people, the business, the communities in which we operate, and the environment.

We believe that...

- all incidents are preventable
- safety is everyone's responsibility
- the behaviour of our leaders influences safety
- anyone can stop an unsafe act; and
- we can learn and improve.

Our commitment is to...

- accept no performance level other than Zero Harm
- ensure that safety is maintained as the primary value of our company
- provide a safe and healthy workplace
- empower our employees and contractors to participate in the identification, elimination or control of risks and hazards
- consult with our employees, contractors, and their representatives, clients, and suppliers as appropriate in the quest for safer workplaces
- comply with relevant Work Health Safety, Mining, Road and Rail Safety laws, regulations, industry codes of practice, licences and project requirements
- maintain, measure, report and review safety objectives and targets, and provide adequate resources to achieve these;
- maintain safety management systems that conform to recognized standards, and strive for continuous improvement
- develop and maintain a positive safety culture
- ensure that our people are trained and competent
- seek continuous improvement through effective review
- provide adequate resources to ensure safety objectives can be achieved
- ensure that this policy is available to interested parties; and
- encourage our people to extend their commitment to safety and good health beyond the workplace.

Employees and contractors shall share the responsibility and...

- present for work in a safe and fit manner
- promptly report incidents, unsafe practices and conditions; and
- comply with procedures, training, instruction and Cardinal Rules.

Grant Fenn
CEO and Managing Director

David Overall
CEO Mining

Cos Bruyn
CEO New Zealand

Brendan Petersen
CEO Engineering, Construction & Maintenance

Sergio Cinerari
CEO Infrastructure Services

Michael Miller
CEO Rail

3 PROJECT MANAGEMENT FRAMEWORK

The Downer Soletanche Bachy project management framework aligns and integrates the project functions which define the project's delivery methodologies and processes. The Project Execution Plan (PEP), is a key element of the project management framework, is the integration document which identifies and details both the standard Downer Soletanche Bachy project management practices, structure, and execution methods and any project specific requirements for the project.

The PEP incorporates a number of subordinate management plans which provide the specific functional detail required to successfully delivery the project, as illustrated in the following figure.

Project Execution Plan(PEP)
Project Controls Management Plan
H&S Management Plan (this plan)
Emergency Preparedness Plan
Quality Management Plan
Construction Environmental Management Plan
Sustainability Rating Management Plan
Waste Avoidance and Recovery Management Plan
Erosion and Sediment Control Management Plan
Traffic Access & Parking Traffic Management Plan
Survey Quality Management Plan
Commercial Management Plan
Risk Management Plan
Procurement Management Plan
Document Management Plan
Communication Management Plan
Test and Commissioning Management Plan

The plans reference any Downer Integrated Management System, client specific requirements, and project specific documents required to execute the project.

The Project Execution Plan provides project specific details including, but not limited to, the following:

- Project information, i.e. background, project location, and project description
- Scope of work, i.e. scope of work narrative, basis of design, battery limits, and scope of services; and
- Project objectives and values, i.e. objectives, overarching principles, values, and key performance indicators (KPIs) for the project.

All positions in the Project Team have a clearly defined role and set of responsibilities that are included either in the PEP or relevant subordinate management plan.

All members of the Project Team are made aware of and understand their responsibilities prior to commencing work on the project. Refer to *Annex A – Project Roles & Responsibilities* for key roles with responsibilities for safety management.

The PEP and subordinate management plans are audited throughout the duration of the project to maintain compliance, and updated as required. Updates to the PEP and subordinate management plans are subject to the document review and approval process detailed in the project's Document Management & Control Plan.

Project Specific Requirements

The Contractor must manage the Contract processes in accordance with the following standards and procedures:

- AT policy documents. Unless an appropriate one does not exist in which case NZTA and Land Transport NZ policy documents shall be used;
- AS/NZS 4801:2001 Occupational Health & Safety Management Systems -Specifications with guidance for use; and
- International Tunnelling Insurance Group (ITIG) Risk Management of Tunnel Works.

4 REFERENCED DOCUMENTS

USE FOR PROJECT?

POLICIES

- [Alcohol and Other Drugs Policy](#)

STANDARDS

Project team members please follow this hyperlink for a comprehensive [hazard control guidance](#) matrix¹

More specific hazard control hyperlinks are provided below;

- | | | |
|---|---|-----------------------------|
| • Permit to Work and Authority to Work | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Isolation of Energy Sources | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Confined Space Entry | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Hot Work | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Working at Height | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Ground Disturbance- Excavation and Underground Services | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Plant and Pedestrian Interaction | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Hazardous Chemicals and Dangerous Goods (Aus.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Mobile Plant (DRAFT) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Personal Protective Equipment | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Electrical Safety | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Air Quality Management | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |

REGISTERS

- | | | |
|---|---|-----------------------------|
| • Banned Items Register | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| • Restricted Items Register | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |

PROCEDURES

- [Downer Soletanche Bachy Disciplinary Procedure](#)

¹ Hyperlink available through Downer Intranet...

http://our.downer.co.nz/functional/zh/_layouts/15/start.aspx#/Lists/HazardControls/DispForm.aspx?ID=15&Source=http%3A%2F%2Ffour%2Edowner%2Eco%2Enz%2Ffunctional%2Fzh%2FLists%2FHazardControls%2FAllItems%2Easpx&ContentTypeId=0x010003196074CAF5864AB43C1E9530F54E3E

Health & Safety Management Plan

CRL C1 Early Works
AT/DSBJV CRL C1 PRO – HSMP – 001 – MP - 0217

- *Training and Competency Management*
- *Incident Reporting and Investigation*
- *Health, Safety and Environmental Risk Management*
- *Downer Drug and Alcohol Procedure*
- *Manual Handling and Ergonomics*

5 DEFINITIONS

The following terms are used in this document:

Authorised Person	A person with demonstrated competency who is authorised by the company to perform nominated tasks.
Competency Assessment	The process of evaluating an individual's knowledge or skill against a specified task or outcome.
Competent	Having the skill, knowledge, experience to undertake a task/ activity safely and efficiently.
Competent Person	A person who is suitably qualified (whether by experience, training or both) to carry out the task or work function.
Crisis/ Critical Event	An unexpected escalating incident that poses a serious threat to the operation, via ability or reputation of the business and our people, specifically a Category 5-6 (Actual) Consequence event.
Health and Safety Representative (HSR)	A person elected by a Work Group to represent their members in work health and safety matters.
Injury Management	The holistic approach/ program for early intervention, reporting, Rehabilitation strategies for persons injured at work. Injury Management is designed to assist the injured worker make an early and safe return to the workplace.
Integrated Management System (IMS)	The documented management system for agreed operational arrangements for all support functions including Finance, Zero Harm, Quality, HR, Project Management. The IMS is designed to provide consistent process controls, meet the requirements of external standards, linking and integrate relevant core business processes.
INX InControl	The Zero Harm database used to record, investigate and follow-up Events (including Audits, Hazards, Incidents, Inspections, Meetings, Observations, Risk Assessments, Reviews and Suggestions).
Job Safety & Environmental Analysis (JSEA)	Documents that identified hazards associated with a specific work process and the controls that are required to minimise risk to people and the environment.

Safe Behaviour Observation

An observation or conversation that happens on site, including any hazards or events that are dealt with immediately. Typically followed up at a prestart meeting or toolbox talk.

6 SAFETY MANAGEMENT OVERVIEW

6.1 Project Health & Safety Management Principles

Downer Soletanche Bachy understands its responsibility for the implementation, leadership, and management of the Safety Management Plan that is based on Downer Soletanche Bachy's systems, processes, and legislative requirements.

Critical success factors include:

- All managers have defined zero harm accountabilities; and
- All employees and contractors follow safe work practices and accept responsibility for their actions.

6.2 Downer Soletanche Bachy Project Safety & Health Objectives

The health and safety project specific objectives are for Downer Soletanche Bachy to:

- 6.2 • implement the specific procedures required for the management of health and safety on the project
- 6.2 • provide a consistent and uniform approach that assures the required standards and health and safety measures are attained and maintained for the life duration of the project
- outline the health and safety actions to be carried out during the supply, installation, and testing of the works, whilst ensuring acceptable construction standards are maintained; and
- ensure all Downer Soletanche Bachy workers exercise a duty of care at all times with respect to health and safety on the project.

Downer Soletanche Bachy accomplishes this by:

- ensuring that client safety standards and specifications are consistently and uniformly complied with on the project, and that the Client is provided with verification that the required health and safety compliance has been achieved
- complying with the requirements of this Safety Management Plan and all legislation, and requirements; and
- describing the project organisation structure and assigning responsibilities to key personnel in terms of health and safety compliance and control activities, and setting key performance criteria to measure project performance.

Key Performance Indicators

Objectives identified in Downer Soletanche Bachy's yearly business plan include KPIs determined to be crucial to the management of health, safety, and the environment within the company's operations.

The lead indicators that are measured and managed include:

- safety audits
- safe behaviour observations, and
- area/workplace inspections

In addition to the lead indicators the following lag indicators are also measured and managed:

- Total Recordable Injuries (TRI), i.e. the combination of fatal injuries, lost time injuries, restricted duty injuries, and medical treatment injuries
- Lost Time Injuries (LTI), i.e. Total number of whole rostered days lost, after the day of the injury
- Medical Treatment Injuries (MTI), i.e. injuries where specific medical treatment has been provided by a doctor, under DN-ZH-PR001 Incident Reporting, Classification and Reporting
- First Aid Cases (FAC), i.e. injuries where first aid treatment is provided, including specific treatment provided by a doctor, registered nurse or physio

6.3 Regulatory Environment

The following legislation is particularly relevant to the Construction Stage

Legislation	Requirement	Person Responsible
Health and Safety At Work Act 2015	To provide a safe place for workers (staff and contractors) and visitors.	Both parties have responsibilities.
Accident Compensation Act	Management of work-related injuries consistent with ACC entitlements.	Downer Soletanche Bachy Safety Officer- Andy Taylor
Building Act	Building Warrant of Fitness to be maintained for relevant buildings	c/o Auckland Transport
Electricity (Safety) Regulations	Regularly "test and tag" all DSBJV electrical leads and appliances if/as required by NZS3760	Downer Soletanche Bachy
Fire Service Act	Provide and maintain an evacuation scheme (technically a requirement of the building owner, but often we have to arrange).	c/o Auckland Transport
Hazardous Substances and New Organisms Act 1996	Manage all aspects of storage, use and disposal of hazardous substances on site.	Downer Soletanche Bachy
Health and Safety at Work (Asbestos) Regulations 2016	Management of asbestos on site (e.g. if handling Asbestos Cement pipe or fibre-board waste)	Both parties have responsibilities
Land Transport Act 1998	Ensure that drivers of class 2 and above vehicles comply with Work Time and Logbook rules, and that records are kept for at least 12 months	Downer Soletanche Bachy
Resource Management Act 1991	Resource Consents are required for activities and discharges that are not permitted-activities, according to Regional and local authority Plans.	Downer Soletanche Bachy

Railways Act 2005	Obtain authority from licensed access provider for any work on railway premises or railway infrastructure. Contract is specific on which parties must be engaged for this work.	Downer Soletanche Bachy
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6.4 Key Performance Indicators (KPIs)

Project Specific Requirements
<p>The contract includes the following KPIs to encourage achievement of CRL's objectives:</p> <ul style="list-style-type: none"> • Contractor scores greater than 95% in all health and safety audits • 100% of incidents are investigated, reported, actions assigned and closed out within 2 weeks. • TRIFR below 4

The safety KPIs for the project are detailed in the following table.

KPI	Measure	Stretch Target
HSE Audits (bi-annual)	Audit score	> 95%
Incidents	Incidents investigated, reported, actions assigned and closed out within 2 weeks.	100%
Total Recordable Injuries	TRIFR	≤ 4.0 per million hours worked
Lost Time Injury Incidents	LTIFR	≤ 0.5 per million hours
Severity Frequency Rate	SFR	≤ 20 days lost per million hours
Monitor and Review	Weekly Site Inspections	>95%

The first three targets in the table above equate to achievement of the best level of performance defined for the performance pool KPIs set by the client.

6.5 Management Commitment

All members of the Project Team demonstrate their commitment to providing a safe work environment by:

- ensuring that decisions and practices are consistent with the stated policies, values, and project objectives
- adopting a risk management approach to all safety issues, and leading hazard identification, risk studies, and JSEA reviews
- wearing the correct **Personal Protective Equipment** (PPE) without exception
- participating openly in safety meetings
- following up on safety action items

- ensuring that all incidents are reported and investigated in-line with the project and Downer Soletanche Bachy's reporting requirements
- being part of incident investigation teams as required
- participating in regular scheduled and unscheduled safe behaviour observations; and
- Participating in regular inspections and audits.

Downer Soletanche Bachy consults with all successful suppliers, subcontractors, and employees in order to ensure they show the same commitment to safety.

7 HEALTH & SAFETY SYSTEM

7.1 Cardinal Rules

Downer Soletanche Bachy has a set of Cardinal Rules mapped against critical risks for health and safety that are non-negotiable and are communicated to all Downer Soletanche Bachy workers and visitors during the site specific induction. Refer to the Cardinal Rules below and **DEDI-ZH-000-AD-110601(6) Downer Soletanche Bachy Cardinal Rules** for further information.



NEVER reverse a vehicle "blind" unless in a no-go zone

NEVER work at height without fall protection and a permit

NEVER enter a designated confined space without training and a permit.

NEVER carry a suspended load over people, or place yourself under a suspended load

NEVER enter a designated exclusion zone without authorisation.

NEVER work on plant and equipment without verifying isolation, tagging and testing.

NEVER tamper with, remove or bypass any safety device.

NEVER operate plant or mobile equipment unless licensed/competent (except when under direct training supervision).

NEVER operate a vehicle while using a handheld mobile phone nor without wearing a seatbelt where fitted.

NEVER consume or be under the influence of alcohol or non-approved drugs in the workplace.

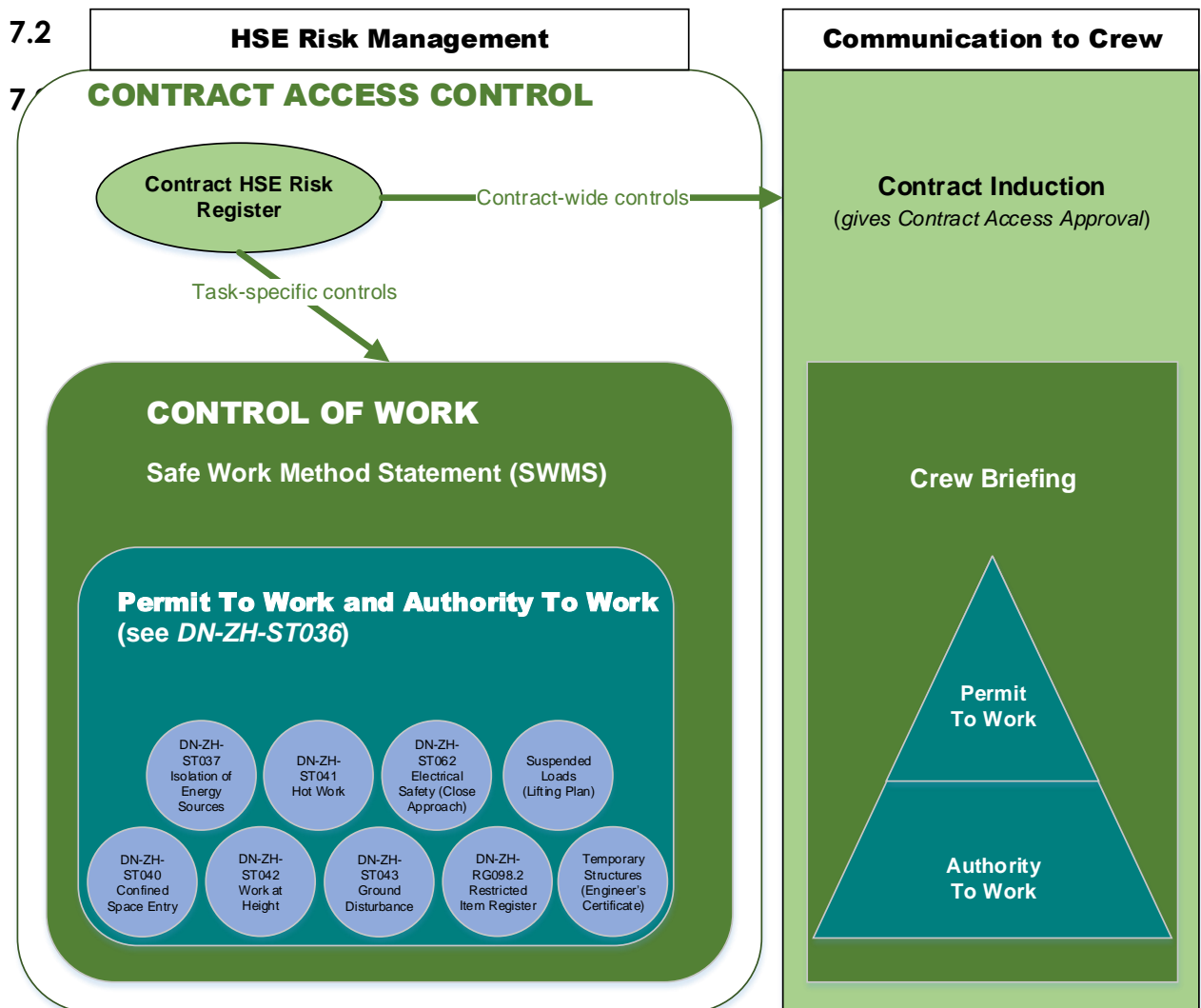
Any non-compliance with the Cardinal Rules, any Downer Soletanche Bachy worker who fails to correct a Cardinal Rule breach, or anyone who knowingly condones a breach, is performance managed in accordance with the [Downer Soletanche Bachy Disciplinary Procedure](#).

Important Notes

- Downer Soletanche Bachy Cardinal Rules do not replace other site safety requirements.
- Compliance with other site safety requirements is expected.
- Non-compliance of other site safety requirements continue to be addressed using the existing progressive disciplinary process.

7.2 Risk Management

The processes, tools, and control hierarchy used to manage risk are defined in [Health, Safety and Environmental Risk Management](#).



The following basic steps must all be achieved:

1. **Identification of hazards** based on scope of works, methodology, environmental protection activities and quality inspection and test activities.
2. Planning of controls based on **risk assessment** of identified hazards;

3. **Implementation** of planned controls, including provision of equipment, training and information;
4. **Monitoring** of work to ensure all controls are implemented and effective to manage the risks, and
5. **Review** of the hazards and controls to identify opportunities for continual improvement.

Refer also: *Annex 1 – HSE Document Hierarchy*
 Annex 2 – HSE Risk Management Process

Note: Elements of the Risk Management Standard are in transition. This is to allow time for training delivery and for new processes to be implemented. Compliance with all aspects will be sought, so far as is reasonably practicable.

Critical success factors for risk management include:

- conducting high level risk assessments prior to project start-up
- identifying, assessing, and controlling changes relating to working conditions, equipment, work locations, weather, processes, practices, and personnel via pre-start meetings, toolbox sessions, and safety committee meetings
- conducting detailed risk assessments with supervisors to verify/ develop JSEAs
- conducting periodic reviews of the Project Risk Register as per the project's Risk Management Plan
- conducting periodic reviews of the project's risk treatment and control plans and their effectiveness as per the project's Risk Management Plan; and
- completing JSEAs and Crew Briefing Plans prior to job commencement.

Health & Safety Management Plan

CRL C1 Early Works
 AT/DSBJV CRL C1 PRO – HSMP – 001 – MP - 0217

7.3 Critical Risks

PROJECTS

TOP 10 CRITICAL RISKS

ZERO HARM

<p>1 PLANT / PEDESTRIAN INTERFACE</p> <ul style="list-style-type: none"> Crushing Striking <p>CARDINAL RULES</p>	<p>6 SUSPENDED LOADS</p> <ul style="list-style-type: none"> Overloading Unstable Loads Unstable Ground <p>CARDINAL RULE</p> <p>ENGINEER'S CERTIFICATE REQUIRED</p>
<p>2 DEEP EXCAVATIONS</p> <ul style="list-style-type: none"> Soil Collapse Load Surcharges Earthquake <p>ENGINEER'S CERTIFICATE REQUIRED</p>	<p>7 CONFINED SPACES</p> <ul style="list-style-type: none"> Low Oxygen Toxic Gases Explosive Atmosphere <p>CARDINAL RULE</p> <p>PERMIT TO WORK REQUIRED</p>
<p>3 WORKING AT HEIGHTS</p> <ul style="list-style-type: none"> Falling Dropping Objects <p>CARDINAL RULE</p> <p>PERMIT TO WORK REQUIRED</p>	<p>8 ENERGY ISOLATION</p> <ul style="list-style-type: none"> Electrocution Entanglement Engulfment <p>CARDINAL RULES</p> <p>PERMIT TO WORK REQUIRED</p>
<p>4 OVERHEAD SERVICES</p> <ul style="list-style-type: none"> Electrocution Power Pole Collapse <p>POWER COMPANY PERMIT REQUIRED</p>	<p>9 FALSEWORK & FORMWORK</p> <ul style="list-style-type: none"> Overloading Unstable Ground <p>ENGINEER'S CERTIFICATE REQUIRED</p>
<p>5 UNDERGROUND SERVICES</p> <ul style="list-style-type: none"> Electrocution Explosion Fire <p>PERMIT TO WORK REQUIRED</p>	<p>10 HOT WORKS</p> <ul style="list-style-type: none"> Fire Toxic Fumes Explosion <p>PERMIT TO WORK REQUIRED</p>

Downer

For Downer Soletanche Bachy Soletanche Bache a key safety focus is stringent control of Critical Risks.

Downer Soletanche Bachy define Critical Risks as those which have the potential to cause fatalities.

Based on our historical knowledge of our businesses we have identified our Top 10 Critical Risks and our systems support strong awareness of these as the first risks we must consider and control correctly on all our sites, each and every day.

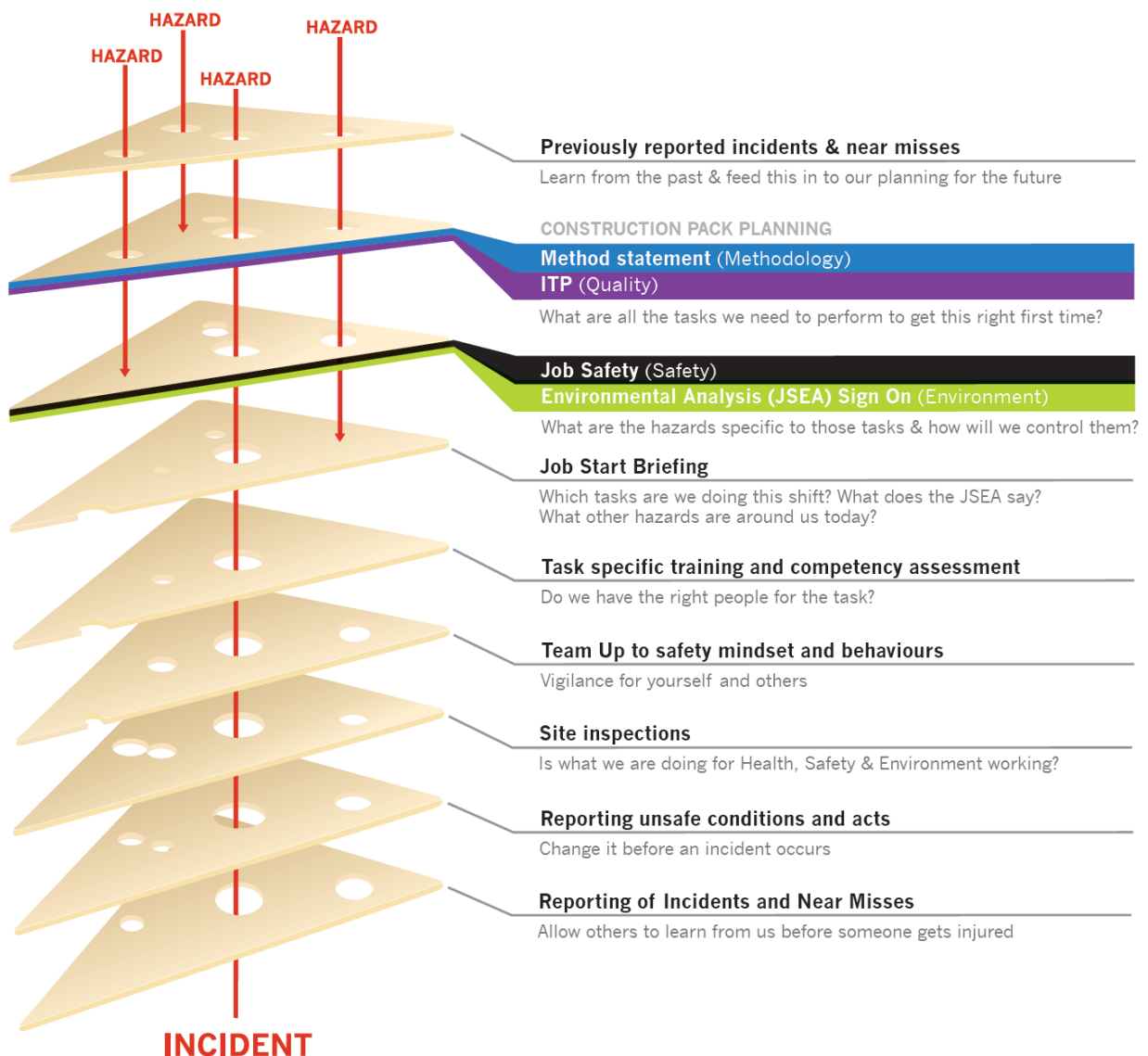
These will be given top priority in our inductions and hazard control activities.

Awareness of the Top 10 Critical Risk will be raised and maintained with poster and toolbox topic campaigns to ensure their control remains a priority.

8 HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROL

The Swiss Cheese Model

Why should we use all these Health, Safety and Environmental procedures?



The site will use a system of Hazard Identification and Control in order to manage hazards which incorporates the tasks discussed in the next section. All work is reviewed, inspected, and audited to ensure the work being undertaken is in accordance with the applicable procedure(s), correct equipment, and competencies or qualifications. This ensures that:

- all necessary hazards and risks are assessed and controlled; and

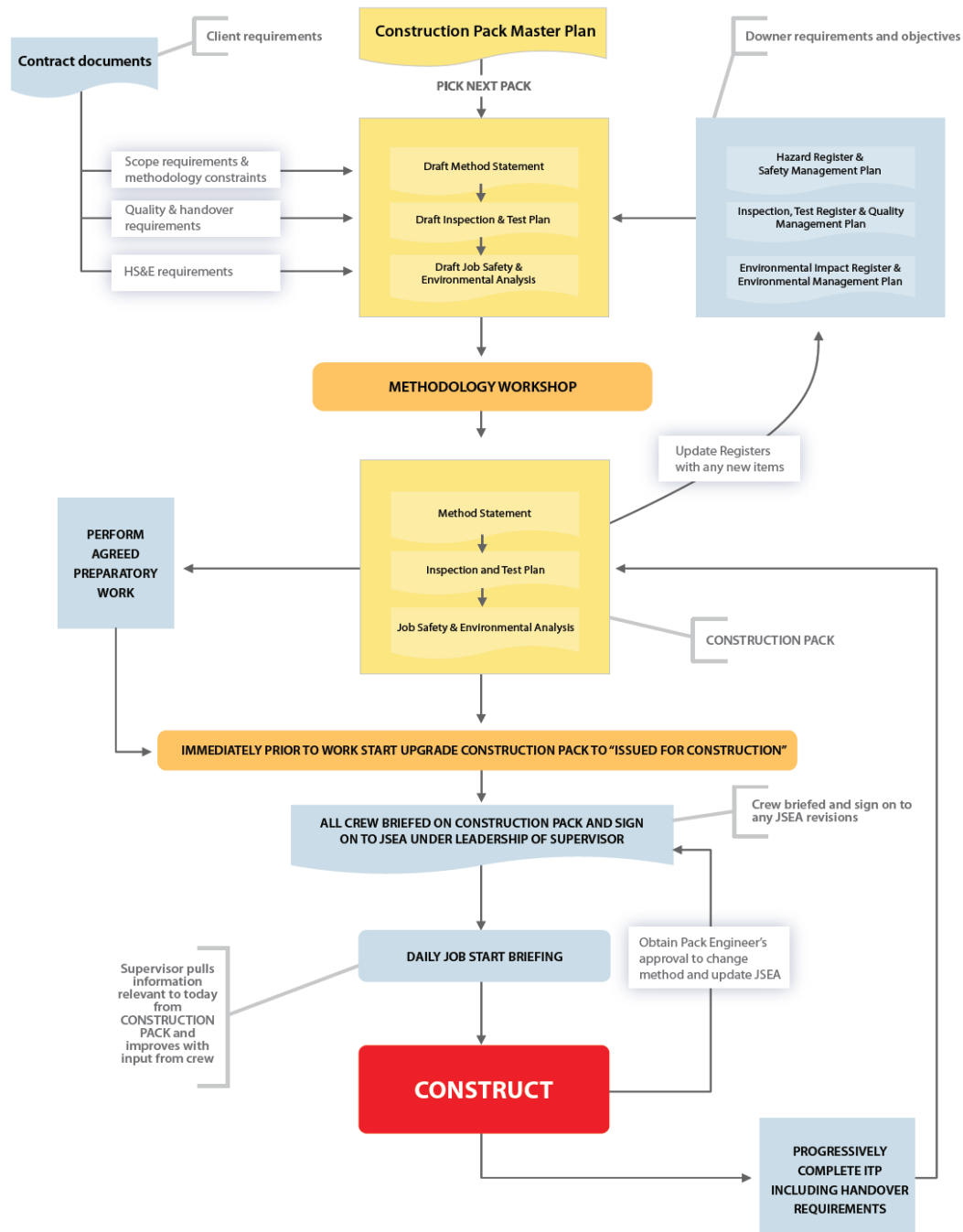
- the methodology being used does not jeopardise the safety of the operator or any other personnel.

Any worker on the Downer Soletanche Bachy site or visitor disregarding a safety procedure is subject to possible removal from the project.

9 CONSTRUCTION PACK PLANNING

Construction Pack Planning

For safety, quality and environmental protection



Planning for Hazard Control is integrated into construction planning through the use of the Construction Pack Planning process which is described in the diagram above and in detail in the following sections;

9.1 Construction Pack Master Plan

The Construction Pack Master Plan will be created to break the work down into logical packs to allow for efficient delivery and management. Every aspect of the project is to be covered by an approved Construction Pack prior to the relevant site work starting.

A Method Statement will be created for each Construction Pack.

A Construction Pack Register will be used to track the status of each Construction Pack through to completion including handover.

This Construction Pack Master Plan will be reviewed and augmented periodically to ensure adequate coverage for upcoming activities and adequate "look ahead" to provide time for planning without delay to physical progress.

9.2 DRAFT Construction Pack

A DRAFT Construction Pack is created by Downer Soletanche Bachy using the following sequence:

1. The Construction sequence is described as a detailed list of steps.
2. Compulsory inspection and testing tasks are added.
3. Risks to product quality are identified, assessed and any resulting additional Inspection and Testing tasks are added.
4. Environmental Hazards are identified, assessed and controls added.
5. Health and Safety Hazards are identified, assessed and controls added.

This DRAFT Method Statement is then used as the starting point for the Methodology Workshop.

9.3 Construction Methodology Workshop

The Project Management and Supervision team and the relevant Subcontractor together attend a meeting to agreeing on the Method Statement for the Construction Pack.

The DRAFT Method Statement is reviewed in full i.e.:

- Construction Methodology check;
- Quality Assurance Activities check;
- Environmental Hazard Analysis and Control Plan check; and
- Health and Safety Hazard Analysis and Control Plan check.

Revisions to the DRAFT Method Statement are agreed at the conclusion of the workshop.

9.4 PRELIMINARY Construction Pack

As soon as the agreed revisions have been incorporated, the Method Statement is signed off by the Site Superintendent and Project Engineer.

Any need for training is to be identified at this point by the Site Supervisors and Safety Officer. Any needs are to be fulfilled prior to the work being undertaken, or alternative staff/resources employed.

The detailed scope of Inspection and Testing requirements are added during this period.

9.5 “IFC” Construction Pack

The above planning tasks should be completed well ahead of the scheduled start of the construction pack. To manage the risk that hazards have changed in the interim, the Method Statement is updated at the weekly site planning meeting closer to construction commencing. Once updated, the status of the Method Statement is upgraded to “Issued for Construction (IFC).”

9.6 JSEA Sign-on

All personnel who work on the Construction Pack will be briefed on the Methodology, ITP and JSEA. All personnel will then sign on to the Job Safety and Environmental Analysis (JSEA) before they commence working on the pack.

This will usually occur immediately prior to the first Crew Briefing (refer below).

When the JSEA is revised all personnel working or entering the area are to be briefed on and sign-on to the JSEA revisions.

9.7 Crew Briefing (formerly Job Start Briefing)

Prior to the start of each shift, or more frequently if required, all personnel who are to work or enter a Construction Pack area are to receive a briefing covering in detail their activities and hazards for the day. The Crew Briefing is to be based on the relevant aspects of the Method Statement, ITP and JSEA

The briefing will include discussion of safety, quality and environmental protection aspects of the activities to be undertaken in that shift.

- Team members will have the opportunity to improve the hazard control elements of the plan
- All team members will sign on to the Crew Briefing Plan before they commence the relevant work.
- The work will then be performed in accordance with the signed Crew Briefing Plan, and the Approved Method Statement, ITP and JSEA.

When there is potential cross-over between Construction Pack activities that day, then a joint muster is to be held with the relevant teams covering the shared hazards on both construction packs before each team breaks off to their usual briefing.

9.8 Construction Pack Information Boxes

Construction pack boxes are used throughout the project and contain the following:

- Current work permits
- Current Job Safety and Environmental Analysis
- Recent and Current Crew Briefing Records
- Other applicable documents.

On completion of the Construction Pack works, key records are filed centrally.

10 COMMUNICATION

Communication and consultation are key components to developing and maintaining a work environment and culture of continuous improvement in health, safety, and environment performance..

All employees are responsible for health and safety. Employees are encouraged to raise questions, concerns, or suggestions to assist with improving performance, including making suggestions for the introduction, amendment, or withdrawal of system documentation or processes related to health

and safety. Downer Soletanche Bachy workers are consulted where changes that affect workplace health and safety are proposed or introduced.

Formal systems of consultation and communication include:

- Zero harm policy statements
- Health and safety system documentation
- Safety performance reporting
- Induction and training
- Toolbox and safety meetings
- Hazard and incident reporting
- Safety alerts, bulletins, and initiatives
- Safety corrective actions
- Audits and inspections; and
- Safety noticeboards.

The following table outlines the methods and schedule for specific zero harm communication processes identified for Downer Soletanche Bachy employees.

System	Schedule	Participants	Facilitator
Site Inductions	On commencement of the project	All	Safety Officer/ Project Engineer
Crew Briefings	At least daily	All	Supervisors
Toolbox Meetings	Weekly	All	Supervisors
Safety Committee Meetings	Monthly	Zero Harm Advisor, Health and Safety Representatives (HSRs), other Safety Committee members	Safety Officer, or appointed Chair Person
Performance Reporting	Monthly	All	Project Manager
Audits	As defined	Applicable personnel	Safety Officer

10.1 Safety Inductions

Visitor Site Safety Induction

All persons who set foot on the construction site, will, until they are fully inducted, be considered visitors. No visitor is allowed to perform any physical work on site.

The scope of subjects covered in the Visitor Site Safety Induction will include those listed in the table at the end of this section.

Signed visitor induction records will be kept by the Safety Officer in the site office.

Visitors will always be under the care of a named Visitor Escort, who must be a fully inducted person.

The Visitor Escort is responsible for:

- providing the Visitor Site Safety Induction

- ensuring the Visitor Site Safety Induction record is completed adequately and filed correctly
- ensuring the visitor stays within close proximity to the escort at all time in live site areas.
- ensuring the visitor complies with all site safety management rules and procedures including signing on to JSEAs and Task-Specific Work Plans when entering active areas.
- guiding the visitor through any emergency or incident to manage the visitors' safety is managed and all procedural requirements are met.

To fulfil these responsibilities it is expected that no more than five visitors can be escorted by an individual escort.

Full Site Safety Induction

All personnel, including subcontractors, will attend a site induction prior to commencing work on this project. Signed induction records will be kept by the Safety Officer in the site office.

The requirement for a crew induction extends to those who regularly deliver and unload materials on site such as ready-mix concrete truck drivers.

Understanding of induction training content is verified by a questionnaire at the completion of the induction session.

Inducted staff will receive an induction sticker that is to be affixed to their Hard Hat for identification purposes.

All induction records are retained as an electronic or hard copy on site and records of those inducted recorded on the Site Induction Register.

Site specific induction topics will include, but not be limited to:

Safety Induction Content	Site	Site Visitor
Responsibilities under the Health and Safety at Work Act 2015;	Y	
Auckland Transport- CRL- DSB JV-Safety Policies and Objectives	Y	
Expected Behaviours	Y	Y
Downer Soletanche Bachy Critical Risks and Controls	Y	
Downer Soletanche Bachy Cardinal Rules	Y	
Downer Soletanche Bachy Banned and Restricted Items	Y	
Site Hazard Control System- Site-wide Rules, Construction Packs, JSEAs, Task Plans	Y	
Site-wide Critical Risks, Hazards and Controls	Y	Y
Site-Wide PPE required	Y	Y
Site Traffic Management protocols	Y	
Exclusion Zones and No-Go Zones	Y	
Safe Access Routes and Areas	Y	Y
Permits to Work	Y	
Verification of competency	Y	

Rules for Escorting of Visitors	Y	Y
Sign in Register;	Y	
Emergency alarms and procedures	Y	Y
Emergency assembly points and egress routes	Y	Y
Identification of key personnel including First Aid and Safety Committee members	Y	
Location of fire extinguishers, first aid kits, spill kits.	Y	
Accident, incident and near miss reporting;	Y	

10.2 Site Muster

At the start of every shift the full site workforce is mustered and information on the significant activities of the day is provided by the Site Superintendent with a focus on communication and coordination around control of hazards that one crews activities may pose to other crews.

10.3 Crew Briefings

Immediately following the Full Site Muster, Crew Briefings are conducted and facilitated by each Area Supervisor for their particular crews at the work site as detailed in section 9.7.

The purpose of the Crew Briefing meeting is to pass on relevant information from the Construction Pack, and make personnel aware of crew activities for the day. This includes:

- what went well and/ or lessons learned from the previous day
- incidents/ hazards that may have occurred the previous day
- any changes (e.g. changes to traffic plans)
- issues presented by site activities from other crews for the day (informed by the Site Muster)
- weather conditions; and
- any other hazards which may be relevant.
- site-specific, task-specific issues, and equipment-specific issues
- relevant controls from JSEA and additional controls required
- health and wellbeing issues; and
- any other hazards which may be relevant.

10.4 Toolbox Meetings

Toolbox meetings play a crucial role in ensuring ongoing and regular communication of any health, safety, and environmental issues as well as providing a means of communicating general activities. Toolbox meetings occur weekly and are attended by all Downer Soletanche Bachy workers and visitors present on site at the time of the meeting.

Toolbox meetings are conducted in accordance with the standard agenda. The minutes of toolbox meetings are recorded, and filed in the CRL office, by the Safety Officer.

The types of issues addressed at these meetings include, but are not limited to:

- Focus topics informed by Risk Assessments, Incidents and Alerts
- Visitors/disruptions expected

- Upcoming training/ emergency drills
- Status of previously raised issues
- Management/ client news or plans
- Audit/ safety inspection findings
- Other items.

10.5 Safety Meetings

The Project Director or HSE Manager may call additional safety meetings to address significant safety matters. The Project Team, safety personnel, and other relevant personnel may be called to attend these meetings. These will occur as stipulated by the Project Director.

10.6 Safety Alerts

Safety alerts are used to notify project personnel of incidents or accidents from within Downer Soletanche Bachy, or from other industries or statutory bodies that resulted in, or had the potential to result in, harm to project personnel. Safety alerts are distributed to the Project Team by the Zero Harm team. There are three types of safety alerts as described in the following table.

Type	Description
Zero Harm Alert	Notices requiring immediate communication and action due to the occurrence of a serious injury or risk that are discussed as soon as practicable.
Zero Harm Bulletin	Notices for the communication of general risks or issues that are communicated at the next available toolbox meeting.
Zero Harm Initiative	Notices used when there has been a proactive/ innovative risk control, process, equipment, and/ or operation identified that may have benefits in other areas of the business. Zero Harm Initiatives are distributed accordingly.

Safety alerts are communicated at Site Musters, Toolbox Meetings and displayed on all safety notice boards.

10.7 Project Health & Safety Committee

The Project Team encourages the election of H&S representatives and the formation of Health and Safety committees, including the election and designation of functions. H&S representatives are nominated into their position, in accordance with the Downer Soletanche Bachy procedure and HSAW Act, by their peers, or by the Site Superintendent, if there are no volunteers or accepted nominations. The project H&S meets as a minimum, on a quarterly basis.

H&S representatives takes an active role in workplace safety management.

The Safety Officer and Project Manager ensure the provision of resources for elected H&S Representatives are consistent with those required under New Zealand legislation.

10.8 Stakeholder Communication

Project stakeholders are defined in the Stakeholder and Communication Management Plan.

Notice of all construction activity or major material movements are made in accordance with the project's Stakeholder and Communications Management Plan and supplemented by appropriate signage as required, e.g. access track signs, restricted area signage, and construction site signage.

Project Specific Requirements

- A confidentiality agreement is to be enforced on all personnel restricting them from External Communication without AT agreement.
- To support Project Objectives a protocol will be agreed with AT for the management of External Communication. This is planned to be documented in the Stakeholder and Communication Management Plan

11 INCIDENT MANAGEMENT, REPORTING, & INVESTIGATION

11.1 Definitions

The following definitions apply uniquely to this project, as they reflect a specific agreement between the Joint Venture partner companies.

Term	Meaning on CRL C1 Contract
Safe Behaviour Observation(SBO)	An observation or conversation that happens on site. Any minor hazards or events are dealt with immediately. Typically followed up at a prestart meeting or toolbox talk.
Near Miss	Any event where, had a change in circumstance occurred, harm to people, property, environment could have resulted.
Incident	Undesirable Event that has caused damage or loss of property, environment or security
Accident	Undesirable event that results in harm to people

All Downer Soletanche Bachy workers and visitors are required to report all accidents, incidents, and dangerous occurrences involving personal injury or plant and equipment damage to their immediate Supervisor (or escort for visitors) directly following the occurrence. Refer to **DA-ZH-PR006 Incident Reporting and Investigation** for further information.

Further notifications follow the reporting timeframes in the following table.

Notification By	Notification to	Near Miss/ Hazard	FAI	Potential or Actual MTI	LTI
All Downer Soletanche Bachy workers and visitors	Project Management Team Member	Immediately	Immediately	Immediately	Immediately
Project Management Team Member	Safety Officer / Safety Manager	Immediately	Immediately	Immediately	Immediately
Safety Officer / Safety Manager	Project Manager	Within 1 hour	Within 1 hour	Immediately	Immediately

Notification By	Notification to	Near Miss/ Hazard	FAI	Potential or Actual MTI	LTI
Project Manager	Client Representative	Within 12 hours	Within 12 hours	As soon as practicable and prior to attendance at medical practitioner, where practicable, within 2 hours	As soon as practicable but within 2 hours
Project Manager	Executive General Manager	Within a month	Within a month	As soon as practicable but always within 12 hours	As soon as practicable but always within 12 hours

The critical success factors for effective injury and incident management are:

- Prompt notification and reporting of all incidents.
- Incident investigations identify root causes and prevent recurrences.
- Sharing of lessons learned via timely significant incident reports.
- Timely and thorough reporting on serious incidents to management.
- All opportunities for improvement from incidents, audits, and suggestions are implemented throughout Downer Soletanche Bachy.

11.2 Incident Reporting & Investigation

All High Potential Incidents, MTIs and LTIs are subject to an investigation commencing within two working days of the incident occurring.

Project Specific Requirements
<ul style="list-style-type: none"> • Notification to Client for high potential incident / MTI / LTI or higher needs to be reported immediately or within 2 hours of the incident occurring. This needs to be reported directly to the CRL Construction Safety Manager or the Construction Works Contract 1 CRL Construction Manager.

Incident Investigation

All investigations commence as soon as possible after the incident has occurred. All incident investigations focus on identifying the cause(s) of the incident so that appropriate remedial and preventative control measures can be identified and implemented.

- The type of investigation undertaken is determined in accordance with the table below with other details as per Downer DG-ZH-MF007.1A [Incident Reporting and Investigation](#)

Severity	Investigation type
----------	--------------------

First Aid Case	Summary investigation / statement of facts
Medical Treatment Injury	Summary investigation/ 5 Whys
Lost Time Injury	ICAM

The Project Team includes suitably trained and qualified member(s) to facilitate incident investigations using the ICAM methodology, if required.

Incident Investigation Reporting

Incident Investigation Reporting is to be completed within 2 weeks unless by prior agreement with the Project Director.

Corrective/Preventive Actions should begin to be implemented as soon as practicable. Where the risk posed is significant they need not await completion of the full investigation report. Individual Corrective/Preventive actions can be approved by the Project Director for immediate implementation.

All corrective/preventive actions should be assigned a responsible person and a target due date for completion.

The status of Incident Investigations and associated actions is to be tracked in a register which is to be reviewed at regular meetings of the Project Management Team.

Project Specific Requirements
<ul style="list-style-type: none"> • CRLL to be invited to participate in significant incident investigations. Participation to be at CRLL discretion. Members of the CRLL team are trained and experienced in the ICAM methodology. • KRA- 100% of incidents are investigated, reported, actions assigned and closed out within 2 weeks.

11.3 Incident Investigation Report Communication

Upon completion of the investigation the findings and recommendations are communicated to the relevant work crews and project personnel at a toolbox meeting.

All significant incidents and the results of the subsequent investigation are reviewed at the project's management team meetings.

11.4 Drug & Alcohol Testing

It is important that all workers attend work fit and healthy. All DSBJV sites are drug and alcohol free and there is zero tolerance to alcohol. DSBJV conduct Pre-employment, Just Cause, Post Incident and Random Drug and Alcohol testing. Refer to the [Downer Drug and Alcohol Procedure](#) for details.

Post-Incident Testing

All personnel involved in a high potential near-miss, reportable injury incident or property damage incident are to be drug and alcohol tested as soon as practicable after the event has occurred, unless the nature of the incident reasonably leads to the conclusion that their conduct is not a contributing factor.

Just Cause Testing

Management can require any subcontractor or Downer employee to submit to Drug and Alcohol testing with just cause. Just cause can be established by various means including the behaviour of

the individual or the discovery of drugs, alcohol or paraphernalia refer [Downer Drug and Alcohol Procedure](#).

Random Testing

All Downer Soletanche Bachy employees are subject to random selection, for Drug and Alcohol testing.

11.5 Injury Management

Any injured worker required to attend a medical centre or specialist medical practitioner is accompanied by the Safety Officer, their Supervisor, or Project Engineer.

A copy of the document "Worker Capabilities Form" is taken to the appointment where possible, and if not practical, the document is sent to the treating medical practitioner as soon as possible.

For all Downer Soletanche Bachy employees, the medical certificate, financial account relating to the treatment, and the completed claim form are sent to the Downer Soletanche Bachy Safety Officer or the Regional HSE Ops Manager - Northern.

Downer Soletanche Bachy provides rehabilitation and return to work programs detailing suitable duties for all injured employees. The Downer Soletanche Bachy representative, injured worker, and treating medical practitioner typically agree on the most suitable injury management and return to work actions as soon as practical.

11.6 First Aid Management

First aid facilities and services are established for the project within and adjacent to the construction area.

Sufficient qualified first aid trained personnel are to be available for each site, nominally one qualified first aid person per twenty five personnel on site.

12 EMERGENCY PREPAREDNESS & RESPONSE

All project personnel adhere to and operate in accordance with the project's Emergency Response Plan (ERP). The ERP clearly defines response management inclusive of responsibilities, emergency contact details, and the location of the defined muster point.

The ERP is displayed in all crib rooms and offices. All employees are made familiar with emergency response procedures through inductions, toolbox meetings, and specific area inductions.

The ERP details critical success factors, including but not limited to:

- Emergency plans and procedures for the site
- Fire Fighting response
- First aid.

Emergency Response trials are to be undertaken at least every six months. These are to be recorded and any improvement actions tracked to completion.

13 TRAINING & DEVELOPMENT

13.1 Training and Qualifications

All Downer Soletanche Bachy workers who undertake work on the project are required to be adequately trained to undertake the task they are required to do.

For subcontractors, qualifications and licenses are checked prior to the site induction process by the Site Superintendent or Construction Manager.

Additional training needs are identified during risk management activities prior to commencement of work (e.g. documentation of JSEA), when participating in toolbox meetings, or at any other time.

13.2 Plant Operator Competency

Subcontractors are also required to attest to the competency of individuals to operate specific plant and equipment prior to attending site induction or starting work on site.

For Downer Soletanche Bachy personnel, the Site Superintendent determines if they are sufficiently qualified and competent to commence work on site or operate specific plant and equipment. Refer to [Training and Competency Management](#) for further information on this process for staff.

Plant Competency of staff and subcontractors is documented utilising the procedures and forms described in the [Plant Competency Assessment](#) area of the Downer intranet.

13.3 Project Inductions

All Downer Soletanche Bachy workers are inducted into the project as per Section 0

13.4 Competence/ Training Matrix

All personnel are trained and assessed as competent, and authorised by the Project Manager or Construction Manager prior to performing any required tasks.

Where a nationally recognised license or certificate applies, personnel are required to provide evidence of their training, qualifications, and competence prior to arriving on site.

Training and assessments are undertaken by a qualified and competent training provider in accordance with [Training and Competency Management](#).

13.5 Site Authorisations

The Construction Manager and/or Site Superintendent, in consultation with the Project Manager, authorises personnel to control high risk activities through implementation of the Permit to Work Systems in the roles of either Permit Issuer or Permit Receiver.

At present not all Permit to Work training modules are available, requiring the authorisations to be made considering not only the person's formal training but also their demonstrated competence and experience.

The authorisation of documented in to be documented in a project-specific [Permit to Work Guide](#).

14 SUBCONTRACTOR REQUIREMENTS

The process for sourcing and engaging suppliers and subcontractors is detailed in the project's Procurement Management Plan. The Project Manager or Construction Manager provides input to the subcontractor/ supplier requirements and also the evaluation of subcontractor/ supplier offers as part of the tender evaluation process defined in the project's Procurement Management Plan.

Subcontractor activities are subject to the same Construction Pack Planning requirements as self-performed work.

This leads to all associated requirements and documentation being the same across the entire site e.g. Permits to Work, Training and Competency standards etc.

Every Subcontractor Construction Pack will have a Downer Soletanche Bachy Engineer assigned to ensure our safety standards are maintained and the documentation is completed to the required standard.

15 INSPECTIONS AND AUDITS

Project audits are planned and executed as per the project's Quality Management Plan.

Routine-based auditing and inspection is undertaken to ensure that all tools, appliances, machines, vehicles, and other equipment, are in safe working condition, fit for purpose at all times, comply with current regulations and, where appropriate, are used only by authorised and competent persons trained in the use of the equipment.

15.1 Inspection & Audit Schedule

As part of safe operating procedures, inspection of equipment prior to each use is often required. Those inspections are not included in this schedule. This schedule in addition to those inspection undertaken in normal operation.

Activity Type	Responsibility	Frequency
Safety Behaviour Observations	Safety Officer, Engineers Supervisor, and Downer Soletanche Bachy Workers	At least Daily
JSEA Compliance Audit	Safety Officer/ Site Superintendent/Engineers	Daily
Site inspection	Safety Officer and member of Project Management Team	Weekly
Scaffold inspection	Scaffold Supervisor/ Competent Person	Weekly
Site Safety System audit	HSE General Manager	3 Monthly
Crane and mobile plant inspection	Operator	On delivery and then Pre- start Daily
Crane and mobile plant audit	Safety Officer	Monthly
Lifting/ rigging gear inspection	Competent Person/ Rigging Supervisor	3 monthly inspection
Height safety gear inspection	User/ Competent Person	3 monthly inspection
Portable electrical equipment	User/ Competent Person	3 monthly inspection
Safety Data Sheets (MSDS)	Supervisor /Site Superintendent+ Safety Officer	3 monthly inspection

16 OCCUPATIONAL HEALTH CONTROLS

16.1 Pre-Employment Medical Screening

All project personnel are required to undertake a pre-employment medical and physical assessment as per their contract of employment. The medical and physical assessment considers

the employee's role or occupation and potential health-relevant exposures associated with the project.

The medical and physical assessment typically includes the following:

- Record of the person's health history
- Respiratory questionnaire
- Lung function/capacity test (if indicated)
- Audiometric test
- Physical assessment commensurate with employment duties, i.e. a functional capacity assessment
- Screen for the presence of alcohol and illegal substances
- Medical practitioner summary assessment report.

All prescribed or un-prescribed medication is reported at the medical screening and to the Employee's immediate supervisor.

16.2 Fitness for Work

Fitness for work of all project personnel, Downer Soletanche Bachy employees, subcontractors, and visitors is managed in accordance with the [Drug and Alcohol Procedure](#).

All project personnel are responsible for ensuring they are fit for work at the start of and throughout each work period, including taking responsibility to ensure their fitness is not impaired, e.g. from the effects of fatigue, stress, medication, alcohol, or other drugs.

An employee may be required to undertake a non-routine health assessment in the following circumstances:

- Where a worker has suffered short term exposure to a hazardous substance.
- Immediately after an employee or contractor has suffered from a serious illness or injury.
- Where there is a change in the demands of the job of the worker that may affect health, or where monitoring detects changes in a person's health status.
- Where a credible health risk exposure has been presented.

The nominated medical adviser is required to reassess the health of the individual to ensure they are fit for duty prior to returning to work.

16.3 Fatigue

A risk assessment is undertaken for any proposed deviation from established rosters and hours of work that are likely to exceed the prescribed limitations.

A specific [Fatigue Management Plan](#) is to be produced that is relevant to each phase of the project.

16.4 Smoking

All project facilities, offices, and vehicles are "No Smoking" areas.

Smoking will only be permitted in specifically designated areas.

16.5 Noise

First seek to eliminate noise through selection of methodology. Turn off plant / machinery when not required for use.

16.5

16.5

Where noise is unavoidable consider measures to isolate personnel from the noise hazard through soundproofing at source and providing distance to personnel. Be sure to consider noise levels in purchasing and design decisions for plant and machinery.

Ensure plant is correctly maintained to limit noise e.g. ensure exhaust mufflers etc. are in place and functioning correctly.

In the planning stages site activities are to be assessed against the [Approved Code of Practice for the Management of Noise in the Workplace](#) to determine whether hearing protection is a required control for that particular activity. This will be evident in the JSEA for the relevant construction pack.

Class 3 Hearing Protection will be available to all personnel on site by default. Should higher classes of hearing protection be needed, they will be provided also.

All project personnel are required to wear approved hearing protection when their noise exposure levels exceeding 85dB (A) (as defined in the ACOP) or where signs, JSEAs, or crew briefings indicate hearing protection is required.

The effectiveness of hearing protection measures is monitored as part of regular health checks for employees.

16.6 Hazardous & Other Substances/ Materials

All hazardous substances in use on the project are managed in accordance with the Hazardous Substances and New Organisms (HSNO) Act and associated regulation requirements and Approved Codes of Practice which include the following:

- No chemicals are brought onto the site unless it has been approved by the Construction Manager, or delegate, and with a current Safety Data Sheets (SDS), no older than 5 years
- SDS is located at each storage facility with a copy included in the SDS Register, for access by all project personnel.
- SDS are discussed in relevant Method Statements and JSEA's as necessary, and for any personnel that need to work with hazardous substances or dangerous goods.
- Corrosive and hazardous materials are stored and handled in accordance with SDS recommendations, and HSNO requirements.
- Fuel, oils, and any other Eco toxic or hazardous substances are stored in a bunded area with a capacity of at least 110% of the largest container stored within.
- All fuel, oils, and hazardous substances are clearly labelled.
- Spill clean-up kits, including absorbent materials, are kept in close proximity to working machinery to enable an immediate environmental response to an oil leak (e.g. blown hydraulic oil hose).
- Servicing, lubricating, and minor mechanical repairs to vehicles and equipment is only undertaken in controlled areas with spill kits adjacent.
- Appropriate containers are available for waste lubricants prior to disposal.
- Major machinery maintenance is not performed on site.

The SDS Register (of all chemicals, hazardous substances, and dangerous goods and the related SDSs) is maintained throughout the duration of the project, filed in accordance with the project's Document Management & Control Plan, and a hard copy stored in the project site office.

Refer to [Hazardous Chemicals and Dangerous Goods](#) for detailed guidance (noting that this standard needs to be adapted to the New Zealand Regulatory environment).

Project Specific Requirements

- Further the fact that works are being carried out in a railway environment, underground, needs detailed consideration. No storage of fuels, hazardous goods or flammables will be allowed in underground areas or in areas that would pose a threat to the operating railway public.

16.7 Airborne Chemical Hazards

Exposure to any airborne fibres, dust or chemical hazards is considered when undertaking all project activities. Refer to [Air Quality Management](#) for further information.

The Project Team implements a program for the management of exposure to airborne chemical hazards which includes, but is not limited to:

- respirable dust
- respirable fibres
- fumes; and
- gases and vapours.

16.8 Personal Hygiene

Toilets, washrooms, designated eating areas, and food storage areas are provided in accordance with local legislative requirements for hygiene controls. A regular cleaning and maintenance program of all facilities is implemented to support and reinforce personal hygiene of all project personnel.

Specific areas are designated for eating food, facilities are provided for storing food, and all non-potable water supply outlets are identified and labelled.

Chemicals and hazardous and flammable substances are stored separately from food storage and eating areas.

All project personnel maintain compliance with the following:

- All toilets, washrooms, designated eating areas, and food storage areas are kept tidy and clean.

Any unhygienic conditions in the work place are reported to the Safety Officer or relevant Supervisor if unable to be immediately rectified

Project Specific Requirements

- **WARNING:** Leptospirosis Bacteria was flagged in the Request for Proposal documents as being an increased risk for all underground places of work e.g. when working with the fill around Britomart station.

Based on **published information**² from the NZ Government the risk of Leptospirosis is assessed as not warranting any specific extra control measures to those already described.

16.9 Heat Stress

² <http://www.saferfarms.org.nz/guides/prevention-and-control-of-leptospirosis/#new-guide-section>

Heat stress is caused by an increase in body temperature. As the body tries to cool itself, other body functions may be neglected and heat stress may commence. It is a potentially dangerous condition that occurs when the body is unable to regulate its temperature and can occur whilst in extreme heat or during strenuous activity.

All project personnel are encouraged to manage heat stress by:

- drinking at least (1-2 glasses) of cool water per hour, where it is required
- wearing a broad brim on their hard hat
- drinking even if not thirsty (as thirst isn't a good indicator of dehydration)
- ceasing working if affected by heat cramps or exhaustion and contacting their Supervisor immediately.

Heat stress awareness is raised at pre-start meetings, and regular toolbox meetings.

Controls considered for managing heat stress include:

- changing the job from outdoors to inside, if possible
- providing shade, e.g. using shade from existing building or structures, or awnings, canopies, tents, or umbrellas as some fabrics can provide up to 99% UV protection
- rotating workers so that the same workers are not exposed all of the time
- limiting exposure between the hours of 10am and 2pm when workers are exposed to the highest radiation levels (adjusting for daylight savings as required)
- ensuring long sleeved shirts (with collars), long pants, and hard hats with hat brims are used for activities in the sun as these are the best form of protection
- ensuring sunscreen is applied generously to all exposed areas at least 20 minutes before going out in the sun, as sunscreen needs to be applied regularly to avoid it being easily wiped away or washed off; and
- using wrap-around tinted safety glasses that meet the requirements of AS/NZS 1067:2003 to protect the eyes in the summer months, as effective sunglasses can screen out up to 99% of UV radiation from the eyes.

16.10 Cold Conditions

Working in cold conditions can lead to physical discomfort and reduced dexterity, and although this may not lead to a more serious condition developing, it is still important to understand the early warning signs of hypothermia and take appropriate action, if required. Signs of hypothermia include:

- hands becoming numb
- shivering not under voluntary control
- loss of motor control, particularly in hands, with difficulty doing minor tasks
- slurred speech; and
- difficulty in thinking clearly.

If personnel experience or observe one or more of these warning signs, work is stopped, and corrective action taken and assistance provided without delay to safeguard health.

For outdoor conditions, this may include seeking shelter, finding an external heat source, putting on extra layers of clothing, replacing wet clothing with dry clothing, or increasing physical activity.

16.11 Outdoor Conditions

Precautions considered for all personnel undertaking project activities in cold outdoor conditions include:

16.11

- providing protection from wind and rain (even temporary such as a vehicle cab)
- monitoring environmental conditions and the physical wellbeing of workers when work involves prolonged or repeated exposure to cold
- providing appropriate protection through PPE and warm clothing, which should be worn in light, loose fitting layers, with a waterproof outer layer to provide protection from rain
- using slip-resistant insulated boots instead of light footwear, which may allow the feet to become wet
- using gloves
- monitoring the use of vibration causing tools which can present a greater risk to workers in cold conditions
- ceasing work if conditions become too cold to continue safely, e.g. wind chill can create significant risk even if air temperature is above freezing point; and
- informing and training workers to recognise unsafe conditions that arise from exposure to the cold while working outdoors.

17 GENERAL SITE SAFETY CONTROLS

17.1 Office Safety

A risk management approach to office health and safety and preventing illness and injuries (including musculoskeletal conditions) is implemented for the project. All offices comply with Downer Soletanche Bachy's office standards and the project's Site Establishment Plan. Environmental factors that require consideration include:

- lighting
- noise
- space
- access
- thermal comfort
- ventilation
- hygiene; and
- use of hazardous substances.

The office work environment is maintained so that it remains in a clean and safe condition.

Broken or damaged furniture, fixtures and fittings, plumbing, air-conditioning, and lighting is repaired promptly or removed from service and replaced accordingly.

17.2 Mobile Phones & Media Devices

The use of mobile phones and media devices is restricted on site to control the risk of reduction of awareness of the adjacent potentially hazardous environment.

The following rules apply;

- No headphones to be used in active work areas
- No portable radios/music players to be used in active work areas
- Calls/texts/emails can only be initiated or received from a safe place. You must stay in that safe place for the duration of the call/text/email
- If operating machinery must made safe and be turned off before making or receiving a call, text, email etc.

- Mobile phones and other devices can be used to take necessary site photos from anywhere on site. Individuals are required to assess their safety when doing so and utilised spotters if appropriate.

The use of mobile phones whilst operating mobile equipment is a breach of the Downer Soletanche Bachy Cardinal Rules.

17.3 Personal Protective Equipment (PPE)

The minimum personal protective equipment required for the project site is:

- Safety Hard Hat
- Safety footwear with steel toe protection, i.e. lace-up boots covering the ankle only
- High visibility vests
- Safety Glasses
- Long Pants cover to ankle
- Long-sleeved shirts or hi-viz long sleeved clothing with cuffs, collars, reflective taping, and sleeves, rolled down and buttoned up when operating in a construction area
- Gloves, carried on the body at all times and worn when undertaking any manual task
- Hand protection, as required for the specific activity
- Double eye protection (Safety Glasses and Visor) is required for tasks involving cutting and grinding
- Hearing and respiratory protection, as required including where mandatory in prescribed areas of site.
- Appropriate protective clothing for any work which requires specific protective clothing
- Hearing protection, for personnel when noise exposure levels exceeding 85dB (A) for any period of time or where signs indicate hearing protection is required
- Other personal protective items such as task-specific gloves, face shields, leather spats, fall arrest or restraint harnesses, aprons, or other such items that may be specified for use by legislation or the scope of work.

Refer [Personal Protective Equipment](#) for additional information.

17.4 Security

Work sites are secured at all times to prevent unauthorised persons from entering the project site.

Lockable gates, signage, and barricading located at all site entrances advising all unauthorised personnel to report to the project office.

All tools and equipment is stored in a lockable container or cabinet at the completion of its use to deter loss and theft.

17.5 Working Alone

Personnel working on tasks in isolation:

- ensure there is either visual contact or radio communication at all times; and
- Establish a process in the JSEA to monitor each other while working.

17.5 Housekeeping

Good housekeeping underpins the project's safety culture and objects. Housekeeping contributes substantially to site safety by:

17.6

- eliminating accidents and fire hazards
- conserving space, time, material, and effort; and
- creating and maintaining good working conditions.

Housekeeping takes place continuously by all Downer Soletanche Bachy workers and includes organised activities in the following areas:

- general cleaning
- walking/ working surfaces
- storage; and
- work areas.

Project housekeeping standards and expectations are communicated to all Downer Soletanche Bachy workers during inductions and ongoing toolbox talks. Supervisors ensure that all equipment and facilities assigned to their operational areas are inspected daily and comply with site requirements, and any deficiencies are noted and corrective action(s) taken.

Scheduled site inspections include checking on housekeeping.

17.7 Mobile Equipment & Light Vehicles

All mobile equipment and light vehicles are managed in accordance the project's Traffic Management Plan, and any specific client requirements.

Operators complete a pre-start inspection prior to commencing work and maintain a log of. Breaches of speed limits, reckless driving behaviour, traffic infringements, and non-compliance with the Traffic Management Plan, or any project guidelines are managed as per *the disciplinary process* and may lead to dismissal and removal from the project.

17.8 Fire Protection

All project fire protection, including the installation, maintenance, and use of fire protection devices, is to be in accordance with *AS/NZS 1841.1:2007 Portable Fire Extinguishers – General Requirements*. Inductions include basic training and instruction on the safe use of portable fire extinguishers for those fulfilling supervisory roles, or specific roles with Hot Work.

A Fire Extinguisher (4kg minimum) is required for:

- engine driven welders ≥ 200 amp

Dry chemical powder AB (E) fire extinguishers are used on the project's construction work sites. Other types of fire extinguishers may be used where fit for purpose, e.g. a foam extinguisher at fuel cells.

Fire extinguishers are placed in the following areas:

- In a place where a welding, grinding, or cutting process is being carried out, and for a reasonable time after the conclusion of any such process
- In the main offices and site establishments
- Where flammable liquids and/ or substances are stored, handled, or used
- Adjacent to each electrical cupboard or switchboard
- Fitted to all trucks, vehicles, and mobile plant.

The maintenance of fire protection systems and equipment is undertaken in accordance with *AS 1851-2012 Routine Service of Fire Protection Systems and Equipment*. Fire extinguishers are checked, retested, and tagged every 12 months by a qualified person. Inspections are recorded in a site fire extinguisher register within the contract filing system. Pre-mobilisation processes, and daily and

weekly site inspections assist with monitoring compliance. Any non-compliant extinguishers are tagged out-of-service, and demarcated for testing or replacement.

Foundation Works

The foundation works are a key component of the construction phase of the Auckland City Rail Link project and there are different types of foundation works to be conducted. They are;

- Diaphragm Wall Works
- Jet Grouting Works
- Mini Piling Works

All of the foundation works will be undertaken in line with a detailed method statement, clearly outlining the sequence of works and all associated risks and subsequent control measures will be identified in an attached JSEA.

All excavation works (guide wall trench excavations, panel excavations, drilling works) are to comply with section 18.23 of this Health & Safety Management Plan

All buried services are to be suitably identified and clearly marked prior to commencing foundation works

18 GENERAL CONSTRUCTION –HAZARD CONTROL

18.1 Hazard Control Guidance

18

Downer Soletanche Bachy is committed to continual improvement and so has revised its referenced documents to keep up with advances in Hazard Control Guidance available from the parent organisations.

Downer New Zealand's latest Hazard Control Guidance has been chosen due to its easy integration with legislative requirements and training frameworks. In some cases these Hazard Control Guidance procedures are still in draft form in the parent organisation, and in many cases the new Hazard Control Guidance is not yet fully implemented within Downer New Zealand. In a few cases formal training within Downer is not yet available to allow full implementation.

Nevertheless DSBJV will strive to implement them as current good practice and catch-up with formal training as soon as that is available, and can be accommodated within the ongoing resource needs of the project.

This will ensure the CRL C1 project will keep up with best practice in Critical Hazard Control.

The following table details the current state of the various Hazard Control Guidance documents that form the core of this management plan.

Topic	Guidance Document	Status of Document within Downer NZ	Status of Training
System of Control of Access and Tasks based on Risk	DN-ZH-ST036 Permit to Work and Authority to Work Standard	This Standard is in transition. This is to allow time for training delivery and for new processes to be implemented.	Available: Downer Risk Management Training Downer Permit Issuer Training (or Unit Standard 17590)

			Downer Permit Receiver Training (or Unit Standard 17588)
Plant Pedestrian Interaction	DN ZH ST107 Plant Pedestrian Interaction Standard	Fully Implemented	Available Downer PPI Practitioner Training Downer Vehicle Spotter Training
Ground Disturbance	DN ZH ST043 Ground Disturbance Standard DN ZH PR043 Planned Ground Disturbance Procedure	In transition	Downer Training not yet available
Working at Heights	DN-ZH-ST042 Working at Heights Standard	In transition	Downer Training not yet available
Electricity	DN-ZH-ST062 Electrical Safety Standard	Fully implemented.	Available
Isolation of Energy Sources	DN-ZH-ST037 Isolation of Energy Sources Standard.	In transition	Available
Confined Spaces	DN-ZH-ST040 Confined Space Entry Standard	Fully Implemented	Available
Traffic	DN-ZH-ST135 Temporary Traffic Management Standard	Fully Implemented	Available
Mobile Plant	DN-ZH-ST057 Mobile Plant Standard	In Draft	Available:
Hot Works	DN-ZH-ST041 Hot Works Standard	In transition	Downer Training Not yet available
Powered Tools and Equipment	DN-ZH-PR030 Air Hose Pneumatic Hand Tools Standard	Fully Implemented	No training requirement. Competency system for some tools available.

18.2 Authority to Work / Permit to Work Permit (ATW / PTW)

All work undertaken on the project is in accordance with the authority to work and/or permit to work process as defined in the standard [Permit to Work and Authority to Work](#)

Authority to Work Permits (ATW) and/or Permit to Work Permits (PTW) for the project include but are not limited to:

- Confined Space
- Working at Heights

- Hot Work
- Isolation of Energy Sources
- Ground Disturbance

Permits are only issued by authorised personnel nominated by the Project Manager. Refer to the project's Delegation of Authority for further information. A register of personnel authorised to issue permits is maintained by the Safety Officer. All permit issuers are trained and competent in the required discipline, e.g. a Working at Height Permit issuer possesses a recognised competency in working safely at heights. Personnel are not authorised to issue permits to themselves.

In addition, external permits are required including;

- Overhead Service Close-Approach Permits and
- Utility Company Works-over or Dig Permits (as part of the Ground Disturbance permit procedure).

In any emergency situation, all ATW / PTW permits are suspended until the facility has returned to its normal status. All permits are re-validated or re-issued prior to work resuming.

It is the permit receiver's responsibility to ensure all workers sign onto the permit.

ATW / PTW are not issued unless:

- hazards are identified and appropriate control measures undertaken and noted on the completed and authorised Job Safety and Environmental Analysis
- isolations are carried out and checklist completed
- any other special permits and their requirements are carried out; and
- a Crew Briefing for the task is completed by the work team immediately prior to commencing the task.

18.3 Plant Pedestrian Interaction

All work involving Plant is to be carried out in accordance with the Downer Standard **Plant and Pedestrian Interaction**. This requires the creation of no-go zones, or exclusion zones and/or the use of vehicle spotters to control the risk of personnel being struck by moving plant.

Also, under certain circumstances, plant needs to work on or near potentially hazardous locations. In these instances spotters are required to ensure that the movement of plant or equipment does not cause an incident or damage to operational facilities or services.

Spotters are required where the movement or operation of plant or equipment (e.g. excavators, cranes, or elevated work platform) may:

- encroach on the minimum approach distance, e.g. to power lines, optical fibre telecommunications lines, water, or sewage mains
- take place within three metres of a live gas pipeline
- strike or damage buildings or structures; or
- encroach on areas near pedestrian traffic.

Spotters are also required where the Operator cannot directly see where the plant is moving.

Spotters are to be formally trained and their competency documented prior to them fulfilling this role.

18.4 Hot Work

Hot work is a Permit to Work activity and is to be planned and completed in accordance with the **Hot Work** standard. This standard includes procedures for the determination of the need for a

Standby Person (Fire Watch) and sets minimum qualification requirements for role holder involved in Hot Work.

Designated hot work includes, but is not limited to:

- grinding
- hot cutting
- oxy acetylene welding;
- Gas cutting (oxy/acetylene); and
- electrical welding and
- any other activity that generates sparks or ignition source

18.5 Confined Spaces

All work in a confined space is performed and all confined space training provided in accordance with Workplace Health and Safety Regulation 2011 (i.e. Confined Spaces Part 4.3) and AS 2865-2009 *Confined Spaces*. The Confined Space Code of Practice 2011 and **Confined Space Entry** provide guidelines and a checklist for assessing if a work zone is classified as a confined space.

Where work in a confined space is necessary, a risk assessment is carried out in accordance with **Confined Space Entry** and the project Confined Space Permit to Work.

The role of the Supervisor or permit holder and the confined space spotter are defined in **Confined Space Entry** and the project's entry/ exit register.

Prior to entering a confined space, project personnel:

- receive accredited training and are assessed as competent in the application of the confined space entry procedures, in accordance with legislation
- participate in the risk assessment process prior to the issue of a Confined Space Entry Permit; and
- understand and comply with the requirements of the Permit to Work system for confined space activities and Permit to Work.

18.6 Isolation of Energy Sources

All work requiring isolation of an energy source is undertaken in accordance with **DA-ZH-ST037 Isolation of Energy Sources**. All personnel required to work under work permits or utilise isolation lock out and tag out requirements, are provided with appropriate approved training including, but not limited to, training on the following:

- Personal Isolation System is to be used for simple isolations while the permit system is to be used for more complex isolations
- Permits of isolation for work involving multiple isolation points, complex isolations, and/ or multiple personnel
- Commissioning or testing of equipment
- Fundamental isolation principles.

The Downer Soletanche Bachy isolation principles are based on the following key concepts:

- All potentially hazardous energy sources are isolated before commencing work
- Only competent and authorised personnel perform isolations
- Personnel do not commence work on isolated equipment until they have applied their personal lock and tag and verified the isolation
- Personal locks are only removed by their owner

- Only competent and authorised personnel perform de-isolations.

18.7 Electrical Work

All electrical installations and electrical work is undertaken by a licenced electrical tradesperson and in accordance with **Electrical Safety**, AS/NZS 3008 *Electrical Installations - Selection of Cables*, AS/NZS 3017:2007 *Electrical installations – Verification Guidelines*, AS/NZS 3000:2007 *Electrical Installations (known as the Australian/ New Zealand Wiring Rules)*, AS/NZS 3012:2010 *Electrical Installations - Construction and Demolition Sites*, Codes of Practice, and all other statutory requirements.

Clients Compliance Certificate for Temporary Electrical Works is used to certify that the temporary electrical wiring and equipment described above has been installed, inspected, tested, and commissioned to the applicable standards. The certificate is completed by relevant electrical workers and submitted to Downer Soletanche Bachy's or the Client's site management on the day of commissioning the temporary electrical installation.

Temporary Switchboard and RCD Checklist is used to provide records of testing for Downer Soletanche Bachy-supplied electrical protection, as per the intervals required by relevant legislation.

All redundant electrical wiring lighting or equipment is isolated and identified as being redundant, or removed and secured to prevent unauthorised use.

Live electrical works are not undertaken apart from those inherent to the performance of safe electrical testing tasks as part of a licensed electrical worker's scope of competencies.

All portable, semi-portable, and transportable electrical power tools and equipment, including leads and earth leakage boxes, are inspected, tagged, and managed in accordance with **Electrical Safety**. The results of inspections and tagging of leads, power tools, and equipment are recorded in the project's Electrical Equipment Register, which is kept on site at all times.

Double adaptors are not used on the project.

Matting Up

When work is performed on exposed low voltage energised conductors or equipment, approved insulating mats and line covers are installed before commencing work to prevent accidental contact with sources of a different potential to that being worked on.

Polarity & Connections

In addition to conducting necessary tests to confirm correct electrical connections, a final test is carried out on the installation earthing system when any low voltage neutral conductor is initially connected or later reconnected, or where there may be any possibility that an active or neutral conductor could be transposed.

Arc Flash

Arc flashes and arc blasts occur as a result of a low impedance fault on equipment failure while opening and closing, through insulation failure, or through accidental shorting during work.

Low voltage arc flash consequences can be greater than high voltage depending on the fault's current levels and protection clearance times. Over current circuit protection might not operate and is not relied upon to safeguard the Downer Soletanche Bachy worker.

Arc flashes that are produced under these conditions have the energy to heat the air to temperatures as high as 19,000 °C, and vaporise metal in equipment.

Arc flashes can cause severe burns to the face and eyes and injury through impact from flying debris or dislodged components. Heating air and vaporising of metal create a pressure wave (arc blast) that can damage hearing, cause concussion, and other injuries, including from hazards such as flying metal parts.

Types of controls used by Downer Soletanche Bachy include:

- operating high voltage switchgear remotely at all times and low voltage switchgear where possible
- if operating locally, wearing appropriate PPE
- securely closing enclosure doors
- avoiding live work
- using approved insulated tools when live work is the only option, and when fault finding; and
- if switchgear is removable or withdrawable, once removed or withdrawn, taking the switchgear a safe distance from the switchboard, panel, or enclosure before working on it. However if not:
 - checking for planned switching; and
 - erecting a blast screen between the Downer Soletanche Bachy Worker and in-service equipment.

Appropriate PPE for electrical work where there is a risk of arc flash includes:

- fire resistant 185gsm cotton, high visibility clothing covering ankle-wrist-neck
- face shield, while switching locally; and
- insulated gloves of the appropriate rating (HV or LV).

Where specific risks are identified, the level of PPE includes flame resistant clothing and a hood designed for arc flash protection, as per the applicable standard.

18.8 Working at Heights

All work at heights is undertaken in accordance with [Working at Height](#) addressed in the:

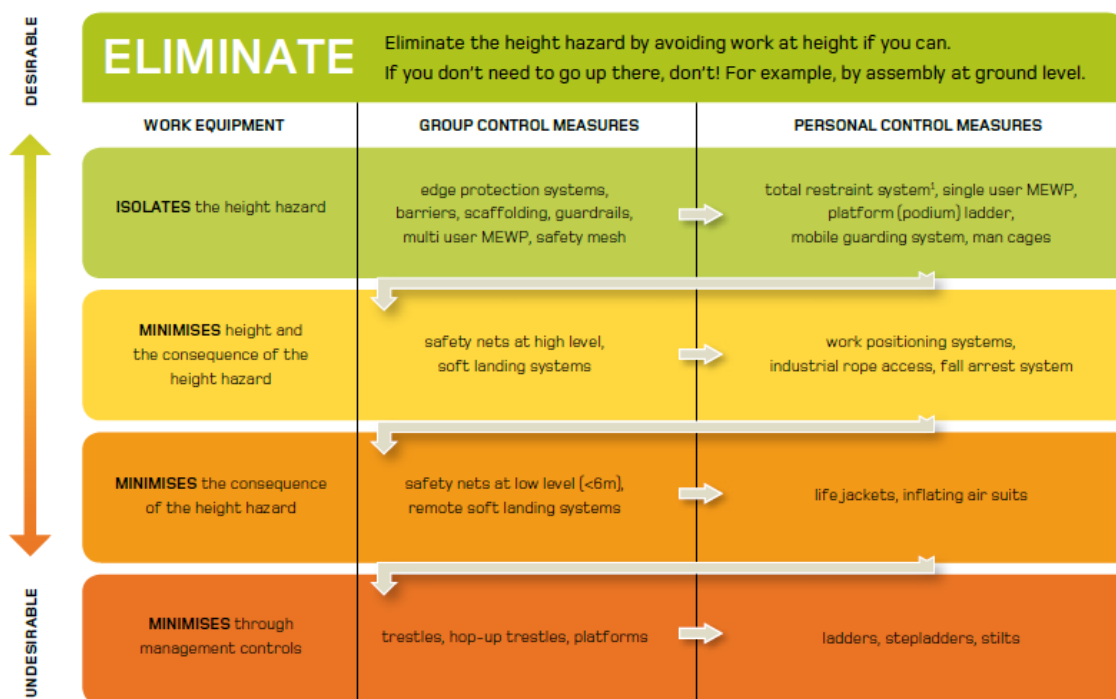
- JSEA; and

18.8 The Crew Briefing

Requirements of [Working at Height](#) include:

- First consider if work can be done on the ground. Otherwise suitable fall prevention (e.g. barriers) must be used if practicable, in preference to fall restraint or arrest systems. Refer to Figure 2 from **Best Practice Guidelines for Working at Height in New Zealand for guidance (see below)**

Figure 2: The selection of work equipment linked to hierarchy of controls.



1. A total restraint system prevents the wearer from being exposed to a height hazard. Because a harness is classified as personal protective equipment it is treated as minimisation. In the order of desirability in fall prevention, it features higher than other minimisation methods.

- Work >2m requires a Permit To Work (see DN-ZH-ST042 [Working at Height](#) and DN-ZH-ST036 [Permit to Work and Authority to Work](#))
- Work where a person may fall >5m is notifiable to Worksafe

All harness work requires training and competence and only trained and competent personnel can install and use harness systems on site. Persons not trained should be inducted by the system installer or other qualified persons before they are permitted to use the system. They should also be supervised at all times by another person who is also trained and competent. For workers who are to complete basic work while under total restraint, the required means of achieving competence is NZQA Unit Standard 23229– Use a safety harness for personal fall prevention when working at height or an equivalent or higher qualification.

A required means of obtaining competence for workers who are involved in planning, installing, operating fall arrest systems and supervising staff is NZQA Unit Standard 15757 – Use, install and

disestablish proprietary fall arrest systems when working at height or an equivalent or higher level of qualification. NZQA Unit Standard 23229 is a prerequisite for achieving NZQA Unit Standard 15757.

- all Downer Soletanche Bachy workers must use fall protection system controls when working at heights greater than 2 metres
- when required to wear a harness with fall arrest systems for each instance of working at heights, the need for an emergency action and response plan will be assessed by Site Superintendent or Construction Manager on a case by case basis during Construction Pack planning stages
- ensuring platform ladders with safety bars are the only type of working ladder permitted on site.

Personnel using fall prevention equipment are appropriately trained and competent in its selection, use, and maintenance. Fall prevention equipment is inspected and maintained in accordance with the manufacturer's recommendations and at the frequency required by the applicable legislation and recommended by the Best Practice Guideline, e.g. tagged/ registered three-monthly, and inspected prior to each use.

Attachment points are certified, installed by suitably qualified personnel, and regularly inspected.

Where there is a risk of falling materials and tools, an infill such as brick guards, netting, or a proprietary panel system is used.

Project Specific Requirements

- In compliance with CRL CSMP- if harnesses are to be used as a primary means of fall protection then this is to be discussed prior with the CRL Construction Safety Manager.

18.9 Fall Protection Equipment

All fall protection equipment is in accordance with *AS/NZS 1891 Industrial Fall Arrest Systems and Devices*.

Safety harnesses equipped with a safety lanyard and a shock absorber or inertia reel device are worn by all project personnel working:

- wherever there is a risk of falling and being injured
- at 2 metres or more above the ground where completed scaffolding is not provided; or
- when working on platforms where a handrail, scaffolding, or grid mesh has not been installed or is not secure, or has been removed for access purposes.

The use of safety harnesses also applies to the erection and dismantling of scaffolds when work is being conducted outside the protection of handrails and mid rails.

Appropriate training in the use of fall protection equipment and working at heights is part of the project induction for personnel required to work at heights.

Refer to [Working at Height](#) for further information.

18.10 Scaffolding

All scaffolding must meet all requirements and recommendations contained in the **Best practice guideline for scaffolding in New Zealand (Worksafe)**.

The design and installation of all scaffolding on the project is in accordance with the applicable standards including *AS/NZS 1576.1:2010 Scaffolding – General Requirements*, *AS/NZS 1576.2:2009 Scaffolding – Couplers and Accessories*, *AS/NZS 1576.3:1995 Scaffolding – Prefabricated and Tube-and-Coupler Scaffolding*, *AS/NZS 1576.4:2013 Scaffolding – Suspended Scaffolding*, *AS/NZS 1576.5:1995 Scaffolding – Prefabricated Splitheads and Trestles*, *AS/NZS 1576.6:2000 Scaffolding – Metal Tube-and-Coupler Scaffolding*, *AS/NZS 1577:2013 Scaffold Decking Components*, and All scaffolds will comply with the Scaffolding, Access & Rigging New Zealand (SARNZ) Best Practice Guidelines for Scaffolding in New Zealand or equivalent guidelines or a higher standard.

All scaffolds should be erected, altered and dismantled by persons who have been trained and have suitable experience with the type of scaffolding being used.

All scaffolds from which a person or object could fall more than five metres, as well as all suspended scaffolds, shall be erected, altered and dismantled by or under the direct supervision of a person with an appropriate Certificate of Competency. This work must be notified to the Ministry of Business, Innovation and Employment as particularly hazardous work.

All relevant fixed scaffold is inspected, approved, and tagged by a competent scaffolder prior to use and at intervals not exceeding 7 days. Inspections are recorded using the weekly Scaffold Register (back of scafftag).

Requirements for scaffolding include:

- ensuring all fixed scaffolding is erected, altered, and dismantled by appropriately trained and competent personnel in accordance with the Supplier's erection information and the design specifications for the type of scaffold. This requirement also applies to scaffolds less than 5 metres high
- using a Scafftag system on all fixed scaffold structures, and inspection reports completed by competent scaffolder preventing access to incomplete scaffolding at all times, including but not limited to: removing or covering ladders to prevent unauthorised access when work is not in progress; and sign-posting all access points for incomplete scaffolding with "Incomplete Scaffolding – DO NOT USE" and including a physical barrier (e.g. scaffolding tube) to prevent access.
- Falsework and formwork is to be designed by a Chartered Engineer prior to installation. The formwork or falsework is to be installed only by competent operators or qualified scaffolders and the structure then signed off by a competent scaffolder or qualified Engineer.

18.11 Ladders

All ladders used on the project are in accordance with [Working at Height](#) and comply with AS1688. Ladders are inspected prior to each use and a competent person conducts a quarterly inspection, with the results appropriately recorded and filed.

- Only fibreglass ladders are to be used in the B2 level of BTC, in immediate vicinity of the rail platform.

Step Ladders and Simple/Extension Ladders can only be used for short-duration tasks (<15 minutes) when 3 points of contact can be maintained and use of a platform ladder is not practicable given access constraints and the low-risk posed by the task.

Step ladders are only used where the full spread of their legs can be achieved. Both Step ladders and simple/extension ladders can only be used where the top two steps and top plate are not used to gain extra height.

18.12 Mobile Elevated Work Platforms (EWP)

All project activities requiring the use of elevated work platforms (EWPs) are undertaken in accordance with [Working at Height](#) and **Best Practice Guideline for Working at Heights in New Zealand** and comply with Standards *AS/NZS 1418.10:2011 Cranes, Hoists and Winches - Mobile Elevating Work Platforms*.

Workers will hold the appropriate training standards;

23966* - Describe types of Elevating Work Platforms (EWP's), and legislative requirements for their use*

23960 - Assess the worksite, prepare and operate a scissor lift elevating work platform

23961 - Assess the worksite, prepare and operate a truck mounted elevating work platform

23962 - Assess the worksite, prepare and operate a self-propelled boom lift elevating work platform

23963 - Assess the worksite, prepare and operate a trailer mounted elevating work platform

23964 - Assess the worksite, prepare and operate a vertical lift elevating work platform

**compulsory course which must be completed and passed before being able to sit any of the other standards*

The following apply where boom type elevating work platforms are used:

- The safe working load is not exceeded under any circumstances.
- An EWP is not used as a slewing crane.
- It is the operator's responsibility to ensure that all the approved safety and rescue equipment is fitted and fit for purpose prior to use.
- Personnel using an EWP (non-scissor type) are required to wear a safety harness attached to the approved hook-up point of the EWP.
- While the EWP manoeuvre is taking place at least one (and as many as appropriate) designated ground rescue person, who knows the documented rescue procedure and is familiar with the EWP being used (including emergency rescue controls), is appointed and is always readily available in the event of an emergency.
- An Emergency Rescue Plan is developed and attached to the Working at Height Permit and JSEA documentation.

Scissor-lift type EWPs do not require occupants are to wear a harness and lanyard attached to the manufactured anchor point at all times.

18.13 Man Box/ Man Cage/ Lift Basket

The Project Manager or Construction Manager authorises and approves all documentation before the use of man cages, work boxes, or similar on the project.

A workbox is a personal carrying device designed (and registered with a SWL stamp) to be suspended from a crane for the purpose of providing a working area for personnel elevated by and working from the box. The workbox, lifting attachments, and records are checked by a competent person before use. Refer to [Working at Height](#) for further information.

18.14 Working on Roofs

For all project activities with a risk of falling, edge protection is provided by means of guardrails complying with *AS 1657-2013 Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation* or *AS/NZS 1576.1:2010 Scaffolding - General Requirements*, and for sloping surfaces (e.g. on roofs of greater than 15 degrees) additional guard rail protection is installed.

[Working at Height](#) defines the risk control measures required when a person is exposed to risk of falling:

- from any perimeter of an existing roof or a roof under construction
- through a roof where rafter spacing is greater than 600mm; or
- where an increased risk of falling exists due to:
 - potentially slippery roof materials such as dust, coal covered, or a wet roof; or
 - the area to which the person may fall presents a hazard (e.g. reinforcing starter bars, building materials, concrete or other hard surface, pipework, and trenches).

The hierarchy of preferred fall control measures is:

- A stable and securely fenced work platform (such as scaffolding or other form of portable work platform); or

- If a stable and securely fenced work platform is not reasonably practicable, secure perimeter screens, fencing, handrails, or other form of physical barrier that is capable of preventing the fall of a person; or
- If screens, fencing, handrails, or barriers are not reasonably practicable, other forms of physical restraints e.g. engineered anchor points or static lines that are capable of arresting the fall of a person from a height of more than 2 metres.

18.15 Barriers or Barricading

All project site barricading and signage comply with the following guidelines;

- be applicable to each work activity; and
- be installed as per the manufacturer's specifications.

Specific design will be determined on case by case basis and documented in the MS/JSEA

Hard barriers (minimum 1.8m high) must be used to fence off the site perimeter.

18.16 Hand & Power Tools

Equipment listed on [Banned Items Register](#) is not permitted for use on the project.

A Restricted Item Permit must be obtained to use any items listed on the [Restricted Items Register](#) refer [Permit to Work and Authority to Work](#).

All power tools and equipment are inspected for defects prior to use, STAR. Any items not fit for service are identified using an "Out of Service" information tag, removed from the work area, and presented for testing and repair or disposal. Any necessary maintenance/ repair is carried out by a competent person.

Rotating power tools have the potential to cause serious injuries. Downer Soletanche Bachy workers ensure:

- guards are fitted and functional
- not to interfere with safety devices (which is prohibited and in breach of the Cardinal Rules)
- work pieces are secured
- blades and discs are checked regularly and kept in good condition; and
- both hands grip the power tool at all times.

Project personnel ensure the activity is not going to adversely affect other workers or that the sparks generated (in the case of grinding or cutting) are not directed towards flammable items, e.g. paints, thinners, greases, or oils.

For bench grinders:

- the work rest is secured and the distance between the wheel and the work rest does not exceed 1.5mm; and
- grinding wheels are tested by the Downer Soletanche Bachy Worker:
 - positioning themselves clear of line of flight of possible wheel fragments
 - allowing maximum speed to be reached and operating for approximately one minute before using; and
 - using grinding wheels for grinding only and cutting wheels for cutting only.

For project activities in inclement weather conditions (e.g. rain), personnel use battery-powered electrical hand-tools to reduce the level of risk associated with using 240v equipment in wet weather conditions.

18.17 Portable Electrical Equipment

18.17

All portable electrical equipment used on the project complies with *AS/NZS 3760:2010 In-service Safety Inspection and Testing of Electrical Equipment*. All portable electrical tools and equipment are tested and tagged by dated tag.

Equipment with expired tags are removed from service and are only be re-used after re-inspection and re-tagging.

All Downer Soletanche Bachy workers inspect all equipment prior to use as part of the STAR process to ensure that it is in good condition includes a current inspection tag, where applicable.

Refer to [Electrical Safety](#) for additional information.

Electrical leads on site:

- To have a dated tag, less than 3 months
- No longer than 30 metres or connected to another power lead
- Connected to a tagged junction box
- Checked daily before use, by operator of powered tools or equipment
- To be raised where practical, or otherwise kept clear of pedestrian or plant movement areas
- When power leads cannot be practically raised or kept clear of movement areas, leads are to be covered or boxed to prevent damage

18.18 Explosive Actuated Hand Tools

Explosive power tools are listed as “restricted items” on **DA-ZH-RG098.2 Restricted Items Register** and require specific approval by the Project Manager or Construction Manager prior to use.

Refer to the project's Rights and Obligations for any client approval obligations for explosive power tools under the contract.

Explosive power tools approved for use on the project conform to *AS/NZS 1873.1:2003 Powder-actuated (PA) Hand-held Fastening Tools - Selection, Operation and Maintenance* or equivalent international standard.

In addition to the above, the following applies to explosive actuated hand tools:

- Only personnel trained and deemed competent are permitted to use explosive actuated hand tools.
- Explosive actuated hand tools are not used in close proximity to other persons.
- Exclusion zones and warning signs are posted to notify personnel when explosive actuated hand tools are in use.
- Explosive actuated hand tools are not used around flammable or explosive gas, liquid, or dust.
- Only cartridges suited to the explosive powered hand tool and the work/ material are used.
- Explosive actuated hand tools are stored in the unloaded condition at all times.
- Cartridges are stored in a secure (i.e. locked) suitable metal container at all times.

18.19 Pressurised Equipment

All project personnel required to use pressurised equipment are trained in the use of the equipment, including the hazard identification and applicable risk control measures. Pressurised equipment includes, but is not limited to, high pressure water wash equipment, compressed air equipment, and compressed gases.

The use of pressurised equipment includes:

- restraining the pressurised equipment, e.g. whip check or clip hoses
- securely fastening air hoses and ensuring safety pins are installed prior to use; and
- handling, storing, segregating, and transporting all compressed gases in accordance with the Australian Code for the Transport of Dangerous Goods by Road or Rail, or equivalent

international standard. Refer to **DA-ZH-ST054 Hazardous Chemicals and Dangerous Goods Storage Principles and Transportation** for further information.

18.20 Cranes & Lifting Equipment

For all project activities involving lifting and cranes shall comply with all recommendation and requirements of the **Approved Code of Practice for Cranes (Department of Labour 2009)**.

Including the following guidelines apply to minimise the risk associated with crane operations:

- All cranes used on site have current registration and test certificates.
- All cranes are inspected and tested (VOC) prior to entering the site to ensure they are mechanically reliable.
- The Manufacturer's Operations Manual is available in all crane cabins for quick access by crane operators.
- Load indicators are fitted and working.
- Load charts are in place.
- A boom angle indicator is fitted.
- All slings included as part of the crane equipment is certified, stamped, or tagged with the SWL and are free from damage.
- Mobile cranes are fitted with operating reversing beepers.
- Records of inspection certificates are retained on file in accordance with the project's Document Management & Control Plan.
- Hooks, blocks, and cable runners are free from damage.
- Booms, pins, and clevises are free from corrosion and cracks.
- Outrigger packing is fit for use and undamaged.

Crane Lifting Operations

- All crane lifting operations on the project conform to *AS 2550.1-2011 Cranes, Hoists and Winches – Safe Use – General Requirements*.
- All operators/ riggers and dogmen have a relevant NZQA Unit Standards or are working under the direct supervision of a qualified and competent person in the prescribed occupation

Unit Standards

3789 –	Sling regular loads and communicate during crane operations
3790 –	Operate a cab controlled overhead crane and lift and place loads
3794 –	Lift and place loads with a tower crane
3795 –	Configure a mobile crane and lift and place loads
3800 –	Operate a pendant controlled overhead crane and lift and place loads
3818 –	Erect, climb and dismantle a tower crane
15757 –	Employ fall arrest systems on building and construction sites
16617 –	Operate a truck loader crane and lift and place loads
20208 –	Describe types of self erecting tower cranes and lift and place loads
20209 –	Erect, dismantle and reconfigure a self erecting tower crane
20526 –	Configure a track crawler crane and lift and place loads
23351 –	Describe, set up, and use, fall arrest and rescue system in a tower crane environment.
24511 –	Configure a non-slewing articulated crane, and lift and place regular loads.

- Daily pre-start safety plant checklists are completed and recorded in the equipment log book.
- The Manufacturer's rated load capacity charts, recommended operating speeds, special hazard warnings, and other essential information are clearly posted in all cranes, hoists, and machinery used for lifting.

The following is followed at all times:

- The rated capacity of the machine or the attached rigging gear is never exceeded.
 - Noting: The capacity of a crane or lifting device varies with boom radius and the use of outriggers and quadrant of operation.
- Outriggers are fully extended with tyres off the ground to realise the machines full capacity in a specific quadrant of operation.
- Machines are set up on level firm ground to prevent potential damage to the boom and to prevent the machine from overturning.
- Operators take signals from only one person, however in an emergency a STOP signal can be given by anyone.
- Load lines are checked thoroughly, and if there are randomly distributed broken wires in one layer, the line is taken out of service. If there is wear or any other distortion of the rope structure, the rope is taken out of service.
- Accessible areas within the swing radius of all cranes are barricaded to prevent personnel being struck or crushed by the counter weight.
- Safety catches are required on all crane hooks.
- Tag lines are used when handling loads that must be guided, with tag lines of 16mm diameter (minimum).
- Where work is carried out in the vicinity of overhead electrical lines, special care is taken and all lines are treated as live.
- Ropes are only be used for tying off or tailing, as per the following:
 - Load bearing 12mm minimum
 - Hand line 16mm minimum.

Lift Studies

A lift study ensures the lift is executed safely with minimal risk, and is prepared for all loads that are lifted refer [Downer NZ Lift Plans](#) area of the Downer intranet for details. This process includes the requirement for peer review or expert review based on risk assessment.

Note the standard process needs to be altered to include the Project Specific Requirement below...

Project Specific Requirements
<ul style="list-style-type: none">The CRL Construction Safety Manager is to be consulted if the lift is in excess of 85% of SWL.

18.21 Loading & Offloading Vehicles

The loading and offloading of materials from vehicles and transport for the project is adequately planned and complies with the National Transport Load Restraint Guide 2004 and LTD 005, and **Loading and Unloading Plant and Equipment**.

Basic considerations include the following:

- End stops are fitted to ensure that the load does not damage the vehicle cab in the event of sudden stopping.
- Only indirect or double action load binders are used on chains.
- The use of extension or cheater bars for leverage is prohibited. Refer to [Banned Items Register](#) for further information.
- Loose items are stored in a segregated storage compartment and not left unsecured in the passenger compartment of any vehicle.
- Regular checks are conducted on loads during the journey.
- Tow trailers are only used if the vehicle has the properly designed towbar and trailer coupling with a certified weight rating. The loaded mass of the trailer does not exceed the load rating of the towbar and the trailer and is within the vehicle manufacturer's prescribed towing limits.
- Transport of abnormal loads only occurs during daylight hours and includes an escort or police vehicles as required by the project's Transport Management Plan.
- Tarpaulin covers or nets are placed over loads to secure materials, as required.
- All loads are pre-slung by preference, however an engineer-approved unloading plan is provided for any loads which are not pre-slung for unloading, where practicable.
- Suitable access and fall protection is provided for personnel required to carry out the load or unload.
- All drivers ensure compliance with the mandatory PPE requirements for the site.
- The Project Manager designates an authorised loading/ offloading area to ensure deliveries are managed on safe ground, and documents in the site's Traffic Management Plan(s).
- A project supervisor is in attendance for all loading/ offloading activities.
- For loading or offloading of major powered mobile plant items in locations other than the designated project unloading/ laydown area, refer to the requirements of **DA-ZH-ST050 Loading and Unloading Plant and Equipment**.
- The Offloading of Plant Checklist is completed by the person responsible for the task.

18.22 Civil Earthworks

All bulk earthworks on the project are undertaken in accordance with **Training and Competency Management** and **Ground Disturbance**, and by considering the following:

- All equipment is fit for purpose and has undergone a pre-mobilisation inspection.

18.22

- Completed pre-mobilisation inspection forms are submitted to the Construction Manager for approval prior to commencing.

18.23 Excavation & Penetrations (Ground Disturbance)

All excavations and penetrations on the project are undertaken in accordance with **Ground Disturbance- Excavation and Underground Services** which includes reference to the **Approved Code of Practice for Excavations and Shafts (Department of Labour)** and requires a permit to work. The following basic fundamentals are taken into account:

- Every excavation which is more than 1.5 m deep and which is deeper than it is wide at the top OR those excavations where the excavated face is steeper than 1 horizontal to 2 vertical, must be notified to Worksafe (2000).
- All necessary investigations regarding underground services are completed prior to commencing work.
- All relevant measures are undertaken to ensure the stability of nearby buildings, adjoining structures, routes, roads, services, and the edges of excavations.
- All excavations and trenches over 1.5m in depth are shored, battered back, or benched, OR have a Chartered Engineers Temporary Works Certificate attesting to their safety.
- All JSEA and permits for work involving excavations greater than 1.5m deep detail the controls for excavation collapse, falling objects, falling into the excavation, and exposure to airborne impurities.
- Covers are placed on unattended excavations (where practicable) and barricades and signs are used to protect unattended excavations that cannot be practicably covered.
- Personnel do not work in an excavation or trench alone if the trench is any more than 1.5m deep.
- Adequate ventilation is always provided for Petrol-driven machinery in or near excavations and trenches.
- A safe means of access and egress is provided into excavations and trenches requiring access.

18.24 Concrete Work

Concrete pumping works on the project is undertaken in accordance with the relevant code of practice.

Planning for concrete pumping works includes:

- the operational requirements for the concrete pump for the duration of the task
- pre-task meetings, JSEA, maintenance and competency verification, and registration certificate
- geotechnical certification or set up checks for the subsurface material in the works zone to confirm the suitability of the load bearing area for the outriggers; and
- operational exclusion zone for the entirety of the pumping works.
- PPE includes PVC elbow length gloves and safety goggles

The concrete line is monitored at all times, with the operator in communication with the concrete line hand.

Designated concrete wash out facilities are detailed in the project's Environmental Management Plan and communicated in site specific inductions.

Other requirements include:

- All exposed reinforcement is covered by some form of protection (e.g. reinforcement bar caps) to prevent injury.

- A minimum of two workers are present during concrete pours.
- A spotter is used to guide whenever reversing concrete trucks into position.
- Extra care is taken when using and moving vibrating equipment.
- All concrete truck deliveries are managed in accordance with site Traffic Management Plans, JSEA, and site induction requirements.

18.25 Cable Stands for cable drums/rolls

All cable stands used on the project for storing cable drums or rolls, are designed and safe working load rated for the task.

All cable stands are regularly maintained and inspected by a competent person for damage or malfunction before each use.

18.25 Electrical Welding

All transformer or inverter type welding machines on the project are fitted with a Voltage Reduction Device (VRD), and all other types of welding machines are fitted with an in-line isolator or a 'dead man' type switch.

If the welding task is undertaken where a fall injury prevention system is in place then:

Personnel using the system and equipment are protected from hot particles or sparks resulting from the welding process; and

- the system is protected from hot particles or sparks.

Welding equipment is inspected before use and to ensure it is in good condition. Electrical welding machines are inspected and tested in accordance with **DA-ZH-ST062 Electrical Safety**, and leads and connections checked to ensure no wires or metal parts are exposed that may cause earthing out to occur.

Welding is only undertaken by competent personnel using the appropriate PPE as detailed in the JSEA and permit for the task.

In accordance with **DA-ZH-ST052 Personal Protective Equipment**, PPE for personnel performing welding operations is:

- dry welding gloves, long sleeve shirt secured at the wrist, and long trousers
- correct safety footwear
- double eye protection, i.e. safety glasses worn under welding helmets; and
- suitable leathers, e.g. jacket and knee pads, as required.

Welding helmets are not used as frontline protection when using grinders.

Earth leads are attached as close as possible to the welding task, with welding sparks contained wherever possible. Barricading or spotters are placed in areas below welding at height operations.

18.27 Oxy Acetylene Welding & Cutting

Welding and Hot cutting must be undertaken in accordance with the condition of a Hot Work Permit.

All oxy acetylene tasks on the project are undertaken by competent personnel using the correct PPE. Hoses and gauges are checked before use and in good working order with the following key considerations:

- Defective equipment is not used.
- Flammable gases or liquids are not stored near hot work areas.
- Oxy acetylene bottles are stored upright and secured at all times.

- Oxy acetylene bottles are secured in purpose built trolleys or cradles when being moved about the site.
- Oxy acetylene bottles are only lifted if secured in designed lifting cradles or containers.
- Flash back arresters are used at both the bottle and handpiece ends, and tested or replaced every 12 months.
- Oxy acetylene bottles are not taken into a confined space or excavation.

18.28 Temporary Structures (above and below ground)

All Temporary Structures are to be designed and constructed according to the procedure described in the standard for [Permit to Work and Authority to Work](#).

This includes the requirement for temporary structures to support deep excavations being done by a recognised competent person in accordance with the standard for [Ground Disturbance](#).

The following types of structures are included in this process

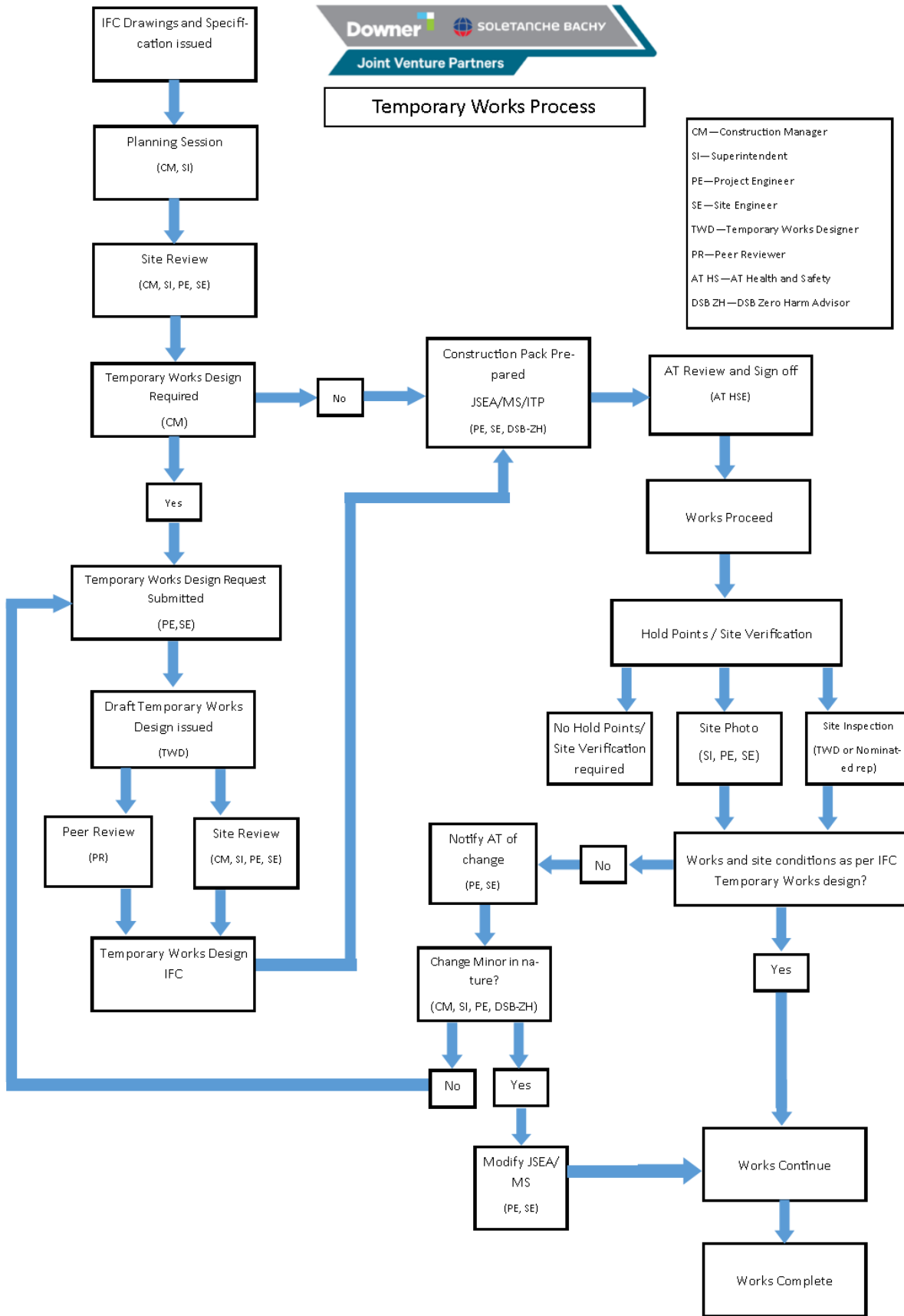
- Falsework, including soffit design
- Suspended slab propping and back propping
- Propping of pre-cast walls and other elements
- Shoring to excavations
- Sheet piling
- Pressure bulkheads and coffer dams
- Suspended and cantilevered scaffolds
- Special scaffolds
- Anchorage systems for abseiling or other working from height
- Major crane lifts
- Multiple crane lifts
- Special lifting devices
- Lifting beams
- Launching beams
- Temporary bridges
- Large temporary signs and hoardings
- Protection structures for the public
- Stability of floating plant.

The Downer Soletanche Bachy Temporary Works Designer is a CPEng experienced in the particular field of temporary works design. On completion, the design is independently reviewed by another Engineer experienced in that particular field of temporary works design, and who is a Chartered Engineer.

A Temporary Works Certificate is issued including definition of any hold points, where work must stop to allow the Temporary Works Engineer to inspect the work and agree to the work continuing, such as producing a Permit to Load prior to first loading of the temporary structure.

Temporary Works Process

CM—Construction Manager
 SI— Superintendent
 PE—Project Engineer
 SE—Site Engineer
 TWD—Temporary Works Designer
 PR—Peer Reviewer
 AT HS—AT Health and Safety
 DSB ZH—DSB Zero Harm Advisor



The following

18.29 Manual Handling

Manual handling is a significant risk for the project. Manual handling hazards include, but are not limited to:

- repetitive movements
- awkward and sustained postures
- heavy and/ or awkward loads
- moving a load over uneven surfaces or in confined spaces
- reaching; and
- working above shoulder height.

Manual handling hazards are identified in the JSEA for the task, and controls put in place to reinforce the following actions:

- Plan all lifts, STAR.
- Avoid manually lifting heavy loads. Where possible, separate or reduce large loads into smaller, more manageable loads. 2-man lift for loads >25kg.
- Use mechanical load-shifting devices, or assistance from other workers when conducting manual handling activities.
- Use gloves in order to ensure a positive grip, especially on items where hazards associated with sharp edges, cuts, or splinters to the hand are present.

Refer to [Manual Handling and Ergonomics](#) for additional information on manual handling

19 SPECIALIST CONSTRUCTION HAZARD CONTROL

19.1 Diaphragm Wall

A diaphragm wall is a reinforced concrete wall that is cast in sections or panels excavated to various depths in the ground.

Due to the nature of the works (confined area with low headroom), the diaphragm wall will be constructed using the HC-05 and mini cutter.

The main hazards associated with Diaphragm Wall Works are;

- Instability of the working platform
- Collapse of excavation (panels)
- Falling equipment (tremie pipes, steel cages etc.)
- Falling material (excavated material, steel bars, spacers, concrete)
- Persons falling into open panels
- Asphyxiation from engine fumes

For all diaphragm wall works, the following considerations will be made;

- Suitably experienced and competent area supervisor will be selected to oversee the correct execution of the works.
- Appropriately trained operatives will be allocated to operate the HC-05 and other associated equipment.
- Access to diaphragm wall working areas are to be suitably controlled. All non-essential personnel are to be kept clear unless pre-authorized to enter by the area supervisor
- Wearing of mandatory PPE requirements are to be followed by all workers at all times.
- Every accessible part of an excavation, into which there is a danger of person falling, shall be suitably protected with barriers as close to the edge of the excavation as practicable.
- Warning signs will be positioned around all excavations

- All open diaphragm wall panels / guide wall panels shall be suitably covered with metal grills (or similar) when not in operation, to prevent ingress of persons or equipment
- No material or load shall be placed or stacked near the edge of the excavation. The excavated material shall not be placed within 1.5 metres of an excavation
- All equipment used in the diaphragm wall works will be fitted with orange rotating beacon lights fitted, an audible horn and an operational reverse / slewing alarm
- No construction vehicles to operate within 1.5 metres of the edges of an open excavation
- The polymer / bentonite supply lines to excavations and the levels in the plant are to be monitored continuously to avoid any spills, leakages or overflows
- Local exhaust ventilation system is to remain operational at all times during diaphragm wall works to ensure all potential asphyxiates are extracted away from working areas and suitable levels of oxygen are maintained

19.2 Jet Grouting Works

Jet grouting is a construction process that uses a high-pressure jet of fluid to break up and loosen the soil at depth in a borehole and to mix it with a self-hardening grout to form columns or panels in the ground.

The main hazards associated with Jet Grouting Works are;

- Instability of working platform
- Overturning of the drilling rig
- Striking of the COP building structure
- Trapping of loose clothing / pinch point injuries to hands

For all jet grouting works, the following considerations will be made;

- Suitably experienced and competent supervisory staff will be selected to oversee the correct execution of the works.
- Appropriately trained operatives will be allocated to operate the rig and associated plant.
- Access to the jet grouting working area is to be suitably controlled. All non-essential personnel are to be kept clear unless pre-authorized to enter by the area supervisor
- Jet grouting rig will be fitted with suitable and sufficient emergency protection systems, to isolate power in emergencies
- During drilling operations, the immediate drilling operations will be suitably barricaded to prevent ingress of non-essential personnel
- Sufficient barricades (fencing) and signboards will be positioned around operational drill rigs to warn others of the dangers
- Wearing of mandatory PPE requirements are to be followed by all workers at all times
- Specialist PPE to be worn as required to suitably protect workers from exposure to inhalation of dusts, skin contact or penetration through mucous membranes (eyes)
- During operations, driller and helpers are to maintain positive communication at all times
- Hands are to be kept clear of operational rigs or moving rods to prevent pinch point injuries
- Good manual handling techniques are to be applied when handling drilling equipment
- The grout supply lines to drilling works are to be monitored continuously to avoid any spills or excessive leakage

19.3 Mini Piling Works

This foundation technique is generally used for repairing existing foundations, and for strengthening foundations of existing structures, as the equipment is light and able to work within existing structures.

Mini piling works are usually considered in areas of low head room, restricted access or for small diameters foundations,

The main hazards associated with Mini Piling Works are;

- Instability of working platform
- Overturning of drilling rigs
- Striking of the COP building structure
- Trapping of loose clothing / Pinch point injuries to hands
- Health effects from diesel fumes

For all mini piling works, the following considerations will be made;

- Suitably experienced and competent supervisory staff will be selected to oversee the correct execution of the works.
- Appropriately trained operatives will be allocated to operate the rig and associated plant.
- Access to the mini piling working area is to be suitably controlled. All non-essential personnel are to be kept clear unless pre-authorized to enter by the area supervisor
- Rig will be fitted with suitable and sufficient emergency protection systems, to isolate power in emergencies
- During drilling operations, the immediate drilling operations will be suitably barricaded to prevent ingress of non-essential personnel
- Sufficient barricades (fencing) and signboards will be positioned around operational drill rigs to warn others of the dangers
- Wearing of mandatory PPE requirements are to be followed by all workers at all times
- Forced ventilation to be available if deemed necessary to reduce dust and fume exposure.
- Specialist PPE to be worn as required to suitably protect workers from exposure to inhalation of dusts, skin contact or penetration through mucous membranes (eyes).
- During operations, driller and helpers are to maintain positive communication at all times
- Hands are to be kept clear of operational rigs or moving rods to prevent pinch point injuries
- Good manual handling techniques are to be applied when handling drilling equipment
- The cement supply lines to drilling works are to be monitored continuously to avoid any spills or excessive leakage

20 SAFETY IN DESIGN

The safe design approach relies on effective communication and documentation of design and risk control information between all persons involved in the phases of the lifecycle.

Where relevant, Downer Soletanche Bachy will provide a Design Hazard log that captures all critical hazards identified in any Safe Design reviews and provide a documented history of the Design Team's decisions on the treatment of the hazards.

For best results, this process will be informed, at the outset, by an Engineering Hazard Log (or equivalent) provided by the client or their agents, as a result of any prior work in the design lifecycle.

The Engineering Design log will include:

Each purpose for which the plant, substance, or structure was designed; and any conditions necessary to ensure that the plant, substance, or structure is without risks to health and safety of people when using it for a purpose for which it was designed or when carrying out any of the following activities: use of the structure for a purpose for which it was designed and inspection, cleaning, maintenance, or repair, decommissioning, dismantling, or disposal of the structure.

The Engineering Hazard log will include, where available, the results of any calculations, analysis, testing, or examination and so far as is reasonably practicable, ensure that the structure is designed to be without risks to the health and safety of persons.

21 MANAGEMENT & CONTROL OF DOCUMENTS

All project documentation is created, reviewed, approved, issued, revised, retained, and superseded in accordance with the project's Document Management & Control Plan, which includes the requirement for records of review and authorisation to be maintained.

The following project-specific documents need to be created to support the processes described in this plan:

The following documents support the processes described in the Health and Safety Management Plan.

1. Project-Specific Fatigue Management Plan
2. Project-Specific Permit to Work Guide
3. Safety Audits Records
4. Safe Behaviour Observation Records
5. Site Inspections Records
6. Recordable Injury Records
7. First Aid Case Records
8. Project H&S Risk Register
9. Construction Pack Register
 - 9.1. Method Statements and
 - 9.2. Inspection and Test Plans and
 - 9.3. Job Safety and Environmental Analyses (JSEAs)
10. Site Muster Records
11. Crew Briefing Records
12. Vehicle Movement Plans
13. Permit to Work Guide
 - 13.1. Hot Work Permits
 - 13.2. Confined Space Permits
 - 13.3. Ground Disturbance Permits
 - 13.4. Working at Height Permits
 - 13.5. Isolation Permits
 - 13.6. Close Approach Permits
 - 13.7. Lift Plans/Permits
 - 13.8. Restricted Item Permits
 - 13.9. Temporary Structure Certificates
14. Project Induction
 - 14.1. Full Induction Presentation Content

- 14.2. Inductee Test of Understanding Record
- 14.3. Visitor Induction Content
- 14.4. Visitor Induction Record

- 15. Electrical Equipment Register
 - 15.1. Electrical Lead Tags
- 16. Building WOF
- 17. Evacuation Scheme/ Emergency Response Plan
- 18. Fatigue Management Plan
- 19. Hazardous Substances
 - 19.1. MSDS Register
 - 19.2. MSDS records
 - 19.3. Labelled Containers
- 20. Truck Drivers Logbook
- 21. Training and Competency
 - 21.1. Site Training Needs Analysis
 - 21.2. Training Records/ Licenses
 - 21.3. Competency Assessment Records
- 22. Sign-in Register Records
- 23. Safety Meeting Minutes
 - 23.1. Toolbox Meeting Records
 - 23.2. Project Team Meeting Minutes- investigation learnings
- 24. Safety Alerts, bulletins and initiatives
- 25. Safety corrective action
 - 25.1. Tracking register
 - 25.2. Records
- 26. Safety Noticeboards (nothing specific)
- 27. Safety Committee Meeting Minutes
- 28. Safety Performance Reports
 - 28.1. TRIFR, LTIFR, SFR Report
 - 28.2. SBO/Hazard Reports
 - 28.3. Near-miss Reports
 - 28.4. Incident Investigation Register

28.4.1. Incident Reports

28.4.2. Incident Investigation Reports

29. Injury Management

29.1. Worker Capabilities record

29.2. Rehabilitation and Return to Work records

30. Plant Inspection Records

30.1. Plant Delivery Check records

30.2. Daily Plant Pre-start records

30.3. Lifting/rigging gear inspection records

31. Pre-employment Medical Screening records

32. Occupational Health Assessment records (including for Noise Induced Hearing Loss)

33. Traffic Management Plans

34. Scaffold Accutags

35. Weekly Scaffold Register

36. Plant Operating Manuals

37. Plant Maintenance Records

38. Crane Inspection Certificate Records

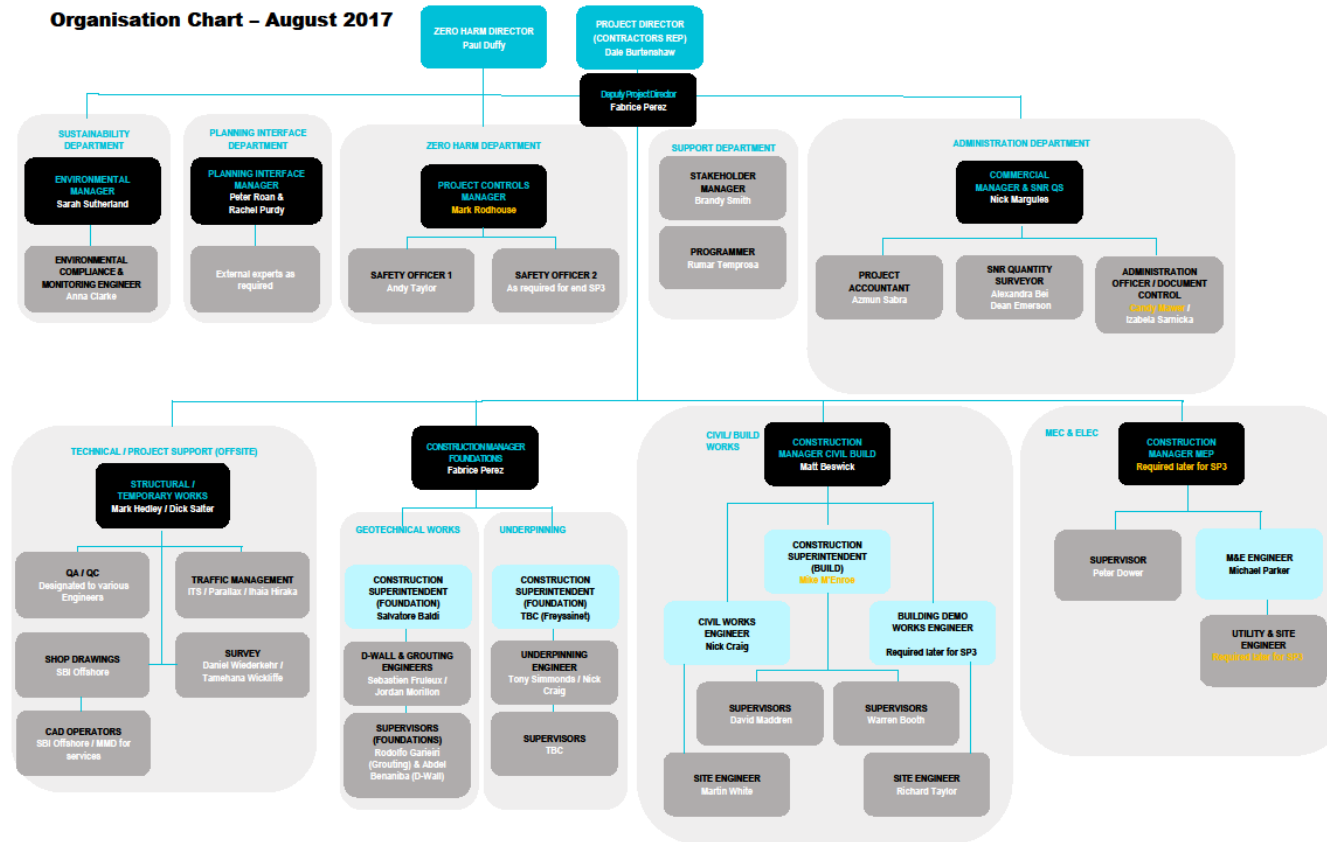
ANNEX A – PROJECT ROLES & RESPONSIBILITIES



CONTRACT NO. 160-14-810-T1-C1

City Rail Link – Construction Works Contract 1 (Britomart to Downtown Shopping Centre Site)

Organisation Chart – August 2017



The Project Director works with the relevant functional managers and human resources personnel to ensure adequate resources are in place for the project

The Project Manager ensures that the individual roles, inter-relationships, and lines of reporting for the project are defined in the project's organisational structure. Refer to the PEP for further information.

Item	Project Director Responsibilities
Prime Responsibilities	<ul style="list-style-type: none"> • Visibly committing to health and safety practices. • Reviewing, implementing and complying with this plan. • Stopping any work deemed unsafe and undertaking all necessary controls to rectify the danger prior to recommencing works. • Providing appropriate resources to implement the requirements of this plan. • Intervening on all unsafe acts or behaviours. • Ensuring all Downer Soletanche Bachy workers are inducted and aware of the site evacuation and emergency procedures. • Ensuring appropriate amenities are provided for all Downer Soletanche Bachy workers. • Reviewing injury, incident, and safety statistical reports and ensuring corrective measures are closed in accordance with defined timeframes. • Ensuring all aspects of Downer Soletanche Bachy's incident management procedures are being maintained, encompassing incident notification, investigation, and participation in the investigation reports. • Notifying incidents to the Downer Soletanche Bachy Safety Manager/ Workplace Rehabilitation Coordinator and the Client, and distributing safety statistics appropriately. • Participating in scheduled audits of this plan. • Participating in toolbox meetings and ensuring pre-start meetings are held at frequencies required by this plan. • Ensuring all Downer Soletanche Bachy workers follow Downer Soletanche Bachy policies, this plan, and all instructions. • Representing the Project Team at client and Downer Soletanche Bachy safety meetings. • Ensuring all near misses, incidents, and reported hazards have mitigation measures implemented to prevent reoccurrence.

Item Zero Harm Director Responsibilities	
Prime Responsibilities	<ul style="list-style-type: none"> • 3-monthly Safety audits to assess level of implementation of Project Health and Safety Management Plan and assess effectiveness and coverage of processes contained within the plan.

Item Safety Officer Responsibilities	
Prime Responsibilities	<ul style="list-style-type: none"> • Visible commitment to the project's safety rules and procedures. • Stopping any work deemed unsafe and undertaking all necessary controls to rectify the danger prior to recommencing works. • Supporting all resources with technical advice to help them implement this plan. • Verifying all worker training and competency. Prior to their induction. • Ensuring all Downer Soletanche Bachy workers are inducted and aware of the site evacuation and emergency procedures. • Convening and facilitating project safety meetings. • Facilitating Crew Briefing meetings with crews and subcontractors. • Identifying hazards and facilitating the selection of appropriate controls. • Conducting formal and informal workplace hazard inspections • Reviewing JSEA prior to commencement of work, and verifying JSEA compliance throughout the duration of the project. • Participating in the investigation of incidents and assisting in any Downer Soletanche Bachy worker rehabilitation and corrective actions. • Participating in scheduled audits of this plan, reviewing the findings, and ensuring all deficiencies are rectified within the nominated timeframe. • Ensuring training programs are conducted as necessary to meet site safety training requirements. • Facilitating/conducting site specific safety training and awareness sessions with the work crews prior to scheduled activities. • Ensuring toolbox and crew briefing meetings are held at frequencies required by this plan. • Supporting the Project Manager in the reporting on health and safety aspects of the project, including KPIs. • Updating the site risk register as new hazards arise. • Ensuring a register of hazardous materials is maintained on site and that a SDS is available for each substance. • Conducting audits on plant and equipment processes, and documentation

Item	Construction Manager Responsibilities
Prime Responsibilities	<p data-bbox="418 277 708 309"><u>Typical Responsibilities</u></p> <ul data-bbox="418 327 1433 1473" style="list-style-type: none"> <li data-bbox="418 327 1134 358">• Visible commitment to safety rules and procedures. <li data-bbox="418 376 1270 439">• Leading and supervising all resources to implement the safety requirements of this plan. <li data-bbox="418 456 1385 519">• Ensuring all employees are inducted and aware of the site evacuation and emergency procedures. <li data-bbox="418 537 1406 636">• Stopping any work deemed unsafe and intervening on all unsafe behaviours, and undertaking all necessary controls to rectify the danger or correct the behaviour prior to recommencing works. <li data-bbox="418 654 983 685">• Participating in project safety meetings. <li data-bbox="418 703 1361 734">• Participating in crew briefing meetings with staff and subcontractors. <li data-bbox="418 752 906 784">• Identifying and reporting hazards. <li data-bbox="418 801 1235 833">• Conducting formal/ informal workplace hazard inspections <li data-bbox="418 851 1401 913">• Reviewing JSEAs prior to commencement of work, and performing JSEA verifications throughout the duration of the project. <li data-bbox="418 931 1406 994">• Participating in the investigation of incidents and assisting in any Downer Soletanche Bachy worker rehabilitation or nominated corrective action. <li data-bbox="418 1012 1406 1075">• Participating in scheduled audits of this plan, reviewing the findings, and ensuring all deficiencies are rectified within an acceptable timeframe. <li data-bbox="418 1093 1150 1124">• Ensuring all employees are appropriately supervised. <li data-bbox="418 1142 1385 1205">• Facilitating/ conducting site specific JSEA/ WIs and JSEA training and awareness sessions with the work crews prior to all scheduled activities. <li data-bbox="418 1223 1410 1285">• Ensuring toolbox and pre-start meetings are held at frequencies required by this plan. <li data-bbox="418 1303 1353 1366">• Conducting audits on plant and equipment processes, and documentation, and validating operator tickets and competencies. <li data-bbox="418 1384 1433 1473">• Ensuring all plant and equipment is inspected upon arrival to site and then on a monthly basis. Ensuring power tools and extension leads are checked, tagged, and recorded as required by legislation.

Item	Site Superintendent Responsibilities
Prime Responsibilities	<p data-bbox="416 277 708 309"><u>Typical Responsibilities</u></p> <ul data-bbox="416 327 1433 1525" style="list-style-type: none"> <li data-bbox="416 327 1134 358">• Visible commitment to safety rules and procedures. <li data-bbox="416 376 1433 472">• Leading and supervising all resources to implement the safety requirements of this plan, with focus on effective hazard identification and control implementation. <li data-bbox="416 490 1382 555">• Ensuring all employees are inducted and aware of the site evacuation and emergency procedures. <li data-bbox="416 573 1406 669">• Stopping any work deemed unsafe and intervening on all unsafe behaviours, and undertaking all necessary controls to rectify the danger or correct the behaviour prior to recommencing works. <li data-bbox="416 687 983 719">• Participating in project safety meetings. <li data-bbox="416 736 1358 768">• Participating in crew briefing meetings with staff and subcontractors. <li data-bbox="416 786 906 817">• Identifying and reporting hazards. <li data-bbox="416 835 1134 866">• Conducting informal workplace hazard inspections <li data-bbox="416 884 1398 949">• Reviewing JSEAs prior to commencement of work, and performing JSEA verifications throughout the duration of the project. <li data-bbox="416 967 1406 1032">• Participating in the investigation of incidents and assisting in any Downer Soletanche Bachy worker rehabilitation or nominated corrective action. <li data-bbox="416 1050 1147 1081">• Ensuring all employees are appropriately supervised. <li data-bbox="416 1099 1398 1164">• Facilitating/conducting training and hazard awareness sessions with the work crews prior to scheduled activities. <li data-bbox="416 1182 1382 1247">• Leading toolbox and pre-start meetings at frequencies required by this plan. <li data-bbox="416 1265 1238 1330">• Conducting audits on plant and equipment processes, and documentation <li data-bbox="416 1348 1398 1379">• Verifying training and competency of workers including subcontractors. <li data-bbox="416 1397 1430 1462">• Ensuring all plant and equipment is inspected upon arrival to site and then on a monthly basis. <li data-bbox="416 1480 1358 1545">• Ensuring power tools and extension leads are checked, tagged, and recorded as required by legislation.

Downer Soletanche Bachy Worker Responsibilities	
Prime Responsibilities	<p><u>Typical Responsibilities</u></p> <ul style="list-style-type: none"> • Undertaking all required inductions • Supporting compliance with all site-wide safety rules • Attending site muster • Contributing to Hazard ID and Control Planning in Crew Briefings and JSEAs • Complying with JSEA and Crew Briefing Plan safety control actions • Working safely and wearing designated PPE. • Following all directions given on site by the Site Supervisors. • Stopping any work that is unsafe. • Ensuring all lifting gear and electrical gear is inspected and has current tags before using. • Reporting all incidents, accidents, near misses, or any unsafe conditions to the Supervisor immediately. • Actively participating in Toolbox Sessions • Actively participating in Training and Competency development and assessments. • Adhering to DI-ZH-PO005 Alcohol and Other Drugs Policy and the Client's requirements.