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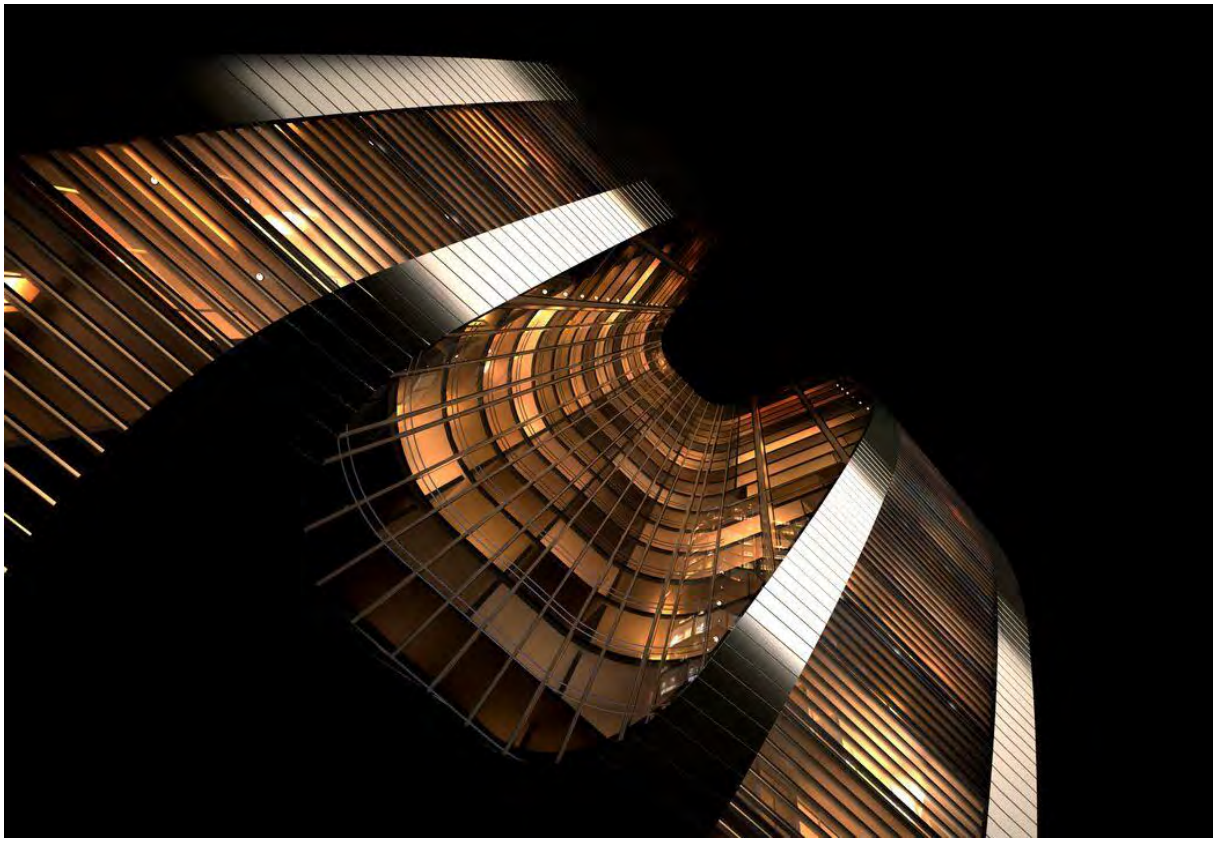
Grocon Constructors (NSW) Pty Ltd
THE RIBBON SYDNEY
Construction Management Plan

Controlled Copy No: Master
(Uncontrolled when Printed)
Issue:1
Issue Date: 10th December 2015

THE RIBBON
SYDNEY

EXECUTIVE PROJECT MANAGER **Authorised (When approved):** .....



1. Authorisation, Issue & Review

1.1 Authorisation

The issue and use of this document is approved and it is the responsibility of all Grocon personnel to ensure that work is carried out in accordance with this Construction Management Plan.

Position	Name	Signature	Date
National Construction Manager	Andrew Merriel		8-12-15
Executive Project Manager	Justin Murphy		8-12-15

1.2 Issue and Review

This Construction Management Plan has been developed in consultation with the NSW Construction Management Team and NSW Safety Team.

Revision	Date	Comments	Approved By
1	16th December 2015	New DA submission	Justin Murphy

1.3 Distribution List

The register below identifies the distribution of registered and therefore controlled copies, of this Construction Management Plan. It will form the basis for the distribution of any amendments.

Revisions to this plan will be distributed to all holders of controlled copies. These holders shall be responsible for updating the document held by them and removing the sections that have been revised.

This document is available electronically via the electronic document transmittal system.

All printed copies unless nominated in the distribution list are deemed to be “Uncontrolled” and will be marked as such.

Controlled Copy No.	Issue Date	Registered Holder Name	Registered Holder Position
Master	8th December 2015	Antony Baroni	Structure Manager

2. Introduction

This Construction Management Plan (CMP) has been prepared to communicate the management strategies that will be utilised on The Ribbon. It describes the construction methodologies, processes and procedures from site establishment through to practical completion.

Specifically this document addresses the following items:

- Safety
- Grocon Commitment, Project Overview and Interface and Management & Training
- Project Structure
- Design Finalisation & Procurement
- Site Location, Hours of Work and Site Interface
- Early Works, Site Boundary & Hoardings
- Site Establishment and Site Access
- Pedestrian, Emergency Vehicle and Traffic Management
- Programming and Planning
- Stormwater and Erosion Management
- Construction Methodology – Demolition, Groundwork's & Main Building Works Phases
- Materials Handling
- Perimeter and Overhead Protection Systems
- Environmental Management
- Noise & Vibration Management
- Quality Management
- Completion Plan
- Documentation Management
- Industrial Relations
- Emergency Response Procedures
- Vodafone Communications tower construction
- Demolition
- Infrastructure diversions

The Construction Management Plan will be developed and revised throughout the construction process.

Notes:
1. ***THE RIBBON SYDNEY*** Development is referred to as "The Ribbon"

3. Safety

Safety is Grocon's highest priority.

Safety is one of Grocon's core values and it is imperative that the health, safety and wellbeing of all The Ribbon Stakeholders including, subcontractors, consultants, Grocon employees and staff, any visitors to the site and most of all the general public, are addressed in all of our design, planning and management decisions.

A comprehensive Workplace Safety Management Plan (Refer Section 30) which addresses how Grocon intends to manage health and safety and compliance with all requirements of Work Health & Safety Act 2011 and Work Health and Safety Regulations 2011 during the construction of The Ribbon has been developed and is included in Appendix A of this Construction Management Plan.

4. Grocon Commitment

The Directors and all staff of Grocon involved in The Ribbon are committed to:

- Implementing responsible and practical management procedures to minimise any impacts and disruptions during the construction process to surrounding infrastructure.
- Complying with all relevant regulation, legislation and authorities to manage the construction process and procedures.
- Managing and implementing a safe system of work for all personnel working on or visiting the site.

5. Project Overview and Interface

The proposed development of The Ribbon, Sydney, represents a landmark project for the city of Sydney. The 24 storey development will compliment Darling Harbour and provide a new hotel ,retail, apartments and commercial hub.

The IMAX theatre will be re-constructed and supported by entertainment, retail and commercial office space.

The site comprises the existing IMAX theatre and is bounded to the north by the elevated Western Distributor Freeway & to the south by the elevated Western Distributor Freeway and the Bathurst Street exits. To the east, the site is bounded by Harbour Street & Wheat Road. The site boundary defines the western elevation.

The proposed development will involve the demolition of the existing IMAX building. The new The Ribbon building will, generally speaking, comprise a reinforced concrete structural steel structure which will cantilever over the public domain, Wheat Road and Harbour Street.

The new development will contain approximately 1,799m2 of retail, 3,217m2 of entertainment. 450m2 of commercial office space, 18,260m2 of Serviced Apartments, and 30,820m2 of hotel area (all areas are GFA).

6. Management and Training

Each Grocon team member has both general and specific responsibilities regarding the implementation of this Construction Management Plan.

All Grocon staff, consultants and subcontractors are required to undergo a site specific induction which outlines the construction procedures and management framework specific to The Ribbon. The induction is aimed at instilling in each person a common-sense approach to safety, to ensure they employ the responsible environmental practices and awareness needed to deliver the project in accordance with the relevant regulations and standards.

A record of all site inducted personnel will be retained on site.

All site personnel are required to have completed their Workcover OH&S General Induction for Construction Work in NSW ("White Card"). A copy of the White Card, and any relevant qualifications, will be recorded and kept on file on site. This requirement will be confirmed during prior to the site induction.

The Project Manager will ensure that all personnel are made aware of their obligations under this Construction Management Plan and the general compliance with Regulations, Acts and Codes of Practices having jurisdiction over the works.
The Project Manager shall:

- Co-ordinate the implementation of the Construction Management Plan
- Co-ordinate the monitoring and inspection programmes;
- Ensure personnel are trained and aware of obligations;
- Ensure that subcontractors are aware of their safety and environment obligations; and,
- Oversee other day-to-day activities required by the Construction Management Plan.

7. Project Structure

7.1 Resource Structure

The Ribbon resource structure is made up of, but not limited to the following:

Role	Name
Developer / Client	Grocon Darling Harbour
Design & Construction Contractor	Grocon Constructors NSW
Quantity Surveyor	RLB
Architect	Hassell
Documentation Architect	Webber & Associates
Structural Engineer	Bonacci Group
Mechanical Services	Aecom
Electrical Services	Aecom
Hydraulic Services	EWFW
Fire Services	EWFW
Fire Engineering	ARUP
Lift Services	NDY
ESD Consultant	Cundall
Landscape Architect	Aspect Studios
Façade Engineer	Aecom
Traffic Engineers	GTA Consultants
Acoustic Consultants	Acoustic Logic
Planning Consultant	JBA Urban Planning

7.2 Project Organisational Structure

The Ribbon Project Team's Senior personnel are depicted below.
The positions held by the respective personnel have responsibility and authority to ensure that works carried out by Grocon, our Consultants and Subcontractors meet the requirements of the Development Brief, Specifications and Drawings and this Construction Management Plan.

The project team will be responsible for the construction and completion of the project in accordance with the requirements of the Project Agreement. Roles and authorities of the Grocon personnel associated with the project will be further detailed in The Ribbon Work Health and Safety Management, the Project Quality Plan and the Environmental Management Plan.

7.3 Project Contacts/ Structure

Role	Name	Telephone	Email/Facsimile	Company / Address
Client/ Developer Managing Director	Grocon	02 8249 7000		Grocon Developments (NSW) Pty Ltd Level 4, Legion House, 161 Castlereagh Street, Sydney NSW 2000
NSW General Manager	Chris Carolan	02 8249 7000	ChrisCarolan@grocon.com.au	Grocon Developments (NSW) Pty Ltd Level 4, Legion House, 161 Castlereagh Street, Sydney NSW 2000
Project Director	Paul Yousseph	0400 362 287	PaulYousseph@grocon.com.au	Grocon Developments (NSW) Pty Ltd
D&C Contractor	Grocon Constructors NSW	02 8249 7000	Facsimile: 02 9247 7768	Grocon Constructors (NSW) Pty Ltd Level 4, Legion House, 161 Castlereagh Street, Sydney NSW 2000
National Construction Manager	Andrew Merriel	02 8249 7000	andrewmerriel@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Senior Contracts Manager NSW	Nicholas Baxter	02 8249 7000	nicholasbaxter@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Grocon The Ribbon Project Office	Emma Scott	02 8249 7000	emmascott@grocon.com.au	Grocon Constructors (NSW) Pty Ltd *Interim* Level 4, Legion House, 161 Castlereagh Street, Sydney NSW 2000
Executive Project Manager NSW	Justin Murphy	0418 555 049	JustinMurphy@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Technical Design Manager	Todd Hulbert	02 8249 7000	toddhulbert@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Services & Environmentally Sustainable Design Manager	Geoff Briggs	02 9849 7000	geoffbriggs@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Site Manager	Neil George	0488 663 673	NeilGeorge@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Heath Safety & Environmental Advisor	Joe Brinzi	0419 755 580	joebrinzi@grocon.com.a	Grocon Constructors (NSW) Pty Ltd

8. Design Finalisation & Procurement

8.1 Design Finalisation

The Ribbon design team have been appointed (refer Section 7) and are currently progressing with schematic design. The Technical & Design Manager will manage the design team through the Design Development, Tender, Construction Documentation, and As Built documentation phases. This will typically comprise:

- Further development and agreement of the Site Management and Construction methodology with the design team.
- Input to the design team on the limitations and constraints imposed by the site conditions on the design, and the subsequent considerations.
- Advice regarding Buildability and Value Management initiatives, particularly regarding the detailed development of installation methods for specific elements such as , IMAX, Wheat Road and structural steel, screen and catch deck methodology, facade panel design and installation methodology, large services equipment, car stacking system and the like.
- Suggestions regarding alternative equivalent construction materials and equipment, which will assist installation or improve future maintainability of the facility.
- Monitoring and assessment of the design deliverables against design and procurement programs.
- Continual Cost Planning to ensure that the design meets the development cost plan.
- Management of approvals, samples and presentations

8.2 Design Critical Path

The Development Application approval phase and IMAX theatre demolition works provide the design team with an achievable design documentation program. The program has appropriate float and will enable the completion of all schematic and Approved for Tender (AFT) documentation in line with the Procurement Program.

Following the AFT documentation, the immediate focus of the design team will be to lock in detailed design and Approved for Construction documentation for the structure, in ground services and façade elements, combined with the necessary Authority approvals and procurement process to achieve a start on site in January 2016 with allocated starting up funding

Grocon will develop a trade packages / subcontract procurement letting strategy during the DA approval period.

8.3 Procurement Strategy

A crucial element for the Grocon Project Team will be the development of a detailed Procurement Strategy. The Procurement Strategy will need to consider the design process, the procurement process and the construction program, particularly the critical path.

The Procurement Strategy will divide the Project into logical trade elements. The trade element will be developed to inform the design program and will be based on the following criteria:

- Capacity of the design team
- Capability, capacity and expertise of the sub-contractor market
- The Tender, recommendation, approval and letting process
- Construction sequence and requirements

The aim will be to develop in conjunction with the Design Team, a Procurement Strategy and program that provides sufficient time for the design team to develop trade package documentation, that the Administration team can procure in a timely manner to satisfy the construction requirements.

In the early stages of the project this may mean splitting packages to ensure that construction can proceed while design is being finalised.

8.4 Procurement Methodology

The Ribbon Project Team is responsible for the preparation of tender documentation, the examination and analysis of tenders, and the internal recommendations as to which tender should be accepted.

We propose to commence the tender process with Approved for Tender (AFT) documentation. Subcontractor tender proposals will be firmed-up during the tender period, following the issue of Approved for Construction (AFC) documentation at which point we will finalise our trade package recommendation.

Grocon believe that by considering the following, during the tender period, we will obtain maximum value for money via the subcontractor tender & engagement process.

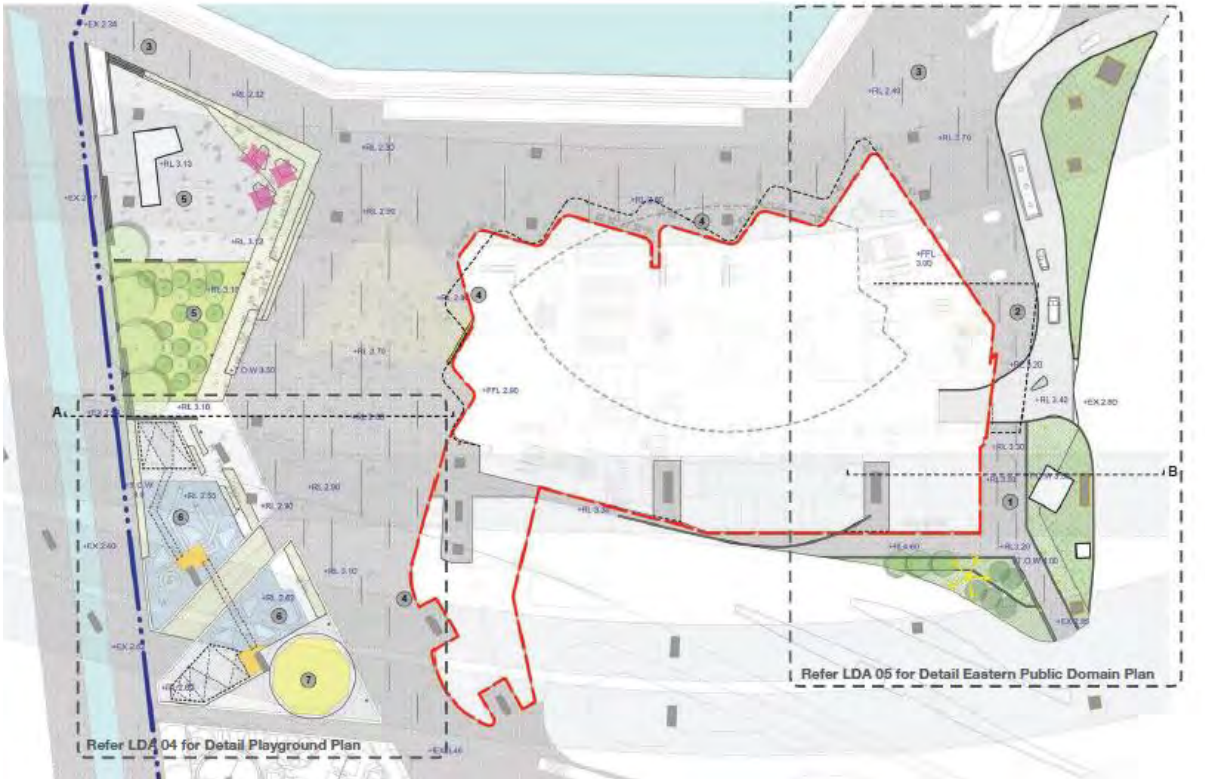
- Financial capacity of each prospective tenderer
- Comparative analysis of all relevant costs and benefits of each proposal throughout the whole procurement cycle (whole-of-life costing):
- Fitness for purpose;
- Performance history of each prospective supplier;
- Distribution of risk in each proposal;
- Flexibility to adapt to possible change over the lifecycle of the property or service;
- Financial considerations including all relevant direct and indirect benefits and costs over the whole procurement cycle; and
- Evaluation of contract options (for example, contract extension options such as ongoing essential services recertification).
- Encouraging competition by ensuring non-discrimination in procurement and using competitive procurement processes;
- Promoting the use of resources in an efficient, effective and ethical manner,
- Making decisions in an accountable and transparent manner, and
- Provision of documentation that is logical, clearly articulated, comprehensive and relevant
- Develop evaluation criteria which will enable the proper identification, assessment and comparison of the costs and benefits of tenderer's.
- Selection of subcontractors with working procedures and systems that ensure a quality product is safely delivered within the allocated program

9. Site Location

9.1 Site Layout and Public Domain

As stated in Section 4, the site comprises the existing IMAX theatre site and is bounded to the north by the elevated Western Distributor Freeway & to the south by the elevated Western Distributor Freeway and the Bathurst Street exists. To the east, the site is bounded by Harbour Street & Wheat Road.
Grocon will deliver the Public Domain in 7 stages. These are attached in Appendix F

Public Domain Plan



Refer diagrams – Location Diagram and Public Domain staging

10. Hours of Work

It is envisaged that the site planning permit hours will be approved by the City of Sydney and that they will likely comprise.

- 07:00 am to 07:00 pm Monday to Friday*
- 07:00 am to 05:00 pm Saturdays*
- Sunday Work Subject to Out of Hours Permit Approval*
- Shift/ Night Works Subject to Out of Hours Permit Approval*
- 11.00pm to 4.00am Wheat Rd Catch deck installation and removal

* Out of hours work will be subject to Out of Hours Permit approvals from relevant authorities.

The site will be closed down and secured on public holidays and in particular, Australia Day, ANZAC Day, New Year's Eve and other days as agreed with the Sydney Harbour Foreshore Authority. After hours lighting will be minimised to security lighting and the cranes jib tip lights.

During Earth Hour the site will be closed one hour prior so that all lighting can be turned off apart from perimeter hoarding lighting which will be provided for pedestrian safety.

11. Site Interface

11.1 Stakeholder & User Group Management

Our Project and Site Managers will have key roles in maintaining relationships with project stakeholders to ensure that the project objectives are achieved with minimal disruption to the adjoining owners & businesses and the authorities and service providers that we interact with.

We will seek to achieve a workable balance between maintaining project momentum in accordance with the delivery program and the needs and expectations of stakeholders. Some of which are listed below:

- Sydney Harbour Foreshore Authority
- Cockle Bay Property Owners
- City of Sydney
- McDonalds Property Owners
- Commonwealth Bank Property Owners
- RMS, TMC
- Sydney Buses
- Sydney Sightseeing Buses
- Sydney Taxis
- Transgrid ,Ausgrid, Sydney Water, Telstra, Optus, Jemena and other service providers
- Sydney Visitors Centre
- Infrastructure New South Wales
- Darling Harbour Live
- NSW Department of Planning and Infrastructure.

11.2 Construction Liaison

Due the close proximity of the site to neighbours, public areas, and the adjacent public infrastructure, Grocon will carry out the project in a manner designed to cause minimal disruption to the activities of others.

Access to the site, material movement and hours of work will be in accordance with the approved working hours & TMP. The construction programme has been based on these hours. Grocon believe in a collaborative approach & will co-operate with all the relevant regulatory authorities by involving them early in the project and promoting a proactive “hand-in-hand” approach to project delivery. The Development Application (DA) period will provide a suitable time frame to engage with these relevant parties for the early establishment works.

Grocon will immediately liaise with SHFA, City of Sydney and other relevant authorities in order that appropriate Management Plans are lodged in accordance with their requirements. Furthermore, Grocon will undertake dilapidation reports of adjacent buildings and facilities enabling a thorough document for future reference to the condition of the site, all in accordance with perceived DA requirements.

Grocon always have a member of their on site management appointed as liaison officer, enabling ongoing communication of upcoming works and defining a contact point in the event of any issues requiring clarification or resolution. The purpose is to provide a forum for neighbours to discuss issues, project progress and special activities.

11.3 Community Consultation

We will consult with the local community to detail the proposed works and the strategies we propose to minimise any impact on access, amenity, staging and program as well as the impact on surrounding facilities and services. In particular we will advise on the proposed pedestrian & traffic management controls to be implemented

The meetings will be established prior to work starting on site and will meet on a regular basis for as long as required. The following plans will be tabled at these meetings:

- Geotechnical Reports
- Demolition Report
- Construction Management Plan
- Construction Program
- Construction Traffic Management Plan
- Dilapidation Reports
- Noise and Vibration Monitoring Reports
- Plans for any temporary road closures and use of mobile cranes

11.4 Noise & Vibration Management

A draft Noise & Vibration Management Plan has been produced and is included in Appendix B of this Construction Management Plan. The plan outlines the information gathering process, impact statements, control measures and implementation requirements for the site.

All construction works will be completed in a manner so as not to cause undue damage to adjoining infrastructure and property. Appropriate vibration monitoring will be installed if required and neighbouring buildings will be reviewed by the project acoustic consultant during works.

Grocon will also develop (in conjunction with all stakeholders) a Communications / Stakeholder Engagement Plan that will comprise a section dealing with noise, dust and vibration.

11.5 Dilapidation Surveys

Dilapidation surveys are to be conducted for all the surrounding pavements, elevated roadways, neighbouring buildings, infrastructure etc.

Copies of these reports will be submitted to the Private Certifying Authority (PCA), SHFA, CoS and the Neighbours prior to any work commencing on the site.

11.6 Geotechnical Monitoring

Grocon are in discussions and will agree with RMS the monitoring requirements associated with their relevant assets including the elevated roadways.

12. Early Works

There are a number of key activities which are to be completed to enable the major works to commence. These activities are essential to allow the major works to proceed unrestrained by external conditions.

12.1 Authority Approvals

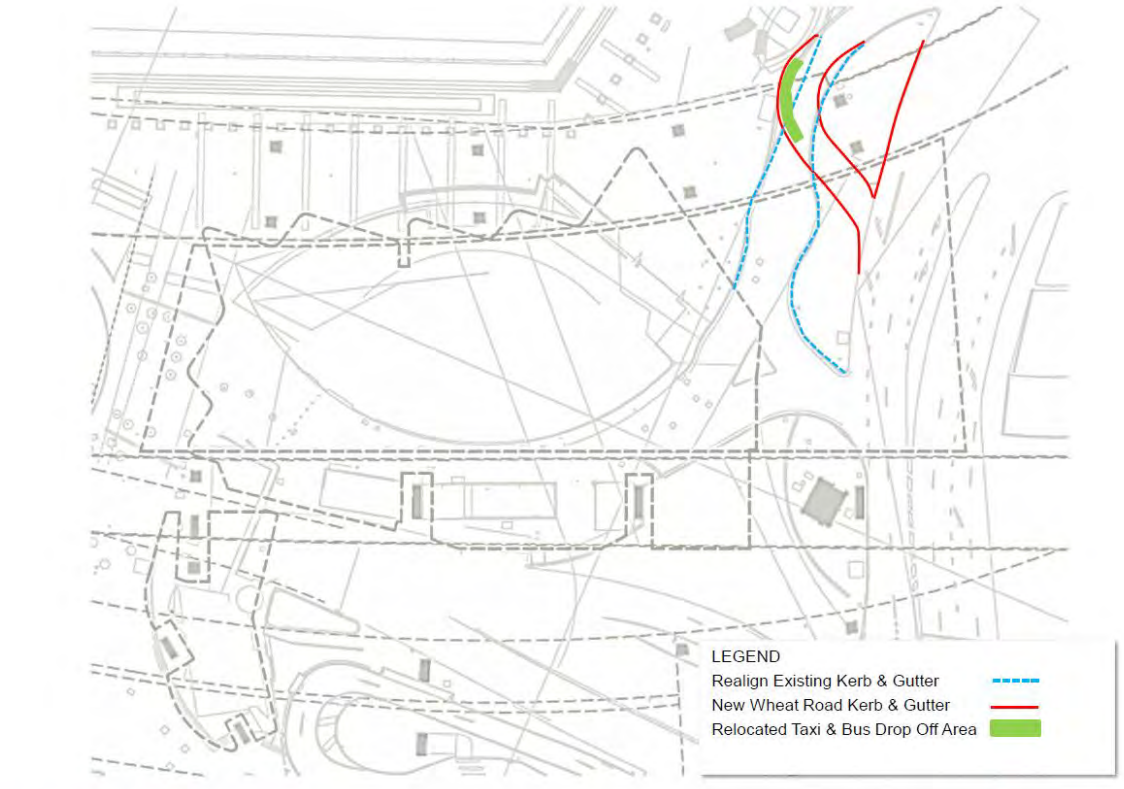
Prior to undertaking any works on site, relevant Authorities will be contacted and where required applications lodged to obtain all necessary approvals and permits. All required notifications and timeframes will be established for any inspections and attendance required by the relevant authority. Such inspections and attendance will be coordinated with Grocon, subcontractor's representatives on site and relevant certifying consultant to ensure continuity of work flow, commissioning, testing and acceptance into service

Authority	Jurisdiction
SHFA & City of Sydney	Gantries, Hoardings, Anchors, Work Zones and Stormwater, Working Hours
Transgrid & Ausgrid	Electrical Infrastructure
Sydney Water	Water & Sewage
Telstra & Optus	Telephone & Data communications
RMS	Roads Infrastructure
Jemena	Gas Infrastructure

12.2 Realignment of Wheat Road

The existing Wheat Road will be realigned as indicated on the following diagram. The realignment of Wheat Road provides construction vehicle access and egress whilst still maintaining service access for the Cockle Bay Retail Tenancies and provides access for the Sydney Sightseeing Bus and Taxi pickup & drop-off areas

Refer diagram – Wheat Road Realignment



Wheat Road Realignment

12.3 Relocation of the Robert Parr Jay Flowers Sculpture

The Jay Flowers sculpture that is currently located between Harbour Street and Wheat Road is to be removed and stored off site for the duration of The Ribbon construction works.
The sculpture will be removed from storage and reinstalled during the landscaping and paving phase of the works onto a suitably designed and certified foundation.

Sculpture removal, transportation, storage and relocation methodology will be formulated in consultation with specialist contractors, the artist/ sculptor (Robert Parr, Canberra School of Art), the fabricators (K&G Fabrications, Unanderra) and the relevant authority/ies to eliminate risk of damage and ensure structurally sound re-instatement. Particular attention will be given to the careful slinging, lifting, packaging and transportation of the sculpture.

Methodology formulation and authority approval will be sought when procuring the relevant construction certificate.

12.4 Relocation of street signs, lights, and bollards

A number of street signs, lights, and bollards may need to be removed or relocated to enable access to the construction works zone and installation of the hoardings & gantries. These will be agreed with SHFA, City of Sydney, RMS etc. as required.

12.5 Relocation of the Darling Harbour Carousel

The Darling Harbour Carousel that is currently located at Palm Grove is proposed to be relocated approximately 10 metres south west of its current location and integrated as part of The Ribbon's public domain and playground upgrade works. The Carousel is currently listed as an item of Movable Heritage. The Carousel (including the Band Organ) is intended to be relocated during the south west landscaping and paving phase of the works (Public Domain Stage 4 at approximately month 27 of the development).

The Carousel dismantling (as/ where only deemed necessary) and its relocation should be reasonably simple as the Carousel was originally intended to be mobile, as it frequented many NSW country and urban travelling fairs, shows and special events whilst owned and operated by the Kale family, prior to the NSW Government's purchase and erection at Darling Harbour. The Carousel's transport carriage, shipping enclosure and wheels seem to still be intact and should facilitate its relocation.

A Conservation Management Plan will be commissioned (with reference to the current SHFA July 2012 Carousel & Organ CMP) to facilitate an informed and sufficiently detailed carousel relocation methodology to the satisfaction of all stakeholders. The planning and methodology will be formulated in consultation with the current operators, specialist period contractors, available archival and as built documentation, the CMP and it's author and the relevant authorities to eliminate risk of damage and ensure sound fully operational re-instatement. Particular attention will be given to the careful labelled/ documented dismantling, slinging, lifting, handling, transportation and re-erection of the carousel and its assumed fragile components.

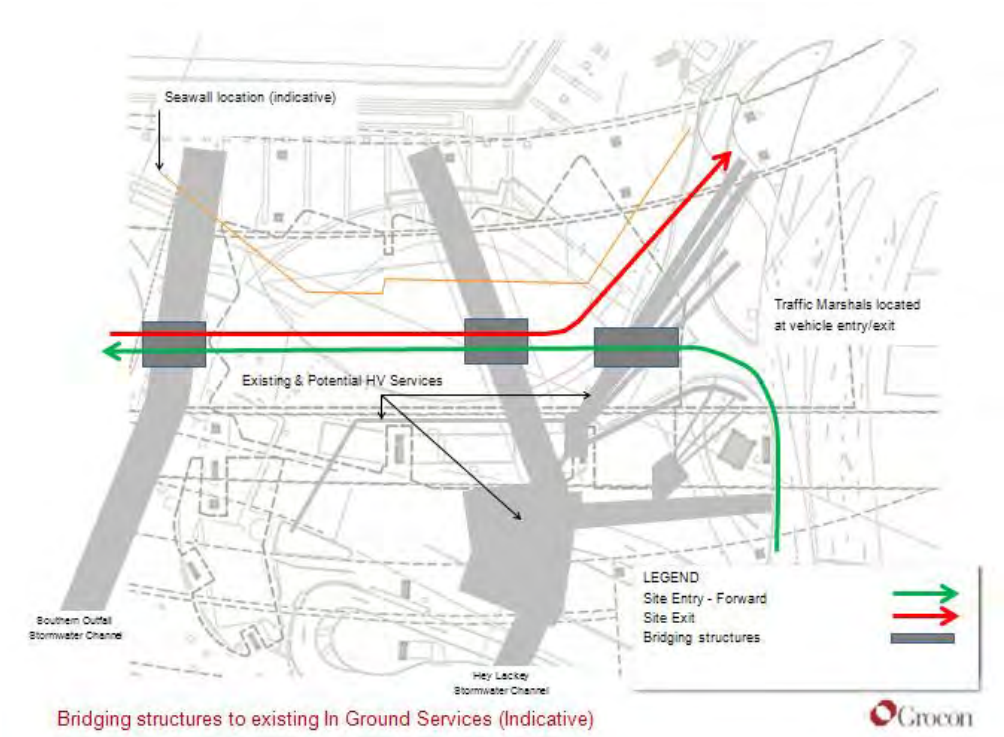
Methodology formulation and authority approval will be sought when procuring the relevant construction certificate.

12.6 Existing Service Disconnections and Disruptions

All service disconnections to the existing IMAX building will be carried out prior to any demolition works commencing.

The existing stormwater, gas, water and sewer services to the IMAX building may need to be re-diverted, out of The Ribbon footprint or encapsulated. The existing Southern Outfall and Hay Lackey stormwater channels will remain. Temporary bridging structures will be constructed to protect these assets yet still enable construction traffic to traverse the site.

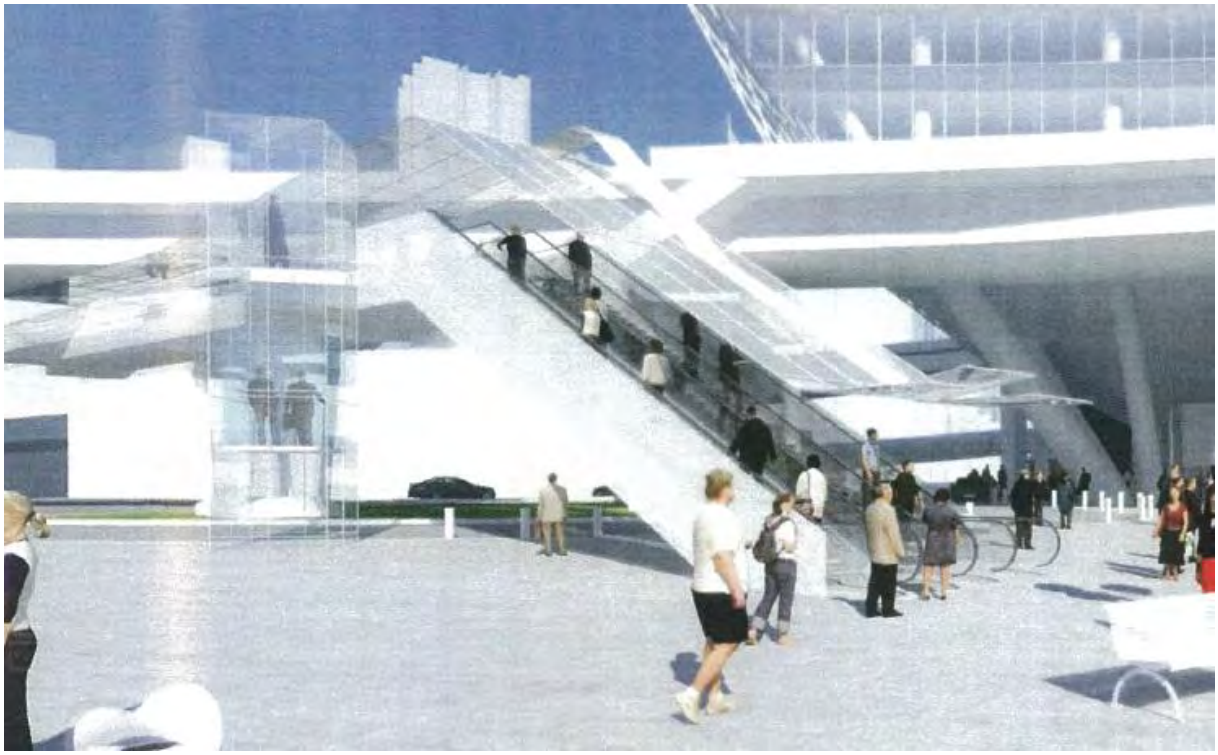
Refer diagram – Bridging structures to In Ground Services (Indicative)



The electrical supply kiosk substation to the IMAX building will be temporarily retained to provide power during construction. There are several existing HV conduit pathways which require diverting, encapsulation and/or structurally transferring over; these will be co-ordinated with and/or undertaken by Transgrid/ Ausgrid to prevent any disruptions to the service provided.

It is not expected that service disruptions will occur to surrounding owners during works as these works will be coordinated with and agreed with the relevant Authority. If any further service works are required, a notification will be issued to the affected authority/ neighbours/ owners to agree a strategy for those works.

12.7 Spanish-Steps



1_Alterations to the existing Spanish steps

- Demolition of existing steps
- Retain existing bridge structure
- Reconfiguration of landing
- New glass enclosed lift
- New escalators
- New glass canopy

Grocon will work closely with stakeholders to maintain disabled access and minimise pedestrian disruption at all times through the demolition and rebuild of this important thoroughfare.

13. Construction Temporary Services

Temporary supplies to the proposed project, site establishment and typical floors will be established as follows:

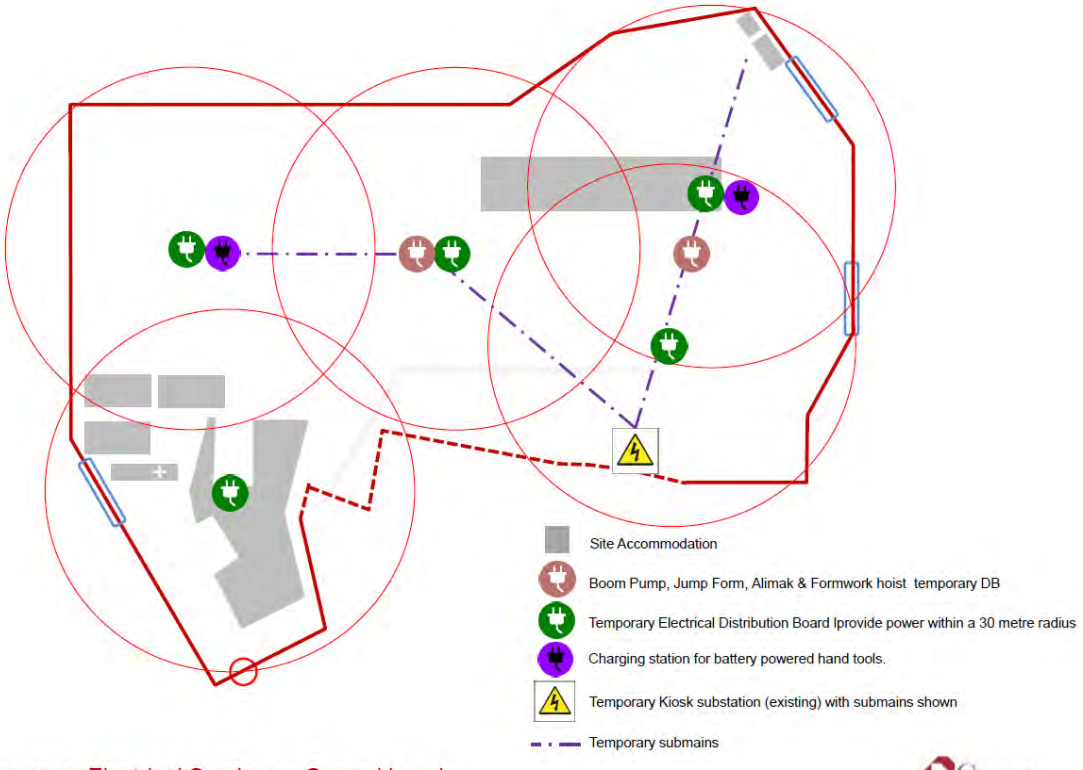
13.1 Temporary Electrical Services

Power supply to the existing IMAX theatre building will be de-commissioned prior to demolition. A temporary power supply will be established on the various floors as required for the demolition process. The existing IMAX kiosk substation located under the southern freeway will be utilized to provide temporary power during construction.

A migration plan will be established with Ausgrid to transfer power onto the new substations to allow this kiosk to be removed.

Our main electrical distribution board will be located on Ground Level adjacent to and connected to the existing Kiosk Substation. The construction site MSB will be separately metered allowing electrical consumption to be monitored and apportioned. The construction site MSB will feed the essential site plant and equipment (tower cranes, man and materials hoists, jump forms, formwork hoists) and temporary distribution boards located on each floor.

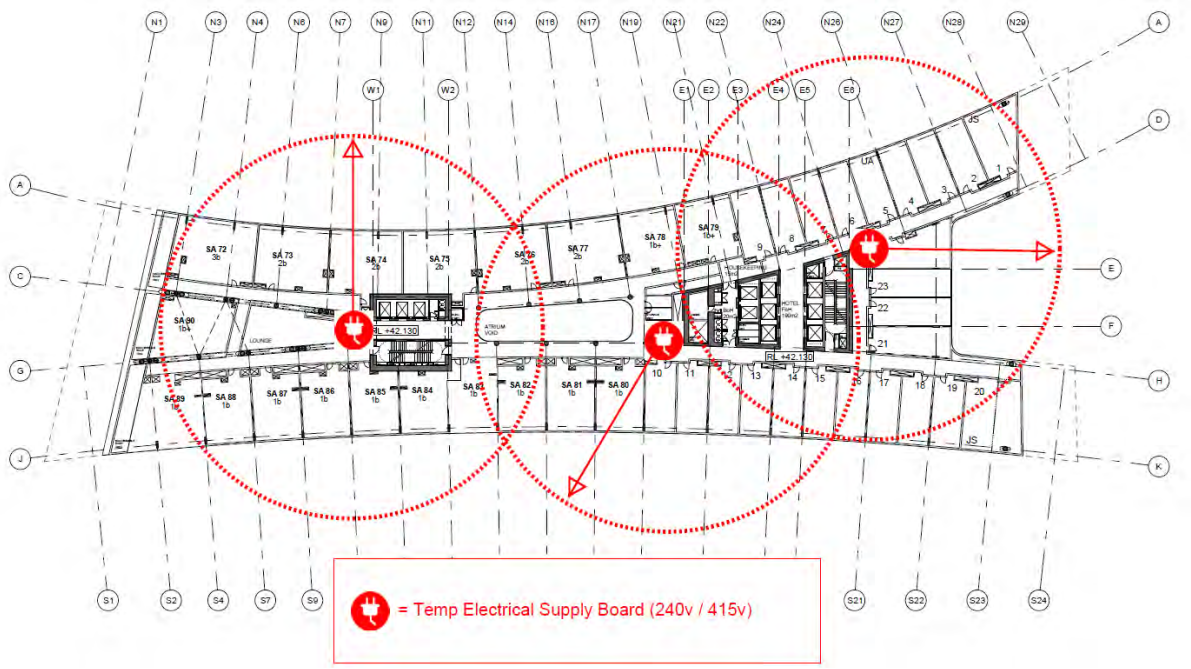
Refer diagram Temporary Electrical Services – Ground Level



Temporary Electrical Services – Ground Level

Based on the floor layout and typical allowance for max 30m leads, Grocon will install three (3) electrical distribution boards on each floor. In conjunction with the temporary distribution boards, two charging stations for battery powered hand tools will installed on each floor. Construction temporary/ emergency lighting will be provided to comply with relevant requirements of WHS regulation 2011, AS1680 & AS2293 throughout the works. The eastern most electrical distribution board will have capacity to accommodate the growth of the building in the easterly direction.

Refer diagram Temporary Power – Typical Floors



Subcontractors will be responsible for the supply of any power and lighting beyond the description above. This will include the supply of leads, lead stands, spider boards, task lighting etc.

Indicative temporary power requirements are as follows;

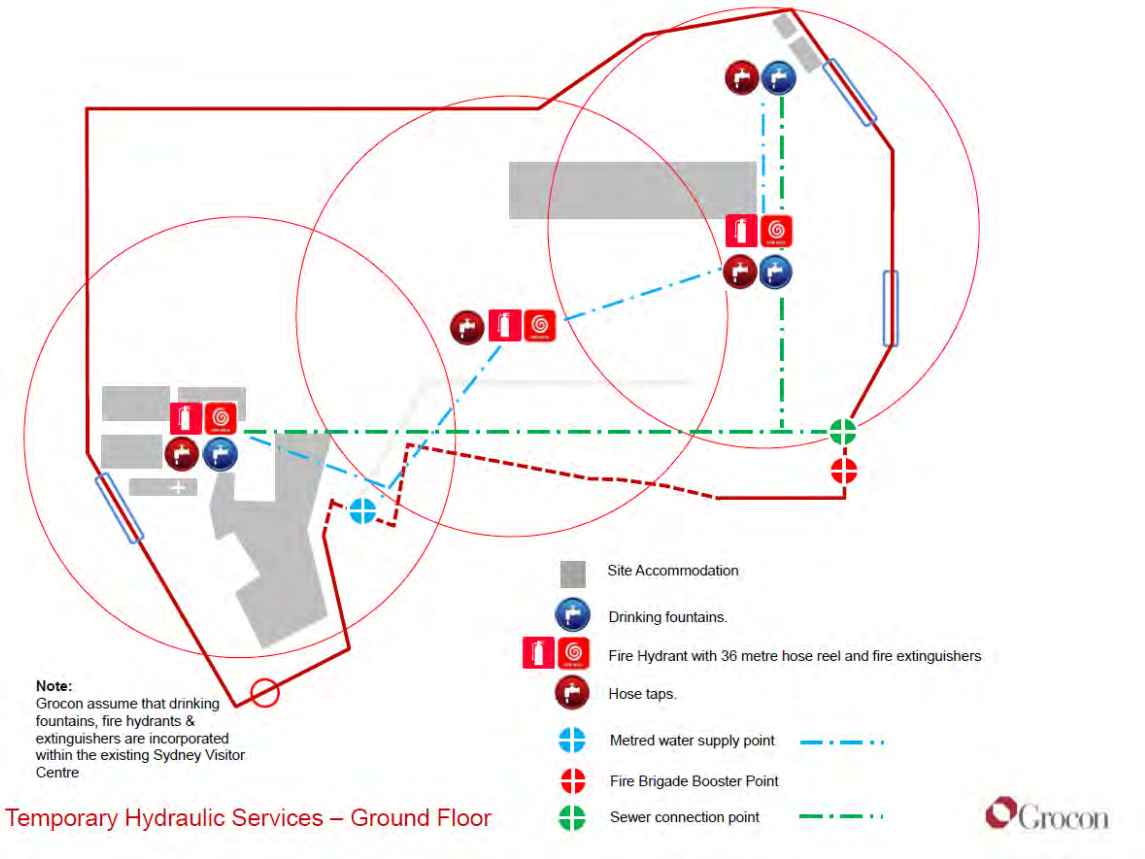
Item	Requirements
Internal twin hoist x 2 (4 of @125 amps each))	500amps
Maber Material Hoist	63amps
High Rise Jumpforms ,Flood Lights and power boards	60amps
Low Rise Jumpforms ,Flood Lights and power boards	60amps
Placing concrete Boom 1	32amps
Placing concrete Boom 2	32amps
Tower Cranes 1- 4 (4 of @320 amps each=1200 amps) powered off diesel generators. Lighting only 25amps each	100amps
Builder amenities and sheds	12amps
Temporary circulation	12amps
Hoarding Lights	50amps
Permanent fit out	20 amps
Wheat Rd Gantry	20amps
Low Rise Builder Lifts (2 of)	36amps
High Rise Builder Lifts (2 of)	36amps
Goods Lift	15amps

Generators will be used some stages during the construction.

13.2 Temporary Hydraulic Services

Existing water mains will be diverted out of the building footprint and temporary water supply will be connected to existing mains take-offs. A metered supply shall feed into the building site (east of the existing Sydney Visitors Centre) and feed site establishment and temporary risers up to each level

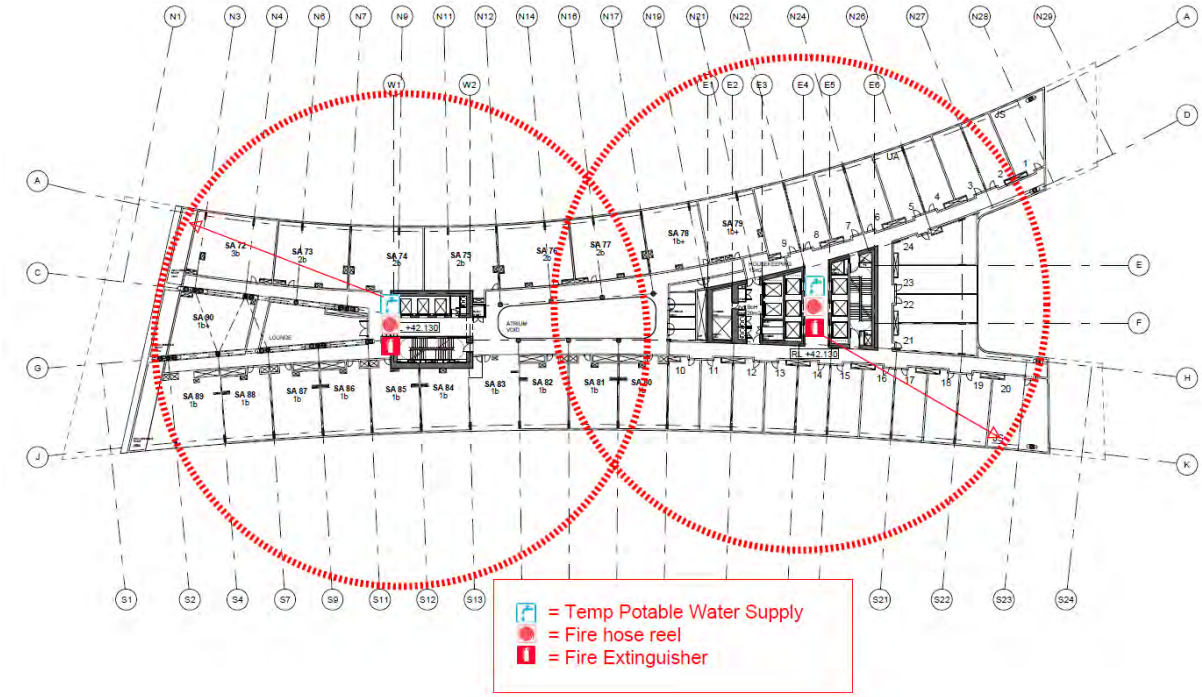
Refer diagram Temporary Hydraulic Services – Ground Floor



Temporary hydraulic services will be provided to the site accommodation areas and the construction site. As the structure progresses two drinking fountains will be provided to the leading decks. Two drinking fountains will also be located on each floor for services, finishes and façade trade subcontractors.

2 hose taps will be provided on every floor and sediment drums on every fourth floor. Hose taps and sediment drums will be located adjacent to the core for ease of maintenance and general access by trades.

Refer diagram Temporary Hydraulic Services – Typical Floors



13.3 Temporary Sewage

Once diverted, the existing sewer mains shall be reused for the temporary connection of builder's construction sewerage. Connection to mains will be via the Harbour Street sewer line and will connect the temporary toilets associated with the main site establishment and the temporary riser that will connect temporary toilet cubicles on every 4th floor of the building.

13.4 Stormwater

Existing stormwater will be diverted out of the building footprint, suitably treated, filtered and/ or capped. Stormwater detention and overflow control measures will be implemented to prevent debris from the construction site entering the harbour and this process will be monitored on a regular basis. As construction develops, stormwater control measures will continue until final detention and gross pollutant devices are installed.

14. Site Boundary & Hoardings

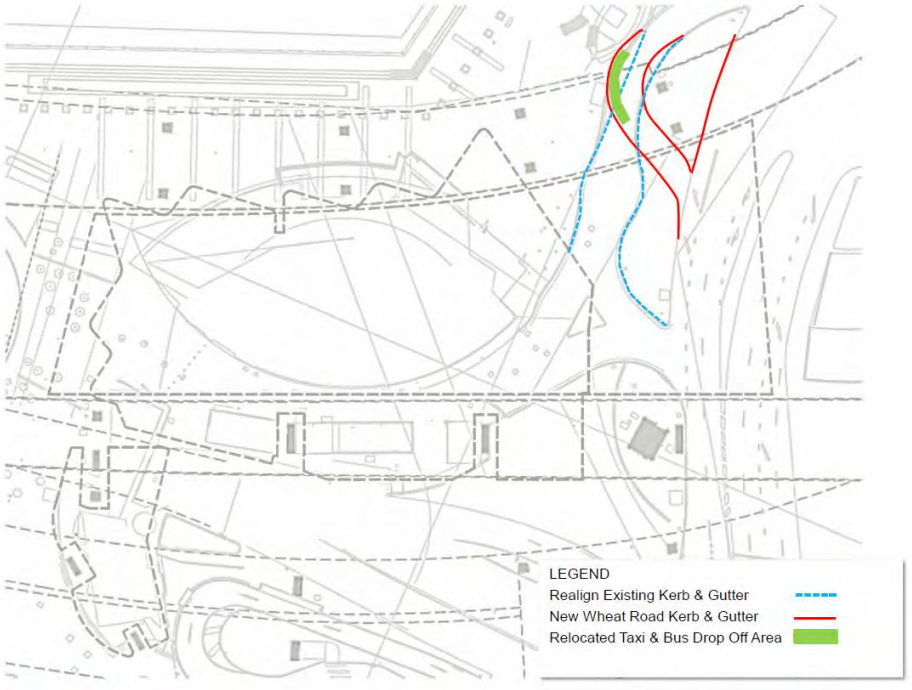
The location of the site is an integral part of Darling Harbour and particularly Cockle Bay. Several boundaries on the development will require hoarding and or other protection structures. Wheat Road will require realignment during the Construction Phase.

A complete listing of road realignments and hoarding and other protection structures required for the appropriate protection of site boundaries and other public interfaces will be as follows:

14.1 Wheat Road Realignment

Wheat Road will be realigned as indicated on the following diagram to enable construction traffic to safely enter and exit the site, yet still provide Sydney Sightseeing Bus and Taxi Drop-off areas.

Refer diagram – Wheat Road Realignment



Wheat Road Realignment

14.2 Northern and Western Elevation Hoarding

The Northern Elevation hoarding will comprise the following:

- Approximately 240 lineal metres of "A" Class hoarding
- Typically the average hoarding height will be a minimum 2.4m to this elevation.
- The hoarding materials will be of a quality commensurate with one of Sydney's major tourist attractions.
- Graphics and signage will be applied to the hoarding and will be agreed with SHFA.
- Access provisions will be provided for RMS maintenance as required.
- Emergency Access/Egress gates will be located in the Western Hoarding.
- Security lighting will be provided

Refer diagram – Hoarding & Gates

14.3 Wheat Road (Eastern) Hoarding

The Eastern (Wheat Road) Elevation hoarding will comprise the following:

- Approximately 60 lineal metres of “A” class hoarding.
- Double entry and exit gates will be provided.
- Typically the average hoarding height will be a minimum 2.4m to this elevation.
- The hoarding materials will be of a quality commensurate with one of Sydney’s major tourist attractions.
- Graphics and signage will be applied to the hoarding and will be agreed with SHFA.
- Security lighting will be provided
- Access provisions will be provided for RMS maintenance as required.

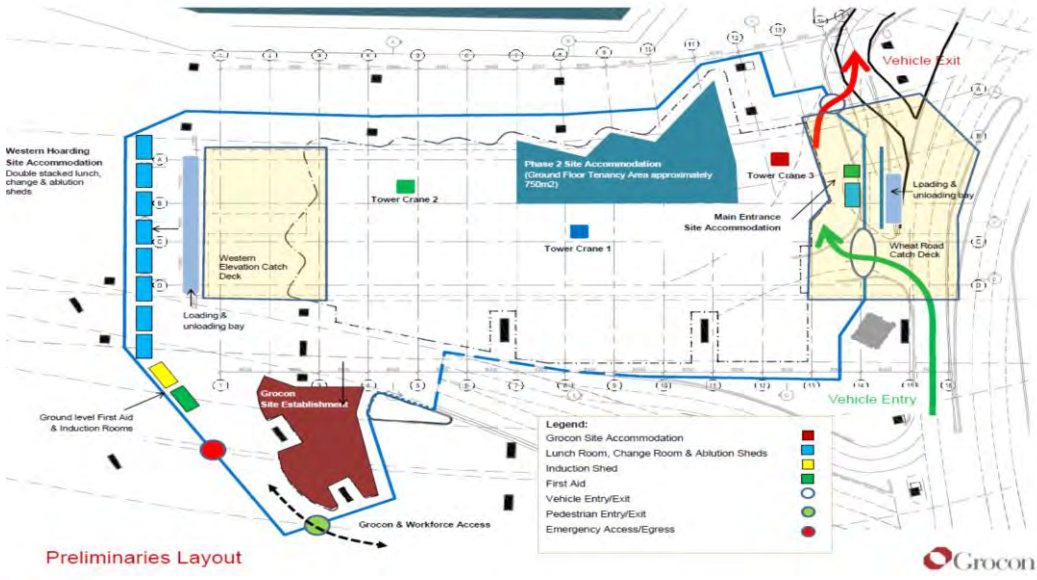
Refer diagram – Hoarding & Gates Sydney Visitor Centre & McDonalds Drive-through Hoarding

The Sydney Visitor Centre & McDonalds Drive-through Hoarding will comprise the following:

- Approximately 40 lineal metres of “A” Class hoarding
- Typically the average hoarding height will be a minimum 2.4m to this elevation.
- The hoarding materials will be of a quality commensurate with one of Sydney’s major tourist attractions.
- Jersey kerb/concrete panel barriers will be installed to the McDonalds Drive-through section of the hoarding.
- Graphics and signage will be applied to the hoarding and will be agreed with SHFA.
- Access provisions will be provided for RMS maintenance requirements.

(Public Domain Hoardings are shown in Appendix B)

CMP



14.4 Cross City Tunnel Exhaust Stack and Bathurst Street Exit Ramp Hoarding.

The Cross City Tunnel Exhaust Stack and Bathurst Street Exit Ramp Hoarding will comprise the following:

- A protective plywood hoarding 2.4m high will be installed to the Cross City Tunnel Exhaust Stack.
- The current access arrangement for Ausgrid will be maintained – i.e. the Bathurst Street Exit ramp wall will be the protective barrier.
- Approximately 55 lineal metres of "A" Class hoarding will be installed from the Bathurst Street Exit Ramp transition to the park adjacent to the existing Sydney Water Pumping station.
- Typically the average hoarding height will be 2.4m to this elevation.
- The hoarding materials will be of a quality commensurate with one of Sydney's major tourist attractions.
- Graphics and signage will be applied to the hoarding and will be agreed with SHFA.
- Access provisions will be provided for RMS maintenance requirements.

14.5 Wheat Road/ Harbour Street Temporary Catch Deck

The Wheat Road Catch Deck will be installed during the ground works phase of the project and will comprise:

- A purpose built structural steel frame with a 10kPa capacity catch deck will be installed below the eastern section of The Ribbon as it cantilevers over Wheat Road and Harbour Street.
- Minimum clearance above all roadways will be a minimum 5.5m (as discussed and agreed with RMS)
- The hoarding will be painted to meet RMS & SHFA and Sydney City hoarding requirements
- Lighting to Wheat Road and Harbour Streets will meet RMS requirements.
- Signage will be agreed with SHFA and RMS
- Independent designed and built crane support structure will be interfaced with the temporary deck and built between the hours of 11.00pm and 4.00am

Refer diagram – Overhead Protection in 14.3

15. Site Access

15.1 Site Access Control- Blue Glue access control

Signage will be placed at all site entrances clearly stating that access is for authorised persons only. The construction workforce will be required to undertake site specific safety induction training and will be issued with project specific identification to confirm this has been completed.

Blue Glue electronic access will be used so we are fully aware of site numbers of personnel on at all times.

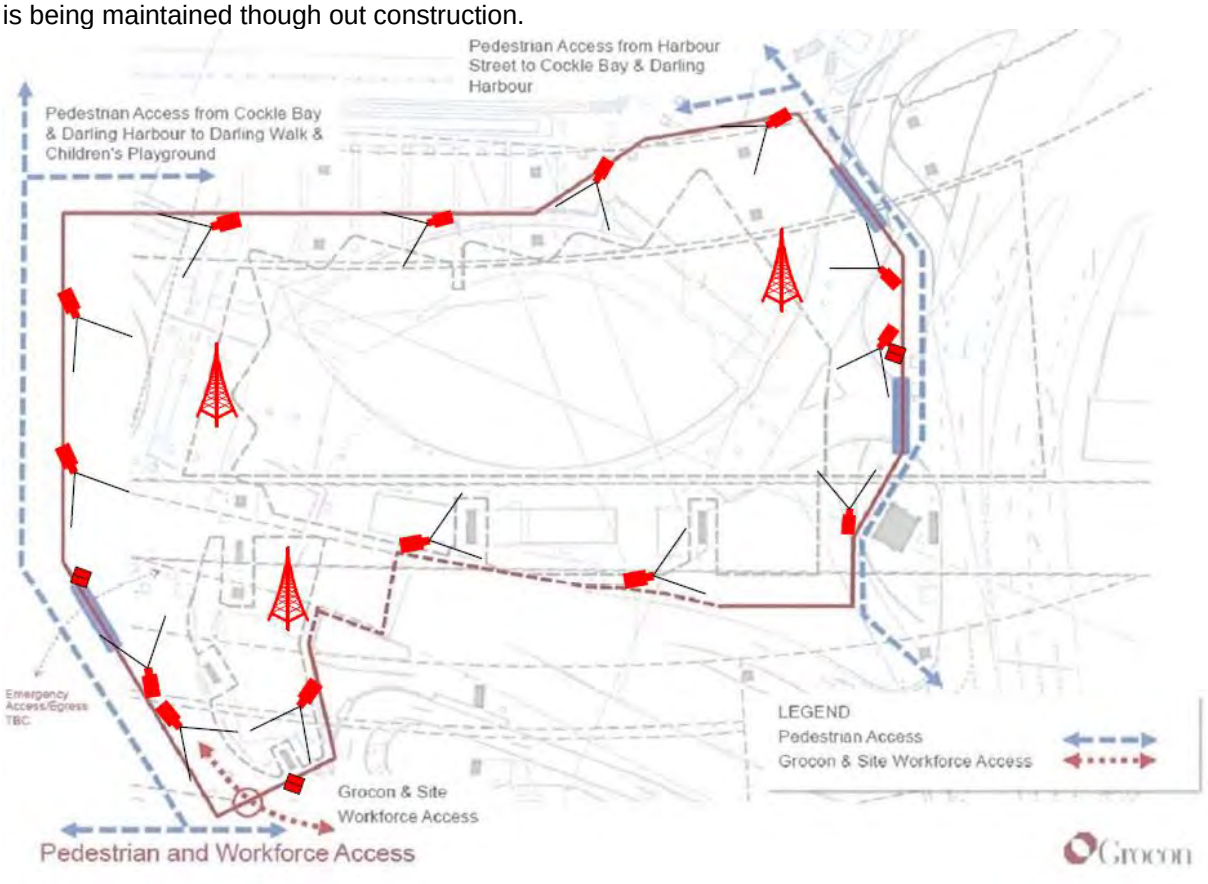
Only those workers or staff who have completed site specific inductions will be issued a card. Visitors to the site will need to attend to the site office, sign in, be issued with a temporary electronic pass, appropriate PPE and be escorted by site personnel at all times.

15.2 Security – I patrol

Grocon will have a combination of electronic motion type systems and mobile 24-hour security presence across the site. This security network will continue to work closely with Grocon and other relative authorities to protect people and property.

Grocon will have a constant live register requiring all visitors to sign in upon entry by virtue of the Blue Glue access system. All visitors are required to wear an identification “visitor” badge and wear appropriate PPE at all times while on site.

All gates are securely locked outside of working hours and patrolled by security staff as required. This security network will continue to work closely with Grocon to ensure that security is being maintained though out construction.

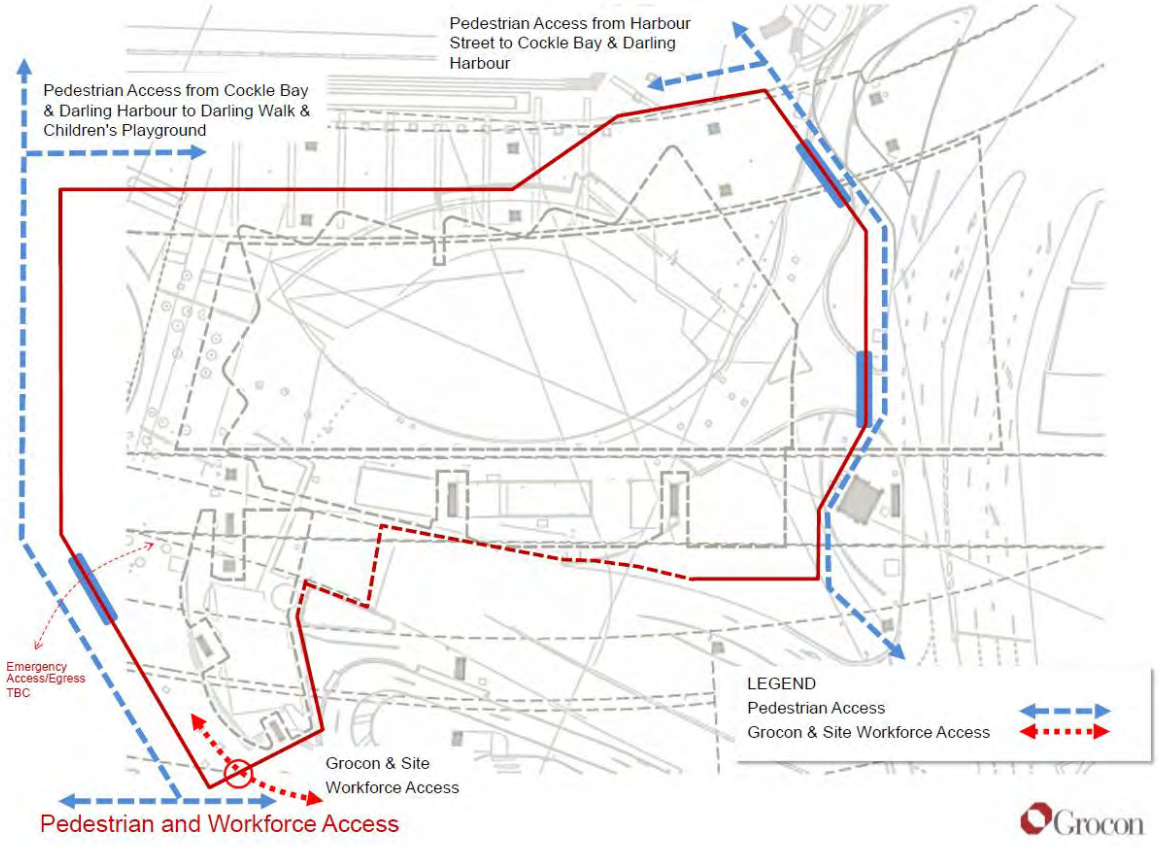


15.3 Construction Workforce

The previous sections described how Grocon will utilise areas adjacent to the Western Elevation Hoarding, the Main Site Entrance and the existing Sydney Visitor Centre for the establishment of both Grocon and the workforce site amenities – lunch sheds, change sheds toilets and showers.

At all times, during the early works and main building works, access to the site for all site staff and workers will be via the gate located adjacent to the Sydney Visitor Centre and the Darling Walk stairs.

Refer diagram – Pedestrian and Workforce Access



15.4 General Public - Pedestrians

The General Public will not be allowed access to the site. Grocon will provide a dedicated pedestrian management team for the construction works zone, to ensure deliveries are received efficiently and safely. The pedestrian management team will be responsible for the management and co-ordination of all pedestrian traffic on Wheat Road and as required adjacent to the existing Sydney Visitor Centre. Due to the nature of the site and the emphasis placed on materials handling, the efficient control and protection of pedestrian traffic is of the utmost importance for this project.

Refer Section 17 - Pedestrian Management

15.5 Vehicle Access - Demolition Phase

During the strip out and demolition phase, construction traffic (single and articulated trucks) will enter the site via Harbour Street and Wheat Road; construction traffic will exit the site via Wheat Road to the north, then Shelley Street and Erskine Street.

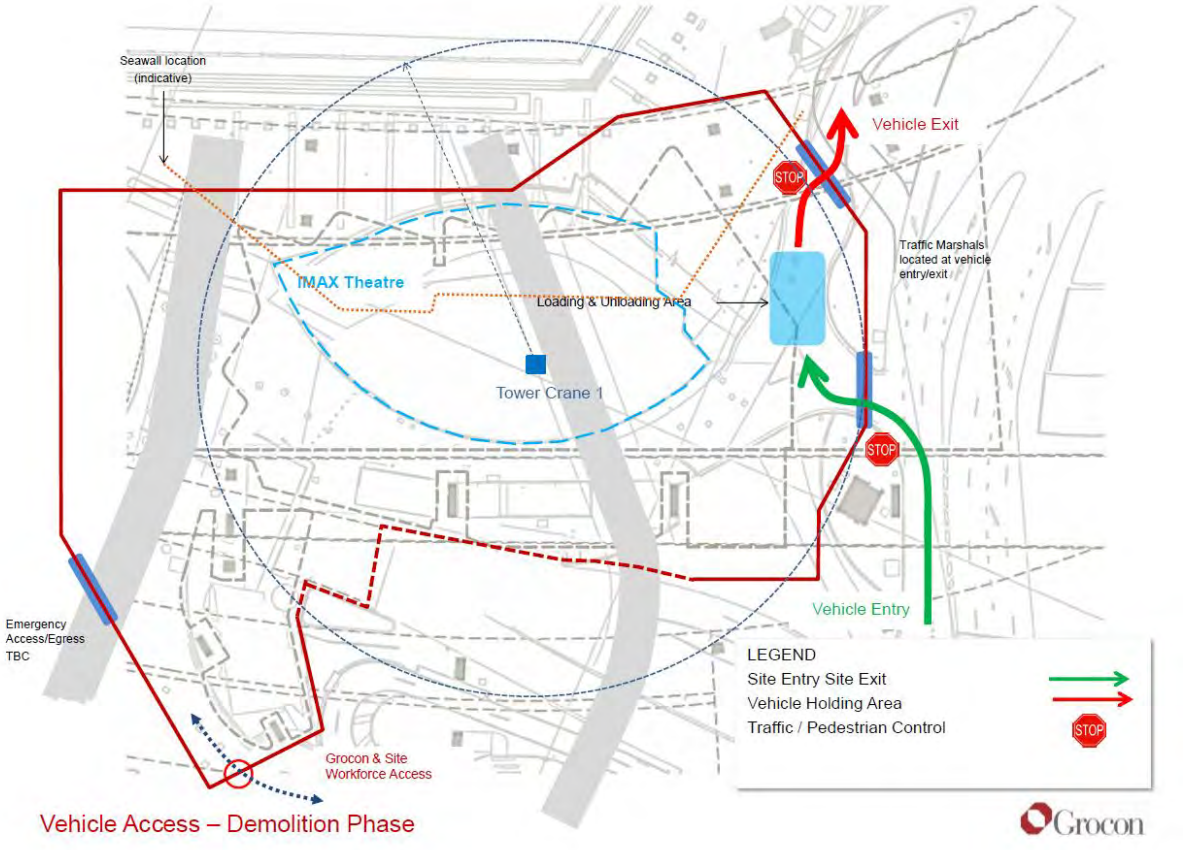
All vehicles will enter the construction site. Vehicles will enter and exit the work area in a forward manner under instruction from authorised traffic controllers

All loading and unloading of materials, plant and equipment will be undertaken within the site boundary (generally to the east of the existing IMAX theatre) - rigid vehicles (up to 12.5m long) and semi-trailers (19m). All trucks exiting the site with demolished material will be tarped and/ or strapped down.

Construction traffic will not be allowed to queue or park within the streets of the surrounding area.

Tower Crane No 4 will be installed to facilitate the demolition of the IMAX. Location under review.

Refer diagram Vehicle Access – Demolition Phase



(note - plan will be amended with simultaneous High Voltage relocation if required)

15.6 Vehicle Access - Groundwork's Phase

Groundwork's can be divided into two discrete elements

1. Structural Works – promenade demolition, bored piling and raft/ground slab construction
2. In ground services – diversion, termination of existing and installation of new services

For all groundwork's, construction traffic (single and articulated trucks) will enter the site via Harbour Street and Wheat Road; construction traffic will exit the site via Wheat Road to the north, then Shelley Street and Erskine Street.

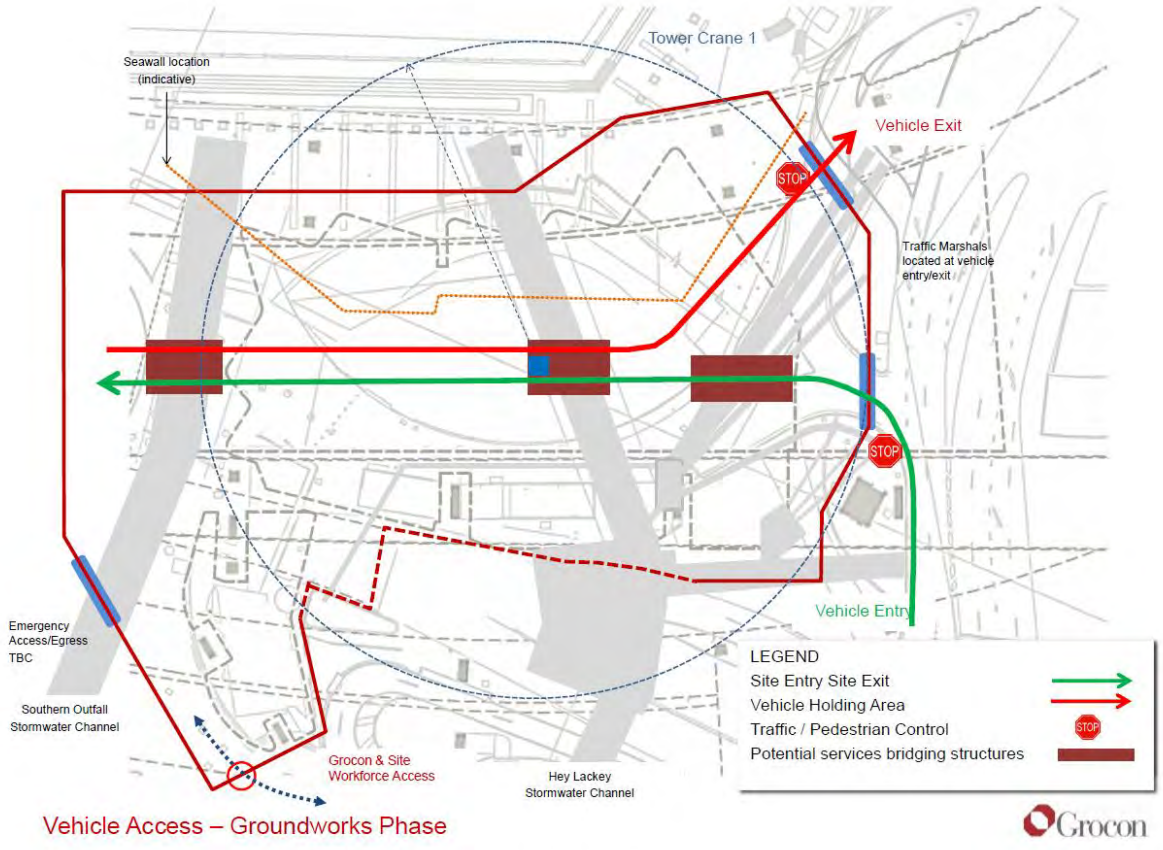
All vehicles will enter the construction site. Vehicles will enter and exit the work area in a forward manner under instruction from authorised traffic controllers

All loading and unloading of materials, plant and equipment will be undertaken within the site boundary (generally to the east of the existing IMAX theatre) - rigid vehicles (up to 12.5m long) and semi-trailers (19m).

Note should the existing stormwater channels not be structurally sufficient to accommodate construction traffic, especially loads associated with piling rigs and chaser cranes, bridging structures will be installed.

Construction traffic will not be allowed to queue or park within the streets of the surrounding area. A dedicated holding area will be agreed prior to commencement of the site establishment works – initial discussions have identified a suitable and available area west of the Anzac Bridge

Refer diagram Vehicle Access – Groundwork's Phase



15.7 Vehicle Access – Main Works Phase

During the Main Works phase, construction traffic (single unit trucks) will enter the site via Harbour Street and Wheat Road; construction traffic will exit the site via Wheat Road to the north, then Shelley Street and Erskine Street.

There will also be an operational haul road through the site, entering off Wheat Rd, with a turning circle near crane 4 and the cinema zone, and back across the site on the northern aspect, exiting through the Wheat Rd diversion.

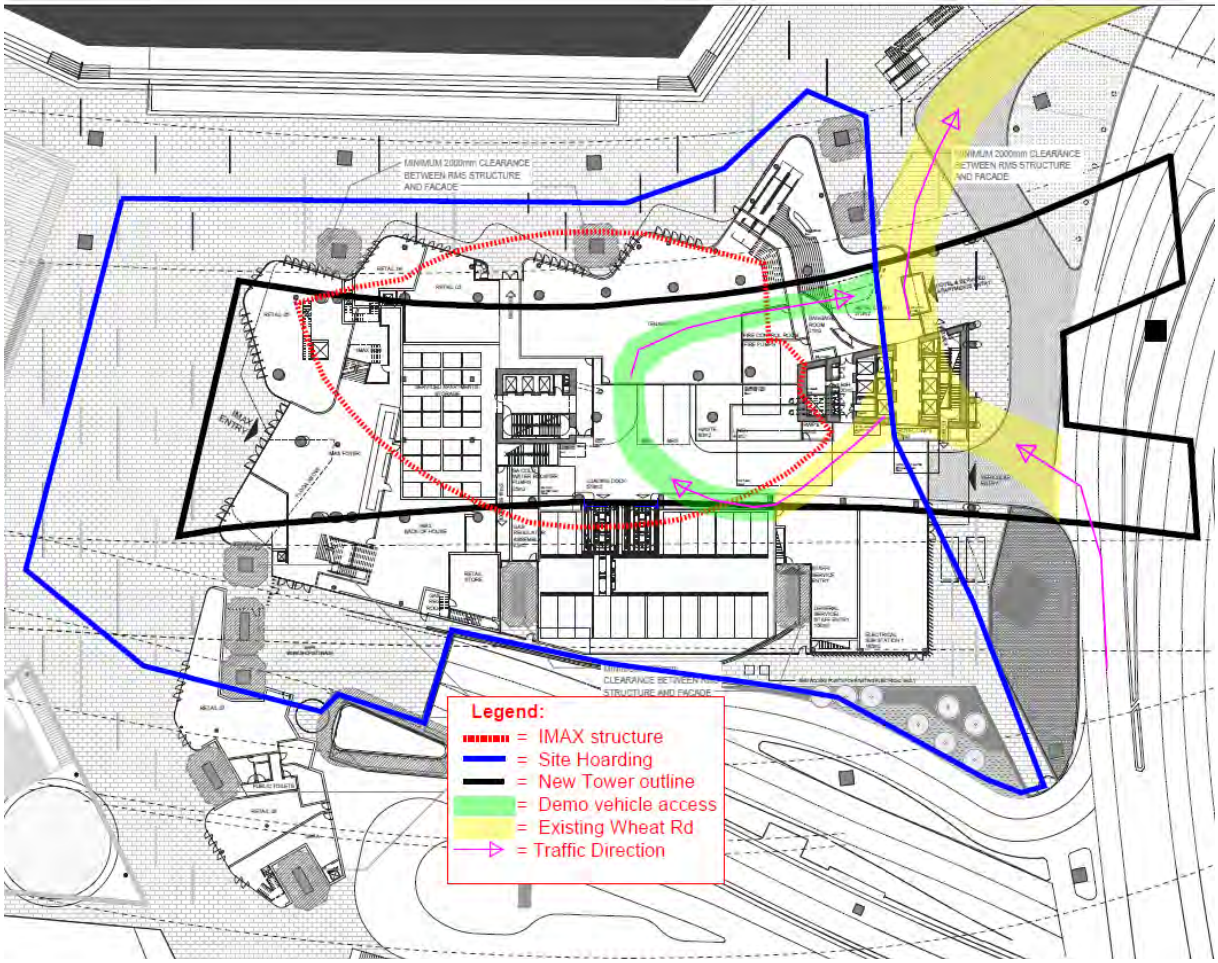
All vehicles will enter and exit the construction site in a forward manner under instruction from authorised traffic controllers

Loading and unloading of materials, plant and equipment will be undertaken as follows.

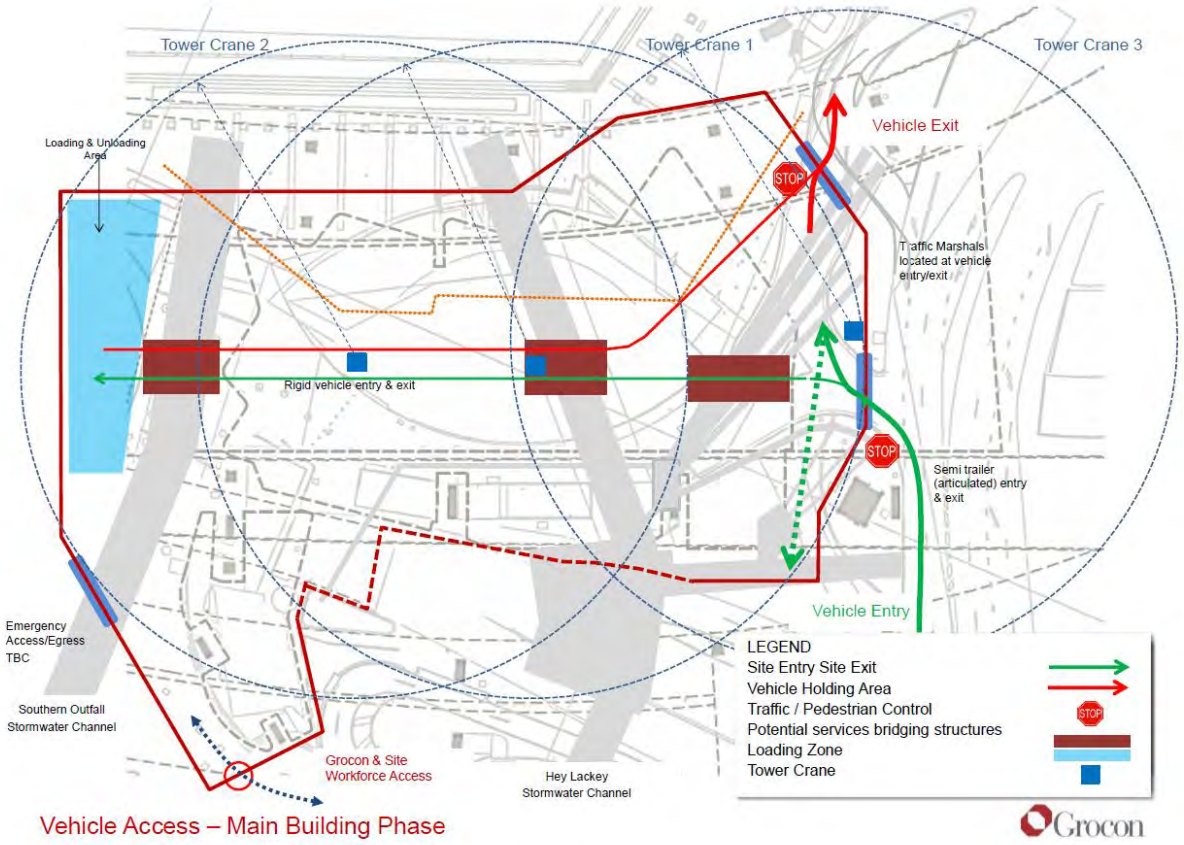
1. All materials and deliveries will enter site though Wheat Rd.
2. Attendant at gate will enquire which area the delivery is for, issue a temporary pass and send the delivery to appropriate crane, unloading bay or gantry.
3 .Cranes 1 and 2 will hoist deliveries through an open construction penetration within the site
4. Cranes 4 will hoist deliveries from a designated area near the east turning circle

Tower Cranes 1,2 &3 (Refer Section 17 Materials Handling) will be installed to facilitate the construction of the Main Building Works.

Construction traffic will not be allowed to queue or park within the streets of the surrounding area.



Refer diagram Vehicle Access – Main Building Phase


Tower Crane 2
Tower Crane 1
Tower Crane 3
Loading & Unloading Area
Vehicle Exit
STOP
Traffic Marshals located at vehicle entry/exit
Rigid vehicle entry & exit
STOP
Semi trailer (articulated) entry & exit
Vehicle Entry
Emergency Access/Egress TBC
Southern Outfall Stormwater Channel
Grocon & Site Workforce Access
Hey Lackey Stormwater Channel
LEGEND
Site Entry Site Exit
Vehicle Holding Area
Traffic / Pedestrian Control
Potential services bridging structures
Loading Zone
Tower Crane
STOP
Vehicle Access – Main Building Phase
Grocon

15.8 RMS Access

RMS will be provided access to all RMS infrastructure for the duration of the works – from site establishment through to completion & handover. Ranging from 1.5 - 2.0 metre clear openings between permanent structures and the RMS infrastructure will be provided.

All construction access, egress and asset monitoring requirements will be agreed with RMS and provided prior to site mobilisation as per the verifier's requirements.

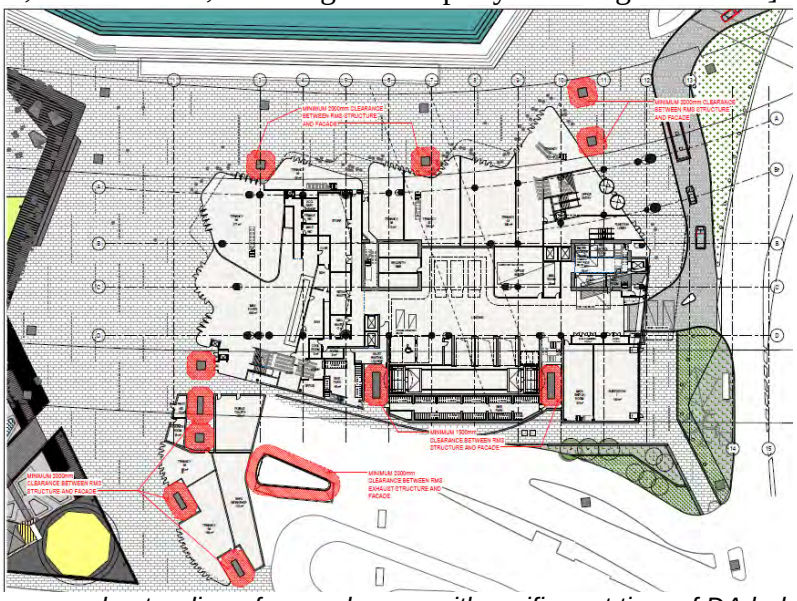
Example WAD :(to be executed)

MAJOR
WORKS AUTHORISATION DEED – PRIVATE FINANCING & CONSTRUCTION

Roads and Maritime Services
("RMS")

The party identified in Item 1 of the Schedule
("Developer")

[This is a Legal Branch precedent document which must only be modified with the approval of the, Environment, Planning and Property Law Legal Counsel]



This drawing is our understanding of agreed areas with verifiers at time of DA lodgement

16. Site Establishment

16.1 Overview

Site Establishment will be provided in two separate phases.

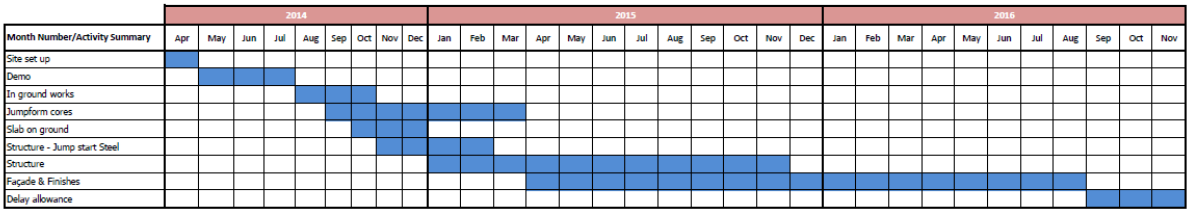
- Phase 1 - Early Works Phase (demolition, HV - Kiosk diversions, service decommissioning, Wheat Rd Gantry , Jemena works , wharf structure, piling works and initial structure).
- Phase 2 - Main Building Works

16.2 Estimated work force and Construction Code of Practice

The estimated work force for each stage of the works is summarised below.

- Phase 1 – Early Works
  - Demolition, HV diversions, service terminations, Wheat Rd Gantry, wharf structure, piling works & initial structure 125 workers
- Phase 2 – Main Building Works
  - Main structure works & services rough-in 200 workers
  - Structure completion, façade, tenancy work & services plus 500 workers
  - Façade completion, roof completion, hotel tenancy fit out & finish workers

	2014									2015												2016										
Month Number/Activity Summary	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Month Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
RESOURCE TOTALS	14	23	28	29	34	89	89	120	127	223	223	238	226	259	279	301	341	376	376	421	346	318	318	333	327	317	327	231	176	0	0	0
Demolition	12	12	12	12																												
Services																																
Hydraulic	1	1	1	2	6	6	6	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
Electrical	1	1	1	1	3	3	3	3	10	15	15	20	20	20	25	25	25	25	25	25												
Mechanical										5	5	15	15	20	20	20	20	25	25	25	25	25	25	25	25	25	15	15	10			
Fire										5	5	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	5	5			
Lifts																16	16	16	16	16	16	16	16	16	10	10	5	5	5			
Structure																																
Formwork - Deck					10	10	10			60	60	60	60	60	60	60	60	60	60	45	30											
Formwork - core						24	24	24	24	24	24	24	12																			
Concrete								10	10	15	15	15	15	15	15	15	15	15	15	15												
Post tensioning												10	10	10	10	10	10	10	10	10												
Reo - Deck								10	10	10	10	10	10	10	10	10	10	10	10	10												
Reo - Jump form						20	20	20	20	20	20	20																				
Jump Start								15	15	15	15																					
Structural Steel roof, etc										10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
scaffold										6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6					
Façade																																
Curtainwall													20	20	20	20	20	20	20	20	20	20	20	20								
Cladding/Roof																								15	15	15	15					
Podium glazing																										10	10	10				
Finishes																																
Partitions & ceiling														40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40			
Tiling																6	6	6	6	6	6	6	6	6	6	6						
Carpet																										10	10	10				
Misc.															15	15	15	15	15	15	15	15	15	15	15	15	15	15				
Paving																											20	20	20			
Landscape																											20	20	20			
Fitout Works																																
IMAX																	20	30	30	50	50	50	50	50	50	50	50	20				
Tenancies																	20	40	40	80	80	80	80	80	80	80	80	40	20			
Preliminaries																																
Crane		3	3	3	3	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9						
Hoist/Lift drivers								2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4			
Traffic controllers		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
first aid			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Carpenter			2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4			
Labourers			2	2	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			



Base on the above, site establishment has been provided to accommodate a maximum of 500 workers excluding the Grocon site project management and supervision staff.

The Construction Code of Practice site accommodation minimum requirements are typically as follows:

- Lunch sheds 1m^2 per person
- Toilets 1 pan for 20 people
- Showers 1 shower per 25 people
- Change 0.5 m^2 per person

16.3 Phase 1: Early Works - Site Establishment

During the Phase 1 works - demolition, wharf structure, piling works and the initial structural works, the main site establishment will be located adjacent to the existing Sydney Visitors Centre/Western Elevation Hoarding and adjacent to the Main Entrance. Site accommodation (minimal) will be located adjacent to the Wheat Road exit gate.

Refer diagram below in blue – Site Accommodation Phase 1

As noted previously, site accommodation will be provided for 125 workers, excluding Grocon site project management and supervision staff.

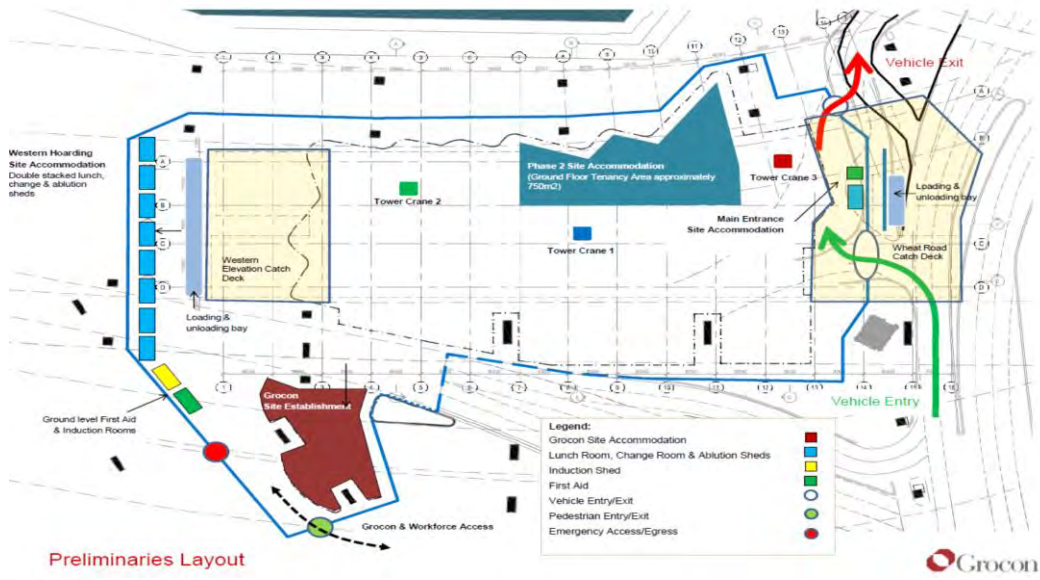
Site Accommodation

- Lunch Rooms: (6m x 3m sheds provides amenities for 18 workers) -- 7 sheds
- Change Rooms: (6m x 3m sheds provides amenities for 31 workers) - 5 sheds
- Ablution Blocks: (6m x 3m sheds provides 2 pans and 2 showers - amenities for 40 workers) - 4 sheds
- First Aid Shed (6 x 3m) – 1 shed
- Induction Room (6m x 3m) – 1 shed
- Dedicated Change Room, toilet & shower facilities for female workers will be included within the Western Hoarding Site Accommodation

Main Entrance Site Accommodation

- Lunch Rooms: (3m x 3m sheds provides amenities for 9 workers) - 1 sheds
- Change Rooms: (3m x 3m sheds provides amenities for 15 workers) - 1 sheds
- Ablution Blocks: (3m x 3m sheds provides 1 pans and12 showers - amenities for 20 workers) - 1 sheds
- First Aid Shed (3 x 3m) – 1 shed

CMP



16.4 Phase 2: Main Building Works - Site Establishment

During the Phase 2 Works – Main Building Works, the site establishment will be located adjacent to the Western Elevation Hoarding and Main Entrance (as for Phase 1) and within the Ground Floor 1 Tenancy Area.

The maximum number of workers is anticipated to be 500. As noted previously, site accommodation will be provided for 125 workers in the Western Hoarding and Main Entrance Site Accommodation, and accommodation for a further 300 workers will be provided in the Tenancy Areas.

Ground Floor Tenancy Area Site Accommodation

- Lunch Area: 300 workers – 300m^2
- Change Rooms: 300 workers – 150m^2
- Toilet Facilities: 15 pans
- Shower Facilities: 12 showers
- First Aid Shed (6 x 3m) – 1 shed
- Induction Room (6m x 3m) – 1 shed
- Dedicated Change Room, toilet & shower facilities for female workers will be included within the Ground Floor tenancy Area Site Accommodation

Refer diagram 1.5 in aqua green Site Accommodation Phase 2

16.5 Grocon Site Accommodation

The Grocon Site Team will peak at approximately 40 staff and will be based nearby at Town Hall House on level 18 (subject to availability or alternate off site location), where there is an uninterrupted view of the site.
The Sydney Visitor Centre toilet amenities will be available for the Grocon Site Team and other accommodation for them, workers and an induction room will be set as part of the Western Hoarding Site Establishment.
There will also be some allocated container storage and flammable goods designated areas.

Note: The crane crew's, hoist & lift drivers, First Aid, carpenters & labourers have been included in general workforce site accommodation numbers.

(refer diagram 16.3)

17. Pedestrian Management

The general public will not be allowed access to the site

Grocon will ensure that the proposed hoardings, staged public domain works and signage around the perimeter of the site will provide the general public with access ways that are maintained in a clean, well illuminated and safe manner at all times consistent with SHFA approved plans and specifications.

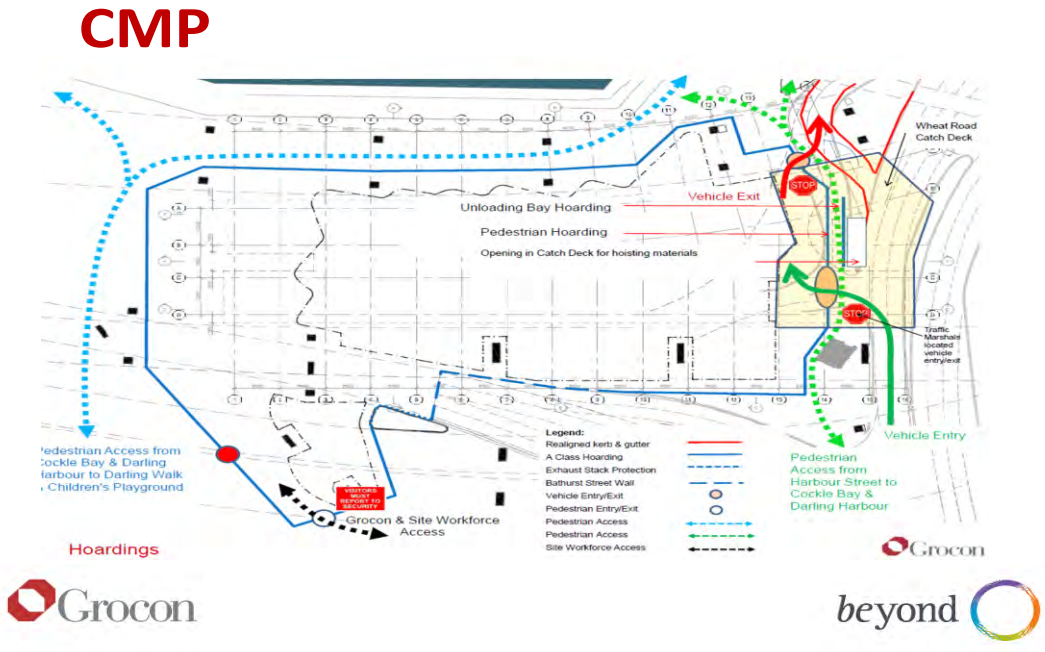
Section 14 described the proposed extent of the hoardings and catch decks to the perimeter of the building. These will be established immediately following site possession, made secure and fitted with appropriate public directional signage, lighting and the like.

Grocon will, in conjunction with SHFA, COS and relevant stakeholders agree the professional graphics and signage that will be applied to the hoardings.

Grocon will provide a dedicated pedestrian & traffic management team for the construction works zone, to ensure deliveries are received efficiently and safely. The pedestrian management team will be responsible for the management and co-ordination of all pedestrian and construction vehicular traffic interfaces including on Wheat Rd, the haul road and as required adjacent to public domain works. Due to the nature of the site and the emphasis placed on materials handling, the efficient control and protection of pedestrian traffic is of the utmost importance for this project.

Due to the extent of time between the original DA approval and construction, we have engaged GTA to review the surrounding works which are significant, to assess and recommend any further additional controls

Prior to any “big event” days at Cockle Bay / Darling Harbour i.e. New Year’s Eve, Australia Day, International Boat and Motor Show etc., Grocon will ensure that all perimeter hoardings have been inspected, secure and are of acceptable aesthetic state that is required and expected for a large scale showcase event.



18. Traffic Management Plan

A draft Traffic and Pedestrian Management Plan has been developed for The Ribbon and is included in Appendix C of this Construction Management Plan. This plan will be finalised upon approval of the Hotel scheme DA.

A full consultative approach will be undertaken when finalising the Traffic and Pedestrian Management. All stakeholders will be engaged including:

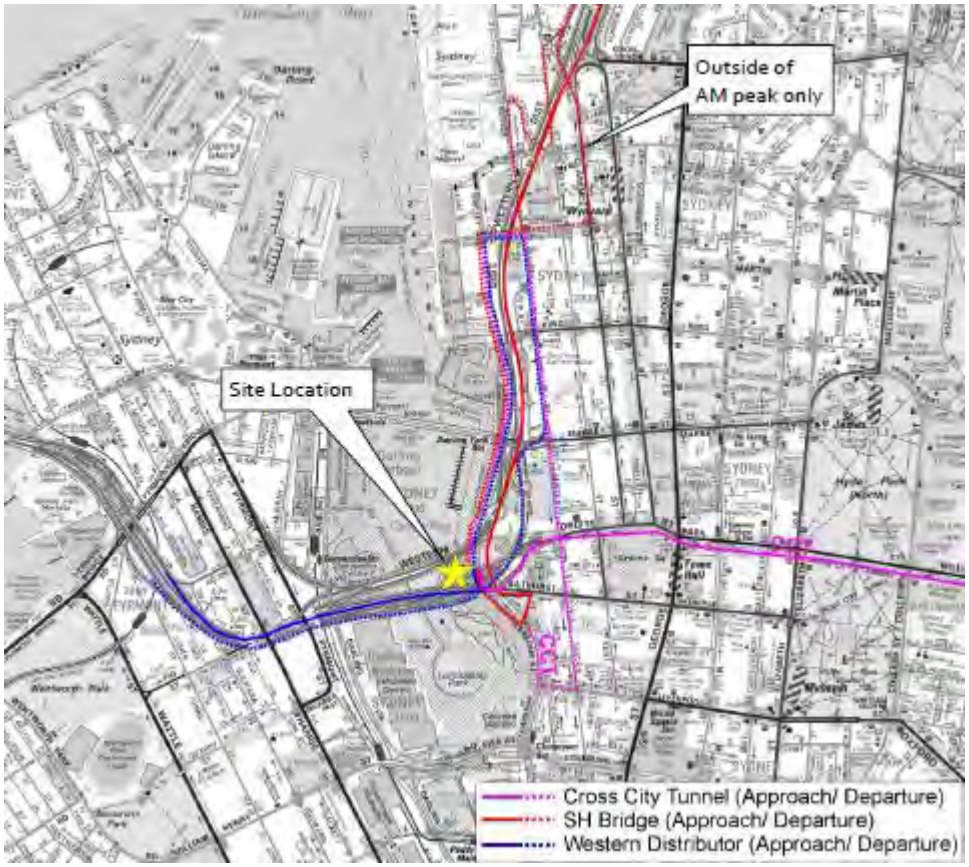
- Sydney Harbour Foreshore Authority
- Cockle Bay Property Owners
- City of Sydney
- McDonalds Property Owners
- Commonwealth Bank Property Owners
- RMS & TMC
- Sydney Buses
- Sydney Sightseeing Buses
- Sydney Taxis
- Transgrid, Ausgrid, Sydney Water, Telstra, Jemena and other service providers
- Sydney Visitors Centre
- Infrastructure New South Wales
- Darling Harbour Live (Destination Sydney)
- NSW Department of Planning and Infrastructure
- The Traffic and Pedestrian Management Plan will ensure the following are implemented during the construction period;
- Maintain full operations and access to adjoining businesses throughout construction – particularly Darling Walk, McDonalds drive through restaurant & Cockle Bay retailers
- Maintain full access to services & infrastructure (Sydney Water, Ausgrid, Telstra etc.) during construction
- Maintain full scheduled maintenance & emergency access to RMS infrastructure during construction
- Maintain Sydney Sightseeing Bus and taxi access to Wheat Road
- Maintain access for Darling Harbour maintenance and service staff
- Maintain pedestrian access to Cockle Bay, Darling Harbour & Darling Walk
- Provide designated safe pedestrian routes around the perimeter of the site
- Ensure the removal of demolished and excavated materials from site is performed in a safe & efficient manner
- Create and maintain a construction zone on the Wheat Road frontage.
- Control all construction traffic to and from the construction zones in Wheat Road
- Ensure suitable traffic control personnel in place at all times along Wheat Road

With the close proximity of public transport, site personnel will be encouraged to make their way to The Ribbon via ferries (King Street Wharf), trains (Town Hall Station), light rail or bus, all of which are readily available within easy walking distance from the project site entrance.

There will be no construction staff or workforce private car parking facilities on site.

As the CBD and Darling Harbour area is a constant congested zone for vehicle movement, a planned approach to vehicles entering the city, arriving on site and leaving the site must be adopted to avoid late deliveries and minimise any confusion or delay for drivers.

Arrivals and departure route plans are proposed to make use of the key streets within the CBD – and to gain access to the main freeways and motor ways as quickly as possible. A strict combination of delivery schedule boards and use of electronic booking will be established with allocated time periods given to each supplier and integrated into the Blue Glue system.



If access to the site is not available on arrival, trucks will be directed to do a loop of the city until access is available.

The final Traffic and Pedestrian Management Plan will reflect the following stages of construction:

- Demolition and HV Diversion Phase
- Groundwork's Phase
- Main Building Works Phase

19. Programming and Planning

Grocon will deliver the project through programming and planning to meet an agreed construction period, within commercial, budgetary and safety constraints. This will be achieved through the active management of all phases of the project from Design through to Construction, by anticipating issues and pro-actively responding.

The initial Design & Construction Program is included in Appendix D of this Construction Management Plan

Our approach to programming and planning will be refined as the design development phase progresses and will take account of and make allowances for the following:

- Design development
- Authority's coordination and approval
- Site and existing services investigation
- Outcomes from consultation with the key design team representatives, subcontractors, stakeholders and tenancy user groups (when required).
- Evolving procurement methodologies
- Options/opportunities including buildability assessments that will allow us to lock-in the optimal timing and extent of options

During the planning phase Grocon adopts the optimum delivery strategy, formulating a construction methodology, and calculating the project's needs in terms of resources. This process takes into account past performance and established techniques, specific external constraints, and seeks to identify any innovations which may assist the project.

An important consideration for successful planning and programme management is the open and collaborative identification of areas of potential quality, safety, environmental, time, and accordingly cost related risks. The measures to be implemented include:

- The establishment of programmes detailing;
    - overall site investigation & identification of constraints
    - site establishment & temporary protection
    - construction activities
    - look ahead or short term activities
    - procurement including the identification of long lead-time risks
    - commissioning and handover activities to identify the processes and timing of actions leading up to delivery of the facilities to the end users
- Periodic and regular program reviews to identify areas of departure and opportunities to increase the rate of activity, such as through re-sequencing, thus allowing expedient attention by the Project Team.
- Periodic and regular reporting to management for tracking and resourcing purposes.
- Periodic and regular site level programming and planning meetings wherein all medium and shorter term site activities are tool boxed and micro managed by our Project Team.

We will further optimise our proposed construction staging / scheduling to take advantage of Darling Harbour busy/quiet periods and construction concurrencies.

A Project Control Group report inclusive of a status programme will be provided regularly (minimum monthly) or as otherwise requested by the PCG in both hard copy and soft copy formats.

Due allowances will be made for resourcing levels to optimise trade flows and hence maximise cost efficiencies and minimise personnel movements, traffic, pedestrian and services disruptions. Adequate allowances will be made for inclement weather delays.

20. Stormwater & Erosion Management Plan

20.1 Environmental Management of Cockle Bay

Grocon understand the sensitivity of the Darling Harbour/Cockle Bay area as one of Sydney's premier water bodies and tourist attractions and as such will ensure the following key Water Quality Objectives are addressed:

- Erosion, contamination and sedimentation will be minimalized as part of the construction activities associated with The Ribbon development.
- We will control the quality of stormwater leaving the construction site such that no unacceptable impact occurs to the adjoining watercourses or stormwater drains discharging into Cockle Bay
- Maximise opportunities for stormwater recycling
- Secondary contact recreation (i.e. boating) is not affected.

We recognise that the Sydney Metropolitan Catchment Action Plan (CAP) is expecting ongoing improvements with respect to impacts by the built environment on Sydney Harbour and as such, Grocon will be guided by the intent of "ANZECC and ARMCANZ - 2000 Guidelines" and the "Sydney Metropolitan Catchment Action Plan (CAP)".

Grocon will use an in house Environmental resource to develop a Stormwater & Erosion Management Plan. As a minimum this plan will address the following.

- Promenade demolition and construction works potentially effecting the quality of Cockle Bay
- Sediment laden water from The Ribbon construction site may potentially flow into the stormwater and/or adjacent surface water bodies
- Stormwater with excessively high or low pH values could run-off from potential stockpiles
- Stormwater collected in excavations and requiring disposal
- Groundwater entering excavations and requiring disposal after dewatering
- Site cut off drains eroding and increasing site water sediment loads
- Vehicles leaving the site depositing dirt/mud on public roads after rain periods
- Removal of bulk materials off site escaping from vehicles and polluting roadways
- Debris and litter collecting along roads and in catch drains and consequently effecting the quality of Cockle Bay
- Site contamination through the potential for an overflow of fuel/chemical storage containers and contamination from equipment and plant repair areas.

21. Construction Methodology – Overview

Grocon has developed a construction methodology specifically tailored to the complex requirements of The Ribbon. We believe this methodology will minimise disruption to the Darling Harbour and Cockle Bay operations and allow a successful and smooth project delivery. Specifically, consideration has been given to the following;

- Our role in the timely delivery of design documentation for procurement of works in line with the project requirements
- The management of construction and shop detailing documentation to ensure efficient and effective construction methodologies may be implemented
- Pedestrian and vehicle traffic management, including our approach to co-ordination and co-operation with other relevant projects (Refer Sections 14, 15 & 16)
- The safety of personnel, the public and property, both within the construction site boundary and adjacent affected areas (Refer Sections 3 & 12)
- The impact of construction on our neighbours and the authorities and services that we interact with, particularly the Sydney Harbour Foreshore Authority, Cockle Bay Property Owners, McDonalds Property Owners, Commonwealth Bank Property Owners, RMS, Sydney Buses, Sydney Sightseeing Buses, Sydney Taxis, Ausgrid and Sydney Visitors Centre. (Refer Section 11)Vodafone
- Impact of the additional construction traffic on the already congested CBD street network (Refer Section 18)
- Our collaborative approach to the management of typical construction disruptions such and noise, dust and vibration
- Management of disruptions related to the protection and maintenance of existing infrastructure

22. Construction Methodology - Demolition Phase

22.1 Demolition Management Plan

A Demolition Management Plan (Site Quality Plan, OH&S & Environmental Management Manual) has been prepared and is included in Appendix E of this CMP. During the DA approval period the Demolition Management Plan will be reviewed, finalised and approved.

All works will be completed in accordance with the Work Health & Safety Act 2011 and Work Health & safety Regulations 2011.

The demolition scope of works will comprise the following

(Attached in Appendix E)

22.2 Demolition Subcontractor Site Establishment & Preparatory Works

- Conduct a detailed hazardous materials audit
- Carry out detailed analysis of the Cockle Bay Wharf and existing services assets regarding their structural capacity and the effects that construction impacts may have.
- Carry out any required dilapidation reports and surveys, geotechnical or structural investigation and reporting.
- Confirm designated truck routes into and exiting the CBD
- Establishment of all demolition phase environmental management procedures - sedimentation and environmental controls to the site and surrounding stormwater systems
- Finalise all SWEMS and induct all workers to the site.
- Erect perimeter barricade tape and signage to the immediate work area as deemed necessary by a competent demolition supervisor.
- Secure all entry points to the associated work faces and obtain services sign off.
- Obtain structural and civil certification of all temporary and permanent retaining structures required duration demolition - Hay Lackey stormwater channel, the southern outfall channel, and retained portions of the existing promenade
- Establish protocols for RMS infrastructure inspection and maintenance regimes and potentially modify the RMS infrastructure in the vicinity of the elevated roadway exit ramp near the SE corner of the site

22.3 Hazardous Materials Audit

After the IMAX building has been vacated, a detailed hazardous materials audit will be conducted to determine the extent of possible materials to be removed from site. Hazardous materials will be removed and the works signed off by the hygienist. Demolition works will follow as noted in the following section.

22.4 Geotechnical Investigation, Promenade Wharf Surveys and Dilapidation Reports

Additional geotechnical investigation works (if required), Promenade Wharf Surveys and Dilapidation Reports will be carried out prior to demolition works commencing.

22.5 Demolition Phase - Environmental Management

The following issues will be address prior to demolition commencing:

Dust Minimisation
Dust control caused by groundwork's (excavation) trades will be via the use of gurneys and hoses and street sweeping of the area adjacent the site and Wheat Road will occur when required. Tarpaulins will cover truck trailers and bogies to ensure containment of material during transit.

Mist spraying will be implemented during demolition works to suppress the migration of dust. Vacuum cleaners and water pumps within the works areas shall effectively suck up and treat and contaminated mist spraying water from further contamination of the work site.

Vehicle Tyres
All roads surrounding the site are hard surface roads. Grocon will install appropriate wheel washing measures (cattle grates, wheel washers, hose down bays) to ensure that road surfaces are kept clean at all times. This will be supplemented by manually sweeping when needed.

All vehicles will be loaded from concrete or sealed hardstands and any minor spillages shall be swept up immediately by the gate men.

Cockle Bay Sediment & Stormwater Control
The demolition contractor will ensure that sediment controls measures such drain socks, geofabric and or sand bags or the like are installed at critical locations around the site to divert, dam and remove, filter or catch water containing sediment from entering Cockle Bay, storm water or sewerage systems.

Waste water derived from demolition and excavation activities (when using mist spray for dust suppression) will be filtered before entering the storm water system.

Any ground water or storm water entering the basement into the excavation area shall be collected into a sump excavated within the excavation. The water in the sump shall be allowed to settle over night with the aid of flocculants and then pumped out into the existing storm water systems pending approval by local council. As a general rule, no water exceeding 60mg/L of sediment will be allowed to enter the cities storm water system.

All demolition and excavation works will comply with:

- The Department of Land and Water Conservation's Erosion and Sediment Control Manual and the Department of Housing Manual Managing Urban Stormwater – Soils and Construction (August 1998)
- NSW Protection of the Environmental Operations Act 1997.

Should groundwater require dewatering, further advise will be sought from the geotechnical engineers and dewatering systems shall be designed and implement under the direction of the relevant engineers and authorities.

Waste Transport and Disposal

A detailed Waste Management Plan will be developed prior to construction commencing. Waste Management procedures on the site will follow the waste management hierarchy (avoid, reduce ,re-use, recycle).

All contaminated and non-recyclable materials to be loaded and transported to an EPA approved landfill sites. All loads departing the site shall be covered with tarpaulins to ensure that any sediment does not escape the truck or bin body.

All recycled materials will be disposed of at the closest and relevant recycling depot. Details of the recycling depots will be described in the site Waste Management Plan.

Storage of Dangerous Goods
Flammable fuels such as petrol, diesel, Oxy-acetylene, oils, etc. will be stored in bunted and lockable compounds with sufficient ventilation. Material safety data sheets for all of flammable and potentially harmful liquids will be stored on site.

Sludge Water (Demolition Phase Works)
Given the location of The Ribbon to Cockle Bay, Grocon will ensure that all sludge water derived from saw cutting activities will be collected by bunting around existing drain holes to ensure that water does not enter the existing storm-water system and sewer systems.

Water will be continually vacuumed from all floors to ensure that it is captured. Drainage holes will be lined with geotextile fabric as a backup should bunted walls be overflowed. Bunding will be made from sand bags and geotextile.

Water will be emptied from wet vacuums and poured into 200L drums. Water will be allowed to settle overnight and siphoned into the existing sewer systems should the water at the top be acceptable. If settling is not achieved, waste drums will be sealed and loaded onto tipper trucks and taken to an appropriate facility where it will be passed through a triple interceptor and settlement tank.

At all times, waste management activities will be carried out in accordance with the Environmental Protection Waste Management Policy 2000

22.6 Demolition Sequence

Generally the demolition sequence will comprise the following sequence:

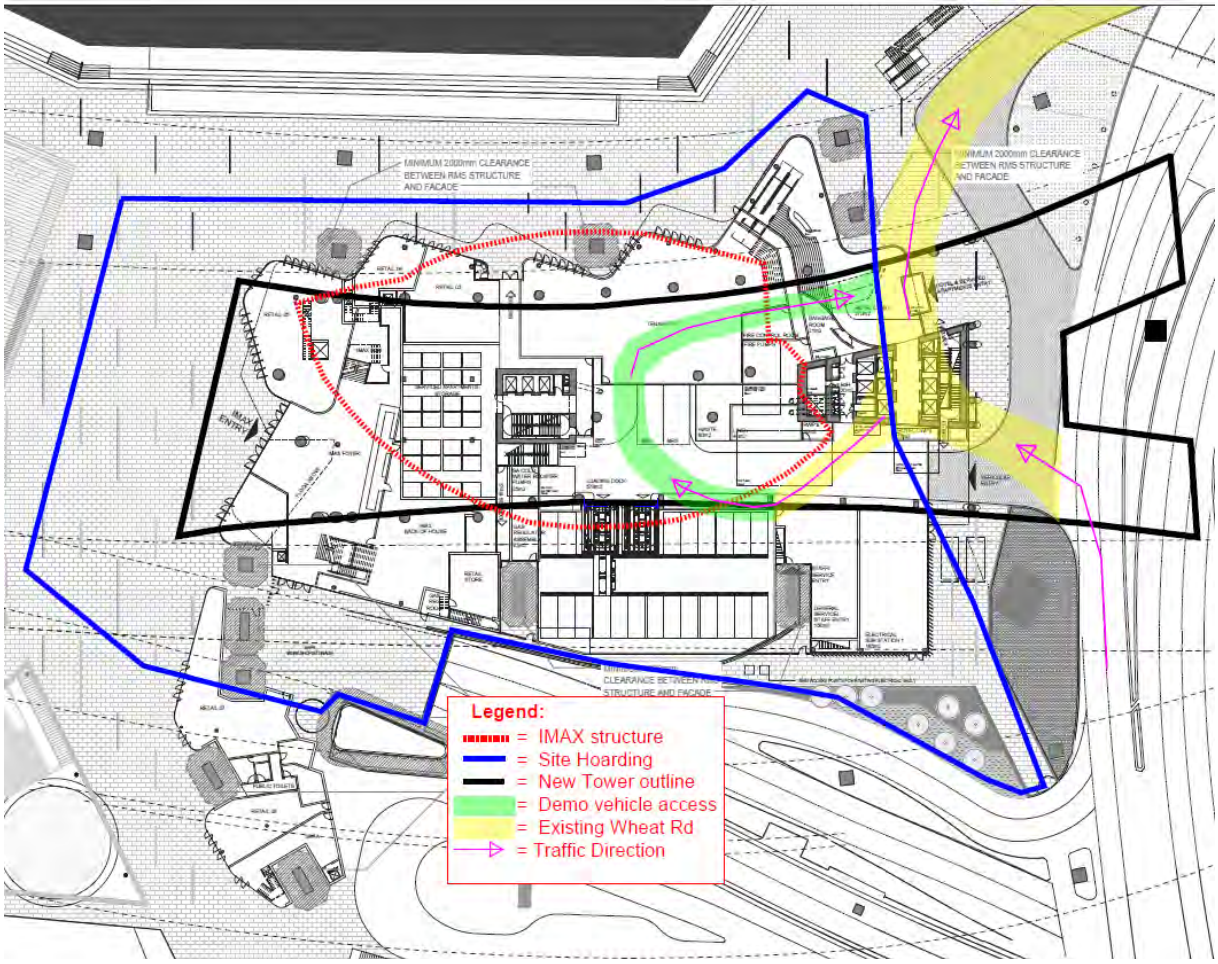
1. Soft strip out of the IMAX building.
2. Erect first Tower Crane (may vary subject to successful contractor methodology)
3. Erect external protection scaffold fully encapsulating the building
4. Removal of roof and associated structures.
5. Demolition of building (total demolition).
6. Material handling.
7. Early core piling and raft access

1. **Soft Strip Out of the IMAX building;**
   Soft strip out of building is to be done mechanically utilising certified (by structural engineer) skid steer loaders and mini excavators where possible. The remainder of strip out works are to be performed manually.
   All rubbish and masonry debris derived as a result of the soft strip out are to be loaded out progressively from each floor via a rubbish and masonry debris chute located in the North East corner of the floor plate.

2. **Erect First Tower Crane** (crane no 4)Grocon will install the first of four (4) tower cranes to enable the materials handling associated with the demolition phase of the works, this will be the western most crane as the other cranes cannot be installed prior to earlier critical activities . Whilst Crane 1 is installed upon completion of the Wheat Rd gantry and cranes 2 and 3 are cast into the core raft slabs.

3. **External Demolition Protection Scaffold around IMAX Building** Prior to demolition commencing, the existing IMAX Building will be fully enclosed with a demolition protection scaffold, specifically the north and south faces will be lined with heavy duty mesh to prevent falling objects.

4. **Removal of roof and associated structures**
   Roof sheets to be removed manually, stacked and bundled ready for removal via the tower crane to ground level for progressive load out. Structural steel beams and purlins are to be removed utilising tower crane. Beams and purlins will be slung by the tower crane, then manually unbolted / dismantled. Individual sections will be lowered to ground level for progressive load out. The same process will be implemented for the roof structure that protrudes from the existing IMAX building .A full SWEMS will be provided for all works, in coordination with the demolition contractor.



5. Demolition of building (total demolition)

Upon completion of the strip out and removal / demolition of roof structure, the demolition of building will proceed.

- Install scaffold around the perimeter of the existing IMAX Building.
- Demolition will start from the top floor (Level 7) and each floor will be completely demolished before proceeding to the floor below.
- All masonry walls in the Eastern and Western Cores are to be demolished conventionally utilising a mechanical excavator.
- All walls will be demolished inwards (into the building line) utilising bucket / ripper attachments. As walls are being demolished, skid steer loaders will transfer masonry debris to the proposed masonry debris chute.
- Eastern and Western core walls are to be demolished to slab level before proceeding with walls to Southern and Northern elevations and slab demolition.
- All reinforced concrete walls to the Southern elevation are to be saw cut into panels of approx. 6 metres x 1.2 metres (tower cranes dependant) and lowered down to ground level for progressive load out.
- All slabs are to be demolished conventionally utilising a mechanical excavator with a hydraulic breaker attachment.
- All debris will fall to floor below where the material will be traversed to designated load out chute as marked in attached drawings.
- Upon completion of each floor, machinery used for demolition will be craned down to the floor below.
- The above process is to be repeated for each floor until level 2 is reached.
- Once level 2 has been reached, the remainder of the demolition will be carried out utilising 30 – 40 tonne excavators with hydraulic breaker / and or grab and bucket

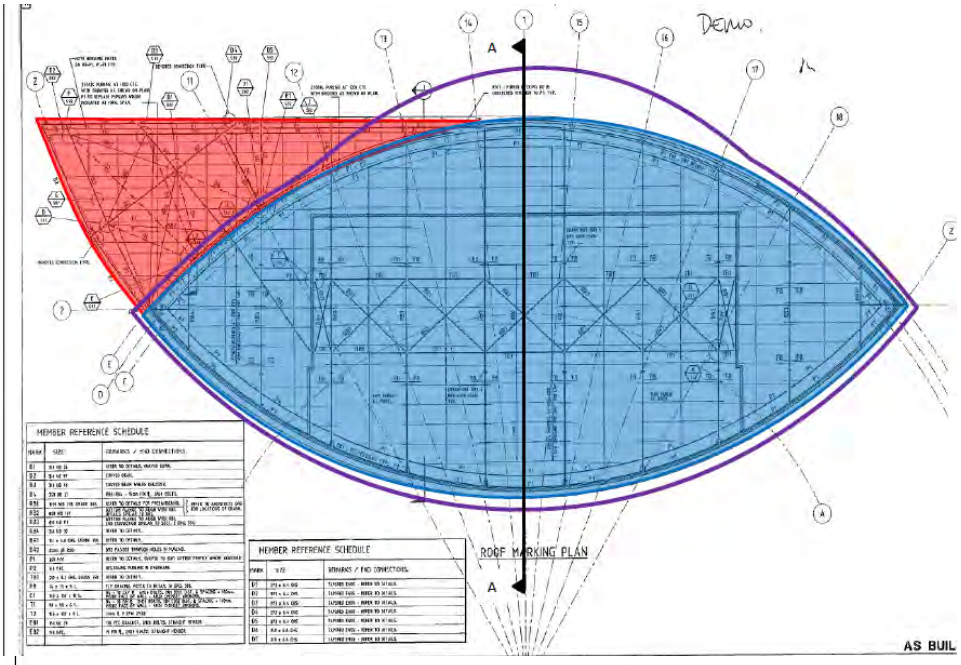
attachments working off Ground Level. This process will include the demolition of the Ultra Floor.

- Excavators will reach up to the top of the Ultra Floor and break up the concrete working east to west and working down to Ground. All demolished materials will be loaded out progressively.

If at any time the works / sequencing is to change or the demolition methodology requires altering, all works are to cease and SWEMS are to be amended and workers will be re-inducted by tool box talk.

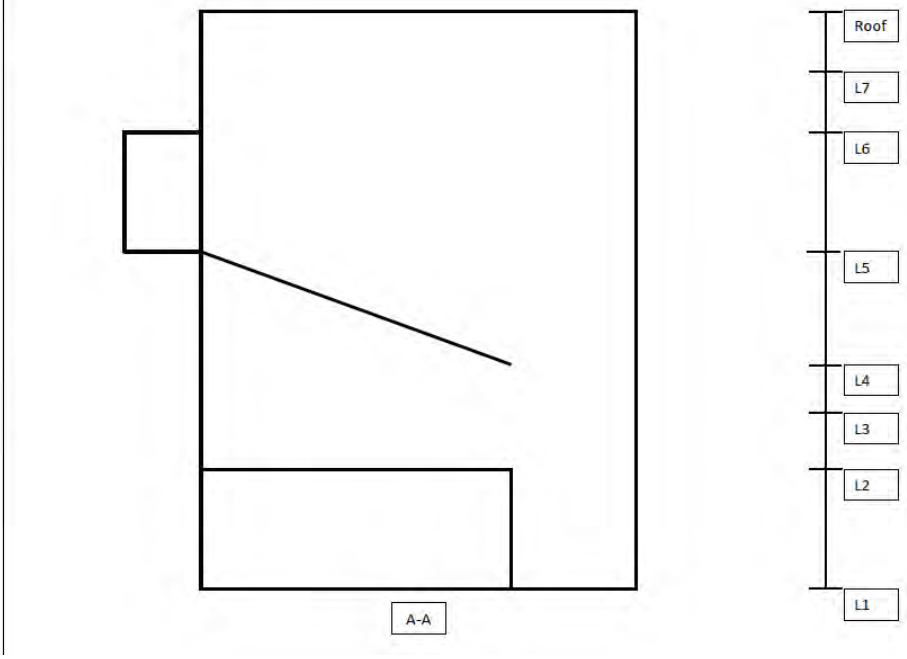
Main Demolition:

- Red Section to be removed first by peeling roof sheets back and cutting and lifting steel members progressively.
- Scaffold to be erected (Shown in purple) to full extent of building.
- Blue Section to be removed by peeling roof sheets back and cutting and lifting steel members progressively.



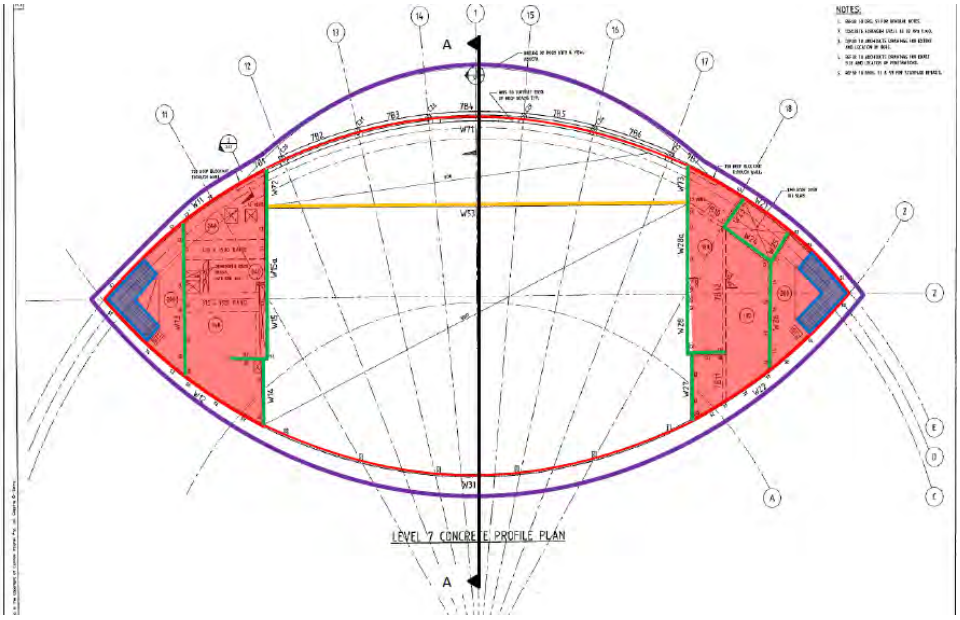
General Notes:

- Demolition will be from top down
- Harnesses to be worn during demolition process to remove roof structure
- Scaffold to be erected after North/West corner removed
- Internal slabs, walls and other structures to be demolished using small machines to level 3
- External walls to be demolished by cut and lift method using tower crane (Assumed 10t blocks) to level 3 (Underside of Western Distributor)
- Remainder of structure to be demolished from level 3 down using 45t excavators



Main Demolition:

- 5 – 12t excavators (pending load rating of slabs) will be lifted onto the suspended slab (Red Shading).
- Machines to break slab away from the middle and head towards the stair cases on the West and East. Walls in green to be demolished progressively.
- Rubble will fall to the level below during this process.
- Stairs to be demolished from top down as the excavators track down to the next level.
- Wall shown in orange to be demolished using crushing jaw to be fitted onto crane. (detailed method shown in *Jaw Crushing Method*)
- Outside walls shown in red are to be cut into 4x4m blocks and lifted down (Detailed method shown in *Cut and Lift Method*)



6. Material Handling

Section 15.5 details specific vehicle access requirements, generally, all demolition materials will be loaded from Ground Floor - refer diagram Vehicle Access – Demolition Phase.

Trucks will enter and exit the work area in a forward manner under instruction from authorised traffic controllers. Trucks are to enter and exit the works zone from the Eastern end. Trucks will be loaded via excavators and or Tower Crane and all trucks will be tarped / strapped prior to leaving site.

22.7 Waste Management & Recycling

In recent years the waste management industry has responded positively to industry pressure and government legislation. As a result Grocon are able to ensure accurate reporting is available and efficient management of waste separation for recycling is assured. Grocon regularly achieve 90%+ recycling rates on all its construction waste.

Waste management facilities will be located adjacent to the site exit gate.

23. Construction Methodology - Groundwork's' Phase

Once the Demolition Phase is complete, the Groundwork's' phase will commence. This will comprise the following:

This will comprise

1. Loading Checks and Temporary Structures, bridges for Hay Lackey channel and southern outfall culverts.
2. Erection of Tower Cranes 4 ,1, 2 and 3
3. Promenade Works
4. Balance of services Relocation
5. Core piling, raft and jump form mobilisation
6. Bulk & Detailed Excavation
7. Piling and Pile Cap Works
8. Raft Slab Construction

23.1 Loading Checks & Temporary Structures

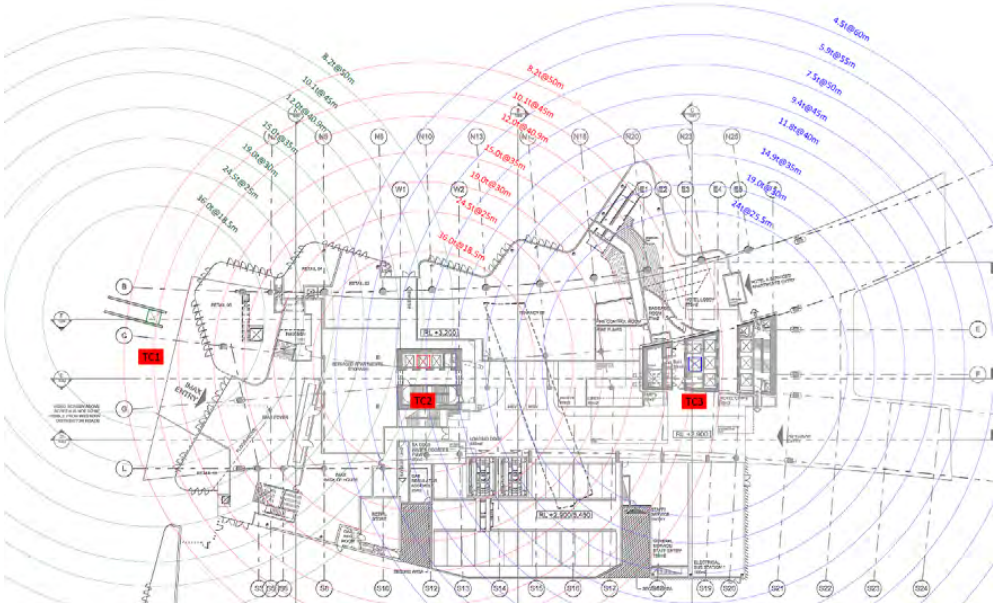
Loading checks and temporary structures will be installed (as required) for materials handling and construction over the existing Hay Lackey stormwater channel, the southern outfall channel, in ground services and retained portions of the existing promenade

Temporary foundations required for tower cranes, man and materials hoists and erection aids for the structural steelwork will be constructed.

A notice of intention to commence excavation, shoring and underpinning will be sent to the PCA and City of Sydney at least 7 days prior to the commencement of those works.

23.2 Erect Tower Cranes No: 1, 2 and 3

During the Groundwork's Phase Grocon will erect the first, second and third tower cranes in order to have the cranes available for the main building works phase and in particular for the erection of the heavy trussed steelwork.



Refer diagram - Tower Crane Locations

23.3 Promenade Works

Removal of promenade finishes and demolition of portions of the existing reinforced concrete promenade structure (constructed over water) to enable the ground floor raft slab to be constructed.
Barges from Cockle Bay will be used (if required) for demolition works and to provide support for new construction works over water. Temporary structures will be constructed on top of promenade for piling works over water.
Temporary formwork systems over water will be installed for the construction of pile caps, raft slab and new promenade structure

23.4 Services Relocation/ Protection As stated in Section 8.2, all service disconnections to the existing IMAX building will be carried out prior to any demolition works commencing.

The existing stormwater, gas, water and sewer services to the IMAX building will need to be re-diverted, out of the construction buildings footprint. Although the existing Southern Outfall and Hay Lackey stormwater channels will remain, procedures will be put in place to protect these assets during and after the construction of the new building.

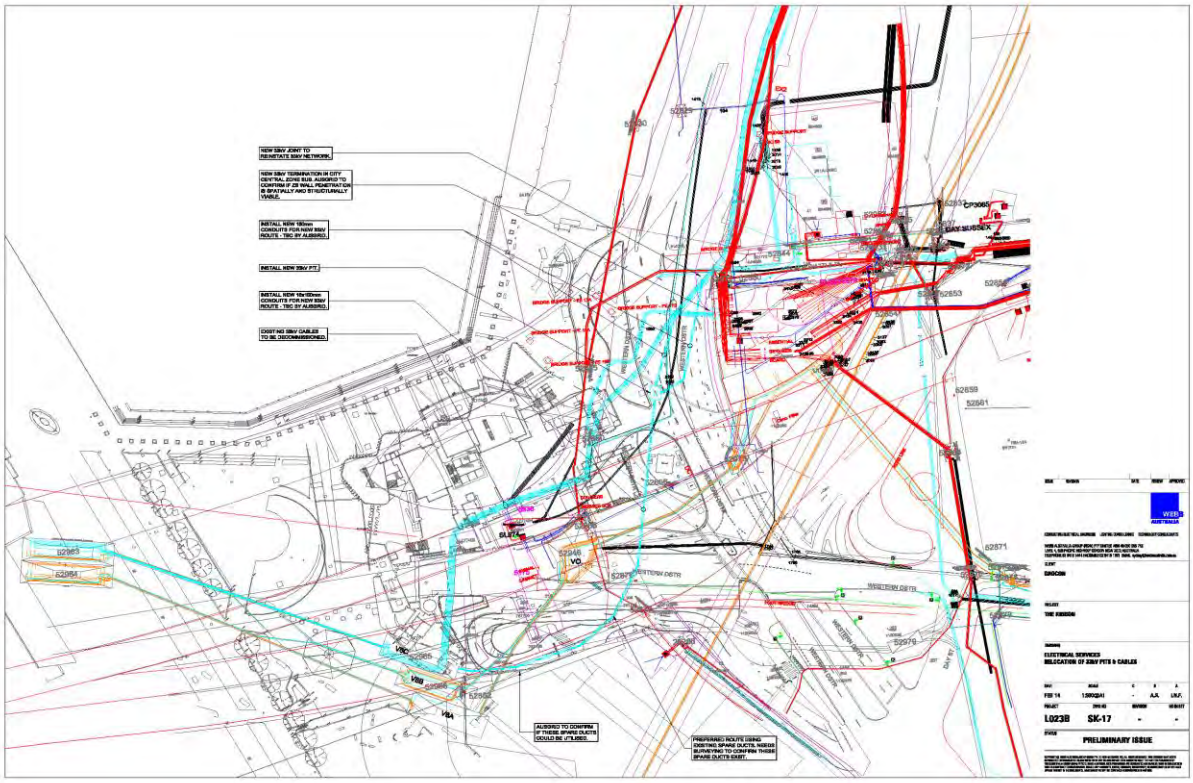
The electrical supply kiosk substation to the IMAX building will be temporarily retained to provide power during construction. But there are several existing HV conduit pathways (11kV & 33kV) which require diverting out of the buildings footprint, concrete encasement and/ or structurally transfers over same. This will be co-ordinated and/ or undertaken by Transgrid/ Ausgrid to ensure no disruptions to the services provided.

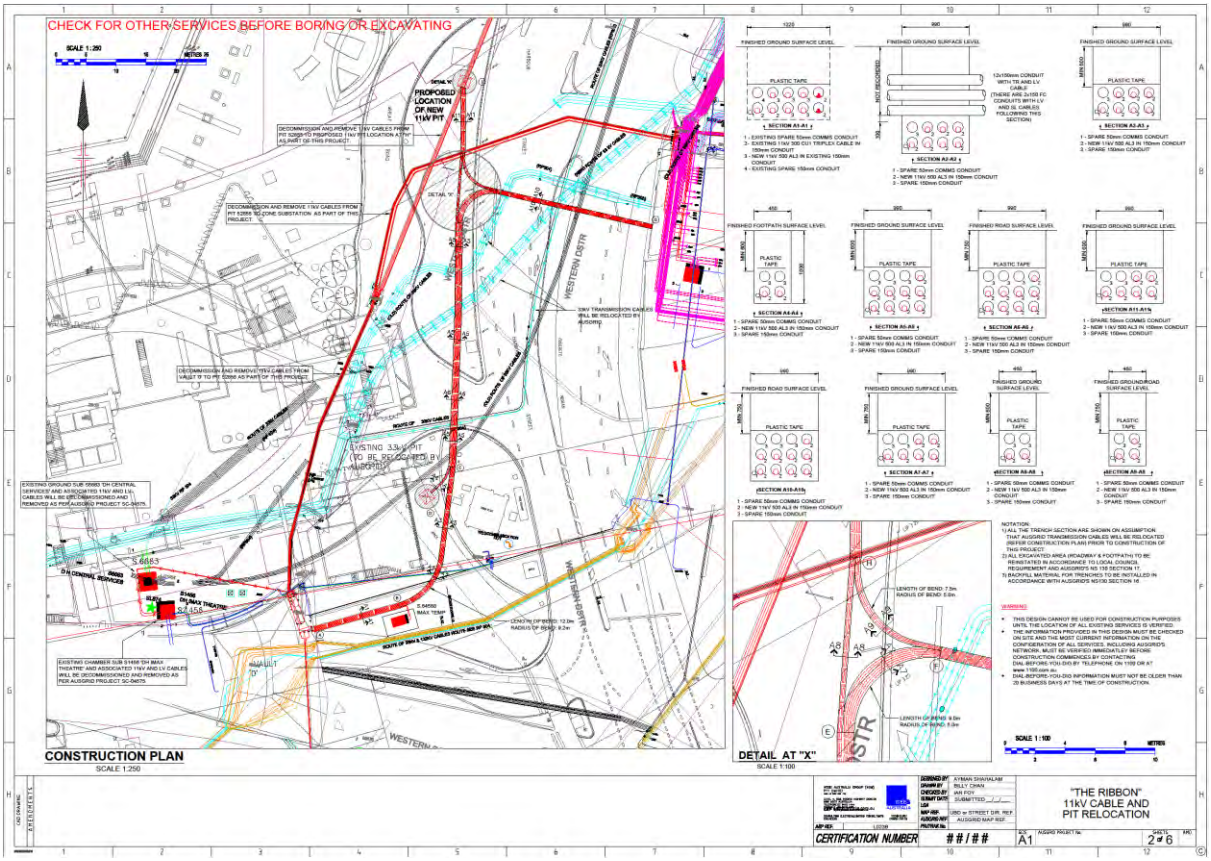
11kV

The relocation of the 11kV 'distribution' HV power will supply power to The Ribbon's substation via pit D. The drawing shows the multiple RED lines which are the new conduits which we will install, along with the pits (main pit at G, minor pits at H, F & E). Trenching works take place under the Western Distributor into the Ausgrid zone substation. The major pits are approx. 3 x 4.5 x 2.4H with all conduits trenched and concrete encase. On completion of works, Ausgrid will pull cables, commission and energise.
The old 11kV route is then decommissioned and can be removed in the excavation stage. This has been discussed with electrical contractors and estimates of 2-3 months to undertake these works have been targeted following Ausgrid and RMS approvals.

33kV

Works involve the rerouting of the multiple conduits which carry the HV cables serving Barangaroo. These existing conduits (LIGHT BLUE) start from the main Vault 8C and traverse across the existing site, south of IMAX. These also cross the Western Distributor and go into the Zone Substation as well as continue up the road to serve Barangaroo.
The proposed new route is also shown but it now starts from Vault 0 and runs adjacent to the Western Distributor to a new major pit and then connects to the existing conduits serving across to the Zone Substation (no new conduits are required under the road). It also connects to the existing conduits serving Barangaroo which will need a major pit in the Western Distributor for which trenching is required under the Western Distributor.



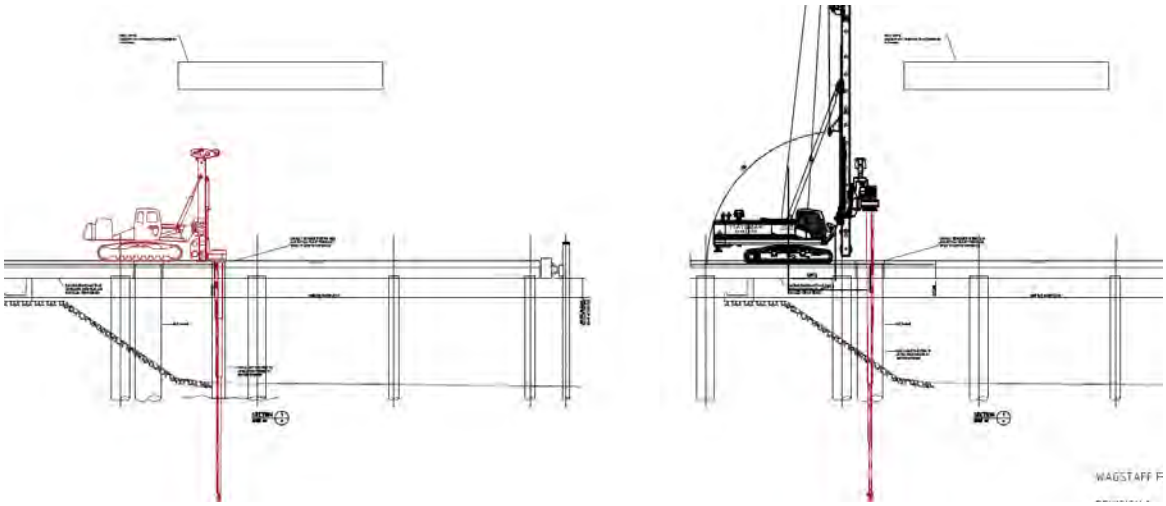


The existing Transgrid / Ausgrid vault will require modification to facilitate the access of future cables. This has been discussed & agreed in principal with the Network Administrators.

23.5 Piling and Pile Caps

Bored piles will support the ground floor raft slab and will be socketed into the sandstone bedrock. Large diameter piles are to be bored with permanent steel casings through water and/or soft soils (mainly along the northern elevation of the building), and using temporary steel casings where piles are located in stable fill.

Sheet piling will be installed to retain water and/or soil at localised deeper excavations for cinema toe and/or lift overruns, at side faces and steps in raft slabs, and at pile caps.



(Images showing different piling rigs for open air space and under bridges.)

23.6 Bulk and Detailed Excavation

Bulk excavation and construction of the raft slab within the building footprint (thickness varying from approximately 0.4m to 1m), and including staged stressed, post-tensioned reinforcement Detailed excavation for core raft slabs and lift pits

Bulk and detailed excavation of smaller diameter piles, thinner raft slabs, and ground beams for podium structures outside the footprint of the main building will occur.

All material removed from site is to be sorted and disposed of in accordance with the Waste Minimisation and Management Act of 1995. All contaminated and non-recyclable materials will be loaded and transported to EPA approved landfill sites.

All loads departing the site shall be covered with tarpaulins to ensure that any sediment does not escape the truck or bin body.

23.7 Raft Slab Construction

The Ground Floor raft slab will accommodate the approx. 1000mm (with approx. 2000mm @ the lift cores) and 400mm deep slab over the new promenade. The raft slab is likely to be heavily reinforced and post tensioned.

24. Construction Methodology - Main Building Works Phase

24.1 Structure Overview

The structural solution for The Ribbon comprises the following:

- The structural solution is a structural steel and a CF210 steel deck solution.
- The solution also incorporates a “Jump Start” structural steel and composite slab solution which will be implemented from Ground Level to Level 3 between the cinema and eastern foyer.
- “Stadium construction” and hanging IMAX cinema seating and Ball room spans between cores
- Significant transfer structures over the Hay Lackey Channel & HV conduits and the installation of heavy duty shoring towers to support the IMAX structural steel.
- Significant truss structures over the IMAX cinema, ballroom and eastern elevation of the building to distribute loads associated with the changing floor slabs.
- Car stacker (in lieu of basement car parking) housed in a structural steel framed enclosure

The Main Building Works Phase will comprise the following structural elements:

1. Grocon Lubeca Jump Form Systems
2. Jump Start structural steelwork and Hay Lackey Channel transfer structure
3. IMAX and Ball Room trusses ,structural steel and Kingfloor slab construction
4. Wheat Road structural steel and composite slab construction
5. Structural steel slab structure

Descriptions of the structural elements follow and the sequencing is depicted diagrammatically in Section 24.8

24.2 Eastern & Western Core - Grocon Lubeca Jump Form Systems

The Grocon Lubeca Jump Forms / core formwork system will not be established until the raft slab bases are complete. The systems will be set-up and established at Ground Floor level and will see the Eastern jump form setup first followed by the Western jump form.

Approximately 21 jumps will be needed to complete the Eastern core and 16 to complete the Western core. This will be followed by dismantling. Typically the core formwork will be progressed a minimum of 3 levels above the leading concrete or structural steel deck.

The eastern jump form will have the kicker/initial pour followed by 3 pours (2 jumps) in order to clear the jump steel that is to be erected between the cores. The western jump form will require to reach level 13 RL 51.730 so there is full connection access to the upper truss members at level 11 RL 45.330. This equates to 12 pours (11 jumps) at approximately 3 9 m high pours in order to clear the IMAX structural steel. Localised connection points / anchoring systems for the principal structural steel wings will be detailed, co-ordinated and cast-in within the required pours.

The western jump form will progress concurrently with the eastern jump form, or lag by, between one to two weeks.
When the core is three to four levels above the leading formwork deck, the core construction cycle will be adjusted to maintain this separation.

24.3 Jump-Start Structural Steel

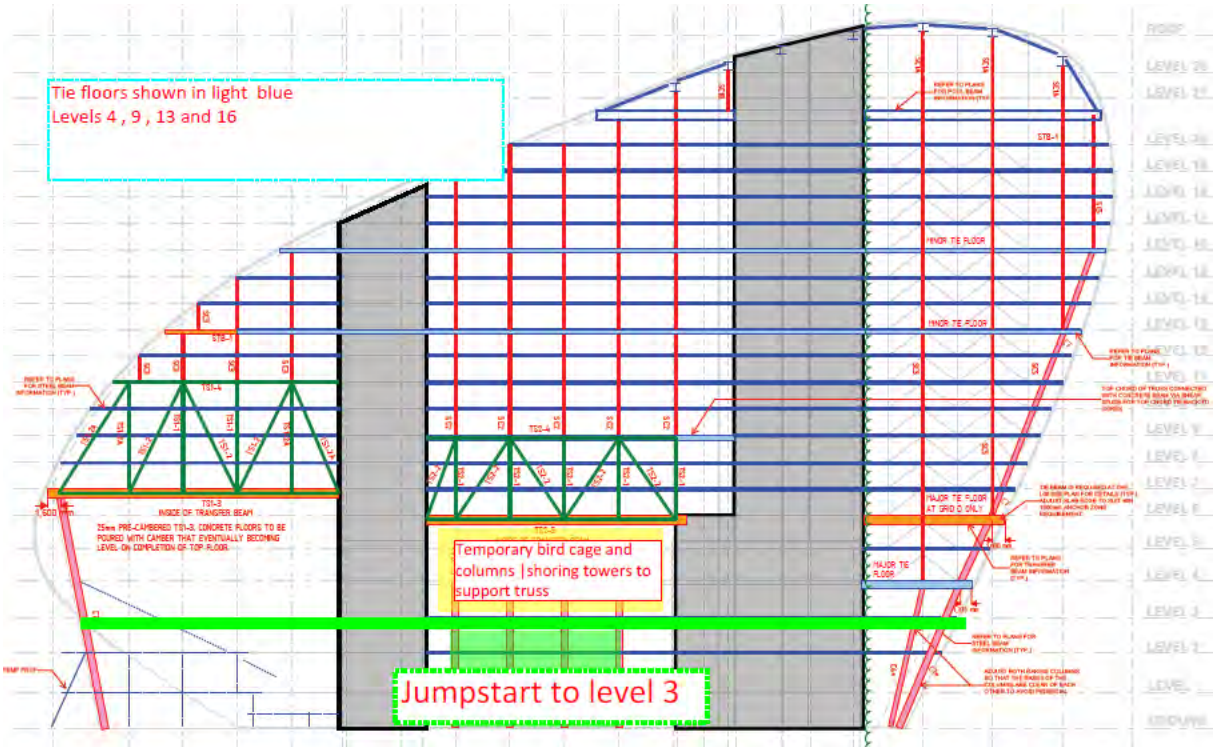
In conjunction with the Grocon Lubeca jump forms progress, Grocon will be installing a Jump-Start structural steel solution and jumping past the level 1 and 2 structure .

The Jump-Start will see the construction of the vertical structural elements accelerated up to level 3 via the use of structural steel framing including large diameter concrete filled steel tube columns.

The Jump-Start enables level 1 and 2 slab to be “left behind” and constructed at a later date. Construction can then progress simultaneously on the typical reinforced concrete levels above and on the non-typical structural steel and composite structure levels associated with the Jump –Start.

The Jump-Start will be tied back to the core structure for stability. Erection of the Jump-Start structural steel would commence when the jump forms are clear of the working deck in a west to east manner. Jump-Start erection works will be carried out via the use of Elevated Work Platforms and Boom Lifts.

The Jump-Start structural steel would be delivered to site and (where possible) assembled at ground level before being lifted into position. The Ribbon tower crane network is based around this methodology.

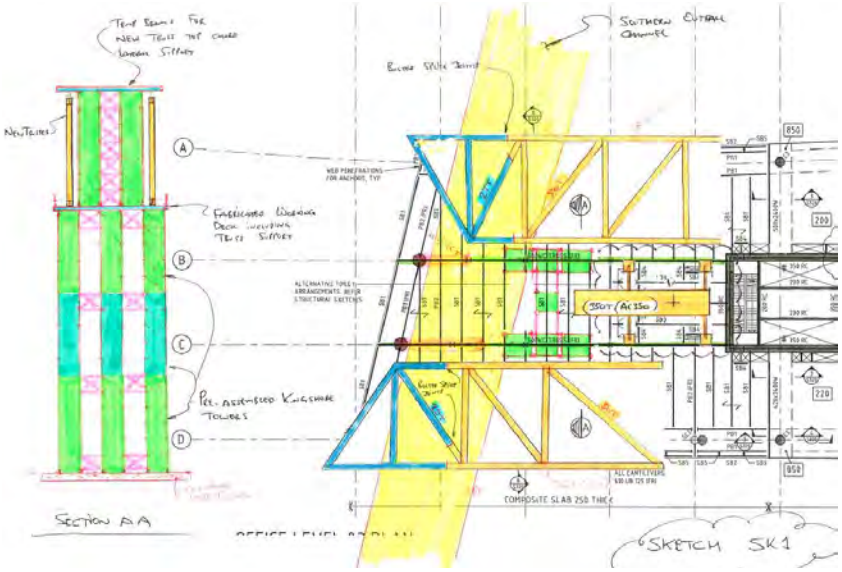


Given the proximity to the RMS elevated roadways and the safety of workers, pedestrians and vehicles below the Jump-Start; structural steel would be installed complete with preformed edges, metal decked soffits and the Workright Edge Protection Handrail System. Screens will be erected off the ground slab where possible to eliminate risk of falling objects.

24.4 IMAX structural steel options, composite slab construction & Freeway protection

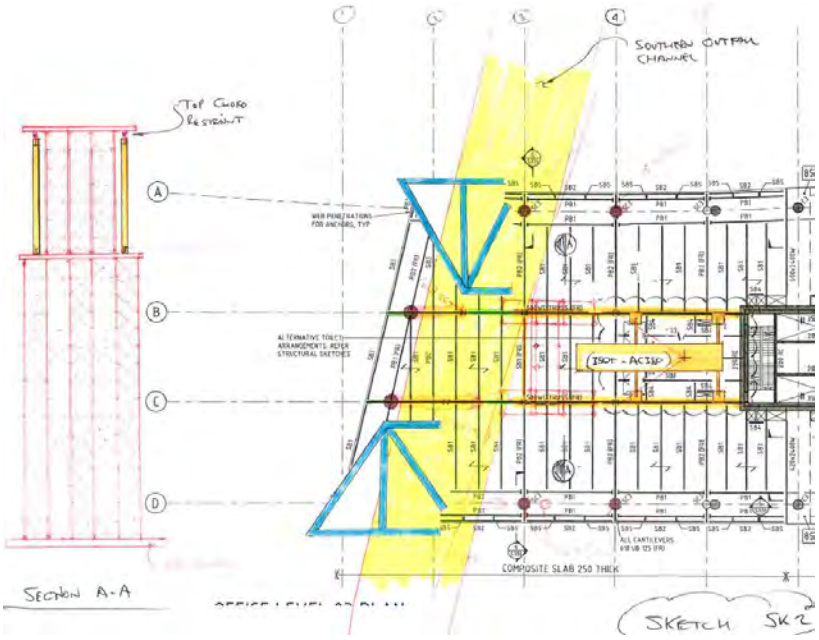
The IMAX structural steel truss installation will commence when the western jump form has cleared the base of the IMAX truss (11-12 jumps). The columns and cinema framing will be progressively installed. The following are options for installation methodology:

Option 1: Proposed methodology



SKETCH - SK1

1. Pre-assemble Kingshore towers off site
2. Pre-assemble trusses on ground (Note:- Bolted splices)
3. Pour strip footings for Kingshore Towers
4. Erect Kingshore towers and prefabricated working deck using Tower crane or mobile crane (Note:- Access tower will need to be provided to outside face of Kingshore)
5. Setup 350T mobile crane and erect Truss portions. Fit top chord restraints prior to crane removal. Utilize tower crane to install set of floor beams from temporary working deck.



SKETCH – SK2

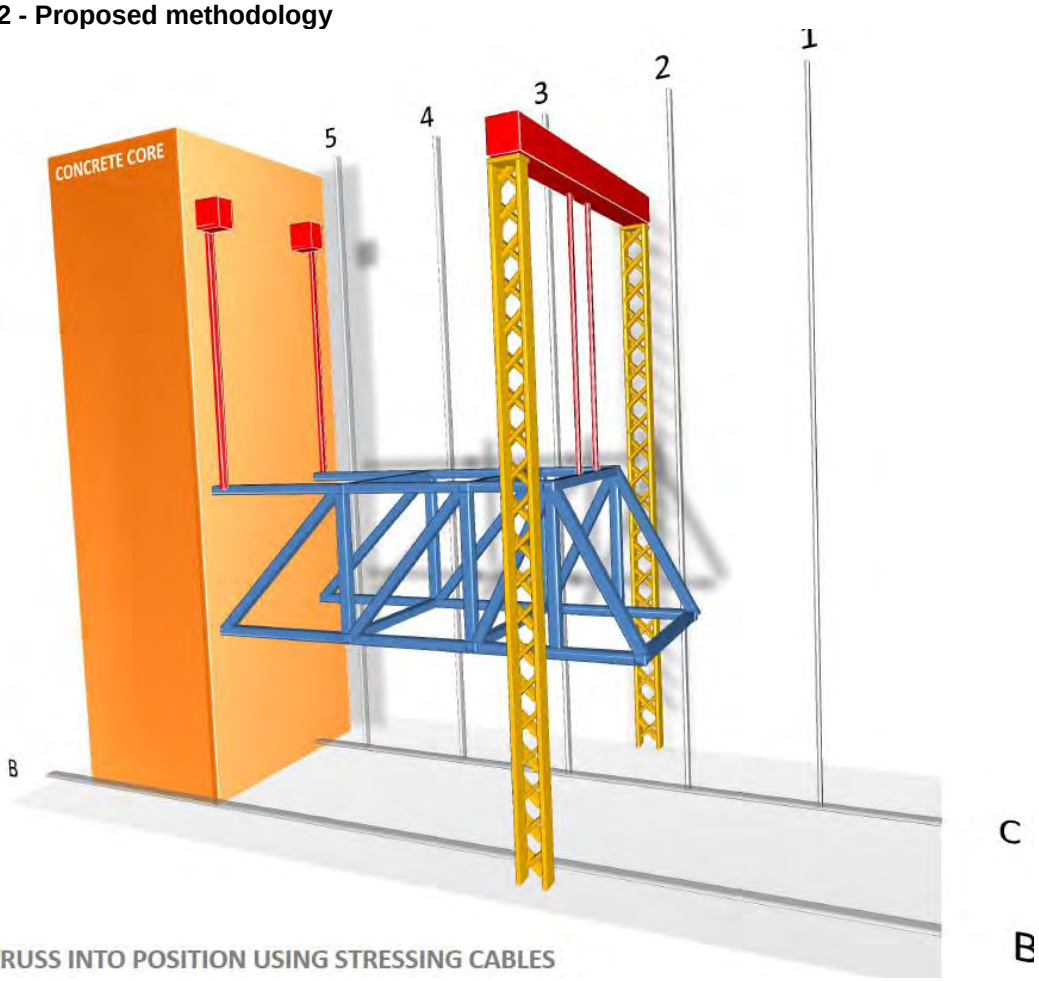
1. Setup mobile cranes. –

1A. Crane 1 - Erect column which has steel reinforcement steel cage already installed and hold stable.

1B. Crane 2 – Erect remaining section of truss and bolt off.

2. Release cranes and adopt same methodology as item 1A & 1B above for second truss. Utilize tower crane to Install all floor beams between grids B and C

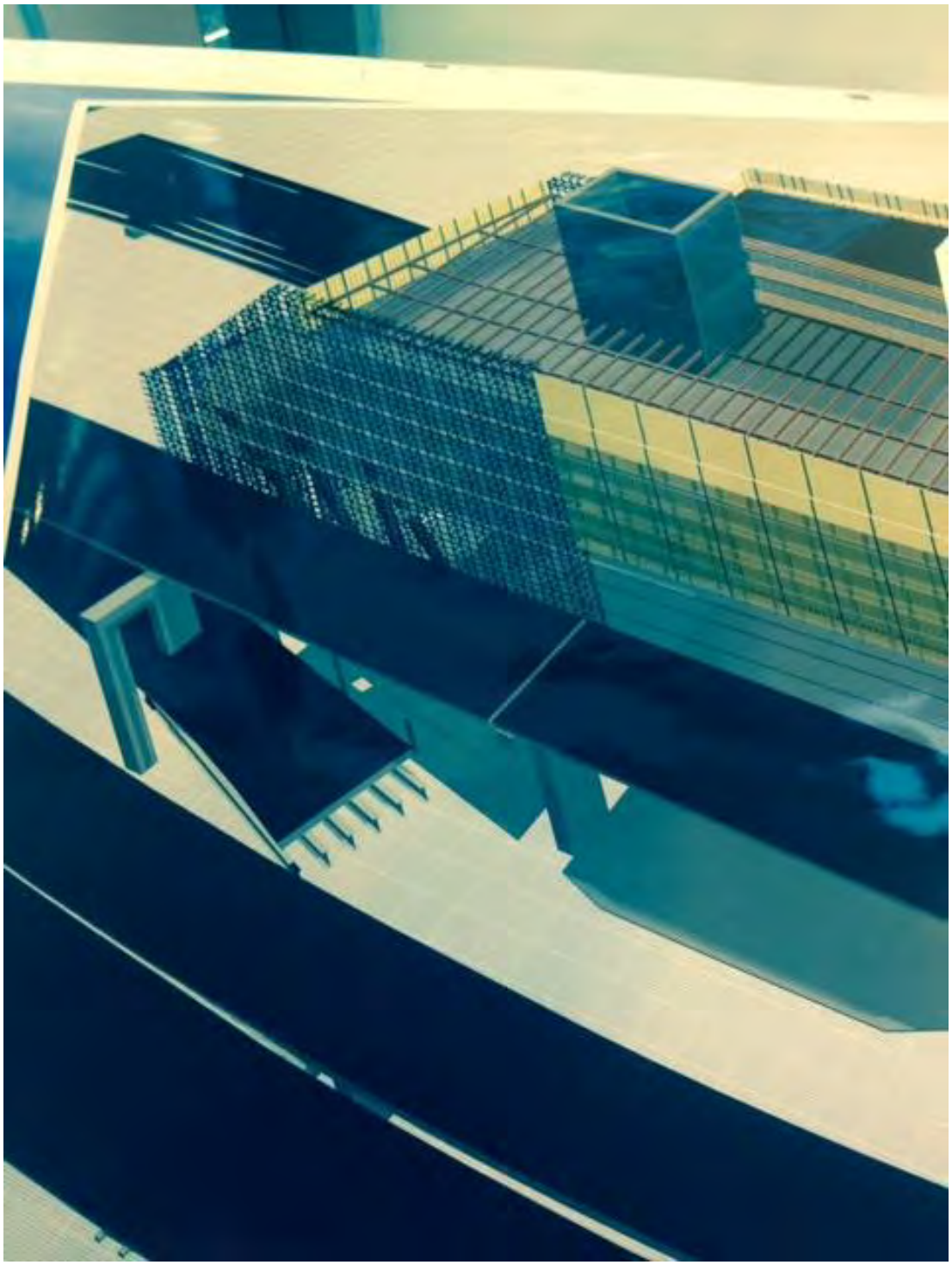
Option 2 - Proposed methodology



JACKING THE TRUSS INTO POSITION USING STRESSING CABLES

The IMAX structural steel and trusses will be fabricated offsite with the largest transportable sizes that can be driven on the road legally and fit within the site haul road.
The site logistics and positioning of crane 4 and amenities have been designed upon consideration of this critical construction activity.

Edge protective system for cinema construction:

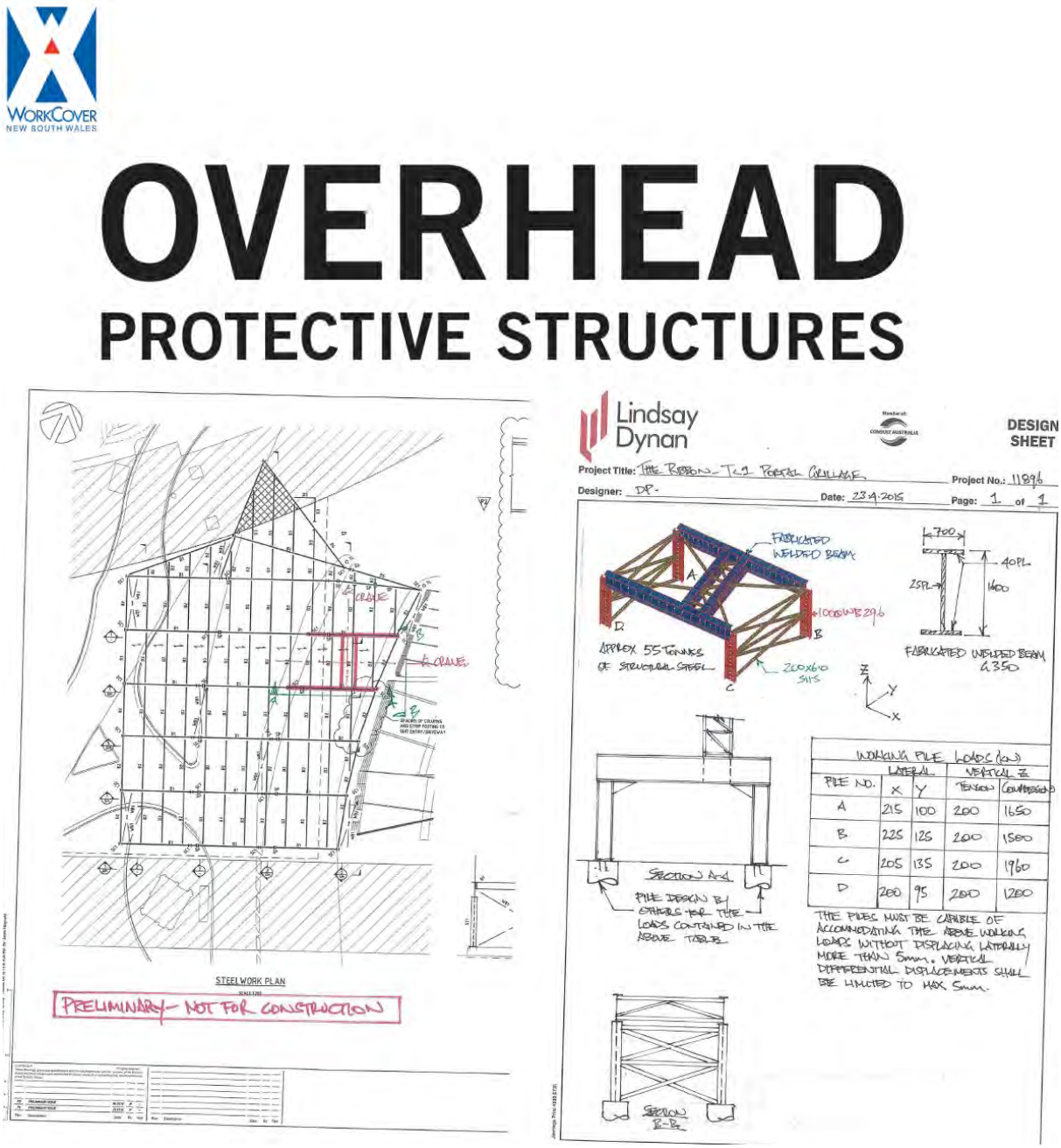


As with the Jump Start; given the location of the RMS elevated roadways and the safety of workers, pedestrians and vehicles below the structural steel will be installed complete with the following safety initiatives:

- Preformed edge boards to the Kingfloor formwork deck
- Workright/ ExPanda full height Edge Protection Handrail System
- Encapsulating scaffold for the north and south elevations of the theatre

24.5 Wheat Road Structural Steel and composite slabs

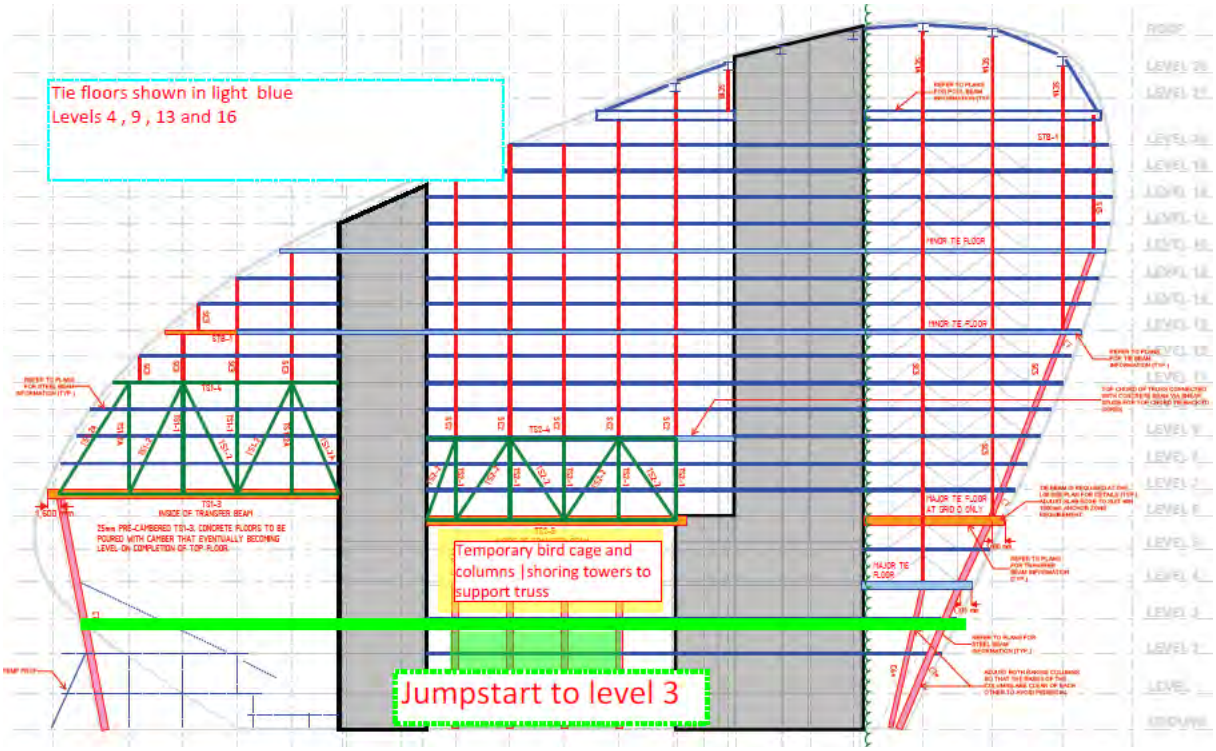
The Wheat Road structural steel erection will be installed with the Jump Start structural steel, and based upon engagement with a leading hoarding company there will be an approx. 3 man crew for 70 shifts to build and remove the catch deck. This is in addition to closures for footings and possible piling that may be needed to support tower crane 1's grillage.



(refer crane elevation on page 55)

24.6 Steel structure

The structural steel will be erected in stages of up to 4 floor levels at a time with erection of Structural steel required to each tension tie slab level prior to concrete being poured. Once the tension tie slab is completed the floors below the tension tie can be completed. This process will continue in the several stages as shown in the section “24.8 - Structure Staging Diagrams” They will occur on levels 4, 9, 13 and 16 as shown in light blue below.

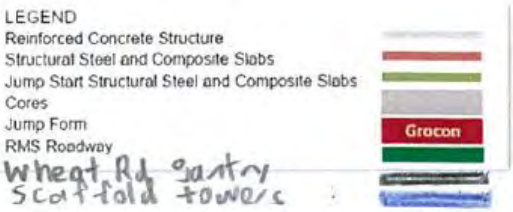


(Refer sketch in section 24. 3)

Slabs will be constructed from structural steel in order to achieve the required cantilevers as the building footprint increases. Level 1 and 2 below the Jump Start level 3 will also be constructed using a structural steel given the restriction imposed by having a completed structure overhead and setting up perimeter screens.
Final erection sequences for the new steel structure will be fully developed in conjunction with the structural steel subcontractor.

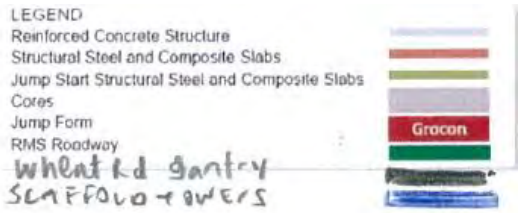
Back propping for all King Floor and Bondek will be performed as per engineering requirements and will comply with AS-3610. Concrete slabs will be back propped until the minimum strength is reached and the propping removal sequence as agreed with the structural engineer.

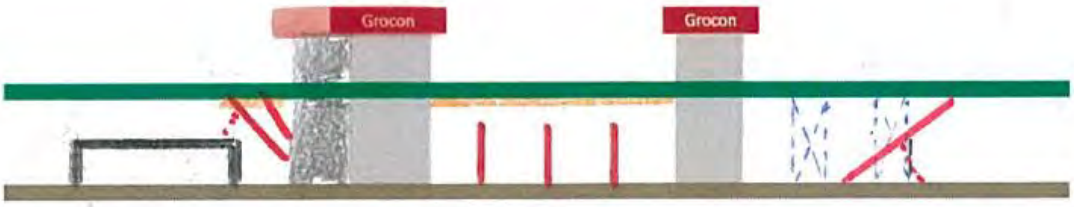
24.7 Structure Staging Diagrams



- Ground works complete
- Core formwork mobilised with scaffolding
- Raft poured
- Part ground slab poured
- Start Wheat Rd catch deck

The structure will kick off with both cores whilst the balance of raft slab and car stacker and trolley pits are being completed. Two floor high scaffold will be used to set up each jump form system.

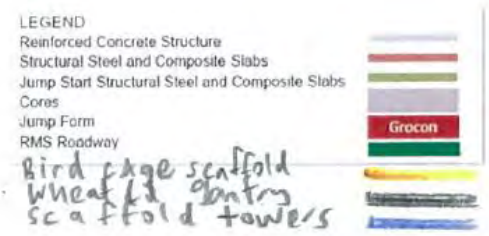


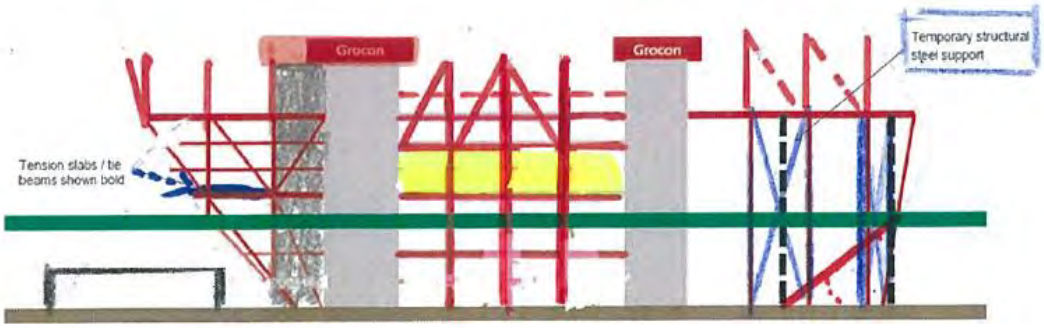


- Jumpform clear of jump start
- Wheat Rd steel complete
- Commence cinema shoring towers
- Commence structural steel erection

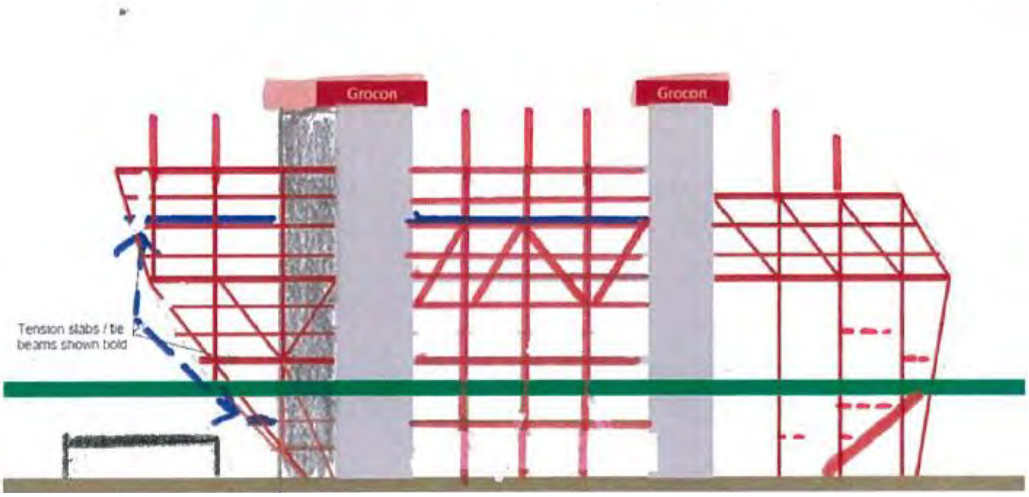
The jump start to level 3 will commence with the erection of triple floor height columns braced down to the ground slab and tied back to the cores.

The level 3 jumpstart will have tower foot print construction joints, so the perimeter screens are installed prior to working above the freeways.

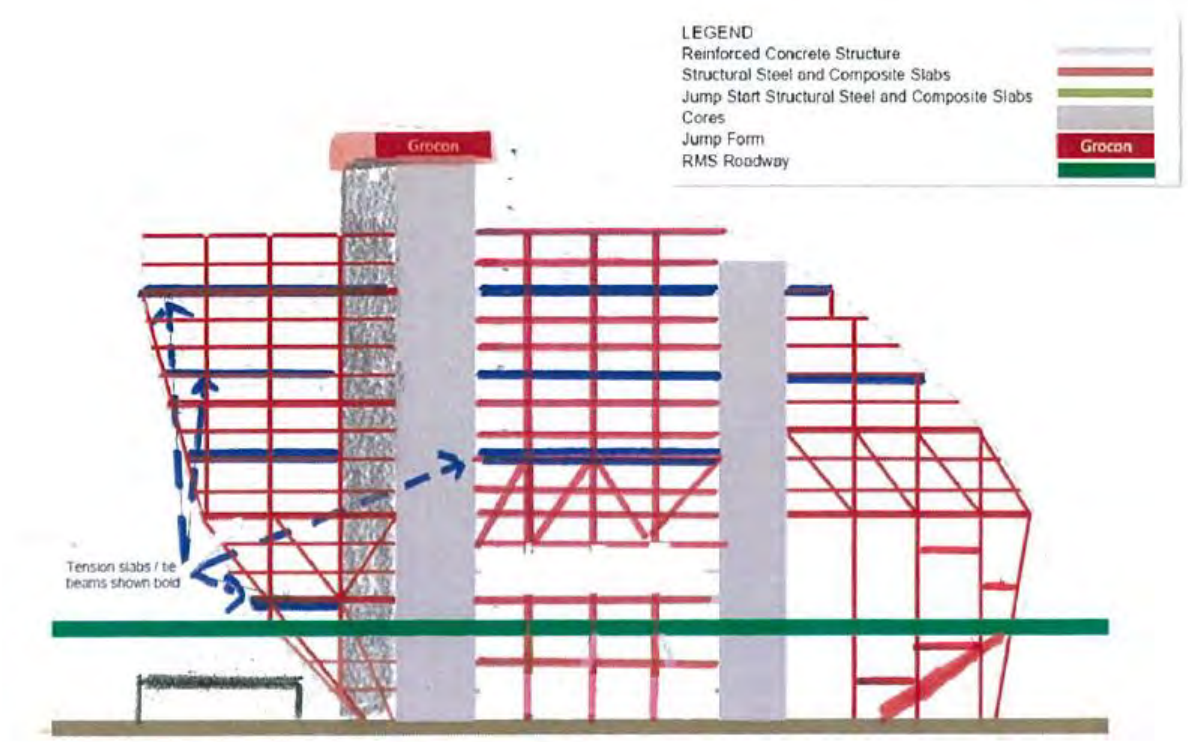




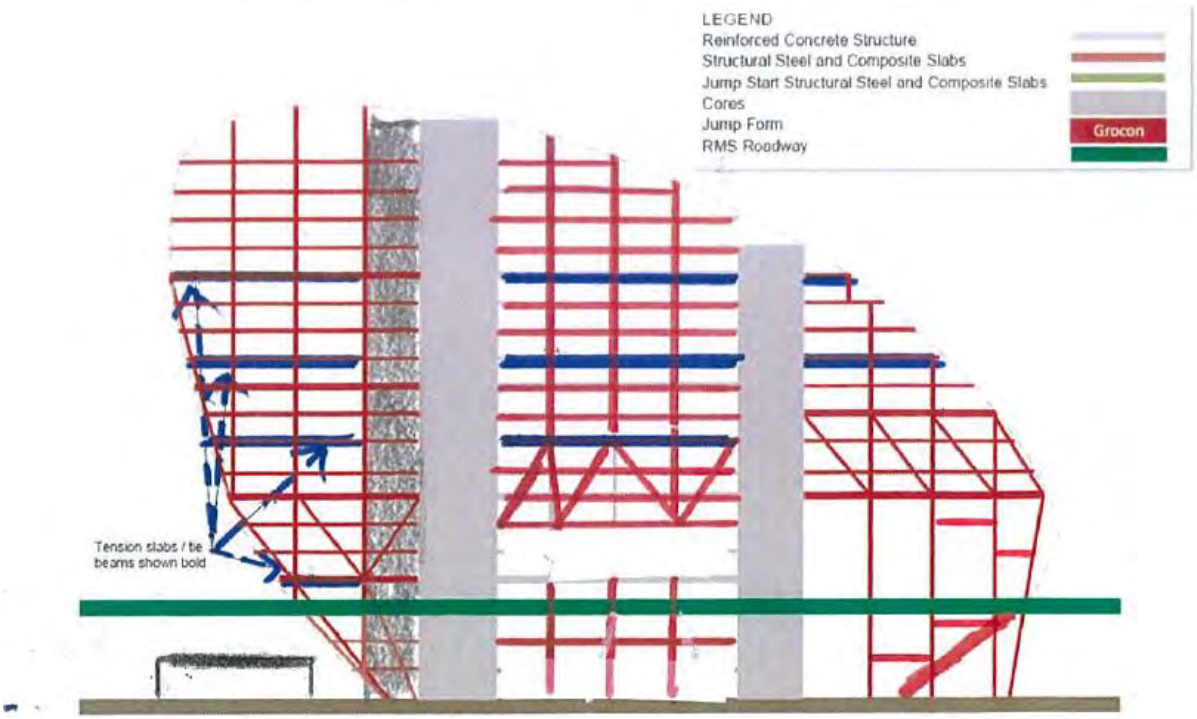
- Cores clear of IMAX structural steel
- First tension tie slab complete
- Shoring towers erected for IMAX truss installation
- Commence cinema and ball room truss



- Cores clear of IMAX truss and ball truss
- Second tension tie slab complete



- Forth and final tension slab complete



- Structural steel and slabs complete to Wheat Rd
- Eastern Jump form removed

24.8 Services

Following the typical structure cycle, high level services rough-in and plant room fitout will commence.

After the equipment is in position in the plantrooms (which also include service risers) the main reticulation of pipework, ductwork and electrics will radiate outwards across the floor. Concurrently services connections within the plantrooms and floor plates will be carried out prior to suspended ceilings being installed.

When the façade is complete the ceilings and services fit-off will commence.

Testing and commissioning will commence on a floor by floor basis following fitout completion.

24.9 Façade Installation

The initial facade set out and installation of fixing brackets for the façade will be conducted inside the perimeter screen system that encapsulates the building. Façade cast ins will also be installed off site at the steel fabrication plant where possible .Safe work practices will be developed in consultation with the façade subcontractor to ensure that the risks of falling objects are eliminated if the preferred option cannot be achieved. Safe work methods such as fall restraint lanyards around the perimeter of the building will be applied.

All façade panels are to be delivered to the floors via crane, vertical materials hoist and dedicated loading areas.

Façade panels are to be distributed across the floor and launched into position through adjustable (above handrail) openings in the proprietary full height perimeter safety fencing system. Typically, façade panels will be installed with the use of a small crawler floor crane or monorail system from the floors above.

Safe work methods, risk assessments and facade safety in design workshops will be developed and implemented in consultation with our in-house façade engineers, OH&S advisors, industry professionals and relevant subcontractors to ensure controls are in place to eliminate risk of falling objects.

24.10 Architectural Finishes

Hotel and serviced apartment finishes will commence following services rough-in and façade installation. This will typically consist of lightweight partition walls, ceiling, joinery, carpet and bathroom fit out.

24.11 IMAX and Tennant Fitout

This Construction Management Plan does not contemplate the early access of Tennant's fitout subcontractor prior to Base Building Practical Completion. If required, an early access strategy will be developed once these conditions are known.

24.12 Landscaping & Ground Plane Works

Ground plane works will commence once low level scaffold has been removed. External street works and promenade make good will commence once hoardings are removed as per public domain staging plans.

24.13 Completion and Handover

Grocon will ensure that all works are commissioned with only minor defects remaining. A detailed Completion Plan will be established 6 months prior to Practical Completion and will be cognisant of all tenant's requirements.

Progressive inspections and sign-offs will be conducted so to ensure minimal defects at handover in line with Grocon's Quality Assurance procedures.

Grocon will ensure that the project is handed over with all Operations and Maintenance Manuals, as built documents, warranties and required certification in place.

We understand the importance of commissioning in that all the building services and functions need to operate at the highest efficiency under all conditions. All services and functions will be witnessed, tested, commissioned (for the pre-occupation condition) prior to handover and effectively integrated with on-going building fine-tuning to ensure efficiency and effectiveness in the occupied and fully operational building.

As part of our handover procedure, training for the facility management team or other nominated people will be programmed and provided before the building is handed over. The training will include the operation of all the services, the function of all the building facilities and any other requirements as needed.

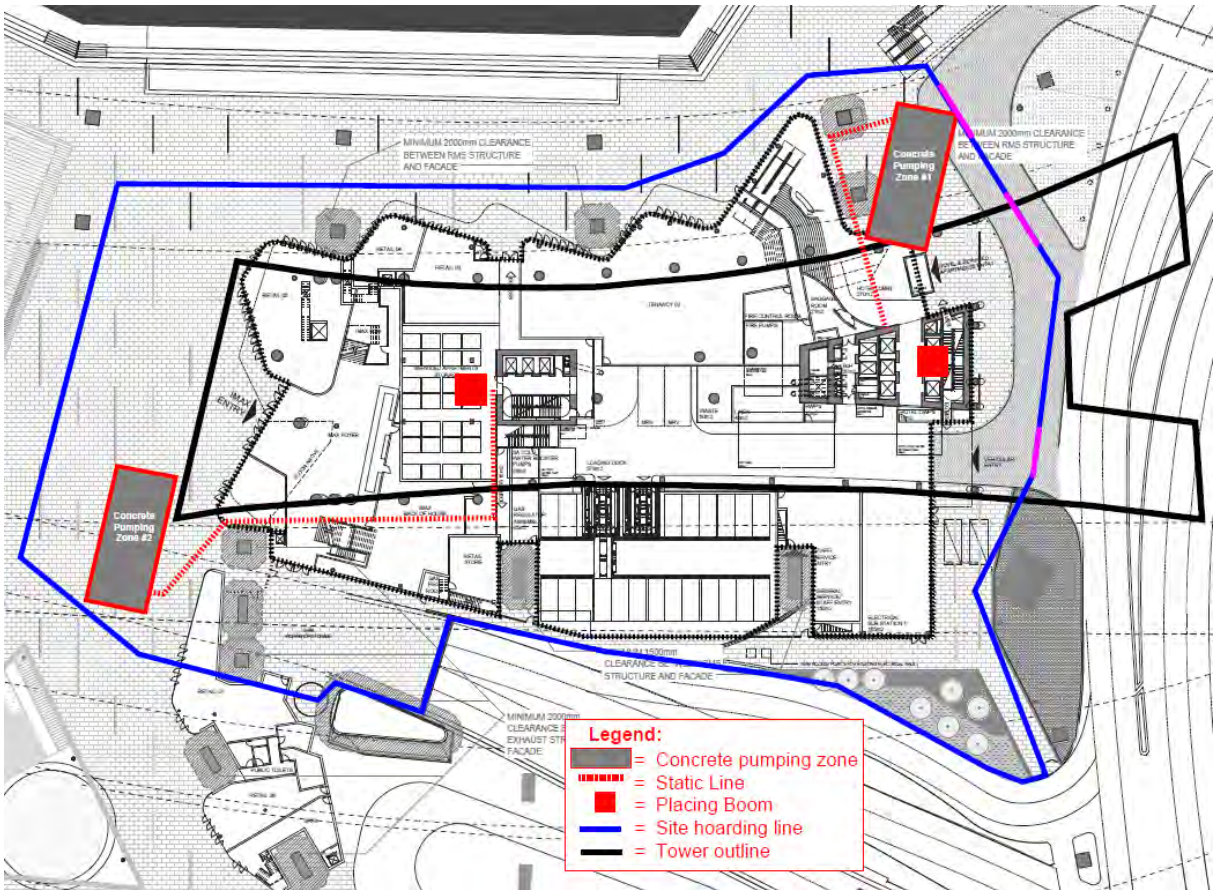
25. Materials Handling

25.1 Concrete Pumping and Placement

The structure and concrete pour sequence will comprise of 4 pours per floor. The East and West cores will be poured separately.
The concrete pumping zone will be located in the south east corner of the site. There are provisions for two concrete trucks to reverse onto the concrete pump. This location will not block or hinder the flow of vehicles onto or through the Wheat Road loading area.
Concrete will then be pumped via static line to the two tower boom pumps located within the eastern and western jumpform then distributed to the respective pour area.

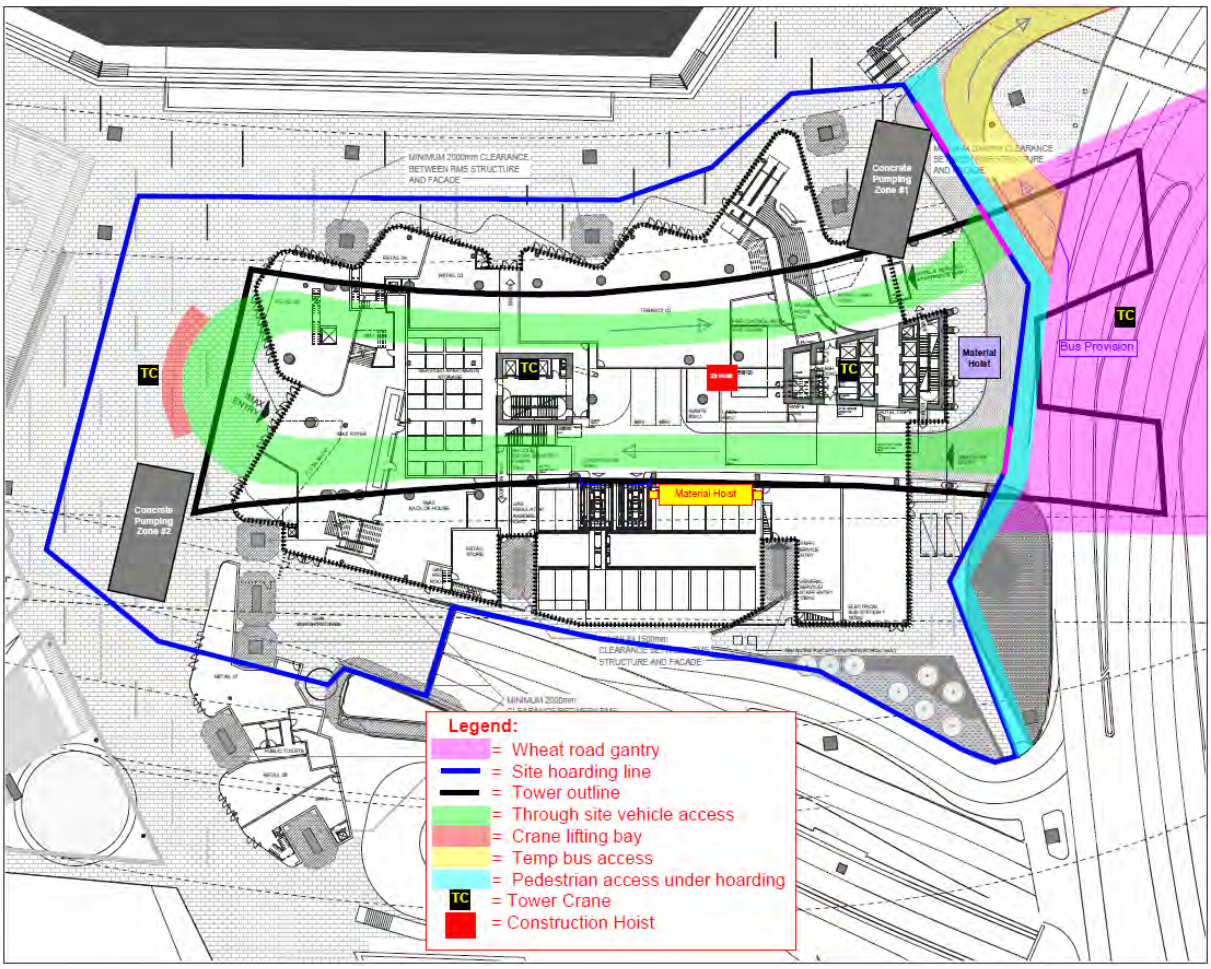
Note: Two tower placing booms will be installed to facilitate the pouring of typical concrete floors.

Refer Diagram – Concrete Pumping



25.2 Loading Zones

Loading zones will be established at the western elevation (adjacent to the hoarding) and to the Wheat Road area.



The Wheat Road loading zone will comprise an overhead gantry which will operate as a material storage area and will provide a clear lift locations on the eastern end of the site.

Refer diagram – Loading and Unloading Areas

25.3 Tower Cranes

Current planning for the project is for the use of three (3) luffing tower cranes for the materials handling of all structure, façade, services and finishing trades. We are aiming to have either electric cranes working off generators or diesel power traditional cranes, but may have a combination based on availability of power supply.
Three (3) tower cranes have been provided to ensure that there is adequate capacity to move materials both vertically and horizontally to the workface from very limited loading & unloading areas.

The tower cranes have been positioned to effectively and efficiently provide materials handling for the project from the Wheat Road gantry, southern and western elevation loading & unloading zones.

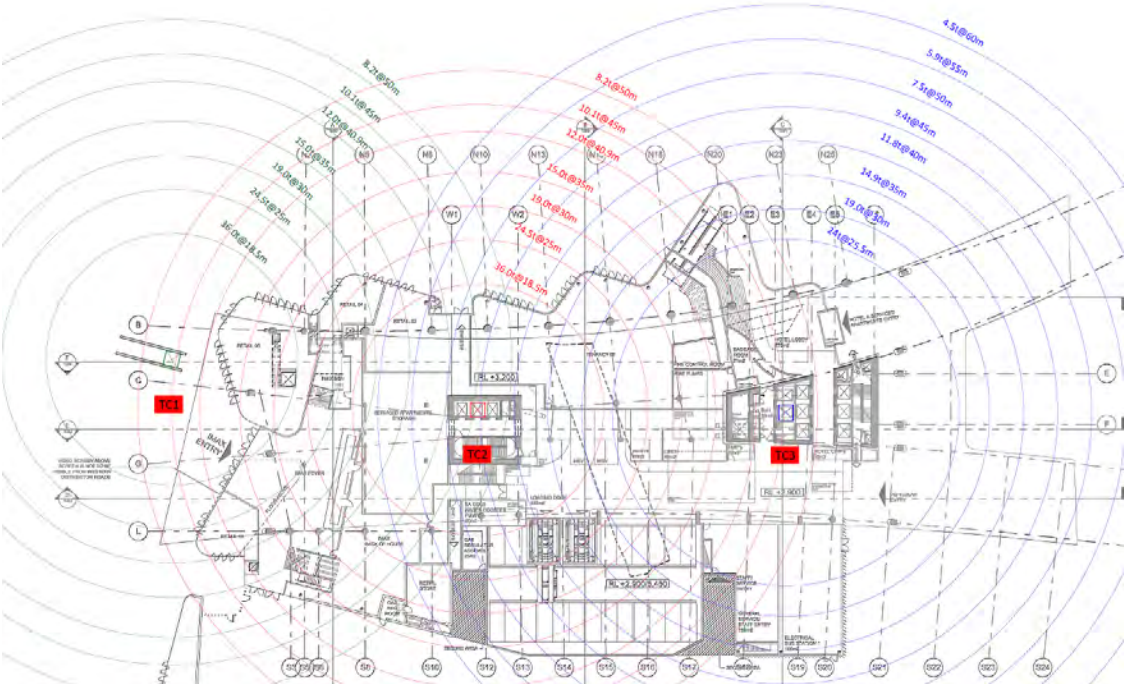
Tower Crane No 1 will be installed on the western elevation away from the southern outfall, at the commencement of demolition. It will be then used for excavation, ground works, and cinema construction and then removed upon architectural cladding completion.

Tower Crane No 2 and 3 will be installed in the cores at the jumpform commencement stage. They will be used primarily for structural steel erection and general materials handling. The cranes will be removed upon completion of the façade and external architectural finishes.

These cranes are sized so that they can perform all forecasted heavy lifts to plant areas. An allowance for the use of a 300 Tonne mobile crane to lift the cinema trusses has been made and will also be used for dual lifting as required.

These cranes will essentially be “the workhorses” for all site deliveries to the project and subsequently have been selected so as to provide both speed and capacity.

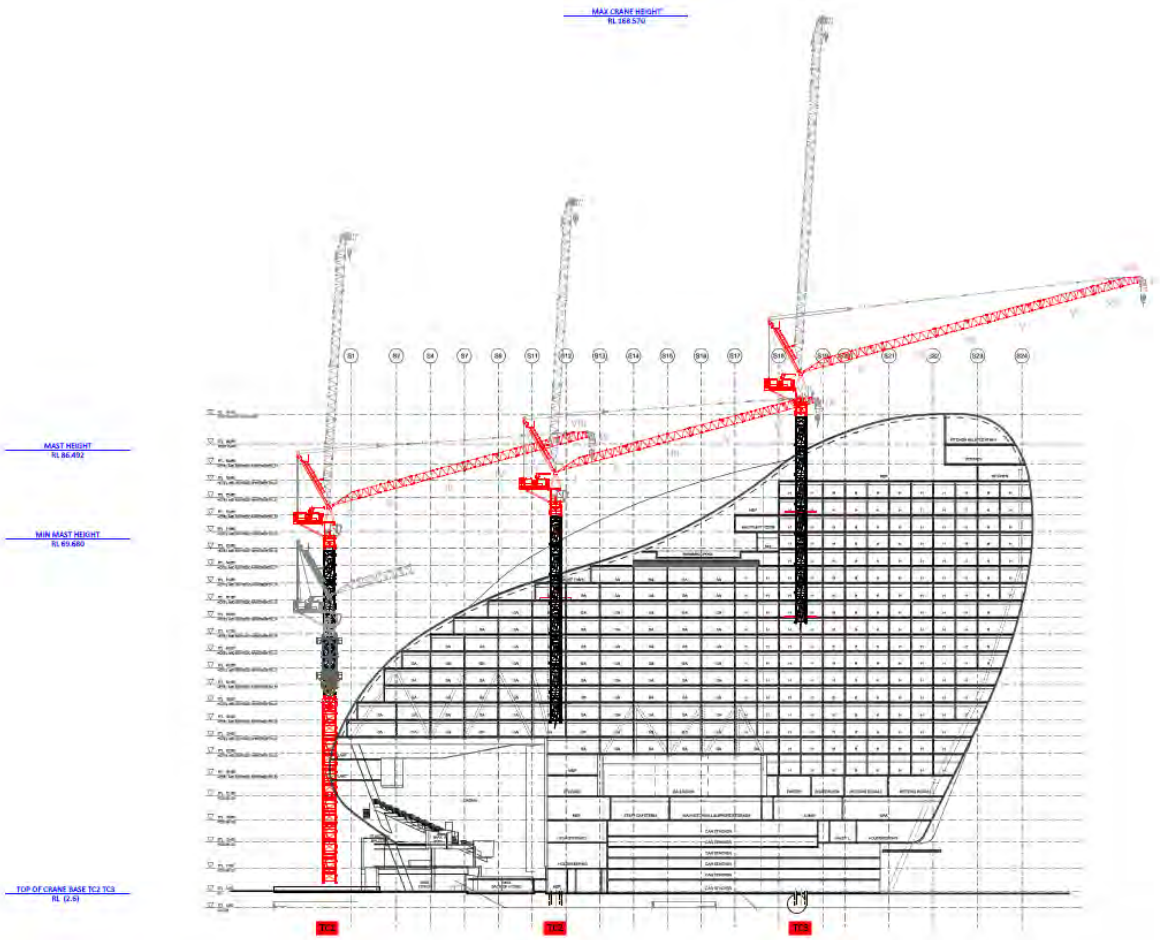
At no time will any loads be lifted over any roadways or public without suitably designed overhead protection gantries. Only time cranes may encroach over roadways is during “after hours weathervane” mode.



Refer diagram - Tower Crane Locations

25.4 Crane removal and movement

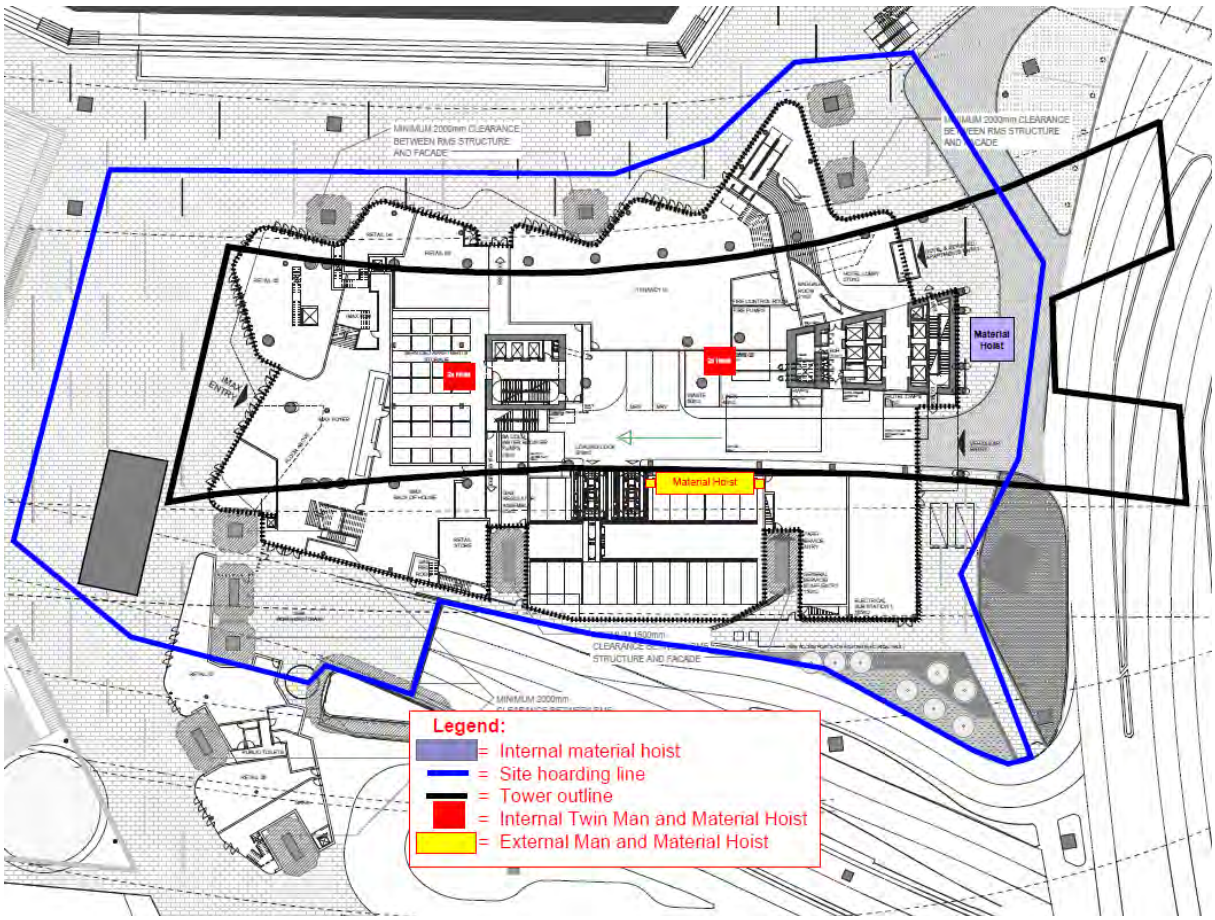
For completion of the roof works and general site works, tower crane 1 will be removed first by crane 2, crane 2 will be removed by crane 3, and crane 3 will be removed by a recovery crane.



25.5 Construction Access and Super Material Hoists

A series of man & material hoists will be installed as an integral part of the logistics for The Ribbon. Each will service the top platform / working deck of the jump form systems. Appropriate penetrations, with perimeter reinforcement “rip” boxes, or similar, will be made to accommodate all temporary penetrations. These will need to be in filled progressively from bottom to top once crane, hoists etc are removed.

- A *Maber* type super material hoist will be installed in the eastern material construction penetration.
- Two (2) twin Alimak type man and materials hoist will be installed internally through the central atrium and a western slab penetration
- A heavy duty hoist will be installed externally off the south façade maintaining RMS required clearances to their assets.



Refer diagram Vertical Materials Handling - Hoist Locations Diagram

25.6 Forklifts

A traditional forklift will predominately be used to unload deliveries while an additional Manitou type forklift will be used to supplement deliveries and also focus on public domain and precinct works.

26.

26. Perimeter Protection Systems

During construction and installation of the façade, fall protection will typically be provided by a perimeter protective screen system.

1. Perimeter Protective Screens
2. Catch Screens and Decks
3. Work Right – ExPanda Fence System

26.1 Perimeter Protective Screens and Cinema Perimeter Scaffold

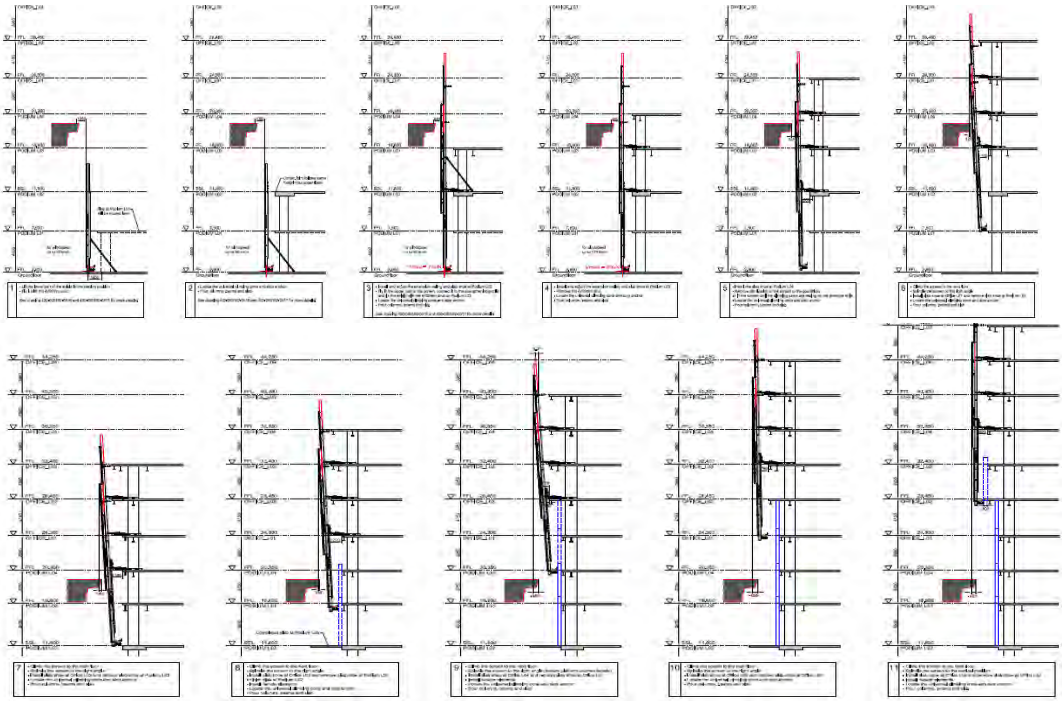
A fully encapsulated perimeter protection screen system will be progressively installed commencing from the Ground floor slab being completed and will be tied into the jumpstart at level 3. Movement and staged planning designs have been developed which clearly identify controls required for climbing adjacent to the freeways .This methodology has been chosen through our extensive SIDR process. All structure above the Jump-Steel will be protected with the perimeter protection screen system.

The system will be an integral part of the tower structure and will encapsulate three to four floors as the building progresses. It will provide protection for all structure trades and protect against falling objects.

In conjunction with the perimeter protection screen system, best work practices will be adopted to eliminate the risk of objects falling from heights by the use of tool and material lanyards.

The perimeter protection screen system will be removed following the completion of all formwork.

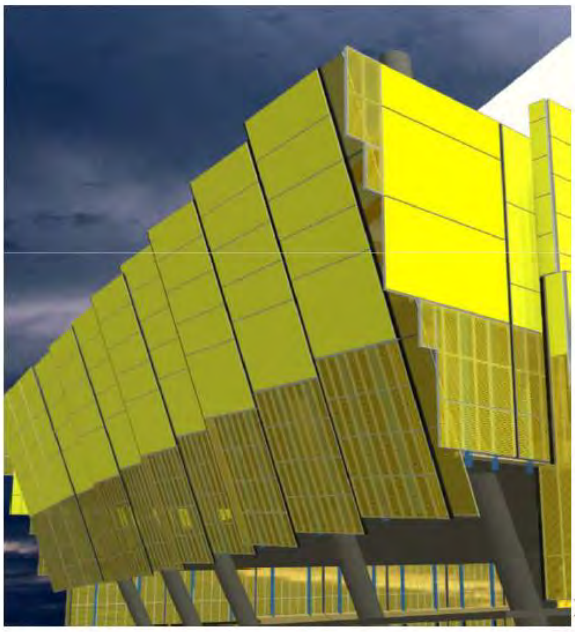
26.2 Actual set up of screens staging sequence



26.3 Catch Screens & Decks

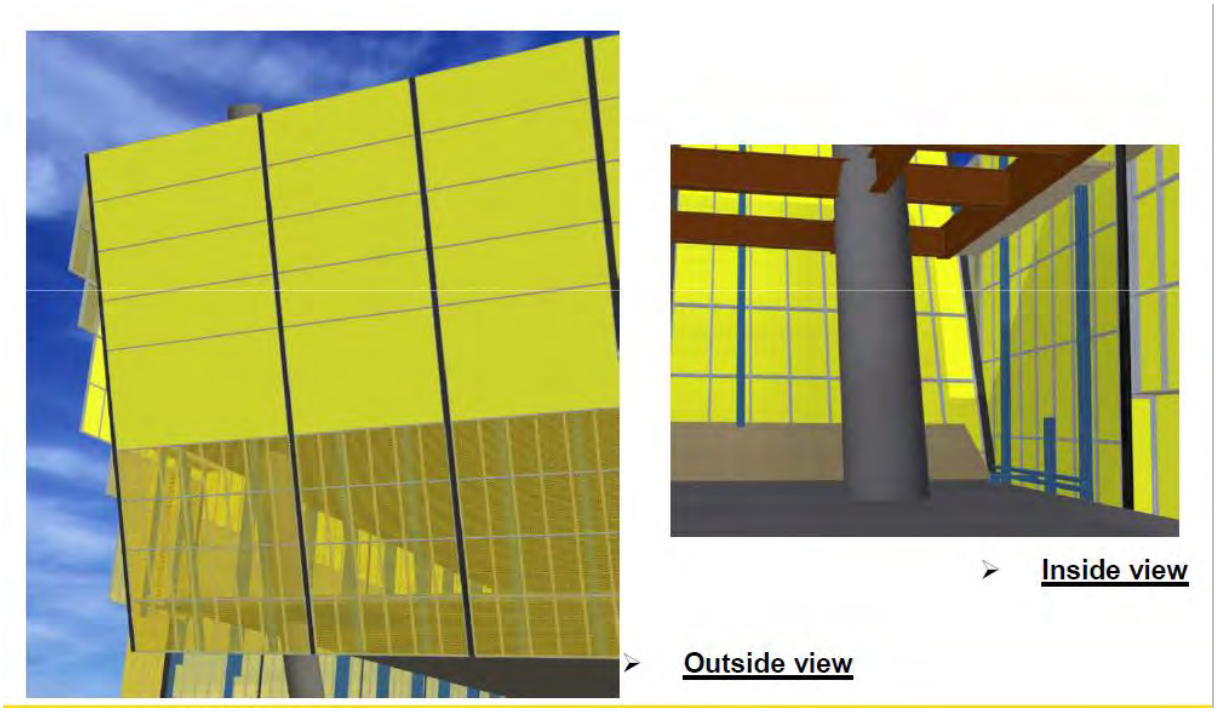
As the building “grows” in floor plate size from Ground Level to Level 4 and 11 respectively, the Wheat Road and the Western Elevation Loading areas will be continually used for the vertical movement of materials, Grocon proposes to install catch decks to these areas to enable worker access around the base of the building.

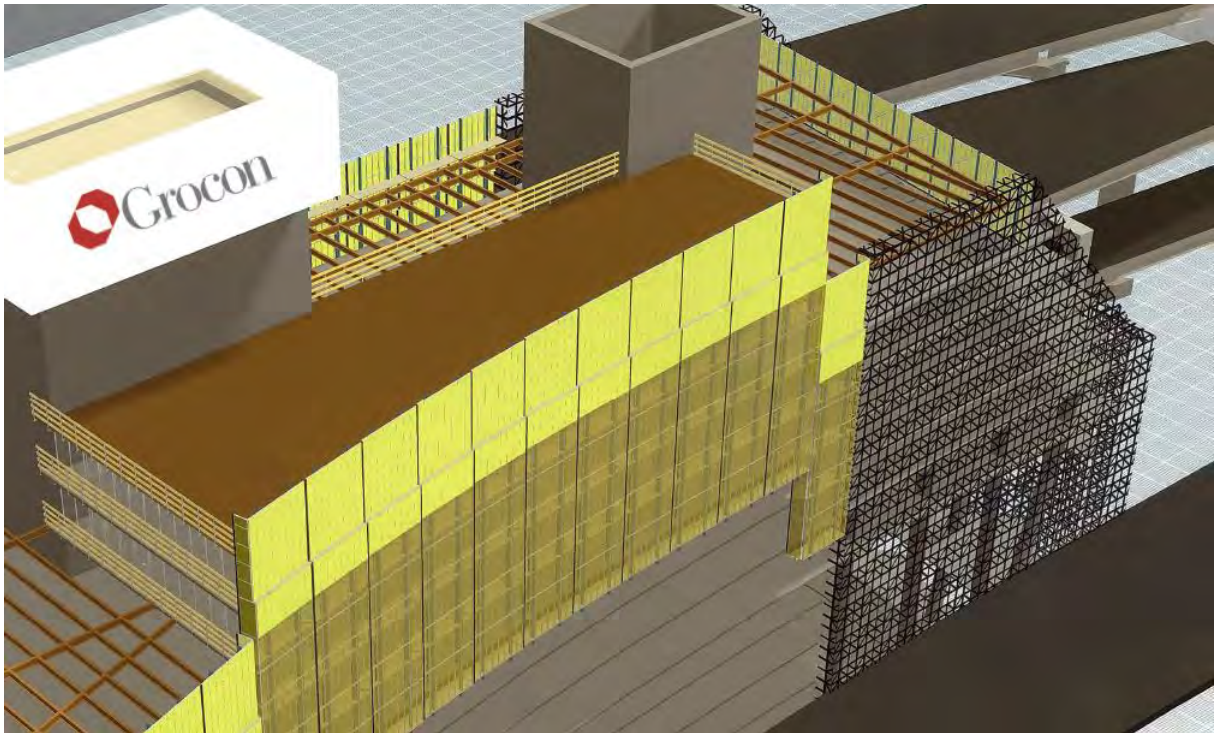
The combination of catch-screens and perimeter protection will be agreed with RMS at a suitable date.



Inside view

Outside view





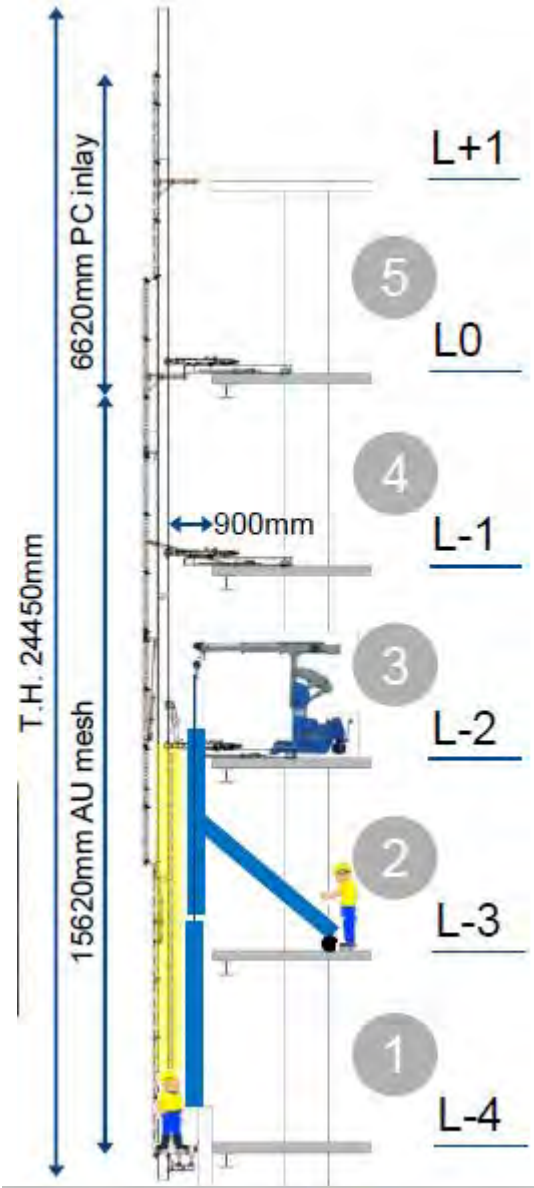
Safety Fences and Façade Installation ("Workright"/ "ExPanda" Fence System or similar)

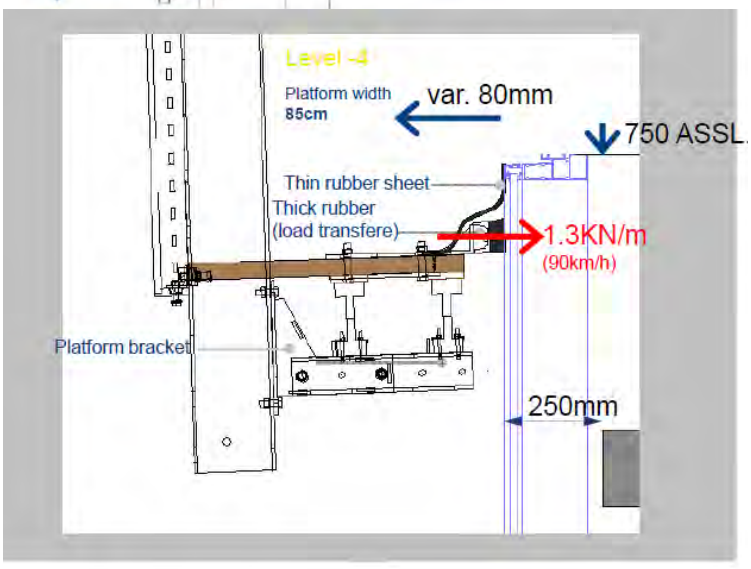
Following the removal of all formwork, the perimeter protection screen system will be removed and replaced by a safety fence screen system that incorporates a full height (slab to slab) screen (similar to the Workright – ExPanda Fence System).

The ExPanda Safety Fence System will be installed prior to the removal of the structure perimeter protection system. As noted, the system is a combination of handrails and full height screens.

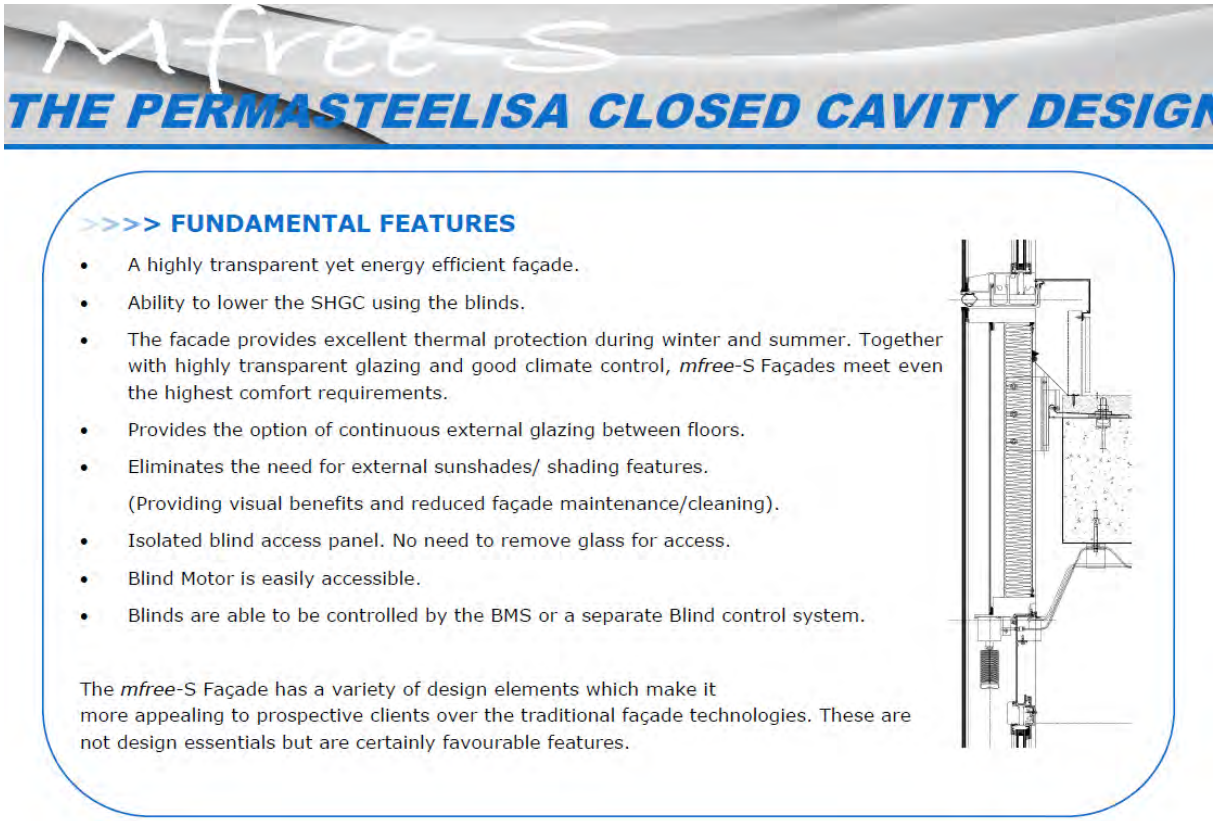
The ExPanda Safety Fence System will be removed following the installation of the unitised façade panels.

The sequencing of the perimeter protective screen system and façade installation are detailed in the diagrams below.


T.H. 24450mm
6620mm PC inlay
15620mm AU mesh
900mm
L+1
5
L0
4
L-1
3
L-2
2
L-3
1
L-4


Level -4
Platform width
85cm
var. 80mm
750 ASSL
Thin rubber sheet
Thick rubber
(load transfere)
1.3KN/m
(90km/h)
Platform bracket
250mm

External scaffold to lower level areas will be removed progressively as façade works are finished, defected and rectified.



26.4 Internal Fall Protection

Internal voids will be protected by either the Work Right–Expanda fence system (or equivalent) or internal scaffold.

27. Environmental Management Plan

A detailed Environmental Management Plan has been developed by our in house environmental expert.

As stated in Section 17, the Environmental Management of Cockle Bay will be paramount. During the DA approval period, Grocon will engage an Environmental Consultant who will in conjunction with Grocon, develop a Stormwater & Erosion Management Plan as part of The Ribbon Environmental Management Plan. As a minimum this plan will address the following.

- Promenade demolition and construction works potentially effecting the quality of Cockle Bay
- Sediment laden water from The Ribbon construction site may potentially flow into the stormwater and/or adjacent surface water bodies
- Stormwater with excessively high or low pH values could run-off from potential stockpiles
- Stormwater collected in excavations and requiring disposal
- Groundwater entering excavations and requiring disposal after dewatering
- Site cut off drains eroding and increasing site water sediment loads
- Vehicles leaving the site depositing dirt/mud on public roads after rain periods
- Removal of bulk materials off site escaping from vehicles and polluting roadways
- Debris and litter collecting along roads and in catch drains and consequently effecting the quality of Cockle Bay
- Site contamination through the potential for an overflow of fuel/chemical storage containers and contamination from equipment and plant repair areas.

These activities will be documented within the Grocon Environmental Management.

The following items have been noted as critical to the works and as such have already been reviewed.

27.1 Air Quality Management

Construction of the Project will be undertaken in accordance with the Protection of the Environment Operations Act 1997, which covers a range of environmental offences including the generation of dust. Specifically, Part 5.4 of the Act which details air pollution offences and requirements for the proper and efficient operation, maintenance and handling of plant, equipment and materials. Air Quality Management practices to reduce the risk for the project will be detailed in the Environmental Management Plan.

28. Noise & Vibration Management Plan

As stated in Section 11.4, a draft Noise and Vibration Management Plan has been produced and is included in Appendix B of this Construction Management Plan. The plan outlines the information gathering process, impact statements, control measures and implementation requirements for the site.

The proposed site team are aware of the crucial need for vibration isolation and minimisation. This includes coordinating or restricting the use and timing for rock hammering, percussion drilling or vibration generating activities that could impact the adjoining buildings and stakeholders.

Grocon will finalise the Noise and Vibration Management Plan during the DA approval phase.

29. Quality Management Plan

Grocon's Quality Management System has been developed and documented to satisfy the elements of the AS/NZS ISO 9001:2000 and AS/NZS 4801:2001 Quality Management Systems requirements. It establishes the criteria for carrying out activities associated with the delivery of The Ribbon.

The main objectives of implementing a Quality Management System are to:

- Sustain our current profile as market leaders in the Construction Industry;
- Maintain a consistent approach to the delivery of products and/or services;
- Deliver the product on time, within budget and to achieve complete client satisfaction.

The Quality Management System which will be implemented on The Ribbon will:

- Assure the client and tenants of conformance to the specified quality requirements;
- Provide Grocon with management information derived from the Quality System to analyse defective processes and allow for their subsequent rectification and prevention;
- Facilitate the effective completion of the project within program time and budget;
- Provide the objective evidence necessary to determine the level of compliance with the project documentation;
- Apply control measures to facilitate the active identification of recurring and potential non-conforming works and their subsequent corrective and preventative actions;

A detailed Quality Management Plan has been developed during the DA approval phase of The Ribbon. In summary, it has documented and identified the processes of implementation of the Quality Management System required for The Ribbon, the organisational structure for the project, the responsibilities and authorities of personnel associated with the project and details of implementation procedures.

The Quality Management Plan will be developed and documented to comply with the specific requirements of the project and outlines as a minimum the following elements:

- Project Organisation Responsibilities and Duties
- Subcontractor requirements
- Design Control with respect to Buildability, Value Management and Particular Design Responsibilities.
- Document Control
- Purchasing
- Process Control
- Inspection and Testing
- Control of Inspection, Measuring and Test Equipment
- Corrective/Preventative Action
- Control of Quality Records
- Auditing

The Quality Management Plan will outline the organisational structure for the project, identifies the levels of authority and responsibility and lines of formal communication. It also includes persons responsible for ensuring inspection and monitoring activities are carried out at times which are relevant to maintaining the project program.

The Quality Management Plan which will be implemented on The Ribbon will reflect the management, administration and construction processes to be adopted by Grocon. This will ensure that the works carried out during project delivery conform to the requirements of the project specification and to the high level of workmanship standards established and delivered by Grocon.

30. Workplace Safety Management Plan

As stated in Section 2, it is imperative that the safety and wellbeing of all Ribbon stakeholders, the general public, visitors to the site, subcontractors, consultants and all Grocon staff are addressed in all of our planning, design and management decisions.

A comprehensive Workplace Safety Management Plan which addresses how Grocon intends to manage health and safety during the construction of The Ribbon has been developed and is included in Appendix A of this Construction Management Plan.

This Workplace Safety Management Plan will constantly be reviewed as the design and construction methodology progresses.

31. Completion Plan

Grocon will implement a plan for testing, pre-commissioning, commissioning, performance testing and training for the works leading up to Practical Completion.

A void closure system will be implemented through the site team to ensure testing and inspection to risers, plenums, ceiling voids and the like before they are closed in.

The Developer's Independent Commissioning Agent (ICA) will report directly to the Developer on commissioning and testing matters covering all services on the project. Grocon will liaise closely with the ICA and ensure that a commissioning Inspection and Test Plan is developed and agreed well before commencement of testing.

All of these procedures will be monitored and the addressed with the Quality Management Plan. The void closure and on-site inspections will be implemented to ensure adequate quality control of the works and will be formalised through the project Quality System.

At the completion of different phases of work we will conduct a handover to the client to take possession of different areas. All of the required completed quality assurance information will be submitted to the relevant parties at Practical Completion.

32. Documentation Management

All correspondence in the form of letters, memoranda, various advices, requests for information will be communicated by the Aconex web based community system. Grocon will utilise Aconex to establish the various required mail types. It is envisaged that the mail types will cater for all eventualities, however further mail types may be available upon request to Grocon.

All mail is automatically tagged and numbered for easy retrieval.
Any attachments to mail will be stored on the system however those attachments are only searchable via locating the mail.

Documentation Management is also catered for on Aconex. The document register must include any project information that is likely to undergo revisions or updates.

Documents are registered on Aconex and transmitted via Aconex. The fundamental point of the Aconex document management system is that it tracks these exchanges.

It is important to note that each organisation's document register is private to that organisation. Information in a register is only available to other organisations where it has been transmitted via Aconex. The correct use of the Transmittal process means that each organisation's document register will be up to date with current approved information.

33. Industrial Relations

Grocon's methodology is one of pro-activeness and inclusiveness with all the stakeholders in the industrial arena. Grocon has certified agreements with the major construction unions. Grocon's policy is one of ensuring that all its employees and site management have a full working understanding of all the relevant agreements.

Grocon's philosophy is to ensure that all facets of the business understand the need for constructive cooperation. Its policies in relation to occupational health, safety and environmental requirements are of the highest standards which will result in significantly reducing the incidents of associated industrial disputes. The approach of the Directors, which extends down to line management, is to ensure Safety is foremost in all dealings.

Grocon has involved its employees in training to ensure consultation and that their voice is heard. The "Action employees can take" initiative fully informs the employees of their rights and appropriate measures they can take to have a say in both Safety and Employee wellbeing.

34. Emergency Response Procedure

In the event of an emergency in relation to an accident on site, the Project Manager will be notified immediately. The allocated First Aid site personnel will also be notified and where possible assist with the incident.

The relevant external services will be contacted and arrangements will be made for access to the area of concern.

In the event of a fire or mass evacuation procedure a fixed air horn will be sounded repeatedly. The air horns will be located at the Wheat Road and the main site entrance / project office. The excavation procedure will be outlined during the initial induction and updated with toolbox talks and information boards. Personnel will then vacate in and orderly and controlled manner to the designated assembly areas to be accounted for.

The Evacuation Plan will be continually updated throughout the construction works. Updating the plan will require co-ordination between SHFA and Grocon to maintain a plan that is both functional for both Construction works and the day to day operations of Darling Harbour.

The assembly point will be agreed with SHFA.

A detailed Emergency Management Plan will be developed prior to site establishment works and fully detailed in the Grocon site safety plan.

35. Complaints Procedure

Complaints are deemed to be issues raised from outside sources, not raised by project stakeholders. Issues raised by our clients or stakeholders during the project shall be addressed through normal lines of project communications.

Complaints received from the community during the project, or from any source after the completion of the project, shall be recorded in the Grocon QSE data base with appropriate actions assigned to the relevant members of the project team. The Grocon procedure starts with immediate communication with the complainant to address urgent matters, then to following up with any necessary information as required. The Grocon Site Manager has a specific role with this as well as the designated Grocon community liaison person.

Appendices

A. Workplace Safety Management Plan
B. Noise & Vibration Management Plan
C. Pedestrian and Traffic Management Plan
D. Design & Construction Program
E. Demolition Management Plan
F. Public Domain Staging Plans

A. Workplace Safety Management Plan

Workplace Safety Management Plan

The Ribbon
31 Wheat Rd,Darling Harbour (including airspace over Harbour St)

Discipline	Document No.	Rev #	Effective Date	Description of Change
Safety	WSMP001	1	10/12/15	New DA

APPROVAL of AMENDMENTS			
Health, Safety and Environmental Advisor	*Joe Brinzi*	*10* / 12 / 15	
Project Manager	*Justin Murphy*	*10* / 12 / 15	

This Workplace Safety Management Plan (WSMP) is considered an integral part of Grocon's Management System which provides reference to the Organisational Structure, Procedures and Practices of Grocon which are applicable to this Project and has been reviewed and is approved for use by the National HSE Manager. Each WSMP is tailored to meet project specific requirements and is approved for use when the signature panels are completed.

1.0 Scope and Application of the WSMP

This WSMP has been prepared to outline the scope of works, services and resources to be provided for the implementation of the Grocon Occupational Health and Safety Management System (OH&S Management System) for this Project.

Overarching the Grocon OH&S Managements System is the Grocon Occupational Health and Safety Policy.

Refer: Section 6 for current OH&S Policy which shall be displayed in all Office.

The WSMP has been developed to reflect the Grocon OH&S Management System's alignment with AS/NZS4801:2001: Occupational Health and Safety Management Systems.

The OH&S Management System implemented on this project shall:

- Assure the client and project stakeholders of conformance of the project works to the specified health and safety requirements;
- Provide Grocon management with information to control conformance and promote continual improvement utilising Lessons Learnt.
- Assist the completion of the project to meet programme, budget, quality and health and safety requirements;
- Provide the objective evidence necessary to demonstrate compliance with the project health and safety legal and other requirements;
- Provide control measures to support a proactive approach for the identification and prevention of hazards and or hazardous conditions that may pose a risk to the health and safety of project stakeholders and the public;
- Provide the process for the identification and control of unsafe conditions and acts and the subsequent implementation of corrective and preventative actions.

This WSMP is documented to outline or reference the resource structure, the responsibilities and authorities of personnel associated with the project and the health and safety procedures to be implemented.

It has been developed to comply with the specific requirements of this project and outlines the following elements:

- Design Development (Safety in Design)
- Workplace Risk Assessment (WRA) development
- Implementing OH&S by Consultants, Subcontractors and Suppliers
- Project Responsibilities and Duties
- Procurement & Purchasing
- Document Management & Record Control
- Inspection and Testing
- Managing Non Conformance, Corrective & Preventative Action
- Inspection, Measuring and Test Equipment
- Auditing

The Workplace Safety Management Plan (WSMP) is one part of the Construction Management Plan (CMP) which lists various other plans that may be required for the management of project activities which may include Design, Environmental, Quality and Traffic management, etc.

2.0 Project Description

The new project development will incorporate:

• 22 - level premium-grade development	• Engineered catch deck over Wheat Rd
• Traffic Management Plans for Wheat Rd	• New Structural Steel frame system
• Site loading from Construction Zones located on Queen and Adelaide Streets	• 6 Star Green Star and 5 Star NABERS rated
• Public protection to the footpaths public domain Hoardings	

Note: For further details on the sequence of works and content refer to the Construction Management Plan.

3.0 Scope of Delivery for the Project

The scope of this project includes:

- Design and Construction of the project;
- Ensure the Clients OH&S Brief is met;
- Management of all Subcontractors to deliver the trade packages to achieve OH&S Objectives and Targets;
- OH&S Auditing and inspecting;
- Providing all required records to demonstrate OH&S compliance.

4.0 OH&S Management System Implementation

4.1 Commitment to Grocon's OH&S Management System

Included in this WSMP is a copy of the Grocon Occupational Health and Safety Policy which demonstrates our commitment to the delivery of excellent projects and services for our clients and all stakeholders.

In addition to this, the Grocon project team have health and safety responsibilities outlined that through implementation will demonstrates the team's commitment to achieve compliance with the Clients requirements and the delivery of a successful project.

Where Grocon undertakes part of the project works, such as structural, the requirements of this WSMP shall be applied to the Grocon works in the same way as it is applied to Subcontractors and or Design Consultants.

Grocon's OH&S Management System is third party certified to AS/NZS4801:2001 which is comprised of company policies, procedures, plans, work instructions and forms, to ensure the consistent implementation of the company's requirements on all projects.

Note: All Procedures are available in real time via the Grocon Intranet to employees. Procedures may be inspected on request, but copies are not distributed externally due to their confidential nature.

4.2 OH&S Management Systems by Subcontractors & Design Consultants

Third parties such as design consultants, subcontractors and suppliers are used on Grocon projects, and where required shall develop and implement their own OH&S Management Systems to ensure that the

provision of all the products and services they provide are in compliance with the specified project health and safety requirements.

Design consultants shall be required to complete design documentation in accordance with the workplace health and safety harmonisation legislation.

Subcontractors who operate their own OH&S management system shall be required to provide a project specific Safety Management Plan.

Where design consultants and or subcontractors, do not have a safety management system, they will be required to comply with Grocon's OH&S management system.

Grocon personnel will monitor all third parties' activities and carry out regular checks, which may include reviews, inspection and audits of the third parties OH&S Management Systems. Any checking/monitoring of the third parties work by Grocon will not relieve the third parties from their responsibilities under the contract.

NOTE: In states that have adopted harmonised legislation, a Design Safety Report is to be supplied and incorporated in the WRA process of the project.

4.3 OH&S Management Systems Reporting

- All projects shall monitor and record performance against the OH& S objectives and targets as set out in the Workplace Safety Management Plan (WSMP). These shall be discussed at each month's project team meeting and the results recorded in the meeting minutes and reported in each months OH&S report.
- The Project Manager, in conjunction with the HSE Advisor, shall ensure that all safety related incidents and information is progressively recorded in the QSE system, so that each project is able to produce safety performance reports on a monthly basis. All data shall be complete and entered into the QSE system within 48 hours of the last calendar day each month.
- All Projects shall review the safety performance at the project Central Safety Committee meetings held each month to identify areas of concern or areas for improvement.
- Each State OHS/HSE manager shall monitor the safety reports from each project to ensure OH&S issues have the appropriate corrective and preventative actions in place.
- The National OHS/HSE manager will compile project and state safety information for inclusion into the monthly Board report, which is presented for review at the Corporate Central Safety Committee.

4.4 Statutory reporting to the relevant Safety Authority

- The HSE advisor is required to report Notifiable Incidents to the relevant state Safety Authority after consultation with the State OH&S/HSE manager. These Incidents shall be reported in accordance with the relevant authorities' requirements which are available from the authority web sites.

  http://www.worksafe.vic.gov.au/safety-and-prevention/health-and-safety-topics/incident-notification

  http://www.deir.qld.gov.au/workplace/incidents/incidents/notify/index.htm

  http://www.workcover.nsw.gov.au/injuriesclaims/Reportinganincidentinjury/Pages/default.aspx

  http://www.safework.sa.gov.au/show_page.jsp?id=2542

- Grocon maintains OH&S accreditation with the Office of the Federal Safety Commissioner (OFSC) and is required to produce various reports related to Scheme or Non scheme projects. These reports shall be produced by the National/State OH&S/HSE manager with input from the relevant project managers and HSE advisors. Details are available from the FSC website.

  http://www.fsc.gov.au/sites/fsc/resources/az/pages/whsperformancereportingpack

  Further details of statutory reporting are in section 16.0 Incident Investigation and Notification.

5.0 Legal and Other Requirements

The legal and other requirements associated with the delivery of the project have been identified during the assessment of risks.

Grocon subscribes to SAI Global, Safety Law and Enviro Law. Relevant stakeholders who require access to changes in legalisation and Australian Standards will be required to register and receive updates by:

- *Electronic notification from SAI Global*
  - **http://bca.sai-global.com/**
- *Safety Law and Enviro Law*
  - **http://www.enviroessentials.com.au/envirolaw/index.php?la=true**

Note: Legislative updates can also be sourced through state or territory WHS/OH&S websites.

Second and third tier Subcontractors will be advised of changes that are relevant to their Safety Plans and SWEMS via notification from Grocon Site Management through:

- Safety Environmental Committee meetings – Grocon and Subcontractors
- Sub-Contractor meetings – Subcontractors
- Aconex notification from site – Grocon and Subcontractors
- Email notification from site – Grocon and Subcontractors
- Site Safety Notice Boards – Grocon and Subcontractors
- Site Safety Management Meetings – Grocon and Subcontractors

Refer: 6010A1 Health Safety and Environmental Legal and Other Requirements Matrix

6.0 Grocon OH&S Policy

Grocon




Occupational Health and Safety Policy

Grocon recognises that the wellbeing of people employed at work and people affected by our activities is a major priority and must be addressed during all activities performed by Grocon.

Grocon will drive a Safety culture change to become industry leaders in Safety to achieve our goal of 'ZERO HARM.'
Grocon is committed to the provision and maintenance of a Safe and healthy workplace for all.

In implementing this policy, Grocon is committed to:

- Making Health and Safety an integral part of managerial and supervisory positions and ensuring it is given due consideration in all planning and work activity;
- Actively encouraging employees to embrace the culture of Safe work practices and a Safe working environment at work and beyond.
- Providing a continuous program of education, training and learning in the principles of Health and Safety to ensure employees at work in the safest possible manner and embrace Grocon's core Safety Values;
- Ensuring that all work is undertaken by competent and suitably trained employees;
- Taking appropriate disciplinary action when employees and subcontractors disregard Health and Safety procedures and practices;
- Complying with relevant legal and other requirements;
- Implementing and maintaining an effective Integrated QSE Management system, to ensure that Hazards are identified, associated risks assessed and controlled;
- Measuring Health and Safety performance through regular monitoring of set measureable objectives and targets for each workplace;
- Ensure that resources are available to achieve the objectives of this policy;
- Adopting innovative strategies to assist in delivering a Safe outcome.

Carolyn Viney
Chief Executive Officer
Grocon Group
24 August 2015

7th annual Safe Work Australia AWARDS

WorkSafe Victoria Awards
OHS Management System of the year.
2011 Finalist

bsi. AS/NZS 4801:2001 Occupational Health and Safety Management

7.0 Safety Objectives

Grocon recognises that the wellbeing of people employed at work and people affected by our work is our first priority which must be considered and addressed during all work performed by Grocon.

Grocon is committed to the provision and maintenance of a safe and healthy workplace for all. It is the objective of Grocon to have **Zero Lost Time Injuries**.

Incidents and injuries will be investigated dependant on Potential apportioned and corrective actions implemented to prevent recurrences. Site interactions and inspections are prescribed to company positions to assist in the identifications of hazards, namely unsafe conditions and unsafe acts.

Project specific Safety Objectives will be developed in line with the Project WRA, National and State Objectives. Strategic Planning developed and implemented during the course of the Project will be considered for inclusion in this document.

7.1 Grocon Project Safety Objectives Matrix

No.	OBJECTIVE	MEASURE - KPI	METHOD	TOOLS or RECORDS	RESPONSIBILTY
PROJECT SAFETY OBJECTIVES					
1/ Subcontractor Pre Start Meetings					
1.1	CM and PM to meet with each 2nd Tier subcontractor principals to reinforce safety expectations	Each subcontract let	In house meeting and sign off	Recorded on a meeting form – 6060F5	CM, PM
1.2	Subcontractor site representative to attend site meeting to address specific safety methodology aligned to the scope of work	Each subcontract let	In house meeting and sign off	Recorded on a meeting form – 6060F5	SM, FM, HSEA
2/ SWEMS Sign off					
2.1	Project Manager to sign off on selected high risk SWEMS: o Harness work o Special crane lifts o Demolition o Confined space work	As reviewed prior to work commencing	In house review and sign off	Signed off SWEMS' filed in QSE database	PM, SM, FM, HSEA
3/ KPI - Safety Interaction Position Matrix					
3.1	Project team to complete Safety Interactions	100% return per month, considering absenteeism through personal, annual or other leave. Management review process as agenda item in Project CSC Meeting	Activities on site	Recorded in register	PM
4/ Front Line and Project Team training					
4.1	Foreman to obtain safety competency to Cert IV level OH&S	Certificate of attainment	External training. Site activities for assessment	Records filed on site and nationally with L & D	PM, SM Mentor by OH&S Manager or HSEA
4.2	Foreman and project team members (Front Line Managers) to undertake First Aid training – Occupational or Workplace First Aid as required	Certificate of attainment	External training.	Records filed on site and nationally with L & D	PM
5/ CAR Close Out					
5.1	Project team to close all allocated CAR's	100% monthly. Management review process as agenda item in Project CSC Meeting	Corrective actions carried out	Aconex, hard copy and QSE Database	PM, SM, FM, HSEA

8.0 Project Stakeholders

Client/Owner:	The owner for this project is (Grocon)	
Project Manager:	Grocon	
Builder and ABN/CAN:	Grocon Constructors Pty Limited	ABN: 32 120 476 495
Project Office:	TBA	

8.1 Communications with Client and all Project stake holders.

Grocon communicate with our Clients and Project stakeholders using various methods including:

- Aconex mail types including; Emails, RFI's, Site Instructions OFI's, etc. (QSE Database System being developed);
- Conference calls;
- At meetings including Safety, PCG, Design, Stakeholder, User groups, Subcontractor etc.
- Written Reports;
- General written correspondence;
- Face to face conversations.

8.2 Compliments and Complaints

Complaints are deemed be issues raised from outside sources, not issues raised by any of the Project Stakeholders. Issues raised by our Clients or Stakeholders during the project shall be addressed through normal lines of project communications.

Complaints received from the community during the project, or from any source after the completion of the project, shall be recorded in the QSE data base with appropriate actions assigned to the relevant members of the project team.

Compliments may be received in the form of letters of commendation or industry awards and are usually communicated via the Grocon intranet.

9.0 Project Personnel & Resources

The delivery of the Project will be carried out by a team under the management of the assigned Project Manager as detailed in the organisational chart, which is located within the Construction Management Plan.

The Construction Manager and or the Executive Project Manager in conjunction with the Project Manager will identify and assign adequate resources to facilitate the effective and efficient management of the works. These resources will include skilled & trained personnel for management, performance of the work and verification activities including site inspections and internal health and safety audits.

The Project Organisational Chart Identifies how the project team functionally interact in order to execute their respective responsibilities and authorities to manage Grocon works, including Consultants, Subcontractors and/or suppliers to achieve contractual requirements.

9.1 Grocon Management Representatives

The Project Manager (PM) has the authority and responsibility for ensuring that the requirements of this WSMP are fully implemented and maintained throughout the duration of the project. The following health and safety related responsibilities are listed for various project positions. The PM is responsible to ensure these responsibilities are communicated to the relevant members of the Project team and ensure that they are covered in the incumbent's Position description.

The Project Manager's responsibilities are:

- Promoting a proactive safety culture to ensure the highest standard of safety performance;
- Understanding the Grocon OH&S System requirements; and
- Ensuring that the allocation of project resources is adequate to meet those needs;
- Ensuring that relevant elements of the Grocon OH&S System are implemented, monitored and reviewed;
- Initiating and ensuring the implementation of the Workplace Safety Management Plan for the Project;
- Chair the Workplace Risk Assessment workshop and ensure monthly monitoring to maintain control of project risks;
- Ensuring compliance with OH&S Legislation and supporting Codes of Practice and Standards;
- Ensuring that subcontractors' ability to comply with OH&S requirements are evaluated prior to commencing work; and
- Monitored and reviewed during delivery of contracted works;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy; and
- Attending Toolbox Talks and Pre Start Meetings as required;
- Ensure all project personnel attend project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Ensuring that safety is the first agenda item at all management and contractor meetings;
- Ensuring training needs analyses are undertaken to determine any training or competency requirements for the site; and
- Ensuring appropriate safety training or competencies requirements are attained;
- Ensuring all staff are adequately trained and instructed in the Grocon OH&S System;
- Ensuring all staff are fully informed about the hazards associated with their work activities;
- Lead and implement the Safety Interactions program;
- Ensuring all staff undertake Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all staff participate in activities that;
  - Identify hazards;
  - Assess risks;
  - Eliminate where possible;
  - Develop and implement appropriate control measures;
  - Monitor and review the control measures;
- Disseminating OH&S related information to all site personnel;
- Consulting with employees and/or Health and Safety Representatives on all safety issues; and
- Ensuring line management participates in the Issue Resolution process;
- Ensuring line management assists in the establishment of Work Groups where requested;
- Participating in the investigation of OH&S incidents where applicable; and
- Providing team members to assist in the investigation process; and
- Ensuring controls are actioned within the allocated time frames;
- Ensuring all internal and external reporting and notification is carried out;
- Notify the State OH&S / HSE manager of All Incidents which are rated 0, 1, or 2, with in 2 hours.
- Providing the OH&S Manager with a review of Workplace OH&S performance on a regular basis.

The Site Manager's responsibilities are:

- Take the lead role in developing and maintaining a safety culture, to ensure the highest standard of safety performance;
- Understanding the Grocon OH&S System requirements; and
- Ensuring that the allocation of resources is adequate to achieve the highest standards of safety performance;
- Ensuring that the Grocon OH&S System is understood, implemented, monitored and reviewed;
- Ensuring the implementation of the line management aspects of the Workplace Safety Management Plan for the Project;
- Ensure actions raised from the Workplace Risk Assessment (WRA) are implemented and continuously reviewed to control risks in line with progress of the works on site.
- Ensuring compliance with OH&S Legislation and supporting Codes of Practice and Standards;

- Ensuring that subcontractors' ability to comply with OH&S requirements are evaluated prior to contract engagement and prior to commencing work; and
- Regularly Monitored and reviewed during delivery of contracted works;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy; and
- Attending Toolbox Talks and Pre Start Meetings as required;
- Ensuring that safety is included as the first agenda item at all management and contractor meetings;
- Assist in reinforcement and promotion of good safety performance;
- Ensuring training needs analyses are undertaken to determine any training or competency requirements for the site; and
- Ensuring appropriate safety training or competencies requirements are attained;
- Ensuring all staff under their direction are adequately trained and instructed in the Grocon OH&S System;
- Ensuring all staff under their direction are fully informed about the hazards associated with their work activities;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all staff under their direction undertake Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all staff under their direction participate in activities that;
  - Identify hazards;
  - Assess risks;
  - Eliminate where possible;
  - Develop and implement appropriate control measures;
  - Monitor and review the control measures;
- Participate in disseminating OH&S related information to all site personnel;
- Consulting with employees and/or Health and Safety Representatives on all safety issues; and
- Actively participating in the Issue Resolution process;
- Assisting in the establishment of Work Groups where requested;
- Ensuring that Safety Environmental Committee members have the appropriate training to fulfil their roles;
- Participating in the investigation of OH&S incidents where applicable; and
- Providing team members to assist in the investigation process; and
- Ensuring controls are actioned within the allocated time frames;
- Ensuring all internal and external reporting and notification is carried out;
- Providing the Project Manager with a review of Workplace OH&S performance on a regular basis.
- Notify the State OH&S / HSE manager of All Incidents which are rated 0, 1, or 2, with in 2 hours.

The Foremen's are responsibilities are:

- Actively promoting health and safety;
- Understanding the Grocon OH&S System requirements; and
- Participating in the implementation of the Workplace Safety Management Plan for the Project;
- Ensuring compliance with OH&S Legislation and supporting Codes of Practice and Standards;
- Participating in all management and contractor meetings; and
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Conducting Toolbox Talks and Pre Start Meetings as required;
- Assist in reinforcement and promotion of good safety performance;
- Identifying training or competency requirements for the site;
- Ensuring all workers under their direction are adequately trained and instructed in the Grocon OH&S System;
- Ensuring all workers under their direction are fully informed about the hazards associated with their work activities;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all workers under their direction participate in activities that;
  - Identify hazards;
  - Assess risks;
  - Eliminate where possible;
  - Develop and implement appropriate control measures;
  - Monitor and review the control measures;

- Participate in disseminating OH&S related information to site workers;
- Consulting with employees and/or Health and Safety Representatives on all safety issues; and
- Actively participating in the Issue Resolution process;
- Participating in the investigation of OH&S incidents where applicable; and
- Ensuring controls are actioned within the allocated time frames;
- Ensuring that subcontractors' ability to comply with OH&S requirements are evaluated prior to commencing work; and
- Monitored and reviewed during delivery of contracted works;
- Participate in the preparation of Grocon SWEMS;
- Participate in audits of Grocon and Sub Contractor SWEMS.

The HSE Advisor's responsibilities are:

- Actively promoting health and safety and implementing the Grocon OH&S system
- Assisting the site team to conduct the Workplace Risk assessment (WRA) and monitor the actions raised to address identified risks during the project;
- Continuously reviewing the Grocon OH&S System to meet OH&S Legislation and relevant Standards;
- Coordinating the site auditing of Workplace Safety Management Plan;
- Providing occupational health and safety expertise to support all personnel;
- Assist in reinforcement and promotion of good safety performance;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Chair the site Safety Environmental Committee (SEC) meetings;
- Establish the SEC committee as soon as practicable and to comply with local requirements;
- Advise and provide site based training to personnel (as required) on hazard identification, risk assessment, control implementation and the monitoring and review process;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Continually monitor the quality of site based Safety Interactions; and
- Reporting to the site management team opportunities for improvement;
- Assisting all staff to participate in activities that;
  - Identify hazards;
  - Assess risks;
  - Eliminate where possible;
  - Develop and implement appropriate control measures;
  - Monitor and review the control measures;
- Ensure relevant OH&S information is available to all site personnel;
- Consulting with employees and/or Health and Safety Representatives on all safety issues; and
- Actively participating in the Issue Resolution process;
- Assisting in the establishment of Work Groups where requested;
- Participating in the investigation of OH&S incidents; and
- Assisting team members in the investigation process; and
- Monitoring that controls are actioned within the allocated time frames;
- Assisting in the internal and external reporting and notification process;
- Assessing subcontractors' documentation for relevance with OH&S requirements during the tender phase and prior to commencing work on site; and
- Participating in the monitoring and reviewing process during delivery of contracted works;
- Leading the preparation of Grocon SWEMS;
- Recommending appropriate personnel to participate in the preparation of Grocon SWEMS;
- Review and follow up with audits of Grocon and Sub Contractor SWEMS;
- Reporting on health and safety performance to the Site Manager and the State OH&S Manager.
- Notify the State OH&S / HSE manager of All Incidents which are rated 0, 1, or 2, with in 2 hours.

The Design Manager's responsibilities are:

- Implement Grocon's Design Safe requirements as per Design Safe Work Instruction;
- Obtain Design safe reports from all design consultants;
- Understanding the Grocon OH&S System requirements; and
- Ensuring the implementation of the line management aspects of the Workplace Safety Management Plan for the Project;

- Ensuring compliance with OH&S Legislation and supporting Codes of Practice and Standards;
- Providing the project team with technical advice based on risk management principles where applicable;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Ensuring that safety is included as the first agenda item at all DesignSafe and contractor meetings;
- Assist in reinforcement and promotion of good safety performance;
- Ensuring all workers under their direction are adequately trained and instructed in the Grocon OH&S System;
- Ensuring all staff under their direction are fully informed about the hazards associated with their work activities;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all staff under their direction undertake Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all staff under their direction participate in activities that;
    - Identify hazards;
    - Assess risks;
    - Eliminate where possible;
    - Develop and implement appropriate control measures;
    - Monitor and review the control measures;
- Participating in the investigation of OH&S incidents where applicable;
- Providing the Project Manager with a review of Workplace OH&S performance on a regular basis.

Project Engineer's responsibilities are:

- Actively promoting health and safety;
- Understanding the Grocon OH&S System requirements; and
- Participating in the implementation of the Workplace Safety Management Plan for the Project;
- Ensuring compliance with OH&S Legislation and supporting Codes of Practice and Standards;
- Providing technical advice based on risk management principles where applicable;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Assist in reinforcement and promotion of good safety performance;
- Ensuring all workers under their direction are adequately trained and instructed in the Grocon OH&S System;
- Ensuring all workers under their direction are fully informed about the hazards associated with their work activities;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Ensuring all workers under their direction participate in activities that;
    - Identify hazards;
    - Assess risks;
    - Eliminate where possible;
    - Develop and implement appropriate control measures;
    - Monitor and review the control measures;
- Participating in the investigation of OH&S incidents where applicable;
- Assist in reinforcement and promotion of good safety performance;

First Aid Officer's responsibilities are:

- Maintaining first aid facilities ensuring they are accessible, clean and contain the required components;
- Treating injured persons to the limit of their training, and not beyond that training;
- Arranging for emergency services where there is a risk to life or long-term wellbeing; and
- Arranging for medical treatment as required, including transportation to a doctor or hospital as necessary.

Contract Administrators /Managers responsibilities are:

- Actively promoting health and safety;
- Understanding the Grocon OH&S System requirements;
- Providing relevant OH&S documentation to Subcontractors at the pre tender stage;

- Assessing subcontractors' ability to comply with OH&S requirements during the Tender phase and prior to being contracted to undertake any work; and
- Updating Subcontractors details in the QSE Database as directed by the Project Manager;
- Participating in the monitoring and reviewing of OH&S requirements during delivery of contracted works;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix;
- Participating in all management and contractor meetings.

Document Controller's responsibilities are:

- Setting up and maintain the document management system, Aconex, in accordance with the Grocon Aconex Project Configuration Document and Best Practice Guide;
- Ensuring all project documentation is submitted via Aconex or scanned onto Aconex;
- Ensure any hard copy documents being used by Grocon are current revisions from Aconex;
- Maintaining copies of superseded documents either electronically or in hard copy for reference;
- Ensuring documents printed from Aconex are identified by a stamp or print on the document, to reduce archiving of hard copy documents when the project is completed;
- Monitor, support and arrange training of project team members, to ensure the correct use of Aconex;
- Ensure that all project records are retained in accordance with Grocon's company procedures, work instructions and Legal department instructions;
- Attending project and other safety meetings as outlined in the Central Safety Committee Hierarchy;
- Undertaking Safety Interactions as apportioned in the Safety Interactions Position Matrix.

All Employees

Employees are all Grocon employees, including managers, supervisors, people with administrative roles and the general workforce plus all subcontractors. They are each responsible for the following:

- Working in a safe manner;
- Taking care for their own health and safety and for the health and safety of anyone else who may be affected by his or her own acts or omissions at the Workplace;
- Co-operating with his or her employer with respect to any action taken by the employer to comply with any requirement imposed by or under the OH&S Legislation;
- Reading, understanding, and complying with the Occupational Health and Safety Policy, safe work practices and procedures and site safety rules;
- Not interfering with or misusing items or facilities including those provided for the health, safety and welfare of employees;
- Reporting potential and actual hazards to their Manager, Supervisor or elected Health and Safety Representative;
- Participating in the Workgroup process;
- Participating in the Issue Resolution process;
- Assisting in the reduction and control of accident and illness producing conditions and suggest ways to eliminate hazards;
- Using the correct tools and equipment for the job;
- Keeping tools in good condition where applicable;
- Using the required safety equipment and protective clothing;
- Reporting defects in workplace equipment;
- Attending induction and any other training provided;
- Reporting any personal injuries and receive first aid treatment as required; and
- Participating in the preparation of Grocon SWEMS.

Off Site Positions

Executive Project Manager and OR Construction Manager have the following responsibilities:

- Ensure that Grocon Workplaces under their control implement this WSMP plan.
- Provide adequate resources to identify and manage project QSE and Design risks.
- Ensure that a contract review considering the QSE issues relating to the works is undertaken.
- Ensure that all design impacts are considered and provide suitable resources to undertake a design safety review.
- Ensure that a Risk Assessment/Workshop (WRA) is undertaken at the beginning of the project covering Design Risks, QSE risks and attended by the relevant project team members.
- Ensure the identified risks have the delegated responsibilities assigned.
- Ensure that the risk assessment and assigned actions are regularly reviewed by the Project manager and the project team and recorded at team meetings to maintain control measures for identified risks.

The State OH&S / HSE Manager has the following responsibilities:

- Conduct the initial review and approval of the WSMP for the project;
- Assist the project team to understand the safety responsibilities outlined in the WSMP;
- Provide updates on changes to the OH&S system in a timely manner;
- Ensure the project team conduct and maintain the Workplace Risk assessment (WRA)
- Train the project team in the manner and timing for conducting Safety Interactions;
- Assist the project team in communicating the OH&S System requirements to all Consultants and subcontractors;
- Assist the project team in reviewing the OH&S System requirements to all Consultants and subcontractors, to ensure adequacy and compliance;
- Support the continual improvement of the OH&S System by attending meetings, workshops, audits & reviews with the HSE Advisor, Project manager, Site Manager and Design manager as required;
- Assist the project team to develop, review and communicate Target and Objectives;
- Undertake internal audits on the project against Grocon Procedures or OH&S documents.
- Conduct regular surveillance of all projects and provide support towards achieving the highest industry safety standards;
- Provide assistance, where required, to improve the safety performance of Grocon subcontractors;

The National OH&S Manager has the following responsibilities:

- Oversee and support the national implementation of the Grocon OH&S System;
- Ensure the Grocon OH&S System is being applied, resourced and managed on all projects through the state Construction managers and each Project manager;
- Maintain the Grocon OH&S System certification and compliance to ISO 4801.
- Maintain, Develop and continually improve the Grocon OH&S System;
- Use feedback and input from OH&S System users across the business at all levels to ensure the system continues to meet business and compliance requirements.
- Manage all internal procedure Audits and external certification audits for Grocon.
- Obtain information from third parties to enable the implementation of corrective action and continual improvement.

9.2 Grocon Resources

Grocon is well known for building complex structures and has completed a large portfolio of well-known projects, which were completed using our direct employees. When Grocon directly undertakes the structural portion of a project we utilise our skilled workforce to carry out the work.

9.3 Subcontract & Supplier Resources

Projects are broken down into trade packages and Grocon employs experienced subcontractors & suppliers to undertake each trade package to deliver a completed project.

Each subcontractor or supplier will be engaged through an evaluation process, as described in this WSMP, which shall consider the resources necessary to deliver the scope of works for the relevant package of work being contracted.

9.4 Consultant Resources

When Grocon is responsible for the Design of the project, we partner with experienced and skilled design consultants who have the necessary resources to complete the Design documentation for each of the disciplines required for the delivery of the project.

Design consultant's novated to Grocon or engaged by Grocon, shall be listed in a project organisational chart which shall be developed during the initial stages of the project.

10.0 Induction and Training

10.1 QSE Training

All project team personnel will be given QSE training as soon as practical to engagement. The training will be consistent with the line management level of the individual. The training may be as a one on one basis or in groups whichever is determined by the Project manager and System manager to effect best time and resource management.

Ongoing training is required given the QSE Database is constantly being upgraded as part of the continuous improvement cycle. Change is driven by the System managers armed with the feedback provided by the end users.

10.2 Safety Cultural Training

Each member of the project team with a line management function will undertake a two day safety cultural training course conducted where possible at the project. On the second day of the training, attendees will separate into small groups and be shown how to conduct onsite Safety Interactions. The Safety Interactions required numbers and timings are defined in ***2025A1 Safety Interactions Position Matrix*.**

All employees (Grocon and Subcontractors) inducted on the project shall be given training in the Action By Employees (ABE) program and instructed about the location and use of the ABE cards. This training will be incorporated in the Site Specific Induction.

10.3 Inductions

All persons who will undertake work at the site must have a General Construction Induction or interstate equivalent. All persons attending the Site Specific Inductions are required to supply Grocon with copies of their Construction Industry Induction Card and relevant tickets of competencies.

Persons who have previously undertaken a General Construction Induction but have not worked in the Construction Industry in the previous two (2) years will need to undertake the training again prior to commencing work on site.

The site induction process includes the following:

- ***The person arranging the induction/s is to forward to site a Subcontractor Employee Registration Form – 6065F2 at least 48 hours before the day of the induction;***
- ***Between 6:30 and 7:30 am the Subcontractor or Grocon site supervisor will complete a session of SWEMS induction and sign off with all workers;***
- ***Between 7:30 and 9:30 the Site Specific Induction and ABE training will be delivered by Grocon to all new inductees;***

The Site Specific Induction and ABE training is delivered in Power Point Presentation format and updated at regular intervals to capture and communicate the changing nature of the project and associated hazards and risks. Further communication of site related safety issues are addressed with the site workers in pre start and toolbox talk meetings.

The inductions also outline to Grocon workers and others where applicable the important work related safety supports such as:

- ***Grocon Employee Assistance Program (EAP)*** – critical event response;

- ***GroHealth* –** wellbeing;
- ***Mates in Construction (MIC) QLD & NSW*** – suicide watch training, intervention and support.

Information relative to EAP and GroHealth are accessible through the Grocon Intranet by clicking on >Systems, >People and Culture and finally >Employee Benefits. Hard copy information posters are displayed on site notice boards.

10.4 Operational Training

Competency levels required in the delivery of a specific workplace task will be considered. Where training is required by Grocon employees, training will be supplied in accordance with procedure 6000P of the Grocon QSE management System.

Certain jobs or tasks can only be undertaken by persons recognised as having a demonstrated competence to perform them efficiently and safely. The issue of a relevant licence, Certificate of Competency or permit is the commonly accepted means of both recognizing and demonstrating such competency. Competency requirements should be identified first, either through a training needs analysis or as prescribed by regulation and then appropriate training can be arranged if necessary.

Where workers are engaged in key supportive safety roles, existing training relevance and currency will be verified and where required new or refresher training will be provided, e.g.:

- Fire wardens
- HSR
- Safety Environmental Committee member
- Assessment and Workplace trainer
- Height retrieval

Grocon provide online training to all employees through the intranet hosted ***Learning Seat – GroLearn.*** Each programs have a built in competency assessment that once completed successfully results in a certificate being generated.

11.0 Hazard Identification, Risk Assessment and Control (HIRAC)

Following on from any corrective actions undertaken in the Development stage of the project and in linking to the outcomes of the DesignSafe process further HIRAC is required for the construction stage.

The DesignSafe process involves facilitated workshops / meetings between appropriate stakeholders and specialists to discuss the safety impacts of the design in a structured way. To stimulate and structure the discussion a series of hazard/risk categories with word prompts and considerations have been developed and form the foundation of the review.

The risk consideration discussed and identified shall be documented, together with any actions and notes considered necessary by the DesignSafe review team. The review is not intended to compromise or change the design performance or architectural detail but to enhance the design buildability, maintainability, operability, end user interactions and disposal of the structure or elements thereof.

Where design changes are implemented during the construction stage, the DesignSafe process will be conducted in accordance with ***Managing Quality, Safety and Environmental Risks 6000P and the DesignSafe Work Instruction 2005W1.***

11.1 Hazard Identification – Workplace Risk Assessment

Where hazards associated with the program are identified in the Workplace Risk Assessment (WRA) are unable to be eliminated, each workplace risk will be given a risk score using the matrix contained in ***6000A1 Risk Assessment Matrix*** a Risk Score will be determined by referring to the matrix on the Risk Assessment System. A risk reduction can be achieved where applicable by implementing a control or combination of control measures from the Hierarchy of Control.

Prior to the commencement of work activities, the Grocon Site Manager, Responsible Foreman and HSEA shall formally review the scope of works for the task to identify and document hazards, eliminate where possible

and assess the risks using Grocon's *Workplace Risk Assessment (WRA)*. The risk management process will be used to identify high risk plant and activities aligned to the task.

The successful mitigation of hazards is based on the following parameters:

- Identify, assess, eliminate where possible, control, monitor and review;
- Instructing personnel on how to report and document any hazards or potential hazards to the Site Manager and/or Foreman.

The reporting of hazards is the first and critical step in the hazard management process, if this step does not occur there is a potential for hazards to go unchecked. All hazards that are identified and cannot be "See & Fixed", that is easily and safely fixed, must be reported to the Grocon Foreman or another supervisor where appropriate or an OH&S representative or Safety Environmental Committee member. The reporting of these hazards can be done verbally. The supervisor directly responsible for the area and / or task is responsible to ensure that the hazard is:

- Made safe
- Rectified

When hazards or potential hazards are identified, personnel shall attempt to rectify, identify, barricade or isolate the hazard, ***only*** where practical and safe to do so. This should be done before reporting the hazard to the responsible Foreman to ensure others are not exposed to risk of injury or illness.

Any hazard, not able to be controlled or rectified immediately, is to be made safe with barricades, information tags and/or warning signs and reported to the relevant Grocon Site Manager or Foreman. The employee should also advise all personnel in the vicinity of the hazard. The Foreman will immediately initiate the appropriate action to correct the hazard or notify the appropriate management representative and HSEA should it be beyond their control. After the hazard has been rectified, the responsible Foreman shall report the outcomes of the hazard to the employees.

If the hazard is of a serious / complex nature it should be documented in written form on *1005 F1 Hazard Report*. The preferred formal method of documenting hazards is via the QSE database, via hazard reporting function in the Safety Menu or via the Grocon Safety Interaction function, *2025 F1 Workplace Safety Interaction Record Sheet*.

11.2 Control Measures

Control measures must be selected and implemented in the WRA using the Hierarchy of Control as follows:

1. Elimination
2. Substitution
3. Isolation
4. Engineering
5. Administrative
6. PPE/C

NOTE: Elimination is the preferred control, with PPE/C being the least preferred.

The Risk Assessment Matrix has four (4) layer Residual Risk Score indicator that identifies – ***Low*** (0 to 6, Acceptable), ***Moderate*** (7 to 14) SWEMS required, ***Very High*** *(15 to 22)* SWEMS required and to be ***SWEMS Implementation Audited (6000F6)*** and ***Extreme*** (23 to 25) score range where work is not to commence.

11.3 Safe Work and Environmental Method Statements (SWEMS)

Safe Work and Environmental Method Statements (SWEMS) will be developed and implemented for all high risk construction activities, or where identified in the Residual Score indicator as required. The Site Manager, Engineers, Responsible Foreman and HSEA shall formally review the SWEMS using ***SWEMS Review (6000F5)*** prior to work commencing to ensure they are correct for the task being undertaken. Records of the SWEMS reviews will be filed in hard copy format and electronically in the QSE Database.

The SWEMS development, implementation, amendment and review process should have employee input where they are engaged in the work activities, those employees are required to be involved in the development process. Specific consideration in relation to the communication of the SWEMS must be given to employees undertaking work outlined in the SWEMS should they move from task to task.

Where changes are required in the WRA through the following actions of review, audit or investigation the changes are to be highlighted in red or italic text.

11.4 Safety Interactions

Safety Interactions conducted in workplaces will be used to assist Grocon and its employees to identify unsafe practices and to utilise skills provided in training to assist in improving safety culture.

The responsibility, timing and number of Safety Interactions required monthly are listed on the ***2025A1 Safety Interactions Position Matrix***.

The Safety Interactions are as follows;

- Workplace Safety Interaction
- SWEMS Implementation Audit
- SWEMS Review
- Plant Inspection
- Safety Environmental Committee Attendance
- Safety Environmental Committee Walk Participation
- Project CSC Meeting Attendance
- Incident Investigation Subcommittee Meeting Attendance
- Project Safety In Design Meeting / Review
- Workplace Risk Assessment

A Workplace Safety Interaction is the act of observing people performing their work tasks in their surrounding environment and undertaking behaviour improvement discussions with them or their group.

All employees will be encouraged to eliminate hazards on a “see and fix” basis.

Considerations for identifying hazards:

- Is the equipment / resources used to perform a task suitable?
- Is the equipment / resources appropriately located? If no, how can it be improved?
- Is the method for using the equipment and materials appropriate? If no, how can it be improved?
- Can people be affected by noise, fumes, vibration, lighting etc? If so, how can this be prevented?
- Can people be injured by equipment, machinery or tools? If so, how can this be prevented?
- Can people be injured by chemicals and other hazardous materials used in the work place? If so, can this be prevented?

To assist this process of identification, resources such as the following should be used:

- Workplace Health and Safety Queensland Codes of Practice and other publications, e.g. Safety Alerts;
- Hazard profiles for specific trade groups;
- Workplace experience and training;
- Consultation (e.g. Toolbox Talks) with workers experienced in the task to be undertaken.

All hazards that are identified and cannot be “See & Fixed”, that is easily and safely fixed, must be reported to the Grocon Foreman responsible for the area. Opportunity for Improvement (OFI) can be raised in the QSE Database where the action requires a specific person to take corrective actions, which are then verified as completed by the OFI originator. This method provides a mechanism for closing the loop in relation to the HIRAC process

11.4.1 2025A1 Safety Interactions Position Matrix.

SAFETY INTERACTIONS POSITION MATRIX

2025 A1 Form	Safety Management System

This Matrix refers to the Work Instruction 2025W1 Safety Interactions Program. For Positions refer to Company and Project Organisational Charts.

Safety Interactions Program Activities Participation Requirements

	Position	Abbreviation	Workplace Safety Interaction	SWEMS Implementation Audit	SWEMS Review	Plant Inspection	Safety Committee Meetings Attendance	Safety Committee Walk Participation	Project CSC Meeting Attendance	Incident Investigation Subcommittee Meeting Attendance	Project Safety In Design Meeting/ Review	WRA Review
CORPORATE	SLC Members	SLC	1	1								
	Head of Department	HOD	1	1					As Required**			
	General Manager	GM	1	1					As Required**			
	Construction Manager	CM	2	2			1	1	As Required**	As Required**	As Required**	As Required**
	HSE Manager	HSEM	2	2			1	1	1	1	1	1
	Operations Manager	OPM	2	2			1	1	As Required**	As Required**	As Required**	As Required**
	Corporate Positions	CP	1	1					As Required**		As Required**	
PROJECT	Executive Project Manager	EPM	2	2			1		1	As Required*	As Required**	As Required**
	Project General Manager	PGM	2	2			1		1	As Required*	As Required**	As Required**
	Project Manager (including assistant)	PM	2	2	2		1	1	1	As Required*	1	1
	Design Manager	DM	2	2	2		1	1	1	As Required*	1	1
	Contract Administrator/Manager	CA	1	1			As Required**	As Required**	1			As Required**
	Site Manager	SM	2	4	4		4	4	1	As Required*	1	1
	Foreman/Supervisor	FM	2	4	4	4	As Required**	As Required**	1			As Required**
	HSE Advisor	HSEA	2	4	4	4	4	4	1	1	1	1
	Leading Hand	LH	2	2	1		As Required**	As Required**				As Required**
	First Aider	FA	2				4	2	1	As Required*		
	Project Support Positions	PSP	1	1			As Required**	As Required**	1			As Required**
MAYGAR	Grocon Operations Management	GOM	2	2	2	2	4	4	1	As Required*	1	1
	Grocon Operations Supervisor	GOS	2	2	2	2	4	4	1	As Required*	1	1

NOTE: As Required* - Applicable when Host Project
As Required**- When Invited

This document is uncontrolled when printed. Please consult the electronic version for the latest revision.

Ownership: Systems Managers
Title: 2025 A1 Safety Interactions Position Matrix

Effective Date: 05th April 2013
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12.0 Subcontractor Management

Subcontractors will only be engaged to work in the workplace who have a demonstrated commitment to occupational health and safety and who are committed to complying with applicable OH&S Legislation and Standards.

All subcontractors on Grocon sites are required, as per the Subcontract Deed, to submit a Project Specific Safety Plan to the project Site Engineer. The documents are to be processed as outlined in the ***6191F1 QSE tenderers capability statement*** available from the intranet.

- Subcontractors and their employees are required to comply with this Workplace Safety Management Plan and the Site Safety Rules;
- Appropriate references and requirements to comply with OH&S Legislative requirements and this Workplace Safety Management Plan, are included in all subcontracts;
- Subcontractors shall submit their site specific SWEMS for review and work will not be allowed to commence until the SWEMS is accepted. SWEMS will be field audited by Grocon personnel for correct implementation at least once, with high risk activities being audited on a more regular basis;
- Subcontractors will be primarily responsible for the health and safety of their employees. Grocon will also undertake monitoring and supervision of subcontractors. The level of monitoring and supervision will depend upon factors such as:

  - the size and expertise of the subcontractor, including in relation to health and safety issues;
  - the complexity of the tasks;
  - the level of risk;
  - the control that Grocon has over the workplace and the particular activity or would ordinarily have in relation to such activity;
  - The interaction of the subcontractors with other site personnel, including Grocon employees, such as:
  - Safety Environmental Committee meeting: and
  - Site Safety Communication meeting attendance.

12.1 Contractual Subcontractor Management including pre-tender evaluation

The Tender package to be issued to the market must include the following documents as a minimum;

Scope of Works:

- Prior to issue this must be approved by the Project Manager, Site Manager and HSEA.

Tenderers Capability Statement 6191F1:

- This document outlines the safety criteria required to be met by the tenderer. Once this information is gathered the Site Management Team must evaluate the information.

Other Documents:

- Grocon General Preliminary Specifications;
- Environmental Management Plan ;
- Project Quality Plan;
- Workplace Safety Management Plan; and
- Supporting safety requisite documents.

Once tenders are received, the Contract Administrator is to evaluate the tenders to gauge those most suited to the successful completion of the package. This evaluation is to include price, programme, previous performance, safety and environmental issues and quality assurance.

Once contracts have been awarded, the subcontractor and Grocon management will meet to discuss Grocon expectations and make arrangements for a site meeting of the project teams to establish the requirements prior to starting work on-site.

12.2 Sublet Subcontractor Management

Second Tier subcontractors (those with a contract with Grocon) will be responsible for reviewing all their subcontractors' documentation (third tier subcontractors) and ensuring it is in line with Grocon, legislative and other requirements. Prior to the third tier subcontractor starting on site, all documentation (including evidence of the Secondary tier subcontractor's review) is to be made available to Grocon for review.

Subcontractors Safety Plans will be audited by the relevant Grocon Supervisor with assistance supplied by the HSEA as part of auditing as outlined in this WSMP. Where non-conformances are identified the Subcontractor will be issued an OFI which must be closed out in the allocated time frame.

13.0 Workplace Establishment

Obtain information and where applicable provide notification to authorities including, but not limited to:

- Notification / application to Council, WHS / OH&S legislator; Police:
  - Construction Certificate;
  - Hoarding notification;
  - Demolition;
  - Asbestos Removal;
  - Contaminated soil removal;
  - Roadway work zone approval;
  - Traffic Management Plan;
  - Footpath closure permits;
  - Road closure permits;
  - Out of Hours Work.
- Site Clearance:
  - Excavation;
  - Soil removal.
- Environmental:
  - Environmental Protection Agency (EPA);
  - Environmental Impact on neighbouring properties;
  - Environmental Management Plan – WRA.

13.1 Workplace Access and Security

The workplace will be made secure to prevent the entry of general public. This will be achieved by the installation of hoarding or fences, gates and signage. All visitors wishing to gain access to the site are required to contact the Project Manager and/or the Site Manager, prior to entering the Site, otherwise access may be denied. Visitors to the workplace are required to report to the Site Office to sign in when entering and sign out when departing the workplace. Visitors must be accompanied by an authorised person at all times whilst on the Site. A visitor sign in book is located at Reception in the Project Office. Visitor tags are to be visible at all times.

13.2 Parking

No general parking or employee parking is available at the Site.

13.3 Site Entry

Construction vehicle access to the Site is via Queen Street and Adelaide Street after the car park ramp is poured.

13.4 Site Hours

Site hours as approved by the Brisbane City Council are:

6:30 am to 6:30 pm	Monday to Friday;
6:30 am to 6:30 pm	Saturday;
Sunday Work	Subject to Out of Hours Permit;
Shift/Night Works	Subject to Out of Hours Permit.

Out of hours work subject to permit approval.

13.5 Signage

Signage will be displayed prominently at Workplace entry points and throughout the site. This will include, but not be limited to:

- Safety signs;
    - first aid;
    - evacuation;
    - assembly area;
    - warden identification;
    - Safety Environmental Committee;
    - site rules;
    - safety alerts.
- Additional signage:
    - public restriction signs;
    - personal protective equipment signs;
    - traffic management signs;
    - warning lights;
    - Hazchem signs;
    - signage regarding the requirement for personnel to be inducted;
    - site procedures

13.6 Workplace Amenities

Amenities will be established in line with program requirements, with consideration given to accessibility to services such as electricity, water, sewerage, ventilation and the proximity to work areas. The number, size and types of amenities will be in accordance with the relevant Code of Practice. Overhead protection will be provided where amenities are located adjacent to open building structure or under an area where overhead lifting activities are carried out. Access ways or paths to amenities must be kept clear at all times and be free of stored material, static or mobile plant.

13.7 First Aid and Rehabilitation

The first aid facility will be located in accessible areas and clearly defined on a site plan. An appropriate number of suitably trained First Aid Officers will be available at the Workplace during normal work hours. Any persons with a health problem or chronic illness that requires medication during working hours must inform the First Aid Officer about their condition and the medication. This information will be treated in the utmost confidence and will assist the First Aid Officer in the correct management of an accident or emergency involving that person. All persons who sustain an injury are required to report the matter to their

Foreman, Supervisor, Grocon First Aid Officer or HSEA and seek treatment from the First Aid Officer (if required).

Rehabilitation

Rehabilitation facilitates the safe return of injured persons to meaningful and productive work and includes:

- Nomination of a Rehabilitation Coordinator;
- Development of a program for the injured person in conjunction with the treating Medical Practitioner;
- Coordination of a return to work program; and
- Contact and correspondence with the injured person.

- Subcontractors will have applicable WorkCover documentation available onsite should an injury occur and the employee needs offsite medical attention, i.e. suitable duties plan.

Employees are informed of Grocon's rehabilitation commitment via the Site Specific Induction. Grocon shall ensure injured workers are treated with respect and offered every level of assistance and provided appropriate suitable duties for full normal working hours in line with applicable medical constraints set by the treating Medical Practitioner, in consultation with the nominated Project preferred Medical Practitioner.

Site based support will be provided to an injured worker that will enable:

- Identify the work that is available within the Employees capabilities, and discuss the nature of such work with the Employee;
- Accompany the Employee to the treating Medical Practitioner if agreed to seek approval of suitable duties;
- Monitoring the injury to ensure any follow up treatment is scheduled and received;
- Provide motivation support to the injured worker to assist with a return to normal duties.

The process of managing the rehabilitation process is outlined in the ***2520 F1 Return to Work Interaction Pack.***

Subcontractors are to provide the Grocon team of their company nominated Rehabilitation Coordinator.

13.8 Emergency Management

The Emergency Management Plan will evolve in line with the program requirements. Initially emergency management will be implemented in the early works in the following way:

- Assessing and supplying adequate emergency equipment;
- Ensuring Grocon and Subcontractors have suitable qualified emergency response trained workers;
- Producing evacuation procedures, evacuation signage;
- Installing evacuation alarm equipment;
- Identifying the location for set down of emergency response personnel;
- Recording quantities and storage locations of Hazardous substances and dangerous goods;
- Maintaining currency of MSDS/SDS and filing in a readily accessible location;
- Communicating emergency evacuation procedures and emergency contact / service numbers in the induction process.

On commencement of the structure vertically an Emergency Management Plan will be developed to provide for the following:

- Fire Wardens;
- Nurse call system / two way radio;
- Crane lifted first aid box;
- Fall retrieval equipment;
- Fire drill procedures.

External notification to the WHS/OH&S legislator other authorities will only be via the HSEA in consultation with the PM. Notification of emergency events to the client will be via the Project Manager and Client.

13.9 Safety Environmental Committee

A Safety Environmental Committee will be established at the Site in accordance with relevant WHS/OH&S Legislation and in consultation with site workers. All members of the Safety Environmental Committee will be required to have undertaken training as required under the relevant WHS/OH&S legislation.

Meetings will be conducted weekly (where applicable), with minutes documented and distributed in hard copy format to attendees, site management and site safety notice boards. Electronic copies will be sent to Subcontractors via Project Centre or Aconex, whichever is the chosen system for the project. Minutes of each meeting will form part of the Project CSC meeting agenda for discussion and actions where required.

Safety Environmental Committee members will be joined weekly (where applicable) by one or more Grocon management representatives in conducting site safety walks.

13.10 Toolbox Meetings, Communication and Consultation

Toolbox meetings will be held weekly by Grocon and Subcontractors/Pre start talks will be held for safety related issues, training, job co-ordination and whenever changes to procedures and SWEMS take place. These meetings will be recorded on the appropriate record in accordance with Grocon's OH&S System.

Where Work Groups are established at the site, each group will be an integral part of the consultancy process. The management team will provide timely site safety information to HSR's for each Work Group to ensure there is a coordinated approach to managing the overlapping work activities required in the program.

Grocon will provide information to second tier subcontractors through:

- Project Centre / Aconex;
- Subcontractor meetings;
- Safety Environmental Committee Meetings;
- Subcontractors tool box meetings.

6060F5 Toolbox Talk Record

Second tier subcontractors are to communicate information to third tier subcontractors. Where tool box talks or other means of communication are used, Grocon will require the subcontractor to provide a copy of the tool box talk documentation or any other correspondence for record purposes.

Records of correspondence relevant to safety issues raised with public authorities will be filed onsite in the standard file directory.

External Communication
Grocon will at the first opportunity communicate with external parties (e.g. clients, neighbours, regulatory authority) regarding safety matters arising at any time during construction of the project. Where regulatory are required to be notified it will be in accordance with regulatory specified time frames. All communication will be recorded electronically in Project Centre or Aconex, with any actions required carried out in the QSE Database.

14.0 Workplace Specific Safety Requirements

Detailed Occupational Health and Safety policy and procedures are set out in Grocon's OH&S System. This WSMP has been developed consistent with the Grocon OH&S System. The policy and procedures in the Grocon OH&S System and the site SWEMS apply throughout the Workplace except where specifically indicated otherwise.

14.1 General

- All personnel must work in a safe manner and in accordance with relevant OH&S Legislation, Codes of Practice, Australian Standards, site policies and procedures;
- Statutory Rules and Regulations are to be taken as a minimum guide only;
- Any workplace injuries (including minor First Aid treatable) or incidents must be reported on the day of occurrence to the Workplace Management or Workplace First Aider; and
- All incidents and injuries require an Incident or Injury report form to be completed.

In conjunction with Grocon, all Subcontractors must ensure compliance with these requirements:

- All personnel are to ensure the safety of the general public at all times and each contractor will be responsible to provide any temporary protection or barriers to ensure public safety;
- All vehicles entering the Site are to obey displayed speed limit of **5kph**. Any driver found to be disobeying speed limits or general road rules will be banned from entering site;
- All reversing plant (including trucks) shall have a spotter and reversing beepers;
- No children are permitted on site, excepting authorised work experience;
- No animals are permitted on site;

- Grocon reserves the right to carry out searches of bags brought onto site, if required, this procedure would only be conducted in the presence of the owner, and it is a condition of entry to comply;
- Subcontractors are required to submit job specific Safe Work and Environment Method Statements (SWEMS), Risk Assessments and Hazard Identification Procedures for Grocon perusal and review at a minimum of 5 working days prior to commencing on site;
- Employees not inducted in a SWEMS for a task with identified risk, are not to carry out that task; and
- SWEMS implementation and adequacy will be regularly audited throughout the life of the project.

14.2 Safety Requirements

- Designated walkways are to be used when walking around the site. Materials or equipment are not to be stored in designated walkways;
- Dust to be suppressed and fumes must be appropriately ventilated;
- All floor and wall penetrations must be appropriately identified and secured;
- Fall arrest equipment, including safety harnesses, lanyards, shock absorbers and inertia reels must only be used when safe work platforms cannot be used;
- All workers must be trained in their application prior to use. Retrieval systems must be documented and proven for all worked conducted with fall arrest equipment;
- All equipment must be registered, correctly stored and inspected;
- Persons engaged in work utilising a fall arrest system must have received training in the previous two years;
- Travel restraint systems must be used in preference to fall arrest systems wherever the risk of impact to a falling person could occur;
- Trenches and excavations must be adequately shored, battered or benched before personnel are allowed access. Safe access shall be provided in all excavations over 1.5 metres in depth;
- Gas cylinders are required to be secured upright at all times to prevent falling;
- Flash back arresters to be used where appropriate and must be on both ends of the hoses, maintenance must be performed in accordance with the applicable Australian Standard;
- Adequate fire protection must be provided as necessary. In particular, a suitable fire extinguisher shall be securely attached to each electric or oxy-acetylene or oxy-LPG welding plant brought on Site; and
- Proper care shall be taken in the use of compressed air. This includes safety glasses, suitable hearing protection and airline safety clips.

14.3 Interference with Safety Installations

Interference with safety installations such as handrails, guardrails, penetration covers, safety lighting, caps over starter bars, and signage etc. will not be tolerated. ***Offenders will be instantly removed from site.***

14.4 Personal Protective Equipment and Clothing (PPEC)

PPE and clothing deemed to be necessary will be worn by all Grocon management, supervisors, employees, subcontractors and visitors in designated areas.

Mandatory PPEC at all Grocon sites include:

- Steel capped footwear;
- Safety eyewear for general work and visitors; and
  - Face shield for pressure cleaning;
  - double eye protection for grinding, e.g. face shield worn over safety glasses or goggles;
  - goggles or safety glasses and face shield for overhead drilling;
- Safety Helmet -
- Gloves (task specific / fit for purpose);
- High visibility vest (or clothing);
- Long sleeved shirt, long pants.

All PPE and clothing must conform to the appropriate Australian Standards. PPE requirements are communicated to all staff and subcontractors prior to attending the site specific induction. PPE will be

supplied to Grocon employees in accordance with Grocon's Occupation Health and Safety Management System.

14.5 Personal Conduct

It is essential that all Grocon Management and employees, subcontractors and others maintain a high personal standard of conduct and a commitment to a safe workplace at all times whilst in the workplace. This is a shared responsibility. The way in which people conduct themselves in the workplace is an important element in maintaining healthy and safe conditions.

- Any person found committing any of the following offences on site shall be disciplined and may be subject to their site access being withdrawn:

  - Horseplay, throwing objects, practical jokes and rowdiness, etc. will not be tolerated
  - Fighting on site;
  - Sabotage, vandalism, graffiti, wilful damage to any appliance or material;
  - Serious misuse of site equipment and amenities e.g. damage to sheds, fire extinguishers, electrical equipment;
  - Not using toilets provided;
  - Theft;
  - Refusing to act on safety instruction;
  - Interfering with safety installations;
  - Skylarking or playing games in a manner that could cause injury or damage.

- The possession or consumption of **alcohol** or **drugs** is prohibited on all Grocon workplaces. Any person who is under the influence of drugs and alcohol must not enter or remain on the site;
- Grocon has implemented a **NO SMOKING** policy which prohibits smoking on site;
- Portable radios, MP3 players, "walkman" type players, and mobile phones are considered to be a safety hazard and therefore the use of this equipment is not permitted on the project. Only supervisors/managers are permitted to use mobile phones, and then only for work purposes, they are not to walk and talk and must position themselves in an area that is isolated from site hazards;
- Good housekeeping on the job is mandatory and every person on site must do their part daily to ensure the job is clean for safety and efficiency;
- Work areas must be kept clean and clear of debris, waste materials and tripping hazards at all times;
- Materials are to be stacked in designated areas;
- Spillage of oil and liquids is to be cleaned up immediately;
- Food is not to be consumed in work zones, only in the lunchrooms; and
- Glass Containers are not allowed on the site other than in the lunchrooms.

Disciplinary action will be applied in accordance with the Grocon Disciplinary Policy and the EBA.

Penalty system for non-conformance being:

- *1st non-conformance – Verbal warning and recorded;*
- *2nd non-conformance – Written warning;*
- *3rd non-conformance – Re-induction and final written warning;*
- *4th non-conformance – Removal from site.*

Any of the above stages are reset after 6 months without a non-conformance.

14.6 Sexual Harassment and Discrimination

Harassment of any form, bullying, or racial discrimination will not be tolerated on this project. All personnel are to refrain themselves from using obscene or offensive language or behaviour. Display of offensive or discriminatory signs or posters is prohibited.

14.7 Drugs and Alcohol

The possession or consumption of alcohol or drugs of addiction are prohibited on all Grocon work sites. Any person who is under the influence of drugs and/or alcohol must not enter the Site. Any employee reporting to work under the influence of alcohol or illicit drugs will be removed from Site following consultation with his

Supervisor/Foreman, Health and Safety Representative and/or the Safety Environmental Committee.

This position is subject to any drug and alcohol policy that Grocon may implement.

15.0 Issue Resolution

OH&S issues at the site will be resolved in accordance with ***Issue Resolution 6660P.*** Where a health and safety issue is identified that involves a hazard in the workplace, the person raising the issue with their PCBU Supervisor or HSR will then assist in the completion of the section in the ABE Card. There is provision within WHS/OH&S legislation for work to cease if there is a serious risk to health and safety and also provision for the raising of a PIN by a HSR.

HSR's involved in the issue resolution process will have completed the relevant training as required by WHS/OH&S legislation.

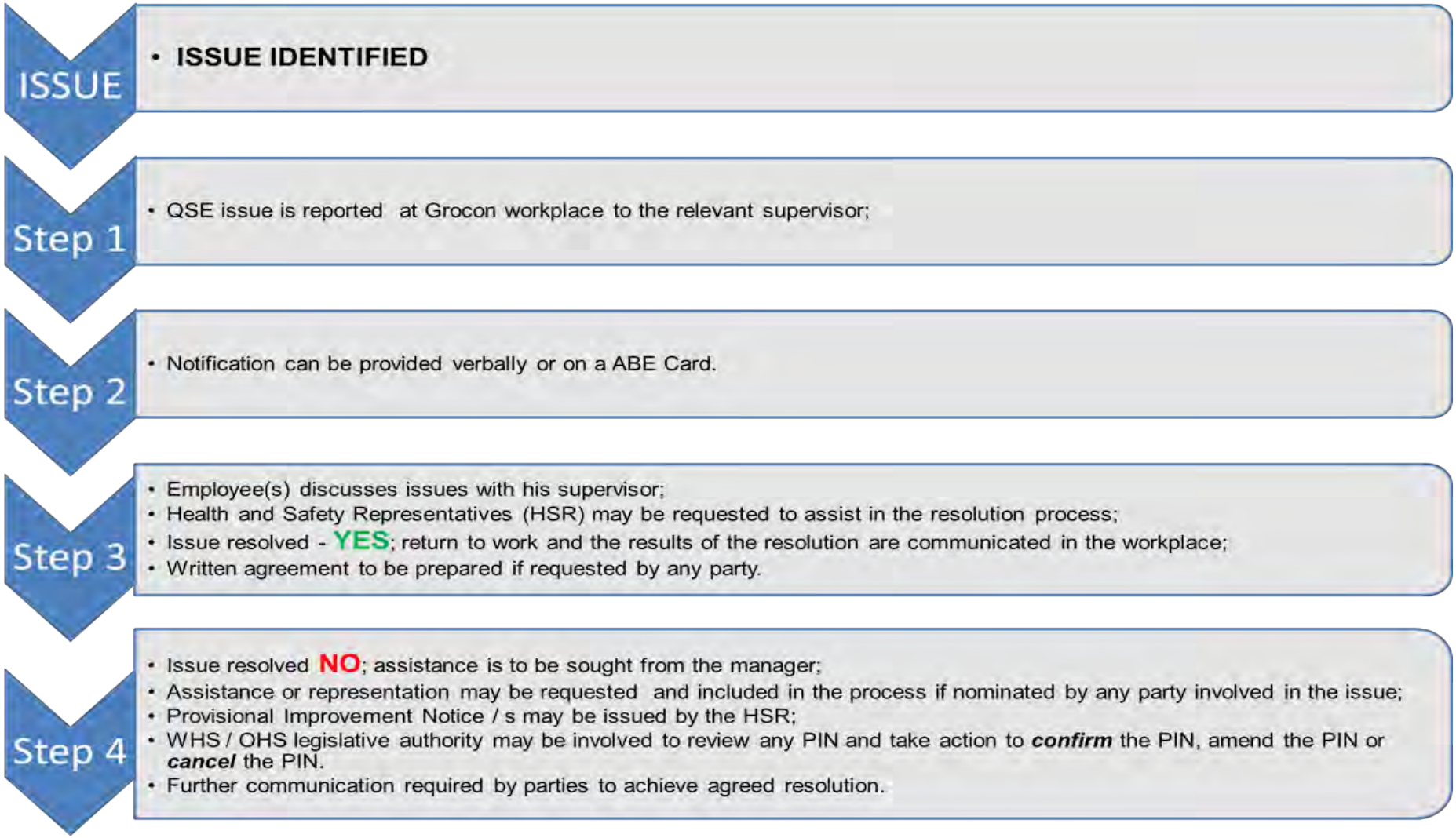
Resolution of issues will be given high priority status and may include in the process to achieve a satisfactory outcome the following persons:

- Site Manager or Line Manager;
- Persons conducting a business or undertaking (PCBU) – Subcontractors included;
- HSR;
- Worker/s;
- Worker/s Representative;
- HSEA.

Where parties cannot reach an agreed position on resolving the issue a request may be made to WHSQ to provide an Inspector to assist in the process.

The HSEA will maintain a register of received Hazard Report Forms / Issue Resolution documents and table the register for discussion at the Safety Environmental Committee Meeting. Hazard Reports (Electronic) are to be managed on the QSE database.

15.1 Issue Resolution Flow Chart



16.0 Incident Investigation and Notification

Occurrences are to be reported immediately to the HSEA. Other relevant persons at the Workplace should be informed of the incident/accident/dangerous including the Project Manager, Site Manager, Supervisor/Foreman, Health and Safety Representatives and/or Safety Environmental Committee. The HSEA will notify the OH&S/HSE Manager. Persons with responsibilities for incident management at this Workplace have been nominated as:

- Project Manager
- Site Manager
- First Aid

External notification to the WHS/OH&S legislator and other authorities will only be via the HSEA in consultation with the PM and OH&S/HSE Manager.

Notification of safety incidents to the client will be via the monthly PCG Report, and as nominated in the D & C Contract:

Details of any:

- work related illness;
- injury;
- dangerous event;
- direction of any Authority or worker's representative in relation to health and safety; or any other event giving rise to an OH&S Notification Requirement.

NOTE: Only that result in a LTI or MTI will be reported as soon as possible but not later than 24 hours after such occurrence.

Under WHS/OH&S legislation, incident notification requires the following incidents to be reported if any of the following events occur at the workplace;

(a) the death of a person; or
(b) a serious injury or illness of a person; or
(c) a dangerous incident.

Upon becoming aware of any of the incident above occurring, site management will notify the WHS/OH&S legislator by the fastest possible means, e.g. telephone, email, fax or other electronic means. Where notice and details are given by phone, the WHS/OH&S legislator may request a written notice on an approved form within 48 hours. In cases where phone notice is given but WHS/OH&S legislator does not require a written notice, the WHS/OH&S legislator must provide site management with;

(a) details of the information received; or
(b) an acknowledgement of receiving the notice.

Grocon will retain a record of all notices given to WHS/OH&S legislator in accordance with the relevant legislation.

- It is a requirement of the FSC that each Grocon site (Scheme or Non-Scheme) will notify the FSC in the following instances and in the manner prescribed:
  - All fatalities irrespective of the project value (notify immediately to 1800 652 500 and provide report within 48 hours);
  - Any incident resulting in a LTI and/or AWI (Alternate Work Injury) where the project value is $3 million or more (provide report within 48 hours if a notifiable Incident, otherwise provide report within 3 weeks);
  - Any MTI or dangerous occurrence on a Scheme project (provide report within 48 hours if a notifiable Incident; otherwise provide report within 3 weeks).
  - all subcontractor incidents should be included in the reporting process.

OFSCreporting@deewr.gov.au

External notification to the OFSC will only by the HSEM using the OFSC Reporting Pack.

17.0 Public Protection

At different stages of the program development, public protection will require additional control measures to be implemented for various hazardous locations or high risk activities where applicable such as:

- Traffic management;
    - Roads;
    - Streets;
    - Footpaths;
    - On site.
- Falling objects:
    - Over roads and footpaths;
    - Over adjoining properties;
    - On site.
- Demolition;
- Asbestos removal;
- Dust;
- Noise.

17.1 Traffic Management

At different stages of the project, Traffic Management Plan/s (TMP) will be developed and reviewed in line with project development. Each TMP will address control measures for the movement and protection of the public and site personnel and will incorporate relevant drawings, permits, signage and trained personnel.

All site personnel are to observe all traffic control equipment and signage and use the designated access and egress.

Appropriate signage and / or physical protection to reduce the risk to the public from vehicles from entering the workplace will be implemented. Consideration will also be given to issues such as noise and dust control.

Internal plant and traffic movement will be controlled, where applicable, by licensed traffic controllers or in other cases as outlined in the Internal Traffic Management Plan (ITMP).

17.2 Falling Objects

In all stages of construction, loads will be required to be lifted over footpaths and into and out of the site. To provide protection to the public on the footpaths during lifting operations, the following controls taken from the ***"Hierarchy of Control"*** will be implemented:

Isolation –
Where possible footpath closure permits will be applied for and hard barriers erected;

- Erect a hoarding along the boundary;
- Erect a gantry along and over the footpath;
- Install warning beacons or sirens;
- Install a retractable barrier system at the footpath crossover location/s and at each end of the gantry when objects are being lifted across. Footpath closure is required under gantries where significant sized or weighted loads are lifted over – applicable to QLD.

Administrative –

- Place qualified Traffic Controllers in the locations required;
- Erect safety signage in conspicuous location for easy public viewing.

Planning for overhead protection will consider factors such as (but not limited to):

- The duration of the overhead protection;
- Location of areas to be protected;
- Crane lifting, luffing and slewing areas;
- The type of loads to be lifted over the areas requiring protection;
- The type and loading of overhead protection required;
- Materials to be used in the structure;
- Supporting ground conditions;
- Provision of temporary services such as power, lighting, water, drainage and concrete pump lines;
- Overhead electrical assets;
- Location of underground services and access to services;
- Pedestrian and vehicular access;
- Obstructions such as trees, light posts, bus stops, street signs and fire hydrants;
- Whether the structure is to be freestanding or tied to an existing building;
- The use of the structure for storage of materials and equipment or amenities and associated access;
- The use of the structure to support scaffolding or formwork;
- The drainage of storm water;
- Method of regular inspections.

Where overhead protective structures are required to be placed over public footpaths or roads, local council must be consulted in the planning stage. All required permits must be obtained from local councils prior to structures being installed.

Overhead protective structures require an Engineer's Certificate for the design, installation, alterations or additions and documentation must be kept at the workplace. Suppliers are to ensure that the persons erecting, altering or dismantling the structure are adequately supervised and have received appropriate instruction.

Overhead protective structures and hoardings must be designed for dead loads and live loads, including wind loads, in accordance with the relevant WHS/OH&S legislation and Australian Standards.

Additional controls will be provided as the structure grows in height that includes the process of isolating the materials, plant and activities from falling by way of:

- Erecting scaffolding to the perimeter of the structure;
- Erecting or fixing containment screening to the structure;
- Isolating areas below with a hard barrier: and
- Placing a Spotter in the lower area to prevent unauthorised entry.

17.3 Demolition

All demolition work will be undertaken by persons qualified and licensed to undertake such work. Demolition contractors are responsible for ensuring all work involving asbestos removal is carried out in accordance with the WHS/OH&S legislation and relevant Code(s) of Practice. Work that involves demolition will be subject of appropriate hazard and risk assessment prior to any work being performed. SWEMS will be developed and implemented for all work activities involved in the demolition works.

17.4 Asbestos Removal

All asbestos removal will be undertaken by persons qualified and licensed to undertake such work. Asbestos contractors are responsible for ensuring all work involving asbestos removal is carried out in accordance with the WHS/OH&S legislation. Work that may involve exposure to asbestos and/or synthetic mineral fibres will be subject of appropriate hazard and risk assessment prior to any work being performed. SWEMS will be developed and implemented for all work activities assessed as having occupational health and safety risks.

17.5 Noise

Areas assessed as potential noise hazards to personnel shall be surveyed by appropriately trained personnel to determine the level of risk, required corrective actions, exposure dosages and required PPE.

Maximum Allowable Noise Levels

- Noise equivalent to a continuous level of 85 dB(A) for eight hours (LAeq8h=85dB(A))
- Steady noise level of 115dB(A)
- Impulse noise level of 135dB(A)
- Peak noise level of 140dB (1peak=140dB[lin])

Management of noise hazards generated from on-site activities will be by addressing the source first to eliminate and where that is not possible controls will be implemented in line with the ***"Hierarchy of Control".*** Before PPE is considered as a control against hearing damage, Grocon will require subcontractors to look at alternatives of a higher control. Previous successful controls have included the following:

- Equipment substitution;
- Equipment shrouding;
- Sound blankets or barriers; and
- On-site area isolation.

Education and Training

Education and training in hearing conservation for employees who may be exposed to the noise comprises as a minimum:

- Hazards associated with noise;
- Control of noise hazards;
- Appropriate protective measures; and
- Hearing protectors.

Audiometric Testing

Personnel exposed to noise hazards frequently will be required to undertake audiometry screening conducted by recognised testing personnel or agencies. The relevant PCBU will be responsible for arranging and recording evidence of audiometric testing.

All test results shall be treated as confidential but participants may be asked for clearance to use the results for statistical purposes.

17.6 Dust

Construction operations on-site have a high potential to generate dust during dry weather periods. The activities that may cause problems include traffic movements on unsealed roads and on working areas, vehicles transporting soils and construction materials, excavation works, drilling, earthworks and the movement of soils. Dust control planning should consider seasonal weather conditions.

Early works

Where necessary (i.e. in the event that any visible dust is generated on the construction site), work methods to be applied include the following:

- Work procedures should prioritise the prevention of dust generation over dust suppression techniques. Weather reports can be utilised to forecast and plan for adverse conditions;
- Chemical dust reduction treatment should be applied to all roadways that are constructed with bare soil that is to be exposed for more than 48 hours;
- If visible dust is generated, keeping a water cart on-site to wet down access roads, working areas and exposed soil surfaces as required;
- The water used or additives added to the water to increase the dust suppression properties should have no adverse impact on the environment;
- Covering and / or grass seeding of any stockpiles that are to remain for any extended periods, or if weather forecasts predict strong winds;
- Construction of wind fences where appropriate;
- Attaching shade cloth to open fencing;
- Covering loads of soil and rock during transport to or from site;
- Tailgates to be secured and checked prior to leaving the site;
- Visual surveillance of dust generation;

- The emission of odorous substances or particulates that create or are likely to create objectionable conditions for the public are not permitted; and
- Dust generated during excavation works by rock sawing and/or trimming/grinding to be controlled by water suppression methods.

Base build and Fit Out

- Substituting materials that release dust when being machined, drilled or sawn;
- Isolating areas where dust generation is being carried out by process;
- Utilising equipment that has dust extraction systems;
- Using wet cutting equipment;
- Erecting barriers and warning signage;
- Identifying and providing the appropriate PPE required to conduct the task.

18.0 Excavation and Trenching

Excavation and trenching contractors are responsible for ensuring excavations and trenching work are carried out in accordance with the WHS/OH&S legislation and relevant Code(s) of Practice. All excavation and trenching is to include access/egress, edge and shoring controls implemented.

SWEMS will be developed and implemented for all work activities involved in the excavation and trenching works.

19.0 Inclement Weather

19.1 Lightning

The 30/30 rule (as per AS1768 – Lightning Protection) is to be implemented on this site. This rule states that people should seek shelter if the 'flash to bang' delay (the length of time in seconds between a lightning flash and its subsequent thunder), is 30 seconds or less, and that they remain under cover until 30 minutes after the final clap of thunder.

19.2 Rain and Wind

During periods of rain and or high wind, any work areas that are identified potentially as unsafe a review of the specific work area including the tasks being performed. The HIRAC process will be conducted to determine the level of risk and required actions to be taken. Directly involved in the review shall be the Supervisor/Foreman, HSEA, HSR/s and if required the Site Manager.

Areas requiring dewatering following rain shall be dewatered by the trades/employees required to work in these areas.

All materials stored on the top deck or lower levels open to the environment are to be secured to prevent movement by wind gusts. Where possible scaffolding will be fitted with screening that provides the least resistance to wind, otherwise where an approaching weather event is identified scaffold will have mesh removed.

20.0 Ultra Violet Radiation

All personnel are advised of the dangers of sunburn and the harmful effects of the sun's UV rays. All personnel are required to wear protective clothing and are required to wear sunscreen at all times. Grocon will provide sunscreen at locations around the workplace, including the First Aid room, toilet and amenities area and the site office.

21.0 Heat and Cold Weather

Workplaces with exposure to UV radiation can adversely affect the health and safety of workers without the implementation of a comprehensive sun safety policy. Ways of controlling exposure to be explored include:

External work controls may include:

- Monitor the weather forecasting agencies to capture forecast weather conditions;
- Rescheduling works where possible across the day to avoid exposure between 10.00am and 2.00pm (heat) and provide internal work where possible;
- Providing and ensuring workers use the appropriate personal protective equipment including appropriate protective hats, clothing (lightweight shirts with long sleeves, collars, close weave, long lightweight trousers), sunglasses and SPF 30+(minimum) water-resistant broad-spectrum sunscreen;
- Provide shade where possible; and
- Provide training and educating staff in weather impact awareness;
- Provide strategically located chilled or bottled water;
- Provide an ice machine for workers;
- In severe cases where work is not stopped at a stated temperature, provide where possible a cool down room (heat).

Internal work controls include:

- Monitor the weather forecasting agencies to capture forecast weather conditions;
- Where possible ventilate the structure to allow natural ventilation and close the openings;
- Identify the area's most like to be affected by heat and install an adequate number of fans;
- Provide strategically located chilled or bottled water;
- In severe cases where work is not stopped at a stated temperature, provide where possible a cool down room.

22.0 Manual Handling

Manual handling activities shall be assessed for potential risk during the preparation of the task SWEMS. Recommended practices for the prevention of manual handling injuries shall be addressed at time of induction and reiterated during the SWEMS review by the area supervisor and the allocated team. Wherever practical, elimination and substitution methods will be adopted and taken into consideration by all personnel.

Manual handling means any activity requiring the use of force exerted by a person to lift, lower, push, pull, carry or otherwise move, hold or restrain any animate or inanimate object. These activities may stress or strain the body when the force required exceeds the capacity of a person, or the activity is improperly undertaken.

The risks from manual handling shall be assessed for minimisation at the workplace. Construction sites by their nature are constantly changing. The physical characteristics and nature of risks change dramatically during a project. This creates a great deal of difficulty when it comes to redesigning work systems and work tasks. Nevertheless, a number of general principles apply. If employees are educated about how to reduce exposure to risk, and the employer is committed to risk reduction, effective changes can be made.

General principles:

- Use smooth, controlled actions and movement, bend your knees;
- Avoid repetitive bending, twisting and overreaching movements;
- Design the workplace and work station layout to allow employees to use an upright and forward facing posture, to have good visibility of the task and to perform the majority of tasks at about waist height and within easy reach;
- Decrease the frequency, repetition and duration of the manual handling activity where practicable;
- Store frequently used items between knuckle and shoulder height;
- When carrying a load, keep it as close as possible to the body;
- Wear gloves when handling hot materials or objects with sharp or ragged edges;
- For seated work, avoid lifting, lowering or carrying loads above 4.5kg;
- Avoid lifting, lowering or carrying loads above ones personal capabilities, without mechanical or other assistance;
- Where an object requires two (2) or more persons to handle, one (1) person shall give the signals for lifting and lowering the object;
- Persons under the age of 18 should never lift, lower or carry loads in excess of their personal capabilities, (never above 20kg) without mechanical or other assistance;
- Extra care should be taken when lifting, lowering or carrying awkward, large, unbalanced, slippery, soft, hot, cold or sharp-edged loads;

- Poor housekeeping, inadequate lighting, lack of space, poor walking surfaces, uncomfortable working temperatures, lack of training in manual handling techniques, young or old age, all increase manual handling risks; and
- Round objects must be locked to prevent rolling.

Other Manual Handling Principles

- Change the weights, size or shape of the load;
- Change or rearranging the workplace layout;
- Rearrange the materials flow;
- Using different actions, movement and forces to do the task;
- Modify the task through mechanical assistance or team lifting;
- Provide mechanical handling equipment and appropriate training to use the equipment; and
- Where the previous control options do not reduce the manual handling risk then appropriate instruction, training and/or education shall be provided.

23.0 Dangerous Goods and Hazardous Substances

Specific procedures for the storage, handling and use of dangerous goods and hazardous substances will be implemented at the Site in accordance with the Grocon OH&S System.

Storage, handling and use of dangerous goods and hazardous substances will be in accordance with the relevant WHS/OH&S legislation and relevant Code(s) of Practice.

A hazardous substance register will be established for the project and relevant Material Safety Data Sheets (MSDS/SDS) will be obtained or provided prior to the materials being brought on to site. MSDS's are not greater than 5 years old, will be readily accessible to all personal and risk assessments as identified.

Appropriate warning (HAZCHEM) and safety signs will be displayed where dangerous goods and/or hazardous chemicals are stored.

Tasks that require working with dangerous goods or hazardous substances will be the subject of an appropriate hazard and risk assessment as identified. SWEMS will be developed and implemented for all work activities utilising a dangerous or hazardous substance. A register of dangerous goods & hazardous substances will be maintained at the Project, this will include the type and quantity of the substance. Each sub-contractor will provide Grocon with a list of dangerous goods or and hazardous substance they are using or storing on site at the end of each week. Grocon will in the event of an emergency provide the register to the relevant emergency response personnel.

24.0 Electrical Safety

All leads, portable power tools and earth leakage devices will be tested, inspected and tagged by a licensed electrician or a competent person as prescribed in legislation before being presented on the site. Whilst on the site all electrical equipment will be subject to regular inspections, including Tagging and Testing in accordance with AS 3012 and AS/NZS 3760.

Site safety requirements relevance to temporary construction wiring include:

- All leads are to be kept off the ground and run on insulated hooks where not restrictive to work processes and not touching Scaffolding, Formwork frames, Fire services etc;
- Logbook records of testing are to be available for review;
- RCDs and switchboards must be tested once a month in accordance with the Australian Standard AS 3012;
- Electric leads shall be of industrial grade
- No leads shall run from one floor to another, except in lift shafts, stair wells – one level and newly completed formwork decks;
- Extension leads must pass through the bottom of switchboards and be tied to the insulated support rail;
- Double adapters must not be used;
- Leads are not to be joined;
- All extension leads must be run from the temporary boards. Orange boxes (EPOD's) can be used to supply power to tools only at the work area;

- All power to extension leads and power tools must be switched off when not in use;
- Work on or near live electrical circuits or live distribution boards is to be carried out in accordance with the relevant WHS/OH&S legislation;
- All temporary construction cables must be identified as such by the Electrical Contractor; and
- The Red, Green, Blue and Yellow colour code system is to be used on the project for Test and Tag.

25.0 Formwork / Jump Form

All formwork erection and stripping is to be undertaken by persons both experienced and qualified or a labourer/trades assistant under the direct supervision of a qualified form worker.

Site safety requirements relevance to formwork, permanent formwork and jumpform include:

- All formwork shall be designed, erected, altered and dismantled in compliance with the with the relevant WHS/OH&S legislation and engineering specifications;
- All formwork activities are to be compliant with the relevant Code/s of Practice and Australian Standards;
- The use of explosive power tools will only be undertaken by persons trained and experienced;
- Project tasks and specific SWEMS are to be created, approved and implemented;
- A risk assessment must be conducted for all working at heights;
- A documented risk assessment with associated SWEMS must be developed for all works at heights of greater than 2m.
- Scaffolding or edge protection must be in place prior to formwork commencing;
- Access to the formwork decks is to be by secured ladder only and not by frames;
- Access ways are to be implemented, maintained and indicated with the use of safety tape throughout the formwork frames;
- Formwork stripping areas are to be barricaded with flagging or barricading, not tape alone, and have signs posted at all times (FORMWORK STRIPPING IN PROGRESS, KEEP CLEAR);
- Adequate access and task lighting is to be maintained by the Formwork Supervisor in coordination with the Site Manager;
- Housekeeping is to be maintained in the formwork areas with the formwork decks being swept routinely (minimum daily);
- After rain, including overnight, the formwork areas are to be inspected by the Site Manager or Foreman with the Formwork foreman to ensure a safe work area prior to workers accessing the areas;
- Formwork certificates are to be produced prior to concrete pour commencing as per the legislative requirements were applicable.
- Decks barricaded below while placing concrete.

26.0 Concrete Pumping

Site safety requirements relevance to concrete pumping include:

- All concrete pumping will be undertaken by persons qualified and certificated as required by legislation to undertake such work and all work associated with the pumping of concrete shall be in compliance with the relevant Code/s of Practice and Australian Standards;
- Project specific SWEMS are to be created, approved and implemented and must include blow back, cleaning, waste and runoff controls;
- No placement of concrete is permitted on formwork until formwork certificates are completed and forwarded to the site manager as per legislative requirements;
- A documented pre-pour safety inspection is to be completed by the concrete Supervisor;
- The placement of the concrete pump is included in the site establishment drawings
- Consideration of types and capacity has been used and placement to eliminate or reduce the build-up of exhaust gases;
- Clear access to the concrete pump for concrete trucks and personnel is to be implemented and maintained;
- A spotter must be in place for all reversing concrete trucks;
- Daily pre-start inspections are to be conducted and recorded in a logbook;
- Monthly and six monthly maintenance inspections, as per manufacturers specifications, are to be conducted, documented and records maintained and available;
- All signage, including all safety signage, is to be clean and legible;
- Safety grates on pump in feed and safety pins are to be on all line joints and must be in place prior to operation;

- All equipment associated with concrete pumping must have fixed compliance plates and/or appropriate certification for their use;
- High visibility clothing to be worn at all times;
- All concrete operations must comply with Traffic Controller instructions if working from the street; and
- All concrete washout must occur in the designated washout area.

26.1 Tilt up and Pre-Cast Concrete

Where Pre Cast elements have been designed in the structure of the project, hazard elimination and risk reductions are realised by eliminating much of the work required to construct the elements in-situ. Hazards associated with the on-site unloading, lifting, placing and securing will be managed through the WRA, Subcontractors SWMS and in the review process in Appendix A of the WSMP.

27.0 Working at Heights

This height hazards on this project are residual following the DesignSafe process whose purpose, however there are many areas in all stages of program development where a fall could occur. The most desirable method of construction is to build from a on the ground or on a solid construction.

Falls could typically on the same level or could be from a height associated with the following:

- Early work (excavation and retention);
- Erecting, accessing, servicing, dismantling Tower Cranes;
- Accessing plant;
- Erecting gantries, hoardings and scaffolding;
- Erecting formwork;
- Erecting, altering or dismantling perimeter containment screens;
- Working from access equipment.

There is also a risk of persons falling into shafts, through wall or floor penetration in cases where the most appropriate form of isolation is not implemented.

27.1 Floor and Wall Penetrations

All floor and wall penetrations must be appropriately identified and guarded. Penetrations larger than that which a person could fall through which are unable to be protected by the use of cast in mesh (25mm x 25mm x2.5mm) will be barricaded or secured. Mesh will not be used where there is a risk of objects falling through the mesh onto workers below.

Examples of guarding include (but are not limited to):

- Barriers;
- Guard-rails;
- Para webbing;
- Appropriate secure covers – highlighted with the words Penetration Beneath / Behind.

Lift door openings / overruns will be identified and guarded with plywood or mesh. Lift door openings will have meshed lift guard doors (lockable) installed progressively as required in the lift installation process. Guarding of lift openings will be full heights.

27.2 Ladders / Platform Ladders

Ladders are only to be used when mobile scaffold and/or scissor lifts are not suitable for the work process and must be platform ladders. In cases where ladders are required for access, they must be used in the correct manner, e.g. correct angle, secured and projected at least one metre past the top platform or landing.

Site safety requirements relevance to ladder work include:

- Only those ladders marked “Industrial” to be used on the project;
- Ladders shall always be in good condition and regularly inspected;
- Ladders shall always be placed clear of walkways and traffic ways;
- No Platform Ladder shall be used within three (3) metres of safety barriers/fences unless full enclosure barriers are in use;

- Platform Ladders should only be used in the fully open position;
- 3 points of contact must be maintained, this means either two feet and one hand, or one foot and two hands on the ladder when ascending or descending;
- Only light duties are to be performed off a Platform Ladder;
- Equipment is not to be carried whilst accessing the Platform Ladder, unless tools are carried on a tool belt, holster or pouch, not in your hands;
- Tools and equipment are not to be stored on the Platform Ladder;
- One Platform Ladder one person;
- Electricians are to use appropriate ladders only; and
- Platform Ladders are not to be used as trestle ladders/tables;
- Trestles must be marked “industrial” have a minimum platform width of 450mm, the platform not exceed 700 in height, and only be used for light work activity.

27.3 Scaffolding

There will be large quantities of scaffolding erected externally and internally throughout the duration of the project. Typically the scaffolding will be modular, with mobile type also utilized in the fit-out.

Site safety requirements relevance to scaffold work include:

- All scaffolding at the site is required to comply with the relevant WHS/OH&S legislation, Code/s of Practice and Australian Standards;
- All scaffolds over 4 metres in height must be assembled by a person who holds a scaffolder’s certificate of competence. Any alterations to a scaffold must only be undertaken by a person who holds a scaffolder’s certificate of competence;
- Scaffolds should not be used unless, and until, Grocon has been provided with a handover certificate and the scaffold displays a green “scafftag” card;
- Where the “scafftag” card or other system is used, a scaffold plan is to be displayed to identify the locations of each card;
- Duplication of the relevant “scafftag” may be utilised where there are multiple access and egress locations in a permanent scaffolding system.
- All scaffolding, open sided work areas, formwork, floor openings, pits or excavations where persons can fall 2 meters or more, shall have appropriate fall protection, such as guard rails/mesh; and

Mobile scaffolds are to be erected and dismantled by persons suitably qualified to do so.

NOTE: All plastic mesh used on the project must be non-flammable.

28.0 Plant and Equipment

All plant and equipment brought on to site must have a Plant Risk Assessment and a Pre-Start Checklist completed and have both approved by the HSEA five working days prior to use on site. All plant and equipment being brought on to site shall be inspected and approved by Grocon for site access. The inspection will include but not limited to the following:

- All plant and equipment, including forklifts, must comply with the relevant WHS/OH&S legislation, Code/s of Practice and Australian Standards;
- All plant and equipment being brought on to site must comply with the relevant Acts or Regulation;
- No machinery, hand tools or any other type of equipment is to be operated without effective guarding, locking pins, etc;
- No general parking or employee parking is available at the site;
- Walking pace (5kph) shall be observed by drivers within the site at all times;
- Site personnel must not operate cranes, mobile plant or equipment unless they have been trained, are appropriately qualified (Certificate of Competence) and are competent in its use. All tickets must be supplied at induction, be available on site and made readily available upon inspection;
- If seat belts are fitted they must be worn;
- Where applicable, seat belts are to be fitted and serviceable;
- Vehicle safety – No seat NO RIDE;
- All equipment such as front-end loaders, bulldozers, forklifts and backhoes are to have their bucket or blade(s) lowered when not in use;
- All plant and equipment must have:

- a current log book,
- current Service Maintenance Report,
- Inspection and Commissioning Reports (where applicable) e.g. Hoists, Alimak, Swinging Stages and Mast Climbers
- an operators manual,
- Plant Registration/design Notification (If applicable),
- Certification of Operation (Operator training record),
- Safe Working Loads displayed,
- Warning and operational decals/signs legible,
- Warning devises, fitted and working,
- Fire extinguishers fitted and serviced,
- All associated lifting equipment certified and tagged in accordance with specified time frames.
- Fuel operated plant exhaust clears no greater than 10 seconds after start up.

Inspection, Testing and Servicing
An appropriate process for the inspection, testing and servicing of plant and equipment at the site will be implemented. Records of inspections, tests and servicing will be maintained at the site. The process will include a process for conducting OH&S inspections and testing (and, where relevant, servicing) for incoming products, such as materials, plant and equipment-

29.0 Cranes, Lifting and Rigging

The Ribbonwill be serviced by cranes throughout its construction.

The crane(s) will be designed, erected, operated, maintained, inspected and recovered in accordance with the relevant WHS/OH&S legislation, Code/s of Practice and Australian Standards. Hazards identified with the

Crane activities will be assessed in the Workplace Risk Assessment (WRA) and Safe Work Environmental Method Statements (SWEMS) developed as required for high risk activities.

Refer to the Construction Management Plan for Crane location, operational radius, and relevant crane operational diagrams. Safety and Environmental impact on neighbours and businesses will be assessed in Grocons WRA and communicated to affected stakeholders.

Periodically mobile cranes will be used on the Project for the installation of materials and plant as required. Mobile cranes will be set up in accordance with the requirements of the Mobile Crane Code of Practice as applicable to crane sitting and underground services.

Hazards identified with Mobile Crane activities will be assessed using the Grocon Risk management process and documented in the Workplace Risk Assessment (WRA) and Safe Work Environmental Method Statements (SWEMS).

Training and Competencies (Each Project shall include local requirements if any)
All crane associated activities such as Crane Operator, Dogger and Riggers shall be carried out by personnel holding the required certificate of competency. An exception will be made for a person who is undertaking a prescribed training programme who is logbook compliant with legislative requirements and under direct supervision of a holder of a certificate of competencies for the prescribed occupation that the training is being undertaken.

Crane Operators, Doggers and Riggers must undergo refresher training between two and a half and three years after either being issued with their initial certificate of competency, or since attending their most recent refresher training, whichever is the shorter time frame as per legislative requirements or as deemed necessary (QLD Requirement)

Installation and Commissioning
A competent person shall be appointed to coordinate the erection, operation, inspection and dismantling of cranes and hoists. Crane installation includes foundation/standing (Design and Certification), for all tower cranes. All relevant crane design documentation and sign off certificates where applicable, must be completed and records maintained on site. Crane Registration (Workplace Health and Safety Queensland) is to be maintained on site.

CraneSafe will be engaged to conduct inspections of all project cranes and on completion each crane will display the Green CraneSafe Sticker.

Operation

Safe crane operation is primarily in the control of a competent operator who knows the machine and is able to determine how far a load can be placed based on crane charts. Limiters are only secondary safety device and are to be considered as a backup only.

Known Crane hazards and incidents:

- Falling objects during erection, servicing, jumping, operating and dismantling;
- Power line contact;
- Overloading;
- Operating in poor ground, over underground services and unsupported slab / platforms (mobile);
- Failure to level crane (mobile);
- Failure to use outriggers (mobile);
- Failure to fully extend outrigger beams (mobile);
- Improper blocking beneath outriggers (mobile);
- Machine defects;
- Rope and tackle failure;
- Operating in adverse weather conditions outside manufacturers specifications;
- Incorrect assembly of crane;
- Ignorance of crane capacity;
- Inattention to job;
- Fast slewing and sudden moves causing load to swing out of radius;
- Incidents associated with the process of Tower Crane assembly, jumping, maintenance and dismantling;
- Operating in close proximity to other cranes, plant, equipment and structures;
- Operator error, i.e.: poorly slung loads and falling material;

Electrical Clearance

Electrical clearances to be maintained include:

- 3 m if the voltage is up to 132 Kv
- 6 m if the voltage is up to 330 Kv
- Controls to be considered include:
  - Task specific training.
  - Spotters.
  - Exclusion Zones
  - Operational limits and devices.

Note: Tiger tails are visuals only, they do not isolate.

Crane Maintenance and Inspections

- A scheduled maintenance programme must be developed and implemented for all inspection and maintenance work in accordance with the Manufacturer's recommendation,
- Third party inspections of the Tower Cranes will be undertaken periodically with the Inspection Report handed to the plant supplier to carry out corrective actions as required.
- Damaged plant is to be inspected and repaired by a competent person and recommissioned for operational works.
- The Crane coordinator or nominated person shall maintain a register of all lifting gear on site. All lifting equipment shall be designed marked, used and inspected in accordance with AS 2550 and comply with AS 1418 and any other standard specific to the lifting equipment being inspected. Any equipment found to be defective will be removed from service and tagged for repair or destroyed if repair is not practical. Refer 3.12 Out of Service Tagging. Refer to Appendix A
- Major inspections – 10 years
- Life cycle – 25 years (Major inspection/reports)
- Specific Items to be included in inspections include, but are not limited to:
  - Detached Hydraulic Hoses and oil leaks
  - Structural damage/guarding missing

- Loose bolts in tower crane base, tower sections or slew
- Rust in structural members
- X-ray of welds

Pre-operational Checks

Pre-operational checks shall be conducted and records maintained (logbooks) on site for:

- Daily Log Books are to be fully completed prior to commencement of operations;
- Any Major operational fault must be reported to the Grocon Site Manager;
- Daily Log books are to be submitted to Grocon at the end of every week;
- Current inspection and testing register maintained and submitted to Grocon;
- Soft fabric slings – used only following risk assessment and consultation with Grocon Management, will be withdrawn from use if damaged or more than 3 months old from first use.

Work Boxes

Work boxes used for lifting persons or materials shall be of a type specifically designed for that purpose. The design and use must comply with relevant legislative, Code/s of Practice and Australian Standards.

30.0 Structural Steel Erection

Steel construction provides the framework for the structure for which other designed components of are added externally and internally in a systematic process to achieve a completed building.

Steel construction is any work to erect assembled portions and single components of structural steel, such as:

- Columns;
- Beams;
- Bracing;
- Rafters;
- Purlins;
- Girts;
- bridging and fly bracing;
- Trusses.

Steel construction by process is generally beneficial in providing less material congestion on site and reduced manual handling when compared to traditional formed concrete structures. On the other hand the steel construction process requires elevated work at heights on the structure and requires additional mobile plant to be placed on slabs during frame erection.

The risks to the health and safety of persons involved in steel construction work are falls from heights, falling objects, collapse of the structure and plant engaged in the steel construction work. Risk management plays an important role in the management of workplace health and safety and the key elements of the HIRAC process are captured in the DesignSafe, Workplace Risk Assessment and relevant SWEMS for high risk construction work.

High risk construction works required in steel construction include:

- Work at heights –
  - On slabs, on permanent formwork, on perimeter screen platforms, on scaffolding, in elevated work platforms, in crane lifted work boxes and as a last resort in harnesses.
- Cranes -
  - Tower and mobile;
- Dogging -
  - Dogging work is the use of slinging techniques including the selection and inspection of lifting gear to safely sling a load, or the directing of a plant operator in the movement of a load when the load is out of the operator's view.
- Basic rigging –
  - The scope of work for basic rigging includes:
    - dogging work;
    - structural steel erection;

        - particular hoists;
        - placement of pre-cast concrete members of a structure,
        - safety nets and static lines;
        - mast climbers;
        - perimeter safety screens; and
        - shutters; and
        - cantilevered crane loading platforms.
- Intermediate rigging -
    - The scope of work for intermediate rigging includes:
        - rigging work in the class Basic Rigging;
        - all hoists;
        - rigging of cranes, conveyors, dredges and excavators;
        - tilt-slabs, demolition of structures or plant; and
        - dual lifts.
- Advanced rigging -
    - The scope of work for advanced rigging includes:
        - rigging work in the class Intermediate Rigging;
        - rigging of gin poles and shear legs;
        - flying foxes and cableways;
        - guyed derricks and structures; and
        - suspended scaffolds; and
        - fabricated hung scaffolds.
- Basic Scaffolding: SB –
    - The scope of work for basic scaffolding includes:
        - modular or prefabricated scaffolds
        - cantilevered hoist with a maximum working load of 500 kg (materials only)
        - ropes
        - gin wheels
        - safety nets and static lines
        - bracket scaffolds (tank and form work).
- Intermediate Scaffolding: SI -
    - The scope of work for intermediate scaffolding includes:
        - scaffolding work included in the class of Basic Scaffolding
        - tube and coupler scaffolds including tube and coupler covered ways and gantries
        - cantilever crane loading platforms
        - cantilever and spurred scaffolds
        - barrow ramps and sloping platforms
        - scaffolding associated with perimeter safety screens and shutters
        - mast climbers.
- Advanced Scaffolding: SA –
    - The scope of work for advanced scaffolding includes:
        - scaffolding work included in the Intermediate scaffolding class
        - cantilevered hoists
        - hung scaffolds, including scaffolds hanging from tubes, wire ropes or chains
        - suspended scaffolds.
- Concrete pumps and placement booms
- Mobile plant –
    - Access equipment, forklifts and slab supported mini cranes for façade erection.

31.0 Confined Spaces and Hot Works

Tasks that require working in confined spaces or carrying out hot works will be managed through the HIRAC process. Each process requires the use of Permits in conjunction with SWEMS.

Confined Space work on this project has been reduced through the DesignSafe process, however in cases where it is required to be carried out, competency of the entry, observer and retrieval workers and knowledge of the process will be linked to the SWEMS and Permit.

Hot Work and Confined Space work will be carried out in accordance with relevant legislative, Code/s of Practice and Australian Standards.

32.0 Document Management & Record Control

32.1 General

Grocon uses Aconex to manage and control project related documentation & records. The intent is to ensure that all project related documentation & records are managed in a manner that is controlled, accurate, efficient, comprehensive, reliable and systematic.

Grocon also has a QSE system which is used to manage the QSE processes on our projects. This system is also used as a data base to review and store QSE type documents including Safety Plans, SWEMS, Toolbox Talks. These documents shall be transmitted using Aconex.

Whilst Aconex is established for use on individual projects, the QSE system is used as a data base with information, documents and records from current and past projects.

32.2 Document Controller and Aconex set up

The Project Manager will assign a document controller to manage and control all project documents using Aconex. Where Grocon establishes Aconex, the Document controller is usually the Aconex System administrator who provides the relevant access level for all users and relevant support and training.

All documentation used during the project will be maintained and controlled in accordance with the Aconex Project Configuration document and any relevant Grocon Document Control Procedures.

32.3 Site Diary Recording

Grocon records daily site diaries using the QSE database, where the Site manager has the overall responsibility for the collation of daily records. Various project roles are assigned the responsibility for adding information to report on the labour resources of all trades, weather conditions including any delays and any offsite activities, site incident (Near miss, injury or illness) notes for later reference, deliveries and other project information.

The Site Manager will progressively review the entered data in the QSE Site diary for completeness and accuracy. Any anomalies will be addressed with the appropriate responsible person and corrected prior to the weekly diary being closed for editing.

Project diaries can be reviewed by Grocon personnel with appropriate access into the QSE database.

32.4 Completion Documentation

Prior to the project reaching Practical Completion, Grocon will obtain the required documents as listed, but not limited to the following; (each project may add others required under the contract)

- Grocon and Subcontractor Lever Arch hard copy safety documents, the documents must include:
- Incident records
- Rehabilitation Records
- Internal and External Auditing Reports and Action Lists
- Reports to the relevant WHS/OH&S legislative authority
- External Notices issued by the relative WHS/OH&S legislative authority
- Reports to the Office of the Federal Safety Commissioner (OFSC) where applicable
- Internal and External safety meeting minutes.

32.5 Documentation Archiving

Following completion of the project, the Contracts Administrator and Document Controller shall be responsible for archiving all project documentation & records which shall be maintained in accordance with Grocon's Record Management Procedure and related Work Instructions.

Grocon endeavours to minimise the archiving of hard copy documents and where possible uses electronic methods such as Aconex, the QSE database and Computer drives for archiving of all project records.

Where a hard copy of documentation is required to be archived, it shall be in its original condition or in lever arch files and sent to Grocon's current archive provider.

All Hard copy archiving shall be completed in accordance with the **Work Instruction '6130W2 Archiving'**.

33.0 Managing Non Conformance, Corrective & Preventative Action

33.1 General

Work being carried out that does not conform to specified safety requirements is deemed to be non-conforming and will therefore need to be prevented from occurring again on the project.

All Grocon employees are responsible for identifying and recording any non-conforming work activities and where possible "See and Fix" will be applied. In other cases requiring a higher level of control to be implemented, an Opportunity for Improvement (OFI) is to be logged in the QSE database.

The subcontractor shall also maintain their own register which shall record and manage all safety Non-conformances, including those of any 2nd & 3rd tier subcontractors. Each Non-conformance raised shall require Corrective and Preventative Actions approved by the relevant authority (Grocon raiser), prior to being closed.

34.0 Inspection, Measuring and Test Equipment

34.1 General

Grocon shall maintain a central IMTE register (**form 3101F1**) and copies of calibration certificates for all Inspection Measuring & Test Equipment (IMTE) being used on the project which shall cover Grocon's and all Subcontractor's equipment.

Each subcontractor shall identify and list all Inspection Measuring & Test Equipment (IMTE) to be used for the Project and provide their own IMTE register and copies of calibration certificates for each piece of equipment to Grocon. As equipment is updated or changed, revised IMTE registers shall be issued to Grocon's Site Quality Representative (SQR).

The Site Quality Representative is to maintain a central Inspection, Measuring and Test Equipment Register with copies of all calibration certificates and ensure that all the calibrated equipment is appropriately identified to the IMTE register.

Grocon Foreman & Supervisors will monitor the equipment being used on site for inspection measuring and testing and advise the Site Quality Representative where new equipment has been identified.

This may also be monitored through an agenda item & discussion at subcontractor site meetings.

35.0 Handling, Storage, Packaging, Preservation and Delivery

35.1 General

Grocon will monitor the delivery of incoming goods to ensure proper handling, storage, and packaging, to assist in the preservation of all components or products which will become a part of the completed project.

Generally most products are supplied by our subcontractors as a part of their trade package works and each subcontractor or supplier is ultimately responsible to ensure they manage their products with correct handling, packaging, storage and protection to ensure the products are maintained in good condition until they are incorporated into the project and accepted at handover of the relevant works.

35.2 Materials Handling

Some materials Handling shall be provided by Grocon to assist with unloading deliveries by suppliers and subcontractors which may include Cranage and Forklifts. Materials handling may be described within the Grocon Workplace Safety Management Plan (WSMP) for the project.

Otherwise Subcontractors and Suppliers shall provide the appropriate equipment or resources for the proper handling of all materials delivered to the project.

35.3 Storage of delivered materials

Storage areas will be designated by Grocon to prevent damage or deterioration of delivered products and materials pending use or incorporation into the project. The method of storage employed is determined with due consideration being given to the characteristics of the materials to be stored, e.g. the hazardous nature, and hazard material or dangerous goods class.

Subcontractors will be responsible to maintain adequate protection of products and materials in storage, during use and disposal.

36.0 Auditing

36.1 General

Audits are conducted on the Grocon Integrated QSE Management System for the Construction business, to ensure that all system elements are correctly and effectively applied to achieve compliance with the requirements of the company procedures.

36.2 External Certification Audits

External Certification & Surveillance Audits are conducted annually on our certification for Quality, Safety & Environmental. Grocon's QSE management system is certified by NCSI.

Additional OH&S audits are conducted by the Office of Federal Safety Commissioner (OFSC) either annually or every six months. Grocon maintains OFSC accreditation.

36.3 Internal Grocon Audits

Internal audits on company procedures are scheduled on our construction projects to provide a systematic check of their correct application. These audits are scheduled by the National Quality Manager in consultation with the National and State HSE manager. An annual audit schedule will be prepared for all current projects and updated as necessary to monitor the scheduled audits and to include any new projects.

All internal audits will be carried out in accordance with the Grocon procedures available from the Intranet.

36.4 Internal Subcontractor & Consultant Audits

Audits on Subcontractors and Suppliers Safety Managements Systems (SMS) are established in a project audit schedule developed by the Health, Safety and Environmental Advisor (HSEA) in conjunction with the SQR and Site Manager (SM) and as approved by the Project Manager (PM).

(**Form 6140F1** Project Audit Schedule available from the Intranet)

First round audits shall be scheduled for each of the above, following commencement of work on the project to confirm the proper implementation of their SMS on the project.

Second & subsequent round audits shall be scheduled subject to the outcome of an informal risk assessment, conducted with input from the HSEA,SQR, SM and PM, which shall consider previous audit results and the demonstration of acceptable performance of their SMS.

The HSEA and SQR are to maintain the audit schedule three months in advance and will be continually reviewed and updated, considering the letting of contracts and the projects construction programme.

Project audits shall be conducted to identify compliance with the Project safety requirements, legislative requirements, Codes of Practice, Standards and other requirements.

36.5 Conducting Audits and Documentation

All Internal Audits shall be conducted in accordance with Grocon's Internal Audit procedure and Work Instruction available from the Intranet. Audit documents and forms are available from the Grocon intranet for use in conducting and managing audits on projects.

36.6 Recording and Reporting of Audits

The results of all Audits shall be recorded and entered into the QSE data base including any OFI's raised from the audit. The QSE data base is capable of producing audits reports for use at project and business levels.

37.0 Review, Issue and Authorisation.

37.1 Preparation, Review & Authorisation

The First Issue.

1. The HSEA, assisted by the State OH&S manager will prepare the WSMP template and include the project specific content.
2. The Project Manager will review the WSMP to ensure it meets the project requirements.
3. The State OH&S/HSE manager will review the first draft issue to ensure it maintains Grocon requirements.
4. The Construction Manager will review the WSMP for approval.

Complete these details in the **First Issue Approval table** of the WSMP.

Any major comments shall cause the WSMP to be returned for further revision and recommence the cycle.

Minor Revisions after First issue.

1. The HSEA will create revisions of the WSMP to suit minor changes identified.
2. The Project Manager will review the changes prior to approving the revised WQMP.

Major Revisions or change of Intent

Should the WSMP require major revisions (based on the First Issue and subsequent minor revisions) which alter the intent or scope of the Original issued document, then the Project Manager shall seek further review by the State OH&S manager and approval from the Construction Manager which shall be recorded in the **First Issue Approval table** for that revision.

Approval of Amendments

All approved WSMP shall be signed by the HSEA and by the Project Manager on the front page.
Records of the amendments shall be recorded in the 'Record of Amendments' table in the WSMP.

First Issue Approval Table for revision 0

Step	Activity	Name	Position	Signature	Date
1	Preparation	TBC	OH&S Manager		
2	Review	TBC	Project Manager		
3	Review	TBC	OH&S / HSE Manager		
	Revision - 1 - was issued with Approval by the Construction Manager.				
4	Approval	TBC	Construction Manager		

(Note: No need to obtain OH&S / HSE Manager Review or Construction Manager Approval after the first issue, subject to Major revisions or change of intent above.)

37.2 Record of Amendments

The WSMP amendments shall be recorded in the table below. The issue and use of this document must be approved and it is the responsibility of all Grocon personnel to ensure that work is carried out in accordance with this current Workplace Safety Management Plan (WSMP).

Revision	Date	Comments	Approved By

37.3 Distribution List

This document shall be available electronically within the Project Aconex Document Register once approved. All printed copies unless nominated in the distribution list are deemed to be “Uncontrolled”.

Approved copies of the all Grocon WSMP shall be loaded onto the QSE database

Appendix A HIRAC Management Matrix

HIRAC MANAGEMENT MATRIX						
High Risk Element	**By Whom**		**Frequency**	**Method**	**Grocon HIRAC Tool/s** *Available in Systems on the Grocon Intranet*	**Filing location**
	Responsible	**Approver**				
Asbestos	SM, CA, FM	PM	Pre Start During removal On disposal On clearance	Asbestos Register / Report – (Consultant/Hygienist) Asbestos Management Plan Safe Work Method Statements Safety Document Review, Monitoring and Auditing Pre Start Meetings / Toolbox Talks Disposal Dockets Clearance Report	6000P Managing QSE Risks 2005W1 DesignSafe Work Instruction 2005F1 DesignSafe Risk Register 2005F2 Design Change Form OH&S Review 6010A1 Health Safety and Environmental Legal and Other Requirements Matrix 6150F2 Plant Inspection 6191F1 Tenderers Capability Statement 6150F1 Plant Risk assessment 6190F2 Monthly Subcontractor Performance Report 6004F1 Safe Work and Environmental Method Statement 6000F5 Safe Work and Environmental Method Statement Review 6000F6 Safe Work and Environmental Method Statement Implementation Audit 6000F7 HSE Purchasing Risk Assessment 6060F5 Toolbox Talk Record 6060F6 Daily Prestart Meeting 2025A1 Safety Interaction Position Matrix 2025F1 Workplace Safety Interaction Record Sheet 2025F2 Monthly Safety Interaction Register 2025WI Safety Interaction Program	Aconex Site Lever Arch Folders QSE Database Site Shared Drive
Demolition	SM, SE, CA, FM	PM	Pre Start During demolition On disposal	Dilapidation Report Structural Drawings - (structural loadings) Engineering Report/s - (structural loadings) Services Report – (DBYD / type / location) Demolition Plan Traffic Management Plan (External / Internal) Safe Work Method Statements Document Review, Monitoring and Auditing Pre Start Meetings / Toolbox Talks Disposal dockets		
Concrete pumps and placement booms	SM, SE, FM	PM	Pre Start Erection Commissioning During use Inspecting / servicing Decommissioning	Design Documentation Pre-Start and Operational Documentation Structural Drawings - (structural loadings) Engineering Report/s - (structural loadings) Traffic Management Plan (External / Internal) Safe Work Method Statements Document Review, Monitoring and Auditing Pre Start Meetings / Toolbox Talks Commissioning Reports Inspection / Servicing Reports CraneSafe Sticker		
Cranes – Tower and mobile	SM, SE, FM	PM	Pre Start Erection Commissioning During use Inspecting / servicing Jumping Dismantling			

HIRAC MANAGEMENT MATRIX

High Risk Element	By Whom		Frequency	Method	Grocon HIRAC Tool/s *Available in Systems on the Grocon Intranet*	Filing location
	Responsible	Approver				
Excavations	SM, CA, SE, FM	PM	Pre Start During process	Services Report – (DBYD / type / location) Structural Drawings - (structural loadings) Engineering Report/s - (geotechnical / structural loadings) Asbestos Register / Report – (Consultant / Hygienist) Asbestos Management Plan Traffic Management Plan (External / Internal) Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings Disposal Dockets Clearance Report	6000P Managing QSE Risks 2005W1 DesignSafe Work Instruction 2005F1 DesignSafe Risk Register 2005F2 Design Change Form OH&S Review 6010A1 Health Safety and Environmental Legal and Other Requirements Matrix 6150F2 Plant Inspection 6191F1 Tenderers Capability Statement 6150F1 Plant Risk assessment 6190F2 Monthly Subcontractor Performance Report 6004F1 Safe Work and Environmental Method Statement 6000F5 Safe Work and Environmental Method Statement Review 6000F6 Safe Work and Environmental Method Statement Implementation Audit 6000F7 HSE Purchasing Risk Assessment 6060F5 Toolbox Talk Record 6060F6 Daily Prestart Meeting 2025A1 Safety Interaction Position Matrix 2025F1 Workplace Safety Interaction Record Sheet 2025F2 Monthly Safety Interaction Register 2025WI Safety Interaction Program	Aconex Site Lever Arch Folders QSE Database Site Shared Drive
Mobile plant	SM, SE, CA, FM	PM	Pre Start During use	Design Documentation Pre-Start and Operational Documentation Services Report – (DBYD / type / location) Structural Drawings – (structural loadings) Engineering Report/s - (structural loadings) Demolition Plan Traffic Management Plan (external / Internal) Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings		
Tilt – up and pre – cast construction	SM, SE, FM	PM	Pre Start During erection	Structural / Design Drawings Engineering Report/s - (structural / environmental loadings) Traffic Management Plan Safe Work Method Statements Inspection / Servicing Reports		
Work at Heights	SM, SE, FM	PM	Pre Start During process	Safe Work Method Statements Inspection / Servicing Reports – (Plant and equipment) Commissioning Reports		

HIRAC MANAGEMENT MATRIX

High Risk Element	By Whom		Frequency	Method	Grocon HIRAC Tool/s *Available in Systems on the Grocon Intranet*	Filing location
	Responsible	Approver				
Hoists, builders lifts	SM, SE, CA, FM	PM	Pre Start Erection Commissioning During use Inspecting / servicing	Design Documentation Pre-Start and Operational Documentation Structural Drawings - (structural loadings) Engineering Report/s - (structural / environmental loadings) Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings Inspection / Servicing Reports Commissioning Reports	6000P Managing QSE Risks 2005W1 DesignSafe Work Instruction 2005F1 DesignSafe Risk Register 2005F2 Design Change Form OH&S Review 6010A1 Health Safety and Environmental Legal and Other Requirements Matrix 6150F2 Plant Inspection 6191F1 Tenderers Capability Statement 6150F1 Plant Risk assessment 6190F2 Monthly Subcontractor Performance Report 6004F1 Safe Work and Environmental Method Statement 6000F5 Safe Work and Environmental Method Statement Review 6000F6 Safe Work and Environmental Method Statement Implementation Audit 6000F7 HSE Purchasing Risk Assessment 6060F5 Toolbox Talk Record 6060F6 Daily Prestart Meeting 2025A1 Safety Interaction Position Matrix 2025F1 Workplace Safety Interaction Record Sheet 2025F2 Monthly Safety Interaction Register 2025WI Safety Interaction Program	Aconex Site Lever Arch Folders QSE Database Site Shared Drive
Mast climber	SM, SE, CA, FM	PM				
Swing stage	SM, SE, CA, FM	PM				
Work boxes, first aid cages	SM, SE, FM	PM	Pre Start During use Inspecting / services	Design Documentation Pre-Start and Operational Documentation Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings Inspection / Servicing Reports		

HIRAC MANAGEMENT MATRIX

High Risk Element	By Whom		Frequency	Method	Grocon HIRAC Tool/s *Available in Systems on the Grocon Intranet*	Filing location
	Responsible	Approver				
Rope access equipment / anchors	SM, SE, CA, FM	PM	Pre Start During use Inspecting / services	Design Documentation Pre-Start and Operational Documentation Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings Inspection / Servicing Reports	6000P Managing QSE Risks 2005W1 DesignSafe Work Instruction 2005F1 DesignSafe Risk Register 2005F2 Design Change Form OH&S Review 6010A1 Health Safety and Environmental Legal and Other Requirements Matrix 6150F1 Plant Risk assessment 6150F2 Plant Inspection 6191F1 Tenderers Capability Statement 6190F2 Monthly Subcontractor Performance Report 6004F1 Safe Work and Environmental Method Statement 6000F5 Safe Work and Environmental Method Statement Review 6000F6 Safe Work and Environmental Method Statement Implementation Audit 6000F7 HSE Purchasing Risk Assessment 6060F5 Toolbox Talk Record 6060F6 Daily Prestart Meeting 2025A1 Safety Interaction Position Matrix 2025F1 Workplace Safety Interaction Record Sheet 2025F2 Monthly Safety Interaction Register 2025WI Safety Interaction Program	Aconex Site Lever Arch Folders QSE Database Site Shared Drive
Harnesses / Lanyard (Travel restraint)	SM, SE, CA, FM	PM				
Confined spaces	SM, FM	PM	Pre Start During process Process completion	Structural Drawings Engineering Report Confined Space Entry Permit Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings Inspection / Servicing Reports		
Hot works	SM, FM	PM	Pre Start During process Process completion	Hot Works Permit Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings Inspection / Servicing Reports		

HIRAC MANAGEMENT MATRIX

High Risk Element	By Whom		Frequency	Method	Grocon HIRAC Tool/s *Available in Systems on the Grocon Intranet*	Filing location
	Responsible	Approver				
Temporary Structures – Gantries, hoardings, screens, scaffolding.	SM, SE, CA, FM	PM	Pre Start Erection Commissioning During use Inspecting / servicing Decommissioning	Design Documentation Operational Documentation Services Report – (DBYD / type / location) Structural Drawings – (structural loadings) Engineering Report/s - (structural / environmental loadings) Demolition Plan Traffic Management Plan (external / Internal) Safe Work Method Statements Document Review, Monitoring and Auditing Toolbox Talks Pre Start Meetings	6000P Managing QSE Risks 2005W1 DesignSafe Work Instruction 2005F1 DesignSafe Risk Register 2005F2 Design Change Form OH&S Review 6010A1 Health Safety and Environmental Legal and Other Requirements Matrix 6150F2 Plant Inspection 6191F1 Tenderers Capability Statement 6150F1 Plant Risk assessment 6190F2 Monthly Subcontractor Performance Report 6004F1 Safe Work and Environmental Method Statement 6000F5 Safe Work and Environmental Method Statement Review 6000F6 Safe Work and Environmental Method Statement Implementation Audit 6000F7 HSE Purchasing Risk Assessment 6060F5 Toolbox Talk Record 6060F6 Daily Prestart Meeting 2025A1 Safety Interaction Position Matrix 2025F1 Workplace Safety Interaction Record Sheet 2025F2 Monthly Safety Interaction Register 2025WI Safety Interaction Program	Aconex Site Lever Arch Folders QSE Database Site Shared Drive

B. Noise & Vibration Management Plan

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The Ribbon

Construction Noise and Vibration Management Plan

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DOCUMENT CONTROL REGISTER

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Attention To	Grocon Constructors Pty Ltd Mr Justin Clark

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TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

A construction noise, vibration and dust management plan has been carried out for the proposed construction activities to assess whether these activities would impact sensitive receivers around The Ribbon site based on the requirements of the City of Sydney Council. The results of the assessment have been used to develop a construction noise and vibration management plan that will be used to manage impacts from these activities.

The Management Plan outlines the development of controls and safeguards that would be applied to all activity on the site by the construction contractor. The objective of these controls is to ensure that all work is carried out in a controlled and predictable manner that will minimise emissions and protect the amenity of the sensitive receivers surrounding the site.

Further reviews would be undertaken through the construction period, as required, in response to revised methods and equipment, as well as in response to the monitoring and evaluation of actual impacts. This management plan outlines the procedures that would be adopted by the contractor during the detailed construction planning and execution phases.

2 INTRODUCTION

An assessment of noise, vibration and dust associated with construction activities proposed for The Ribbon development located at Darling Harbour is presented within this report. The site is indicated in Figure 1.

3 PROJECT DESCRIPTION

The scope of work entails the demolition of the existing IMAX building and the construction of the new 18 storey Ribbon development. It is anticipated that demolition will take approximately 6 months followed by a 24 month construction period. All traffic will enter and exit the site as detailed in the Grocon Construction management Plan.

There are no residential receivers within close proximity to the site and all neighbouring areas include external areas of Darling Harbour or roadways.

The nearest potentially affected noise receivers are as below:

- Receiver 1 - Commercial receivers to the north of the site.
- Receiver 2 - Commercial receivers to the east of the site.
- Receiver 3 - Commercial receivers to the south of the site.
- Receiver 4 – Park Royal Hotel to the east of the site

Figure 1: Site Map Site Map and Noise Receiver Locations

4 HOURS OF WORK

All work would be undertaken during the standard construction hours as defined by the City of Sydney Council which are detailed below:

- 7:00am to 7:00pm Monday to Fridays
- 7:00am to 5:00pm Saturdays.

No work must be carried out on Sundays or public holidays.

5 NOISE, VIBRATION AND DUST OBJECTIVES

5.1 NOISE

The applicable guidelines and standards are:

- Local Authority - City of Sydney "Construction Hours/Noise Within the Central Business District" (1992) which nominates the following noise objectives.
  - 7am to 8am – background + 5 dB(A)
  - 8am to 7pm – background + 5 dB(A) + 5 dB(A)
- Australian Standard 2436-1981 "Guide to Noise Control on Construction Maintenance and Demolition Site". The requirements stipulated in Section 3 of the standard will be followed.

Section 3 of AS 2436 states that care shall be taken in applying criteria that normally would be used to regulate noise emitted from industrial, commercial and residential premises to construction, particularly for those activities which are transitory and of short duration. For the control and regulation of noise from construction sites AS2436 nominates the following:

- That reasonable suitable noise criterion is established.
- That all practicable measures be taken on the building site to regulate noise emissions, including the siting of noisy static processes on parts of the site where they can be shielded, selecting less noisy processes, and if required regulating construction hours.
- The undertaking of noise monitoring where non-compliance occurs to assist in the management and control of noise emission from the building site.

Based on these criteria the following procedure will be used to assess noise emissions:

- Predict noise levels produced by typical construction activities at the sensitive receivers.
- If noise levels exceed "background + 5 or 10 dB(A)" noise goal at sensitive receiver locations, investigate and implement all practical and cost effective techniques to limit noise emissions. For commercial receivers, a background + 10 dB(A) criterion has been adopted at all times given that the buildings are expected to predominantly unoccupied between 7am and 8am and it does not make sense to restrict activity at a time when it would produce minimal impact.
- If the noise goal is still exceeded after applying all practical engineering controls to limit noise emissions investigate management and other techniques to mitigate noise emissions.

5.2 VIBRATION

Vibration caused by construction at any residence or structure outside the subject site must be limited to:

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures; and*

- For human exposure to vibration, the evaluation criteria presented in the British Standard BS 6472:1992 *Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80Hz)* for low probability of adverse comment

The criteria and the application of this standard are discussed in separate sections below.

5.2.1 Structure Borne Vibrations

German Standard DIN 4150-3 (1999-02) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (1999-02) are presented in Table 1.

It is noted that the peak velocity is the absolute value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 1 - DIN 4150-3 (1999-02) Safe Limits for Building Vibration

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms^{-1})			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

5.2.2 Assessing Amenity

The Environmental Protection Authority "Assessing Vibration: A Technical Guideline" (Feb 2006) is based on the guidelines contained in BS 6472:1992. This guideline provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings.

The recommendations of this guideline should be adopted to assess and regulate vibration within the construction site

Table 2 - EPA Recommended Vibration Criteria

		RMS acceleration (m/s^2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	Time	Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Impulsive Vibration							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0

5.3 DUST

The air pollutants impact assessment criterion applicable to the site with regards to health concerns is based on the Environmental Protection Authority's criteria for acceptable duct emissions from building sites. The acceptable duct levels detailed within the EPA guideline is detailed in Table below.

Table 3 - Dust Impact Criterion from Building Sites

Pollutant	Averaging Period	Concentration
PM_{10}	24 hours	50 µg/m^3

6 PROPOSED PROGRAMME & ASSOCIATED NOISE SOURCES

The following sections detail the proposed programme for all stages of the development.

6.1 DEMOLITION

There is no basement excavation required on the project. There may be some demolition of the existing promenade structure over Cockle Bay to construct a new ground slab.

The demolition phase of the project will include removal of part of the existing IMAX structure based on the Grocon management plan and includes the erection of a hoarding for the full length of the property perimeter, setting up of site sheds and services etc. Demolition of the structure using excavators and hydraulic hammers. Internal demolition will be undertaken using jackhammers, angle grinders, electric saws; Bobcat and trucks for loading demolition material and clearing rubble from site.

6.2 ERECTION OF STRUCTURE

Structure will be a hybrid – reinforced concrete between the cores and structural steel wings (east and west of the cores). This involves the construction of new building structure. The processes involved in this activity include the construction of bored piles to support the basement slab and structure, delivery of materials, erection of formwork, pouring of concrete, and stripping of formwork. All materials for form working and structural steel are transported to the work face using the site tower cranes and man/material hoists. Concrete will be pumped using concrete pumps.

6.3 EXTERNAL FINISHES WORKS

This involves installation primarily of façade glazing and brickwork to the exterior of the building. This work will be implemented once the building structure is complete and formwork has been removed.

6.4 INTERNAL FITOUT AND FINISHES

This involves all internal fitout work from the installation plasterboard of ceilings, services installation to painting and joinery. All work covered under this section, will be contained within the building, with the facade providing a barrier to the direct transmission of noise to the exterior.

7 ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE SOURCES

Noise impact will be determined from all processes and equipment, which are involved in the activities outlined below by defining the levels of sound, which they generate.

The A-weighted sound power levels for all the component parts of the above-described activities are outlined in the tables below.

Table 4 - Sound Power Levels of the Proposed Equipment

CONSTRUCTION ACTIVITY	EQUIPMENT /PROCESS	SOUND POWER LEVEL - dB(A)
Demolition	Truck	105
	Bobcat	105
	30 Ton Excavator	114
Piling	Piling	111
Construction	Angle Grinders	114
	Electric Saw	111
	Drilling	94
	Hammering	110
	Concrete Vibrator	100
	Cement Mixing Truck	105
	Concrete Pumps	107
	Crane	105

The noise levels presented in the above table are derived from the following sources, namely:

- On-site measurements
- Table A1 of Australian Standard 2436-2010
- Data held by this office from other similar studies.

8 ASSESSMENT OF POTENTIAL NOISE EMISSIONS

8.1 BACKGROUND NOISE LEVELS IN THE VICINITY OF THE SITE

Daytime background noise levels were measured at the site using an unattended noise logger. These were obtained using an unattended noise monitor which was placed at the subject site to measure ambient noise through the period of between from 15th and the 23rd May, 2012. The results of unattended noise logging are included in Appendix 1.

The results of the monitoring and attended measurements are summarised in the following table.

Table 5 - Measured Background Noise

Location	Day Background Noise Level dB(A) L_{90}
The Ribbon	65

8.2 NOISE ASSESSMENT

Noise generated by plant and equipment throughout the duration of the project will be managed to generally comply with the background + 5 or 10dB(A) criterion (as applicable), and where this noise goal may be exceeded noise will be managed in strict compliance with AS2436.

Predictions of the noise levels at the sensitive receivers identified have been made of the construction processes with the potential to produce significant noise.

All predictions were made by taking into account the expected façade reductions, barrier effects (where applicable) distance losses, respite periods of equipment on site, and using the noise levels tabled above.

8.3 PREDICTION TO NOISE RECEIVERS

8.3.1 Noise Receiver 1- Commercial Property to the North

The noise goal for the commercial receiver to the north of the project site complying with Council guidelines 75dB(A) between 8am and 7:00pm. The centre does not operate before 8:00am and therefore, the background + 5db(A) criterion does not apply. The predicted noise levels are presented below:

Table 6 - Predicted Noise Level – Commercial Receivers to the North

Equipment / Process	External Noise Goal dB(A) $L_{eq\ (15min)}$ (Background+10dB(A))	Predicted Level at Receiver dB(A)	Complies
Angle Grinders	75	75-65 – prior to the construction of building shell 55-45 – after construction of building shell	Yes
Electric Saw	75	72-62 – prior to the construction of building shell 52-42 – after construction of building shell	Yes
Drilling	75	55-45	Yes
Hammering	75	71-61 – prior to the construction of building shell 51-41 – after construction of building shell	Yes
Concrete Vibrator	75	61-51	Yes
Cement Mixing Truck	75	66-56	Yes
Concrete Pumps	75	68-58	Yes
Crane	75	66-56	Yes

8.3.2 Noise Receiver 2- Commercial Property to the South

The noise goal for the commercial receiver to the south of the project site complying with Council guidelines 75dB(A) between 8am and 7:00pm. The centre does not operate before 8:00am and therefore, the background + 5db(A) criterion does not apply. The predicted noise levels are presented below:

Table 7 - Predicted Noise Level – Commercial Receivers to the South

Equipment / Process	External Noise Goal dB(A) $L_{eq\ (15min)}$ (Background+10dB(A))	Predicted Level at Receiver dB(A)	Complies
Angle Grinders	75	75-65 – prior to the construction of building shell 55-45 – after construction of building shell	Yes
Electric Saw	75	72-62 – prior to the construction of building shell 52-42 – after construction of building shell	Yes
Drilling	75	55-45	Yes
Hammering	75	71-61 – prior to the construction of building shell 51-41 – after construction of building shell	Yes
Concrete Vibrator	75	61-51	Yes
Cement Mixing Truck	75	66-56	Yes
Concrete Pumps	75	68-58	Yes
Crane	75	66-56	Yes

8.3.3 Noise Receiver 3- Commercial Property to the east

The noise goal for the commercial receiver to the east of the project site complying with Council guidelines 75dB(A) between 8am and 7:00pm. The centre does not operate before 8:00am and therefore, the background + 5db(A) criterion does not apply. The predicted noise levels are presented below:

Table 8 - Predicted Noise Level – Commercial Receivers to the East

Equipment / Process	External Noise Goal dB(A) $L_{eq\ (15min)}$ (Background+10dB(A))	Predicted Level at Receiver dB(A)	Complies
Angle Grinders	75	70-60 – prior to the construction of building shell 50-40 – after construction of building shell	Yes
Electric Saw	75	67-57 – prior to the construction of building shell 47-37 – after construction of building shell	Yes
Drilling	75	50-40	Yes
Hammering	75	66-56 – prior to the construction of building shell 46-36 – after construction of building shell	Yes
Concrete Vibrator	75	56-46	Yes
Cement Mixing Truck	75	61-51	Yes
Concrete Pumps	75	63-53	Yes
Crane	75	61-51	Yes

8.3.4 Noise Receiver 4 – Hotel to the East

The noise goal for the Park Royal Hotel complying with Council guidelines would be 70 dB(A) between 7:00am and 8:00am, and 75 dB(A) between 8:00am and 7:00pm. The predicted noise levels are presented below:

Table 9 - Predicted Noise Level – Park Royal Hotel

Equipment / Process	External Noise Goal dB(A) $L_{eq\ (15min)}$ (Background+5/10 dB(A))	Predicted Level at Receiver dB(A)	Complies
Angle Grinders	70/75	70-60 – prior to the construction of building shell 50-40 – after construction of building shell	Yes
Electric Saw	70/75	67-57 – prior to the construction of building shell 47-37 – after construction of building shell	Yes
Drilling	70/75	50-40	Yes
Hammering	70/75	66-56 – prior to the construction of building shell 56-36 – after construction of building shell	Yes
Concrete Vibrator	70/75	56-46	Yes
Cement Mixing Truck	70/75	61-51	Yes
Concrete Pumps	70/75	63-53	Yes
Crane	70/75	61-51	Yes

9 VIBRATION - ACCEPTABLE WORK PRACTICES

Vibration during the construction period is not expected to exceed vibration limits.

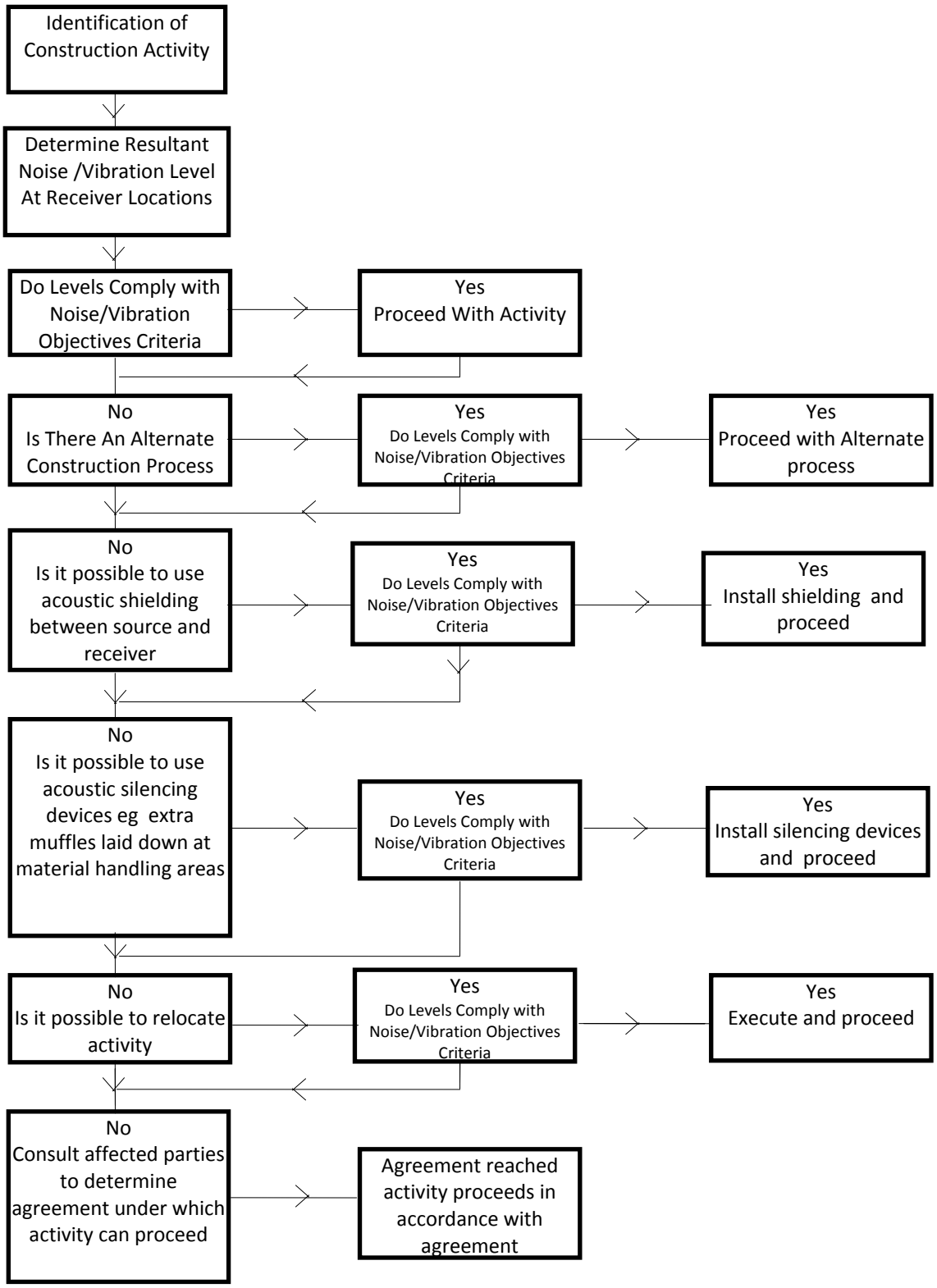
10 CONTROL OF DUST

There is little dust generation associated with construction when compared to excavation and demolition activities (which have already been completed on site). Where complaints are received associated with dust the complaints procedure listed in report will be followed and where required, dust monitoring will be implemented.

11 CONTROL OF CONSTRUCTION NOISE

As a part of the noise management plan a detailed study has been undertaken of each of the proposed activities which will occur as a part of the construction works on this project. This facilitates the formulation of noise control strategies for this project. The flow chart which follows illustrates the process which will be followed in assessing construction activities.

CONTROL OF NOISE AND VIBRATION



12 NOISE CONTROL METHODS

The determination of appropriate noise control measures will be dependant on the particular activities and construction appliances. This section provides an outline of available methods.

12.1 SELECTION OF ALTERNATE APPLIANCE OR PROCESS

Where a particular activity or construction appliance is found to generate excessive noise levels, it may be possible to select an alternative approach or appliance. For example; the use of a hydraulic hammer on certain areas of the site may potentially generate high levels of noise. By carrying this activity by use of pneumatic hammers, bulldozers ripping and/or milling machines lower levels of noise will result.

12.2 SILENCING DEVICES

Where construction process or appliances are noisy, the use of silencing devices may be possible. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts.

12.3 MATERIAL HANDLING

The installation of rubber matting over material handling areas can reduce the sound of impacts due to material being dropped by up to 20dB(A).

12.4 TREATMENT OF SPECIFIC EQUIPMENT

In certain cases it may be possible to specially treat a piece of equipment to dramatically reduce the sound levels emitted.

12.5 ESTABLISHMENT OF SITE PRACTICES

This involves the formulation of work practices to reduce noise generation. A noise plan will be developed for this project outlining work procedures and methods for minimising noise.

12.6 REGULAR NOISE CHECKS OF EQUIPMENT

To determine the requirement for silencing devices on machinery it is proposed to undertake fortnightly noise check. Noise levels of all machines on site will be measured and if they are found to be higher than nominated for that equipment type, items such as mufflers and engine shrouds will be examined to ensure they are in good working order.

A record of these measurements will be kept on a form similar to that shown below.

This measure is expected to maintain noise at constant levels, and prevent any increases.

The Ribbon

Construction Appliance Compliance Certificate

Month .....

Year .....

Plant Item .....

Allowable Noise Level .....

Measured Noise Level .....

Complies Yes ☐ No ☐

Issuing Engineer .....

Sub-Contractor .....

Project Manager .....

13 COMMUNITY INTERACTION AND COMPLAINTS HANDLING

13.1 ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES

In order for any construction noise management programme to work effectively, continuous communication is required between all parties, which may be potentially impacted upon, the builder and the regulatory authority. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation processes is to:

- Inform and educate the groups about the project and the noise controls being implemented;
- Increase understanding of all acoustic issues related to the project and options available;
- Identify group concerns generated by the project, so that they can be addressed; and
- Ensure that concerned individuals or groups are aware of and have access to the Site Complaints Register which will be used to address any construction noise related problems should they arise.

To ensure that this process is effective, regular scheduled meetings will be required for a finite period, until all issues have been addressed and the evidence of successful implementation is embraced by all parties.

An additional step in this process is to produce a newsletter informing nearby residents of upcoming activities that are likely to generate higher noise/vibration levels.

13.2 DEALING WITH COMPLAINTS

Should ongoing complaints of excessive noise /vibration or dust criteria occur immediate measures shall be undertaken to investigate the complaint, the cause of the exceedances and identify the required changes to work practices. In the case of exceedances of the noise/vibration and dust limits all work potentially producing noise/vibration or dust shall cease until the exceedance is investigated.

The effectiveness of any changes shall be verified before continuing. Documentation and training of site staff shall occur to ensure the practices that produced the exceedances are not repeated.

If a noise complaint is received the complaint should be recorded on a Noise Complaint Form. The complaint form should list:

- The name and address of the complainant (if provided);
- The time and date the complaint was received;
- The nature of the complaint and the time and date the noise was heard;
- The name of the employee who received the complaint;
- Actions taken to investigate the complaint, and a summary of the results of the investigation;
- Required remedial action, if required;

- Validation of the remedial action; and
- Setup vibration monitoring system at the location represents the nearest vibration receiver location with alarm device which can inform the project manager on site if the vibration exceedance happened.
- Summary of feedback to the complainant.

A permanent register of complaints should be held.

All complaints received should be fully investigated and reported to management. The complainant should also be notified of the results and actions arising from the investigation.

The investigation of a complaint shall involve where applicable;

- noise measurements at the affected receiver;
- an investigation of the activities occurring at the time of the incident;
- inspection of the activity to determine whether any undue noise is being emitted by equipment; and
- Whether work practices were being carried out either within established guidelines or outside these guidelines.

Where an item of plant is found to be emitting excessive noise, the cause is to be rectified as soon as possible. Where work practices within established guidelines are found to result in excessive noise being generated then the guidelines should be modified so as to reduce noise emissions to acceptable levels. Where guidelines are not being followed, the additional training and counselling of employees should be carried out.

Measurement or other methods shall validate the results of any corrective actions arising from a complaint where applicable.

14 CONTINGENCY PLANS

Where non-compliances or noise complaints are raised the following methodology will be implemented.

1. Determine the offending plant/equipment/process
2. Locate the plant/equipment/process further away from the affected receiver(s) if possible.
3. Implement additional acoustic treatment in the form of localised barriers, silencers etc where practical.
4. Selecting alternative equipment/processes where practical
5. Setup noise/vibration and dust monitoring devices at locations represent nearest noise receivers and provide noise data for each complain time period. Analysis is required to determine suitable mitigation measures.

Complaints associated with noise /vibration and dust generated by site activities shall be recorded on a Complaint Form. The person(s) responsible for complaint handling and contact details for receiving of complaints shall be established on site prior to construction works commencing. A sign shall be displayed at the site indicating the Site Manager to the general public and their contact telephone number.

15 CONCLUSION

A noise/vibration and dust assessment has been undertaken of the proposed construction activities to identify whether these activities would impact sensitive receivers around The Ribbon, Darling Harbour.

The assessment of construction noise and vibration indicates that management and engineering measures will be needed to limit noise impacts to the surrounding receivers. Noise emissions to the remainder of the buildings surrounding the project site will generally be within the recommended goals.

Minimal vibration impacts are expected as a result of construction activites. Notwithstanding this, safeguards to ensure no adverse impacts at the residential buildings have been recommended in this report.

Dust emission criteria have been set up in this report based on the requirements of the Environmental protection Authority. Detailed dust mitigation methods have been recommended in this report.

We trust this information is satisfactory. Please contact us should you have any further queries.

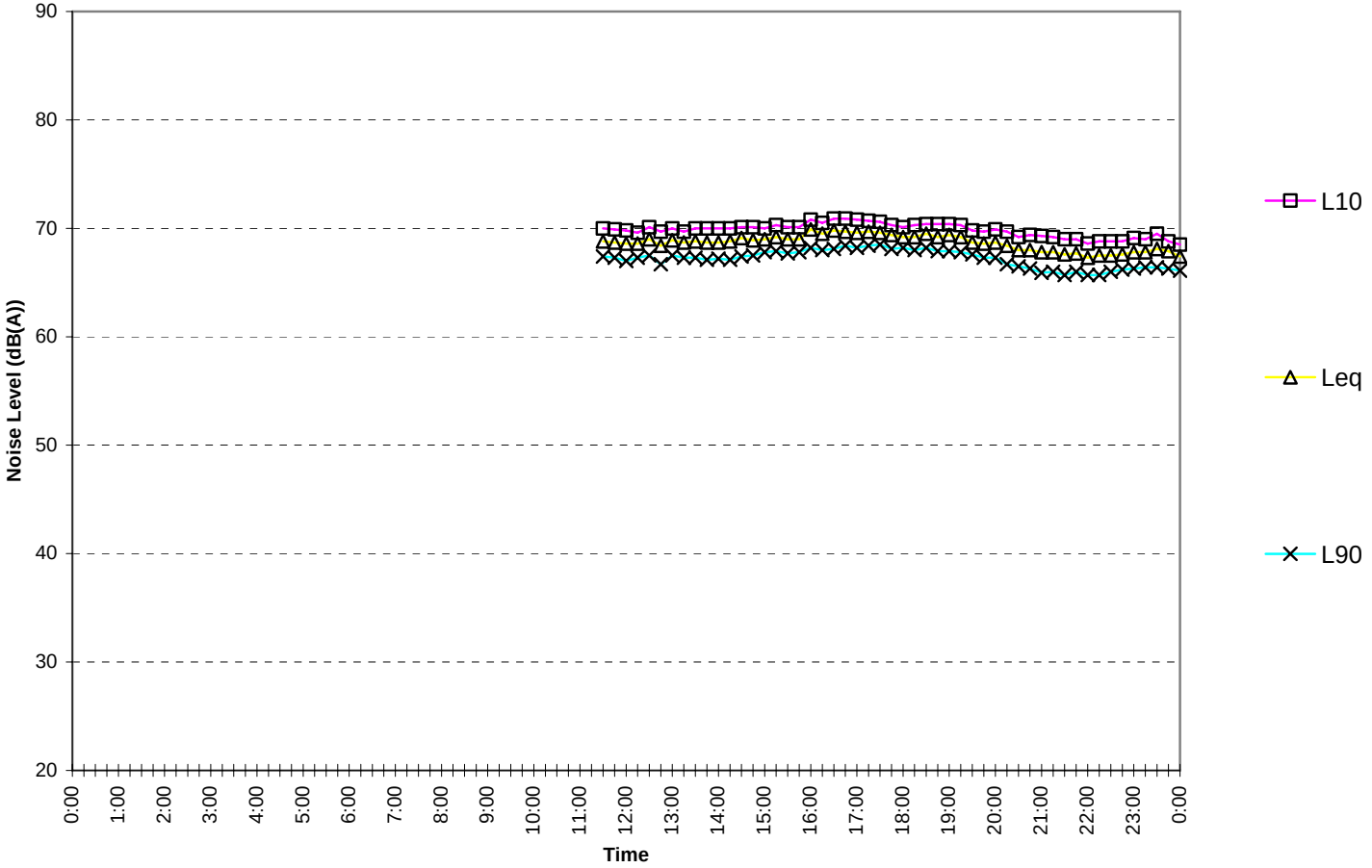
Yours faithfully,

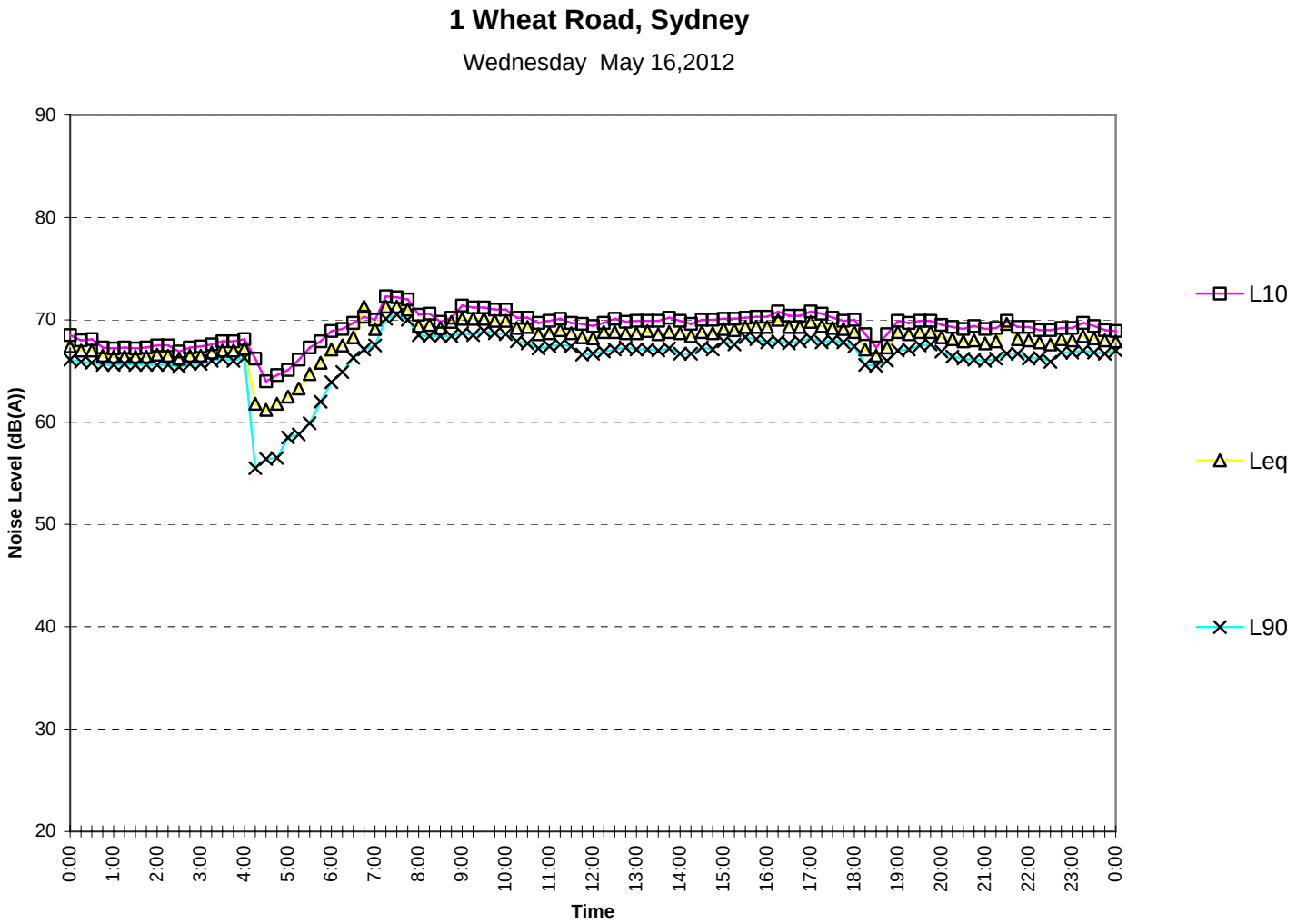
Acoustic Logic Consultancy Pty Ltd
Ben White

Appendix One –
Unattended Noise Monitor Results

1 Wheat Road, Sydney

Tuesday May 15,2012

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Wednesday May 16,2012
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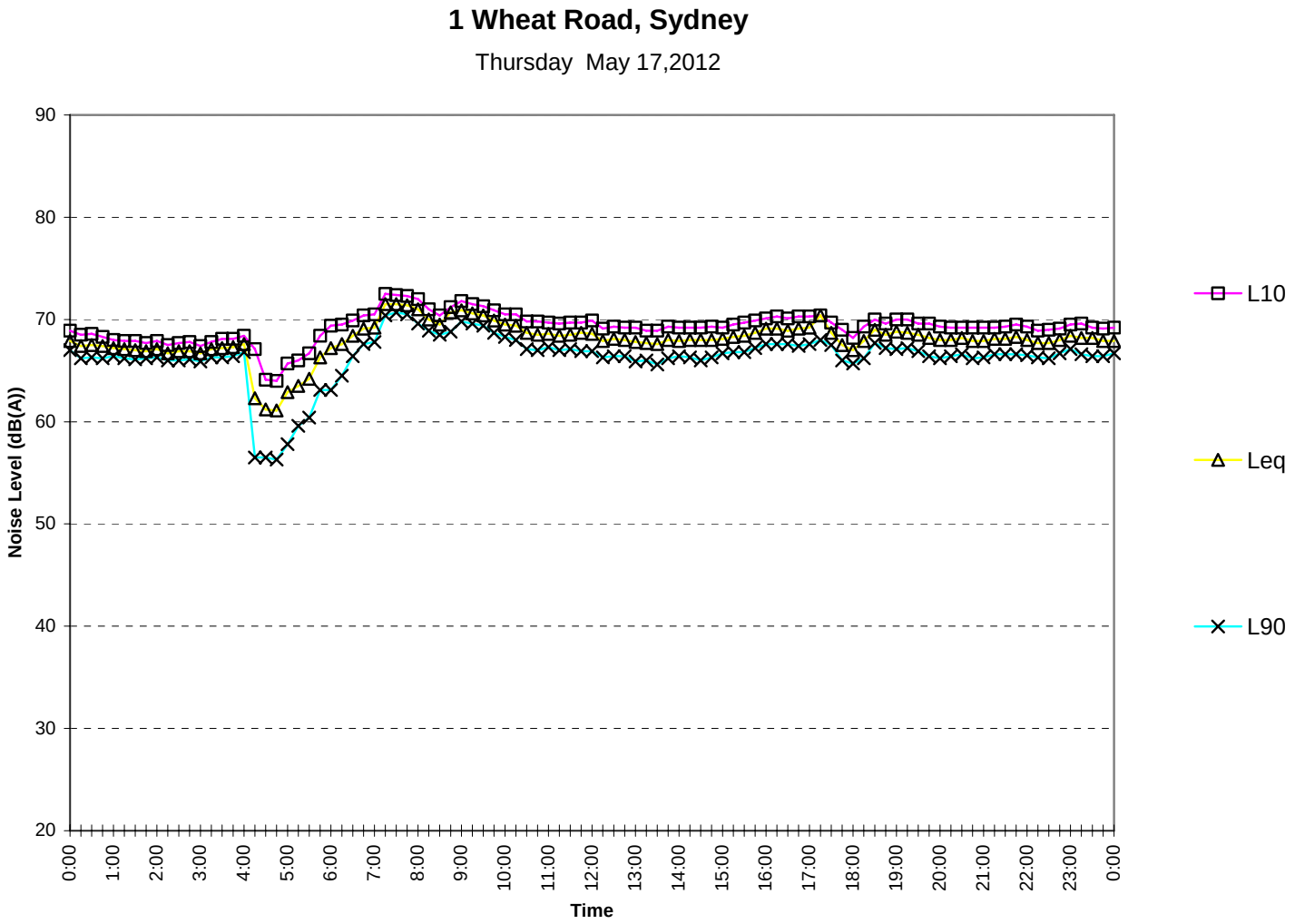
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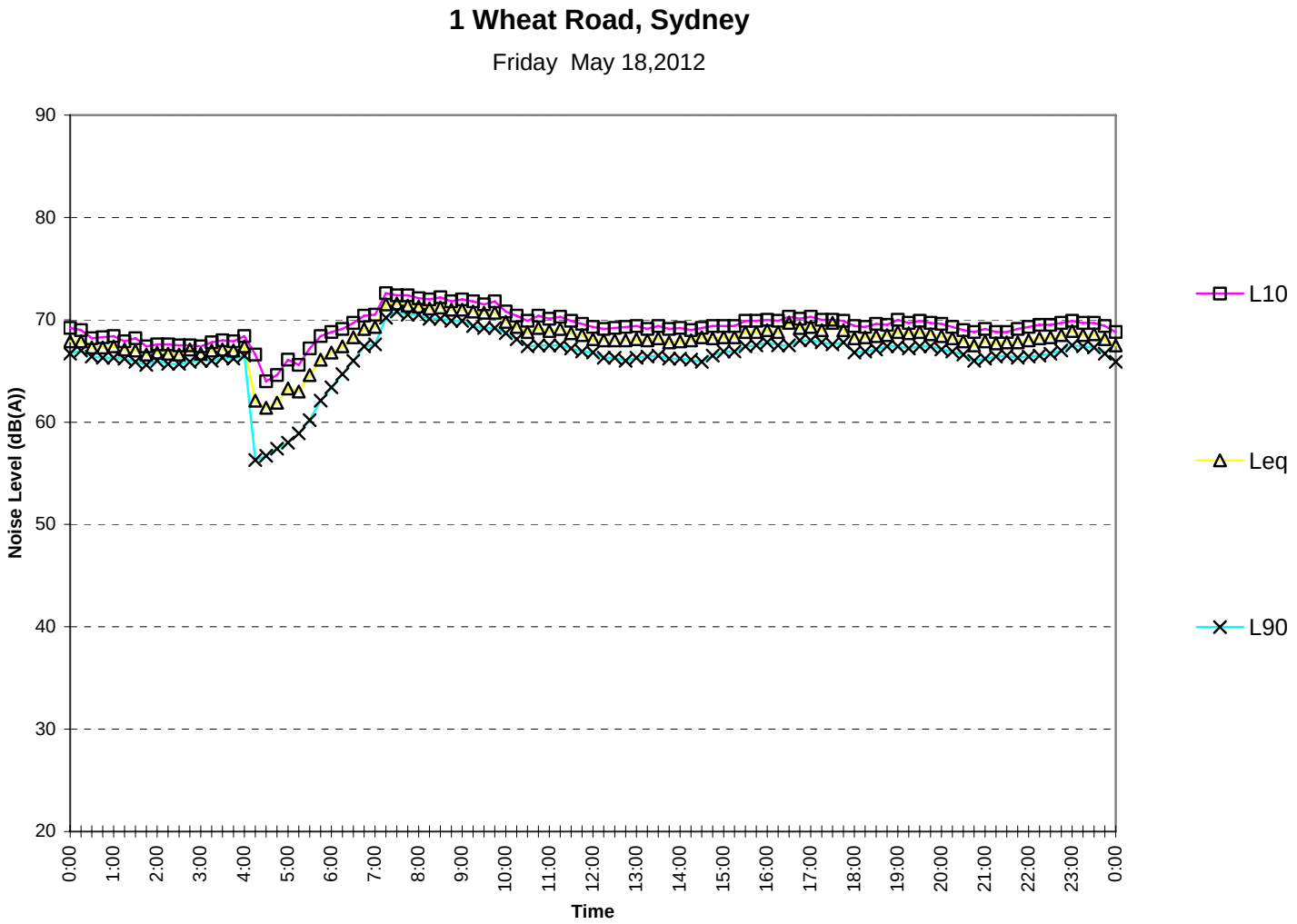
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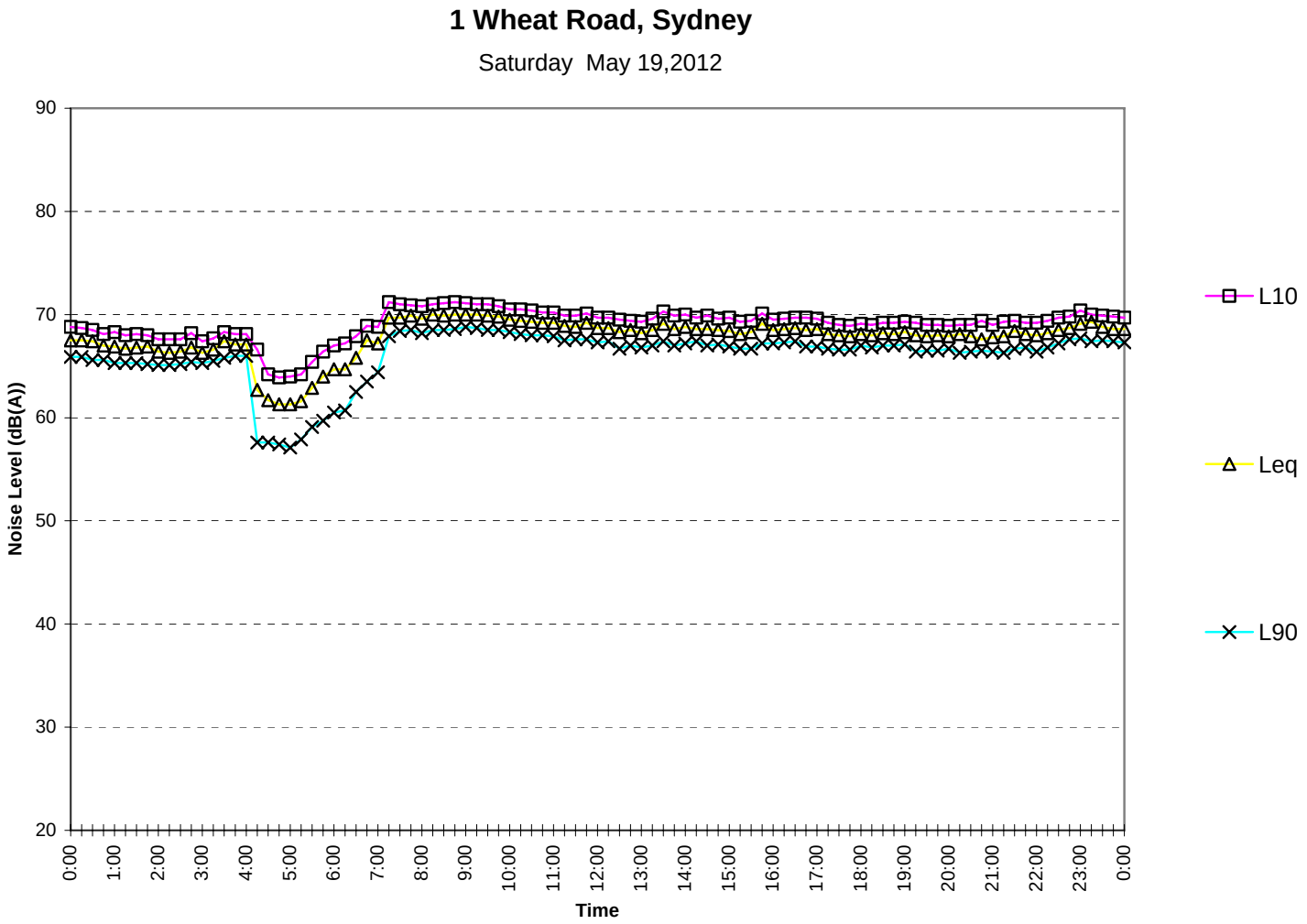
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Saturday May 19,2012
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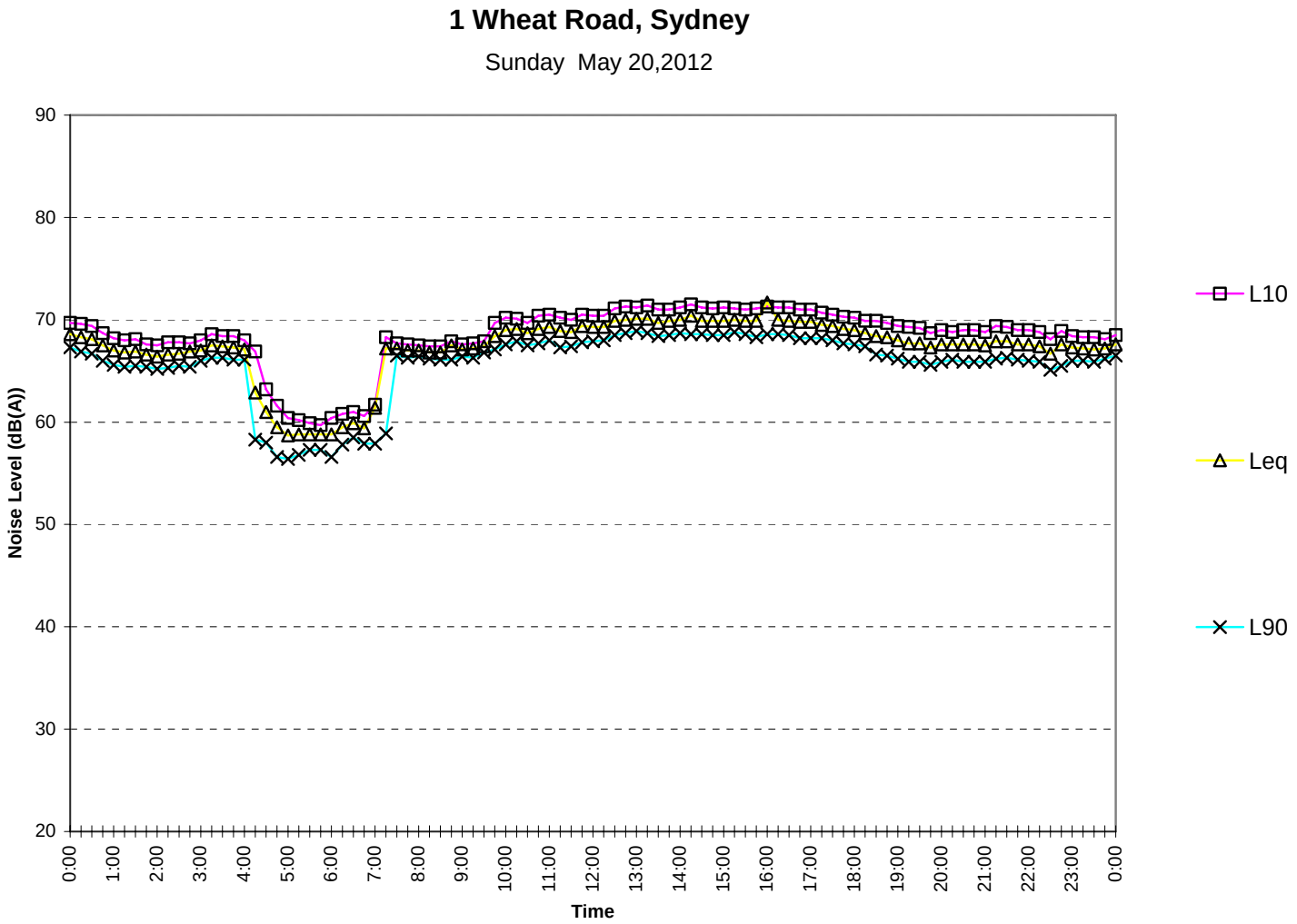
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Noise Level (dB(A))
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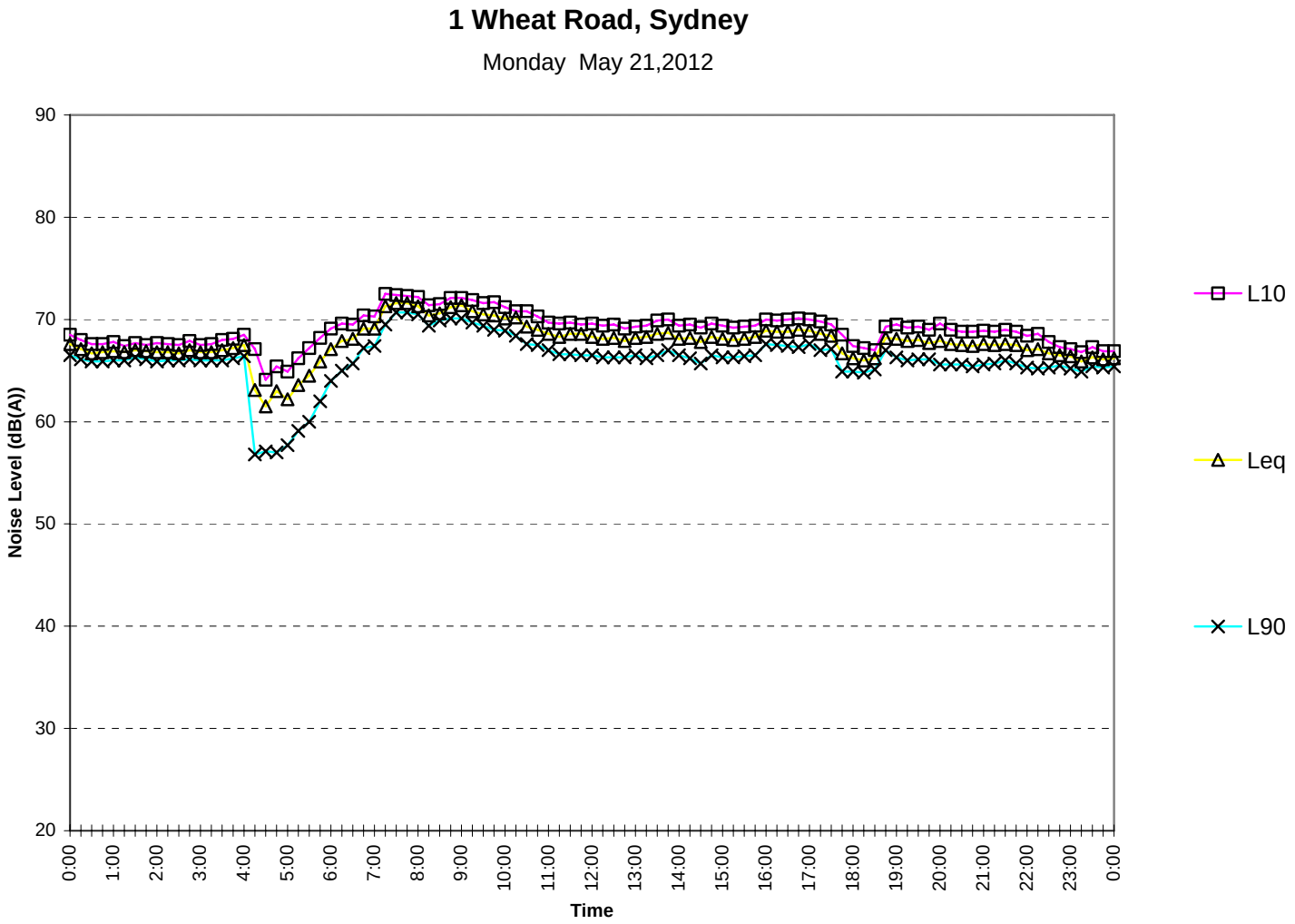
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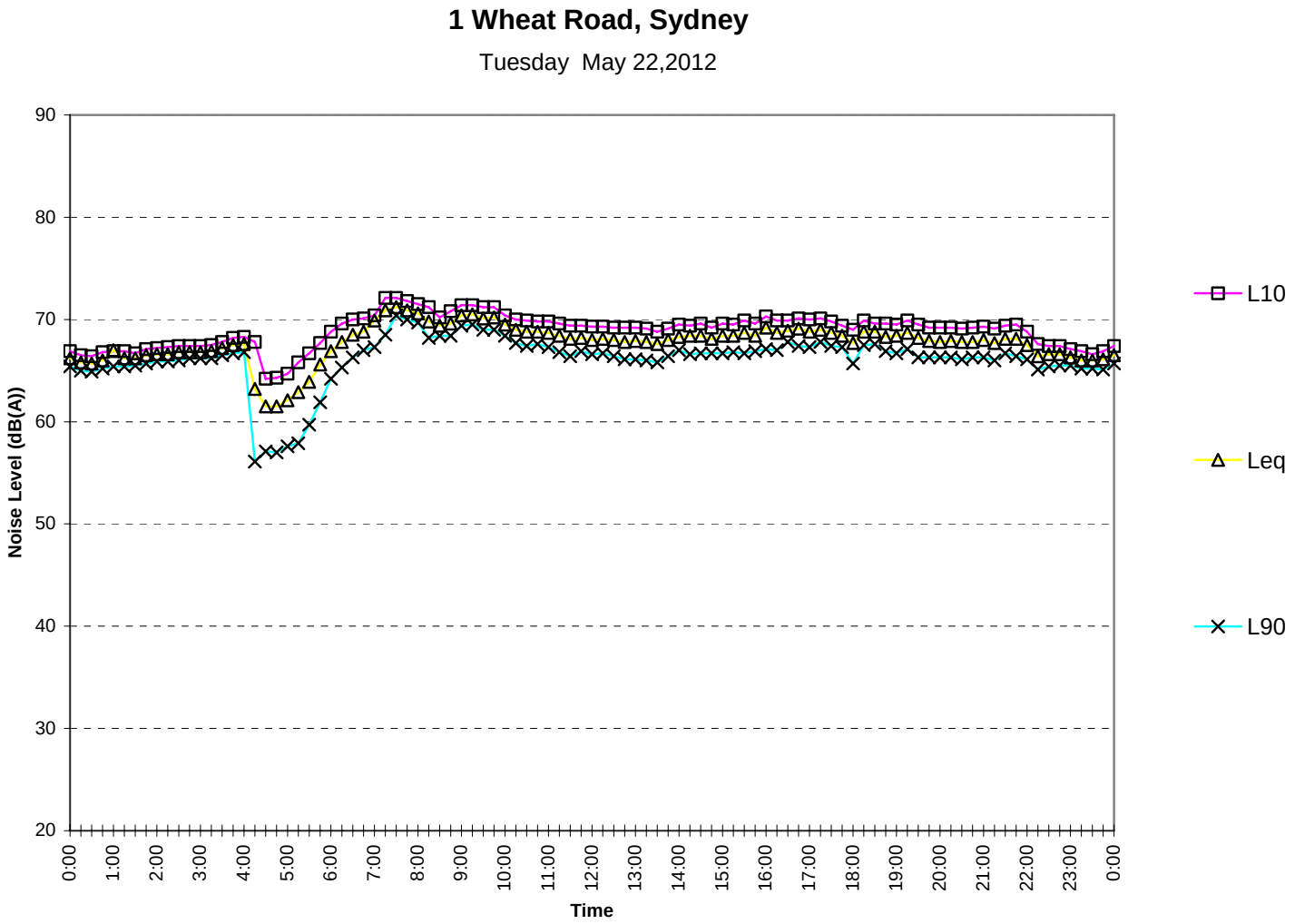
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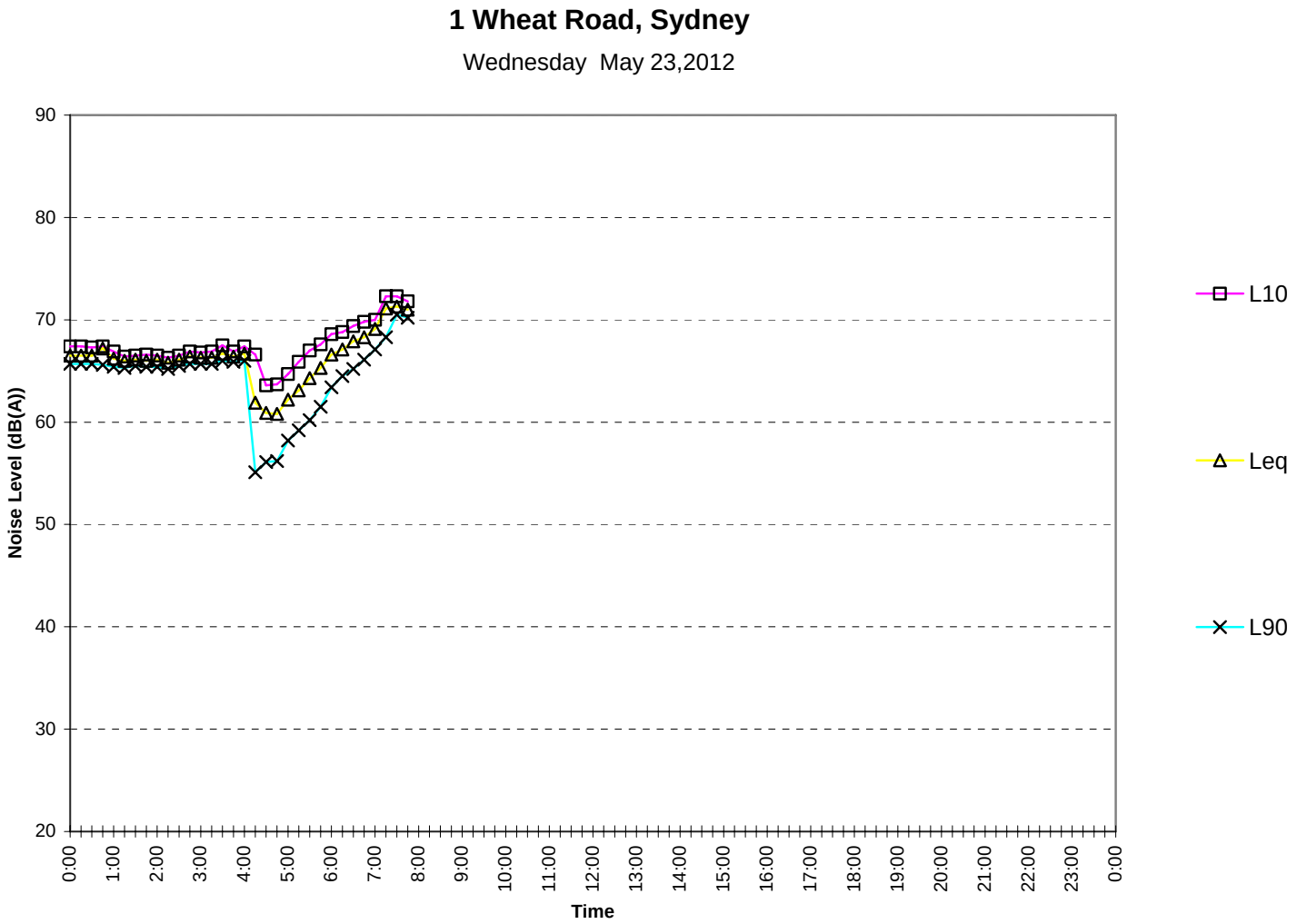
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Noise Level (dB(A))
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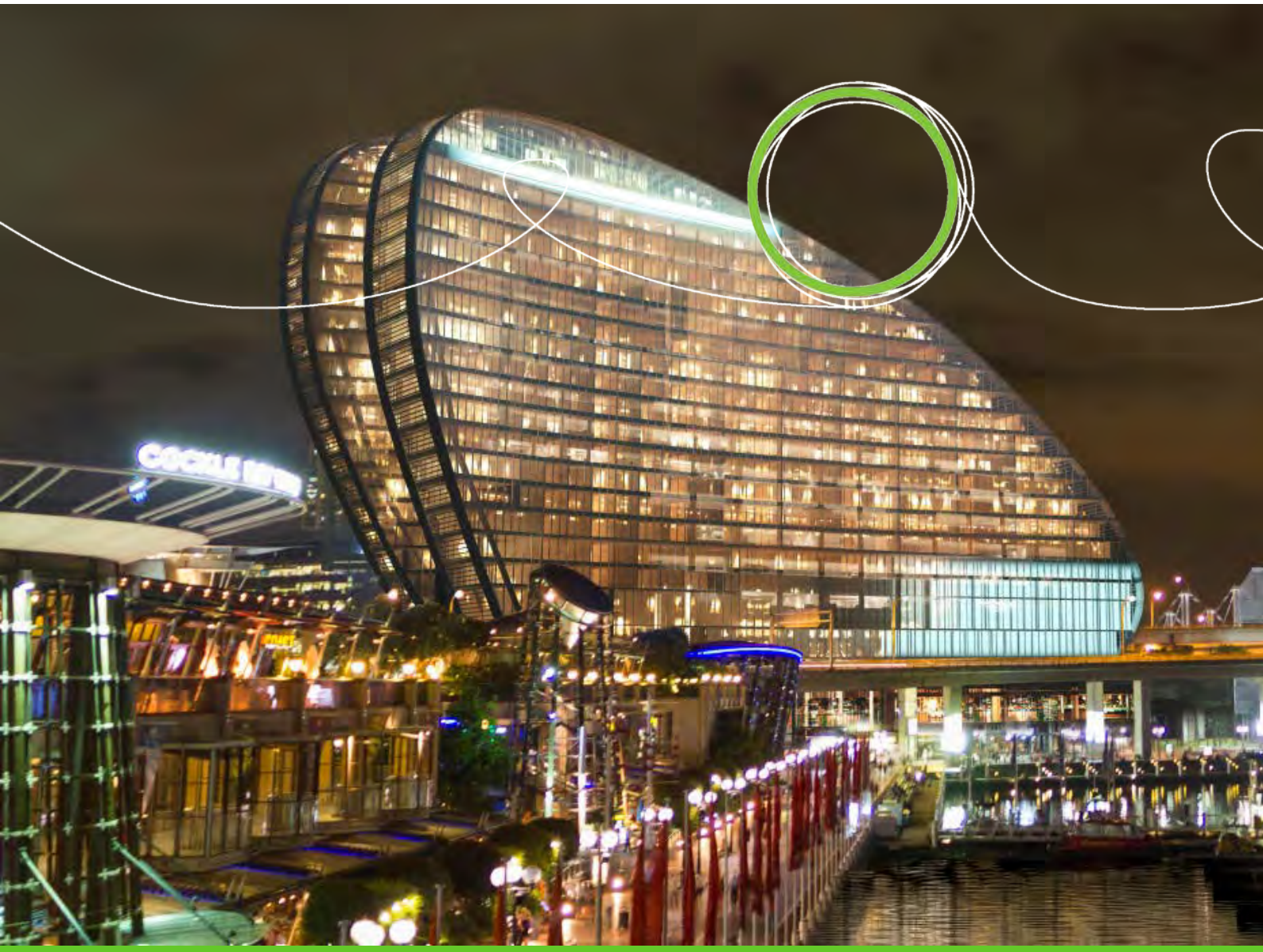
Appendix Two –
Builder's Operational / Explanation Notes

C. Pedestrian and Traffic Management Plan



The Ribbon Mixed Use Development
31 Wheat Road, Sydney
Preliminary Construction Traffic

Client // Grocon
Office // NSW
Reference // 12S9018500
Date // 18/12/15

The Ribbon Mixed Use Development

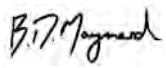
31 Wheat Road, Sydney

Preliminary Construction Traffic Management Plan

Issue: B 18/12/15

Client: Grocon
Reference: 12S9018500
GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	16/08/13	Final	Cameron Ward, Chris Slenders	Rhys Hazell	Brett Maynard	Brett Maynard
B	18/12/15	Amended to include revised construction methodology	Brigette Humphrey-Robinson	Rhys Hazell	Brett Maynard	

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Appendices

Figures

Tables

1. Introduction

It is understood that a development application (DA) is to be lodged with NSW Planning and Environment (DPE) for a proposed mixed use development on land located between the Western Distributor elevated roadways and within the Darling Harbour/ Cockle Bay tourist and entertainment precinct in the western fringe of Sydney CBD.

The proposed development includes demolition of the existing IMAX building and the construction of a new 23-storey building and a separate two storey building, incorporating a total Gross Floor Area (GFA) of approximately 54,500m^2 for hotel and serviced apartments, retail, restaurant, function space and a new IMAX cinema.

Grocon commissioned GTA Consultants in December 2015 to address matters raised in the Secretary's Environmental Assessment Requirements (SEARs), including the preparation of a Preliminary Construction Traffic Management Plan for the proposed development to address the potential construction impacts on the surrounding transport networks.

This preliminary Construction Traffic Management Plan (CTMP) has been prepared to accord with City of Sydney *Standard Requirements for Construction Traffic Management Plans*. The City of Sydney requirements are attached in Appendix A. This CTMP would be updated prior to the issue of the construction certificate.

This study has also considered the SEARs for the Environmental Assessment of the proposed development. The SEARs were issued by the NSW Government Department of Planning and Environment for the redevelopment of the IMAX (SSD 7388) on 11 December 2015. Section 8 of the document addresses the construction impacts, as detailed in Table 1.1.

Table 1.1: Secretary's Environmental Assessment Requirements (SEAR's)

Description	Relevant Section
Details of peak hour and daily construction and servicing vehicle movements and access arrangements, and the likely impacts of this traffic and cumulative impact from surrounding development sites on the local network and potential conflicts with other road users, and measures to mitigate these impacts.	Section 3.2 Section 3.7
Details of vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures for all demolition/ construction activities.	Section 3.1.3 Sections 3.2-3.4 Section 3.8
Address road safety at key intersections and locations subject to heavy vehicle movements and high pedestrian activity, and details of temporary cycling and pedestrian access.	Section 3.6 Section 3.8
Details of access arrangements for workers to/from the site, emergency vehicles and service vehicles.	Section 3.6

In preparing this report, reference has been made to the following:

- several inspections of the site and its surrounds
- procedures for use in the Preparation of a Traffic Management Plan (TMP), Roads and Maritime Services (RMS), December 2001 (Version 2.0)
- Traffic Control at Work Sites Manual, RMS, June 2010
- Australian Standard AS1742.3 – 2009 Manual of Uniform Traffic Control Devices – Part 3: Traffic control for works on roads
- Grocon Constructors (NSW) Pty Ltd, The Ribbon, Sydney Construction Management Plan, Issue 1, Dated 10/12/15
- other documents and data as referenced in this report.

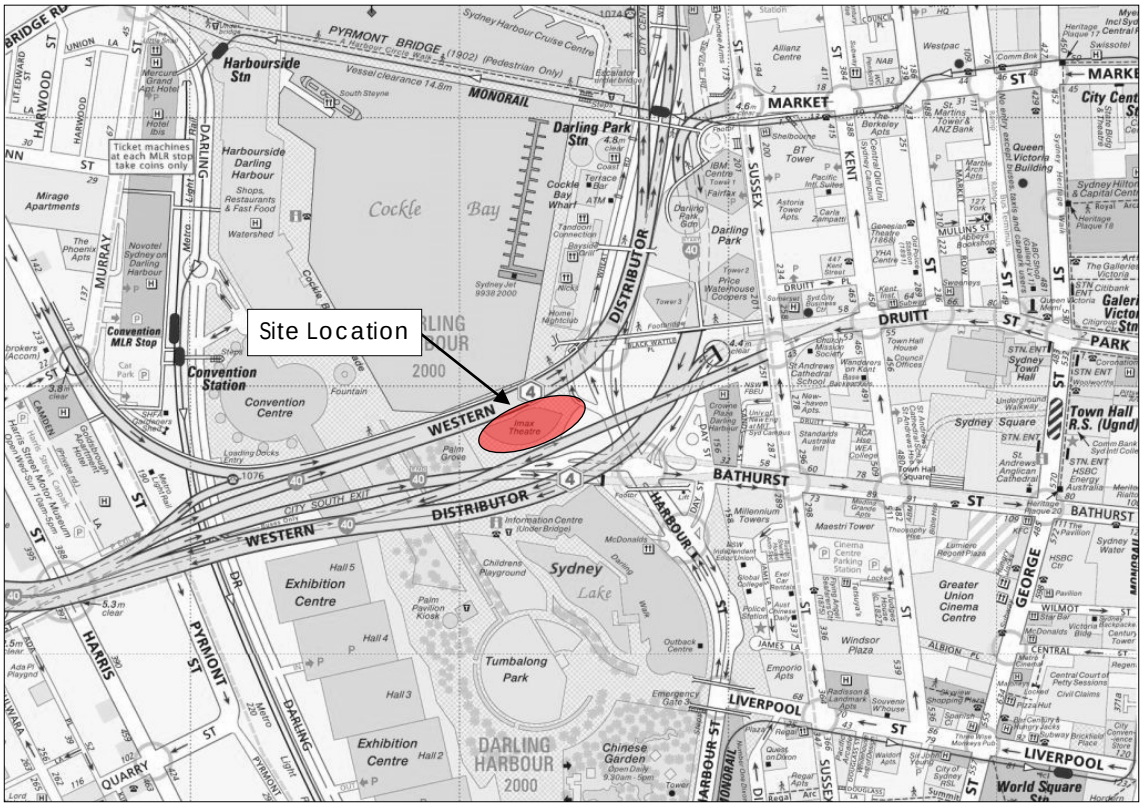
2. Existing Conditions

The subject site is located in a prominent position within Darling Harbour along the western fringe of Sydney CBD. Occupying land between the two Western Distributor elevated roadways, the site of approximately 2,330m^2 has a frontage primarily north facing to the pedestrian environment of Darling Harbour. The site is under the care and control of the Sydney Harbour Foreshore Authority (SHFA) and is occupied by the IMAX Cinema, function centre and associated restaurants/ cafes.

The surrounding properties predominantly include commercial, tourism and retail uses.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and its Environs



Basemap source: Sydway

2.1 Road Network

2.1.1 Adjoining Roads

Harbour Street

Harbour Street is classified as a State Road and is aligned in a north-south direction east of the site. It is a two-way divided road configured with 2-3 lanes in each direction and set within a 55m wide road reserve. Harbour Street is a key road in the area and links Chinatown/ CBD western fringe and Ultimo directly with Cockle Bay/ King Street Wharf, Barangaroo (under construction) and further to the Sydney Harbour Bridge. Additional lanes are provided at most intersections,

particularly where Harbour Street intersects with the Western Distributor off-ramp (eastbound), Bathurst Street and Cross City Tunnel (westbound).

Kerbside parking is not permitted at any time along Harbour Street in the vicinity of the site.

Harbour Street is shown in Figure 2.2 and Figure 2.3 and carries approximately 19,000 vehicles per day1.

Figure 2.2: Harbour Street (looking south)

Figure 2.3: Harbour Street and Wheat Road (looking north)

Wheat Road

Wheat Road is classified as a local road and in the vicinity of the site is aligned in a north-south direction. It is a one-way northbound road configured with a one-lane, 5m wide carriageway, set within a 10m wide road reserve. Wheat Road runs off Harbour Street adjacent to the site and primarily provides access to taxi, bus and loading facilities located adjacent to the site and north of the site, at the rear of the commercial/ retail properties fronting Cockle Bay.

Kerbside parking is permitted, mostly for buses, taxis and for loading purposes along Wheat Road in the vicinity of the site. A limited amount of time restricted parking is also provided north of the site.

Wheat Road is shown in Figure 2.4 and Figure 2.5 and carries approximately 1,000 vehicles per day, north of the site[1].

Wheat Road also provides access to the loading docks and staff parking areas located immediately south of the site with this access and the intersection with Harbour Street shown in Figure 2.6 and Figure 2.7.

[1] Based on the peak hour traffic counts undertaken by GTA in May 2012 and assuming a peak-to-daily ratio of 8% for arterial roads and 10% for local roads.

Figure 2.4: Wheat Road North of the Site (looking south)

Figure 2.5: Wheat Road Taxi/ Bus Area (looking north)

Figure 2.6: Wheat Road Taxi/Bus Area (looking south)

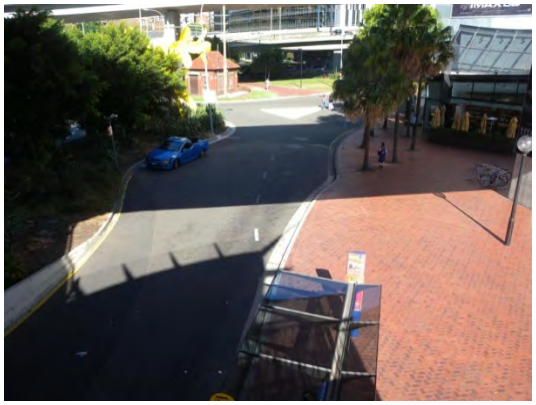


Figure 2.7: Harbour Street/ Wheat Road Intersection

2.1.2 Surrounding Intersections

Harbour Street intersects with Wheat Road at two locations in the vicinity of the site. Both are priority controlled and with movements limited to entry access to Wheat Road from Harbour Street. There is no opportunity to exit Wheat Road to gain direct access to Harbour Street, with the available route via Wheat Road to the north, then using Shelley Street and Erskine Street to filter into the arterial/ CBD road network. The southern Harbour Street intersection is located adjacent to the site and the other is located 60m to the north.

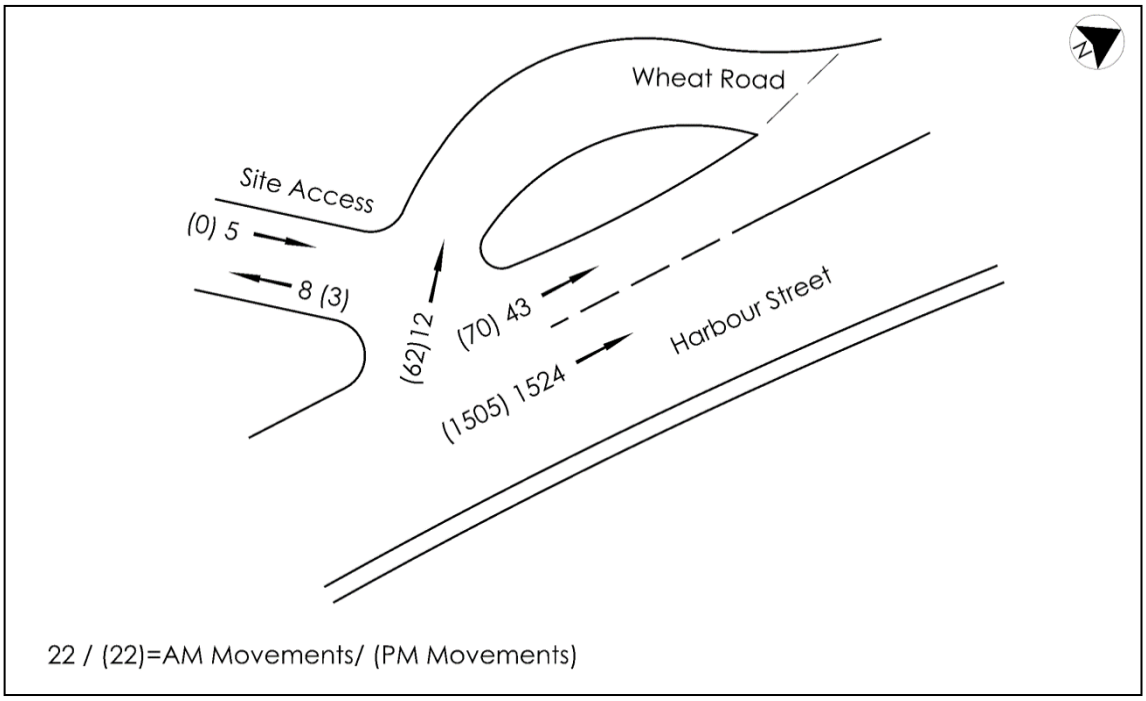
Harbour Street intersects with the Western Distributor off-ramp (eastbound), Bathurst Street and Cross City Tunnel (westbound) where the off-ramps provide exits to an at-grade signalised intersection immediately south of the site.

GTA Consultants completed traffic movement counts on key roads in the immediate vicinity of the site on the 9th May 2012 during the weekday AM (7:30am and 9:30am) and PM (4:30pm and 6:30pm) peak periods. The peak hour traffic volumes are summarised in Figure 2.8.

While it is recognised that the traffic surveys are not strictly current, the operation and function of the area immediately fronting the site has not changed significantly, while also noting that the area is in a constant state of change given the significant construction projects within and surrounding the CBD. This includes the Wynyard Walk and Barangaroo projects which would

further alter 'typical' traffic volumes at present and since 2012. For this reason, the 2012 traffic data is considered an accurate reflection of existing traffic volumes.

Figure 2.8: Existing AM / PM Peak Hour Traffic Volumes



The traffic surveys also identified various transport modes to/ from the local area as detailed in Table 2.1 and Table 2.2.

Table 2.1: AM Peak Hour Local Traffic Summary

Movement	Car	Taxi	Truck	Bus	Total
Site entry	3	0	2	0	**5**
Site exit	7	0	1	0	**8**
Wheat Road entry	5	3	2	2	**12**
Total Movements	**15 (60%)**	**3 (12%)**	**5 (20%)**	**2 (8%)**	**25**

Table 2.2: PM Peak Hour Local Traffic Summary

Movement	Car	Taxi	Truck	Bus	Total
Site entry	0	0	0	0	**0**
Site exit	3	0	0	0	**3**
Wheat Road entry	4	53	0	5	**62**
Total Movements	**7 (11%)**	**53 (82%)**	**0 (0%)**	**5 (7%)**	**65**

Harbour Street generally carries more than 1,500 northbound vehicles through the local area while Wheat Road provides access to the area immediately east of the site for more than 60 vehicles during the PM peak period. These are mostly made up of taxis picking up or dropping off passengers. Approximately 60 and 130 vehicles use Wheat Road north of the site during the AM and PM peak periods respectively with up to 15 being private cars (during the AM peak). The on-site loading docks and staff parking area generate less than 10 vehicles per hour during any peak hour.

2.2 Pedestrian Infrastructure

The surrounding area experiences high levels of pedestrian activity as a result of the surrounding commercial/ retail and tourist land uses including the site's existing uses, most notably the IMAX cinemas and associated function facilities. As such, the area surrounding the site has well established pedestrian facilities as detailed below:

- Pedestrian Overpass – 5m wide path located 50m north of site, providing access to Town Hall Station.
- Harbour Street – 5m wide path located 10m south of site (and adjacent to the site).
- Pedestrian Overpass – 10m wide path located 150m north of site, linking Darling Harbour (via the 'Spanish steps') with the CBD.
- Bathurst Street Pedestrian Bridge.
- At-grade pedestrian crossings on the western and southern approaches to the Harbour Street/ Bathurst Street signalised intersection.
- Pyrmont Pedestrian Bridge – 15m wide bridge located 300m north of site, linking Darling Harbour and Pyrmont with the CBD.
- Darling Harbour Walk – located 500m north of site providing access to the CBD.

2.3 Cycle Infrastructure

The site is located within close proximity to both on- and off-road cycling facilities. An off-road shared path travels north-south through Darling Harbour connecting Pyrmont Bridge Road in the north-west with the Union Street separated cycleway and Liverpool Street. This route travels within approximately 100m of the site and provides access to the broader cycling network, including via Pyrmont Bridge Road and Kent Street north of the site and Darling Road south-west of the site.

It is also noted that end-of-trip facilities in the form of bike racks, providing capacity for six bikes are provided within the pedestrian areas along the frontage of the site.

3. Traffic Management Plan

3.1 Overview

The proposed development, located at 31 Wheat Road Sydney, includes demolition of the existing IMAX building and the construction of a new mixed use building over 23-levels with 2 levels of retail/ mixed use space, a new IMAX theatre, 21 levels of hotel and serviced apartments together with associated facilities including restaurants and function space. A separate two storey building is included in the development to include retail tenancies and SHFA offices. Upgrades to the surrounding public domain are also proposed.

Construction of the project is scheduled to be carried out in two phases with the overall works estimated to take approximately 38 months.

The preparation of the construction traffic management plan for demolition/ excavation and construction of the proposed development has been completed on the basis of the following:

- overall principles of construction traffic management
- staging schedule
- works zone
- hours of operation
- construction traffic volumes
- truck routes
- pedestrian management
- traffic and parking affects
- Traffic Control Plan (TCP).

3.1.1 Overall Principles of Construction Traffic Management

The overall principles of traffic management during construction activity include:

- providing an appropriate and convenient environment for pedestrians
- minimising the impact on pedestrian movements
- maintaining appropriate capacity for pedestrians on footpaths adjacent to the site within the Darling Harbour precinct and along Wheat Road
- maintaining appropriate public transport access
- retaining, as far as possible existing kerb space for loading, buses and taxis
- minimising the loss of on-street parking
- maintaining access to/ from any adjacent properties
- restricting construction vehicle movements to designated routes to/ from the site
- managing and control construction vehicle activity in the vicinity of the site
- ensuring construction activity is carried out in accordance with City of Sydney's approved hours of works.

3.1.2 Staging Schedule

Construction of the proposed development is estimated to take up to 38 months and would be undertaken through the following phases:

- **Phase 1 Early Works (6 months)**
  Site establishment and demolition of all the existing on-site structures including the IMAX Cinema building and associated retail/ restaurants. Construction of piling and initial structure.
- **Phase 2 Main Building Works (32 months)**
  Construction of all on-site facilities including the main 23-storey tower and IMAX as well as ground level retail tenancies.

3.1.3 Hours of Operation

Work associated with the proposed development would be carried out between the following hours of construction:

- Monday to Friday 7:00am and 7:00pm
- Saturday 7:00am and 5:00pm
- Sunday no work.

The contractor/ builder would be responsible to instruct and control all subcontractors regarding the hours of work. Any work outside of the approved work hours would be subject to specific prior approval from the appropriate authorities. Such works may include:

- delivery of cranes, large plant or equipment required to the site that requires oversize vehicle access
- non-noise generating activities such as internal fit-out works.

3.2 Construction Traffic Volumes

Construction traffic volumes would generally incorporate 12.5m large rigid vehicles, 17.5m truck and dog combinations and 19m articulated vehicles. There would be up to 20 trucks per day and 120 trucks per week accessing the site.

No on-site parking would be provided for construction workers. The site is located within close walking distance of numerous public transport services including Wynyard and Town Hall Railway Stations and the major bus interchanges of Clarence Street/ York Street and Wynyard. The site is therefore well serviced by public transport and construction workers would be encouraged to use public transport when travelling to/ from the site.

The number of construction workers would vary throughout each works phase and can be broken down into the following estimates:

Phase 1

- demolition, wharf structure, piling works and initial structure 125 workers

Phase 2

- main structure works and services rough-in 250 workers
- structure completion, facade, tenancy work and services 425 workers
- facade and roof completion, tenancy fit-out and finishes 325 workers.

All intersections in the vicinity of the site are expected to continue to operate at existing levels of service during the overall construction period. This includes the major intersection south of the site where Harbour Street intersects with the Western Distributor off-ramp (eastbound), Bathurst Street and Cross City Tunnel (westbound).

3.3 Site Access

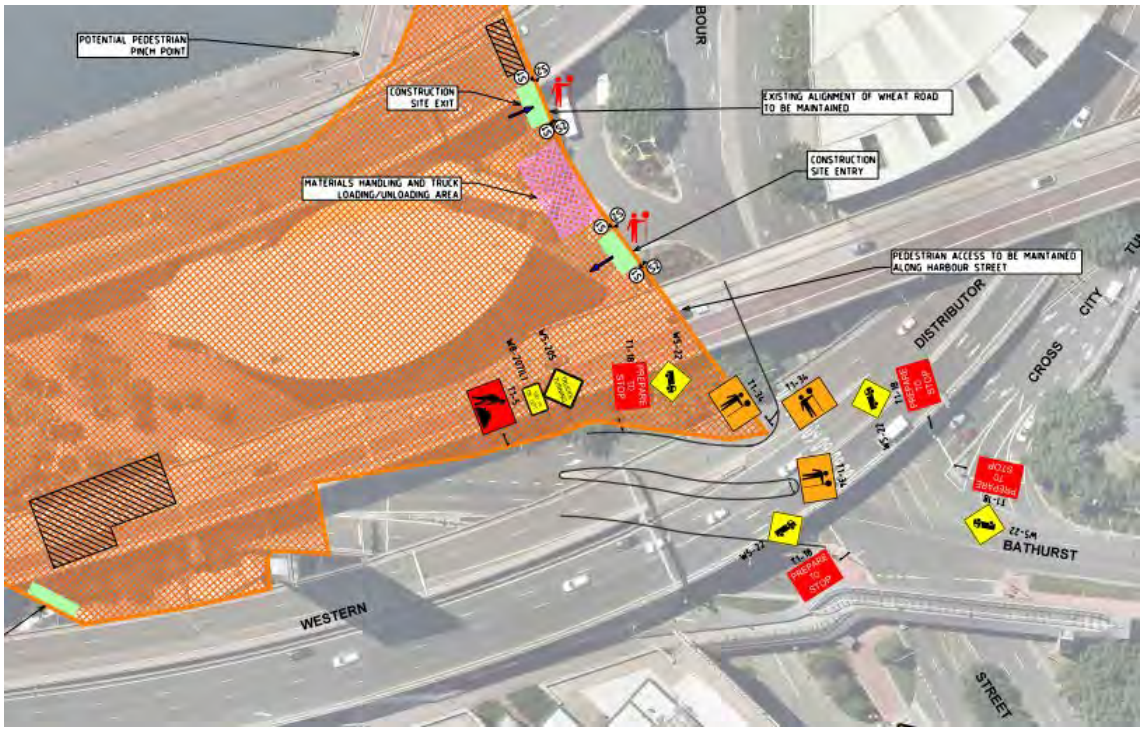
Site access would be provided via dedicated construction site access points on Wheat Road along the eastern boundary and adjacent to Harbour Street. These accesses would generally facilitate forward entry and exit to/ from the site for the duration of all works.

Phase 1 – Early Works

During Phase 1 works, two access points would be provided along the existing Wheat Road frontage, as indicatively shown in Figure 3.1. All construction vehicles would enter and exit the site in a forward direction as instructed by accredited traffic controllers. Loading/ unloading would occur within the eastern section of the site and within a dedicated one way loop.

Swept paths have been completed and are included in Appendix B. They show that truck and dog combinations would be able to enter the site, use the loop section to load/ unload and exit the site in a forward direction.

Figure 3.1: Phase 1 Early Works



Basemap source: Nearmap

Phase 2 – Main building Works

During Phase 2 works, two access points would be provided along the Wheat Road frontage, as shown in Figure 3.2. Temporary pavement would be constructed on the approximate future alignment of Wheat Road, subject to stakeholder consultation and approval.

All construction vehicles would enter and exit the site in a forward direction and travel through the centre of the site to a dedicated loading/ unloading zone within the western section of the work site.

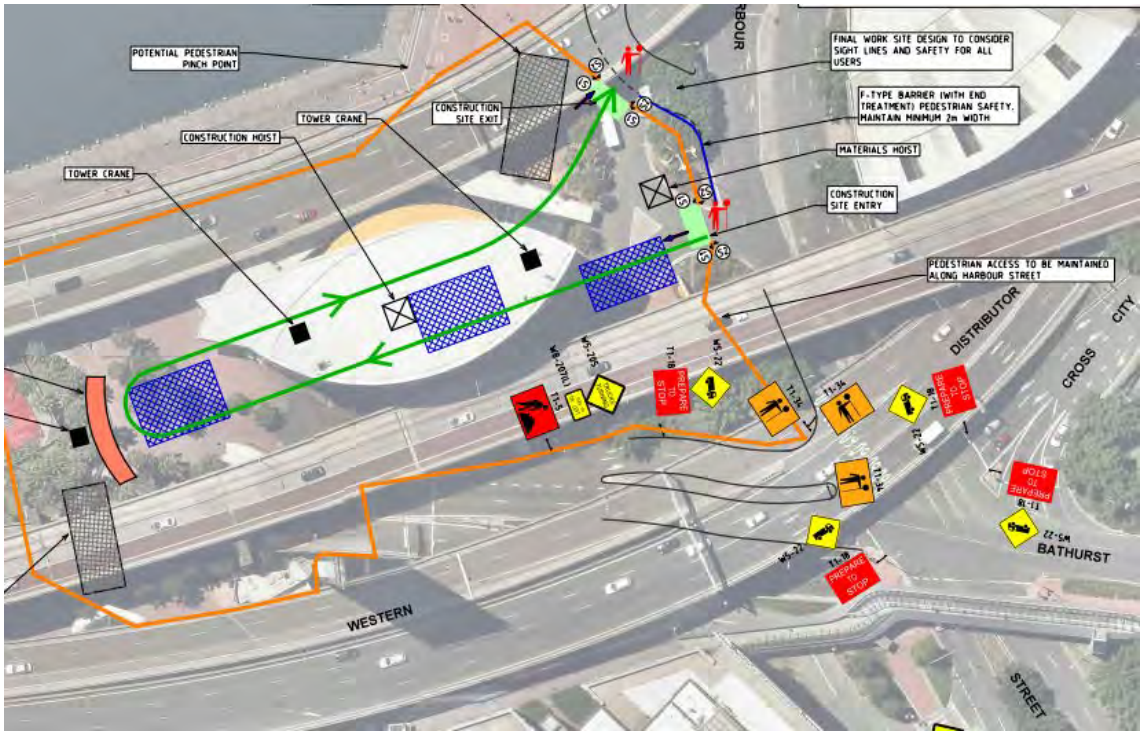
The existing stormwater, gas, water and sewer services to the IMAX building may need to be diverted out of the site footprint or encapsulated. Temporary bridging structures will be constructed to protect these services while still ensuring construction traffic are able to traverse the site.

A secondary access point located in the north-east corner of the site would also be used for concrete pumping, with concrete trucks required to reverse into this area facilitated by accredited traffic controllers.

Construction vehicles will not be permitted to queue or park within the streets along any approach route. Should there be a temporary need for this, initial discussions have identified an area west of Anzac Bridge that is both suitable and available.

Further consultation with the CBD taskforce will be required as would consideration for timing of works associated with surrounding key developments including Darling Harbour Live, The Haymarket, Barangaroo and Wynyard Walk.

Figure 3.2: Phase 2 Construction Works



Basemap source: Nearmap

Swept paths have been completed and are included in Appendix B. They show that construction vehicles would be able to make use of the temporary Wheat Road alignment, enter the site, circulate as required and exit the site in a forward direction.

3.4 Truck Routes

Truck movements would be restricted to designated truck routes and confined to the main road network. Truck routes to/ from the site, as indicated below, have been identified with the aim of minimising the impact of construction traffic on streets in the vicinity of the site.

Although the directional distribution and assignment of traffic generated by the proposed development would be influenced by a number of factors, most notably the origin/ destination of materials, configuration of access points to the site and the configuration of the arterial road network in the immediate vicinity of the site, all vehicles would approach via Harbour Street (south) and exit the site via Wheat Road to the north.

Approach Routes

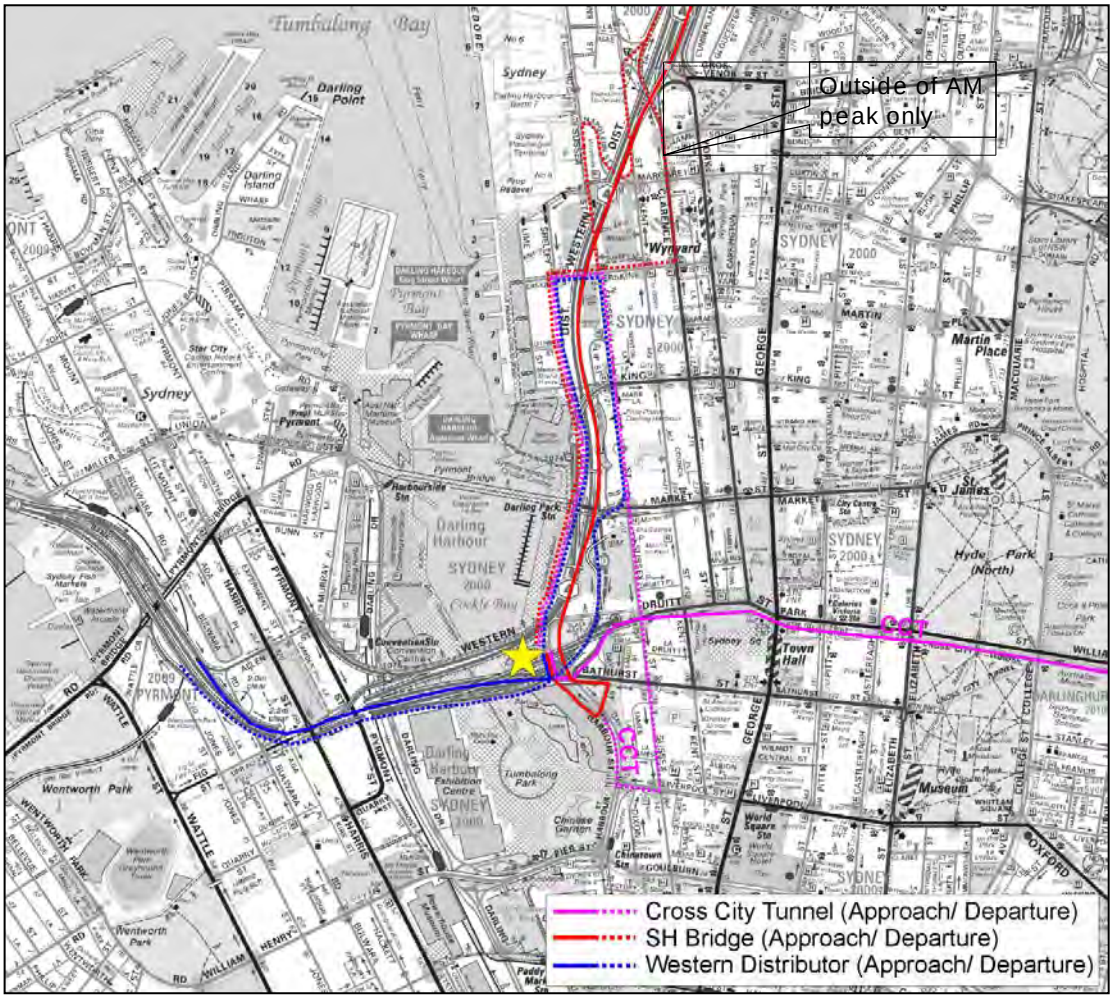
- North approach
  - Sydney Harbour Bridge (southbound), Western Distributor (southbound), Bathurst Street (eastbound), Day Street (southbound), Harbour Street (northbound), Wheat Road.
- East approach
  - Cross City Tunnel (westbound), Harbour Street (northbound), Wheat Road.
- West approach
  - Western Distributor (eastbound), Harbour Street (northbound), Wheat Road.

Departure Routes

- North departure
  - Wheat Road (northbound), Shelley Street (northbound), Erskine Street (eastbound), Sussex Street (northbound), Napoleon Street (eastbound), Kent Street (northbound), Sydney Harbour Bridge (northbound).
  - Wheat Road (northbound), Shelley Street (northbound), Erskine Street (eastbound), Clarence Street (northbound), Sydney Harbour Bridge (northbound). This is possible outside of the weekday AM (5:45am – 9:30am) peak period.
- East departure
  - Wheat Road (northbound), Shelley Street (northbound), Erskine Street (eastbound), Sussex Street (southbound), Liverpool Street (westbound), Harbour Street (northbound), Cross City Tunnel (eastbound).
- West approach
  - Wheat Road (northbound), Shelley Street (northbound), Erskine Street (eastbound), Sussex Street (southbound), Western Distributor (southbound and westbound).

Truck drivers would be advised of the designated truck routes to/ from the site. The truck routes are shown in Figure 3.3.

Figure 3.3: Designated Truck Routes



3.5 Pedestrian Management

During the Phase 2 construction works, pedestrian movements adjacent to the site and in particular those along the eastern boundary and within the Darling Harbour precinct north of the site will be maintained at all times. These pedestrian routes however, would be subject to some modification as a result of the construction activity.

A pedestrian management team would be responsible for the management and coordination of all pedestrian traffic on Wheat Road and as required adjacent to the existing Sydney Visitor Centre. Pedestrian volumes and activity would initially need to be monitored to ensure that the available routes and information is adequate.

Class B hoarding will be provided along the eastern boundary for pedestrian protection along a realigned footpath with minimum 2m widths to maintain amenity throughout Phase 2 construction works.

Scaffolding with Class A construction fencing (with overhead protection where required) would be provided, around the balance of the site.

Should any unforeseen activities require the temporary closure of any pedestrian thoroughfares, a Traffic Control Plan (TCP) should be developed and implemented by the contractor to ensure a safe alternative for pedestrians traversing these routes in the vicinity.

3.6 Traffic and Parking Effects

3.6.1 Public Transport

Temporary alternate bus stop arrangements would be implemented to minimise the overall impact to existing public transport services including the Sydney Explorer bus and coaches using Harbour Street/ Wheat Road. Appropriate arrangements and signage would be installed after approval from the Sydney Buses and RMS has been obtained and in consultation with bus/ coach operators.

Swept paths have been completed and included in Appendix B to illustrate that buses could be accommodated via a temporary Wheat Road alignment.

3.6.2 Cyclists, Emergency Vehicles and Heavy Vehicles

No special provisions are required or proposed for emergency vehicles and/ or cyclists. Construction activity is also not expected to impact on existing heavy vehicle movements in the vicinity of the site.

3.6.3 Traffic Movements in Adjoining Council Areas

No adverse effects are expected from the movement of heavy vehicles through adjacent council areas.

3.6.4 RMS Access

Access to RMS infrastructure would be retained for the duration of the works. All construction access, egress and asset monitoring requirements would be agreed with RMS and provided prior to site mobilisation. 1.5-2.0m clear openings between permanent structures and RMS infrastructure would also be provided.

The construction of the gantry over Wheat Road will be a key construction aspect and will require structure not only above Harbour Street though supporting structure within the road reserve including the central median (consistent with other recent development in the area). Harbour Street is under the management and control of RMS and concurrence will be required to allow for such structures. These site establishment works are key to the Phase 2 construction works and will be required to be completed during non-peak traffic periods (as a minimum) though likely to be conditioned as night-time works to minimise impacts.

The use of any areas within the road reserve will require consultation with RMS and appropriate road safety considerations, including should a tower crane be required within the central median at any time. It is recommended that such consultation be established as a priority in order to minimise any such potential delays associated with obtaining a Works Authorisation Deed (WAD).

3.7 Existing and Future Developments

There are several other CBD construction sites that are currently active and would likely remain active in the vicinity of the site, as shown in Figure 3.4 and includes the nearby Darling Harbour Live project.

The CBD and South East Light Rail (CSELR) project would be the key construction project in the CBD over the next four years. Noting that Transport for NSW has specifically limited the extent of east-west traffic impacts and concurrent intersection works during the construction period to minimise the impact on CBD traffic where possible, the CSELR project is unlikely to result in any changes to the proposed construction routes.

Further to the above, consultation with key stakeholders such as the CBD taskforce and CSELR project team would be key to obtaining agreement on the truck routes and the interaction of the various construction work sites. In addition, any cumulative transport impacts would be addressed through the Central Sydney Traffic and Transport Committee.

Figure 3.4: Sydney CBD Construction Projects

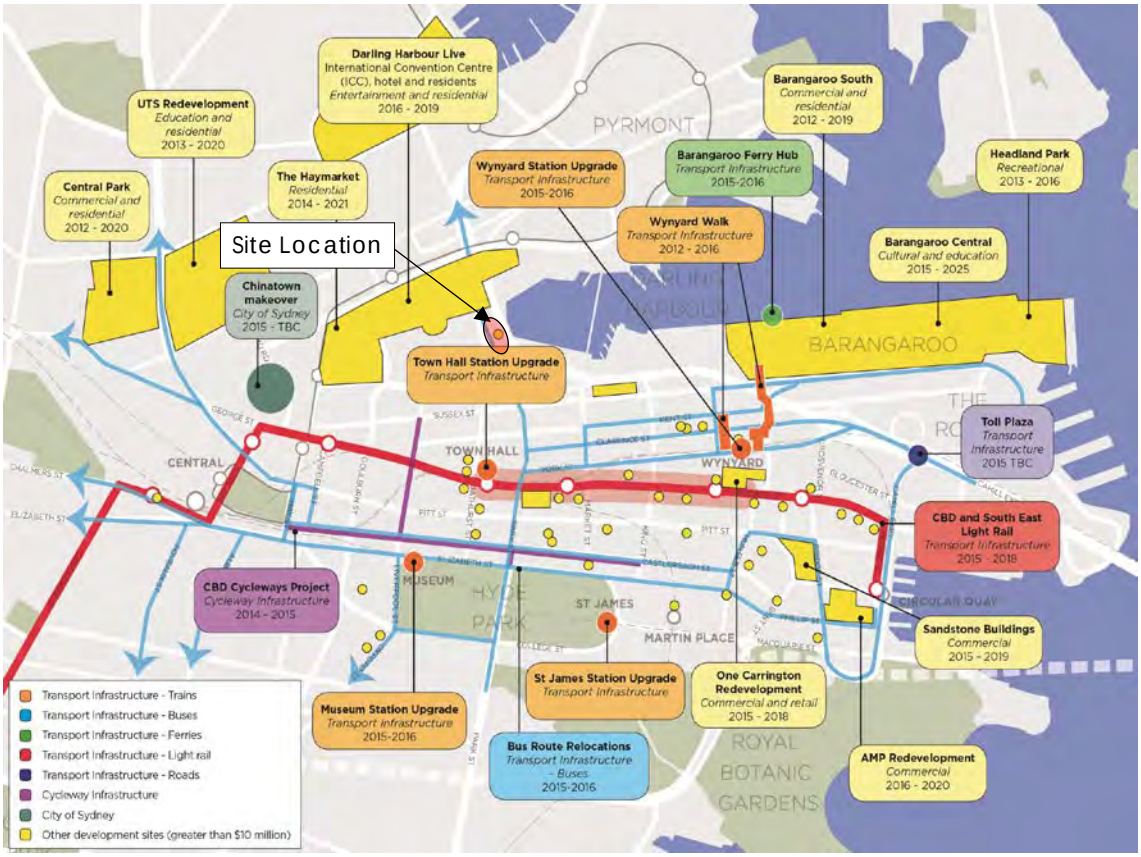


Image source: TfNSW

3.8 Traffic Control Plans

The proposed Traffic Control Plans (TCPs) for the Phase 1 Early Works and Phase 2 Main Building Works are included in this report as Appendix C. The plans present the principles of traffic management and are subject to WorkCover requirements.

Detailed information for work site operations is contained in the RMS Traffic Control at Work Sites manual. The control of traffic at work sites must be undertaken with reference to WorkCover requirements and the contractor/ builders own Occupational Health and Safety Manuals.

The TCPs included as Appendix C detail the following considerations:

- construction vehicle activity, including the loading/ unloading of trucks and materials handling to be provided within the construction site boundaries at all times
- the temporary closure of the southern section of Wheat Road with a temporary access (designed to accommodate a 14.5m long bus) established further north for the duration of the construction works
- the movement of trucks to/ from the construction site is to be managed and controlled by accredited traffic controllers
- pedestrian safety to be maintained at all times, particularly along the eastern boundary and within the public domain
- crane standing areas and reach.

Swept paths have been completed to confirm the construction site layout and appropriateness of the site access points with respect to location, width and layout, as included in Appendix B.

Appendix A

City of Sydney Standard Requirements

APPENDIX A

The City of Sydney
Standard Requirements for Construction Traffic Management Plan

The Applicant or contractor undertakes to follow and abide by the following requirements at all times during the demolition, excavation and construction works at 31 Wheat Road, Sydney

1. Details of routes to and from site and entry and exit points from site – site specific

2. Details of roads that may be excluded from use by construction traffic i.e. roads with load limits, quiet residential streets or access/turn restricted streets – site specific

3. The approved truck route plan shall form part of the contract and must be distributed to all truck drivers.

4. All vehicles must enter and exit the site in a forward direction (unless specific approval for a **one-off occasion** is obtained from the City's Construction Regulation Unit).

5. Trucks are not allowed to reverse into the site from the road (unless specific approval for a **one-off occasion** is obtained from the City's Construction Regulation Unit).

6. The Applicant must provide the City with details of the largest truck that will be used during the demolition, excavation and construction.

   NOTE: No dog trailers or articulated vehicles (AV) to be used on local roads (unless specific approval for a **one-off occasion** is obtained from the City's Construction Regulation Unit).

7. Oversize and over-mass vehicles are not allowed to travel on Local Roads (unless approval for a **one-off occasion** is obtained from the City's Traffic Operations Unit). Requests to use these vehicles must be submitted to the City 28 days prior to the vehicle's scheduled travel date. For more information please contact the National Heavy Vehicle Regulator (NHVR) on 1300 696 487 or www.nhvr.gov.au.

8. No queuing or marshalling of trucks is permitted on any public road.

9. Any temporary adjustment to Bus Stops or Traffic Signals will require the Applicant to obtain approval from the STA and RMS respectively prior to commencement of works.

10. All vehicles associated with the development shall be parked wholly within the site. All site staff related with the works are to park in a designated off street area or be encouraged to use public transport and not park on the public road.

11. All loading and unloading must be within the development site or at an approved "Works Zone".

12. The Applicant must apply to the City's Traffic Works Co-ordinator to organise appropriate approvals for Work Zones and road closures.

13. The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for partial road closures.

14. The Applicant must apply to the Transport for NSW's Transport Management Centre for approval of any road works on State Roads or within 100m of Traffic Signals and receive an approved Road Occupancy Licence (ROL). A copy of the ROL must be provided to the City.

15. The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for temporary driveways, cranes and barricades etc.

16. The Applicant must comply with development consent for hours of construction.

17. All Traffic Control Plans associated with the CTMP must comply with the Australian Standards and Roads and Maritime Services (RMS) Traffic Control At Work Sites Guidelines.

18. Traffic Controllers are NOT to stop traffic on the public street(s) to allow trucks to enter or leave the site. They MUST wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - **the vehicles already on the road have right-of-way.**

19. Pedestrians may be held only for very short periods to ensure safety when trucks are leaving or entering BUT you must NOT stop pedestrians in anticipation i.e. **at all times the pedestrians have right-of-way on the footpath not the trucks**.

20. Physical barriers to control pedestrian or traffic movements need to be determined by the City's Construction Regulations Unit prior to commencement of work.

21. The Applicant must obtain a permit from the City's Construction Regulation Unit regarding the placing of any plant/equipment on public ways.

22. The Applicant must apply to the City's Building Approvals Unit to organise appropriate approvals for hoarding prior to commencement of works.

23. The CTMP is for the excavation, demolition and construction of building works, not for road works (if required) associated with the development. Any road works will require the Applicant or the contractor to separately seek approval from the City and/or RMS for consideration. Also WorkCover requires that Traffic Control Plans must comply with Australian Standards 1742.3 and must be prepared by a Certified Traffic Controller (under RMS regulations).

24. Please note that the provision of any information in this CTMP will not exempt the Applicant from correctly fulfilling all other conditions relevant to the development consent for the above site.

Appendix B

Swept Path Assessment

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

LONG RIGID BUS metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 46.3

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2. HARBOUR STREET - 50 KM/H SPEED ZONE

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DRAWN B.KLINKO	DRAFTING CHECK R.HAZELL
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Certified System Quality ISO 9001

CLIENT GROCON

THE RIBBON HOTEL DEVELOPMENT
31 WHEAT ROAD, SYDNEY
SWEPT PATH ASSESSMENT
14.5m LONG RIGID BUS
PHASE 1 - EARLY WORKS

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31 WHEAT ROAD, SYDNEY
SWEPT PATH ASSESSMENT
18.1m TRUCK & DOG
PHASE 1 - EARLY WORKS

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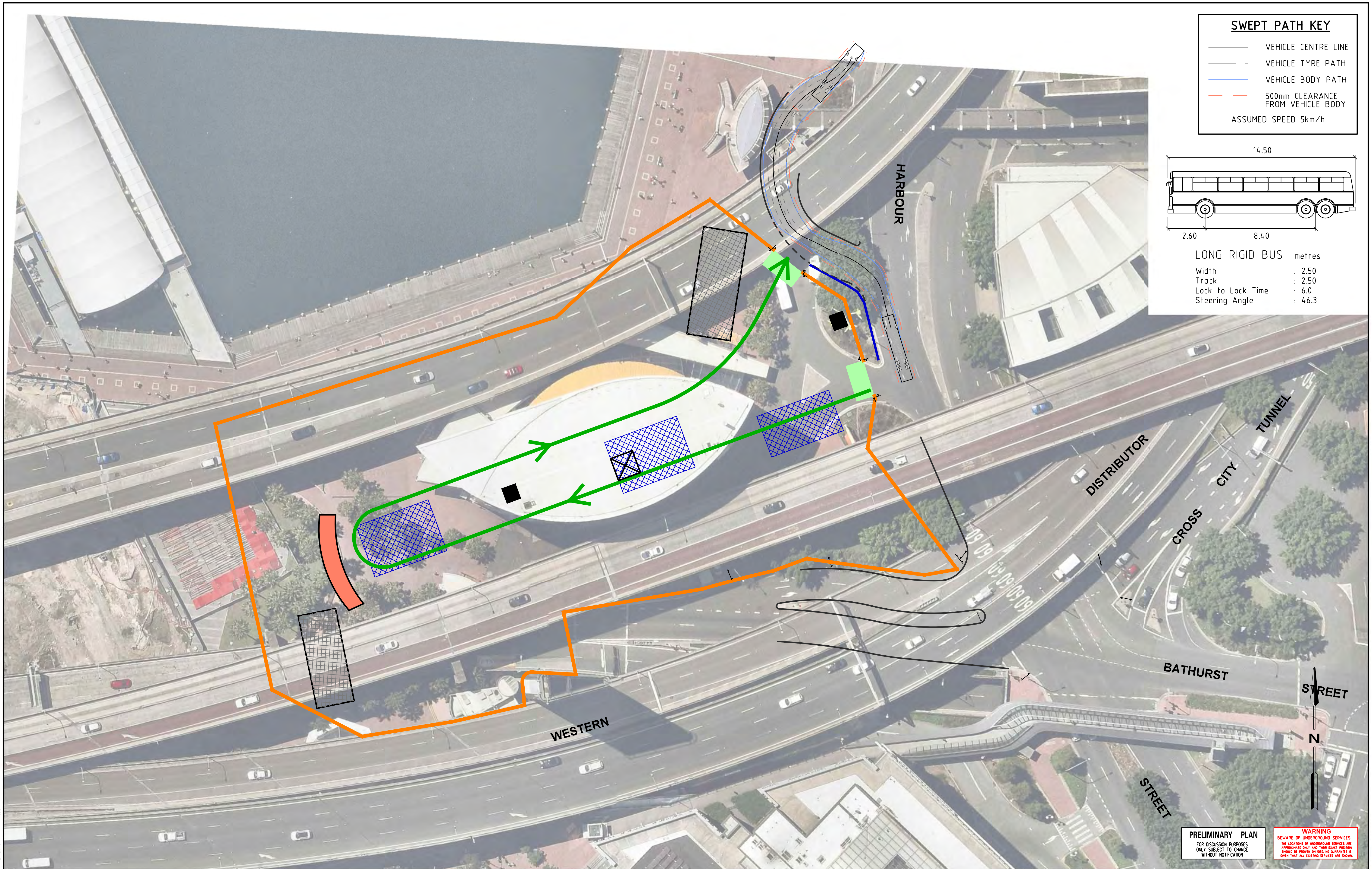

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THE RIBBON HOTEL DEVELOPMENT
31 WHEAT ROAD, SYDNEY
SWEPT PATH ASSESSMENT
14.5m LONG RIGID BUS
PHASE 2 - MAIN BUILDING WORKS

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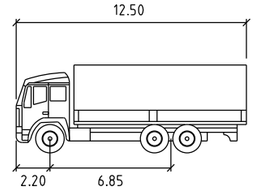
SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



SU TRUCK metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

HARBOUR

DISTRIBUTOR

CITY

TUNNEL

CROSS

BATHURST

STREET

WESTERN

STREET

N

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31 WHEAT ROAD, SYDNEY
SWEPT PATH ASSESSMENT
12.5m SERVICE TRUCK
PHASE 2 - MAIN BUILDING WORKS

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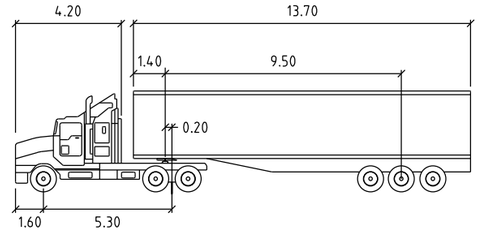
SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



PM S 19M

	metres		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

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CITY
CROSS
BATHURST
STREET
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31 WHEAT ROAD, SYDNEY
SWEPT PATH ASSESSMENT
19.0m SEMI TRAILER
PHASE 1 - EARLY WORKS

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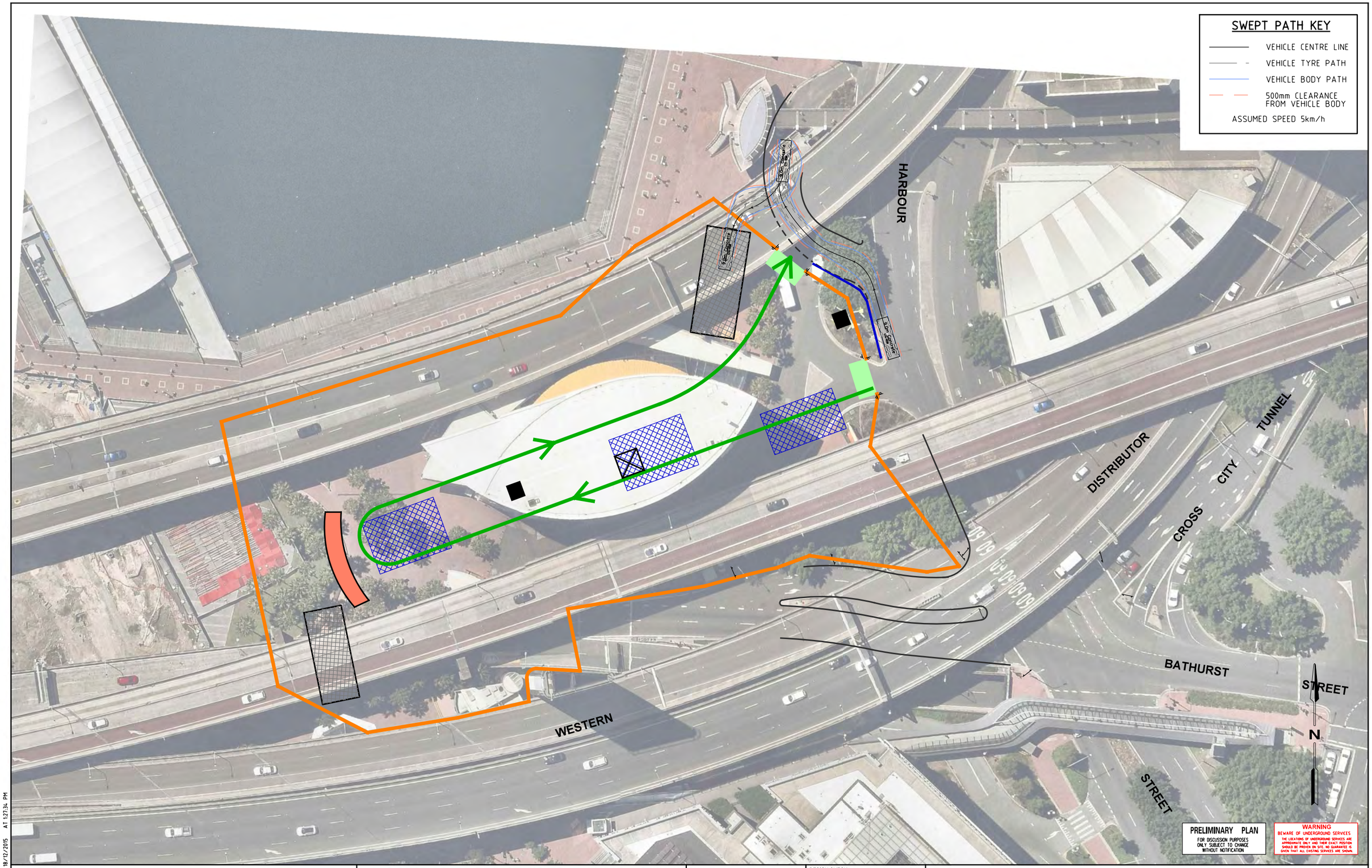

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THE RIBBON HOTEL DEVELOPMENT
31 WHEAT ROAD, SYDNEY
SWEPT PATH ASSESSMENT
9.0m CONCRETE TRUCK
PHASE 2 - MAIN BUILDING WORKS

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Appendix C

Traffic Control Plans

KEY:

- TRAFFIC CONTROLLER
- CLASS A CONSTRUCTION FENCE
- CONSTRUCTION SITE
- MATERIALS HANDLING, CRANE LIFTING AND TRUCK LOADING/UNLOADING AREA
- SITE ACCOMMODATION
- CONSTRUCTION ACCESS ONLY — S1
- CAUTION VEHICLES CROSSING — S2

NOTES:

1. TRAFFIC CONTROLLERS TO DIRECT CONSTRUCTION VEHICLES IN AND OUT OF THE SITE VIA HARBOUR STREET AND WHEAT ROAD.
2. T1-18 AND T-34 SIGNS MUST BE COVERED WHEN TRAFFIC CONTROLLERS ARE ABSENT.
3. LOCATION OF T1-18, T1-34, W5-22, W5-205, AND W8-207 SIGNS TO BE CONFIRMED ON-SITE TO ENSURE APPROPRIATE VISIBILITY.
4. THE MANAGEMENT OF THE CONSTRUCTION SITE, THE ON-STREET WORK ZONE, AND THE MOVEMENT OF CONSTRUCTION VEHICLES TO/FROM THE SITE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

POTENTIAL PEDESTRIAN PINCH POINT

CONSTRUCTION SITE EXIT

EXISTING ALIGNMENT OF WHEAT ROAD TO BE MAINTAINED

CONSTRUCTION SITE ENTRY

MATERIALS HANDLING AND TRUCK LOADING/UNLOADING AREA

PEDESTRIAN ACCESS TO BE MAINTAINED ALONG HARBOUR STREET

EMERGENCY ACCESS (TBC)

HARBOUR

WESTERN

DISTRIBUTOR

CROSS CITY TUNNEL

BATHURST STREET

STREET

S1 S2

W8-207(L) T1-5 150m ON LEFT

W5-205 TRUCKS TURNING

T1-18 PREPARE TO STOP

W5-22

T1-34

N

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

PLOTTED BY : brendan.klinko ON 18/12/2015 AT 1:16:10 PM

AMENDMENTS

ISSUE	DATE	DESCRIPTION	BY	CHK.	APP.
P1	18.12.15	INITIAL ISSUE	BCK	RMH	BDM

GENERAL NOTES

1. SKETCH PLAN ONLY. THIS PLAN PRESENTS THE PRINCIPLES OF TRAFFIC MANAGEMENT. TRAFFIC MEASURES PROPOSED ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN AND APPROVAL BY WORK COVER.

2. HARBOUR STREET - 50 KM/H SPEED ZONE

DESIGNED C.WARD	DESIGN CHECK R.HAZELL
DRAWN B.KLINKO	DRAFTING CHECK R.HAZELL
APPROVED BY B. MAYNARD	DATE APPROVED FOR INITIAL ISSUE 18 DECEMBER '15
SCALE A3 Hor. 0 7.5 15 1:750	CAD FILE NO. 12S9018400-01-P1.dgn

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CLIENT GROCON

THE RIBBON HOTEL DEVELOPMENT
31 WHEAT ROAD, SYDNEY
TRAFFIC MANAGEMENT PLAN

PHASE 1 - EARLY WORKS

SDYWAY REF.	DRAWING NO.	SHEET	ISSUE
25/G20	12S9018400-01-01	01 OF 09	P1

KEY:

- TRAFFIC CONTROLLER
- CLASS A CONSTRUCTION FENCE
- MATERIALS HANDLING, CRANE LIFTING AND TRUCK LOADING/UNLOADING AREA
- POTENTIAL SERVICES BRIDGING STRUCTURES
- SITE ACCOMMODATION
- CONSTRUCTION ACCESS ONLY — S1
- CAUTION VEHICLES CROSSING — S2

NOTES:

1. TRAFFIC CONTROLLERS TO DIRECT CONSTRUCTION VEHICLES IN AND OUT OF THE SITE VIA HARBOUR STREET AND WHEAT ROAD.
2. T1-18 AND T-34 SIGNS MUST BE COVERED WHEN TRAFFIC CONTROLLERS ARE ABSENT.
3. LOCATION OF T1-18, T1-34, W5-22, W5-205, AND W8-207 SIGNS TO BE CONFIRMED ON-SITE TO ENSURE APPROPRIATE VISIBILITY.
4. THE MANAGEMENT OF THE CONSTRUCTION SITE, THE ON-STREET WORK ZONE, AND THE MOVEMENT OF CONSTRUCTION VEHICLES TO/FROM THE SITE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONCRETE PUMPING ZONE 1
POTENTIAL PEDESTRIAN PINCH POINT
CONSTRUCTION SITE EXIT
CONSTRUCTION HOIST
TOWER CRANE
CRANE LIFTING BAY
TOWER CRANE
CONCRETE PUMPING ZONE 2
FINAL WORK SITE DESIGN TO CONSIDER SIGHT LINES AND SAFETY FOR ALL USERS
F-TYPE BARRIER (WITH END TREATMENT) PEDESTRIAN SAFETY. MAINTAIN MINIMUM 2m WIDTH
TOWER CRANE
CONSTRUCTION SITE ENTRY
PEDESTRIAN ACCESS TO BE MAINTAINED ALONG HARBOUR STREET
HARBOUR
DISTRIBUTOR
CROSS CITY TUNNEL
WESTERN
BATHURST
STREET
STREET
W8-207(L) T1-5 TRUCKS TURNING 100 m ON LEFT
W5-205
T1-18 PREPARE TO STOP
W5-22
T1-34
N

PRELIMINARY PLAN
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PLOTTED BY : brendan.klinko ON 18/12/2015 AT 1:15:49 PM

AMENDMENTS					
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THE RIBBON HOTEL DEVELOPMENT
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TRAFFIC MANAGEMENT PLAN

PHASE 2 - MAIN BUILDING WORKS

SDYWAY REF.	DRAWING NO.	SHEET	ISSUE
25/G20	12S9018400-01-02	02 OF 09	P1