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

Controlled Copy No: Master
(Uncontrolled when Printed)
Issue: 2
Issue Date: 22nd of January 2014

THE RIBBON
SYDNEY

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


TAXI

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
Construction Manager NSW	David Risbey		22 January 2014
Executive Project Manager NSW	Justin Murphy		22 January 2014

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
2	22 January 2014	Carousel & Jay flowers relocation	George Araujo
1	15 August 2013	DA Submission Document	George Araujo

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	22 January 2014	George Araujo	Assistant Project 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

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 20 storey development will compliment Darling Harbour and provide a new retail, entertainment 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 structure between the two central cores and a steel framed structure which will cantilever over the public domain, Wheat Road and Harbour Street.

The new development will contain approximately 2,200m^2 of retail, 3,900m2 of function & entertainment and 41,000m^2 of commercial office space (all areas are NLA).

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	Markham Corporation & Grocon
Design & Construction Contractor	Grocon
Quantity Surveyor	Davis Langdon
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 Johnston & Partners
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	James Markham	02 9225 8300	j.markham@markham.com.au	Markham Corporation L9, Challis House 4 Martin Place 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		02 8249 7000	Facsimile: 02 9247 7768	Grocon Constructors (NSW) Pty Ltd Level 4, Legion House, 161 Castlereagh Street, Sydney NSW 2000
State Construction Manager NSW	David Risbey	02 8249 7000	DavidRisbey@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Senior Contracts Manager NSW	Paul O'Neill	0418 555 046	PaulOneill@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Grocon The Ribbon Project Office		02 8249 7000	Facsimile: 02 9247 7768	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
Assistant Project Manager	George Araujo	0401 132 940	GeorgeAraujo@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Technical Design Manager	Angus Morten	0423 024 534	AngusMorten@grocon.com.au	Grocon Constructors (NSW) Pty Ltd
Services & Environmentally Sustainable Design Manager	Dru Spork	0419 855 121	DruSpork@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	Toby Pritchard	0419 755 571	TobyPritchardt@grocon.com.au	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 Jump-Start 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 March/ April 2014.

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.

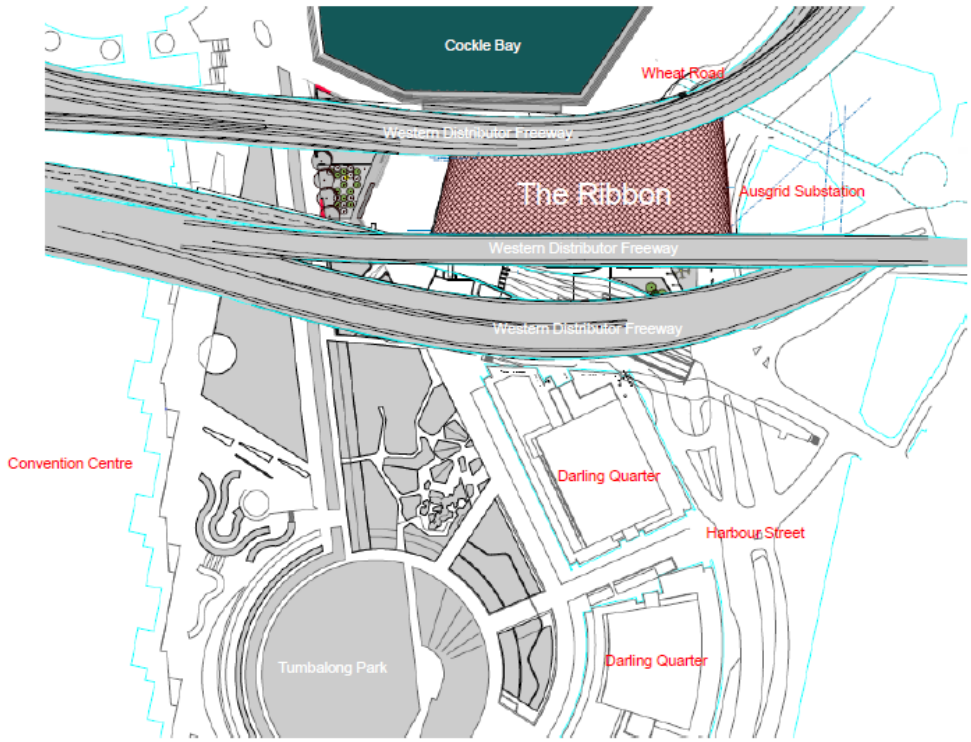
- Financial capacity of each prospective tenderer
- Comparative analysis of all relevant costs and benefits of each proposal throughout the whole procurement cycle (whole-of-life costing):
- Fitness for purpose;
- Performance history of each prospective supplier;
- Distribution of risk in each proposal;
- 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

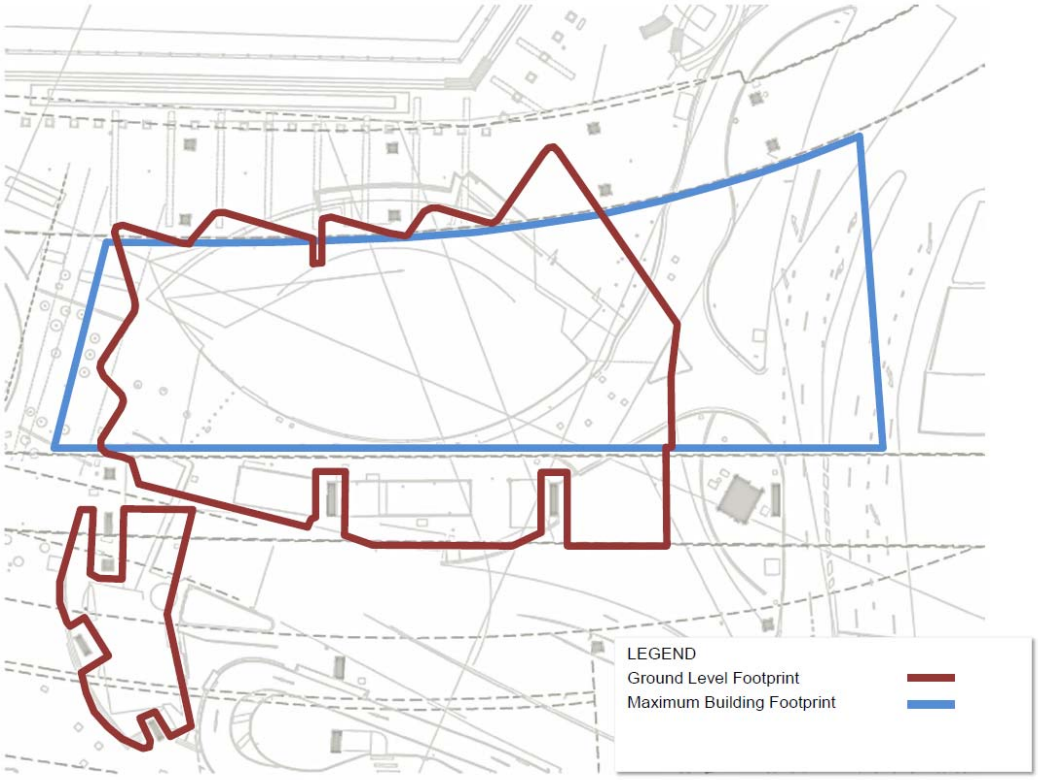
9.1 Site Layout

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.

Refer diagrams – Location Diagram and Building Footprint



Location Diagram



Building Footprint

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*

* Out of hours work will be subject to Out of Hours Permit approvals from relevant authority/ ies.

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:

- Markham Corporation
- 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 can 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

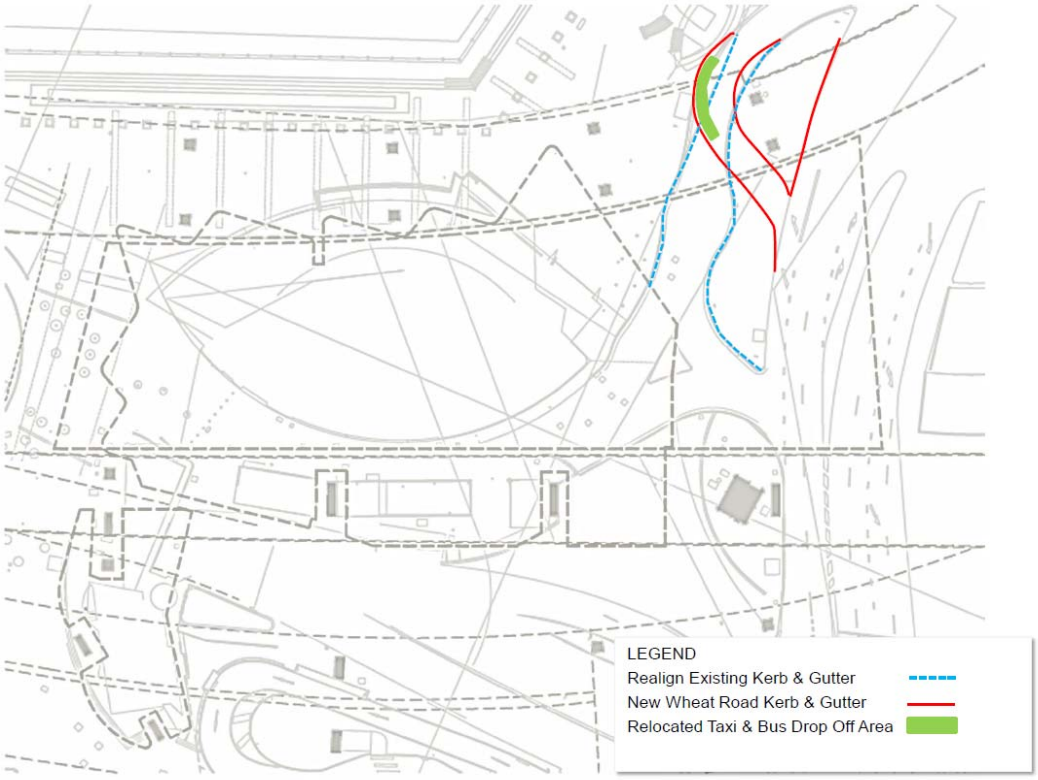
Prior to undertaking any works on site, relevant Authorities will be contacted and where required applications lodged to obtain all necessary approvals and permits. All required notifications and timeframes will be established for any inspections and attendance required by the relevant authority. Such 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 authority/ies 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.

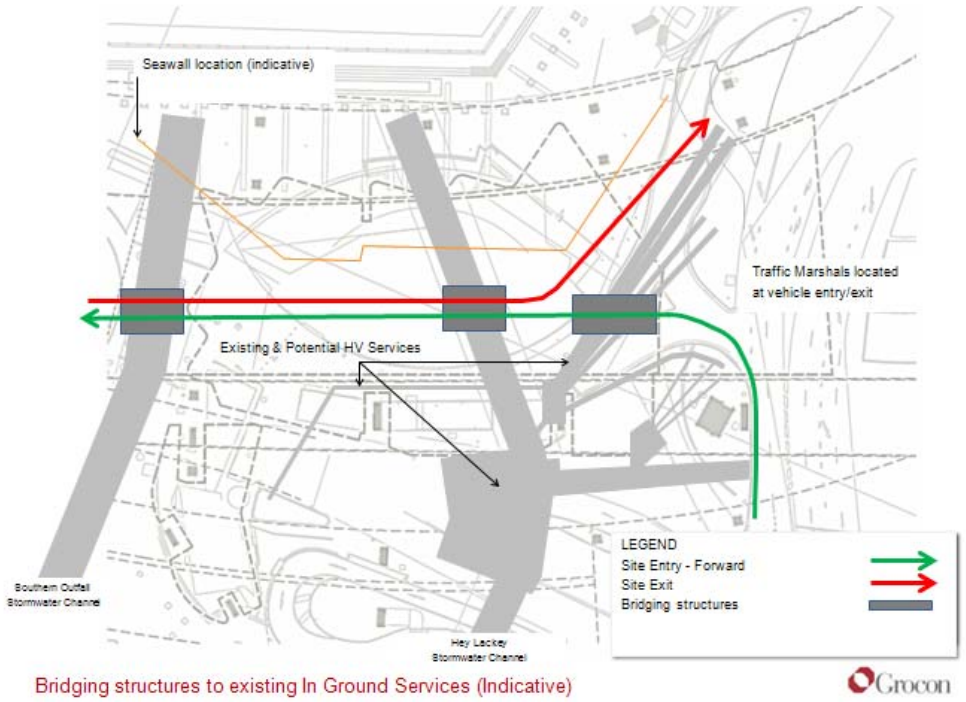
Methodology formulation and authority approval will be sought when procuring the relevant construction certificate.

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)



Bridging structures to existing 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.

13. Construction Temporary Services

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

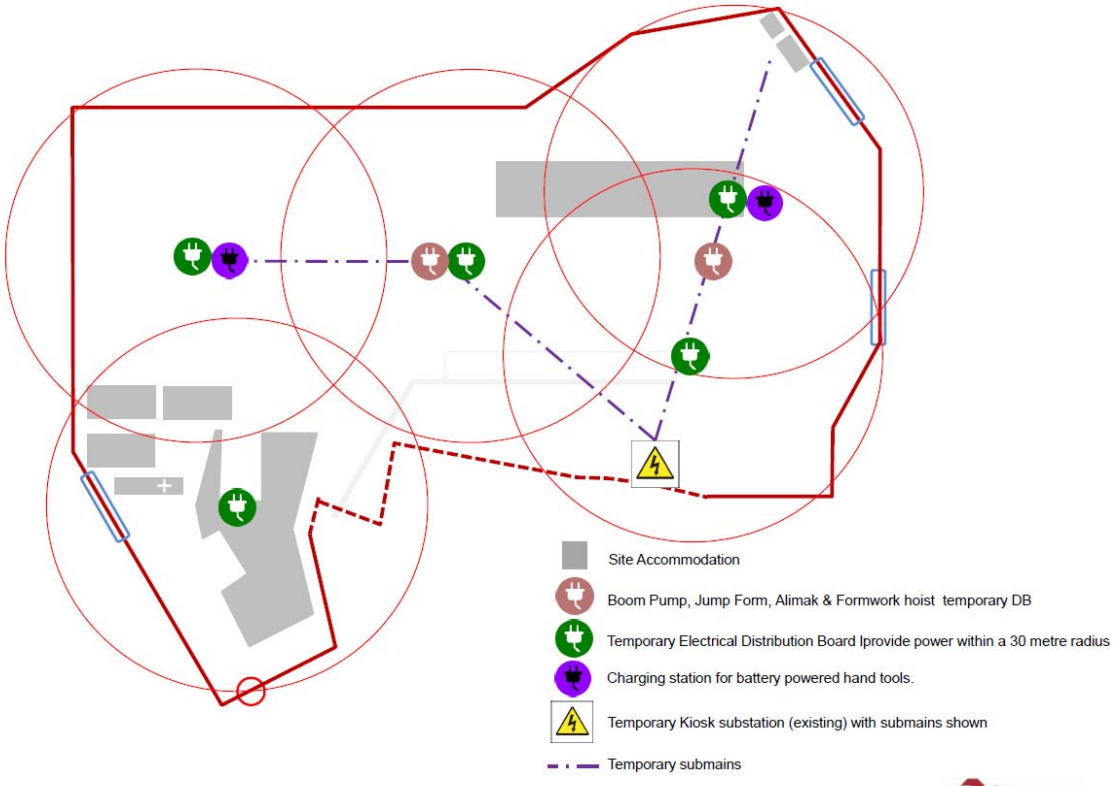
13.1 Temporary Electrical Services

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.

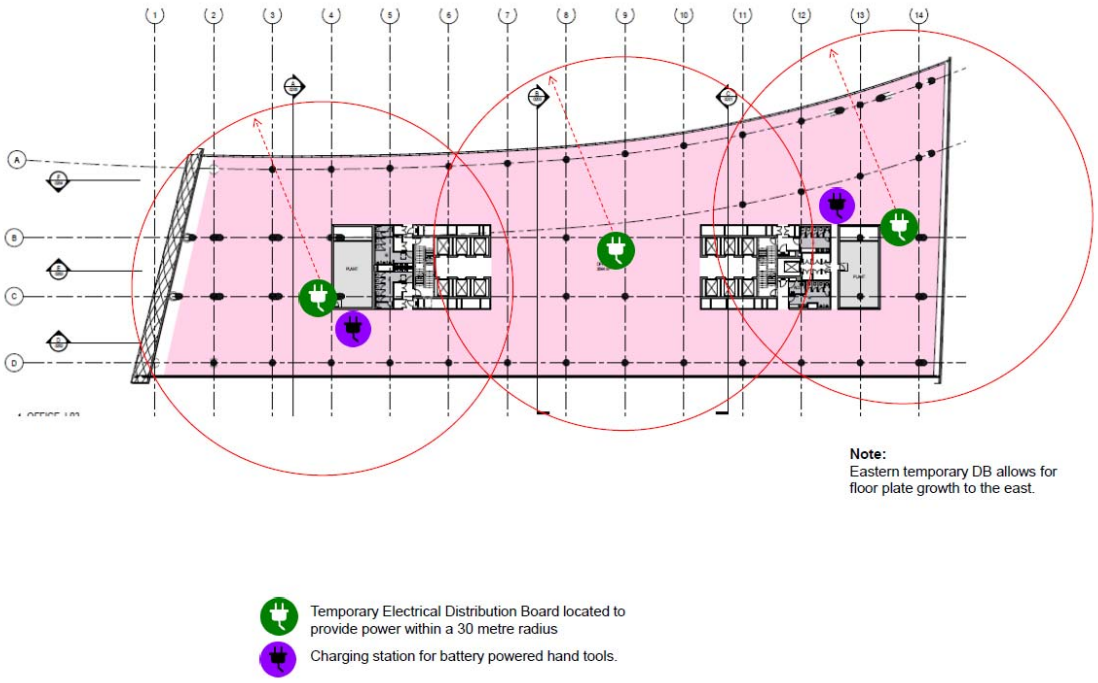
Refer diagram Temporary Electrical Services – Ground Level



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



Temporary Electrical Services – 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;

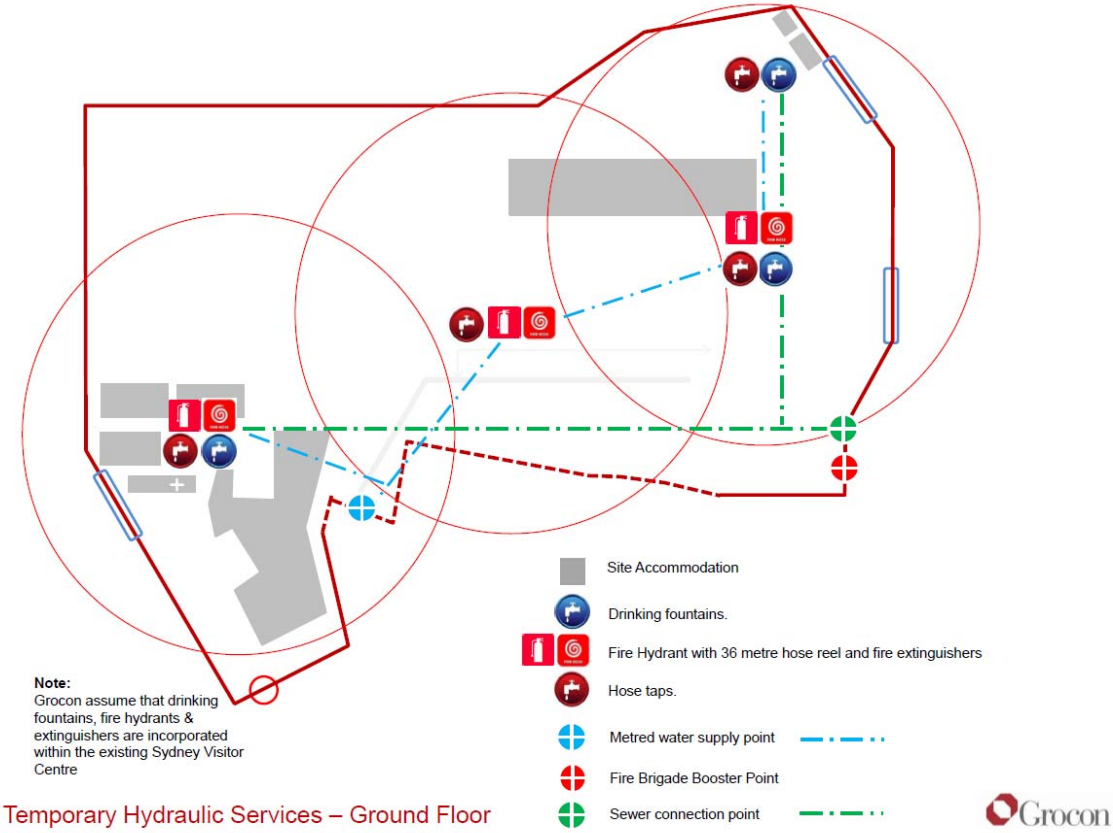
Item	Requirements
2 x Twin Alimak	160 amps
Eastern and Western Jump Form	200 amps
Temporary Builders lifts	100 amps
2 x Formwork hoist	100 amps
General power	400 amps
Site accommodation	100 amps
Four Concrete Tower Placing Booms	150 amps

Generators may be required at some stages during the construction, but in general power shall be provided off existing infrastructure.

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

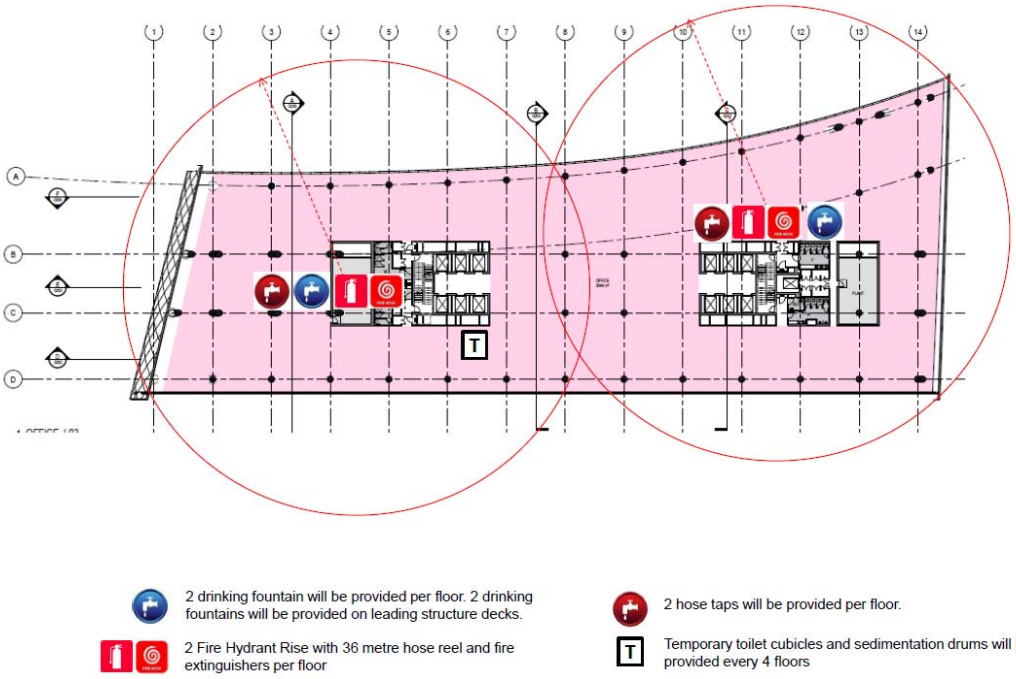
Refer diagram Temporary Hydraulic Services – Ground Floor



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



Temporary Hydraulic Services – Typical Floors

13.3 Temporary Sewage

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

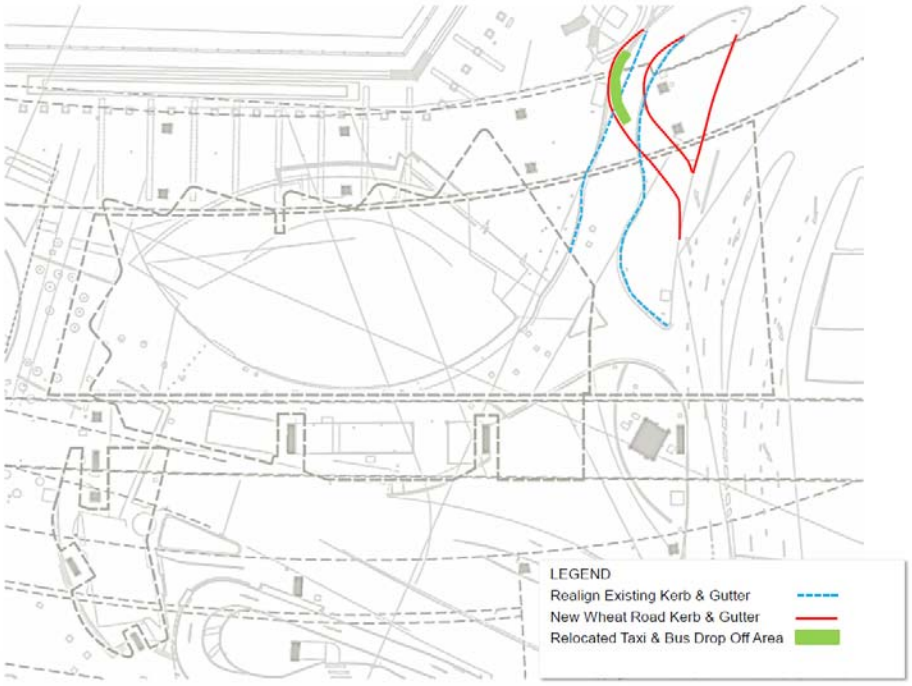
The location of the site is an integral part of Darling Harbour and particularly Cockle Bay. Several boundaries on the development will require hoarding and or other protection structures. Wheat Road will require realignment during the Construction Phase.

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

14.4 Sydney Visitor Centre & McDonalds Drive-through Hoarding

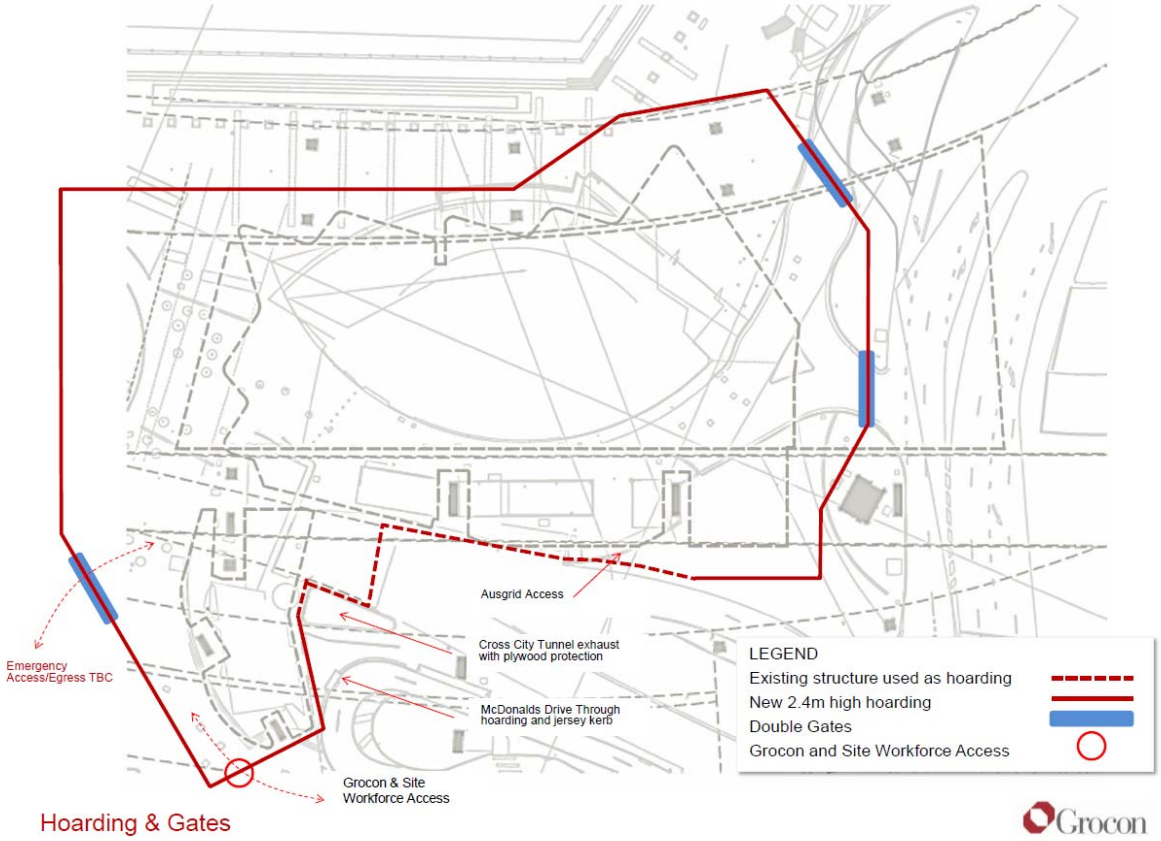
The Sydney Visitor Centre & McDonalds Drive-through Hoarding will comprise the following:

- 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.

14.5 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.

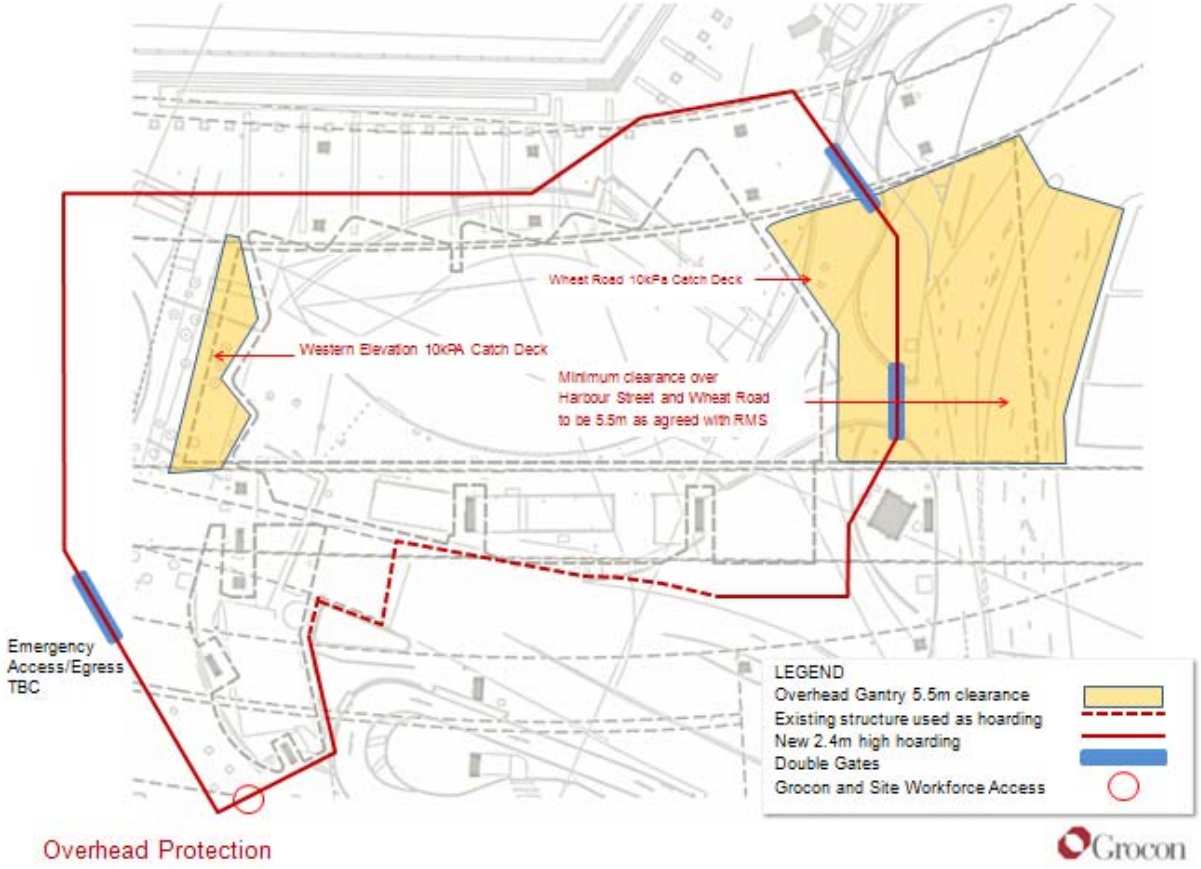


14.6 Wheat Road/ Harbour Street Temporary Catch Deck

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 requirements
- Lighting to Wheat Road and Harbour Streets will meet RMS requirements.
- Signage will be agreed with SHFA and RMS

Refer diagram – Overhead Protection



14.7 Western Elevation Temporary Catch Deck

The Western Elevation Catch Deck will comprise:

- A purpose built gantry with 10kPa capacity catch deck will be installed below the western Ribbon.
- Minimum clearance will be 2.4m.
- The catch deck will be painted to meet SHFA requirements

Refer diagram – Overhead Protection

15. Site Access

15.1 Site 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.

Daily sign-in registers will be kept at the main entrance, and each sub-contracting entity will be required to advise of numbers of personnel on site each day.

Only those workers who have completed site specific inductions will be allowed to enter the site and undertake works. Visitors to the site will need to attend to the site office, sign in, be issued with appropriate PPE and be escorted by site personnel at all times.

15.2 Security

Grocon will have in place an active 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.

Security staff will be located at the site entry in a security booth and will assist in coordinating access to the site.

Grocon will maintain a site entry register requiring all visitors to sign in upon entry. All visitors are required to wear an identification “visitor” badge and wear appropriate PPE at all times while on site.

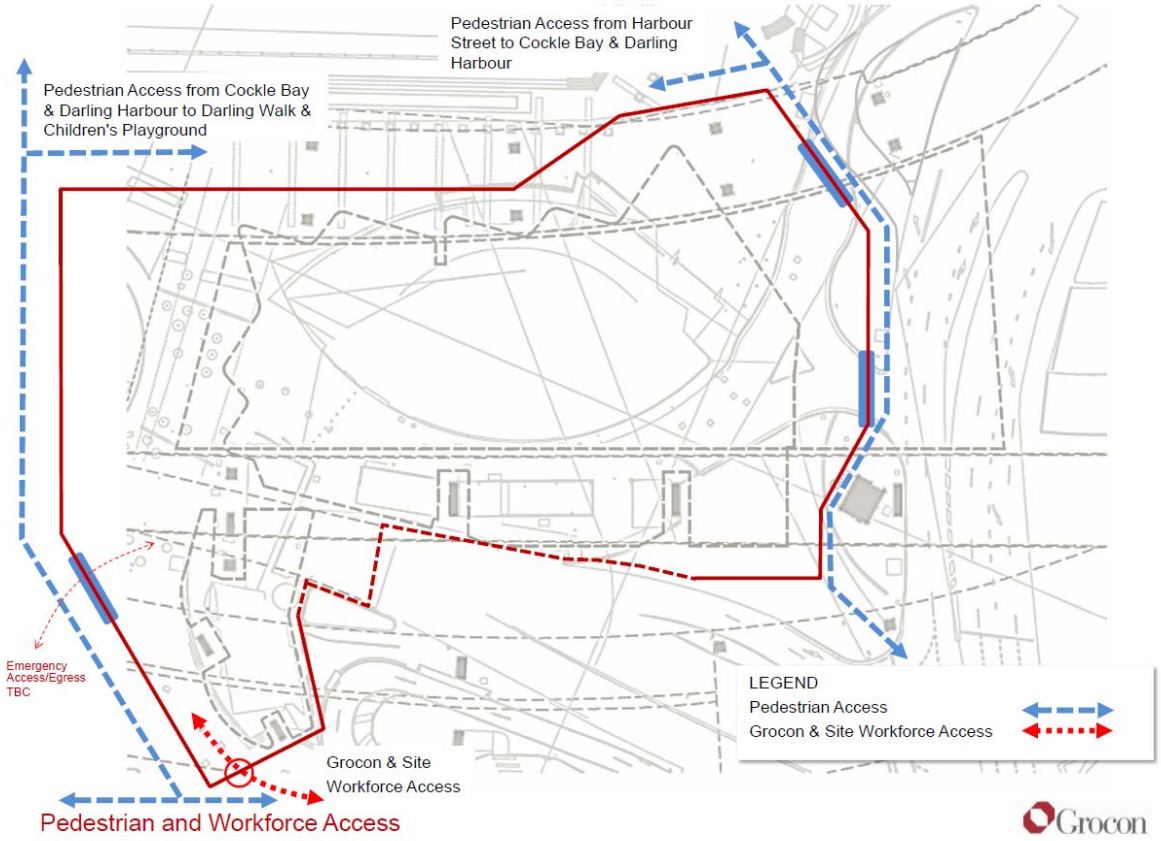
All gates are securely locked outside of working hours and patrolled by security staff. This security network will continue to work closely with Grocon to ensure that security is being maintained though out construction.

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.

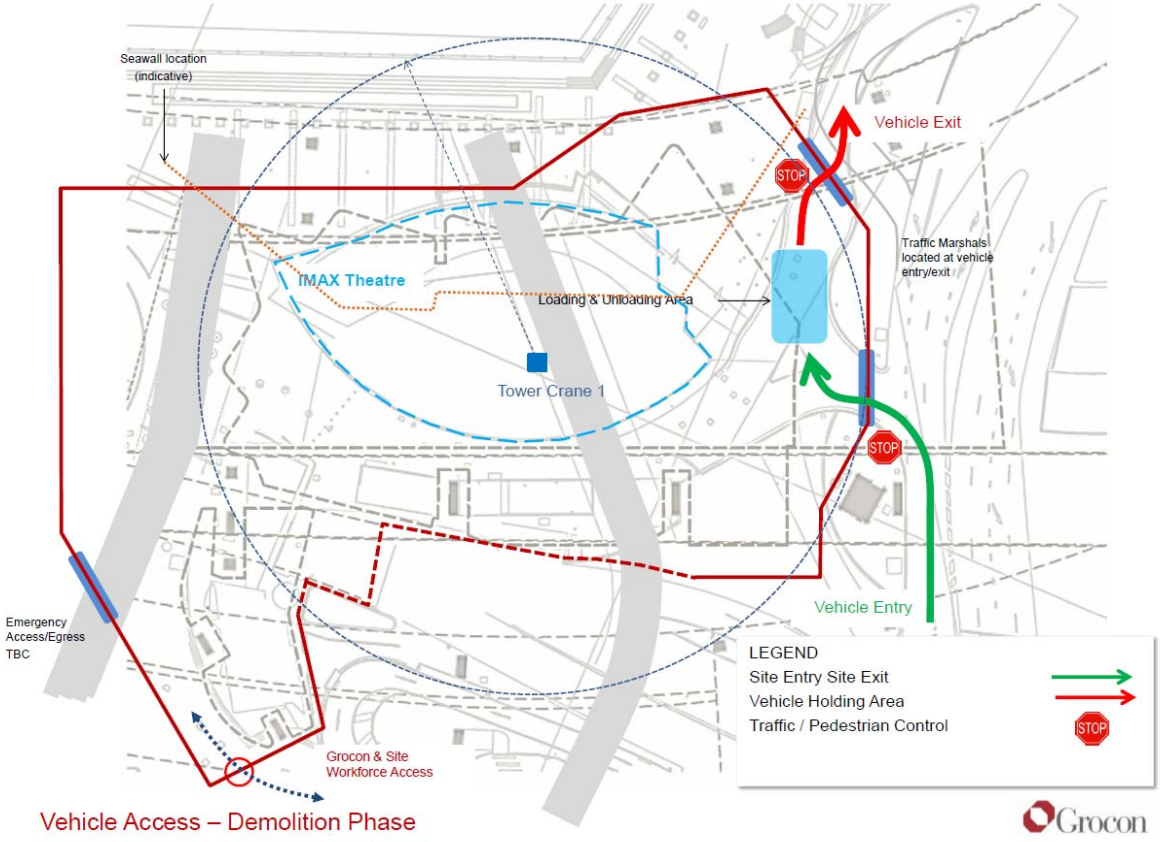
All vehicles will enter the construction site. Vehicles will enter and exit the work area in a forward manner under instruction from authorised traffic controllers

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 1 will be installed to facilitate the demolition of the IMAX.

Refer diagram Vehicle Access – Demolition Phase



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 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.

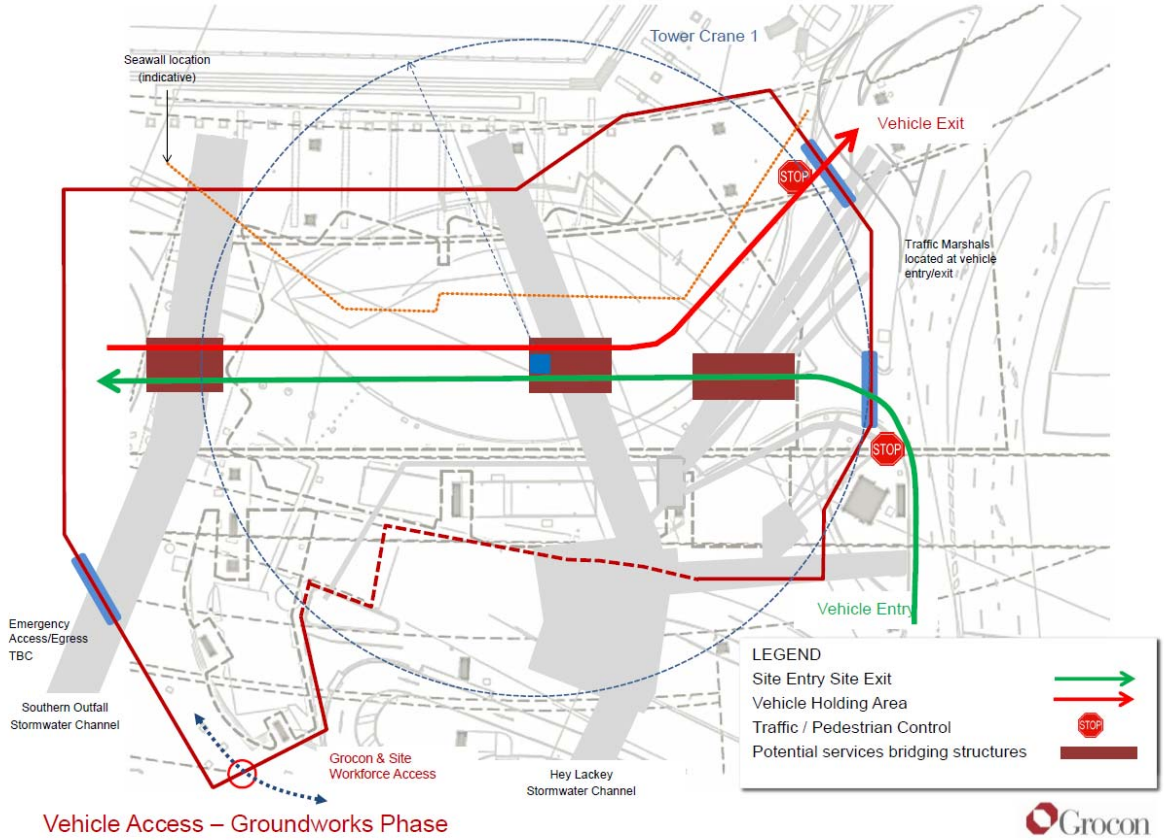
All vehicles will enter the construction site. Vehicles will enter and exit the work area in a forward manner under instruction from authorised traffic controllers

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

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

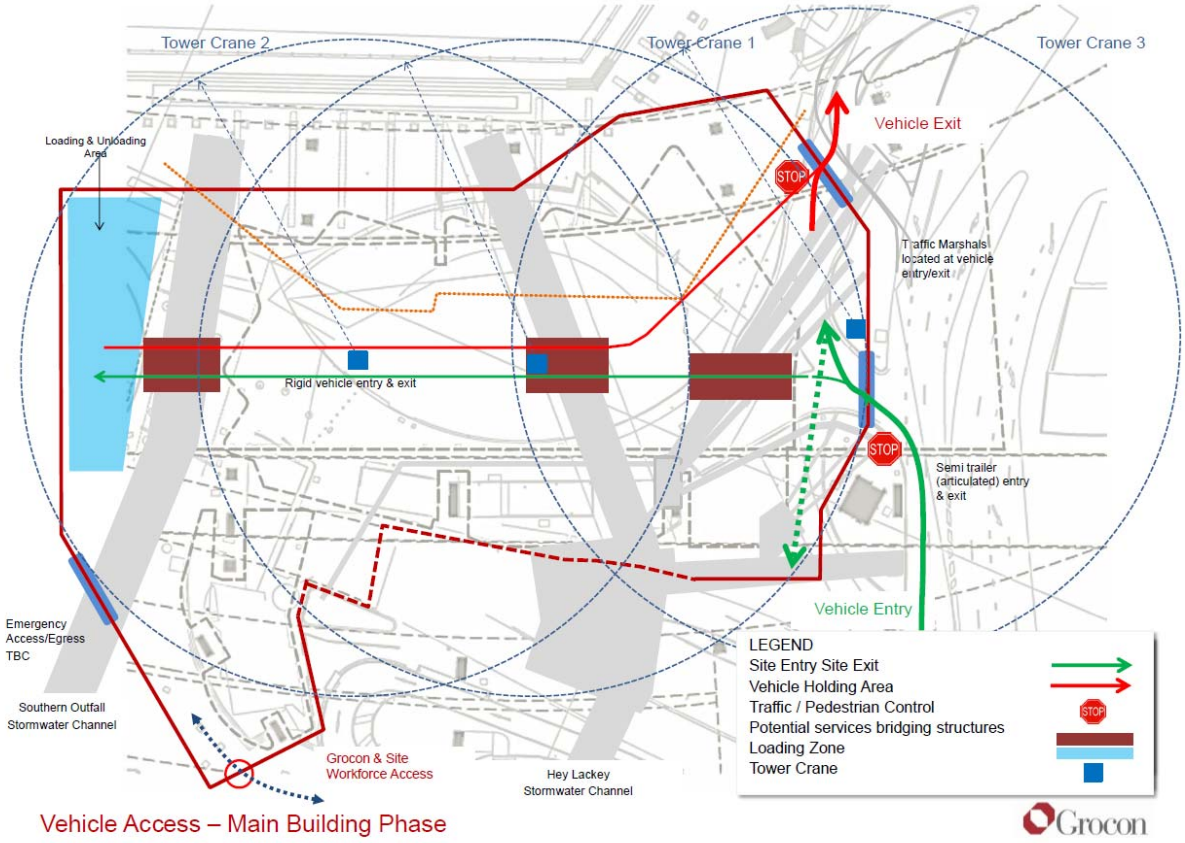
Loading and unloading of materials, plant and equipment will be undertaken as follows.

1. Rigid vehicles (up to 12.5m long) will be able to enter the construction site and will be loaded/unloaded at the western loading bay as detailed in the Groundwork's Phase
2. Semi-trailers and vehicles in excess of 12.5m will not enter the construction site. They will be loaded / unloaded at the eastern loading area. Vehicles will drive forward then reverse into the loading/unloading area.

Tower Crane No 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.

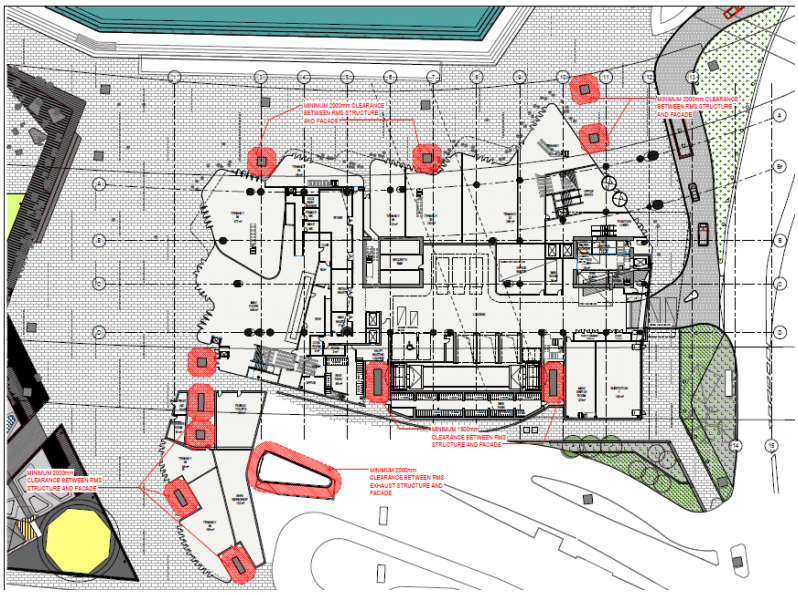
Refer diagram Vehicle Access – Main Building Phase



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.



16. Site Establishment

16.1 Overview

Site Establishment will be provided in two separate phases.

- Phase 1 - Early Works Phase (demolition, wharf structure, piling works and initial structure).
- Phase 2 - Main Building Works

16.2 Estimated work force and Construction Code of Practise

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

- Phase 1 – Early Works
  - Demolition, wharf structure, piling works & initial structure 125 workers
- Phase 2 – Main Building Works
  - Main structure works & services rough-in 250 workers
  - Structure completion, façade, tenancy work & services 425 workers
  - Façade completion, roof completion, tenancy fit out & finishes 325 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												
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	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	10			
Misc.															15	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			

	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
Site set up																																
Demo																																
In ground works																																
Jumpform cores																																
Slab on ground																																
Structure - Jump start Steel																																
Structure																																
Façade & Finishes																																
Delay allowance																																

Base on the above, site establishment has been provided to accommodate a maximum of 425 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 – Site Accommodation Phase 1

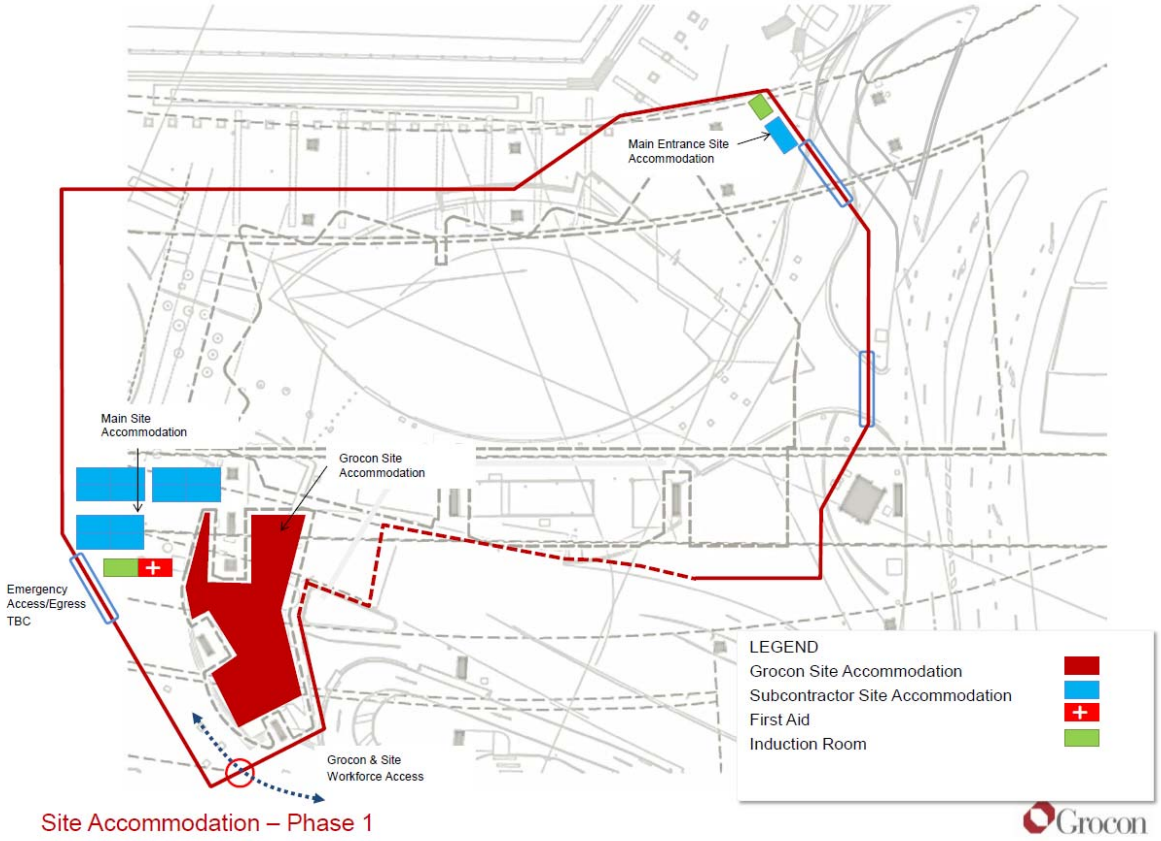
As noted previously, site accommodation will be provided for 125 workers, excluding Grocon site project management and supervision staff.

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



Site Accommodation – Phase 1

16.4 Phase 2: Main Building Works - Site Establishment

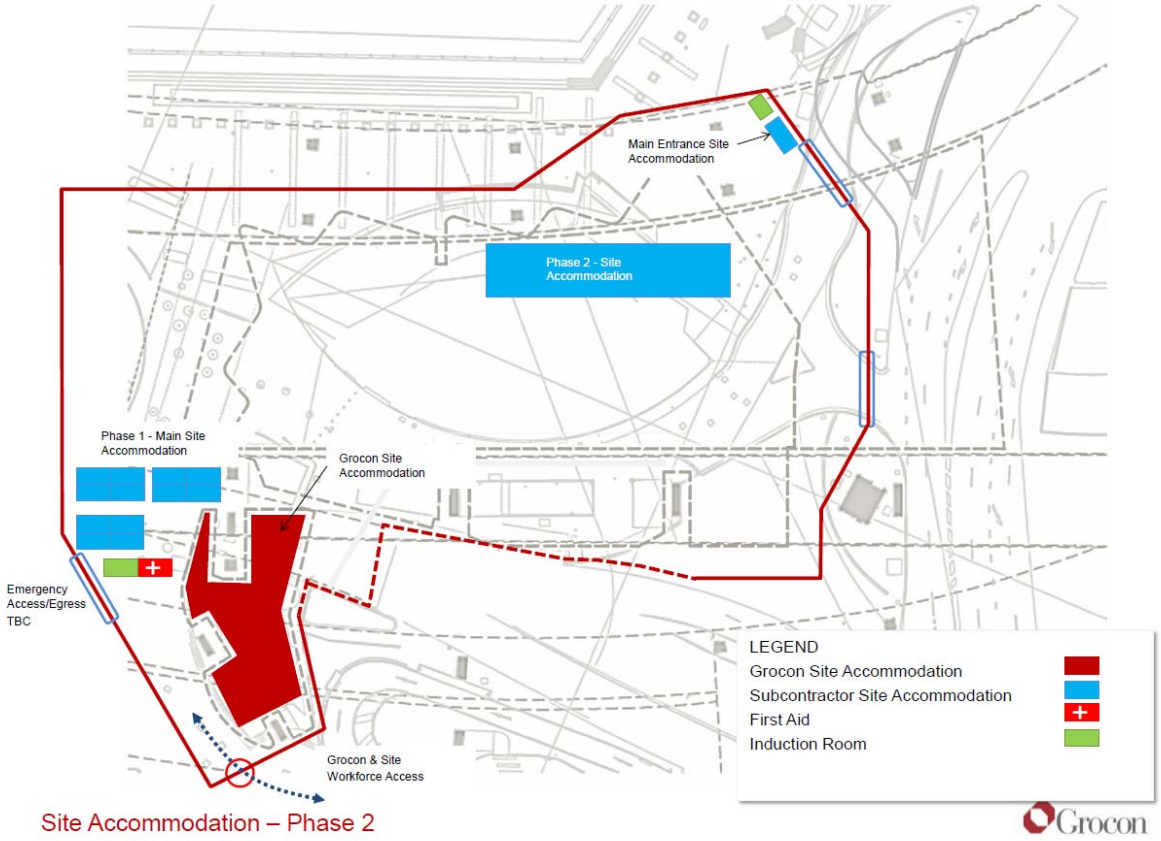
During the Phase 2 Works – Main Building Works, the site establishment will be located adjacent to the Western Elevation Hoarding and Main Entrance (as for Phase 1) and within the Ground Floor 1 Tenancy Area.

The maximum number of workers is anticipated to be 425. 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 – Site Accommodation Phase 2



Site Accommodation – Phase 2

16.5 Grocon Site Accommodation

The Grocon Site Team will peak at approximately 40 staff and will occupy the existing Sydney Visitor Centre for the first 18 months of The Ribbon. The Grocon Site Team will then relocate to either a Ground Floor or Level 1 Tenancy Area.
Should the Sydney Visitor Centre be unavailable, the Grocon Site Team will establish accommodation as part of the Western Hoarding Site Establishment.

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

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.

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 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.

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. It will be finalised during the upcoming DA Approval/ Construction Certificate phase.

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

- Markham Corporation
- 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, Jenema 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;

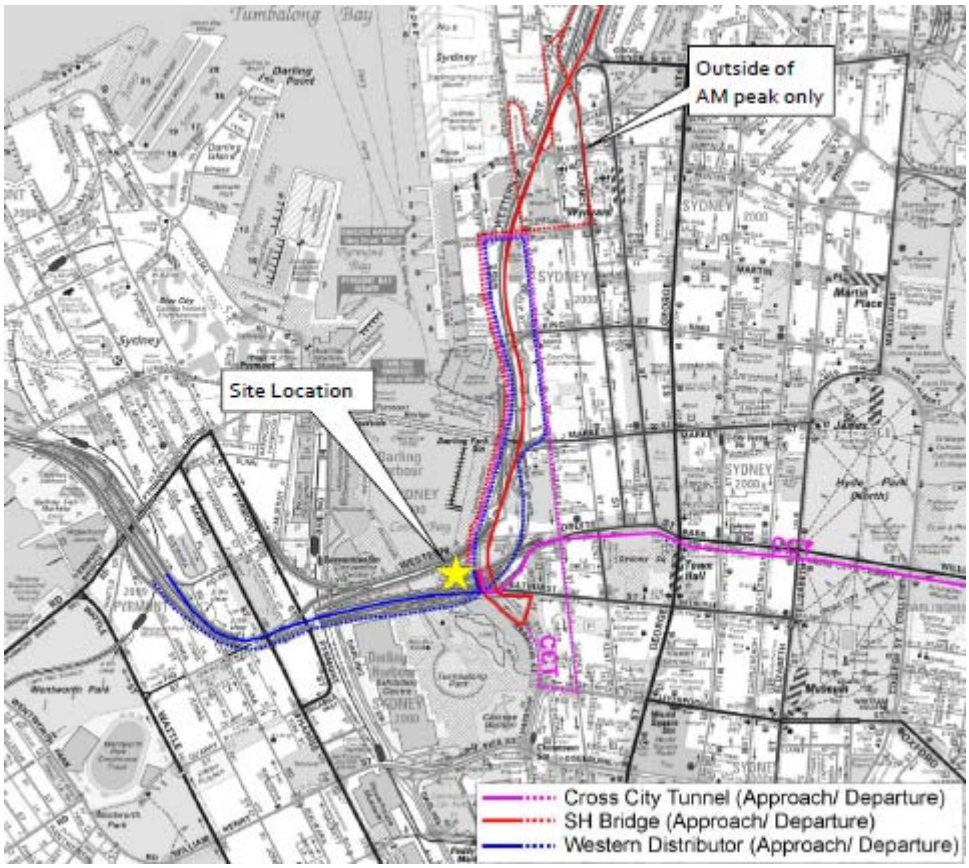
- Maintain full operations and access to adjoining businesses throughout construction – particularly Darling Walk, McDonalds drive through restaurant & Cockle Bay retailers
- Maintain full access to services & infrastructure (Sydney Water, Ausgrid, Telstra etc.) during construction
- Maintain full scheduled 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 delivery schedule board will be established with allocated time periods given to each supplier.



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 Phase
- Groundwork's Phase
- Main Building Works Phase

19. Programming and Planning

Our aim with regards to Programming and Planning is to deliver the works in a timely 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)".

During the DA approval period, Grocon will engage an Environmental Consultant who will in conjunction with Grocon, 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)
- 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 Draft 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

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
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 Tower Crane on the existing crane base.
3. Removal of roof and associated structures.
4. Demolition of building (total demolition).
5. Material handling.

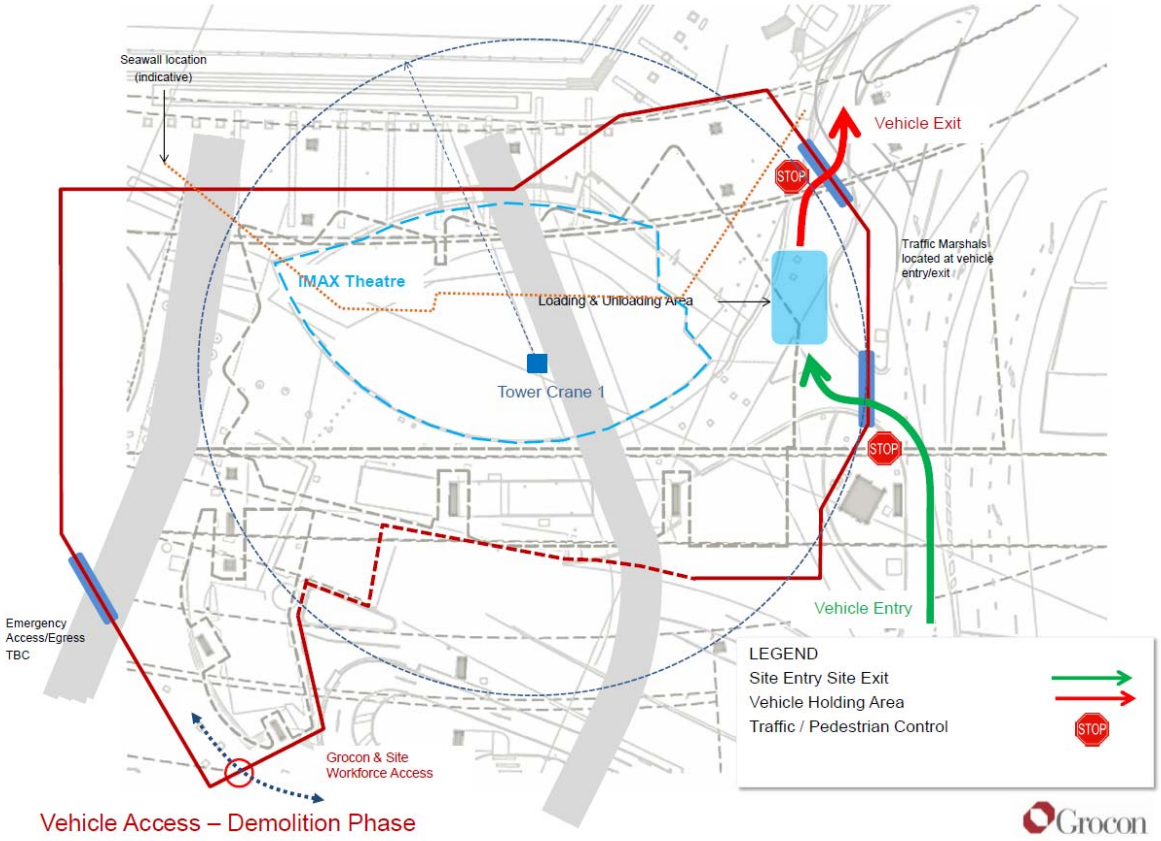
1. Soft Strip Out of the IMAX building
Soft strip out of building is to be done mechanically utilising certified (by structural engineer) skid steer loaders and mini excavators where possible. The remainder of strip out works are to be performed manually.

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 Tower Crane No: 1
It is proposed (subject to structural engineer approval) to utilise the existing crane base that is located in the IMAX building. Grocon will install the first of three (3) tower cranes to enable the materials handling associated with the demolition phase of the works.

Refer diagram Vehicle Access – Demolition Phase

3. 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.



4. Demolition of building (total demolition)

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

- 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.

5. 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
2. Erection of Tower Crane 2 and 3
3. Promenade Works
4. Services Relocation
5. Bulk & Detailed Excavation
6. Piling and Pile Cap Works
7. 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

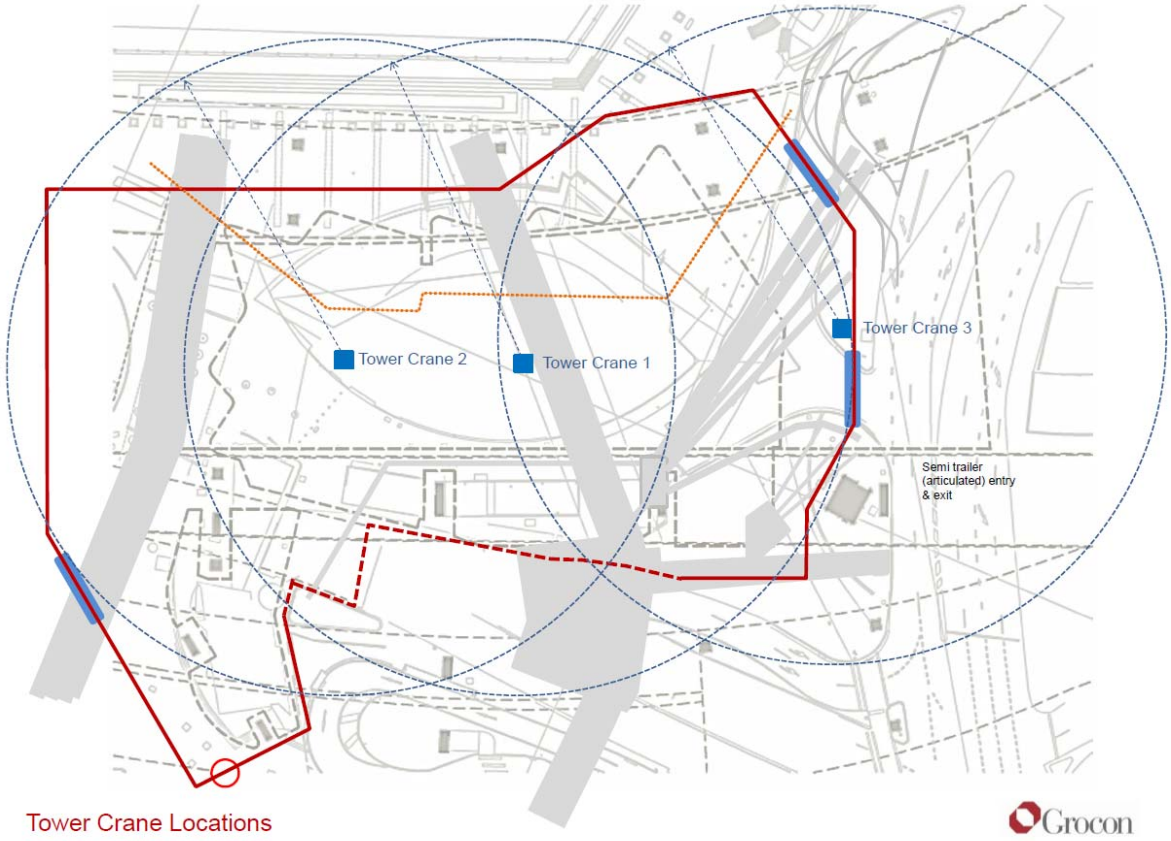
Temporary foundations required for tower cranes, man and materials hoists and erection aids for the structural steelwork will be constructed.

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 Crane No: 2 and 3

During the Groundwork's Phase Grocon will erect the 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 jump start steelwork.

Refer diagram - Tower Crane Locations



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

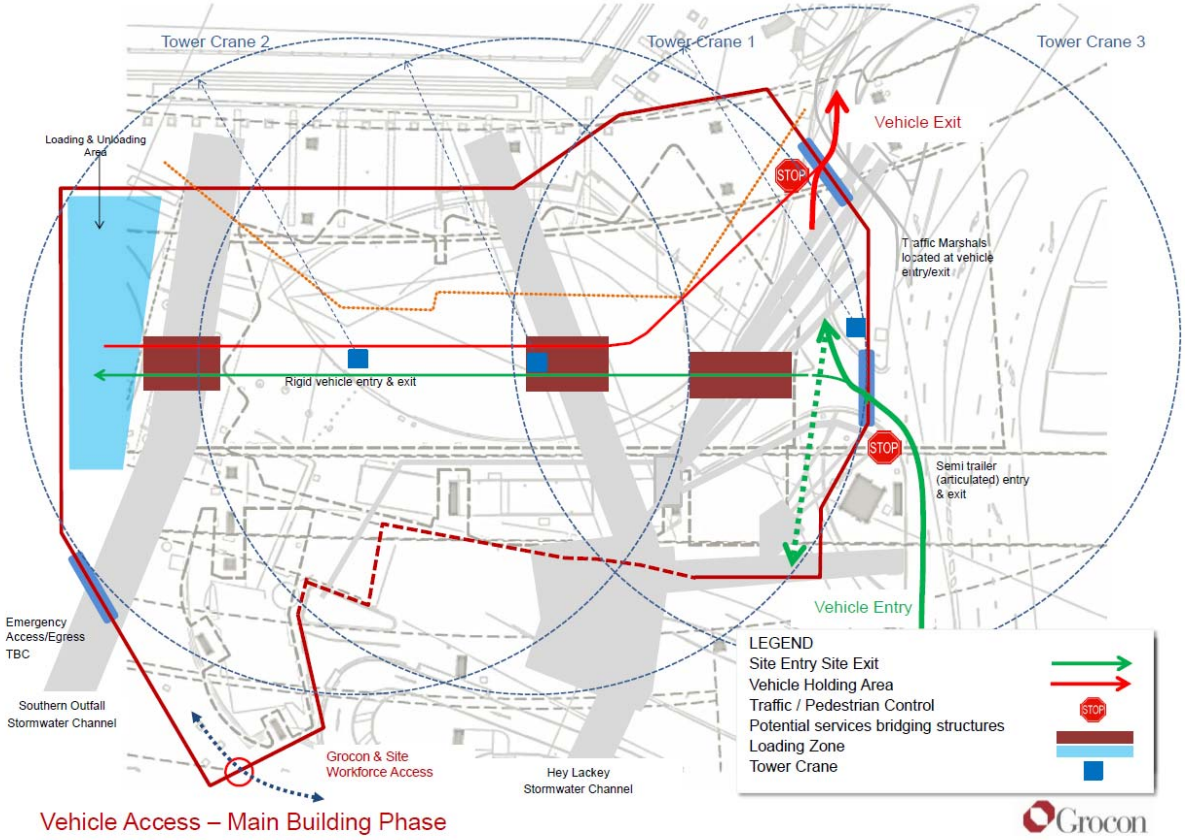
As stated in Section 8.2, all service disconnections to the existing IMAX building will be carried out prior to any demolition works commencing.

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.

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.

Refer diagram – Vehicle Access Main Building Phase



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. Pile caps will be constructed.

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

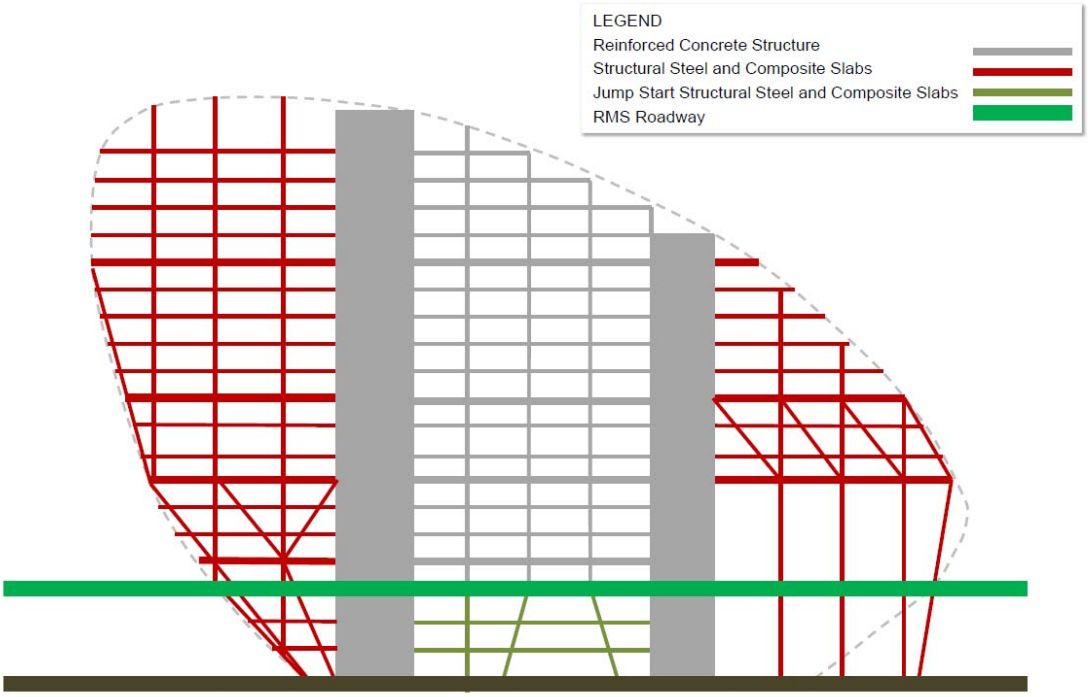
The Ground Floor raft slab will accommodate the approx. 1000mm (with approx. 2000mm @ the lift cores) and 400mm deep slab over the new promenade. The raft slab is likely to be heavily reinforced and post tensioned.

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 “hybrid” scheme, which is a combination of concrete slab and columns between the lift cores (centre section) and structural steel and composite slabs beyond these grids (the wings).
- The solution also potentially incorporates a “Jump Start” structural steel and composite slab solution which may be implemented from Ground Level to Level 3 between the concrete cores. *Refer Jump Start and Hybrid Structure Diagram*
- “Stadium construction” and hanging IMAX cinema seating
- Significant transfer structures over the Hay Lackey Channel & HV conduits and the installation of 2 crane towers to support the IMAX structural steel.
- Significant truss structures over the IMAX cinema 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



Indicative Structural Framing

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 structural steel and composite slab construction
4. Wheat Road structural steel and composite slab construction
5. Concrete slab and column structure
6. Structural steel and composite 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 is complete. The systems will be set-up and established, based at Ground Floor level and will see the eastern jump form setup followed by the western jump form.

Estimates suggest a maximum of 21 jumps 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 5 pours (5 jumps) in order to clear the jump steel that is to be erected between the cores. The western jump form will require 10 pours (10 jumps) 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 either 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 is looking at the benefits of potentially installing a Jump-Start structural steel solution.

The Jump-Start could 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 approximately three levels of complex building and transfer structure associated with the Hay Lackey channels 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. Ground level prefabrication will be determined by the lifting capacity of the combined The Ribbon tower crane network.

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, Condeck soffits and the Workright Edge Protection Handrail System.

24.4 IMAX structural steel and composite slab construction

The IMAX structural steel erection will commence when the western jump form has cleared the base of the IMAX truss (10 jumps) and crane towers have been erected as temporary props for the IMAX structural steel beams.

The IMAX structural steel will be built “stick by stick” from the bottom cord of the truss being supported by the crane towers.

Once the columns and wind bracing are installed, the three storey truss will be build in situ.

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 preformed edges, Condeck soffits and the Workright/ ExPanda full height Edge Protection Handrail System.

24.5 Wheat Road Structural Steel and composite slabs

The Wheat Road structural steel erection will be installed with the Jump Start structural steel. The Wheat road structural Steel installation will be driven by the requirements of the 1. Tension slabs and 2. The vertical elements required to support the structure above.

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”

24.6 Conventional Reinforced Concrete Structure

The structure between the lift cores (and above the Jump Start structural steel – Level 3) will be constructed conventionally with concrete slabs and columns.

A fully integrated modular formwork system will be utilised and will include a full encapsulated construction perimeter screen system, including to areas above the elevated RMS roadways.

Cast in steel connection items for the structural steel and composite slab structure (the wings) will be implemented as the structure progresses.

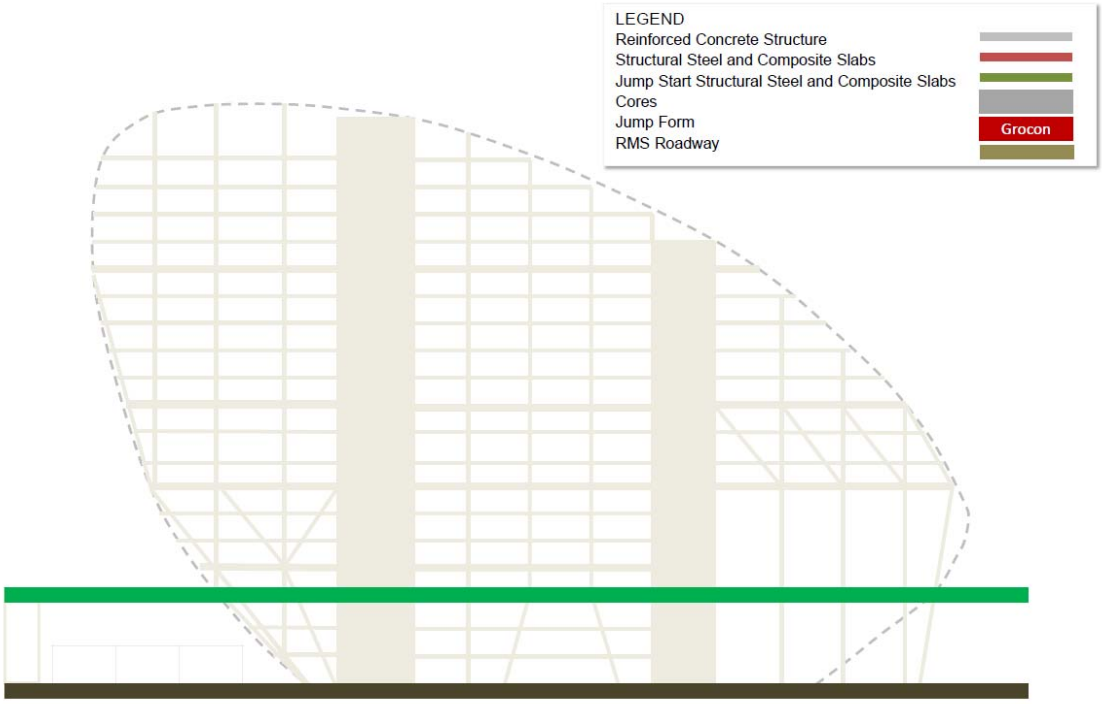
24.7 Structural Steel and Composite slabs

Areas outside of the conventionally reinforced concrete structure - the wings (areas to the east of the eastern lift core and west of western lift core) will be constructed from a structural steel and a composite slab structure in order to achieve the required cantilevers as the building footprint increases. The levels below the Jump Start level will also be constructed using a structural steel and composite slab solution given the restriction imposed by having a completed structure overhead.

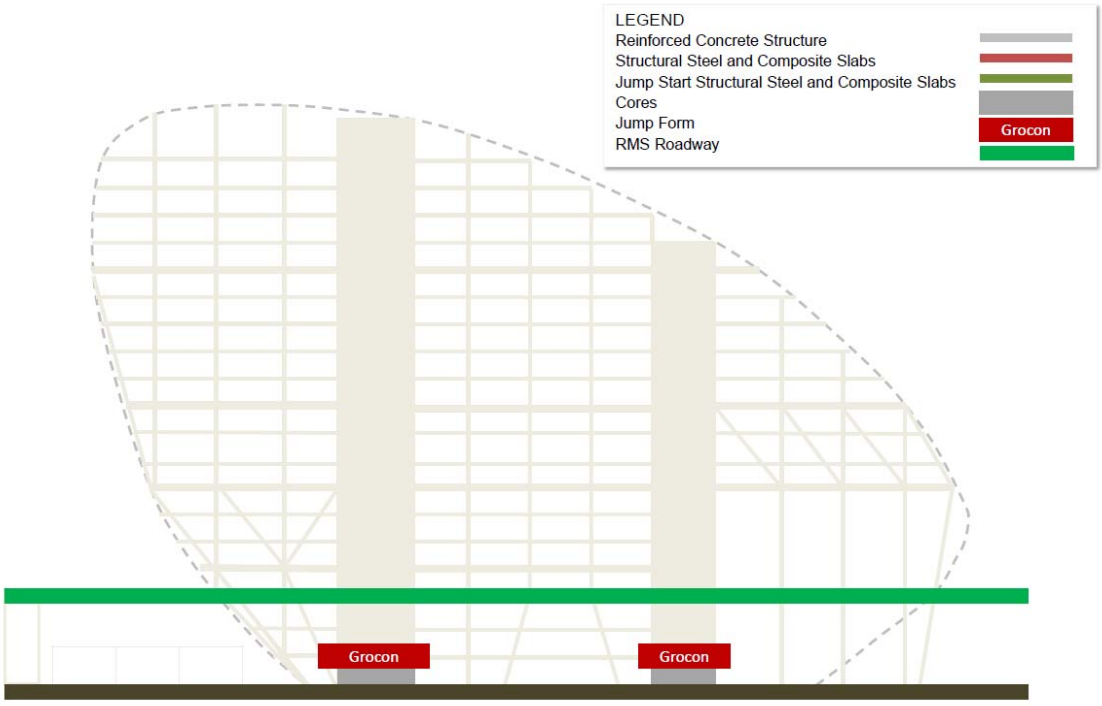
Final erection sequences for the new steel structure will be fully developed in conjunction with the structural steel subcontractor.

Stripping and back propping for all areas will be performed as per the requirements of Bonacci Group (the structural engineer for The Ribbon), and will comply with AS-3610. Concrete slabs will be back propped until the minimum strength is reached and the propping removal sequence is agreed with the structural engineer.

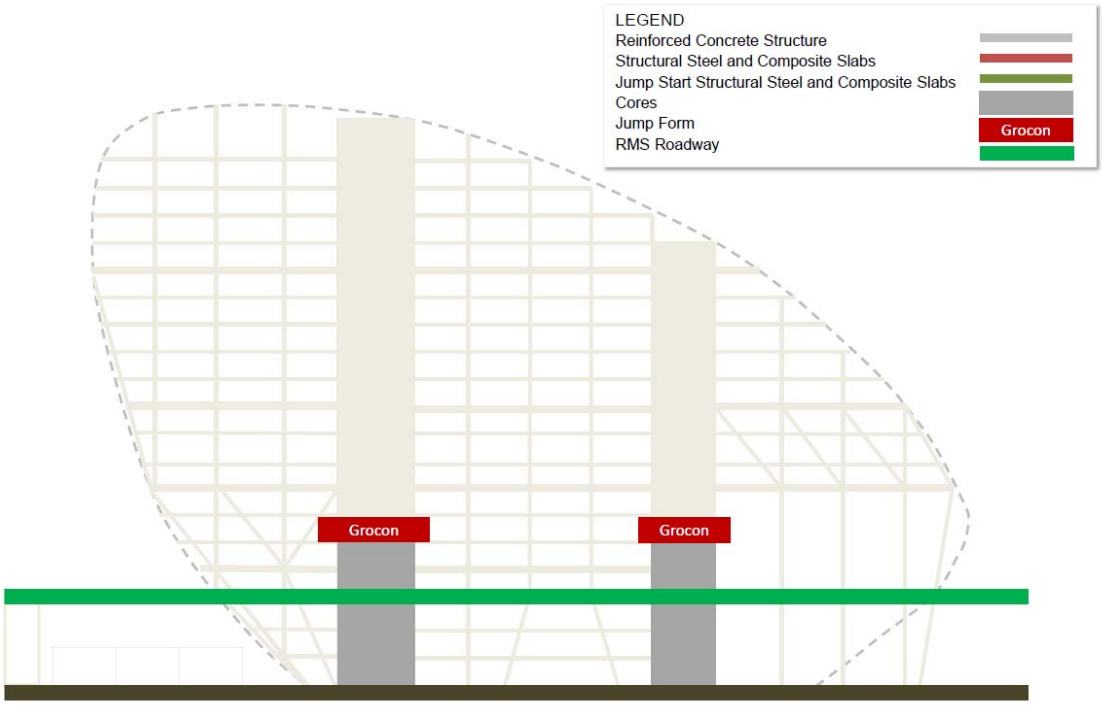
24.8 Structure Staging Diagrams



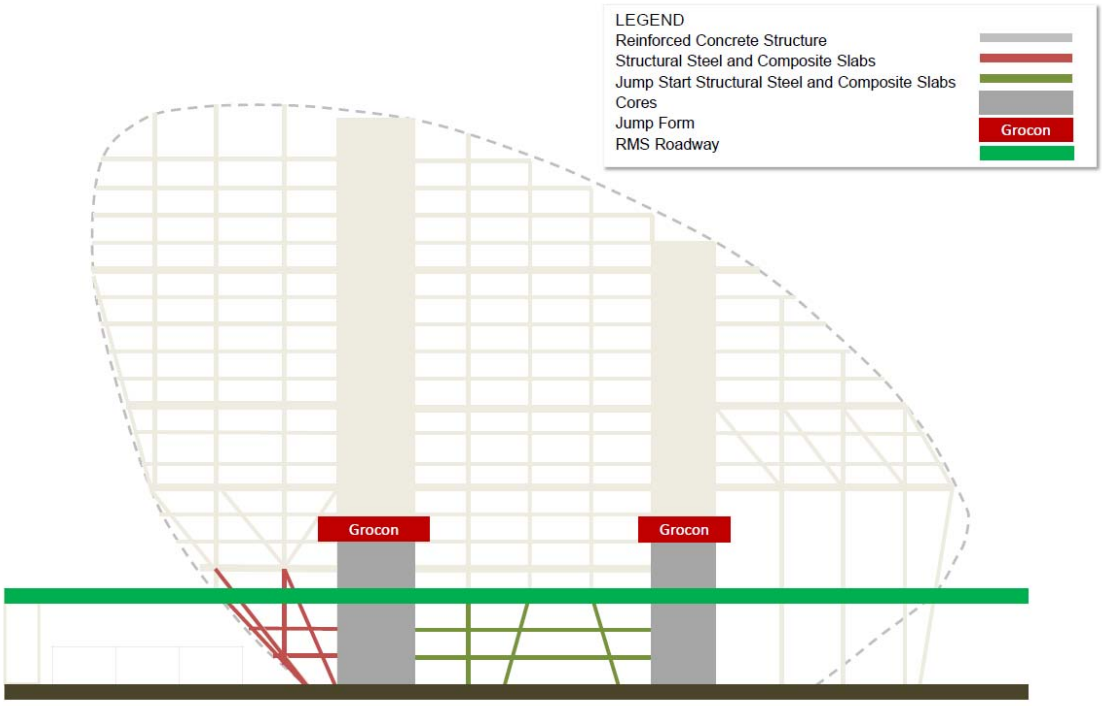
- Ground Works



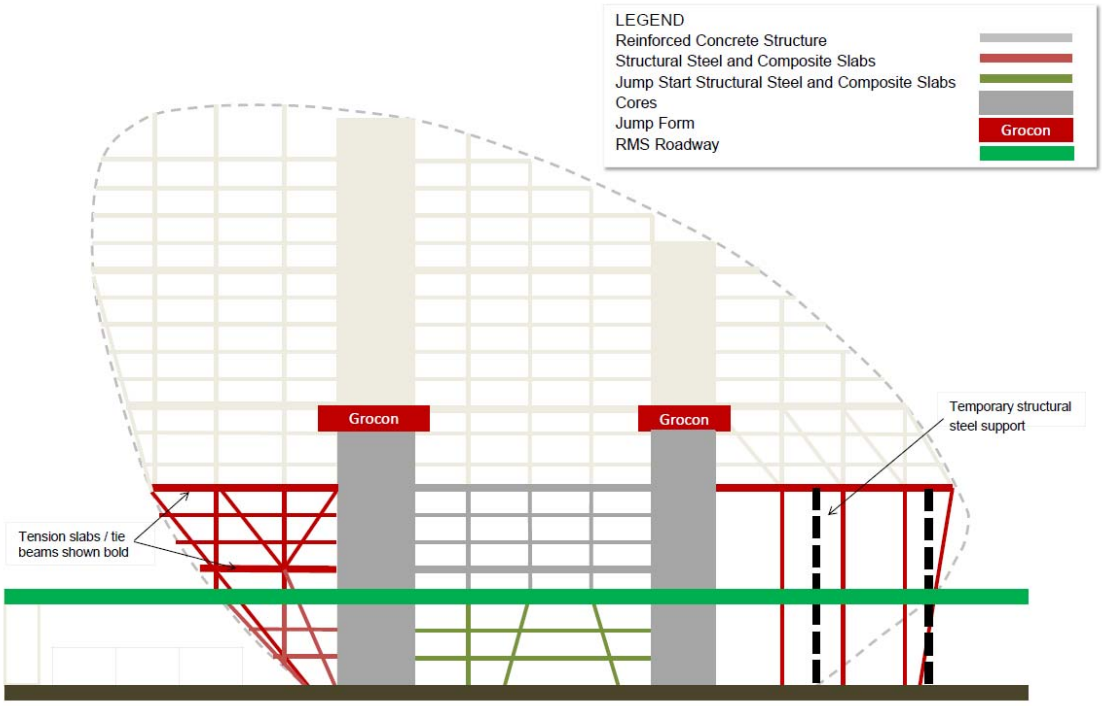
- Ground works complete
- Core formwork mobilised



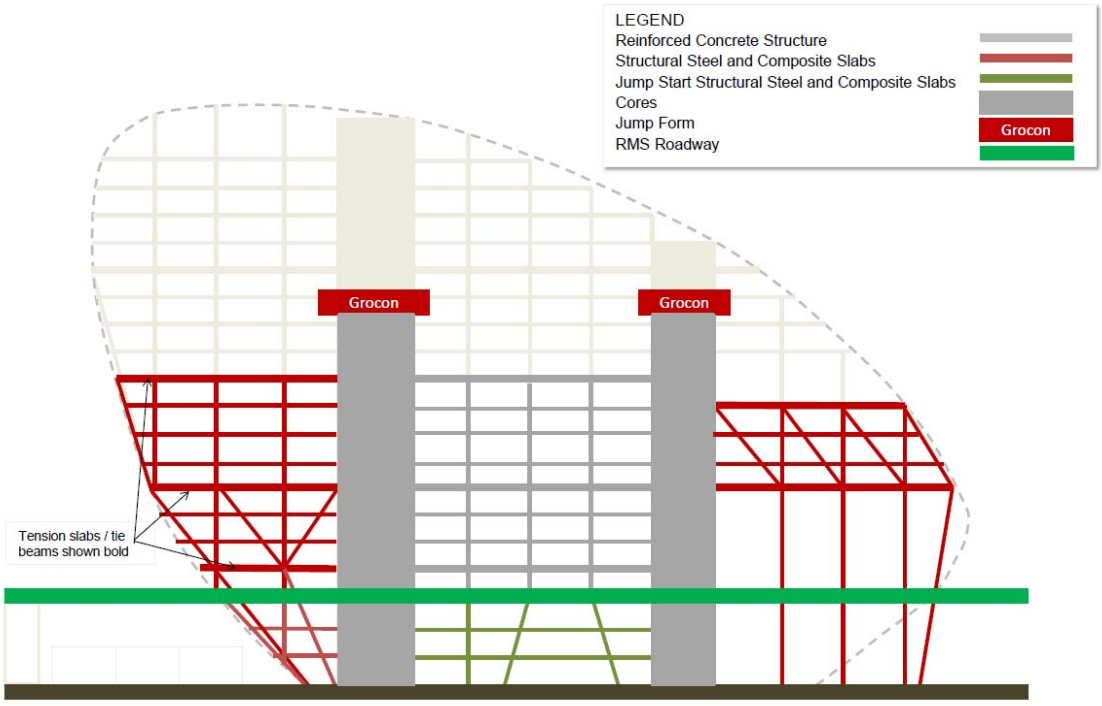
- Jump form clear of Jump Start Wheat Road structural steel



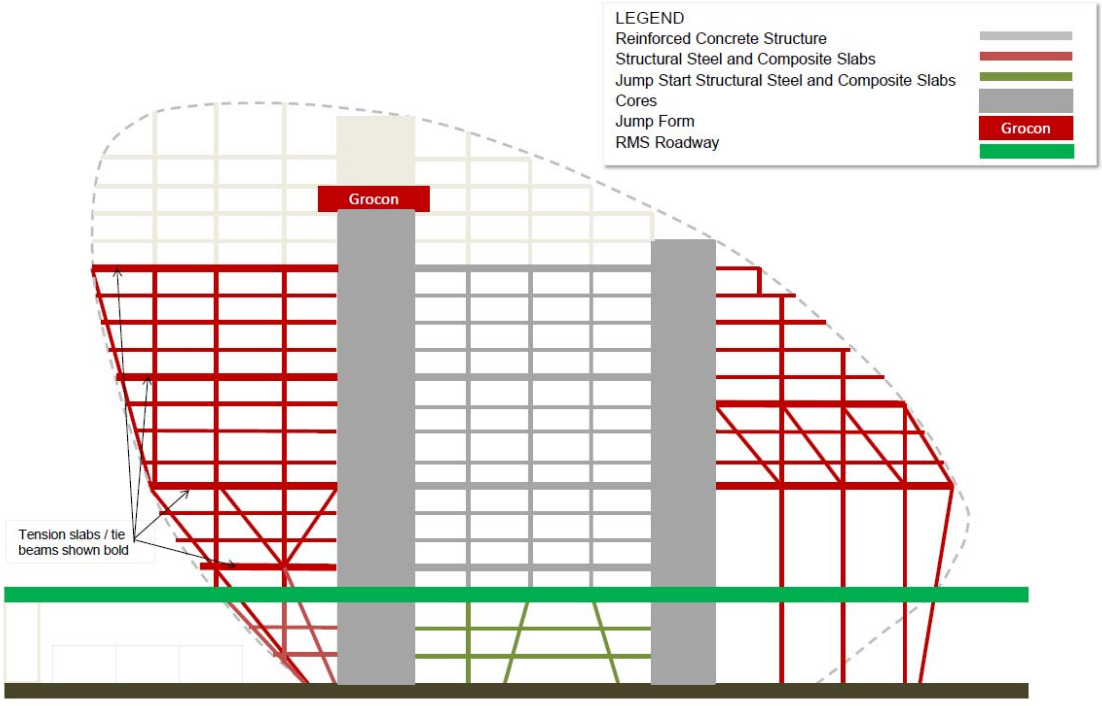
- Jump Start structural steel complete
- Wheat Road structural steel approaching first tie slab



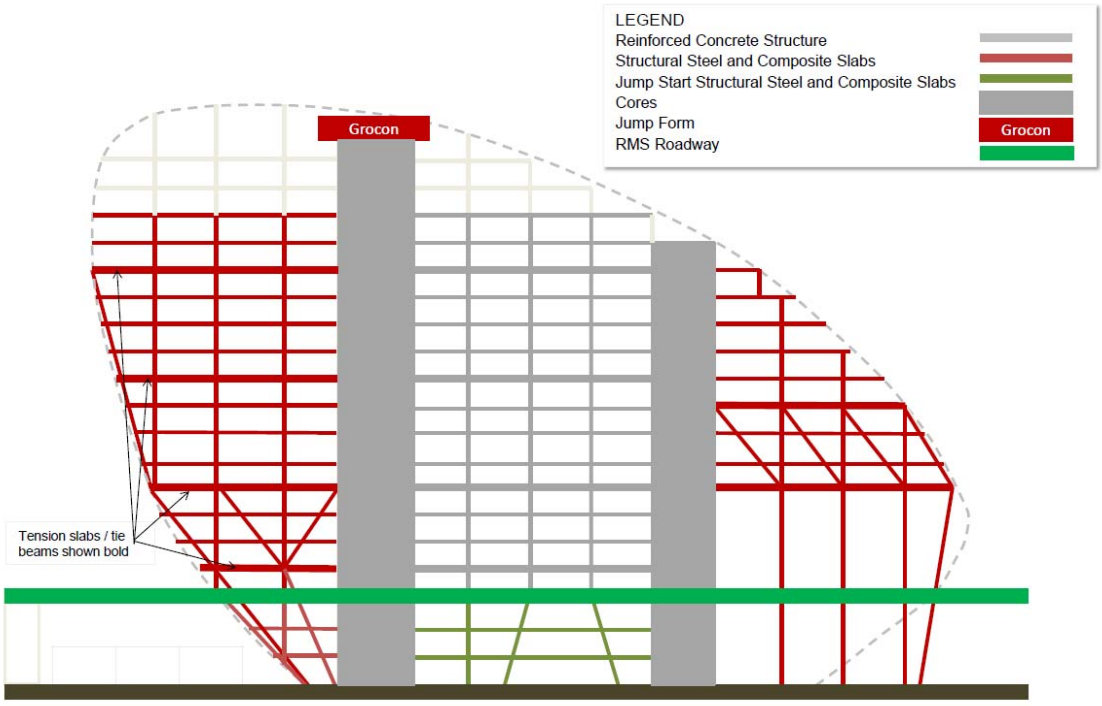
- Cores clear of IMAX structural steel
- First tension slab complete
- Crane towers erected for IMAX structural steel installation



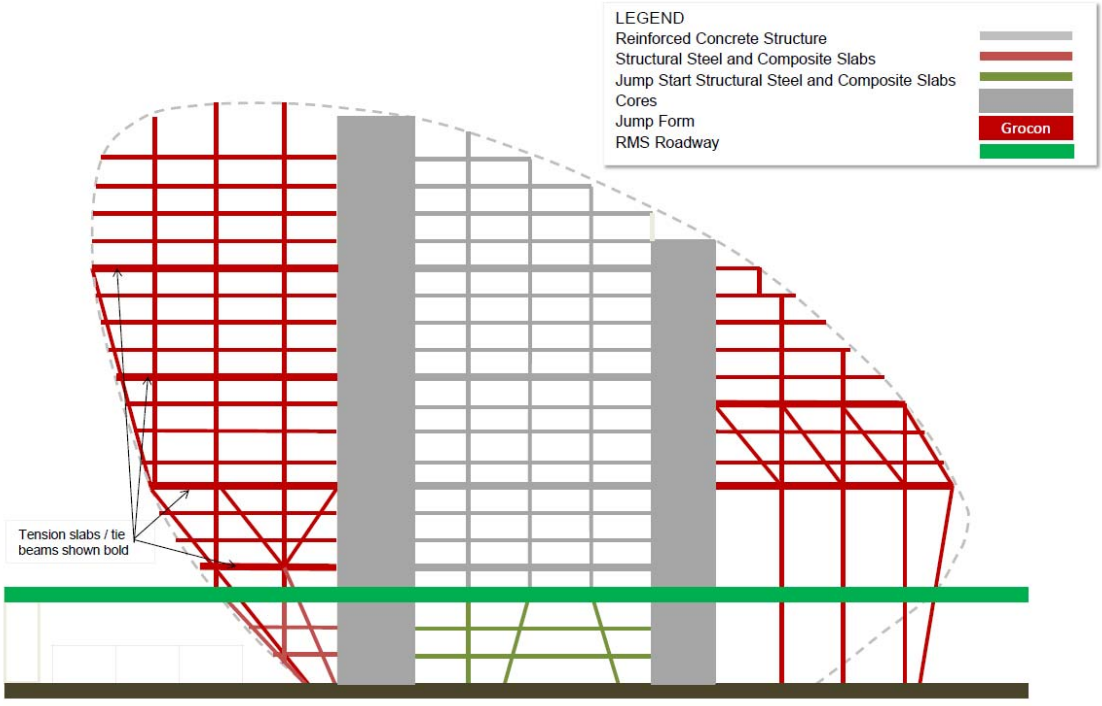
- Cores clear of IMAX truss
- Second tension slab complete



- Structural steel and composite structure complete to IMAX elevation
- Western jump form removed
- Third tension slab complete



- Forth and final tension slab complete



- Structural steel and composite structure complete to Wheat Road
- Eastern jump form removed

24.9 Services

Once formwork or back-propping is removed from a floor area, high level services rough-in will commence. This will also include loading of the floors with plant and equipment for the on-floor plantrooms.

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 whist suspended ceilings and access floors are being installed.

When the façade is complete the ceilings and services fit-off will be undertaken to complete the installation of the works. Testing and commissioning will follow after all systems are finalised.

24.10 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. Safe work practices will be developed in consultation with the façade subcontractor to ensure that the risks of falling objects are eliminated. Safe work methods such as fall restraint lines around the perimeter of the building will be applied.

All façade panels are to be delivered to the floors via crane 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 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.

24.11 Architectural Finishes

Once formwork or back-propping is removed from a floor area, high level services rough-in will commence. That will be followed by internal non-load bearing walls and ceilings. Services and finishes adjacent to the edge of the building will be installed after the façade is installed. Fit off of ceilings, dry wall installation, wall and floor finishes, joinery and painting will follow.

Sections of the works will need to be completed after the removal of temporary elements such as tower cranes, man and materials hoists and the like.

Where possible, services will be coordinated around the temporary elements to minimise the amount of “out of sequence” work. This will also enable commissioning to commence.

24.12 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. An early access strategy will be developed once the early access conditions have been finalised.

24.13 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.

24.14 Completion and Handover

Grocon will ensure that all works are complete, commissioned, defect free, working and are effectively integrated with the on-going building fine-tuning. A detailed Completion Plan will be established 6 months prior to Practical Completion and will be cognisant of the retail tenant's requirements.

Progressive site inspections are required to ensure that works are carried out in accordance with the design documentation. Grocon will diligently manage a project void closure system ensuring full inspection prior to closing in risers, plenums, ceilings and the like. Monthly inspections will be carried out by the Architect and the Design Consultants. Consultants will issue reports outlining findings, reoccurring issues, potential design issues and required rectification and reinspection if required. Progressive inspections and sign-offs will be conducted so to ensure minimal defects at handover.

Grocon will ensure that the project is completed and handed over on time 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

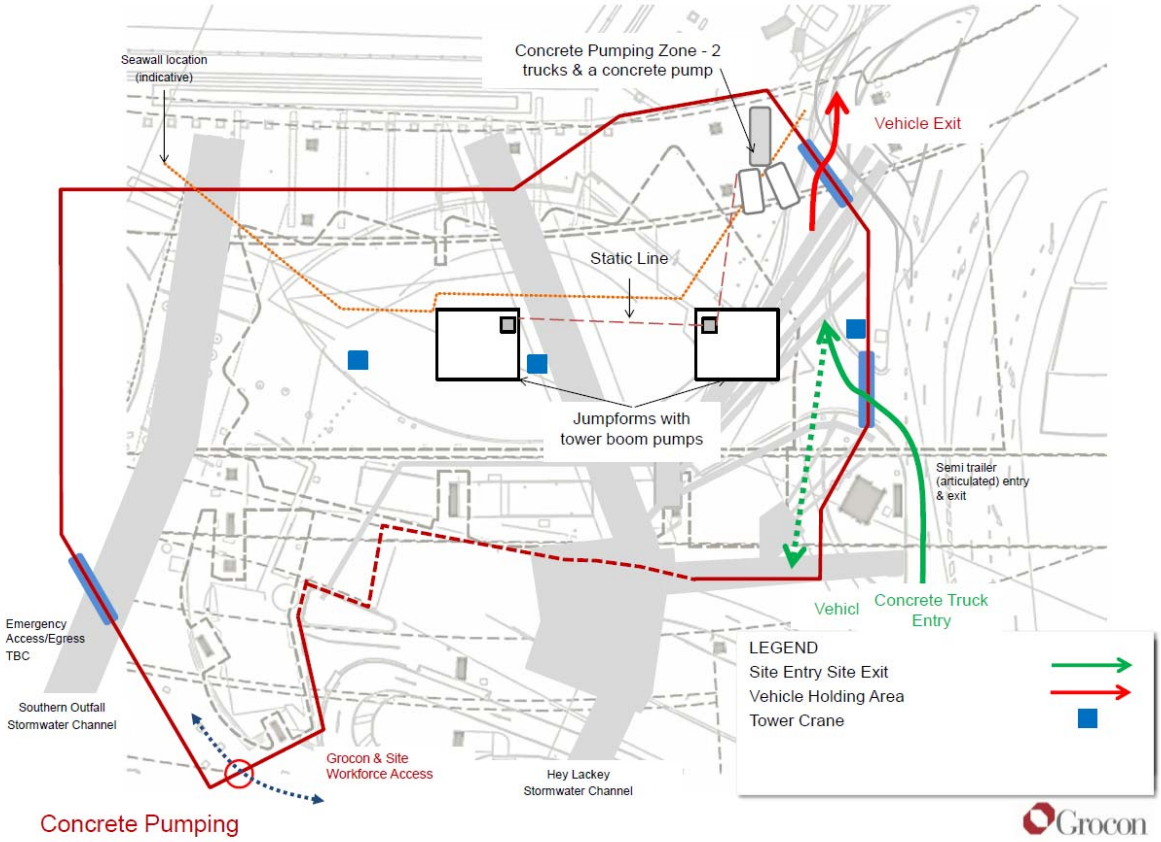
The structure and concrete pour sequence will comprise 4 pours with the option of reducing the size of the major hybrid pours where necessary to a maximum of 8 pours per floor. 2 core jumpform pours per floor will occur where stairs and miscellaneous items will also be poured

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: Upon engagement of a concrete subcontractor; another two tower boom pumps may be installed to facilitate the concrete pours.

Refer Diagram – Concrete Pumping



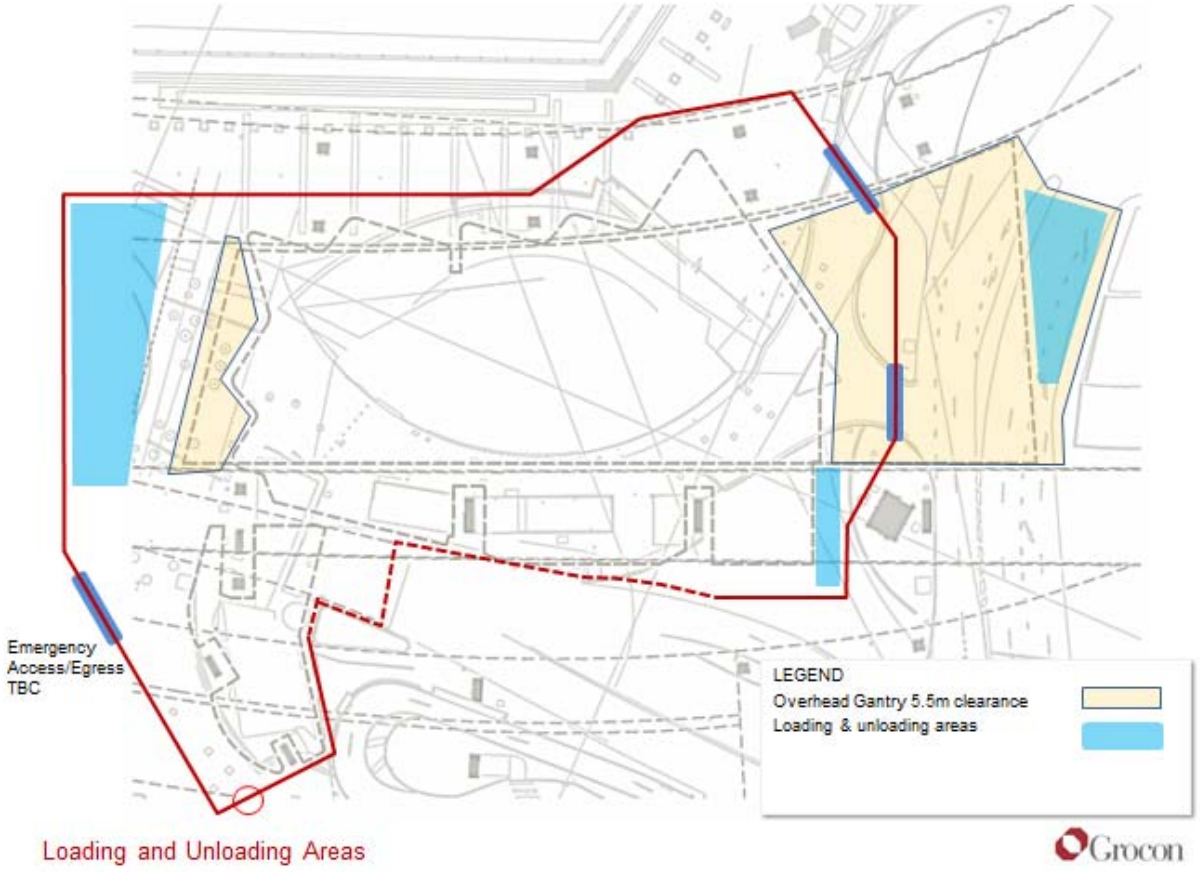
The structure and concrete pour sequence will generally comprise 4 pours per floor with the option of reducing the size (increasing the number of concrete pours) of major hybrid pours where necessary to a maximum of 8 pours per floor. 2 core jumpform pours per floor will occur where stairs and miscellaneous items will also be poured

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 based upon the use of three diesel luffing tower cranes for the materials handling of all structure, façade, services and finishing trades.

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 and the Western Elevation loading & unloading zones.

Tower Crane No 1 will be installed between Grid 8/C – centrally located between the Lift Cores. It will be in place prior to the commencement of demolition works and will stay in place for the duration of the building works.

Tower Crane 1 will be the smallest of the 3 cranes and will be utilized mainly for the concrete structure works and horizontal materials handling.

Tower Cranes No 2 and 3 will be installed between Grid 12/B and the north east corner of the building and Grid 5/B and the western end of the building.

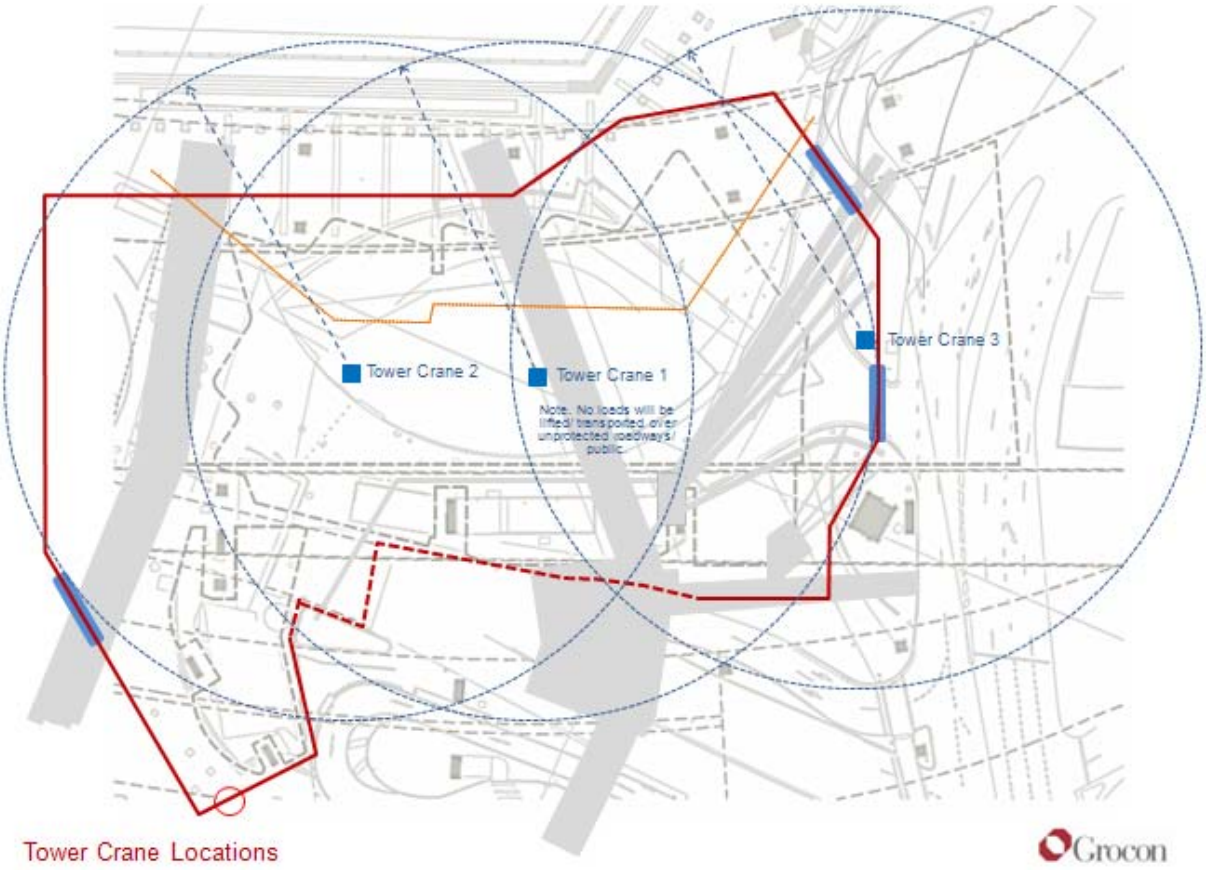
These cranes are sized so that they can install the structural steel to the eastern and western ends (wings) of the building as well as heavy lifts to plant areas.

The cranes will be in place prior to the commencement of the main building works and will stay for the duration of the building works.

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

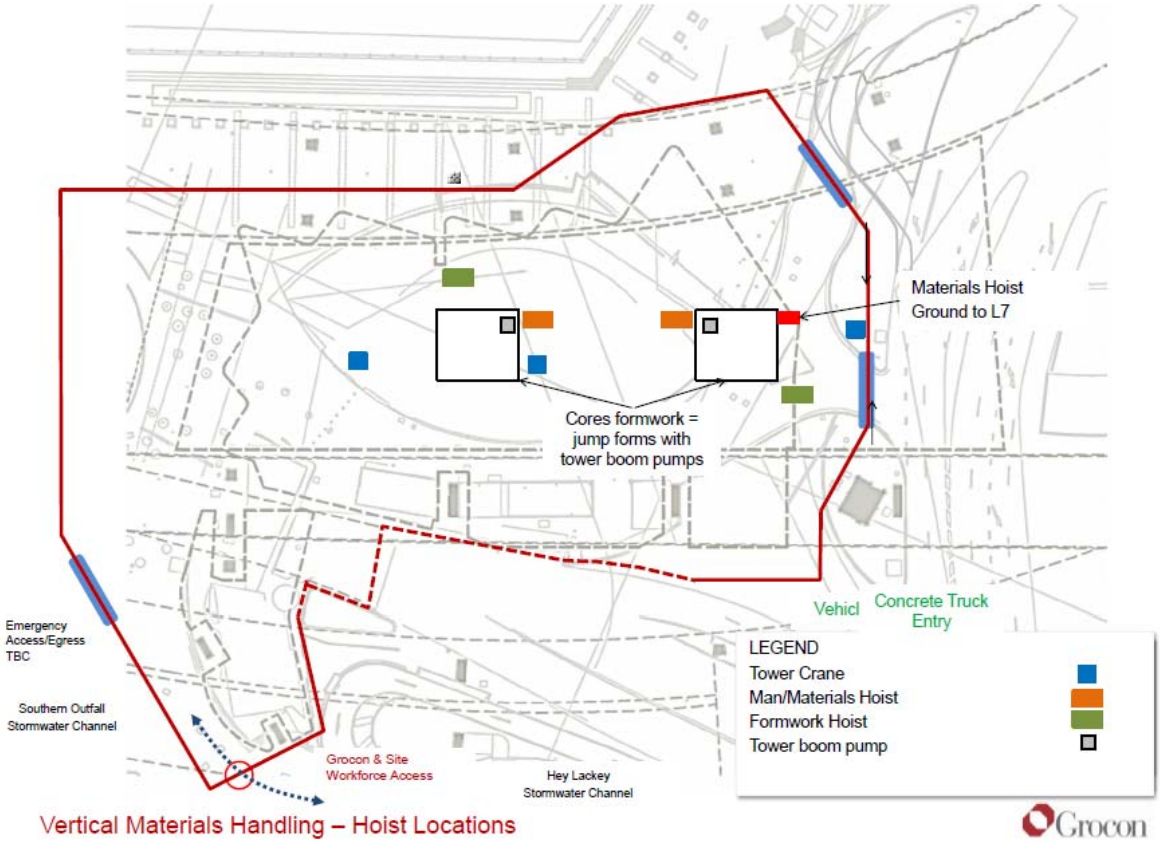
For completion of the roof works and general site works, tower cranes 1, 2 and 3 will be removed and replaced with smaller tower cranes. These will be set up on grillage on the roof areas and progressively removed from west to east on prior to the completion of works.

25.5 Construction Hoists

Two (2) formwork hoists will service the leading decks, indicatively located below. Two (2) Alimak man & material hoists will be installed as an integral part 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.

Given the increasing size of the floor plates and subsequently the inability to install loading platforms from Level 1 to Level 7, a dedicated materials hoist will be installed adjacent to the eastern core.

Refer diagram Vertical Materials Handling - Hoist Locations Diagram

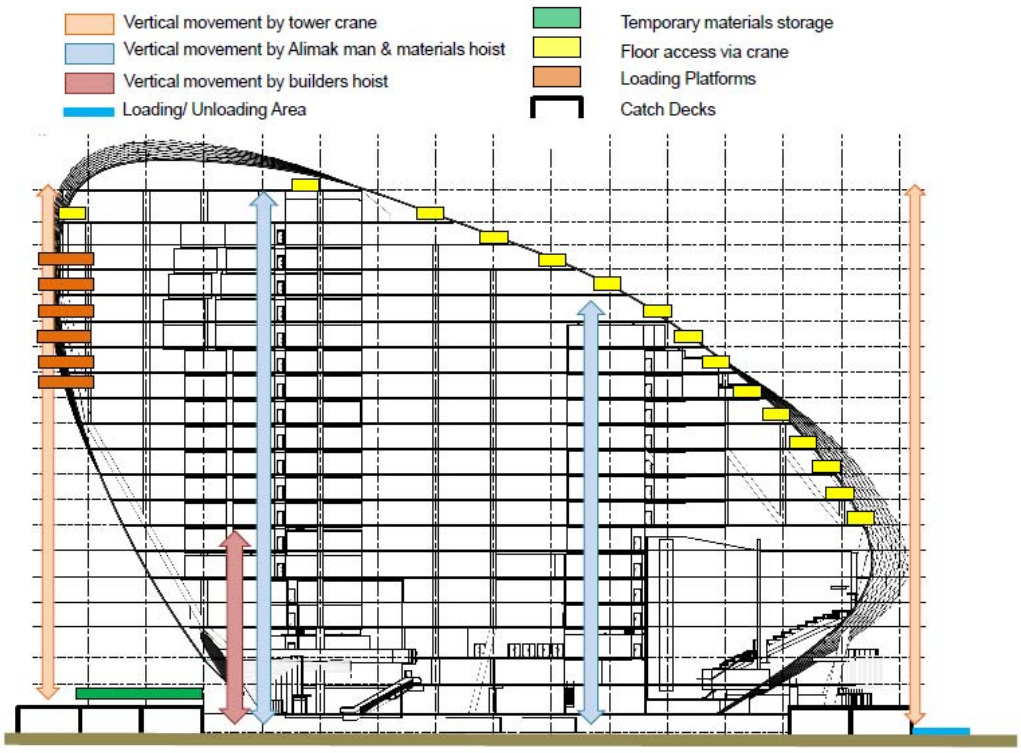


25.6 Vertical Movement of Materials, Loading Platforms & Landing Areas

As stated previously, the increasing size of the floor plates precludes the installation of loading platforms from Level 1 to Level 7, a dedicated materials hoist will be installed adjacent to the eastern core

Dedicated landing (unloading) areas will be made available on the western end of the floor plates from Level 7 through to Level 21.

Refer Diagram - Loading Platform Location and Vertical Materials Handling Diagrams



Vertical Materials Handling

26. Perimeter Protection Systems

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

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

26.1 Perimeter Protective Screens

A fully encapsulated perimeter protection screen system will be installed off the Jump-Start, Wheat Road and IMAX structural steel (approximately in line with the RMS elevated roadway). 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.

The trailing structure below the Jump-Start structural steel will be poured after the mobilisation of the tower perimeter protection system. The perimeter protection system to the trailing structure will be a combination of perimeter screens and scaffold.

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 removal of all formwork.

26.2 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.

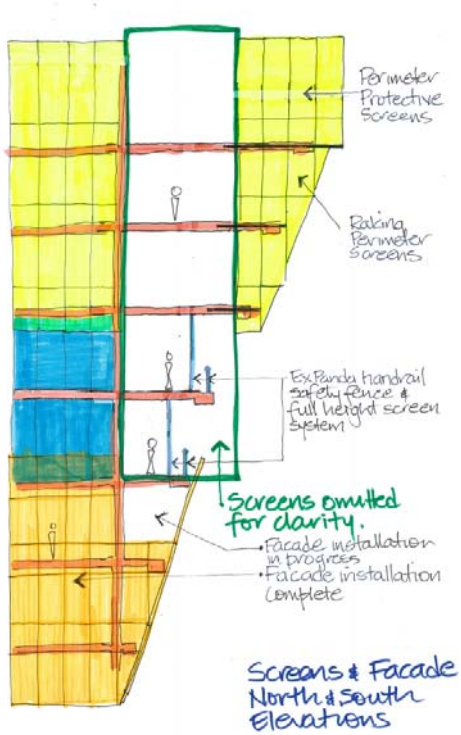
26.3 Safety Fences (“Workright”/ “ExPanda” Fence System or similar)

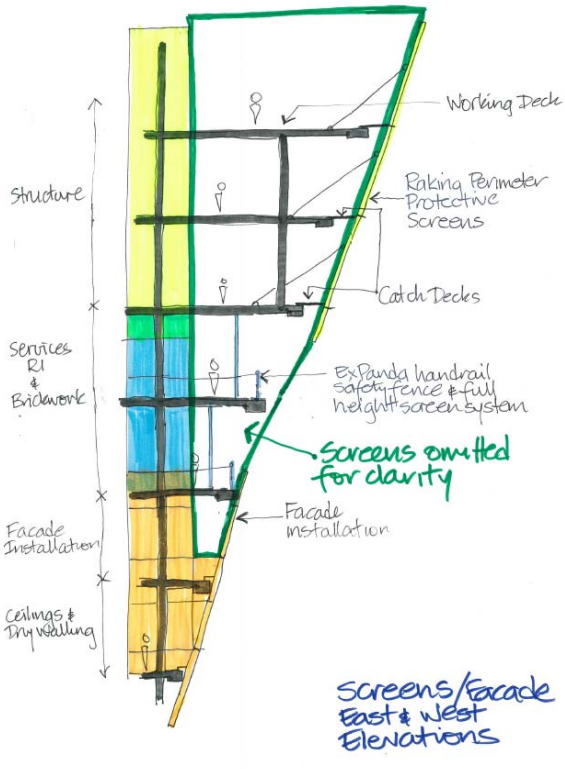
Following the removal of all formwork, the perimeter protection screen system will be removed and replaced by a safety fence screen system that incorporates a full height (slab to slab) screen (similar to the Workright – ExPanda Fence System).

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 is detailed in the diagrams below.





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 will be developed during the Development Application approval period.

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.

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 will be developed during the DA approval phase of The Ribbon. In summary, it will document and identify the process 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 The Ribbon stakeholders – Markham Group, the general public and 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 progress.

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 for 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" initative 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.

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

A. Workplace Safety Management Plan

B. Noise & Vibration Management Plan

C. Pedestrian and Traffic Management Plan

D. Design & Construction Program

E. Demolition Management Plan