Downtown Carpark Site Development
Draft Construction Management Plan

Prepared for:
Precinct Properties New Zealand

09 / 10 / 2025

Contents

Preface

This plan has been prepared for the benefit of Precinct Properties. No liability is accepted by this company or any employee or subconsultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons for an application for permission or approval to fulfil a legal requirement.

This Construction Management Plan will be finalised upon granting of the resource consents and following appointment of the Contractor. The Contractor will determine the construction methodology for the Project on the basis of best practice. The environmental performance standards and environmental controls specified within this draft plan, resource consent conditions, and other management plans specified under the resource consents are the minimum requirements that the Contractors must comply with when undertaking construction activities on site. Confirmation will be required that the Contractors' management of the construction process is in accordance with the standards and controls specified within this management plan.

1. Version Control

1.1 Revision Notes

Version	Version Notes	Date
Version 1.0	Draft	09 September 2025
Version 2.0	Draft for FTAA	30 September 2025
Version 3.0	Updated Draft for FTAA	07 October 2025
Version 4.0	Final	09 October 2025

2 Background

2.1 Purpose of this document

This draft Construction Management Plan (CMP) details the principles, practices, and procedures to be implemented on the development of the Downtown Carpark site into an integrated mixed-use precinct ("**Project**") to manage effects arising from the demolition and construction phases of the Project. These principles, practices and procedures are intended to meet conditions of consent, relevant legislation, and the objectives of Precinct Properties New Zealand Limited ("**Precinct**").

This CMP has been prepared prior to the appointment of a Main Contractor and as such provides the framework for how effects will be managed to inform the application for consent. It is intended that a final Construction Management Plan, that builds upon and provides more detail to this CMP, will be prepared and submitted to Auckland Council pursuant to a condition of consent once a preferred contractor is appointed who will subsequently provide the final management plans.

2.2 Scope and Application

This CMP is the umbrella document for the construction management and monitoring procedures to be implemented during the demolition, enabling and main works phases, together referred to as the "construction", phases of the Project unless otherwise specified. The CMP defines details of who, what, where and how management measures should be implemented.

It is supported by a range of Specialist Management Plans ("**SMP**s") for the management of specific effects. This suite of documentation presents a framework for appropriate environmental management practices to be followed throughout construction.

This CMP will be reviewed and modified (in line with the established framework) following confirmation of the resource consent and associated conditions as well as finalisation of detailed design and construction methods with the appointment of a main contractor. The CMP and SMP's will require review and amendment during the life of the Project to reflect changes to activities, risks, mitigation measures and management processes. Where changes are required, they will need to comply with the relevant consent conditions and will be submitted to Auckland Council for certification.

The Project team will be required to undertake all construction activities on site in accordance with the provisions of the relevant management plans and conditions of consent.

2.2.1 Purpose

This draft CMP, submitted in support of the consent application made under the Fast Track Approvals Act 2024, outlines a construction methodology and provides a framework of management plans and associated protocols to be implemented for the purposes of managing construction effects. The final CMP will outline all details required to enable Precinct and the contractor to construct the Project while managing effects resulting from construction activities. The most recent version of this plan will be held at the main site office at all times throughout construction.

Overall, the objectives of this CMP are to:

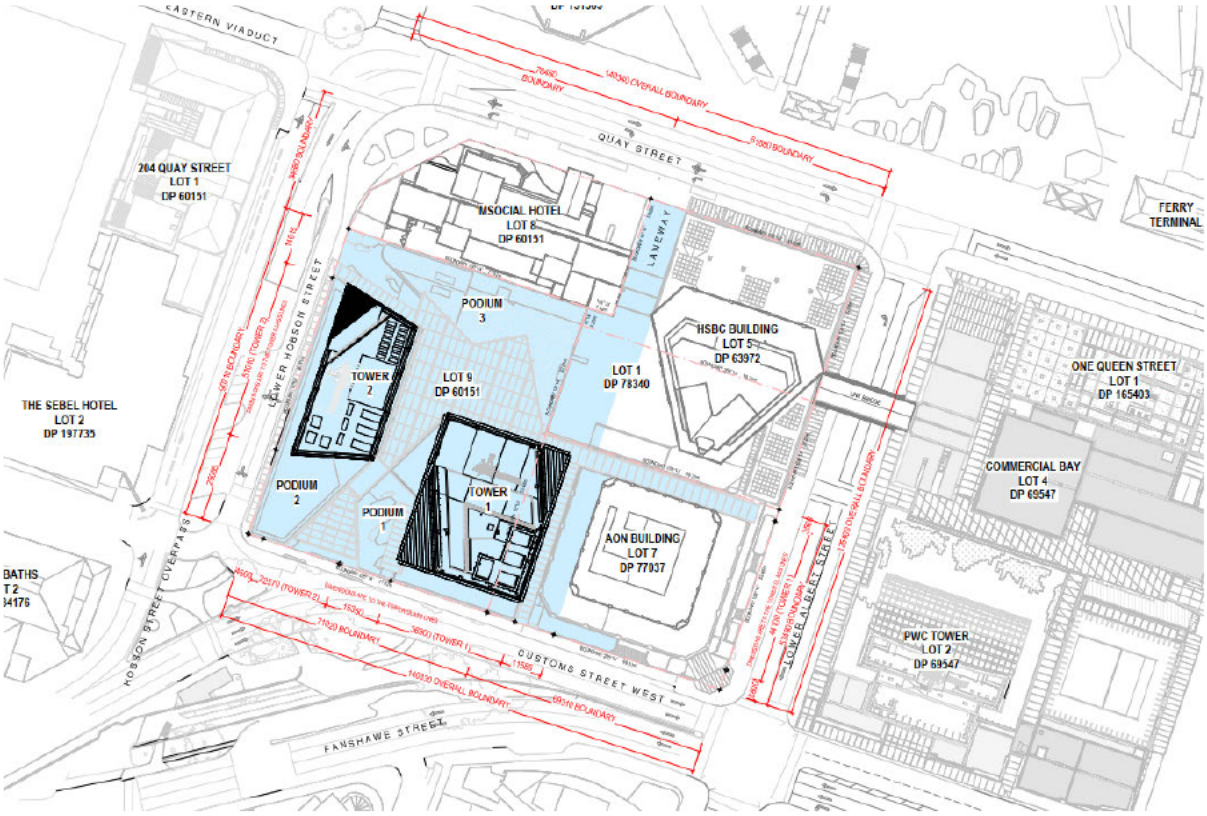
- Define the procedures to manage adverse effects resulting from construction activities;
- Set out the duration, frequency and timing of works to manage disruption, taking into account other construction related activities occurring in the vicinity;
- Require engagement with affected receivers; and

  Require timely management of complaints, including by implementing remedial actions, where appropriate.

2.3 Project Overview

The Project comprises the development of the Downtown Carpark site at 2 Lower Hobson Street Auckland Central, legally described as Lot 9 DP 60151 and located on the corner of Customs Street West and Lower Hobson Street. The overall intention for the Project is to deliver a world class, environmentally sustainable mixed-use development. The site area is 6,442m^2 and will accommodate a mix of commercial office, residential, and hotel uses together with retail and food and beverage and new public realm within the site with an approximate overall GFA of 127,500m^2. The site plan is provided in the figure below.

Figure 1: Project Site Plan:



In summary the development comprises:

- The demolition of the existing Downtown Carpark Building.
- Excavation / bulk earthworks and establishment of a 4-level basement beneath the site footprint to accommodate 454 basement carparks and a single additional localised sub-basement level to accommodate lift pits. Approximate earthworks volumes for the bulk excavation are provided as follows:
  - Total estimated bulk excavation – 100,000m^3
- The construction of:
  - Three podium buildings (Podium 1; Podium 2 and Podium 3)
  - Two towers - Tower 1 (T1) comprising 55 levels (including Podium 1) and Tower 2 (T2) comprising 45 levels (including Podium 2)
  - New public realm.

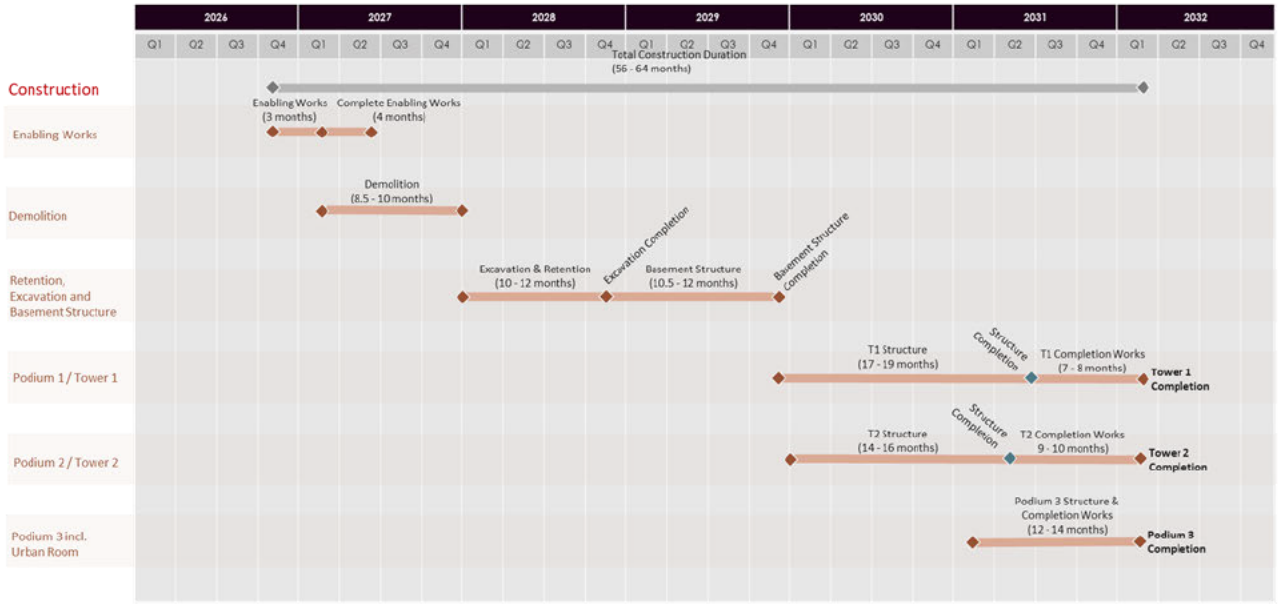
3 Method Statement

The following methodology is to be refined and finalised once consents have been obtained, detailed design completed, and a Main Contractor appointed.

3.1 Programme and Working Hours

3.1.1 Programme Summary

The following is a programme summary outlining the current feasibility programme developed for the Project:



Indicative Summary Programme

This is summarised in the following table:

Project Phase (Critical Component)	Month Range
Pre-Demolition Enabling Works (Prior to Demolition)	3 months
Demolition	8.5 to 10 months
Retention and Excavation Enabling Works (Excavation and Retention)	10 to 12 months
Basement Structure (B5 to Ground Floor)	10.5 to 12 months
Podium and Towers Completion Tower 1 and 2 Completion – Structure, Fitout and Commissioning (Nett)	24 to 27 months
Project Completion (Gross)	56 to 64 months

3.1.2 Construction Hours of Operation

Hours of operation on site will be per as prescribed in the consent.

It is anticipated that these will be between 7am – 6pm, Monday to Friday (excl. public holidays) and 8am – 5pm Saturdays.

Construction hours (hereafter including demolition, unless otherwise stated) may be extended to Monday to Friday 6.30am – 10.30pm (excl. public holidays) and Saturdays 7am – 11pm and public holidays to enable activities / works to occur outside of sensitive hours of neighbouring building where these comply with noise limits, for example for large concrete pours (with an anticipated start of 3am).

Bridge demolition working hours

There are two bridges currently servicing the existing Downtown Carpark that are to be demolished as part of the Project:

- Pedestrian footbridge over Lower Hobson Street.
- Vehicle ramp connecting to Fanshawe Street, running over Customs Street West

In order to undertake these elements with minimal disruption to the road network it is planned to undertake these works during extended working hours over three weekends as follows:

Footbridge over Lower Hobson Street

- Over one full weekend working 24 hours each day with two shifts.
- Works to be scheduled over a long weekend and / or school holiday period.
- Noisy works will be managed at night to control impact on surrounding neighbours.
- Lower Hobson Street will require a managed street closure.

Vehicle Ramp to Fanshawe Street

- Two full weekends working 24 hours each day with 2 shifts:
    - Weekend 1: Install propping support temporary structure.
    - Weekend 2: Main Bridge structure over Customs Street West removed. Weekend 2 works are to be scheduled over a long weekend and / or school holiday period.
- Noisy works will be managed at night to control impact on surrounding neighbours.
- Customs Street West will require:
    - Partial closure for weekend 1.
    - Complete closure for weekend 2.

Refer to *section 3.2.8* for demolition overview.

3.2 Construction Methodology

3.2.1 Materials Deliveries

The site location provides multiple materials deliveries points during the various stages of demolition, excavation, structure and finishes.

Establishment of work zones will be required, and full pedestrian and traffic management will be implemented upon establishment of the construction work zones and site access gates prior to demolition commencing. To ensure that there is sufficient public protection between the construction site and public roads, hoardings and barriers will be utilised.

The Traffic Engineer has provided input into the proposed materials handling sequences for each stage of the works.

The stages for materials deliveries are detailed as follows:

Scenario		
1	Demolition Lower Hobson St	Entry & exit to site.
1a	Demolition Custom St	Entry & exit to site.
2	Excavation	Ramp Load at Lower Hobson St – used to depth of safe ramp gradient
2a	Excavation	Loading Platforms Lower Hobson St – used to complete load out after ramps removed.
2b	Excavation	Slip Lane Lower Hobson St – as required for materials & equipment to be craned into site.
3	Construction	LB4 – L00 Rigid Truck Loading Zone Custom St West.
3a	Construction	LB4 – L00 Rigid Truck Loading Zone Slip Lane Lower Hobson St.
3b	Construction	LB4 – L00 Semi Trailer Loading Zone Customs St West.

3c	Construction	Lb4 - L00 Semi Trailer Loading Zone Slip Lane Lower Hobson St (Semi Trailer).
4	Construction	L00 and UP - Rigid Truck Loading Zone Customs St West.
4a	Construction	L00 and UP - Rigid Truck Loading Zone Slip Lane Lower Hobson St.
4b	Construction	L00 and UP – Semi Trailer Loading Zone Customs St West.
4c	Construction	L00 and UP – Semi Trailer Loading Zone Slip Lane Lower Hobson St.
5	Construction	L00 and UP – Onsite Partial Duration - Rigid Truck.
5a	Construction	L00 and UP – Onsite Partial Duration – Semi Trailer.

Figures 2- 16 illustrating the above are provided as follows:

Figure 2: Scenario 1: Demolition Lower Hobson St – Entry & Exit to Site:

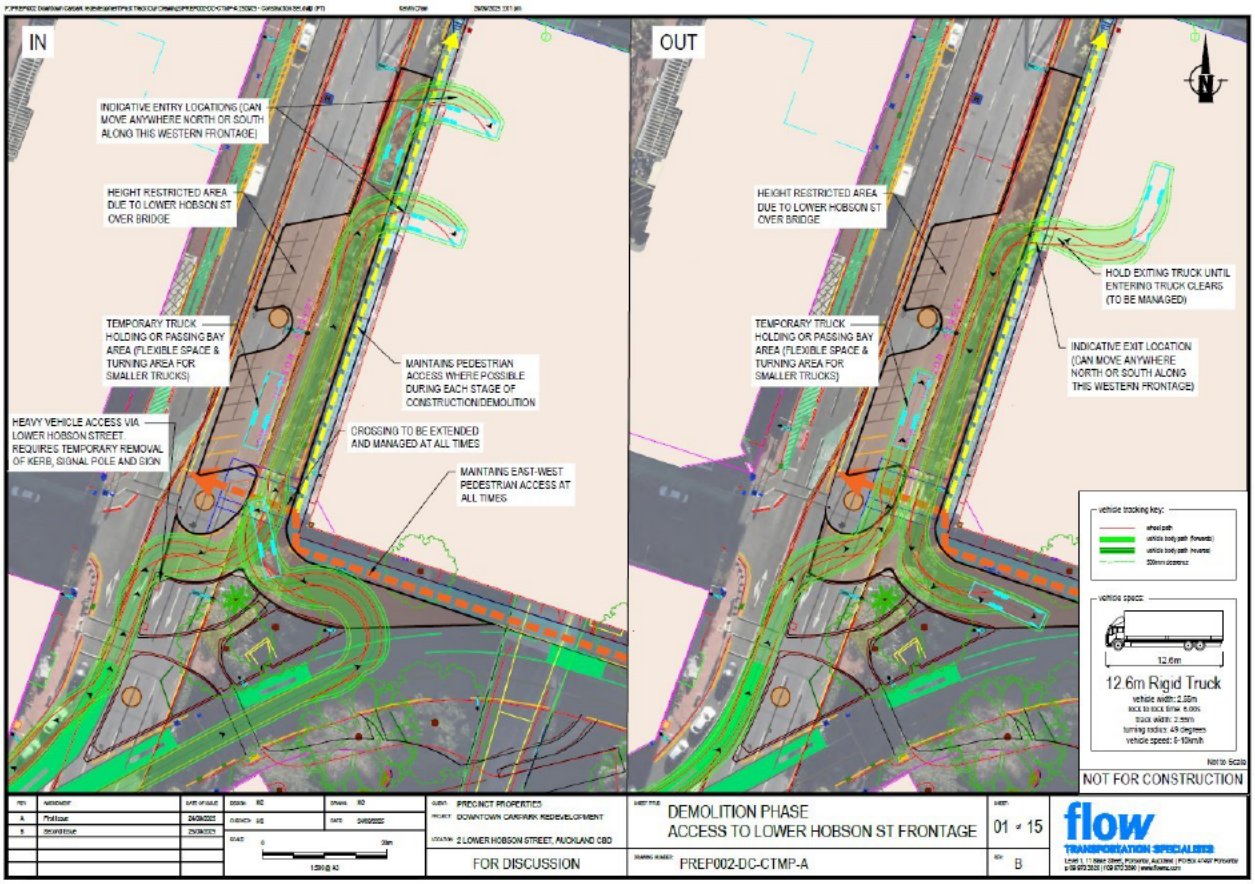


Figure 3: Scenario 1a: Demolition Custom St – Entry & Exit to Site:

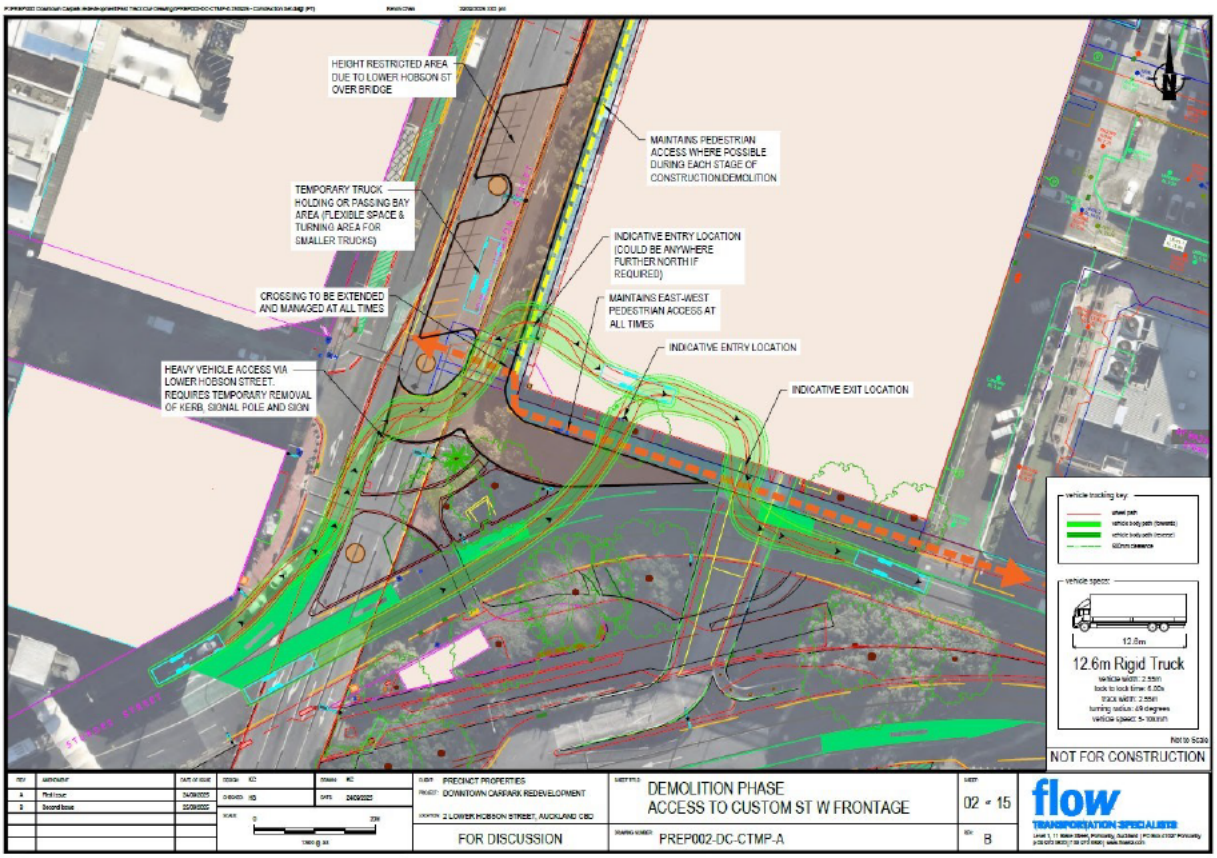


Figure 4: Scenario 2: Excavation – Ramp Load At Hobson St – Used to Depth of Safe Camp Gradient:

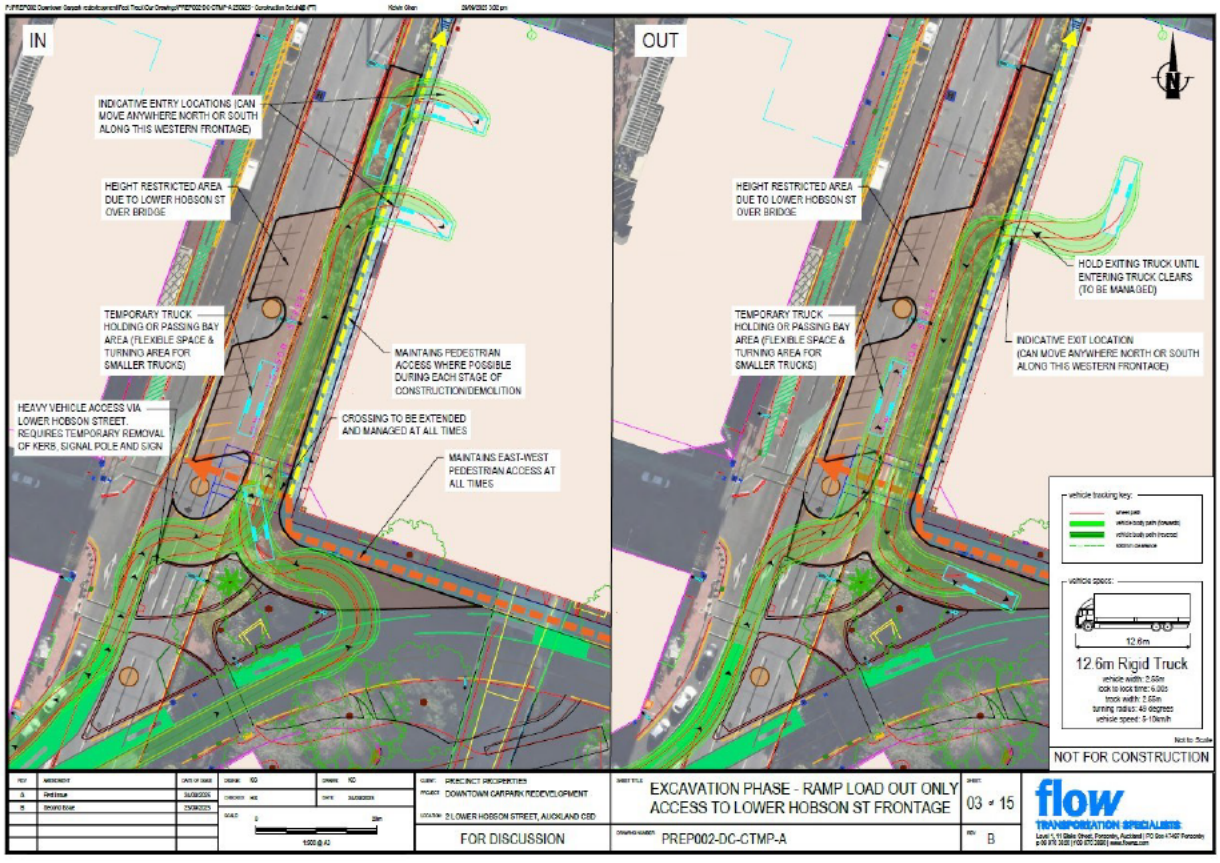


Figure 5: Scenario 2a: Excavation - Loading Platforms Hobson St – Used to Complete Load Out After Ramps Removed:

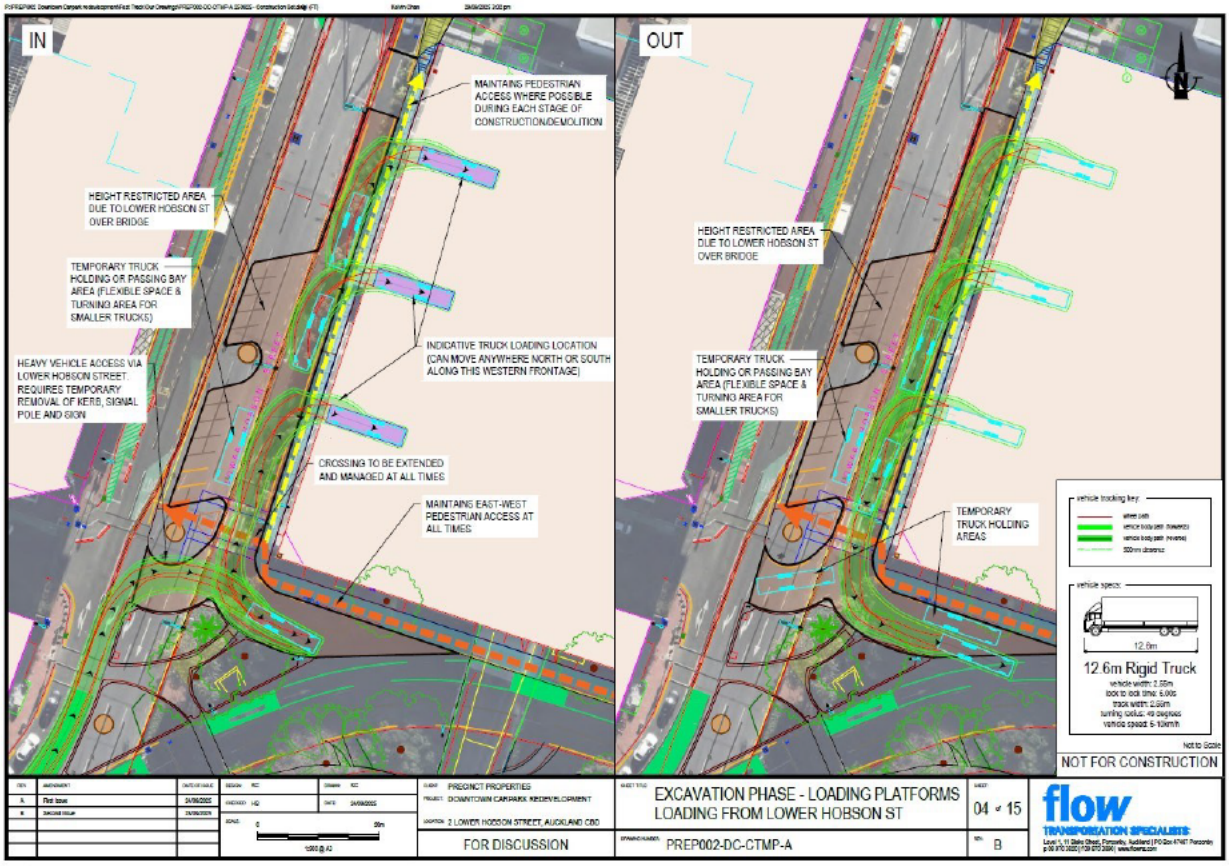


Figure 6: Scenario 2b: Excavation – Slip Lane Hobson St – As Required for Materials & Equipment to be Craned into Site:

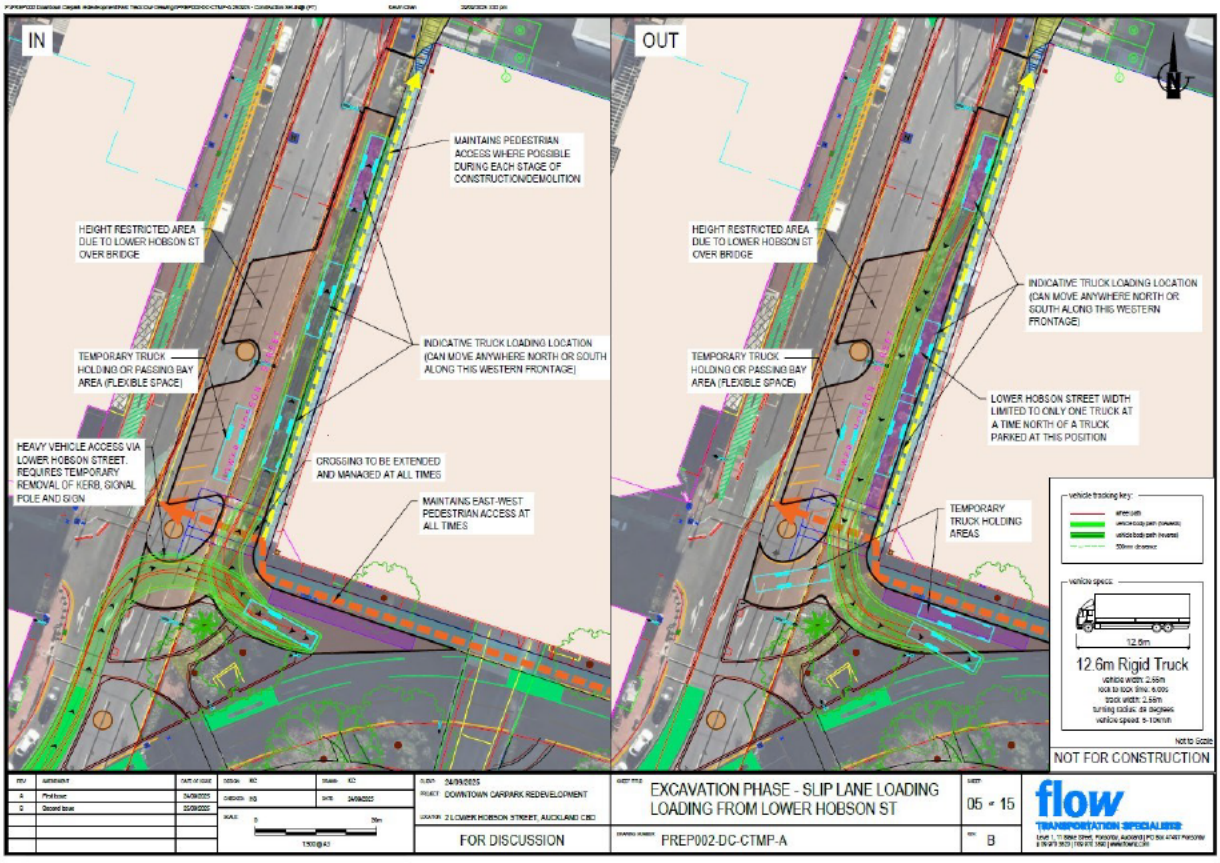


Figure 7: Scenario 3: Construction LB4 – L00 Rigid Truck Loading Zone Custom St West:

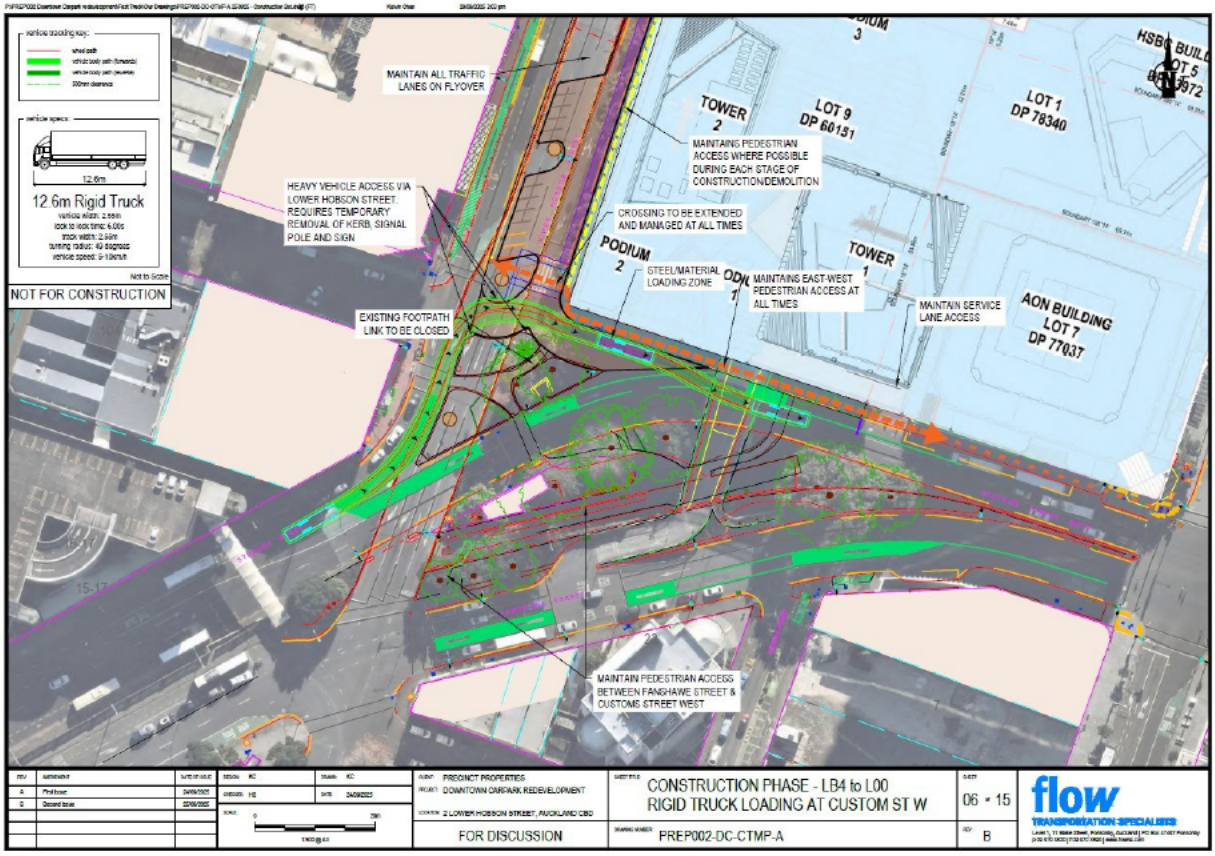


Figure 8: Scenario 3a: Construction LB4 – L00 Rigid Truck Loading Zone Slip Lane Hobson St:

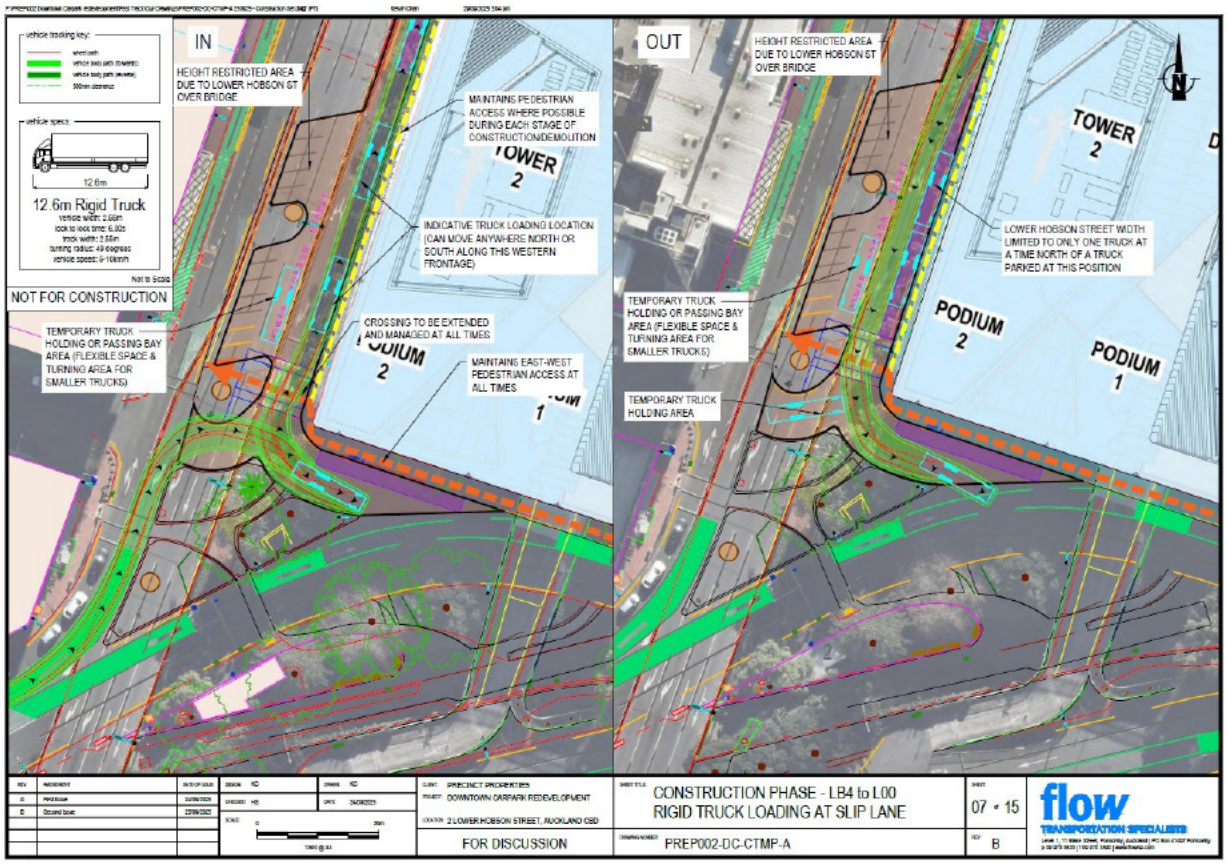


Figure 9: Scenario 3b: Construction LB4 – L00 Semi Trailer Loading Zone Customs St West:

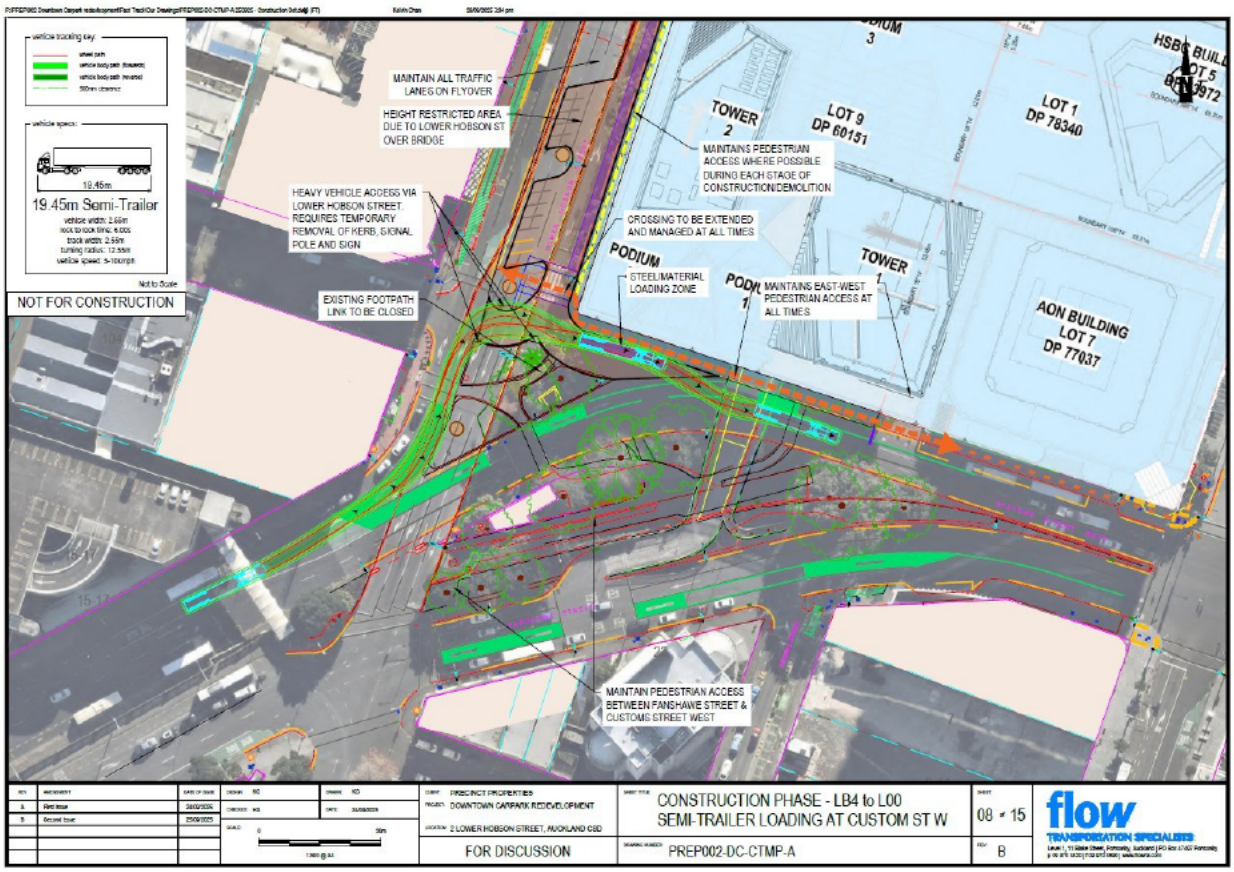


Figure 10: Scenario 3c: Construction LB4 – L00 Semi Trailer Loading Zone Slip Lane Hobson St (Semi Trailer):

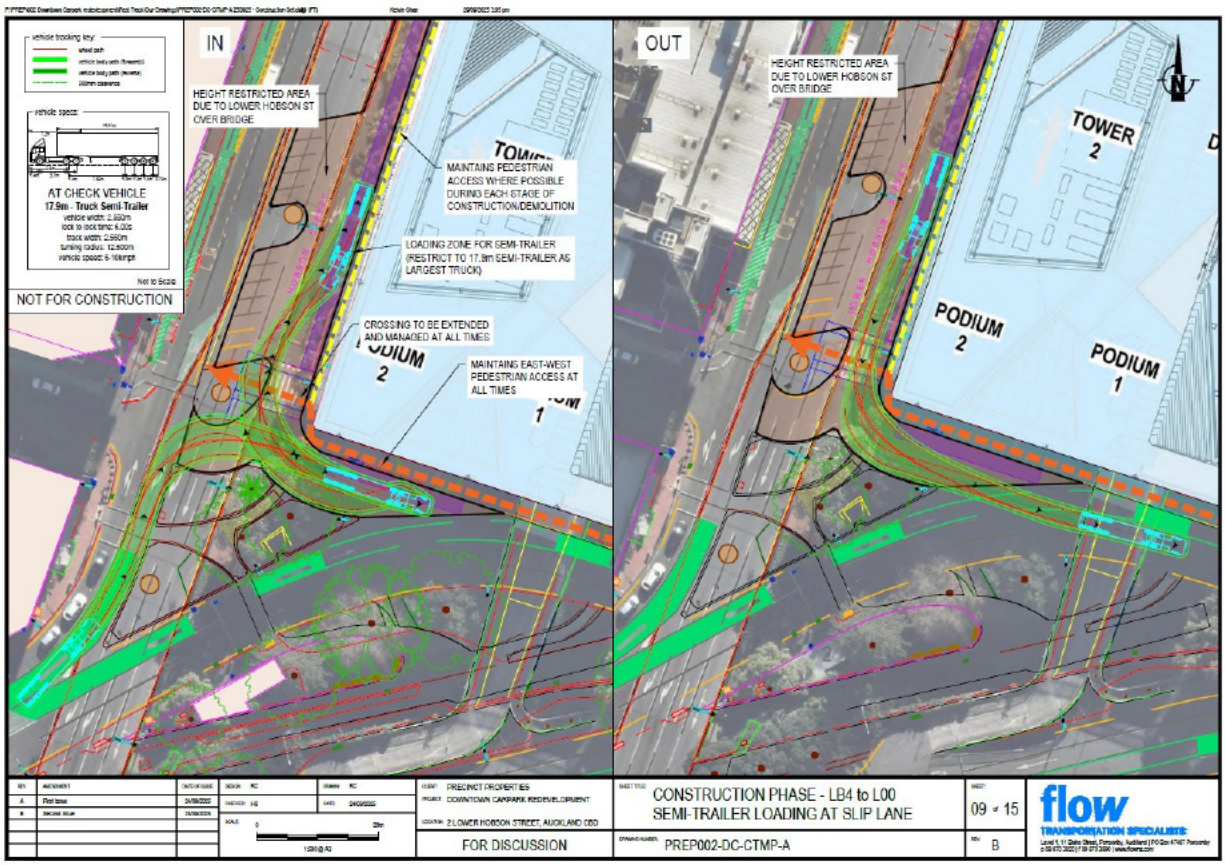


Figure 11: Scenario 4: Construction L00 And Up - Rigid Truck Loading Zone Customs St West:

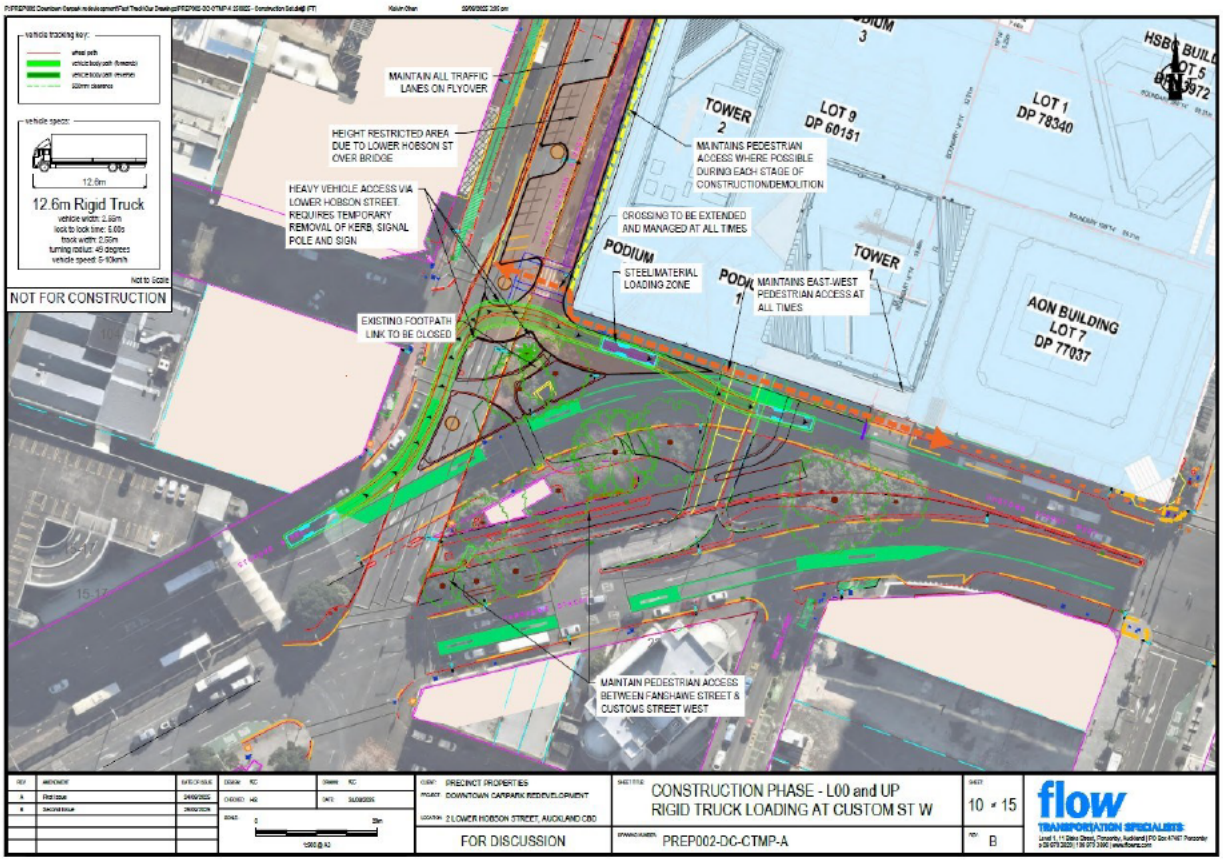


Figure 12: Scenario 4a: Construction L00 And Up - Rigid Truck Loading Zone Slip Lane Hobson St:

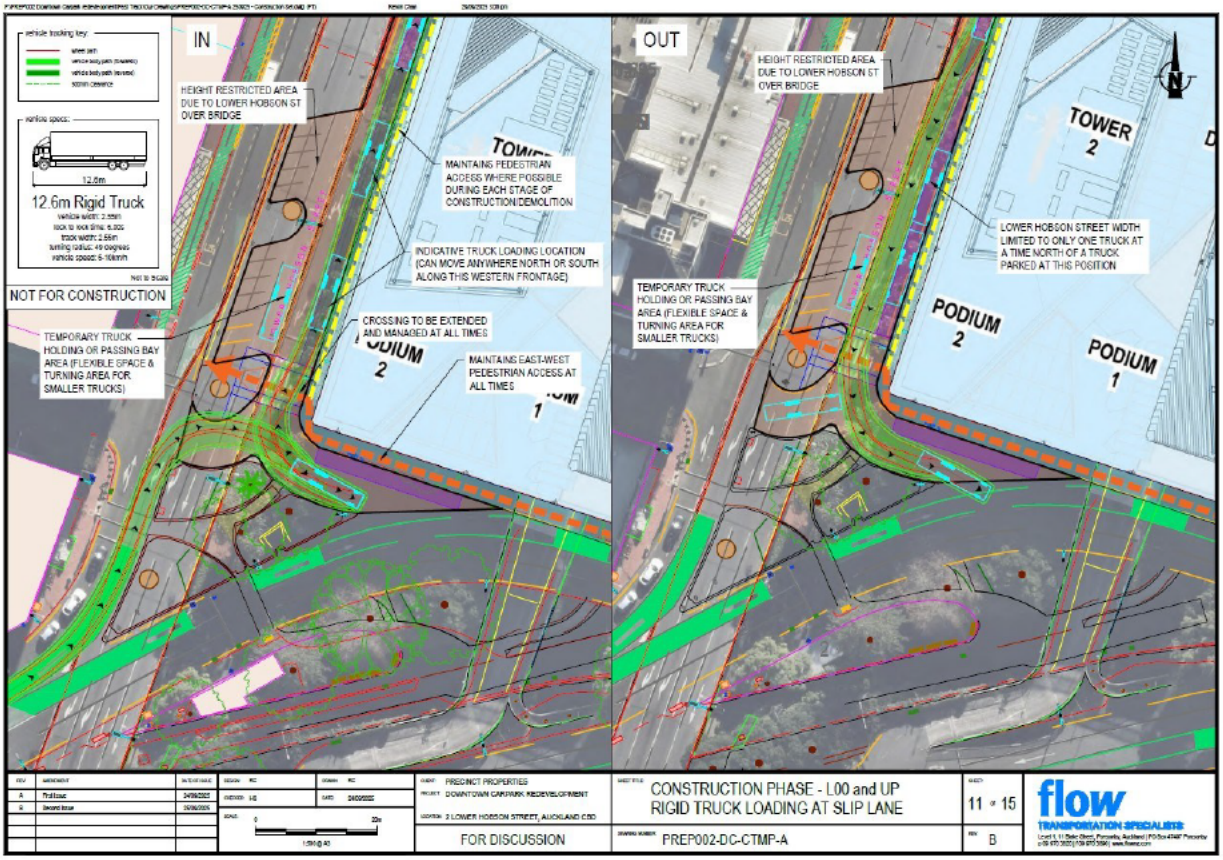


Figure 13: Scenario 4b: Construction L00 And Up – Semi Trailer Loading Zone Customs St West:

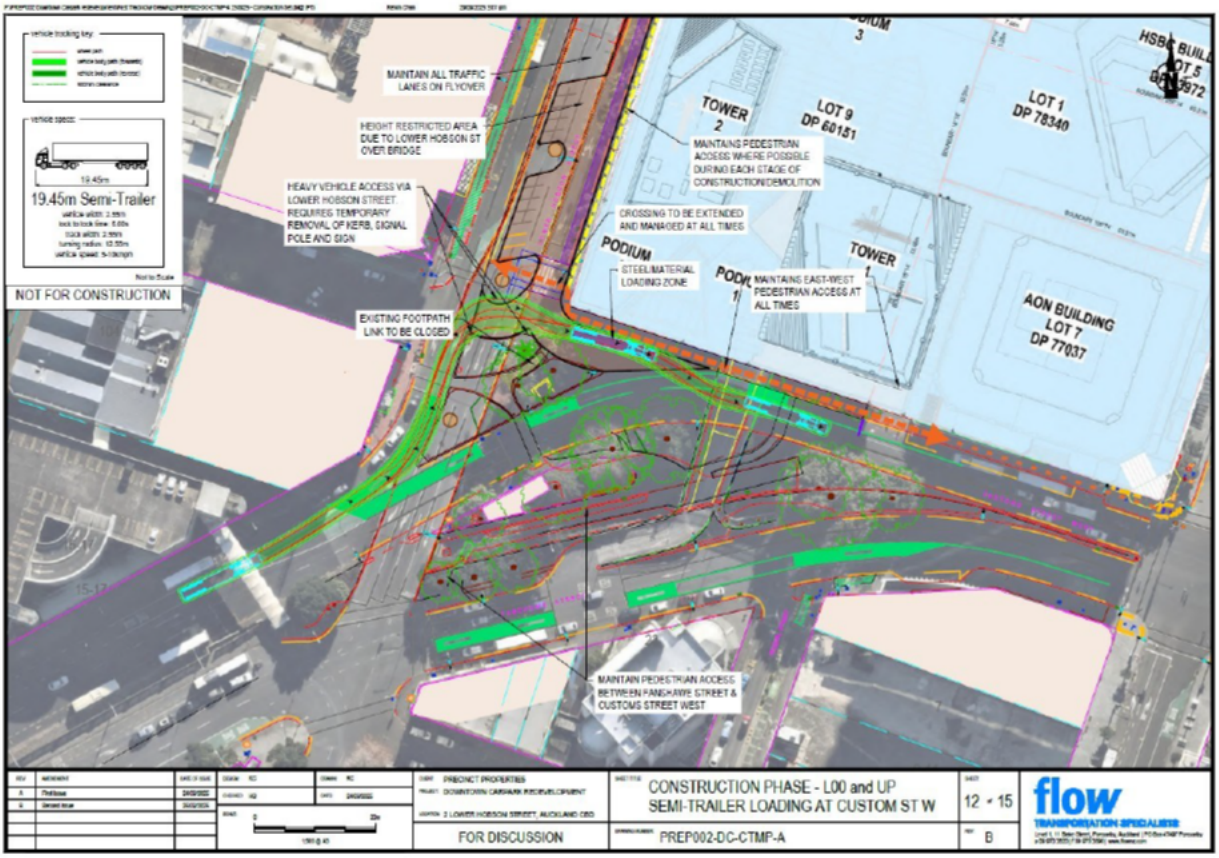


Figure 14: Scenario 4c: Construction L00 And Up – Semi Trailer Loading Zone Slip Lane Hobson St:

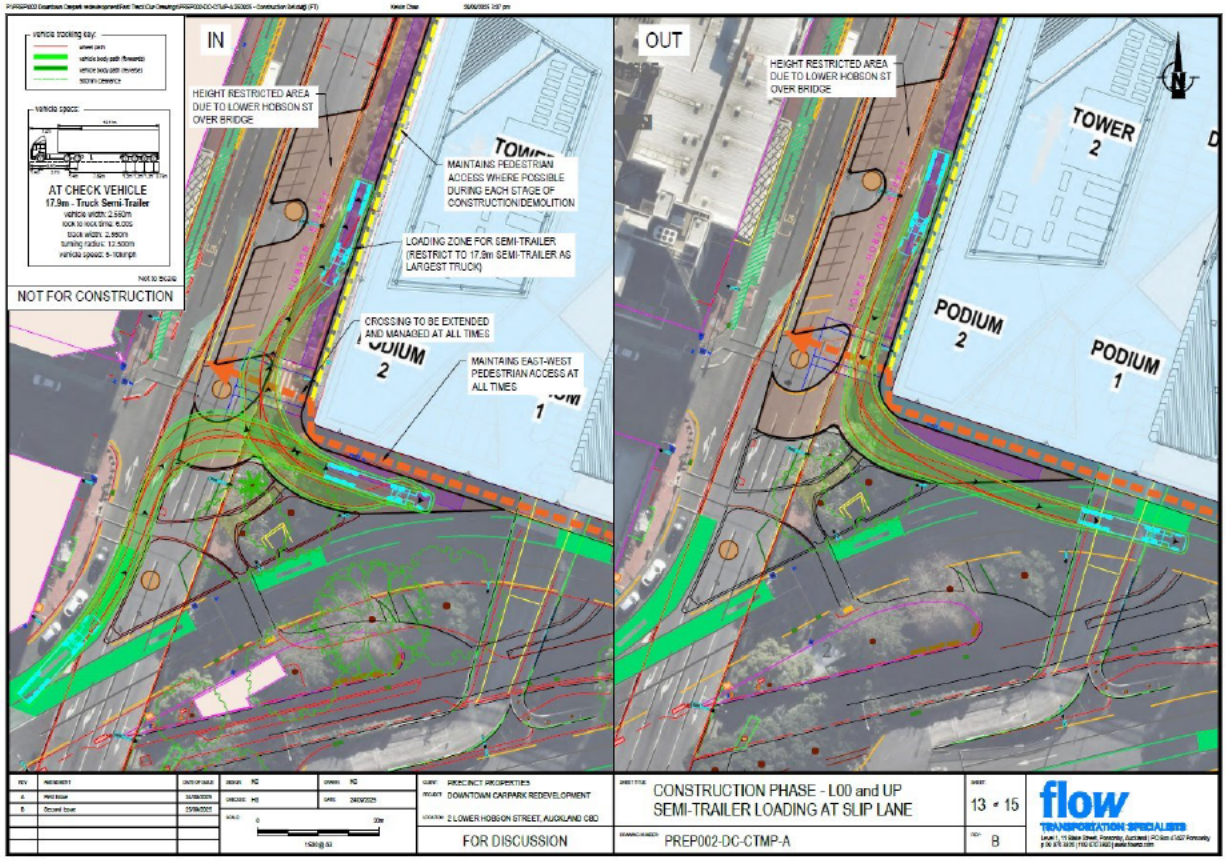


Figure 15: Scenario 5: Construction L00 And Up – Onsite Partial Duration - Rigid Truck:

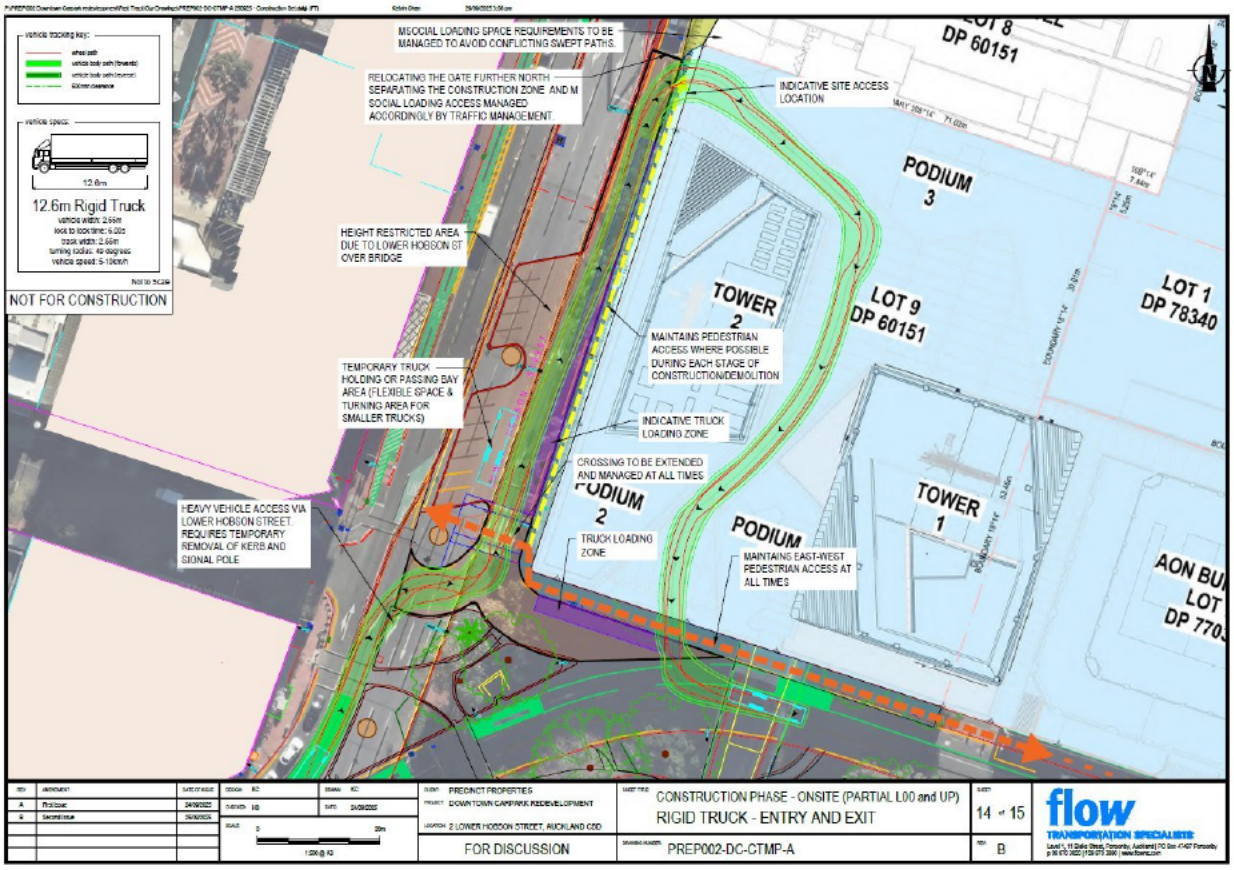
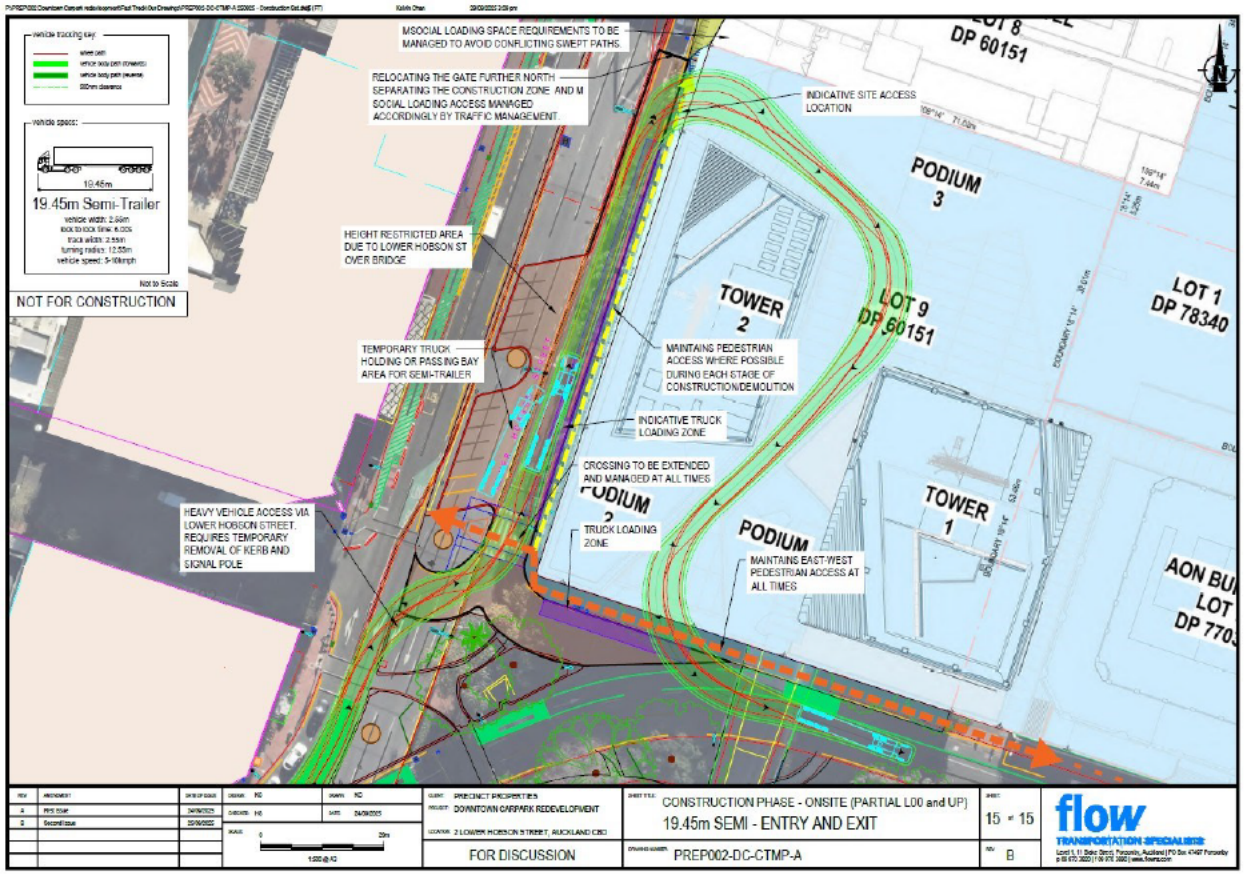
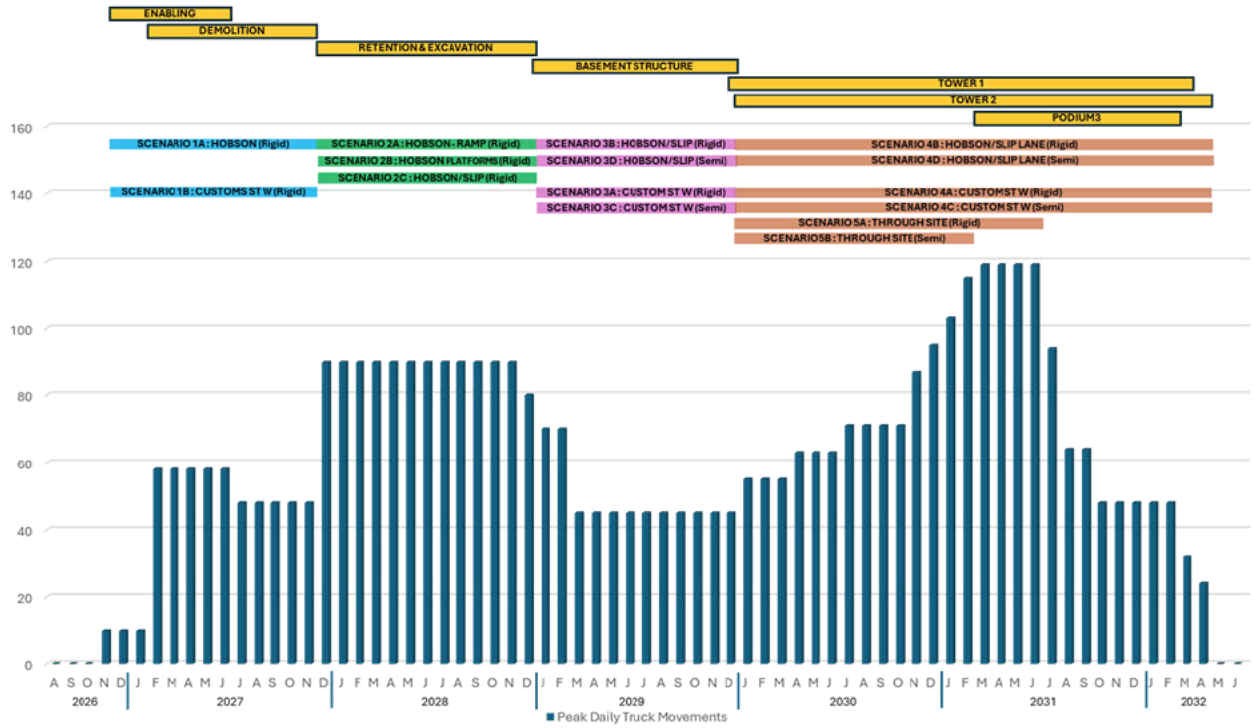


Figure 16: Scenario 5a: Construction L00 And Up – Onsite Partial Duration – Semi Trailer:



The following histogram (Figure 17) represents the peak daily truck movements per month through each phase of the Project and the likely materials deliveries option from the previous pages (1A, 1B, 2 and 3A) that will be utilised throughout the various activities in the programme (noting that this histogram is based on a gross programme):

Figure 17: Peak Truck Movements Histogram:



In addition to the above, other vehicle and personnel site access and works zones include:

- Personnel site access via turn style at corner of Custom Street West & service lane west of Aon Centre.
- Once basement structure is complete and works to Western Service Lane is complete a vehicle site entry and exit via service lane off Customs Street West will become available for small deliveries only.
- Access will also be provided internally to the Northern area of the site with Podium 3 works being delayed to enable additional materials storage areas. This works zone can be potentially established during the excavation works stage of the Project should the top-down support slab be implemented.

3.2.2 Hoardings Overhead Protection and Site Access/Egress Gates

Hoardings will be installed to establish a secure barrier between the construction site and the public and will be positioned along the frontage of Lower Hobson Street, Customs Street West, adjacent areas to the top level of the HSBC carpark, the service laneway between the M Social Hotel and the site as well as the service lane between the Aon Centre and the site. This will assist with demolition overhead loading from construction zones and perimeter edge protection and containment scaffold and screens.

Overhead Protection Gantries will cover the entire width of the aforementioned areas with additional Overhead Protection Gantries established to Customs Street West to cover the entire width of the footpath.

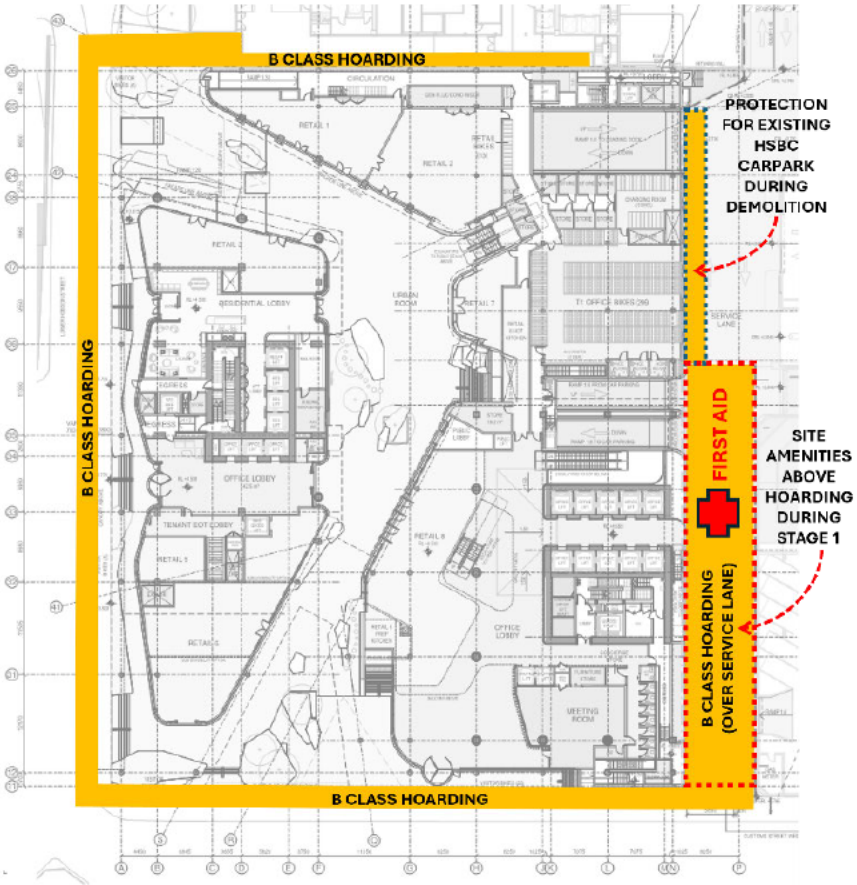
Overhead Protection Gantries will be required around the perimeter of the site during the demolition phase of the works with Fencing Hoardings around the perimeter of the site during diaphragm and sheet pile walls, excavation and final street scape works nearing completion of the Project.

Site vehicle access/egress gates will be located on Lower Hobson Street and Customs St West with these gates managed by ticketed traffic control. Personnel site access will be via turnstile at the corner of Custom Street West and Service Lane West of Aon Centre.

This gate will be managed by swipe card turnstile which will record all movements of personnel to and from site including control of access to allow only site inducted personnel who have satisfied all Occupational Health and Safety and Environment (OHS&E) requirements.

Figure 18 shows the establishment of key hoardings for the demolition, excavation and construction phases of the Project:

Figure 18: Hoarding Plan



3.2.3 M Social Loading Bay Interface

Access to the existing M Social loading zone in the laneway behind the hotel off Lower Hobson Street will be maintained during the construction works.

The diagrams provided following indicate the access arrangements for various vehicle sizes and management interface with construction during the various construction phases

In summary the management of the M Social loading bay will work as follows:

- A boom gate will be installed to allow only M Social delivery vehicles to enter the loading bay and to stop the public vehicles entering.
- An intercom will be installed for the M Social loading vehicles to gain access via hotel staff.
- There is a space for truck/vehicle waiting before the gate to avoid queuing into the flyover lanes.
- A gate will be installed to separate M Social loading vehicles from the construction zone in Hobson St.
- This gate will be managed by the Contractor to be opened as required in the later stages of construction when construction vehicles require access to the L00 slab for internal site deliveries.
- There will be a hoarding and overhead protection gantry installed in this corner of the site and the layout of support columns will be configured so as to not impede M Social loading bay access. Figures 19 - 23 indicate the access arrangements and various vehicle sizes as per the below:
    - M Social Arrangements – Overview - Lane Closure and Accesses *(Figure 19)*.
    - M Social Arrangements - Workable VEHS 8.0m Truck In and Out *(Figure 20)*.
    - M Social Arrangements - Workable VEHS 6.3m Van In and Out *(Figure 21)*.
    - M Social Arrangements - Larger Trucks 10.3m and 8.3m Truck In *(Figure 22)*.

- M Social Arrangements - Larger Trucks 10.3m Truck Exit Via Slip Lane *(Figure 23)*.

The management plan should ensure vehicle access is maintained into the M Social loading bay as follows

- Access into the area is managed by contractors with a gate as outlined above
- Exit manoeuvres occur with a contractor acting as a spotter. Any gates can be closed after a vehicle has exited the loading zone
- Vehicles should be directed to exit onto the Lower Hobson Street flyover where possible, to avoid needing to go through the construction zone. These manoeuvres must occur in a forward direction, to avoid reversing onto live traffic lanes.
- Oversized vehicles will need to be escorted through the construction zone by a contractor (indicatively trucks over 8.3 m in length, to be confirmed in the final plan).
- The vehicle crossing splay and traffic island at the base of the Lower Hobson Street flyover should be modified to provide more manoeuvring space where safe and practical. This will provide greater flexibility for vehicles to exit onto the flyover, instead of needing to be escorted through the construction zone.

Figure 19: M Social Arrangements – Overview - Lane Closure and Accesses:

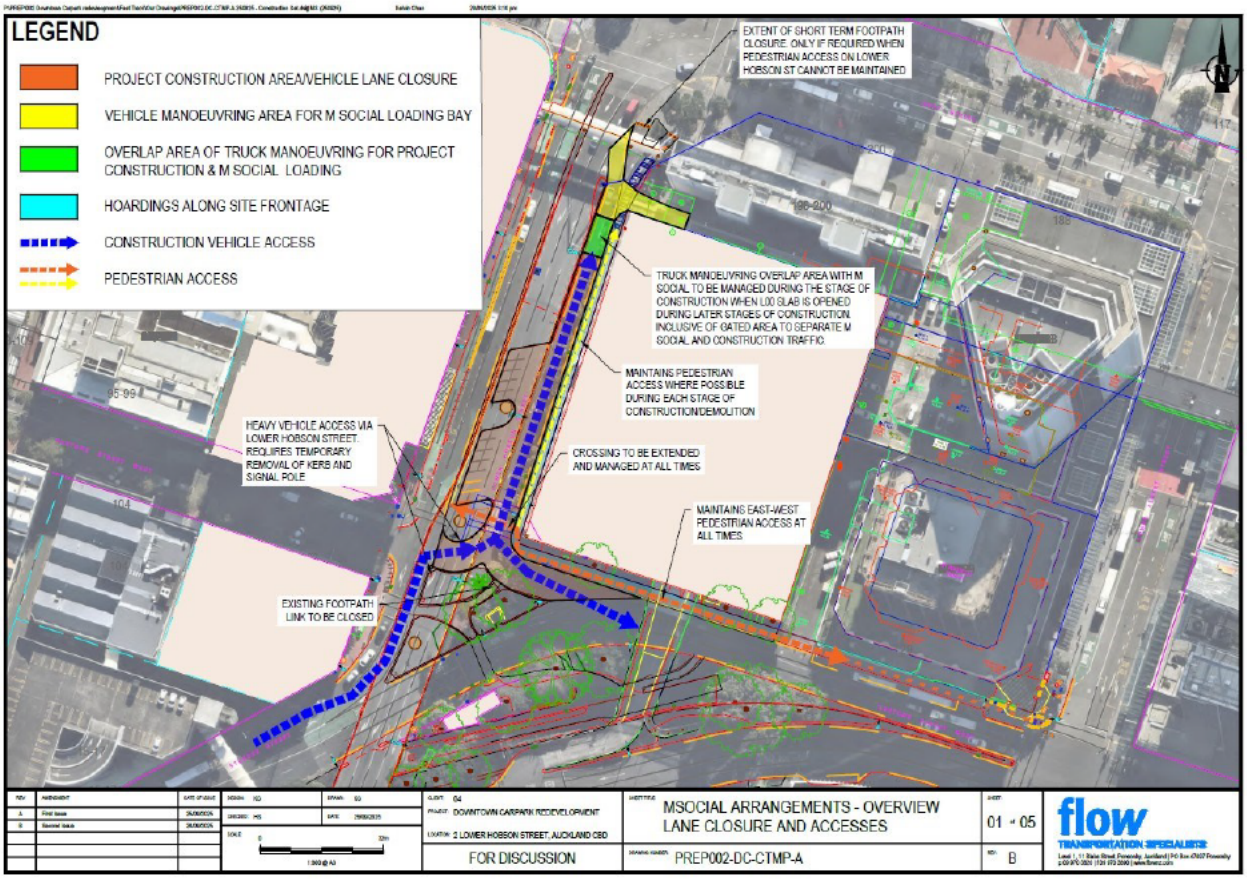


Figure 20: M Social Arrangements - Workable Vehs 8.0m Truck In and Out:

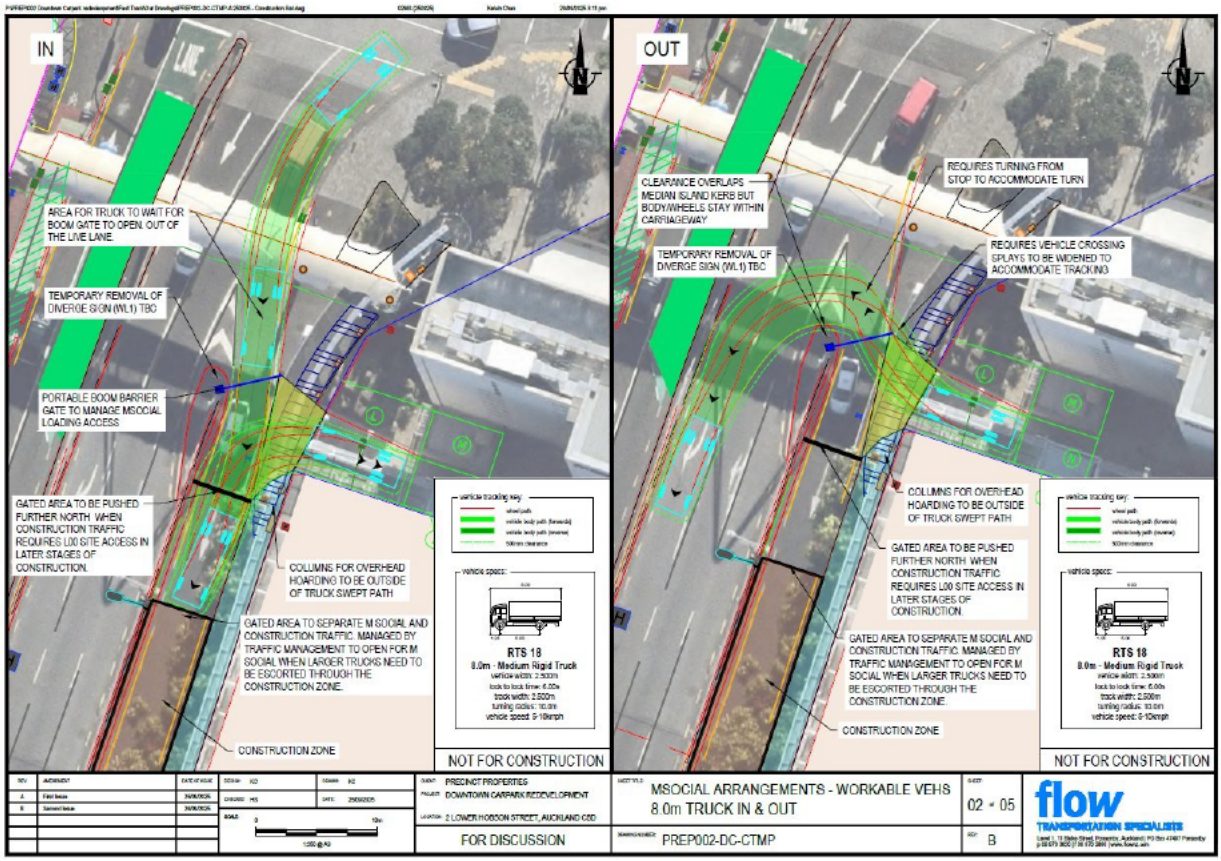


Figure 21: M Social Arrangements - Workable Vehs 6.3m Van In and Out:

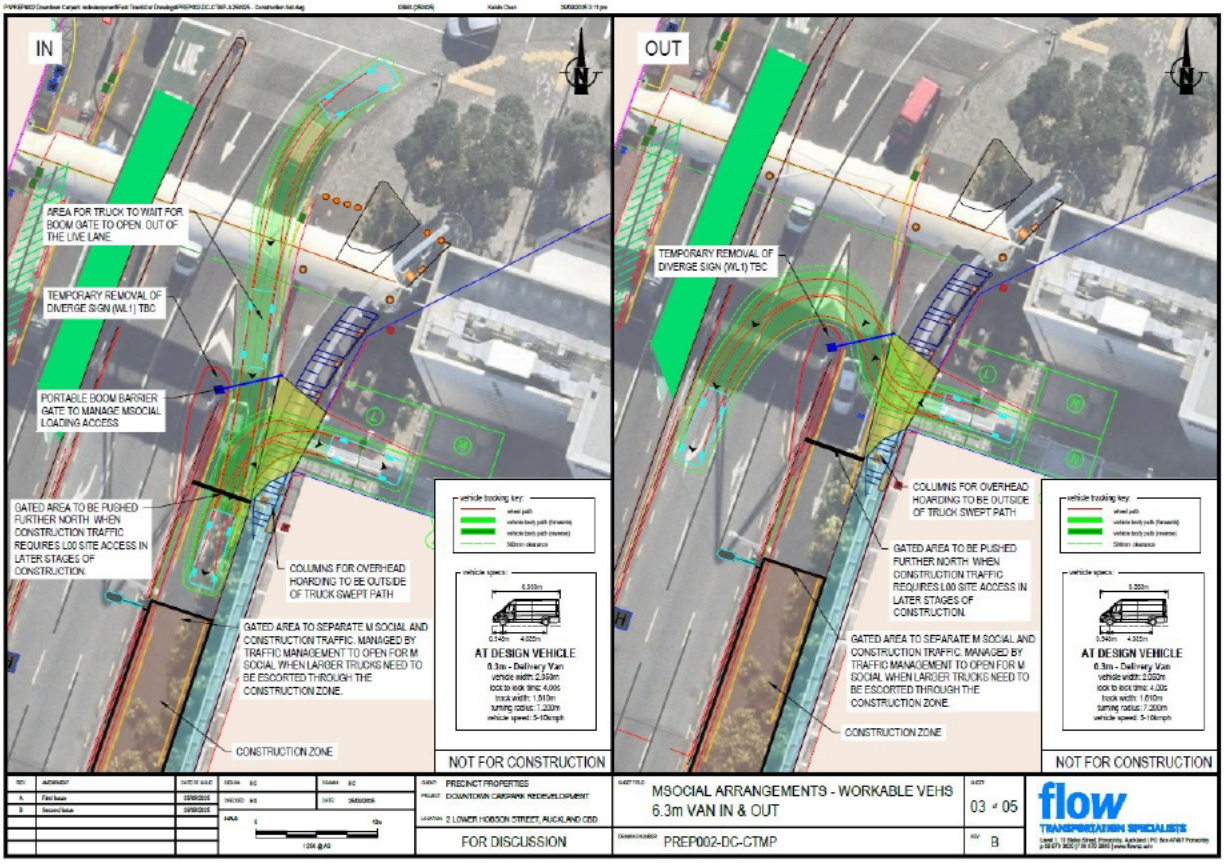


Figure 22: M Social Arrangements - Larger Trucks 10.3m and 8.3m Truck:

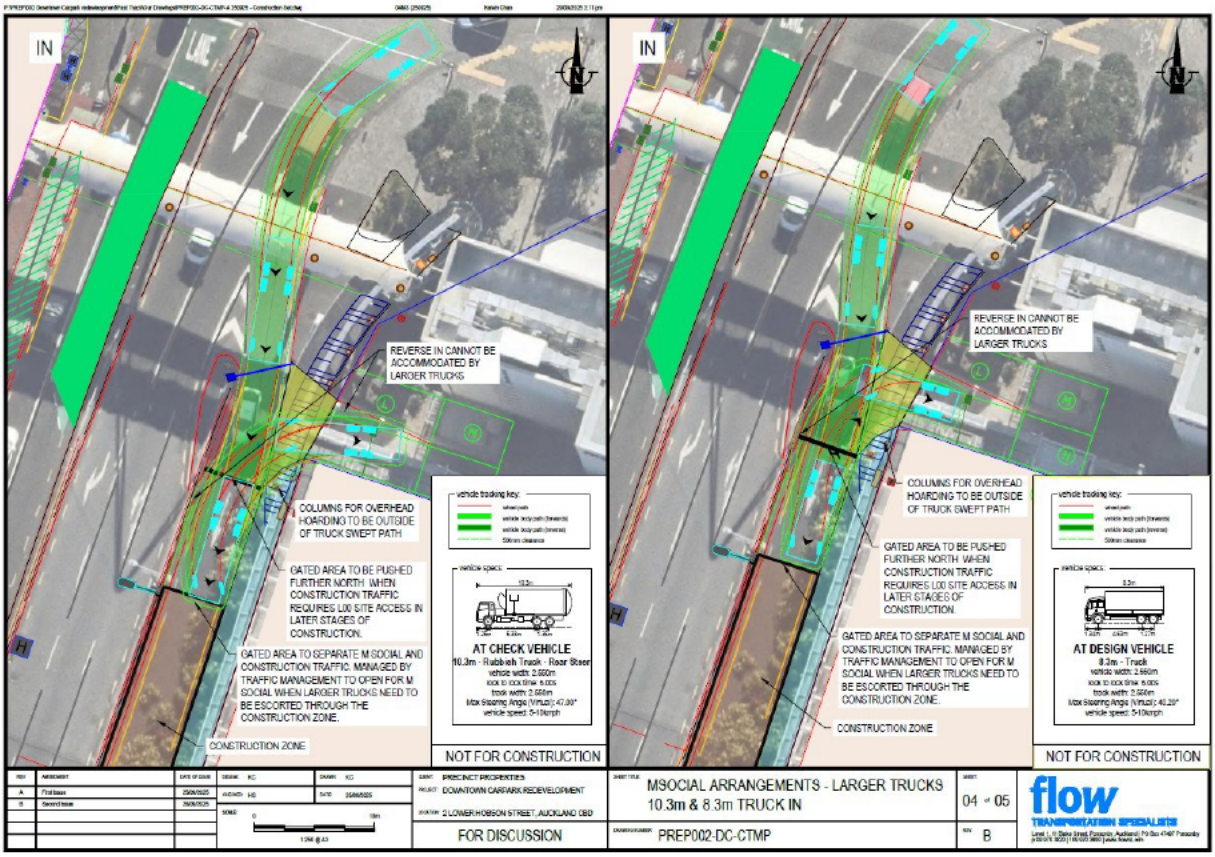
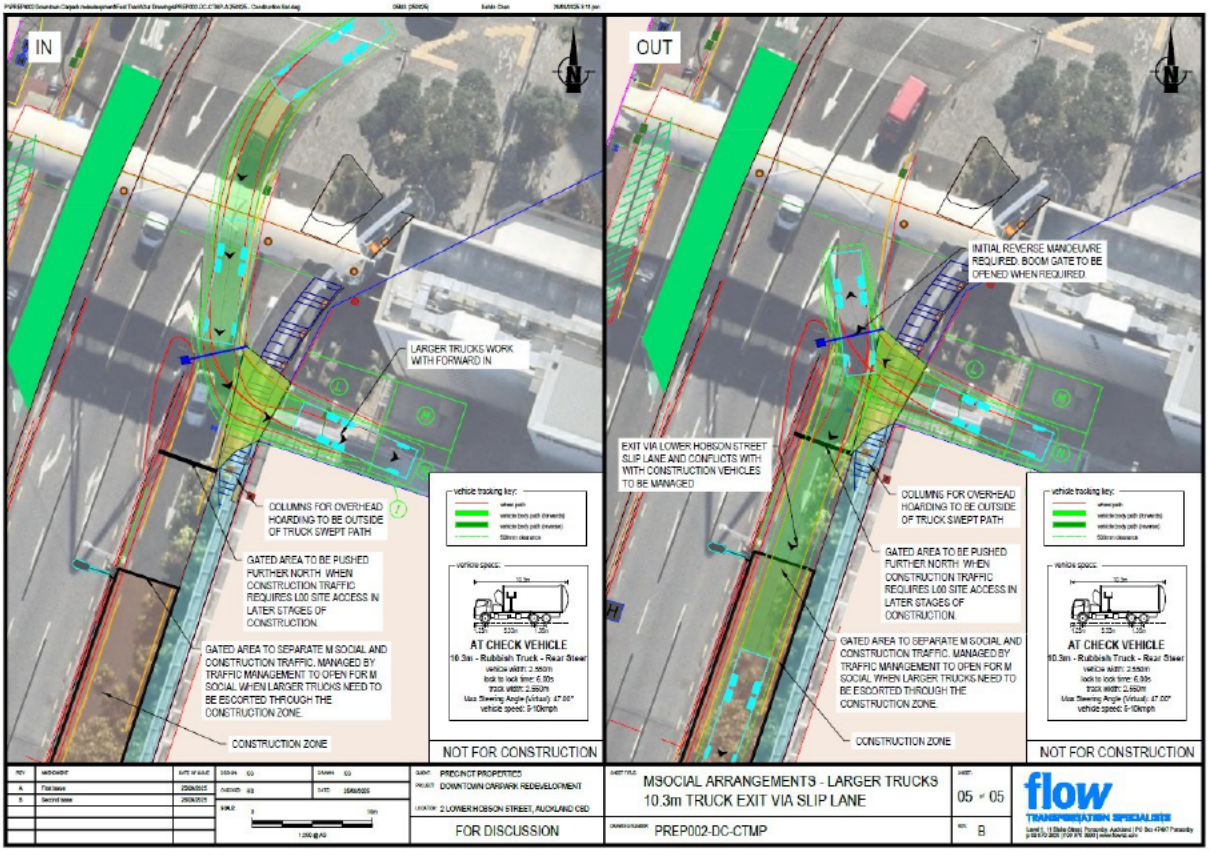


Figure 23: M Social Arrangements - Larger Trucks 10.3m Truck Exit Via Slip Lane:



3.2.4 Scaffold and Screens

For the demolition stage, the entire existing building perimeter will be fully scaffolded.

For the construction stage, the key podium areas being Ground Floor to Level 7 will utilise a scaffold edge protection system. Above the podium levels, a mechanised screen system will be introduced to the Project. The screens will be independently mechanically lifted (self-climbing) to reduce demand on tower cranes.

Where the façade splays inwards a perimeter edge protection system such as Workright will need to be introduced to slab edge.

3.2.5 Cranes and Hoisting

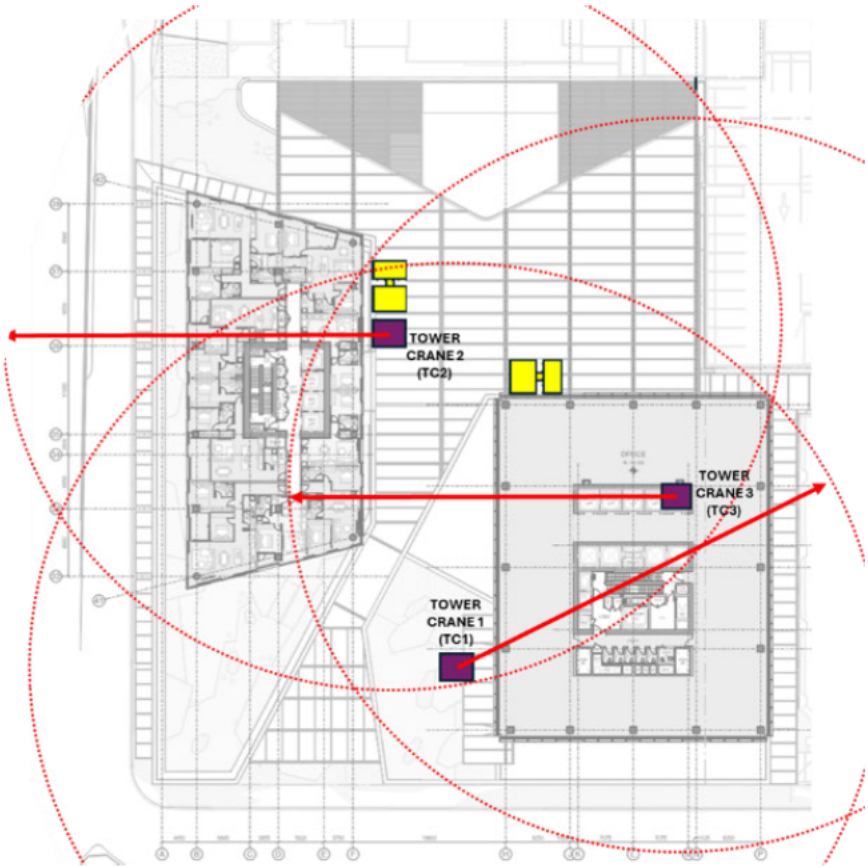
During construction it is assumed three tower cranes will be utilised in order to provide an efficient configuration for both towers being constructed on the site with mobile cranes introduced to supplement cranage as required. These cranes, indicatively selected, are detailed as follows:

- Tower 1 – Luffing Tower Crane on tower sections at grid lines AK, A6.
- Tower 2 – Luffing Tower Crane on tower sections at grid line AD, B4-B5.
- Tower 1 – Luffing Crane within the jumpform to assist with reinforcement loading to the core and additional steel lifts for the T1 structure.

The above cranage selection is based on the following:

- Hook time demands for steel members to T1 and T Beam elements for the basement and the podium buildings.
- The tower cranes for new construction will provide safe and efficient:
    - Erection of new structure.
    - Loading in of new structure façade and finishing materials required within the existing new structure.
    - Trade waste removal via rubbish skips.

Figure 24: Indicative Crane and Hoist Locations:



Man and Materials hoists will be required to service all levels of the new buildings with the above diagram identifying the assumed hoist requirements for the Project being:

- A Man and Material Hoist will also be required to service from the Overhead Gantry Protection over the rear lane off Customs Street West which has site accommodation and first aid facilities into the excavation approx. 6 levels below.
- Man and Material Hoists servicing both towers T1 and T2 could be located in a central zone between Grids B2 and B3, and CD and CF.
- A Large Capacity Hoist has also been assumed in this zone which will assist with loading of façade, joinery carcasses and large stone elements to floors during fitout cycle. A large capacity hoist (5m x 3.5m with a capacity of 5.5T with a speed of 30m/min) may enable the loading of large materials such as façade stillages within the hoist. Coordination of the hoist needs to be considered to enable adequate access from the basement where site accommodation will be situated and also, where smaller deliveries will be made as the Project progresses.
- Man and Materials Hoists will also be required to service the T1 tower jumpform to enable the core to progress ahead of the main working decks.
- Jump lifts have been considered for the vertical movement of manpower, material, defects and final clean during the later part of the finishes cycle. The jump lift's machine room moves up as the building rises with the Core Construction, the hoisting rope lengthens as the machine room moves to higher floors. The jump lift can be used before the permanent elevator shaft is built to its full height. Jump lifts also allow for façade in hoist zones to be installed earlier when Jump lift is servicing a particular level and gives the provision for after-hours materials handling including rubbish removal to floors serviced by the Jump lifts
- A formwork hoist for Tower 2 has also been considered to assist with relocation of stripped formwork to the leading deck.

Retractable loading platforms will then be installed on each floor sequentially from bottom up for the loading of materials, plant and equipment to each level. These will be located on the Southern elevation of Tower 1 and the Southern elevation of Tower 2 to assist with crane access. These retractable loading platforms will be removed as façade works progress up the building.

The façade loading platform penetration should be located from living area to living area rather than through wet areas or kitchens to ensure critical path activities are not compromised.

3.2.6 Site Office and Other Requirements

In order to complete the construction works it is necessary to provide site amenities for the workers that include lunch, change, ablution, first aid and wash down facilities.

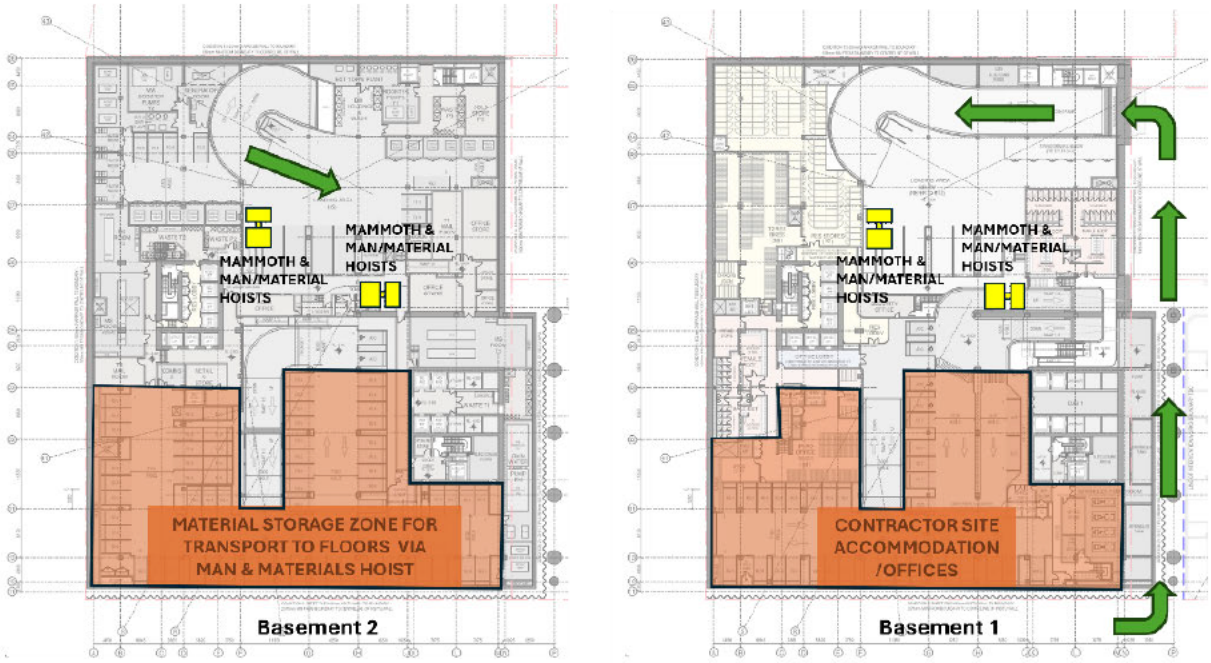
Various possibilities exist for accommodating Project personnel and include:

- On the Overhead Protection Gantry during the demolition and excavation process.
- Within the new basements and podium structures once these are completed.
- Site Office accommodation offsite, but close to site.

The following are to be determined:

- Measures to be adopted to maintain the site in a tidy condition (disposal/ storage of rubbish).
- Location and services of workers' conveniences (portaloos) and transport and parking arrangements.
- Site plan showing material/ plant/ machinery storage areas and loading / unloading zones,
- Measures to ensure that to the extent practicable, construction activities are managed taking into account other construction activities occurring in the vicinity at the same time.

Figure 25: Possible Site Accommodation Zones (and General Access to Basements):



3.2.7 Pre Demolition Works

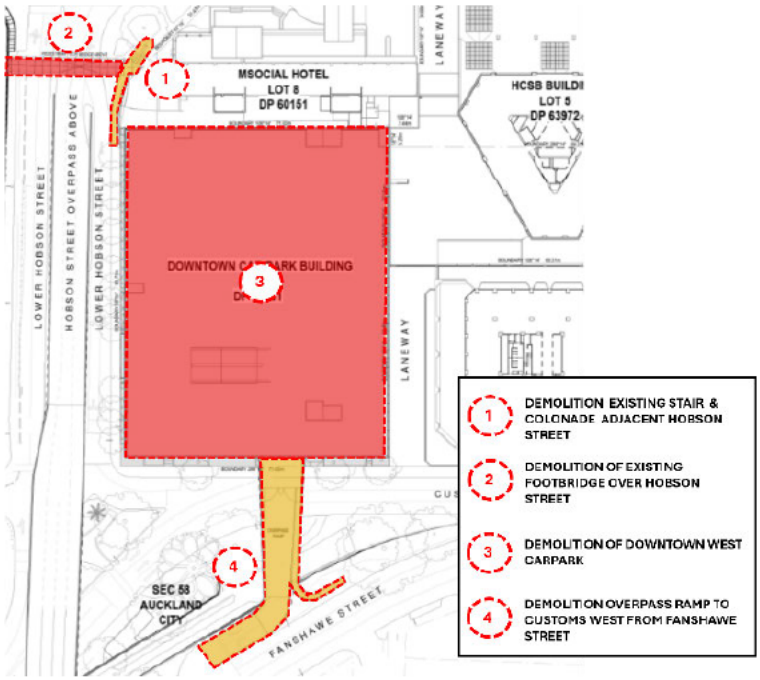
Prior to the commencement of demolition works, there are a series of critical enabling works which must be undertaken. The scope of enabling works is detailed as follows:

- Provision of an incoming power supply solution for both Aon and HSBC.
- Installation of a new fire egress route for Aon, ensuring safe evacuation during the construction period.
- Management of all affected building services, including the necessary relocation or protection of services as required.
- Execution of dilapidation and asbestos surveys on the existing car park infrastructure to establish baseline conditions.

3.2.8 Demolition

The scope of the Project requires that the construction methodology reflect a logical demolition/ construction process that is capable of being expedited in an efficient and safe manner.

Figure 26: Areas of Site Demolition Required:



This will require the building to be scaffolded on all available elevations and appropriate shade cloth enclosure to be undertaken prior to any hard demolition works. An additional layer of acoustic enclosure will be provided to assist with reducing disruption to adjacent neighbours where possible.

Following termination of redundant services and make safe works, internal soft demolition strip out will be progressively undertaken from top down after all hazardous materials are removed and clearance certification from hygienist issued.

Concurrently with the floors being cleared and made safe, the following areas of works will be undertaken:

- Areas of the works will be accelerated to create drop shafts for the dropping of demolition materials; and
- Structural augmentation works will be undertaken at Ground Floor and Level 1 to enable access for machinery to "muck" and sort the demolition materials and enable loading of the spoil into vehicles within the site boundary. To enable trucks to enter and exit site from Lower Hobson Street in a forward motion, an early demolition of truck path and load out area of suspended slab above ground floor may be required.

Following the above, the existing structure will then be demolished commencing at the top floor and proceeding down the building floor by floor with the following sequence of works:

- Mobile crane to lift excavators and skid steers onto roof of the carpark, noting that it is not foreseen that a tower crane will be required for the demolition phase of works.
- Slab structure to be mechanically demolished commencing from the South and working towards the North before the machines walk themselves down to the floor below and commence cutting and processing the structural steel framework (for the top two floors).
- Skid steer (bobcats to be used to progressively clear the demolished rubble from the floor and transfer the rubble to the designated drop-zones).
- Upon clearing the demolition debris, excavators to demolish columns and re-commence slab demolition and repeat the process.

The expected approach to demolish the existing structure will be to create a number of sequential work faces primarily for efficiency and safety purposes.

A Site-Specific Waste Plan shall be developed once a contractor is appointed in alignment with waste minimisaton objectives. This shall include an analysis of all materials on-site and salvage processes for all valuable and reusable items where appropriate.

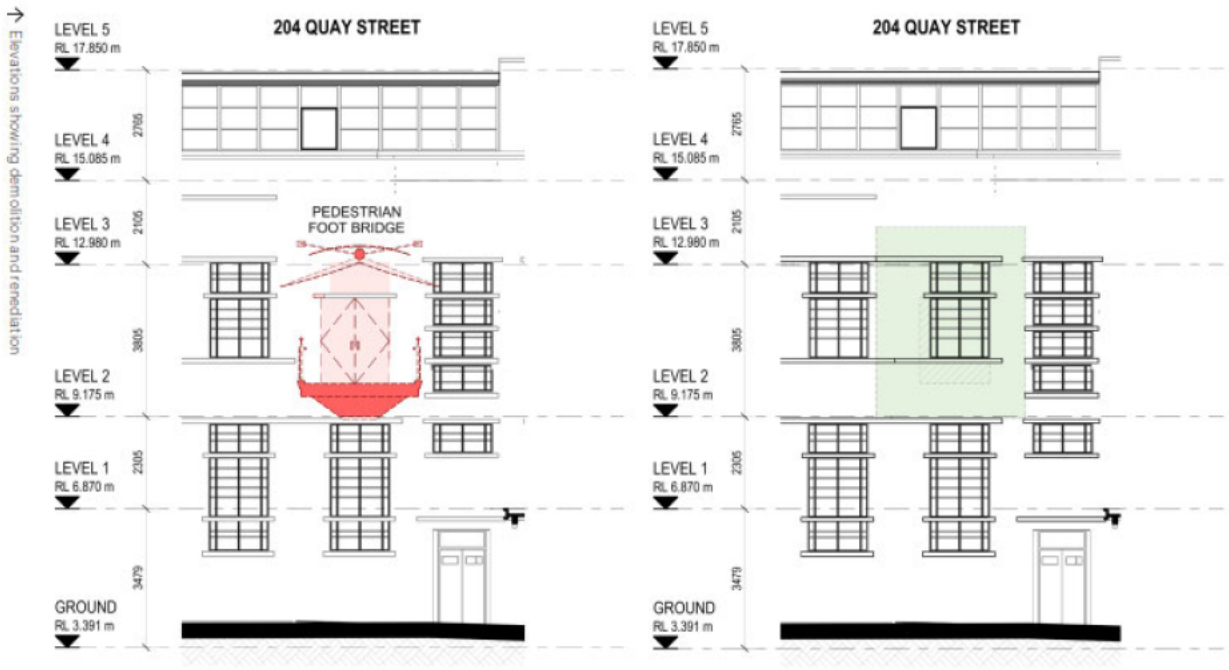
In addition to the main area of demolition works, the following scope of works for demolition has also been included for:

- Demolition of existing pedestrian footbridge over Lower Hobson Street which is sequenced to be undertaken prior to the commencement of the main carpark demolition works. This may require temporary engineering to be implemented dependant on further detailed investigations of the bridge structure:

Figure 27: Pedestrian Bridge Support Structure System:

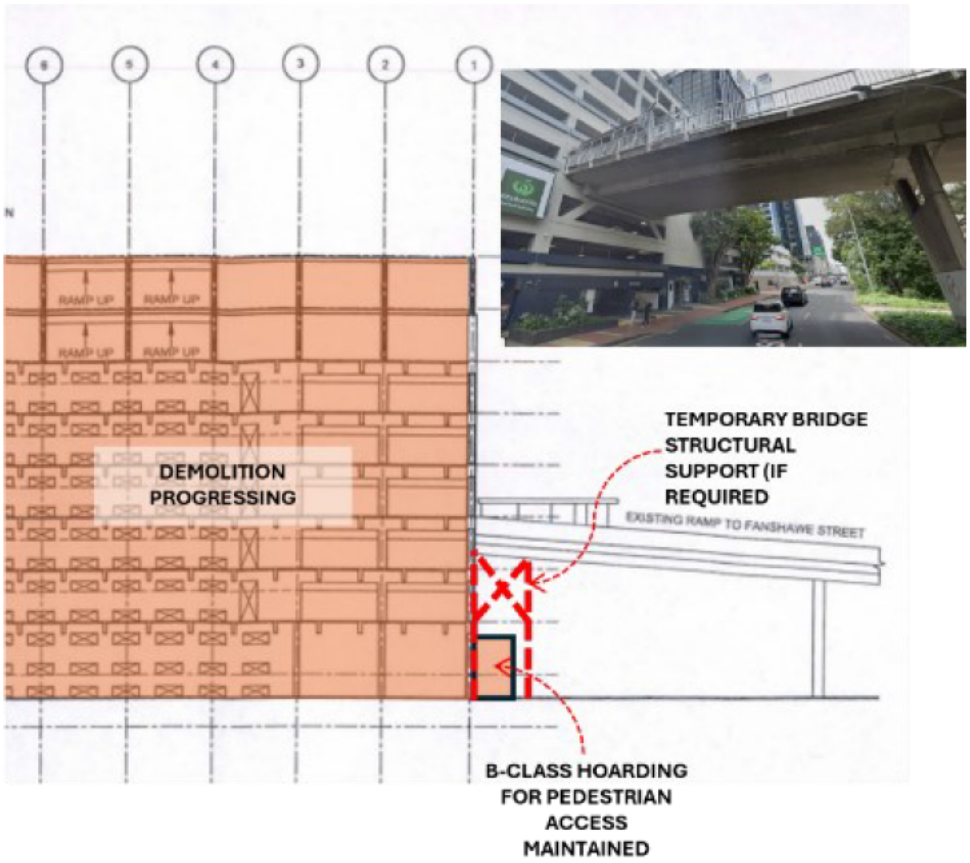
- Remedial works to 204 Quay Street façade where the pedestrian foot bridge over Lower Hobson Street connects. The remedial methodology is summarised as follows and illustrated in the figure following:
    - Demolish existing footbridge and any fixings relating to this from existing facade – as noted above.
    - Demolish existing glass doors including any egress controls.
    - Demolish overlight infill above existing concrete ledge and make good to sill profile and opening to accept new window.
    - Infill opening to lower sill height, create new sill and opening to accept new window and finish to match existing wall (to be defined in future scope of work).
    - Reinstate decorative plasterwork freeze and concrete window head to match existing.
    - Install new steel window and overlight to match existing.

Figure 28: Make Good Works to 204 Quay Street Façade:



- Demolition of the vehicle ramp connecting to Customs Street West which is to be coordinated to occur as required prior to the progress of demolition of the main carpark being impacted. This may require temporary engineering to be implemented dependant on further detailed investigations of the bridge structure. This temporary engineering may require interim structural steel supports to be installed to allow for the coordinated timing of the demolition of the bridge during specific road network downtimes.

Figure 29: Bridge Support Structure System



Indicative demolition staging plans for both the structural steel and concrete are shown in Figures 30 and 31 highlighting the drop zones to be created and the Truck Movement plan:

Figure 30: Indicative Demolition Plan:

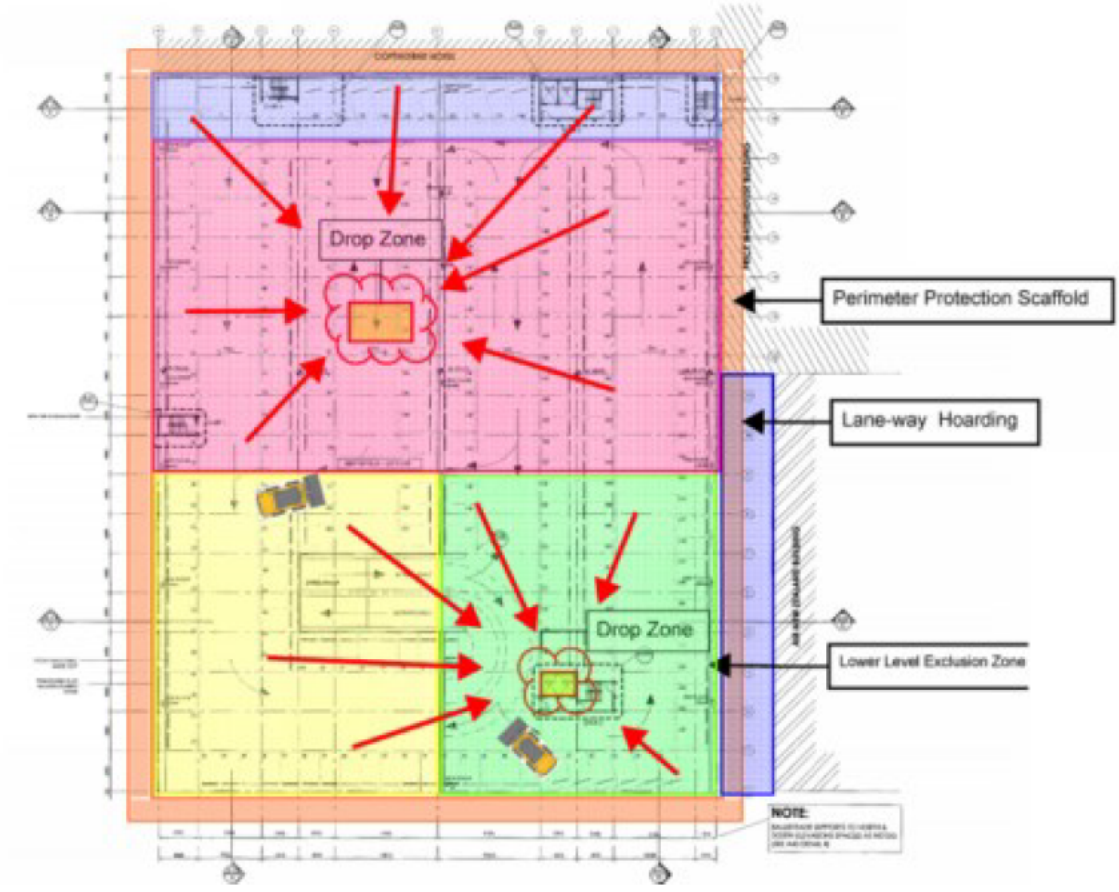
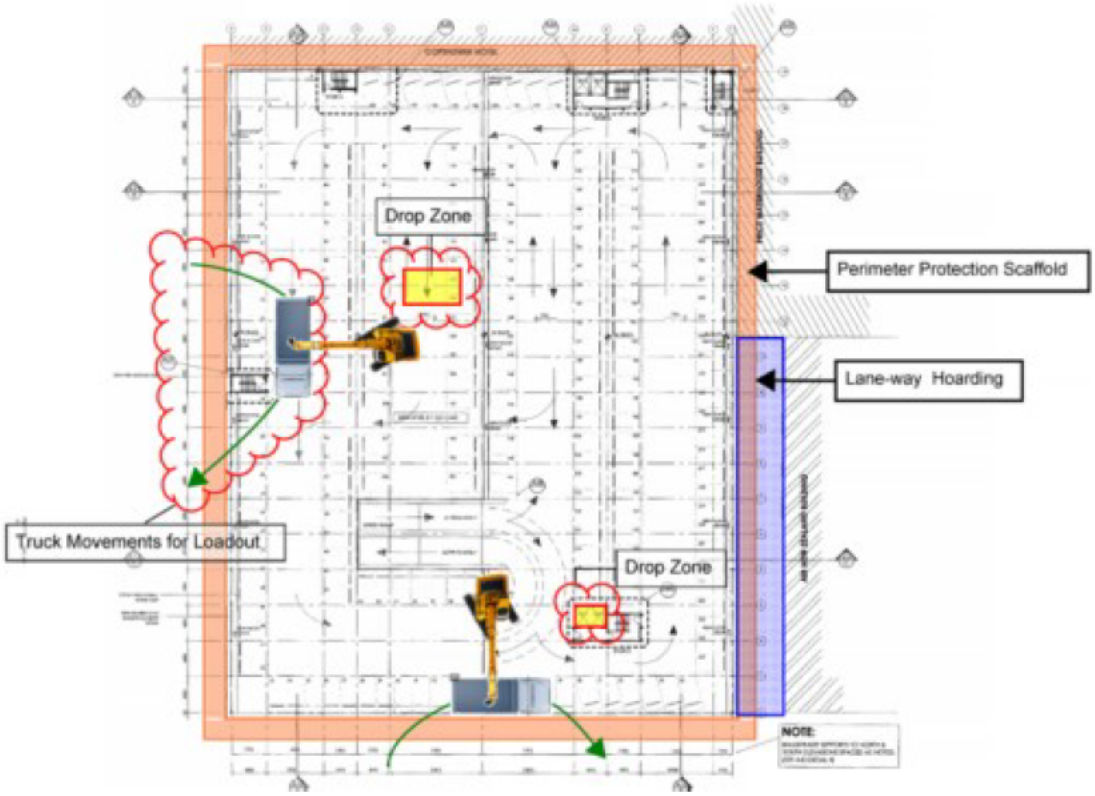


Figure 31: Indicative Demolition Plan:



3.2.9 Perimeter Retention

Once demolition is completed to the existing carpark levels and suitable access is provided for personnel and equipment, diaphragm and sheet piling to perimeter walls will commence to the new basement levels.

Prior to the commencement of the diaphragm wall works, a bentonite plant must be established on site for the excavation works process.

Whilst the plant is being established, the intent is to progress ahead of the proposed diaphragm wall sequence to “over bore” the existing piles which may clash with the new perimeter boundary works to the North and West.

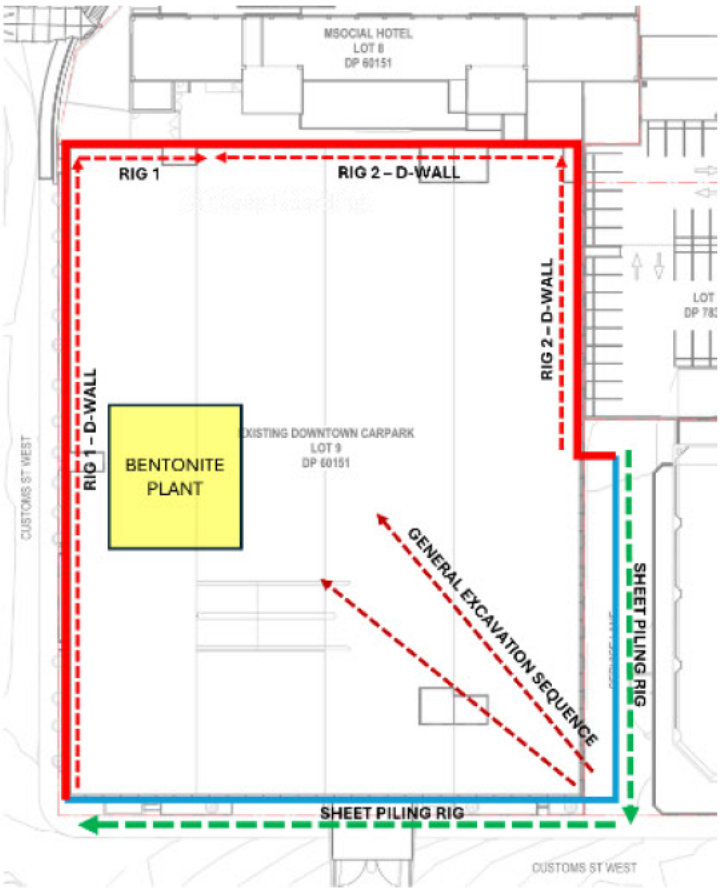
It is noted that these works can be completed off critical path and ahead of the D-Wall construction.

The sequence of works to be undertaken will be to establish 2 rigs for the diaphragm wall works, commencing the first rig for the diaphragm wall from the Eastern side of the site and the second rig from the South West corner of the site. These will then progress to the North and meet near the North West corner of the site. Coordination of the diaphragm walls to the Eastern section of the site needs to be coordinated with the HSBC structure as this may require a level of temporary engineering to ensure structural stability remains to the adjacent building.

Concurrently with these works, the sheet piling works will be undertaken along the Eastern and Southern boundaries.

This sequence is shown in Figure 32 below.

Figure 32: Piling and Excavation Sequencing:



Once the perimeter wall retention is complete, truck load out of excavation material can commence at the Southern end of the site. It is noted that given the current projected level of water ingress onsite, the top 2m of the required excavation can commence prior to the completion of the perimeter boundary wall.

Due to the size of the site, the main method of excavation will be via rock ripping machinery and excavators to load out spoil. Only where required due to site constraints, excavator-mounted rock saws and hammers will be used to break up the material, which is difficult to access, including buried obstructions. All excavation spoil will be placed in trucks and loaded out of the site via ramps and/or long arm load out machinery. Removal of spoil will take place via Lower Hobson Street and required rock anchors will occur as excavation progresses. Dewatering measures will be required to be implemented as excavation progresses. Further investigation regarding the extent of dewatering requirements will be addressed in the final CMP following appointment of the main contractor.

A ramp will be maintained adjacent the Western boundary to enable machinery access into the excavation. The ramp will then be removed in a staged manner with long arm excavation used to lift out the spoil.

3.2.10 Structure

The following section of the report outlines the key structure elements of the works. It is noted that the first element of works which must be undertaken once the excavation is completed is the establishment of a Tower Crane in order to effectively service the materials requirements for the basement.

Piling

The basement 4 Level includes for a series of 2.4m diameter piles below the core rafts, 1.2m piles at the column grid and 600mm tension piles off the column grid. The following sequence of works has been assumed:

- Establish rig for 2.4m piling works and then undertake the Tower 1 core raft piling works (this enables commencement of the Tower 1 core raft Hydrostatic Slab) followed by the Tower 2 core raft piling works.
- Concurrently with the above piling works, establish a 1.2m piling rig for the column grid piling and when complete, undertake the 600mm piles.

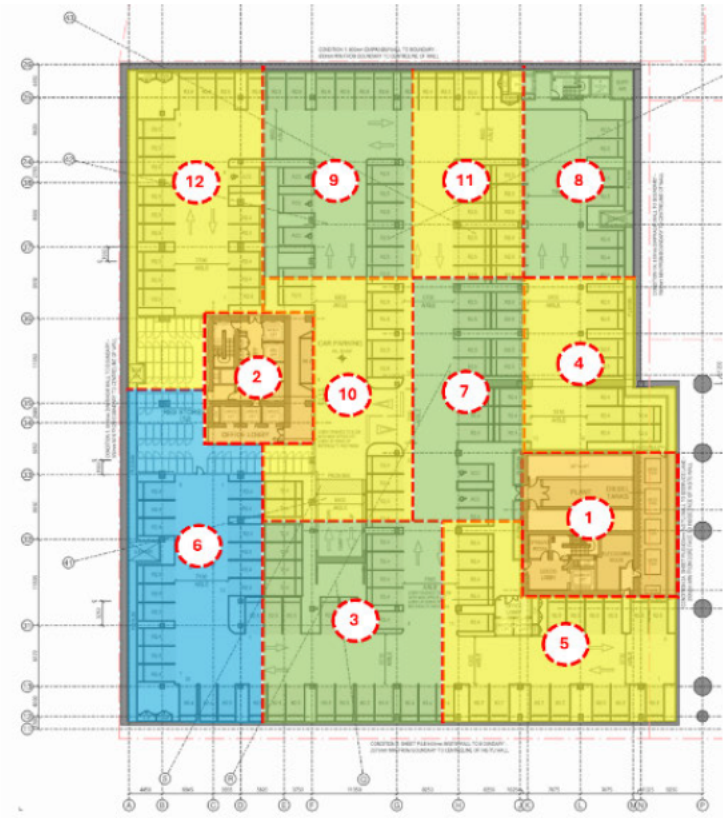
Hydrostatic Slabs (Including Core Rafts)

As piling works progress, the sequence of works is to establish the Tower 1 core raft and then undertake the Tower 2 core raft. This enables the critical area of the tower cores to progress.

As piling works progress to the remainder of the site, this will enable inground services to progress. This will be followed by a 100mm topping slab and a waterproof detail which will enable the Basement 4 Hydrostatic Slabs to progress, noting that these are designed as 900mm thick slabs.

The following sequence has been established to outline the Basement 4 Hydrostatic Slab works (noting these are in the order of 480-500m^3 pours).

Figure 33: Hydrostatic Slab Sequencing:



Cores

The core has a large plan area and with the structural lateral restraint design dealing with the tall building height plus the significant wind effects comes increased wall thicknesses.

The intent with constructing the Tower 1 and Tower 2 core raft slabs first is this enable the erection of the mechanised jumpform systems to be established as early as possible and progress to remove the dependency on the coordination with the core works and tie in slabs.

Accordingly, the intention is to sequence the Tower 1 core and the Tower 2 core works immediately after the core raft is complete, followed by the lift kickers and jumpform establishment.

Basement Slabs

The basement slabs are then to progress across the entirety of the site noting that these works are currently designed as precast T-Beam planks and a topping slab supported by insitu columns.

The slabs from B4 to Ground Floor are across the entire area of the site with voids for ramps and the loading dock area.

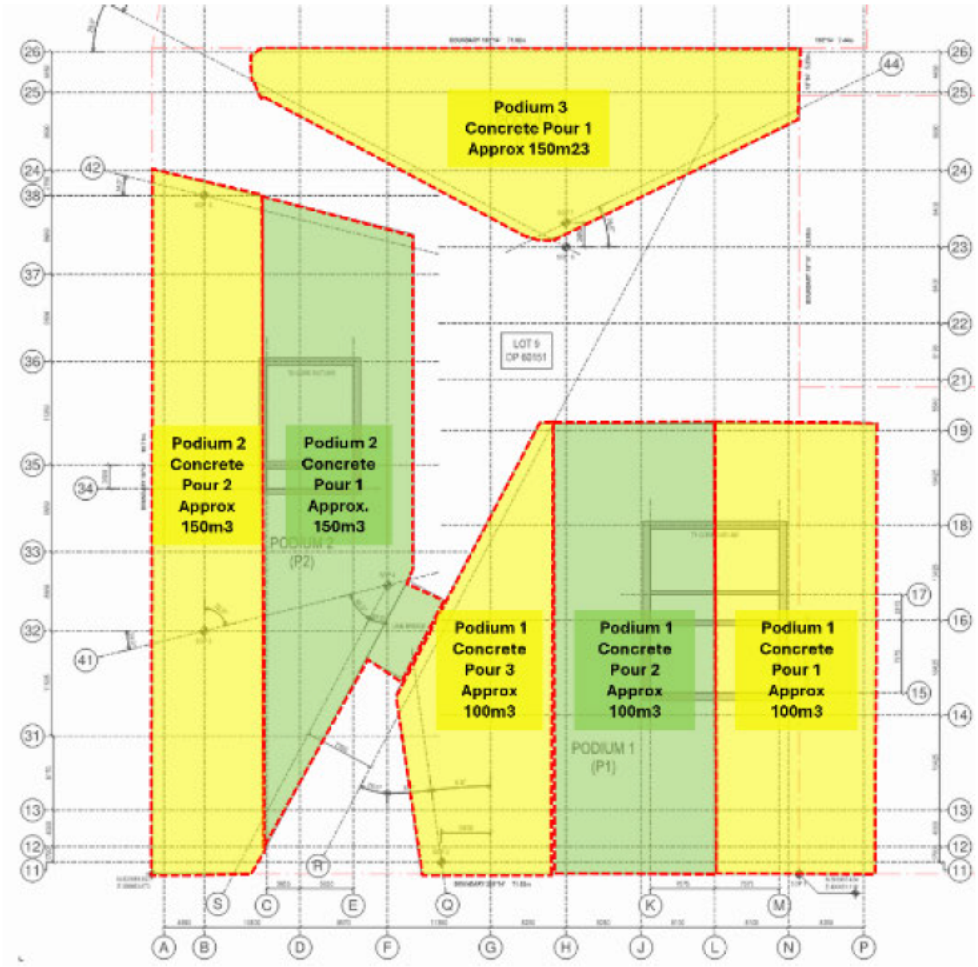
Podium Slabs

The podium slabs will then progress following the completion of the ground floor slab. At this stage, Podium 3 works have been delayed in order to utilise this area as a laydown space for the remainder of the works.

The construction method through the Podium 1 area is steel columns with T-Beams whilst the Podium 2 area is insitu concrete with T-Beams.

The following diagram details the proposed pour areas for these works:

Figure 34: Podium Pour Areas:



Tower 1

The Tower 1 structure comprises of a steel structure with ComFlor permanent formwork. In addition to this, an outrigger belt truss system is implemented at Levels 21, 22 and Level 51.

The structure sequence is therefore proposed as follows:

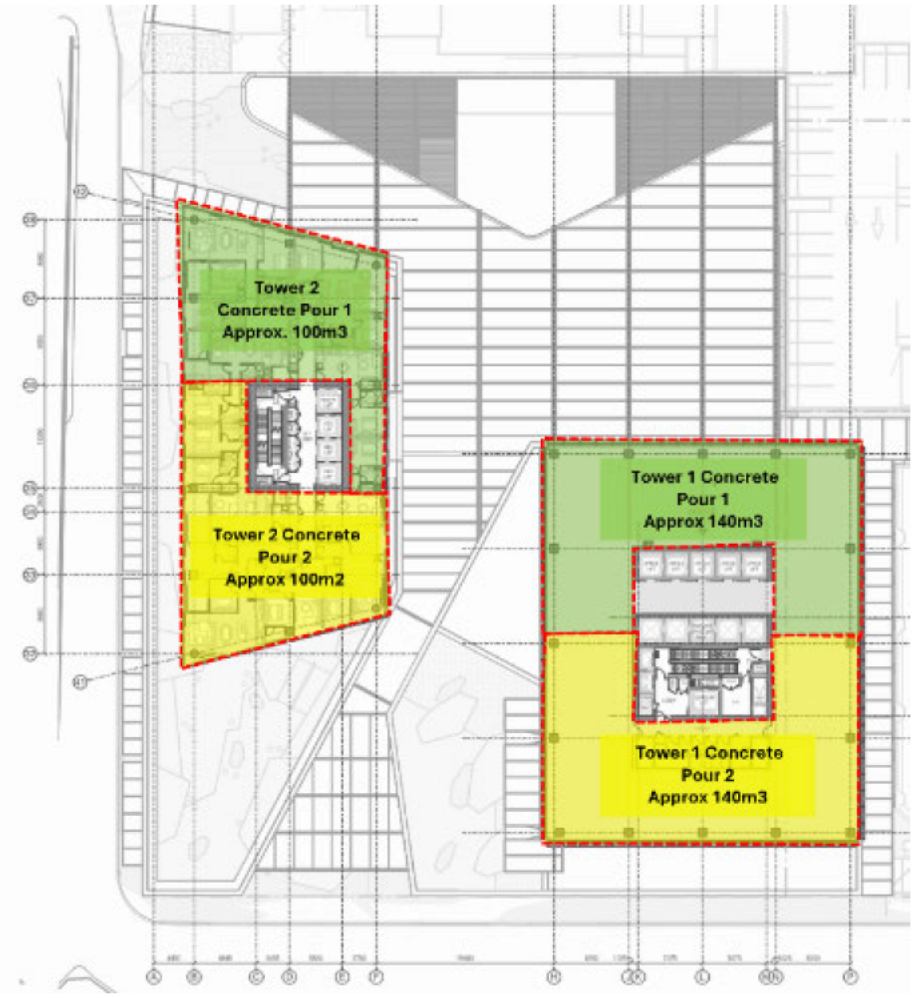
- Erect four floors of columns from 1st slab in sequence.
- Install horizontal steel for the four floors.
- Pour Highest floor in the sequence (enabling next sequence to commence).
- Infill other floors following completion of highest floor.

Tower 2

The structural system for Tower 2 is a conventional Post Tensioned slab and we have assumed a Table form system would be the most efficient for these works.

Outriggers have been designed for this tower at Level 20.

Figure 35: Proposed Pour Areas for Tower 1 and Tower 2:



Facade

Façade panels may be delivered to site complete ready to be loaded onto floors by tower crane or hoist. Once the panels are loaded on to the floor, it is assumed that fins and sunshades are to be fixed to the panels prior to the panel being launched into position on façade by small Maeda crane.

Alternate options for delivery to installation could be delivery to a storage and assemble zone on site on Basement B2 level then transported to floor from Basement B1 Floor by Mammoth Hoist as required then launched into position on façade by small Maeda crane.

Podium Facade

The podium façade includes for a series of varying panel types with fins and sunshades.

Installation of façade to the podium area will not commence until all structure is completed to the podium area, allowing coordination with the perimeter scaffold to ensure sufficient access is maintained.

Consideration for terracotta elements of the façade fins also needs to be allowed for as that lifting equipment has adequate capacity.

Tower Facade

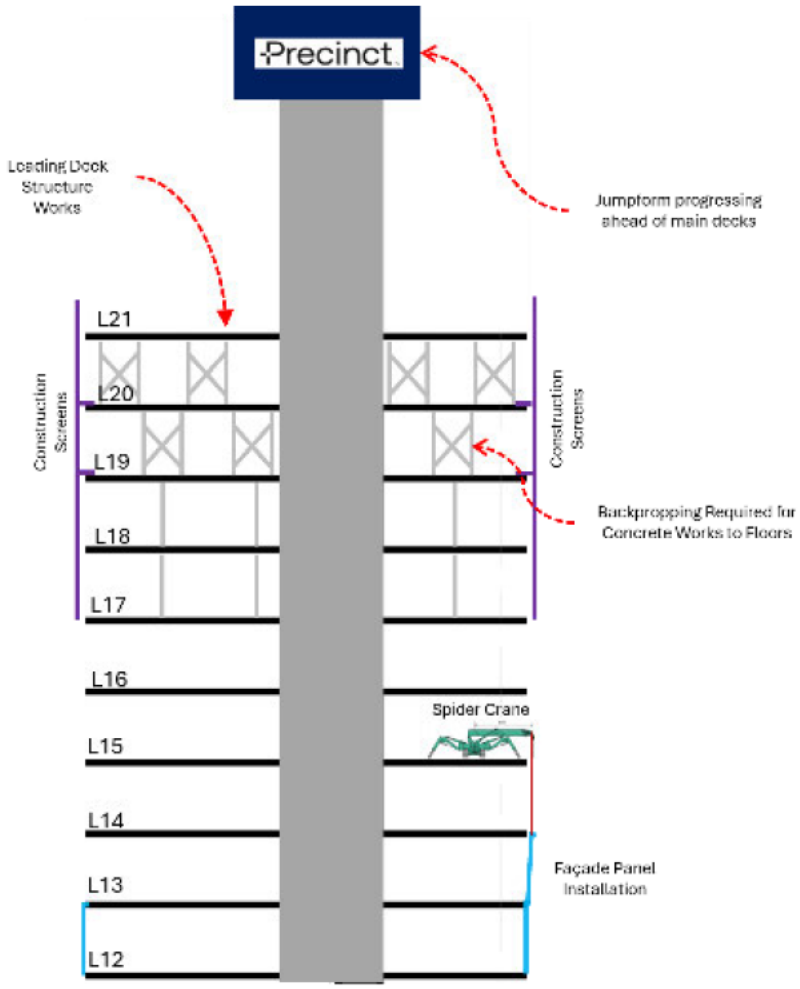
Façade installation will generally progress approx. 8 floors behind structure leading deck and be undertaken via the use of floor cranes from two levels above. This is incorporated with the back propping methodology for the structure.

With the structure progressing as programmed, it is the intention that the façade is erected floor by floor with façade at hoists zone and loading platforms zone installed once jump lift is in operation and material required to be loaded into floors by tower crane is complete.

Perimeter edge protection system like the Workright Edge Protection System will be installed behind perimeter edge protection screens prior to screens jumping and then removed and recycled up the buildings once façade is installed.

The façade splay elements to both T1 and T2 Towers will need custom designed screens and systems for each level of façade splay.

Figure 36: General Façade Installation Sequencing for the Towers:



3.2.11 Services and Plant

Provision of access for utility services and placement of respective plant and equipment will commence once floors are sufficiently clear of back propping from the structural works to provide a safe, clear and approved environment. Emphasis will also be placed on the pursuit of permanent power as soon as possible.

The current plant allowances for Tower 1 includes a centralised Chilled Water Plant for mechanical works whereas the Tower 2 mechanical system is a Fan Coil system with air cooled water chillers.

Substations and Generators are centralised plant allocated for both Towers.

3.2.12 Finishes

Fit out of the Basement Lower Ground levels, Ground Floor lobby, podium level and amenities, will be back ended due to construction requirements. This will allow the basement to be used for site accommodation and materials storage during the Project.

- Appropriate durations for finishes to each floor of residential Penthouse Levels has been included.
- The current programme summary assumes MCHF (Main Contractor Hard Fitout) scope of fitout works for the commercial areas.

3.2.13 Commissioning and Completion Works

A detailed commissioning plan will be developed by the Contractor to ensure that all services and functions are witnessed, tested and commissioned prior to handover, and effectively integrated with on-going building fine-tuning to ensure efficiency and effectiveness in the occupied and fully operational building.

The potential staged completion of each tower will be considered in this commissioning process.

3.2.14 External Works

The external works will be completed at the final stages of the Project and include the site through link, the lobby entrance areas, as well as street finalisation and public domain works.

As a result, the external works cannot be completed until all hoardings are removed. It is noted that external works will be required to be staged as well in the staged delivery option.

The exception to external works occurring in the final stages of the Project is the Western Service Lane Works which needs to be completed at the front end of the Project to allow for installation and provision of permanent power, 2400 diameter piles to support Tower 1 and materials handling access into the basements.

In addition to the above, the canopy over the ground plane area is a significant structure which cannot be completed until sufficient access is provided following the completion of other construction works.

4 Environmental Management

This section outlines and addresses environmental effects that may be generated from construction activities.

Each of the issues identified as requiring control, management or mitigation has been discussed in a SMP to address effects and set out appropriate management. Specialist subject authors have developed the respective SMP's.

The following sections identify Project related potential impacts, the guidance for the management of the impacts and the Project issues that need to be considered in the management of those impacts.

The referenced SMP's set out the current expectations for the successful Main Contractor when appointed and should be read in their entirety for full detail in relation to the specific management of potential environmental effects.

The management plans that are required for the Project are:

- This Construction Management Plan
- Construction Traffic Management Plan
- Construction Noise and Vibration Management Plan
- Dust Management Plan
- Erosion and Sediment Control Management Plan
- Groundwater and Settlement Monitoring and Contingency Management Plan
- Waste Management Plan
- Contamination Site Management Plan
- Asbestos Management Plan
- Hazardous Substances Management Plan
- Servicing and Loading Management Plan
- Managed Access Service Arrangement Plan
- Hotel Pick Up and Drop Off Management Plan
- Flood Management Plan
- Archaeological Management Plan

4.1 Noise and Vibration

4.1.1 Potential Effects

Construction activities including earthworks, piling and structure construction are likely to generate periods of elevated noise and vibration levels. As such there are likely to be some temporary noise and vibration effects on the following receivers.

- M Social: 196 – 200 Quay Street
- The Sebel:85 Customs Street West
- Aon Building: 29 Customs Street West
- HSBC Building: 188 Quay Street
- 204 Quay Street

4.1.2 Management Measures

Construction noise and vibration effects have been assessed by Marshall Day Acoustics and are predicted to be reasonable if good practice mitigation and management measures are implemented.

A draft Construction Noise and Vibration Management Plan (CNVMP) has been prepared that outlines the Projects construction noise and vibration mitigation and management measures. Once a contractor is onboard and prior to demolition commencing the CNVMP will need to be updated and provided to Council.

Schedules to the CNVMP will need to be prepared detailing mitigation and management measures for specific activities that are predicted to exceed the construction noise limits. These are to be provided to Council prior to that activity commencing and will be further determined at the time of contractor appointment.

As part of the demolition and construction phases the following key mitigation and management measures are proposed to be implemented:

- A scaffold will be erected on all four sides and have an incorporated noise barrier. The scaffold with noise barrier will reduce in height as the building is demolished, but remain 2m above the floor being demolished
- Excavator mounted hydraulic breakers will be fitted with a breaker shroud
- Wire saws will be prioritised over concrete saws. If a concrete saw is needed it will be undertaken in an enclosure when within 50m of a neighbouring building.
- The slab structure will be demolished with pulveriser and breaker attachments (and potentially concrete saws).

4.2 Traffic Management

4.2.1 Potential Effects

A construction traffic assessment reflecting the construction methodology has been prepared by Flow and is contained within the Preliminary Construction Traffic Management Plan (CTMP) and Transport Assessment. This confirms how the site, and the surrounding road network, are to be managed across the demolition and construction phases of the Project.

Different stages of demolition and construction will require closures of roads, traffic lanes and pedestrian footpaths for roads in the surrounding area. The demolition and construction phases rely on closing the Lower Hobson Street vehicle lane along the west frontage of the site. This is to provide a separated loading area and access points for construction vehicles, and to provide safe separation between the public and live work zones.

Given the overall length of construction and the different phases that will occur, the exact construction traffic methodology is likely to vary to adapt to the requirements and methodology of the contractor. Given the uncertainties and the range of construction activities that will occur over the construction period, it is important to provide flexibility for the methodology to be developed at a later stage.

Flow have assessed that 24 trucks per hour (48 truck movements per hour) can be supported throughout both the demolition and excavation stages. This is based on the maximum peak truck movements histogram (refer *Figure 17),* which estimates up to 120 trucks per day (240 truck movements per day) during the entire construction phase. The 24 trucks per hour is 20% of the daily maximum. Flow also consider that weekday peak period restrictions for truck movements are not necessary.

The construction phase will also generate light vehicle movements. Whilst contractors will be encouraged to use public transport or park in other areas in the City Centre, there may still be some staff who need to drive directly to the site on some occasions. This could involve light vehicles driving in and out of the construction zone on the Lower Hobson Street lane adjacent to the building if this is used during any part of construction. This detail will be provided as part of the final CTMP to be developed once a contractor is appointed.

4.2.2 Management Measures

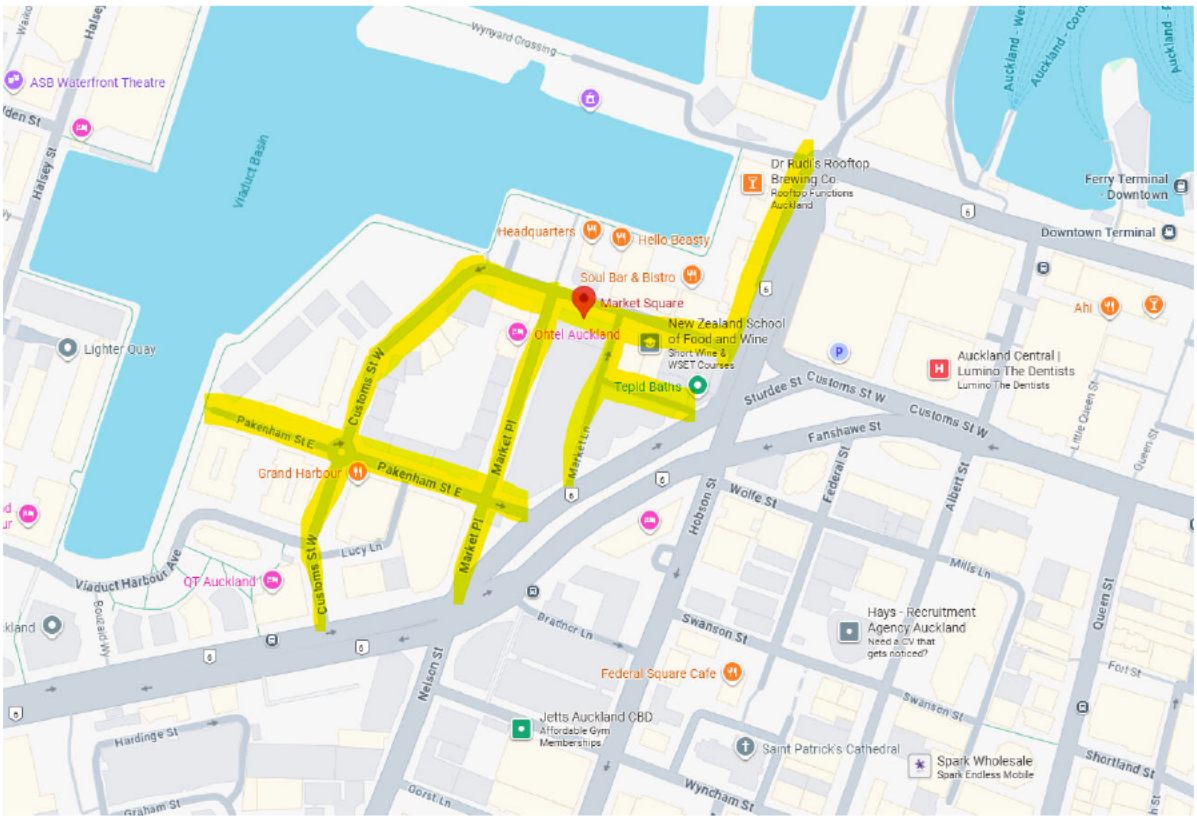
It is considered that construction traffic effects can be managed with the implementation of a CTMP which will outline the agreed methodology for traffic management throughout the Project. This is to be required as a condition of consent and will be developed in further detail by the contractor once appointed.

The CTMP is to be prepared based on the following principles:

- Protect the public from construction activities
- Contain the construction works within the Site where possible
- Minimise unnecessary pedestrian, road and bus lane closures. Provide safe alternatives where any closures are required

- Undertake the construction in an efficient manner to avoid prolonging any required road or footpath closures
- Provide consideration to the Auckland Transport's Temporary Traffic Management Guidelines.
- Set out the proposed duration, frequency and timing of demolition and construction works to manage disruption to the transport network taking into account other construction related activities occurring in the vicinity
- Avoid Quay Street and those Viaduct Streets (annotated in yellow within Figure 37) as heavy construction vehicle routes.

Figure 37: Viaduct Streets where Heavy Vehicle Construction Traffic is to be avoided:



The guidance and expectations as set out by the CTMP should be followed and will be reviewed and updated once a detailed construction methodology has been finalised along with appointment of the Main Contractor. The Main Contractor shall provide information regarding anticipated site compound and lay down points, traffic management points or method statements for effective traffic management.

In addition to the CTMP, the following management plans shall be implemented:

- Managed Access Service Management Plan - for M Social's service driveway on Lower Hobson Street.
- Servicing and Loading Management Plan - to manage the use of the loading spaces that have access from the service lane, and to ensure compliance with the vertical clearance restrictions.
- Hotel Pick Up and Drop Off Management Plan – for managing the use of the hotel's Pick Up and Drop Off area for exclusive use by the hotel activity.

4.3 Air Quality

4.3.1 Potential Effects

The main discharge to air from the demolition activities will be dust. Dust has the potential to cause nuisance or soil property if deposited in sufficient quantities in the environment. Fine particles present in dust emissions have the potential to affect respiratory heath while suspended in air.

The main sources of nuisance dust emission along the Project are:

- Demolition activities, such as
    - Knocking down and breaking up of building material including plasterboard and blockwork.
    - Cutting, breaking and crushing of concrete.
- Handling of spoil, aggregate and other solid materials.
- Wind erosion of spoil and other stockpiled material.

4.3.2 Management Measures

A Dust Management Plan has been prepared. Measures to manage and mitigate the effects of discharges of dust from demolition activities are outlined below and are to be used as required depending on the type of demolition activity being undertaken, weather conditions, and proximity to sensitive receptors.

- Internal fittings are to be stripped out prior to demolition of structural and exterior elements.
- Use of water sprays to dampen material prior to and during demolition and excavation.
- Only wet cutting of concrete is to be undertaken.
- Any breaking of concrete should be done under wet conditions (such as a water spray or fog cannons directed at where the breaking is occurring)
- Containment of the immediate area of demolition works though placement of construction wrap in a series of zones as the demolition progresses.
- Containment or screening is to be installed along the entire eastern façade of the carpark building during demolition of the adjacent carpark building (demolition stages 3 and 4), This is to be achieved through either:
    - Installation of scaffold lined with an acoustic barrier is proposed to the full eastern façade, provided that this wall of barriers is impermeable to wind flow.
    - If wind flow is able to pass through the acoustic barrier wall, construction wrap should be placed along entire eastern façade. This could be progressively reduced in elevation as demolition progresses.
- During periods of high winds, store stockpiled material containing a high content of fine material indoors or undercover where practicable.
- Locate and orientate outdoor stockpiles to maximise wind sheltering and separation from sensitive off-site activities as far as practicable.
- Dampen, cover or stabilise inactive stockpiles if they are producing visible dust emissions.
- Limit the height of stockpiles to reduce wind entrainment as far as practicable.
- Minimise handling of stockpiled material and drop heights to stockpiles during unloading to decrease potential for dust generation.
- Avoid handling (including loading or unloading) of material during windy conditions in locations where dust may be emitted beyond the site boundary, where practicable.
- Cover loads of dry fine materials.
- Use enclosed chutes and conveyors for material to be dropped to lower levels as well as covered skips.
- Limit vehicle speeds on site to no more than 20 km/h.
- All vehicle engines are to be switched off when stationary (no idling on-site).
- Cover loads of fine materials leaving or entering the site.
- Minimise on-site travel distances through appropriate site layout and design.
- Minimise mud and dust track out the site to sealed areas by using wheel cleaning facilities at site exits to sealed roads.
- Any material identified to be tracked onto public roadways during regular inspections (or via notification from the public) is to be cleaned with a vacuum sweeper truck.

- Sealed access routes are to be cleaned with a vacuum sweeper truck whenever inspections (regular or in response to complaints) identify surface accumulation of dust material.
- In dry conditions (e.g. less than 1 mm of rain in the preceding 48 hours), maintain vehicle accessways in regular use in damp condition through surface watering (e.g. with water carts or fixed irrigation).
- If water suppression is ineffective, synthetic dust suppressants (excluding used oil-based suppressants) may be used as an alternative.
- Site personnel trained in dust management controls.
- Monitoring of site conditions (weather/soil conditions) to anticipate and prevent dust effects.
- Limiting operations which have the potential to cause high dust during high wind events.
- Use of water cart and sprays to keep surfaces damp as required near sensitive receptors. A critical part of this control measure is identification of a sufficient water supply at the site for this purpose with adequate volume.
- Use of wind break fences.
- Cleaning paved surfaces if affected by tracking of transported dust.

In addition, visual monitoring of dust across all demolition areas should be undertaken on a daily basis, or more frequently if conditions change. Weather forecasts should also be checked daily (wind speed, wind direction and rainfall) to assist in managing site activities and implementing the appropriate dust controls.

4.4 Erosion and Sediment Control

4.4.1 Potential Effects

The proposed earthworks involve a total area of approximately 6,444m^2 and 100,000m^3 of excavation. All land disturbing activities require erosion and sediment control to be considered to minimise the potential for sediment generation and discharge from construction activities into the surrounding receiving environment.

4.4.2 Management Measures

A Draft Erosion and Sediment Control Plan has been prepared by Tonkin and Taylor as part of the Erosion and Sediment Control Report which is based on the principles of GD05.

In summary, the following is to be implemented:

Enabling works:

- Existing stormwater catchpits, adjacent to the site that will receive runoff from the site will be protected to GD05 Standards.
- The existing kerb and channels along Customs Street West and Lower Hobson Street will serve as a clean water cut off, diverting stormwater and road runoff around the site location. A bund will be installed at sections along the portions of the perimeter not confined by kerb and channel (such as the South-eastern side of site and vehicle crossing access areas). The bund will be constructed from hotmix or sandbags (subject to location). The purpose of this bund is to both isolate the site from clean runoff and to ensure runoff from within the site is retained within the site boundaries.
- Stabilised entrance ways will be established at all entry and exit points of the site.
- If required (depending on the Contractor's chosen methodology) wheel wash areas will be located at each exit point with a hard standing surface for washing truck tyres.
- There are three main sources of water that will need to be collected and disposed of in the excavation; these are from groundwater inflows and from rainwater as well as general siteworks. Methods of dewatering the excavation will be based on pumping into a secondary treatment device.
- Stormwater runoff and groundwater that has come into contact with soil during earthworks will be discharged to trade waste/sewer under permit or through a trade waste contractor as required. If discharge to stormwater is required, the water shall be initially treated to remove sediment/solids.
- Prior to discharge into the stormwater system, proof of performance monitoring shall be conducted to confirm the quality of the groundwater pumped from the excavation does not contain unacceptable levels of contamination.

- Additional contingency measures are proposed for dewatering during the winter period:
    - Use of additional settlement tanks.
    - The Contractor may be required to allow the collected water in the excavation to be retained until it can be discharged via one of the dewatering methods.
    - Flocculation may be used.
    - Pumping of excess water into a tanker for offsite disposal.

General:

- The seven-day weather forecast will be monitored.
- Monitoring of all erosion and sediment control devices will be undertaken regularly with a checklist recorded and kept on site. Any maintenance will be in accordance with GD05.
- When sediment has accumulated to 20% of the storage volume, the settlement and dosing tanks would be de-silted by a sucker truck and carted off-site to an approved landfill.
- Chemical dosing rates (when required) will be undertaken before discharging into the stormwater system.
- The location at the public stormwater outfalls where site discharge enters the harbour will be monitored daily for visible plumes and unexpected sediment discharge.
- All erosion and sediment controls should be checked before and after extreme and heavy rainfall to ensure the controls are operating correctly.
- Monitoring of all erosion and sediment control devices will be undertaken regularly with elements inspected recorded and kept onsite.

4.5 Geotechnical and Groundwater

4.5.1 Potential Effects

The geotechnical and groundwater regime has been extensively investigated as part of the development of this project to assess the potential effects of the Project on neighbouring buildings, structures and infrastructure. Settlement effects as a result of groundwater drawdown and wall reflections around the proposed basement have also been assessed.

The main contributing factors potentially causing ground settlements near the site that could impact on the immediately adjacent buildings, services or infrastructure include:

- Excavation will extend below groundwater levels and so will result in local groundwater drawdown. Consolidation of the ground due to groundwater drawdown may occur due to the reduction in porewater pressures and increase in effective stress in the soil as groundwater seeps into the excavation and will be dependent on time.
- As the excavation proceeds and the perimeter walls take load from the retained soil, lateral deflections will result. Mechanical settlement of the ground is associated with the deformation of the retaining walls. The associated ground settlements will occur relatively quickly and are expected to rapidly diminish with distance from the excavation.

4.5.2 Management Measures

Tonkin + Taylor have prepared a Draft Groundwater and Settlement Monitoring Contingency Plan (GSMCP) as contained within the Geotechnical and Groundwater Assessment Report. These reports propose measures to manage geotechnical and groundwater effects for the Downtown Carpark Development.

Key measures include:

- Sheet pile walls and diaphragm walls have been considered to retain the basement excavation. The sheet pile walls are proposed to be embedded a minimum 1m into ECBF rock and the diaphragm walls are proposed to be extended to an elevation of at least RL –16m to achieve groundwater cut off.
- The potential for surface deformation of surrounding ground due to the basement excavation has been assessed. The estimated ground settlement below neighbouring structures is estimated to be less than 12mm, with differential gradients generally less than 1V:1000H.

This is generally expected to result in negligible damage to surrounding buildings. Total settlement of less than 20mm is estimated for surrounding pavement and underground structures. Differential settlement for services oriented perpendicular to the basement excavation are likely to be less than 1V:1000H and is expected to be within the tolerable levels for the various types of underground services surrounding the site.

- A preliminary GSMCP has been developed outlining the required monitoring for the excavation works and condition surveys for the neighbouring structures prior to commencement of excavation.

4.6 Contamination

4.6.1 Potential Effects

The site is on land reclaimed in stages between 1860s through to the 1920s by the Auckland Harbour Board. The reclamation fill comprises both materials cut from nearby, materials dumped from unknown imported sources and dredged materials. Old harbour records identify the location of the graving dock that extended over the northeastern to southwestern corners of the site. According to council records, the graving dock was infilled in 1923, prior to the reclamation of Quay Street (between Princess Wharf and the site). Since the 1970's the site has been used as a carpark. The site has also had underground fuel storage tanks at the site prior to 1996. No information was available on the removal and/or presence of hydrocarbon contamination after the removal.

Site investigation data from surrounding developments indicate that reclamation fill is generally found to contain low concentrations of heavy metals and polycyclic aromatic hydrocarbons (PAH) which typically comply with relevant acceptance criteria for the protection of human health and the environment. Fill containing industrial and demolition waste, when encountered, is found to contain elevated concentrations of heavy metals, PAH, total petroleum hydrocarbons and the presence of asbestos. Groundwater samples from the surrounding investigations indicate concentrations of contaminants in groundwater meet with environmental criteria when taking into consideration mixing within the receiving environment. There is also potential for vapours to be generated from hydrocarbon contamination where the former fuel tanks were located, that has not been investigated to date owing to limited access and this could pose a risk to human health during earthworks.

There are potential source-pathway-receptor linkages to human health for both site workers and general public during soil disturbance from isolated hotspots of contamination (where industrial and demolition material is present). There is potential for unexpected, elevated concentrations of contaminants to enter the environment are from uncontrolled discharges during earthworks. Therefore, controls are proposed for management of contaminated land and discharges from the site. Investigations are proposed prior to soil disturbance to ascertain the contamination concentrations present at the site.

The majority of contamination is likely to be removed during the development works as a result of the proposed basement construction.

As such, it is anticipated there will be no risk to future site users the site is redeveloped.

4.6.2 Management Measures

Tonkin and Taylor have been engaged to prepare a preliminary Contamination Site Management Plan (CSMP).

The preliminary CSMP provides for procedures for the appointed contractor to follow to manage potential ground contamination effects on human health and the environment during ground disturbance activities associated with the proposed site development works.

It also outlines pre-works site investigations to support site development and provided for proposed conditions of resource consents for ground disturbance works under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS Soil) regulations and Auckland Unitary Plan (AUP). Key measures include:

- Pre-works sampling prior to earthworks (after building demolition) to ascertain the level of contamination present in the underlying reclamation fill, groundwater and presence of vapour (if required).
- Outlines roles and responsibilities under the CSMP for the site works.
- Health and safety procedures for management of contaminated soils which includes decontamination procedures, personal protective equipment, asbestos management procedures, and management of vapour risk.

- Ground disturbance procedures which include site establishment requirements i.e. secure work area, dust control, sediment discharge controls, excavation and transport requirements for contaminated soil, soil disposal requirements and management of dewatered groundwater and surface runoff.
- The CSMP outlines unexpected discovery and/or accidental discovery procedures in relation to contaminated land.
- Validation procedures and completion reporting requirements for consent close out.

4.6.3 Asbestos Removal

A pre-demolition asbestos survey will be required prior to demolition activities and will be used to inform an Asbestos Management Plan (AMP). The AMP will provide the appropriate controls and procedures for the management of asbestos removal and will be provide to the appropriate authorities e.g. WorkSafe. The final and/or updated CSMP will be prepared to provide synergy with the AMP.

4.7 Arboriculture

4.7.1 Potential Effects

Six protected street trees or groupings of trees are growing adjacent to structures proposed for demolition, with pruning anticipated for one of the five individual trees and the removal of an existing garden area proposed as part of the demolition works.

4.7.2 Management Measures

The arboricultural assessment provides for the following tree protection measures which are to be adopted to ensure that adverse effects on the protected trees being retained within the project area are minimised and/or avoided.

- Pre-commencement meeting to be held on site and prior to works commencing to discuss all issues pertaining to the protection of the trees and to gain a common understanding of the relevant conditions of consent in that regard.
- No excavations are to be undertaken within the protected root zones of the protected vegetation.
- Protective fencing shall be installed at an appropriate alignment on the edge of the root zone, under the guidance of the appointed works arborist. This fencing shall be installed at the edge of the root zone where practicable. The fencing shall remain in place for the duration of the Project in order to best protect the subject trees. The fencing is to be rent-o-style 1.8 metre steel mesh sections. The location of this fencing is to be confirmed and approved at the pre-commencement meeting.
- All pruning works are to be undertaken by a Council Approved Arborist under the supervision of the works arborist. The pruning is to be recorded and added to the completion log.
- Compliance with all conditions of consent relating to tree protection would be monitored by the appointed works arborist - with the detail of each visit and communication being logged. The completed log would be provided to the consent holder at the completion of the Project to serve as a compliance report.

4.8 Archaeology

4.8.1 Potential Effects

An archaeological assessment of the site has been undertaken. The Project area has been confirmed to contain the former Auckland Graving Dock which has been recorded as an archaeological site R11/3458 and is also located in an area reclaimed during the late 19th and early 20th centuries. It is therefore likely to contain additional 19th and early 20th century remains, such as seawalls, building foundations, historic artefacts, drainage pipes and other features.

4.8.2 Management Measures

The Auckland Graving Dock has been evaluated as having moderate archaeological values relating to historical, knowledge, technological and contextual values.

Overall, the historic heritage and archaeological significance of site R11/3458 is lowered as the site was at least partially demolished and the Calliope Graving Dock in Devonport (which was constructed between 1885-1888 and which was designed by the same engineer who designed the Auckland Graving Dock) is still present, thus still providing an intact example of a late 19th century graving dock in Auckland.

As such, the effects of the proposed works on archaeological and other historic heritage values can be mitigated through the recording of any surviving remains of the archaeological site (R11/3458) along with additional information to be gained through the recording and sampling of reclamation fill to provide information on late 19th century and early 20th century activities associated with the Auckland Waterfront.

Further, and as recommended in the archaeological assessment, an authority under Section 44(a) of the New Zealand Pouhere Taonga Act 2014 will be sought prior to the works being undertaken.

The draft Archaeological Management Plan requires the following for earthworks:

- Pre-start requirements.
- Earthworks phase requirements (monitoring of excavations and processes for if features are identified).
- Processes for if archaeological sites are exposed when the archaeologist is not present.
- Protocols for human remains and Taonga.
- Post earthworks phase requirements.
- Contact details for archaeological team.

4.9 Heritage

4.9.1 Potential Effects

The footbridge connecting to the Downtown Car Park building is proposed to be removed. As such the following modifications are proposed to be undertaken to the façade of the heritage building:

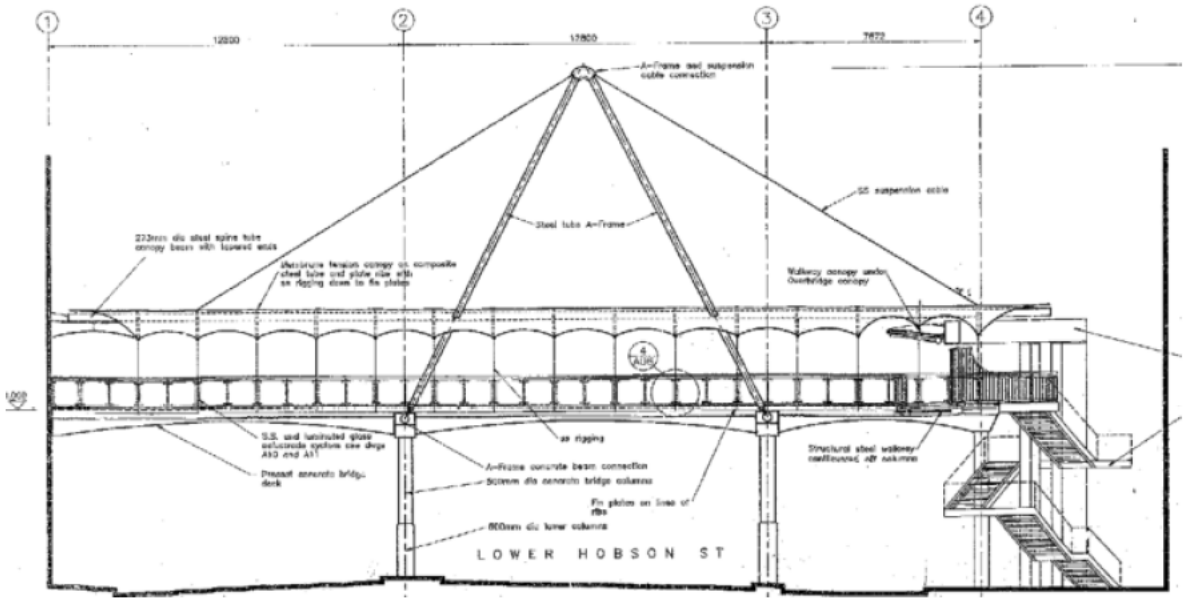
- Demolish the existing footbridge and any fixings relating to this structure from the existing façade.
- Demolish existing glass doors including any egress controls.
- Demolish overlight infill above the existing concrete ledge and make good to sill profile and opening to accept new window.
- Infill opening to lower sill height, create new sill and opening to accept new window and finish to match existing wall (to be defined in future scope of work).
- Reinstate decorative plasterwork freeze and concrete window head to match existing along façade.
- Install new steel window and overlight to match existing façade.

4.9.2 Management Measures

The main concrete pedestrian bridge has three spans.

These spans are formed between three concrete piers and a support at the existing building at 204 Quay St as illustrated in Figure 38.

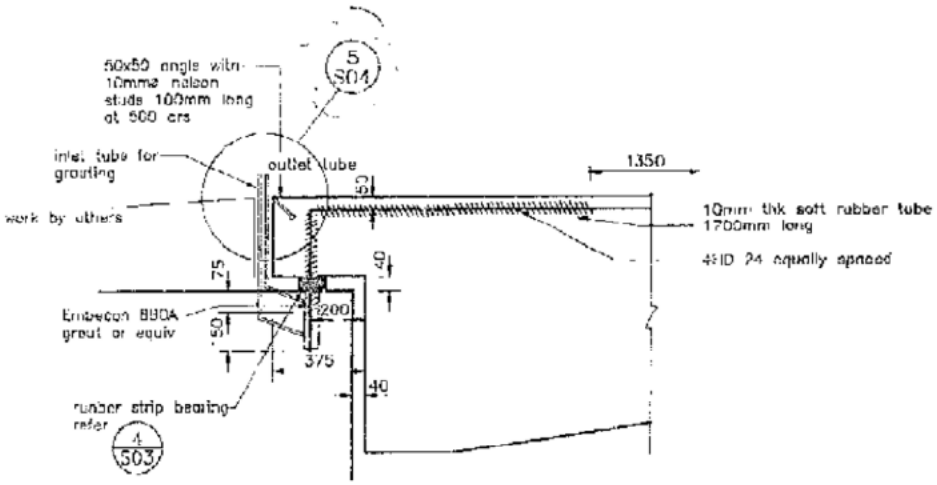
Figure 38: Pedestrian Bridge:



Prior to road closure, the end of the concrete deck element adjacent to the building would be propped securely to the footpath level, with appropriate pedestrian protection measures provided (hoarding / barricades) the roof would be demolished and removed to the deck level. The roof spine elements will also be propped.
Once road is closed, the cables will be removed and the spine element are ready to remove the end of the deck unit would be cut though flush with the face of the existing building, leaving a small remnant piece attached to the building. Once the other end adjacent the western intermediate pier is also cut free this deck span can be removed.

The A-frame masts will then be cut free and removed. The methodology to remove the deck spans involves cutting them at the junction with the existing piers and the support at the existing building and then removing each span, one at a time. Propping would be in place to secure the spans until ready for removal. The piers would be demolished separately after the spans are removed.

Figure 39:



The remnant piece of deck adjacent the building can be grouted in place to ensure it is safely secured to the existing building. The propping and pedestrian protective measures at footpath level can then be removed, hoardings at first floor level to secure the opening to the inside of the locked doors shall remain until façade remediation works are complete.

5 Implementation and Operation

This section of the Draft CMP addresses the implementation and operation of the CMP and SMPs.

5.1 Management Structure and Responsibility

Each person involved in the Project has equal responsibility to avoid, remedy or mitigate potential adverse environmental effects.

The expected management roles on site are provided below. The management structure and role descriptions for the Main Contractor shall be provided upon contract award.

Position	Name and contact details	Company	Responsibility
Precinct Properties Project Director	Iain Purdie E: [redacted] M	Precinct Properties or Delegate	▪ Overall Responsibility for the Project
Engineer to the Contract	TBC	TBC	▪ Administration of the Contract
Engineer's Representative	TBC	RCP	▪ Overall responsibility for construction activities on site. ▪ Responsibility to ensure the implementation of the CMP. ▪ Administration of the Contract
Project Manager	Andre Koolen E: [redacted] M	RCP	▪ Project delivery and ultimate responsibility
Contractor			
Main Contractor	TBC	TBC	▪ Contractor representative with overall responsibility for the Project ▪ Compliance and updating of CMP
Project Manager	TBC	TBC	
Site Manager	TBC	TBC	▪ Responsibility for site environmental management ▪ Review and reporting on performance and compliance ▪ Onsite compliance with conditions attached to consents / approvals ▪ Update and maintain environmental risk register ▪ Facilitate and oversee monitoring ▪ Maintain complaints, incidents register
Environmental Manager	TBC	TBC	▪ Environmental induction and training ▪ Responding to incidents, including seeking specialist contamination

Position	Name and contact details	Company	Responsibility
			advice where necessary, and providing feedback ▪ Environmental reporting ▪ Maintaining the CMP ▪ Compliance with CMP ▪ Liaison with Council

Generally, the key roles of personnel as they relate to environmental management during the construction of the Project are detailed below and will be confirmed following appointment of the Main Contractor.

Roles and responsibilities of personnel which implement specific environmental controls and monitoring programmes (such as the arborist, asbestos removalist) are to be detailed in the relevant SMPs.

5.1.1 All Staff

- Familiarisation with the requirements of the CMP and SMPs.
- Responsible for reporting environmental incidents, complaints, defects, and other problem areas to senior staff as they arise on site.
- Ensuring that required processes and procedures for environmental management are followed.
- Ensuring that environmental mitigation and protection measures are maintained and working correctly.
- Within day-to-day work responsibilities, ensure the environment both on site and adjacent to the site is protected and respected.

5.1.2 Precinct Properties Representative

- Review CMP, Complaints Register, Incidents and Emergency Register, Non-Compliance
- Environmental Performance Report.
- Meet monthly with Environmental Manager and Site Manager to discuss non-compliance, complaints, incidents and emergencies, monitoring, auditing and review of the CMP and sub-plans.

5.1.3 Project Manager

- Takes ultimate responsibility for delivery of the Project.
- Establishes a Resource Consent conditions tracker to provide to the contractor to track compliance against conditions.
- Tracking the compliance of the conditions of resource consents.
- Approves environmental plans prior to issue.
- Ensures adequate resources are provided to ensure environmental issues and obligations are appropriately managed.
- Ensure that environmental requirements are incorporated into the works as required by the consent.

5.1.4 Design Manager

- Incorporates environmental requirements into design as required by the consent and designation conditions, the CMP and sub-plans; and
- Advises Environmental Manager of any design issues that may impact on the environment.

5.1.5 Construction Manager(s)

- Reviews work packages against the CMP to ensure a high level of performance is achieved.
- Develops, implements, and monitors construction works ensuring compliance with consents, designations, CMP and SMP's.
- Coordinates environmental interfaces with consultants, subcontractors and suppliers

- Implement environmental protection measures in accordance with the contract and the CMP and sub-plans.
- Trains all workers in relation to environmental measures.
- Report all incidents, system defects and complaints.
- Ensure all workers and others (e.g. subcontractors and suppliers) comply with environmental operating procedures and community relations protocols.
- Provides updates against Resource Consent Conditions Tracker to confirm compliance.
- Non-compliance reporting to Consent Authorities in a timely manner.
- Provides leadership to the site construction team to achieve Project environmental objectives and requirements.
- Ensures that the CMP is implemented appropriately.
- Ensures environmental controls are protected and maintained on a day-to-day basis.
- Leads the emergency response crew.

5.1.6 Project Engineers

- Provides leadership to the site team to achieve Project environmental objectives and targets to ensure a high level of performance is achieved.
- Responsible for ensuring environmental controls and erosion and sediment control works are installed, modified and maintained as appropriate for each stage of construction.
- Assists in the implementation and review of Project environmental objectives.
- Ensures staff onsite are aware of environmental requirements at all times and sees that routine maintenance to erosion and sediment control facilities and management measures continue with ongoing effectiveness.

5.1.7 Environmental Manager

- Provides leadership to ensure staff are motivated to achieve environmental standards and comply with all resource consent conditions and approvals.
- Develops, implements and reviews environmental management systems including the CMP for the Project.
- Co-ordinates the interfaces and communications with external agencies and stakeholders in relation to environmental management of the Project.
- Manages and co-ordinates compliance with all consents and designation conditions and any new approvals required.
- Demolition monitoring and maintaining/submitting relevant reports and records to the consenting authorities as required.
- Notifies Project Manager and Consent Authority of any significant environmental non-compliances for which they have jurisdiction.
- Responsible for resolving issues of environmental non-compliances.
- Undertakes regular site inspections and audits to ensure compliance with the CMP and consent conditions.
- Coordinates all site monitoring including but not limited to groundwater, water quality, dust, noise, and vibration monitoring and provides necessary related training and advice to staff in relation to this monitoring.
- Trains staff in site specific environmental procedures.
- Coordinates environmental emergency responses.
- Manages maintenance and monitoring of the effectiveness of erosion and sediment controls, Stormwater devices and other control devices; and

- Ensures spill kits are available and stocked and provides training on equipment use.

5.1.8 Stakeholder Relationship Manager

- Coordinates interfaces with external agencies and stakeholders ensuring all requirements of resource consents and approvals are met, including the potential to support the administration of the Community Liaison Group.
- Responsible for notifying surrounding landowners of works occurring within the near vicinity and managing mitigation as required.
- Disseminates information to the public as approved by the Precinct Properties Limited Representative.
- Primary contact for Project related complaints and enquiries

5.1.9 Site Manager

- Provides leadership to the site construction team to achieve Project environmental objectives and requirements.
- Ensures that the CMP and SMPs are implemented appropriately.
- Ensures environmental controls and erosion and sediment controls are protected and maintained on a day-to-day basis.
- Leads the emergency response crew.
- Reviews and authorises the closures of site access points to reduce the risk of dirt on roads.
- Reviews the need to use dust control measures such as water sprayers.

5.1.10 Site Specific Managers

- Report directly to the Construction Manager and inform the Project Manager on all environmental and community matters.
- Ensure that all on-site personnel have undertaken the community and environmental site induction training prior to the commencement of works.
- Ensure that all contractors comply with environmental protection programmes appropriate to their activities.
- Ensure that all contractors comply with community relations protocols and procedures.
- Ensure compliance with any resident agreements and commitments.
- Conduct regular site inspections, at least weekly and following rain events, of the site, surrounding areas and Contractor's activities.
- Record and action System Defects (i.e. spills, incidents and complaints) when required.
- Liaise directly with Environment Manager and Stakeholder Manager on the day-to-day management of sites.

5.1.11 Foreman – with Environmental Responsibilities

- Manages the construction of critical erosion and sediment control devices.
- Co-ordinates daily site inspections of environmental controls including erosion and sediment control devices and co-ordinates maintenance where necessary.
- Monitors the site during rainfall events and high wind events.
- Ensures staff on site are aware of environmental requirements at all times.

5.2 Training

All those holding project roles that relate to compliance with consent conditions and implementation of the Contractors final CMP will have appropriate briefing and training in relation to the CMP and environmental responsibilities.

In addition to project team having relevant backgrounds and qualifications, systems to be implemented shall include:

- Site inductions – communicating the specific site risks and potential impacts of work activities
- Health and Safety
- Project briefing – including on the CMP requirements, consent conditions and consequences of non-compliance
- Ensuring specific training has been undertaken for those responsible for activities such as:
    - Environmental monitoring / sampling methods and techniques
    - Emergency responses
    - Environmental Auditing
    - Sediment and Erosion control installation
    - Spill training.

The Main Contractor shall develop, implement, and maintain necessary training systems to meet the requirements of this CMP for its staff and any subcontractors to ensure full compliance with the Resource Management Act, conditions attached to consents and approval and all applicable regulations and Management Plans.

5.3 Emergency Contacts and Response

This section outlines how environmental incidents / emergencies are to be managed by the Main Contractor if there is a requirement for an emergency response to unforeseen environmental impacts.

Incidents may include:

- Spills
- Release of hazardous substances to air or water
- Consent non-compliances
- Significant deviation from the requirements of the CMP or SMPs – failure to follow established processes or procedures.

An environmental emergency is an event that has a detrimental effect on the surrounding environment – causing significant harm and which is not legally permitted and as such requires an immediate response.

In the event of an environmental incident / emergency the following shall be undertaken:

- Immediate action is to be taken to stabilise the situation (i.e. cessation of works, deploy spill equipment), with specialist advice sought where necessary.
- Contractor is to contact Council within 24 hours or sooner where appropriate (i.e. hazardous substance spill)
- Any affected parties shall be contacted as soon as possible where an incident occurs that may affect land outside of the Project area.
- An incident report is to be prepared and all incidents recorded on a site incident register- which is to be elevated to project control group meetings as an agenda item. The report is to include a description of the incident; likely cause; potential or actual effects; remedial action taken; and the preventative actions taken to prevent reoccurrence.
- Emergency response and management equipment is to be made available at all times on site with all site staff made aware of the location of this equipment as part of the induction process. All staff are to be made aware of their responsibilities on site in an emergency situation.
- It is intended that following the appointment of the Main Contractor that a site-specific Emergency Response Plan shall be developed prior to the start of construction.

5.4 Engagement and Communication

The impacts of the Projects construction will be noticeable and as such, open and two-way communications will be provided to ensure people are informed as to construction impacts. This may include the following:

- Project specific website to provide project information and to be updated frequently to provide details on timing and durations, and construction processes and project progress.
- Community Liaison Group.
- Targeted mail drops to forewarn of construction activity including advising adjacent/ nearby properties before upcoming works that generate high levels of noise or vibration.
- Billboards positioned on site.
- Contact details for the Project Communications Manager and as well as for the site and project manager should be provided as appropriate.
- A communications register will be kept for the project to record all enquiries and complaints with responses to be tracked and closed out within agreed timeframes.

6 Monitoring and Review

In order to ensure that compliance with consent conditions, legal requirements and relevant policies, standards and guidelines are achieved, on-going evaluation and monitoring shall be undertaken during construction.

Environmental monitoring will be undertaken on both a scheduled (regular) and unscheduled (triggered) basis to check that specific activity controls have been implemented and that there are no adverse environmental effects being generated from the construction works.

Monitoring shall be primarily based on:

- Erosion and Sediment Control devices
- Water quality
- Spoil quality (for offsite disposal)
- Noise and Vibration
- Groundwater levels

6.1 Consent Compliance Monitoring

Scheduled monitoring of environmental performance and compliance with conditions of consent will be required throughout the construction phase. This will enable the effectiveness of environmental controls to be determined and corrective action to be taken where there is an identified non- compliance.

Environmental monitoring shall take place

- Prior to construction to establish necessary baselines.
- During construction to assess the impact of construction on the environment.
- After construction to assess the impact of completed works.

Monitoring requirements at various stages of construction as outlined in the SMPs and as prescribed by conditions of consent shall be undertaken and provided to the relevant authorities as required.

6.2 General Site Monitoring

General Site Monitoring shall be undertaken by the contractor on site, in line with the timeframes noted below.

In addition to the formal environmental monitoring, the following general site monitoring shall also be undertaken:

- Daily – inspections to be conducted on the basis of informal visual inspections to check CMP compliance and focusing on specific activities including for example refuelling procedures.
- Daily – checking of weather and any necessary pre and post weather event inspections.
- Inspections as required for environmental control procedures – e.g. sediment and erosion control and tree protection.
- Weekly – formal site inspections to be completed by Site Manager to check compliance with consent conditions and content of the final CMP. Issues are to be noted where they present a significant risk – i.e. noisy works.
- Monthly –Project Manager will conduct monthly inspection on site to confirm the environmental monitoring programme and work procedures are being implemented in accordance with consents, approvals and guidelines of the final CMP.
- Triggered inspections will be undertaken in response to the following:
    - Feedback – upon receiving feedback on any issue an inspection of that issue / area shall be undertaken
    - Extreme Weather – Site control measures shall be inspected prior to and during (if possible) as well as after an extreme weather event.
    - Non-compliance – inspections will be undertaken immediately following an incident, emergency or near miss.

- Reporting on the basis of the above shall be presented at monthly PCG and / or Board meetings and include a summary of any issues and actions. Regular meetings shall also be held on site between the Project Manager and Contractor to discuss outcomes of daily and weekly monitoring.

6.3 Reporting

Reporting requirements for this CMP are provided below and are subject to the appointment of the Main Contractor:

- Statutory reporting requirements / Resource Consent compliance report as per resource consent conditions.
- Non-compliance reporting where corrective actions are required in response to failure to comply with consents, approvals and / or operational procedures.
- Risk reports.
- Site Monitoring / Inspection report and any corrective actions.
- Incident reporting and responses.
- Complaints and resolutions.
- Site auditing.
- Internal monitoring on site of compliance with CMP and SMP requirements and identification of any necessary amendments.

On the basis of the above, a monthly report shall be prepared that provides a summary of all information pertaining to results of monitoring, sampling, environmental effects, incidents, complaints and the like.

6.4 CMP Management Review

This draft CMP will be reviewed following confirmation of the resource consent and conditions and will be finalised in accordance with those conditions. The CMP will be updated to reflect consenting requirements, and Main Contractor engagement which may give rise to changes in construction techniques.

Approval from Auckland Council will be required for any relevant revisions of a material nature to the CMP or SMP.

A management review of the CMP will be undertaken at least annually by the project management team and Main Contractor and will consider:

- Input from Precinct Properties.
- Comments from site personnel.
- Recommendations and findings resulting from auditing / monitoring / sampling.
- Outcomes of any environmental incident and associated response.
- Outcomes of any no-compliance and associated corrective actions.
- Changes to Project personnel.
- Changes to legislation / standards.

In particular the review process will take into account the environmental controls being employed and their continued applicability and effectiveness to activities being carried out as part of the Project. Any changes are to be documented, and subsequent versions issued to eliminate obsolete documentation.

6.5 Complaints procedure

Complaints will be acknowledged immediately where practicable and responded to within 24 hours. If a more detailed response is needed, it will be provided within a timeframe agreed with the complainant.

All complaints will be recorded in a complaints file that is available to affected parties and Council on request. For each complaint, an investigation will be undertaken as soon as practicable using the following steps:

- Acknowledge receipt of the concern or complaint and record:
    - The name, address and contact details of the complainant (unless they elect not to provide)

    - Time and date the complaint was received and who received it.
    - Time and date of the activity that caused the complaint (estimated where not known).
    - The complainant's description of the activity and its resulting effects.
    - Any relief sought by the complainant (e.g. scheduling of the activity.
- Identify the relevant activity and review the activity log to verify the complaint (or otherwise).
- If a complaint relates to building damage, inform the on-duty site manager as soon as practicable and stop the relevant works pending an investigation. In most cases, stopping the activity will provide immediate relief. But in some cases, this may not be practicable for safety or other reasons, in which case the complainant will be kept updated regularly during the time it takes to stop the activity.
- Review data from monitoring (if available) to identify the time in question and, if possible, verify the relevant activity.
- Review the relevant conditions of consent to determine if the activity was identified.
- Review the mitigation and management measures in place to ensure these have been applied. Review the relief sought by the complainant. Adopt further mitigation and management measures as appropriate.
- Review the potential residual effects if predicted to continue to exceed the relevant performance standards.
- Report the findings and recommendations to the Project Manager, implement changes and updates relevant management plans as appropriate.
- Report the outcomes of the investigation to the complainant, identifying where the relief sought by the complainant has been adopted or the reason(s) otherwise.