Downtown Carpark Redevelopment

Draft Construction Management Plan

Prepared for:

Precinct Properties

11 / 12 / 2024

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	16 August 2023
Version 2.0	Draft for Resource Consent	22 July 2024
Version 3.0	Final Draft for Resource Consent	29 July 2024
Version 4.0	Final for Resource Consent	31 July 2024
Version 5.0	Updated in response to S92 and revised design	11 December 2024

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 Downtown Carpark Redevelopment (the "project") to manage, remedy, and mitigate potential adverse effects during construction. These principles, practices and procedures are intended to meet resource consent conditions, relevant legislation, and the objectives of Precinct Properties.

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 resource consent application. 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 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 construction phase of the project. The CMP defines details of who, what, where and how construction management and mitigation 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. The CMP and SMP's may 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 approval.

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 Resource Management Act 1991 approvals, provides a methodology and framework of management plans and protocols for implementing the environmental controls to ensure the project meets conditions of consent. The final CMP will outline all details required to enable Precinct Properties and the contractor to construct the Project with the least adverse environmental effects. The most recent version of this plan will be held at the main site office at all times throughout construction. `

Overall, the purpose of this CMP is to:

- Specify practicable methods and measure to avoid and mitigate adverse environmental effects arising from construction works.
- Provide the framework for the Contractor responsible for this CMP to achieve compliance with conditions of resource consents.
- Achieve compliance with environmental legislation.
- Appropriately manage environmental risks associated with the Project; and
- Provide the Main Contractor with sufficient information to enable the development of a final CMP for direct adoption and refinement by the Main Contractor.

2.3 Project Overview

The project comprises the redevelopment of the Downtown Carpark site at 2 Lower Hobson Street Auckland Central, legally Lot 9 DP 60151 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. It will accommodate residential and commercial office uses together with retail and hospitality, as well as providing a new civic space and an extensive new laneway and public space network. In summary the development comprises:

- The demolition of the existing Downtown Carpark Building.
- Excavation / bulk earthworks and establishment of a 6-level basement beneath the site footprint comprising 5 levels to accommodate 540 basement carparks and a single additional localised basement level to accommodate water tanks and lift pits. Approximate earthworks volumes for the bulk excavation are provided as follows:
    - Total estimated bulk excavation – 120,000 m^3
    - Estimated volume for plunge columns and DWalls - 4500m^3
- The construction of:
    - Three podium buildings (Podium 1; Podium 2 and Podium 3)
    - Two towers - Tower 1 comprising 56 levels (incl. Podium 1) and Tower 2 comprising 45 levels (incl. Podium 2)
    - New public realm.

The following information should be treated as indicative only. It is intended to provide sufficient detail on the proposed construction activities to assess their potential environmental effects and to identify any necessary measures to avoid, remedy or mitigate those effects where appropriate.

Detailed programming has been undertaken; however, this will be dependent upon several factors, and it should be recognised that once the Contract for the Project has been awarded and a contractor in place, that the construction methodology shall be further defined and developed. This will be undertaken within the scope of the resource consent conditions which will be in place to manage the environmental effects of construction activities.

SMP's will be further finalised and informed by conditions of consent to ensure that all mitigation measures are implemented as required. Should a contractor wish to undertake construction activities in a manner not consistent with the consents held, appropriate authorisations shall be obtained at that time.

3 Method Statement

3.1 General

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

3.1.1 Programme Summary

Item	Start	Finish	Duration (approx.)
Demolition	February 2026	November 2026	10 - 12 months
Enabling works	November 2026	June 2027	6 months
Excavation	May 2027	January 2028	9 months
Basement	December 2027	February 2029	14 months
Main Construction	February 2028	December 2032	40 months

3.1.2 Hours of Operation

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

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

Construction hours may be extended to Monday to Friday 6.30am – 10.30pm (excl. public holidays) and Saturdays 7am – 11pm and public holidays to enable high noise works to occur outside sensitive hours of neighbouring buildings.

3.1.3 Site Fencing / Hoarding

Hoardings, fences, access gates will be provided around the perimeter of the construction site. All hoarding will be designed and built according to the relevant legislation, codes of practice and New Zealand and Australian Standards.

3.1.4 Overhead protection

Where potential overhead lifting works are required along the AON/HSBC/M Social accessway, overhead protection gantries will be provided to allow safe passage of pedestrians.

3.2 Enabling Works Methodology

Following demolition of the building, ground floor slabs and foundations will subsequently be removed to enable excavation and construction. This will be removed in a progressive matter as piling works moves across the site.

3.3 Excavation / Bulk Earthworks Methodology

The final earthworks methodology will be determined by the Contractor undertaking the works.

The following is an indicative methodology prepared using specialist inputs from the project design team.

Sheet pile walls and diaphragm walls have been considered to retain the proposed basement excavation. A partially drained site is expected to be used for construction with an impermeable perimeter wall installed prior to earthworks to provide groundwater cut-off to the excavation. The final basement excavation will be sealed, which will minimise groundwater inflows both during construction and in the long term.

A low point in the excavation would be maintained approximately 1 m below the working level of the excavation to form a collection point for groundwater flows and rainfall runoff entering the excavation. Water collected will be pumped up to the surface and treated. Other ponding areas within the excavation that cannot be diverted under gravity to this collection point may be dewatered using smaller pumps into the main collection point for pumping up to the surface.

All excavated material will be carted offsite and disposed of at an appropriate waste disposal facility which can accept the level of contamination present.

Bulk earthworks are expected to take six (6 months) to complete. It is proposed that the earthworks on this project are not subject to seasonal restrictions. This would enable the basement excavations to be completed without the need to temporarily shut down the earthworks over the winter period whilst the excavation is part-way completed. Given the close proximity to the adjacent roads and buildings and the self-containment of the excavation, the most practical option is to continue the earthworks operations with no seasonal restrictions to allow the basement excavation to be completed and sealed off as soon as practical.

3.4 Basement Construction Methodology

The excavation plan is provided as Figure 1 below from Tonkin and Taylor.

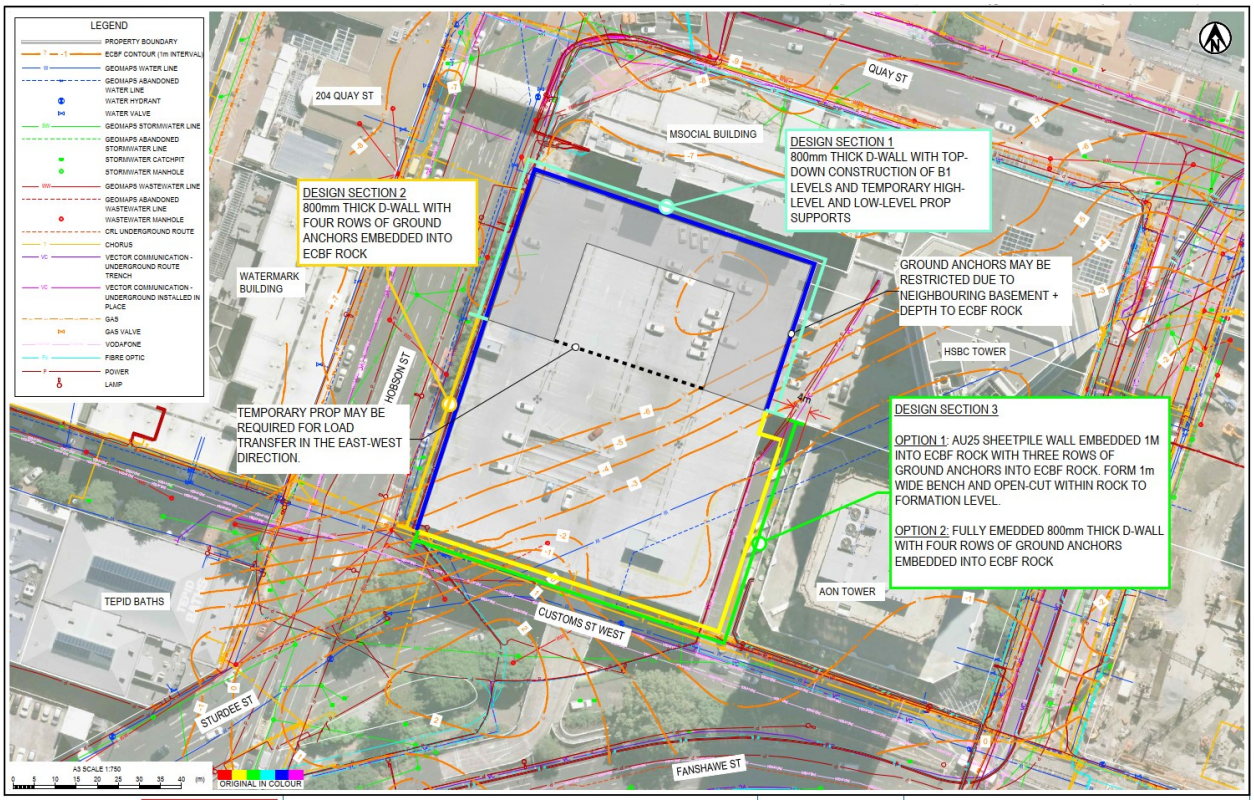

Figure 1: Excavation Plan (Tonkin & Taylor)

At the northern end of the site, construction will be top-down with installation of the perimeter wall and internal plunge piles.

Temporary diagonal props to the internal plunge piles will be installed prior excavation to B01 level and construction of the floor slab.

Similarly, temporary diagonal prop below the B04 basement level extending to the base of the excavation will be installed prior to construction of the basement floor slab and B04 basement floor.

Corner props, as an alternative to diagonal props, may be utilised. Access for excavation will be from the south.

At the western end of the site, the basement excavation will be retained by a Diaphragm wall with four-rows of ground anchors founded within the ECBF rock and/or internal props.

The southern and south-eastern perimeter, a sheet pile wall is proposed with three-rows of ground anchors founded within the ECBF rock.

Once excavation proceeds to be ECBF rock, a 1 m wide shelf would be formed below the wall and an open-cut excavation would be undertaken vertically within the ECBF. Temporary support with rock bolts with mesh facing and/or shotcrete may be required to stabilise the rock cut as excavation proceeds. Horizontal drains may also be required in the rock cut to temporarily relieve groundwater pressures near the cut face. Alternatively, a diaphragm wall with three-rows of ground anchors and/or internal props may be considered.

The following summarises the construction methodology with reference to Figure 1.

3.4.1 Design Section 1

- Install 800 mm thick Diaphragm wall with a toe level at RL -20.3 m.
- Excavate no deeper than RL 0.0 m and form 1(v):2(h) temporary berm to B01 FFL (RL +0.90 m).
- Install 310UC118 temporary prop founding upon internal plunge piles at 5 m c/c spacing (or alternatively corner propping).
- Excavate berm and continue excavation no deeper than RL 0.0 m and install 400 mm thick B01 level floor slab.
- Excavate no deeper than RL -6.0 m and install 400 mm thick B03 level floor slab.
- Excavate to no deeper than RL -10.7 m and form 1(v):1(h) temporary berm to basement excavation level (RL -16.3 m).
- Install 450x9.53 temporary prop founding on the basement excavation floor (or leave berm in place until B04 slab construction).
- Excavate berm and continue excavation to no deeper than RL -16.3 m and install B05 level slab.
- Install B04 and B02 level slab.
- Remove the lower and upper-level temporary prop and install GF slab.

3.4.2 Design Section 2

- Install 800 mm thick Diaphragm wall with a toe level at RL -20.3 m.
- Excavate no deeper than RL 2.0 m and install 7 x 15.2 mm VSL strand ground anchors at 2.5 m c/c spacing, at RL 2.5 m. Pre-stress anchor to 150 kN.
- Continue excavation to no deeper than RL -1.8 m and install 7 x 15.2 mm VSL strand ground anchors at 2.5 m c/c spacing, at RL -1.3 m. Pre-stress anchor to 200 kN.
- Excavate no deeper than RL -6.5 m and install 12 x 15.2 mm VSL strand ground anchors at 2.0m c/c spacing, at RL -6.0 m. Pre-stress anchor to 400 kN.
- Excavate no deeper than RL -11.0 m and install 7 x 15.2 mm VSL strand ground anchors at 2.5 m c/c spacing, at RL -10.5 m. Pre-stress anchor to 200 kN.
- Excavate to no deeper than RL -16.3 m and install B05 slab
- Install B4 and B3 slabs, and remove low-level ground anchors at RL -10.5 m and RL -6.0 m.
- Install B2 slab and remove ground anchor at RL -1.3 m
- Install B1 and GF slab and remove ground anchor at RL 2.5 m.

3.4.3 Design Section 3

- Install Arcelor AU25 sheet piles with a minimum toe embedment of 1 m into ECBF rock.
- Excavate no deeper than RL 2.0 m and install 5 x 15.2 mm VSL strand ground anchor at RL 2.5 m. Pre-stress anchor to 150 kN.
- Continue excavation to no deeper than RL -1.0 m and 5 x 15.2 mm VSL strand ground anchor at RL -0.5m. Pre-stress anchor to 200 kN.
- Continue excavation to no deeper than RL -4.5 m and 5 x 15.2 mm VSL strand ground anchor at RL -4.0 m. These are to act as passive anchors.
- Install 1 m wide level bench at RL -4.5 m and excavate vertical rock-cut (with temporary support with rock bolts and mesh / shotcrete as required) to no deeper than RL -16.3 m.
- Install permanent basement wall and internal floor slabs. Backfill between sheet piles and permanent wall.

3.5 Foundations

Once excavation works are completed, foundation works will commence. Foundations are to comprise the following:

- Shallow strip, pad or raft foundations bearing directly upon ECBF rock. Where required, ground anchors and/or tension piles may be required to resist high uplift loads.
- Piled foundations – comprising sheet piles or bored cast insitu concrete piles.

The existing belled reinforced concrete pile foundations will also need to be removed as the excavation proceeds.

The existing piles may need to be cut down where they conflict with construction of the foundations for the proposed development and to reduce the potential for hard points beneath the B5 floor level.

The excavated material will be promptly carted away from site. However, provisions have been made for a surge pile where trucks will be loaded. The surge pile will be isolated with a perimeter bund where surface runoff from this area will be directed under gravity to the basement excavation.

Existing stormwater catchpits adjacent to the site with the potential to receive runoff from the site will be protected and maintained to GD05 Standards.

3.6 Main Works

The above ground works will comprise the implementation of a core raft foundations to support the two tower cranes to be used for the above ground construction.

Once the foundations are complete, the tower cranes and jump forms for each tower will be installed. A ‘Jump Form’ is a prefabricated, ‘self-climbing’ formwork system for concrete structures that lets the construction of the lift core progress in advance of the concrete floor slab construction.

Forming, reinforcement tying, and concrete pouring of the cores will progress in a controlled cycle which will improve in efficiency as through repetition as the structure construction progresses.

Once above the complex podium levels, both Towers 1 and 2 transition into ‘typical’ arrangements. The structural construction will rapidly build to peak productivity. Maintaining the structure and follow-on passive fire, façade and fit out works in a logical sequence is essential for high rise construction.

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 risks 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.

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
- Aon Building – 29 Customs Street West
- HSBC Building – 188 Quay Street
- The Sebel – 85 Customs Street West

4.1.2 Mitigation 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 as part of a Construction Noise and Vibration Management Plan (CNVMP) once a contractor has been appointed

A CNVMP will be provided to Council for approval prior to the commencement of construction activities onsite. All identified noise and vibration control measures are to be in place and effective at all times

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 Integrated Transport Assessment (ITA). This confirms how the site, and the surrounding road network are to be managed across the construction 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. 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.

In summary, the primary potential effects will be as a result of earthworks / excavation activities which will generate the highest amount of heavy vehicle movements onto the surrounding road network. Depending on the truck size, there could be an average of 36 – 72 trucks per day (72 – 144 truck movements per day) during earthworks. Based on a weekday working period between 7 am to 6 pm, there could be an average of 3 to 7 trucks per hour (6 to 14 truck movements per hour).

This can be accommodated if a separated truck loading area is provided.

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. It is noted that on-site parking may be restricted or limited during specific stages of construction, notably excavation and once the structures have been established. A final CTMP to be developed once a contractor is appointed will need to provide this information.

4.2.2 Mitigation Measures

It is considered that construction traffic effects can be managed with the implementation of a CTMP. This can be provided as a condition of consent and 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
- Avoid Quay Street as a construction vehicle route.

The guidance and expectations as set out by the Traffic Management Plan 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 shall be implemented:

- Servicing Management Plan - to ensure that all servicing vehicles that access the Development comply with the necessary vertical clearance restrictions
- On the service at the Quay Street, access measures are implemented to improve visibility between exiting trucks and inbound vehicles. Such measures could include providing convex mirrors and a CCTV camera/screen system.

4.3 Erosion and Sediment Control

4.3.1 Potential Effects

The proposed earthworks involve a total area of approximately 6,444m^2 and 120,000m^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.

4.3.2 Mitigation 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 two main sources of water that will need to be collected and disposed of in the excavation; these are from groundwater inflows and from rainwater. 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.

4.4 Geotechnical and Groundwater

4.4.1 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 Downtown Carpark Redevelopment 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.

4.4.2 Mitigation Measures

Tonkin and 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 Redevelopment.

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 –20.3m 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 Groundwater and Settlement Monitoring Contingency Plan has been developed outlining the required monitoring for the excavation works and conditional surveys for the neighbouring structures prior to commencement of excavation.

4.5 Contamination

4.5.1 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 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 redevelopment 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.

4.5.2 Mitigation 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 resource consent close out.

4.6 Archaeology

4.6.1 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.

4.6.2 Proposed Mitigation

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.

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	Company	Responsibility
Precinct Properties Development Manager	Tim Woods	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	RCP	▪ Project delivery and ultimate responsibility
Contractor			
Main Contractor	TBC	TBC	▪ Contractor representative with overall responsibility for the Project ▪ Compliance and updating of CMP ▪ 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
Project Manager	TBC	TBC	
Site Manager	TBC	TBC	
Environmental Manager	TBC	TBC	▪ Environmental induction and training ▪ Responding to incidents, including seeking specialist contamination 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; and
- 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 Precinct Properties Representative

- Non-compliance reporting to Consent Authorities in a timely manner.
- Review CMP and SMP's, Complaints Register, Incidents and Emergency Register, Non-Compliance
- Report, 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.

5.1.9 Stakeholder Relationship Manager

- Coordinates interfaces with external agencies and stakeholders ensuring all requirements of resource consents and approvals are met.
- 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.

5.1.10 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; and
- Reviews the need to use dust control measures such as water sprayers.

5.1.11 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; and
- Liaise directly with Environment Manager and Stakeholder Manager on the day-to-day management of sites.

5.1.12 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; and
- 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.

- Targeted mail drops to forewarn of construction activity.
- 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.