RICHARD CROOKES
CONSTRUCTIONS

MONTE SCIENTIA PROJECT
1228

CONSTRUCTION MANAGEMENT PLAN - DEMOLITION AND EXCAVATION NEAR SYDNEY METRO ASSETS

15 January 2021

REGISTER

DATE	DESCRIPTION	BY	APPROVED BY
15.01.21	Draft for review	KB	MR
19.01.21	For Submission	KB	MR

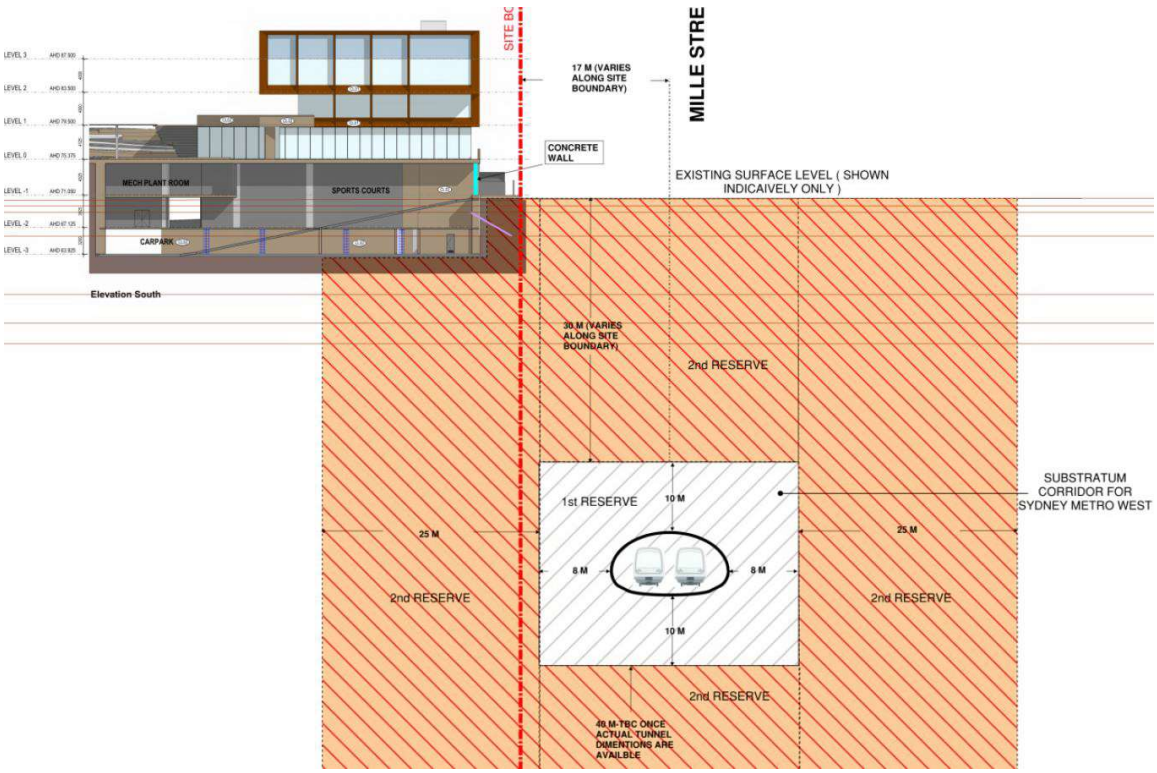
CONTENTS

1 INTRODUCTION

This Construction Management Plan for Demolition and Excavation works is to be read in conjunction with the following documentation:

Discipline	Title	Rev.	Date
Geotechnical	Report on Numerical Modelling by Douglas Partners	01	27.11.20
Geotechnical	Report on Geotechnical Investigation by Douglas Partners	02	25.02.20
Structural	Structural Engineering Design And Impact Assessment Report For Sydney Metro by Webber Engineering		15.01.21
Survey	Plan Showing Detail & Levels Over Lot 1 Dp104072, Lot A& B Dp339358, Lot 4-9 & Lot 11 Dp 5030 & Lot1-8 Dp262534 – (Sheet 1-8) by Total Surveyors	03	24.12.20
Demolition	Demolition Work Plan and Safe Work Method Statement - Ace subcontractors	02	07.01.21
Excavation	Excavation management Plan and Safe Work Method Statement – Ace subcontractors	02	07.01.21
Acoustics	Wilkinson Murray Memorandum Amended Acoustic Report	01	20.12.20
Acoustics	Wilkinson Murray SSBP RFP-Response to Submissions - Acoustics	01	23.07.20
Acoustics	Construction & Operational Noise Report by RWDI (former Wilkinson Murray)	E	06.04.20
Acoustics	Noise and Vibration Management Plan	A	13.01.2021
Hazardous Materials	Asbestos Management Plan Monte Scientia AMP	1	15.01.2021

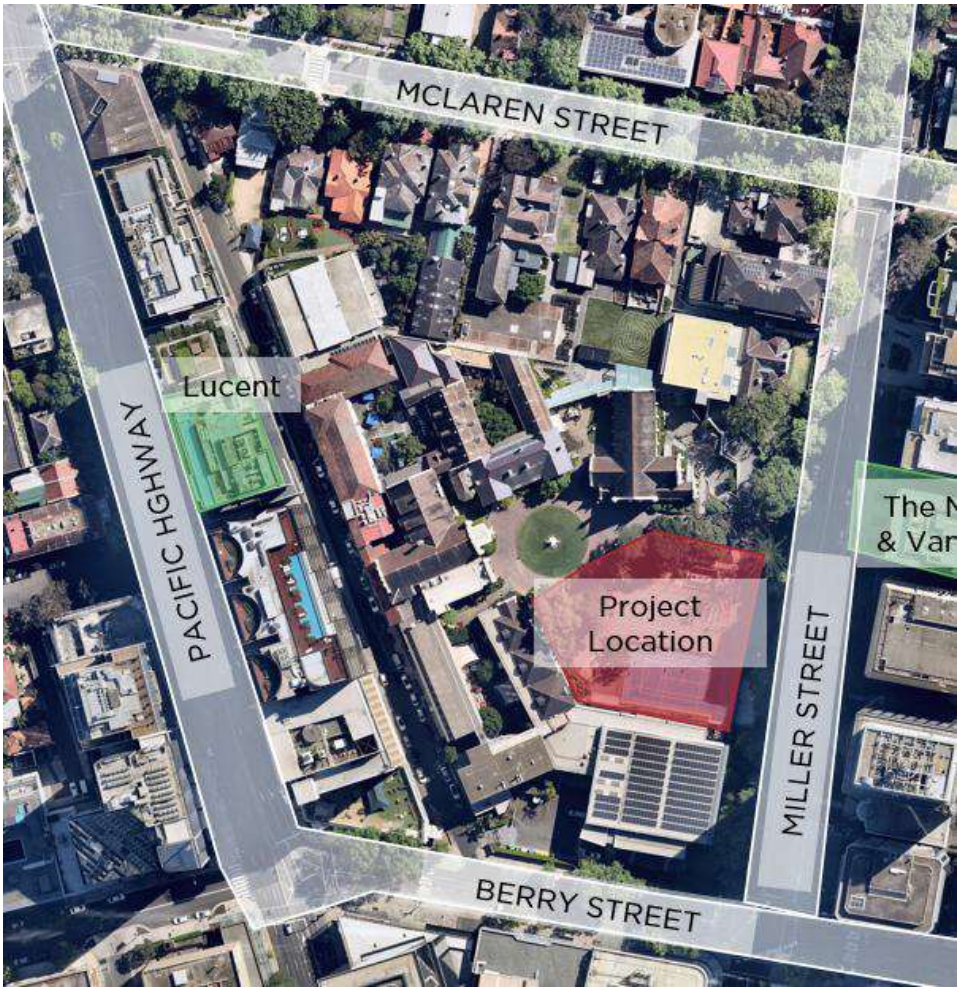
The proposed excavation will extend within the zones of influence of the Sydney Metro 2nd Reserve, however the findings in the geotechnical analysis and assessment has demonstrated that the overall impact to the tunnel is well within the tolerance provided.



2 PROJECT DETAILS

2.1 SITE DETAILS

The project is located at 128 Miller Street, Access to site is off Miller Street.



2.2 HOURS OF WORK

As per SSD 10393 conditions of consent D6, D7, D8 and D9 the construction hours will be as follow:

- Monday to Friday - 7am to 6pm
- Saturdays – 8am to 1pm
- Sundays and Public holidays – no works are to be carried out

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

- Monday to Friday - 9am to 12pm and 2pm to 5pm
- Saturdays 9am to 12pm

2.3 SCOPE OF WORKS

The Project scope will involve the following:

- Demolition

  The demolition of two existing sports courts and associated under croft staff carpark. The demolition works will include demolition of all structures between the main 'circular-drive' driveway entry from Miller Street, and the McQuoin Hall/Aquatic Centre at the corner of Miller and Berry Streets.

  Partial demolition and interface works with the northern face of the McQuoin building will also be required prior to commencing basement excavation works.

- Construction of New Sports and Science Building

  The new Building is a four-storey building with a basement staff carpark, partially underground dual sports court facility, three levels of new teaching spaces (innovation / science labs) and a rooftop sports court. The new education and sports facilities will include:

  - Two basement sports courts , fitness gym and car park
  - Workshops, kitchen and a shop
  - Science laboratory teaching spaces spread over three levels and
  - Rooftop outdoor sports court

- New Landscaping

  New landscaped area including a circular lawn is proposed to the west of the Building which will reflect the form and scale of the circular-drive lawn. Tiered stairs are proposed surrounding the new circular lawn providing a path connecting the circular drive and northern part of the School campus with the new Scientia Building and McQuoin Hall / Aquatic Centre.

3 CONSTRUCTION METHODOLOGY

3.1 SITE STABLISHMENT

Prior to site establishment, a thorough dilapidation survey of the surrounding structures and environment will be undertaken to identify and establish a baseline to ensure that any vulnerable elements are identified and protected. During this phase we will also conduct an existing services survey to identify all services both above and below ground which is essential for the finalisation of our project services design.

The key focus of our site establishment will be to ensure the ongoing safety of neighbouring properties, pedestrians and compliance with North Sydney council, RMS , Sydney Metro and Development Consent conditions of approval.

In order to accommodate labour and management personnel onsite, approval shall be obtained from North Sydney council to install amenities and offices.

Further approvals shall be sought from North Sydney council for the installation of the following temporary hoisting facilities, loading platforms, street zones etc.

- Internal electric tower crane;
- Twin Alimak external man material hoist;
- Scaffold or climbing screen edge protection system;
- Retractable loading platforms;
- Temporary Construction Zone in Miller Street (applied for individually).
- Hoisting permits to lift materials from Miller Street
- Footpath Crossings

A 3-metre-high A-Class acoustic hoarding will be erected around the entire site boundary to encapsulate the site and assist with noise mitigation.

A water misting system will also be installed on top of the hoardings to act as dust supress during demolition and excavation works. In line with the College's requirements, the hoardings will remain blank so that they can be decorated by the students and we will install 'viewing windows' where required into the hoarding. Specialised hoarding covers and panels will also be installed against the exposed elevation of the McQuoin building where traditional hoardings are not practicable.

Due to the constrained available space on site, there will be 3 phases to the establishment and location of the site compound. RCC administrative project offices will not be located within the construction site, we will rent office suites immediately adjacent to the College and construction site.

Demolition Phase 1:

During this phase the site compound will be established within the existing car park.

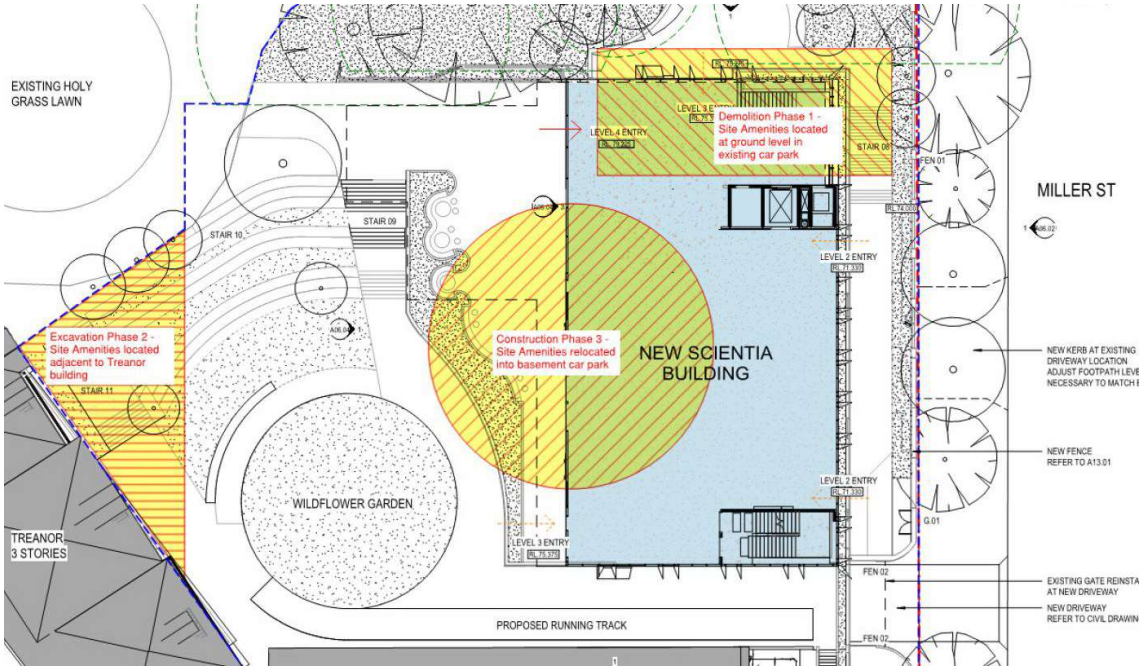
Excavation Phase 2:

During the excavation phase, site amenities will be relocated to the western portion of the site, adjacent to the Treanor Building which will also act as protection and noise barrier. The western elevation of our site amenities facing the Treanor Building will also be covered so there is no visual disturbance to the Treanor Building. RCC propose, in consultation with the College, the installation of acoustic baffles to this elevation of the site hoarding or applied close to the windows of these classrooms. This will help considerably to mitigate any impact construction noise may have on the productivity and effectiveness of the lessons being conducted in these classrooms.

Construction Phase 3:

As the structure at Level 3 is completed and the internal temporary supports are removed,

site amenities will be relocated to the basement carpark area. This will enable the commencement of all above ground works including the western landscaping area.



3.2 DEMOLITION SEQUENCE AND METHODOLOGY

The following sequence and methodology has been explain in depth in the Work Management Plan by Ace subcontractors, this document has also being review by Webber Structural engineers.

3.2.1 STAGE 1 PRELIMINARIES

3.2.1.1 PERMIT & TREE REMOVAL

Prior to the scheduling of any works a SafeWork NSW Permit for both Demolition and Asbestos Removal will be obtained from the regulator. SafeWork NSW permits to be issued for:

- Asbestos Removal Works
- Demolition Works

- Consultation with stakeholders and regulators will commence prior to site establishment and will continue throughout the project Permit
- Tree removal/Protection works to be done as per demolition plan.

3.2.1.2 EXCLUSION ZONE

Establish the exclusion zone around the buildings to isolate the building to be demolished from other parties, ensure no personnel from other trades access to the demolition areas.

- Signage to be placed and maintained in accordance with AS 1319
- Spotters to be in place and to ensure no unauthorized personnel enter the exclusion zone without approval from supervisors.

3.2.1.3 LOOSE ITEMS REMOVAL & SERVICE DISCONNECTION

- All the loose items to be removed prior to the asbestos removal.
- All the services to be disconnected prior to the demolition work commencement.
- Disconnection certificates of services to be provided prior the commencement of works.

3.2.1.4 ASBESTOS REMOVAL

- All asbestos removal to follow the process outline in the demolition Work Management Plan and Asbestos Management Plan by Coffey dated on 15.01.2021

3.2.2 STAGE 3 - SOFT STRIP

3.2.2.1 LOADING, DROP ZONE & METHODOLOGIES

- Drop zones to be erected. Size to be revised and extended when required. Proposed drop zone locations for the structure to be nominated,
- Subcontractor to strip out all the non-structural elements, including the fix joinery, partition walls and the like.
- All the extracted materials to be removed progressively from the building and dropped down into the drop zone at designated drop zones in a control manner.

3.2.3 STAGE 4- MAIN STRUCTURE DEMOLITION

3.2.3.1 DETAILED DEMOLITON WORKS

Detailed demolition works including the building separation and hand demolition around McQuoin Hall will be undertake it as per the following structural documentation prepared by Webber engineering

- S060 - Existing & Demolition Plan - Sheet 1 [T1]
- S061 - Existing & Demolition Plan - Sheet 2 [T1]
- S062 - Existing & Demolition Section - Sheet 1 [T1]
- S063 - Existing & Demolition Section - Sheet 3 [T1]

3.2.4 MECHANICAL DEMOLITION

Mechanical Demolition to be undertaken after the building being adequately separated.

The sequence of works is as per the following:

- Establishment of 35t – 50t excavators with pulveriser and hydraulic hammer attachment next to the building.

- Then demolish the building munching the structure bay by bay from one side all the way back to the other side. Demolition of each section is from higher section to the lower section
    - Roof → Beam → Columns
- No one will be working around that area when the demolition work is undertaken.
- The subcontractor to demolish the whole last section mechanically to prevent any unexpected collapse of the structure
- No cantilever span will be left hanging when the work is completed at the end the day

3.2.5 STAGE 5 – WASTE REMOVAL

3.2.5.1 REMOVAL OF MATERIALS

- Segregate all the materials and load the materials to the tips by trucks.
- Disposal of material must be in accordance with the EPA requirements.
- Tipping records to be updated to RCC once available
- Truck entering and leaving the jobsite refer to stage planning in line with CTMP
- Traffic controllers to coordinate traffic in and out the work area.

3.2.5.2 SEDIMENT CONTROL

- Sediment control to be in place as per project specification and drawings provided.
- Sweeper (bobcat) to clean the driveway frequently.
- Dust Control: dust suppression from different locations to ensure the maximum dust catchment during the demolition process.

3.3 EXCAVATION SEQUENCE AND METHOLOGY

3.3.1 EXCAVATION DETAILS

The Excavation is predominately sandstone with Fill material. Type and estimated quantity of materials are as follows:

- Sandstone - 67000 Ton
- Fill - 1300 Ton

The excavators will dig using hydraulic hammer during the bulk and detail excavation.

The following excavators will be utilised:

Bulk Excavation:

- 30 ton – 45 ton Excavator for load out and Excavation
- 35 Ton Excavator on rock saw cutting

Shoring and Retention:

- Piling Rig
- Anchor Rig
- 5 Ton Excavator

Detail Excavation and Drainage Excavation:

- 14 Ton Excavator
- 12 Ton Excavator
- 5 Ton Excavator

3.3.2 CONTAMINATED MATERIALS

A waste classification report which classifies the contaminated material will be provided prior to excavation, and the materials are to be removed prior to Excavation.

If the materials are tested positive for asbestos, hygienist is to be engaged and removal procedures must be as per the relevant WHS legislation.

3.3.3 EXCAVATION SEQUENCE

Excavation works will be carried out as per below sequences,

1. Service Disconnection Certification
2. Establishment of exclusion zone
3. Installation of sediment control
4. Classification of inground materials
5. Removal of fill materials as per classification reports
6. Installation of Piling Platform
7. Installation of Shoring System
8. Installation of Capping Beam
9. Excavation of First Drop
10. Installation of Shotcrete Panels
11. Installation of Anchor/Rock Bolts
12. Handover to client

All vertical rock faces will be progressively inspected by a geotechnical engineer at 1.5 m depth intervals to check for adversely inclined joints and detached blocks, and to assess whether additional stabilisation measures are required. Ref Geotechnical Investigation, by Douglas Partners rev 2 February 2020

3.3.4 TYPICAL ANCHORING AND DETAIL EXCAVATION METHODOLOGY

Excavated in approximately 1.5m-2.5m lifts. The first lift will be excavated below the top row of anchors.

- Walls will be trimmed as the excavation is undertaken
- Confirm RL and inclination
- Core-holing/drilling through piers to the required length
- Extract materials and clean out
- Installation of anchor as per engineer design
- Survey Capping Beam prior to stressing anchors, movement < 10mm

• Installation of anchor plates, ensure compliance with proof loaded to 1.3 times the design working load in a minimum of four equal increments

• Load and extension of anchors recorded

• Grout tested

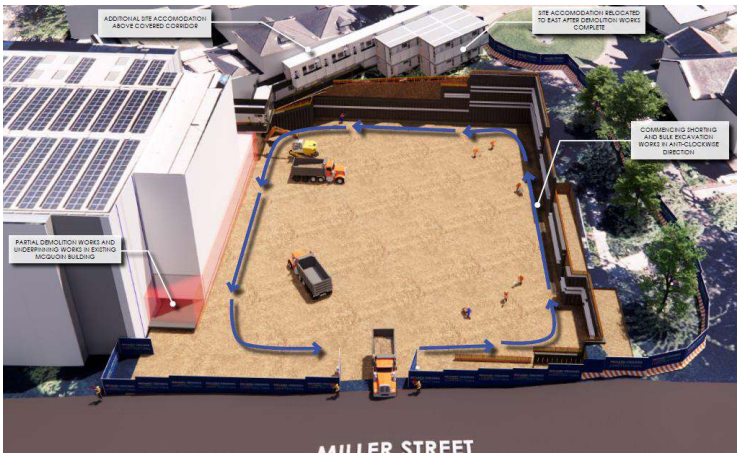
• Reinforcing mesh will be installed on the full 2.2m lift and the bottom 200mm will be backfilled to provide a lap for later connection.

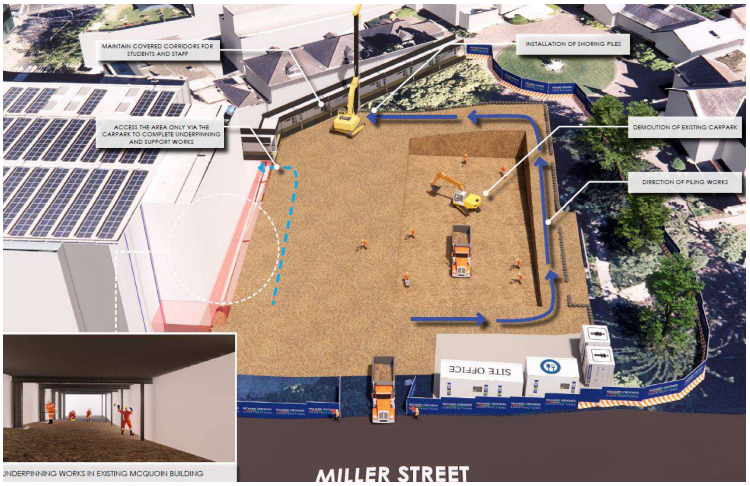
• Continue excavation

3.3.5 TYPICAL SHOTCRETE METHODOLOGY

Shotcrete will be applied to wall and batter faces in a single layer, with thickness as noted on the drawings. Applied shotcrete will be installed on flat surfaces, mesh reinforced and unreinforced and may include a steel fiber additive or without. Shotcrete application will be undertaken in the following stages:

- Preparation/trimming of work area and rock face
- Setout of shotcrete depth to ensure adequate cover and alignment.
- Installation of bolts, nails, vertical strip drains and reinforcing mesh.
- Engineer inspection to shotcrete wall reinforcement
- Setup of shotcrete pump and hoses
- Application of shotcrete
- Curing for 4 days minimum
- Clean-up
- Dust Control





3.4 MONITORING PROGRAM REGIME

3.4.1 NOISE MONITORING

A construction and operational noise and vibration assessment of the has been conducted by Wilkinson Murray Rev.E. Site specific noise criteria that are applicable to this project are presented.

Exceedances of construction noise management levels are expected at surrounding receivers to the east of construction site on Miller Street and, to a lesser degree, residences to the west backing onto Angelo Lane. Management of noise from construction activities should be included in the Site Construction Environmental Management Plan.

Site-specific operational noise criteria have been determined for the project based on ambient noise monitoring. A review of likely major plant indicates that noise levels can comply with established noise criteria during proposed operation with the inclusion of acoustic treatment. A review of all plant with respect to site-specific noise criteria is required at detailed design stage.

Noise emissions from the proposed new building need be designed to achieve the site-specific assessment criteria under operation.

3.4.2 VIBRATION MONITORING

As the adjacent structure will be retained and remain operational during the demolition and excavation works, vibration must be minimized to ensure the structural integrity of existing building and works are not undermining the any structure elements.

The following measures will ensure that disruptive vibration will not travel beyond site:

- Separation works to be done via saw cutting to ensure no further connection between structure to stay and structure to be demolished.
- Breakup of slabs, beams and columns into smaller pieces of rubble to reduce vibrations being felt from Drop Zone operation.
- Structural steel and large heavy objects will be craned off site.
- Installation of vibration monitor if required.

Note, as required by the SSD10393 consent, Wilkinson Murray Pty Limited has conducted an addendum report to the previous reports addressing the items in conditions B7, B8 and B9.

The report has found that the Sydney Metro criterion of 15mm/s will not be exceeded at the tunnel from all plant including the largest hydraulic hammers.

3.4.3 GROUND VIBRATION

As recommended on the Geotechnical Investigation report by Douglas Partners Feb.2020

It is anticipated that the excavation within fill/soils and weathered bedrock will result in relatively insignificant vibrations. Excavation of rock with rock hammers will result in vibration of the surrounding ground and it would be important to manage vibrations on the adjacent buildings/structures, especially the sensitive/heritage items and Sydney Metro infrastructure in close proximity.

During excavation it will be necessary to implement appropriate methods and equipment to keep ground vibrations within acceptable limits.

3.4.4 DUST CONTROL

Dust suppression measures must be implemented by ACE to ensure the dust is kept below a level that adversely affects the surrounding buildings and site:

Installing a minimum of 3 water points around site perimeter to ensure full coverage of water suppression.

- Each machine used in the demolition process will be accompanied by a labourer with a water hose to ensure water is available on each separate Excavation face and provide adequate dust suppression. Water runoff will be minimized
- Material will be saturated prior to being removed
- During load out of material, material will be wet down to minimize dust being generated
- Installation of Dust Monitor if required.

3.5 SUPER STRUCTURE AND FIT OUT

After the completion of detailed excavation works including services trenching, we will install the required waterproofing membranes followed by concrete placement to form the footings. This is then in-turn followed by placement of concrete and installation of reinforcement and post tensioned tendons to form the final structural slabs. The general sequence of works to construct the concrete structure is;

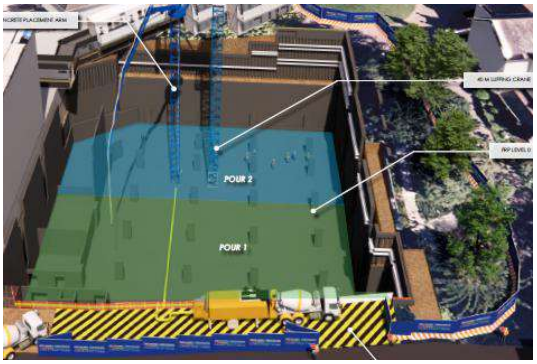
• Erect formwork and install reinforcement and post tensioned tendons then concrete placement to complete.

• After bottom slabs is poured, install formwork for the next slab above and repeat.

• After the above slab is poured, vertical structural elements such as columns and walls are then poured 'down' the level below.

There will be two large concrete pours to complete each floor from Level 0 to 4. The pour will then reduce to one pour per floor except for Level 6 which is a double slab.

This sequence has been formulated to ensure the elimination of out of hours works and concrete placement during morning and afternoon peak periods.



SYDNEY

LEVEL 3, 4 BROADCAST WAY
ARTARMON NSW 2064

PO BOX 1024
CROWS NEST NSW 1585

PHONE: +61 2 9902 4700
FAX: +61 2 9439 1114

NEWCASTLE

LEVEL 1, 118A BELFORD ST
BROADMEADOW NSW 2292

PO BOX 835
HAMILTON NSW 2303

PHONE: +61 2 9902 4700
FAX: +61 2 6766 3022

TAMWORTH

SUITE 1, 493 PEEL ST
TAMWORTH NSW 2340

PO BOX 576
TAMWORTH NSW 2340

PHONE: +61 2 6766 5225
FAX: +61 2 6766 3022

ACT

UNIT 1, 155 NEWCASTLE ST
FYSHWICK ACT 2609

PO BOX 771
FYSHWICK ACT 2609

PHONE: +61 2 6143 2900
FAX: +61 2 6280 8774

richardcrookes.com.au

Delivering Certainty