Appendix 33: Mitigation measures table

Potential impact	Mitigation measure	Appendix
Waste	**Management of hazardous waste materials** • Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather; • Sediment fences should be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal; • Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials (to prevent windblown emissions and spillage) and must be licensed by the NSW Environmental Protection Authority (EPA); • Decontamination of all equipment prior to demobilisation from the site is important so that contaminated materials are not spread off-site. **Management of excavation waste** • Wherever practical, excavation material will be reused as part of the development; • Excavation material that is not natural (virgin) material will be transported to an approved landfill site or off-site recycling depot; • A waste classification assessment of the fill material should be undertaken prior to it being acceptable for waste disposal purposes; • Transportation routes for excavation material removed from site will be identified and used. **Site-specific operational measures** **Training/Site Inductions** All staff employed during the demolition and construction stages of the development must undertake site-specific induction training regarding the procedures for waste management. Employees of the head contractor will undertake a specific induction outlining their duties and how they are to enforce the waste management procedures. **Induction training will include the following at a minimum:** • Legal obligations;	Appendix 8

Potential impact	Mitigation measure	Appendix
	• Emergency response procedures on site; • Waste storage locations and separation of waste; • Litter management in transit and on site; • The implications of poor waste management practices; • Correct use of general-purpose spill kits; • Responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities). **Materials Selection and Ordering** • Selection of all materials will be undertaken by architectural designers; • Prefabrication of materials off-site where possible; • Materials requirements are to be accurately calculated to minimise waste from over-ordering; • Materials ordering process is to aim at minimisation of materials packaging; • Material Safety Data Sheets (MSDS) are to accompany all materials delivered to site, where required, to ensure that safe handling and storage procedures are implemented. **Waste Avoidance Opportunities** • Limiting unnecessary excavation; • Selection of construction materials taking into consideration to their long lifespan and potential for reuse; • Ordering materials to size and ordering pre-cut and prefabricated materials; • Reuse of formwork; • Planned work staging; • Use of naturally ventilating buildings to reduce ductwork; • Reducing packaging waste on-site by returning packaging to suppliers where possible, purchasing in bulk and requesting cardboard or metal drums rather than plastics; • Requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels; • Reduction of PVC use; • Use of low VOC (volatile organic compounds) paints, floor coverings and adhesives; • Use of fittings and furnishings that have been recycled or incorporate recycled materials;	

Potential impact	Mitigation measure	Appendix
	• Use of building materials, fittings and furnishings with consideration to their longevity, adaptation, disassembly, reuse and recycling potential. **Site Procedures** • Excavated materials will be used onsite where practical; • Green waste will be mulched and reused in landscaping either onsite or offsite; • Concrete, tiles and bricks will be reused or recycled offsite; • Steel will be recycled offsite; all other metals will be recycled where economically viable; • Framing timber will be reused on-site or recycled off-site; • Windows, doors and joinery will be recycled off-site where possible; • Plumbing, fittings and joinery will be recycled off-site where possible; • Plasterboard will be re-used in landscaping on-site or returned to the supplier for recycling where possible; • All used crates will be stored for reuse unless damaged; • All glass that can be economically recycling will be; • All solid waste timber, brick, concrete, rock, plasterboard and other materials that cannot be reused or recycled will be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner; • All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with WorkCover Authority and EPA requirements; • Provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources will be provided on site; • Beverage container recycling will be provided on-site for employee use; • All waste and recycling will be disposed of via council approved systems. **Safety and signage** • Location should not interfere with sight lines of drivers entering or leaving the site; • Skip bins should be clearly visible and located in well-lit areas;	

Potential impact	Mitigation measure	Appendix
	• Safe paths of travel should be designated using reflective tape, barriers and cones; • Skip bins must be secured and must not be over-filled to reduce risk of injury through bins moving and falling objects.	
Contamination	**Detailed site investigation** • a hazardous building materials assessment is required for the existing buildings. Hazardous materials, if present, will need to be removed in accordance with relevant legislation and guidelines prior to demolition and managed appropriately in the interim or where buildings are to be retained • following demolition of existing site structures, the footprints of the buildings should be inspected by a suitably qualified environmental consultant for signs of contamination and sampled as necessary. If signs of contamination are identified, then further investigation and / or the need for remediation / preparation of a RAP should be considered • asbestos has not been identified in the samples analysed during the current investigation. However, given that sporadic pockets of asbestos contamination can sometimes be present amongst demolition debris and noting that intrusive sampling was undertaken using test bores (due to the operational nature of the site and associated access limitations), the potential for undetected and/or sporadic pockets of asbestos contamination cannot be completely ruled out. Therefore, it is recommended that an unexpected finds protocol should be prepared and implemented to address any unexpected contamination identified during the civil and construction phase • confirmation of the preliminary waste classification reported herein by a suitably qualified environmental consultant prior to off-site disposal of surplus soils at a licensed receiving facility • the dewatering management plan (DMP) for the site must give adequate consideration to groundwater quality, noting the elevated metals concentrations reported herein. It is likely that groundwater requiring disposal will need to be treated prior to disposal depending on the levels of contaminants in the collected water. Given the inherent variability in groundwater conditions with time, it is recommended that a baseline groundwater quality assessment be undertaken close to the proposed dewatering date and reported as part of the DMP.	Appendix 14

Potential impact	Mitigation measure	Appendix
Noise and vibration	**Noise** • This construction program should be issued to assist on the prediction of the noise impact and to develop mitigation measures that can ameliorate this impact. A 3D computer noise model can be produced to conduct the noise level predictions and undertake the relevant assessment. The outcomes of this assessment should be discussed in the CNVMP. • Maximising the offset distance between plant items and nearby noise sensitive receivers. • Preventing noisy plant working simultaneously and adjacent to sensitive receivers. • Minimising consecutive works in the same site area. • Orienting equipment away from noise sensitive areas. • Carrying out loading and unloading away from noise sensitive areas. • on-site monitoring be conducted to attest this impact and propose mitigation measures as construction activities develop. • The contractor should also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers. • The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal. • A potential approach would be to schedule a respite period after continuous construction activity, or undertaking high noise generating works to less sensitive times. • Finally, undertake an assessment of road traffic noise generated by light and heavy vehicle movements which are associated with the development construction. For this purpose, request a traffic study report to determine the relevant traffic flows and assess the predicted road traffic noise levels in accordance with the criteria discussed in Section 4.2. **Vibration** • Any vibration generating plant and equipment is to be located in areas within the site in order to lower the vibration impacts.	Appendix 15

Potential impact	Mitigation measure	Appendix
	• Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment. • Identify of other vibration sensitive structures such as tunnels, gas pipelines, fibre optic cables, Sydney Water retention basins. Specific vibration goals should be determined on a case-by-case basis by an acoustic consultant which is to be engaged by the construction contractor. • Identify heritage structures as well as vibration sensitive premises (such as those containing scientific instrumentation, surgery equipment, etc). Safe working distances from vibration generating equipment should be established to achieve compliance with the criteria discussed in Sections 4.3 and 4.4. Hence, it is advised to conduct attended measurements of vibration generating plant at commencement of works to confirm compliance with vibration criteria discussed in Sections 4.3 and 4.4. Measurements should be conducted at the nearest affected property boundary. If possible, measurements will also be used to validate the safe working distances advised in Table 40 and to establish safe working distances suitable to the project. Trial measurements should be considered at the following premises: • Residential apartments at No. 258 & No. 250 Pacific Highway. • Residential buildings between No. 51 and No. 77 Sinclair Street. • Commercial building at No. 286 Pacific Highway. • Use lower vibration generating items of construction plant and equipment, that is, smaller capacity plant. • Minimise conducting vibration generating works consecutively in the same area (if applicable). • Schedule a minimum respite period prior to long continuous activities. • Use only dampened rock breakers and/or “city” rock breakers to minimise the impacts associated with rock breaking works. **Miscellaneous measures and recommendations** • Deliveries should be undertaken, where possible, during standard construction hours. • Maximise hammer penetration (and reduce blows) by using sharp hammer tips. Keep stocks of sharp profiles on site; and monitor the profiles in use.	

Potential impact	Mitigation measure	Appendix
	• It is advised that mobile plant and trucks operating on site for a significant portion of the project are to have reversing alarm noise emissions minimised. Broadband “quacker” reversing alarms should be used in preference to tonal alarms. This is to be implemented subject to recognising the need to maintain occupational safety standards • No public address system should be used on site. • A complaint response procedure should be implemented. Information to be gathered as part of this process should include location of complainant, time/s of occurrence of alleged noise or vibration impacts (including nature of impact particularly with respect to vibration), perceived source, prevailing weather conditions and similar details that could be utilised to assist in the investigation of the complaint. All resident complaints will be responded to in the required timeframe and action taken recorded • Mechanical plant design and equipment selection should be made so that the aggregate noise level from all external emissions, comply with the external noise level criteria discussed in Section 3.1. Additionally, plant selection and mechanical design should be undertaken so aggregate internal noise level complies with the criteria discussed in Section 3.2. Mechanical plant should be resiliently mounted. Vibration isolation mounts and supports should be designed to achieve compliance with vibration criteria discussed in Section 3.7. • Building envelope constructions should include treatments aimed at mitigating noise intrusion from external noise sources (mainly local road traffic), so the aggregate internal noise level does not exceed the internal noise level criteria discussed in Section 3.2. These constructions should be recommended when floor layouts are finalised. In the interim, conceptual sound insulation performances are provided in Section 5.3 and Appendix C. • Internal building elements which are subject to the sound insulation requirements discussed in Section 3.3 (generally in accordance with Part F7 of the NCC 2022), should be designed and constructed so compliance is achieved with these requirements. Generally, these building items correspond to residential apartments, and comprise inter-tenancy partitions, floors/ceiling constructions, apartment doors, risers.	

Potential impact	Mitigation measure	Appendix

	• As mentioned in Section 3.5, the outdoor terrace areas are no intended to be used as licensed premises. As such, the following is recommended for all outdoor terrace areas:
	  ○ Terrace areas should not exceed patron capacity listed in Table 34.
	  ○ Terrace areas are only allowed to operate between 7:00 am and 10:00 pm.
	  ○ If background music is to be used in any terrace area, a noise limiter should be installed as part of the PA system, so noise levels within the terrace do not exceed 60 dB LAeq.
	  ○ For Level 2 outdoor terrace, a solid screen should be installed as discussed in Section 5.5.
	• Ground-borne vibration generated by the Sydney Metro rail network, is unlikely to impact the proposed development. However, we advise that ground-borne noise related to the Sydney Metro underground rail corridor, should be further assessed during detailed design stages. Refer to discussion in Section 5.7.
	• Since the carpark will be fully enclosed and mechanically ventilated, it is expected that noise impact from the carpark will be negligible. Furthermore, noise emissions from the entry and exit routes, to and from the carpark, are expected to achieve compliance provided that the existing screen shown in Figure 9 is retained.
	• Waste collection and use of loading dock should be conducted between 7:00 am and 10:00 pm.
	• Noise impact on local roads is expected to be negligible (refer to discussion in Section 5.10).
	• Additionally, it is advised that a construction noise and vibration management plan (CNVMP) should be developed for the construction works related to the development. This	

Water Management	• Sandbag protection will be installed surrounding all existing stormwater drainageinfrastructure inlets to prevent sediment entering the system. • A shaker grid and wash down facility will be installed at all exits from the construction site. All vehicles leaving the site will have their wheels washed down and pass over the shaker grid to remove any spoil collected on their wheels and retaining the spoil on site.	Appendix 19

Potential impact	Mitigation measure	Appendix
	• Installation of sediment fences on all downstream boundaries of the site to collect sediment and prevent it discharging onto downstream properties or waterbodies. • it is recommended that a bespoke maintenance schedule and checklist be created.	
Geotechnical	• Design parameters for batters slopes, retaining walls and ground anchors based on site-specific investigation / laboratory testing of ground conditions. Geotechnical inspections of batter slopes and ground anchor installation • Use rock saws prior to rock hammering, undertake vibration trials and on-going vibration monitoring. • Design parameters for footing design based on site-specific investigation / laboratory testing of ground conditions. Geotechnical inspections of foundations. • Design parameters for subgrade and pavements based on site-specific investigation / laboratory testing of ground conditions. Subgrade preparation, earthworks inspection and testing. Installation of drainage. • Groundwater level monitoring for minimum 3 months, inflow assessment, preparation of Groundwater Impact Assessment (GIA), basement drainage system • Groundwater Impact Assessment (GIA), vibration trials and possibly on-going vibration monitoring induced by construction plant, Dilapidation Surveys, analyse lateral movements of retaining walls, stormwater management. Assessed as low risk and not applicable • it is recommended that a design subgrade CBR of 3% be provisionally adopted for the clays at the site, assuming that the site preparation recommendations, above, are adopted • it is recommended that a design subgrade CBR of 3% be provisionally adopted for the clays at the site, assuming that the site preparation recommendations, above, are adopted.	Appendix 20
Arboricultural	• Tree protection measures specified within section 5 of the Arboricultural Impact Assessment	Appendix 26
Green Travel Plan	• *Provide 226 bicycle parking spaces within a secure room in the basement car park*	Appendix 33

Potential impact	Mitigation measure	Appendix
	• *Provide public transport noticeboard at key locations within the site in the form of a Transport Access Guide (TAG). This will also be posted on the website, displayed on any digital directory in the lobby and included as part of the welcome pack distributed to all employees upon occupation* • *Provide food and beverage opportunities on-site* • *Provide tenants with a TAG on day one of occupation and post the TAG on noticeboards, front entrances, website, social media etc. Walking and cycling maps and the surrounding facilities will be available via a Digital Directory Screen located on site* • *Discuss providing public transport travel allowance for staff members (for each tenant to decide on)* • *Encourage Walking Groups and Bicycle User Groups for staff to encourage the active transport use* • *Ongoing review of the GTP to introduce additional measures as required* • *Once the plan has been implemented, it is important to maintain interest in the scheme. Each new initiative in the plan will need to be publicised and marketing of the plan as a whole will be undertaken. The regular annual review will take place to identify any remedial actions, which are possible to be adopted, should the modal share targets not be achieved. The appointed TPC will coordinate with other organisations such as Council to canvass any other initiatives that can be practically adopted. Alternatively, the TPC could work with Council to see how the measures might be aligned with Council's strategic planning for active travel.*	