Appendix C – Mitigation Measures
SSD-97092958 – Bullecourt Avenue, Milperra- Early Works & Stage 1

Consultant	Mitigation Measure
Design and Operation	
Noise and Vibration	
Renzo and Tonin	• Based on the noise modelling, and in accordance with internal noise criteria set out in Section 4.2, recommendations for building element constructions are presented for the room types outlined in Table 6-1. The required acoustic treatment categories are presented graphically. The acoustic treatment corresponding to each category is specified in Table 7-1. • Where facades have been identified for acoustic treatment in Section 7.1, windows are to be kept closed to meet the internal noise goals. It is noted that windows are not required to be sealed shut/fixed and can be operable. It is recommended that a mechanical engineer is consulted to ensure the ventilation requirements of the Building Code of Australia and Australian Standard 1668 "The use of ventilation and air-conditioning in buildings" are achieved. The internal noise goals are to be met with mechanical ventilation systems not operating. Where alternative forms of ventilation are to be provided, it must be ensured that the solution does not provide a new noise leakage path into the dwelling and does not create a noise nuisance to neighbouring premises. • The recommended mitigation measures for road traffic noise cannot consider the specific design of each dwelling as those details are not available at this stage of development. The recommendations have been developed for the approvals process and cost planning, and to provide the indicative measures required for each dwelling. Whilst it is the intent for the recommendations and this report to minimise the need for detailed acoustic assessment of each dwelling, it is recommended that an individual acoustic review of the 'Construction' drawings be carried out for each noise affected lot to ensure correct interpretation and application of the recommendations. • To achieve the required levels of acoustic privacy in private open spaces, as outlined in Chapter 5.2 Section 2.1 (Acoustic Privacy) of the Canterbury-Bankstown Council DCP 2023, it is recommended that a minimum of 1.8m high lapped and capped timber, masonry, or Colourbond fence be installed at each lot along the dwelling's sides and backyard boundary. The noise mitigation measures stated in Table 7-1 consider the benefit provided by noise screens along the southern boundary of the site (approximately 4.8m high) and around the playground of Mount St Joseph Catholic College Milperra school (approximately 1.8m high). An acoustically rated fence can be constructed of common building materials but needs to be from a durable material with sufficient mass (min. 10kg/m2) to prevent direct noise transmission e.g., masonry, fibrous cement, lapped and capped timber fence, polycarbonate, or any combination of such materials, provided they withstand the weather elements. The boundary fence should be continuous with no gaps between panels or underneath panels (other than that required for gates).
Construction Management	
Aboriginal Heritage Due Diligence	

Consultant	Mitigation Measure
Extent Heritage	• In the event that unexpected Aboriginal objects (or potential Aboriginal objects) are discovered during development, all works in the vicinity of the discovery site should cease and the site manager and/or proponent should immediately notify Heritage NSW, to determine whether further Aboriginal heritage assessment or permit approvals are required. • If human remains, or suspected human remains are discovered, all works must cease and the unexpected finds protocol must be followed.
Heritage Now	• All on-site personnel are to be made aware of their obligations under the National Parks and Wildlife Act 1974, which includes protection of Aboriginal sites and the reporting of any new, or suspected, Aboriginal heritage sites. This may be done through an on-site induction or other suitable format. • In the unlikely event that Aboriginal or suspected Aboriginal archaeological material is uncovered during the development, then works in that area are to stop and the area cordoned off. The Project Manager is to contact the Heritage Consultant to make an assessment as to whether the material is classed as Aboriginal object/s under the National Parks and Wildlife Act 1974 and advise on the required management and mitigation measures. Works are not to re-commence in the cordoned off area until heritage clearance has been given and/or the required management and mitigation measures have been implemented. • In the unlikely event that human remains, or suspected human remains are uncovered during the development, then works in that area are to stop and the area cordoned off. The Project Manager is to contact the NSW Police to establish whether the area is a crime scene. If it is not a crime scene, and the remains are determined to be Aboriginal ancestral remains, then Heritage NSW is to be notified via the Environment Line on 131555 and management measures are to be devised in consultation with RAPs. Works are not to recommence in the area until the management measures have been implemented.
European Heritage	
Extent Heritage	• Existing street trees should be retained where feasible. Street tree planting is encouraged where it enhances the axis of the historic streetscape pattern along Ashford Avenue and Bullecourt Avenue. • An Unexpected Finds Protocol should be developed by an archaeologist with demonstrated experience and understanding of the required obligations in accordance with the Heritage Act. This protocol would include a pre-start briefing of contractors regarding the type of material that may be uncovered during works and their obligations under the Heritage Act. The procedure should also outline a process for protecting and identifying unexpected archaeological material, if uncovered during works
Noise and Vibration	
Renzo and Tonin	General bulk earthworks methods: • Use of excavator with bucket should be used whenever feasible in order to conduct bulk earth works of buildings and hard stand areas. • Use of hydraulic hammers should be adopted only when use of excavators with bucket is not feasible (e.g. breaking of ground slabs or similar). • Any equipment not in use for extended periods during construction work must be switched off. • The offset distance between noisy fixed plant (if any) and adjacent sensitive receivers is to be maximised where practicable. • Avoid stockpiling spoil within 50m of the Child Care Centre or St Joseph Catholic School.
	Noise mitigation and respite periods:

Consultant	Mitigation Measure
	• Residences on Ashford Ave – given the risk of exceedance of Highly Noise Affected Levels when using hydraulic hammers on the western edge of the site. it is recommended that works within 30m of the western boundary of the site should not commence prior to 8am. • Unless agreed otherwise with the school, work within 50m of the school buildings using a hydraulic hammer is not recommended during class times. • Unless agreed otherwise with the Childcare centre, work within 50m of the buildings using a hydraulic hammer is not recommended during sleeping times (this will apply to works at stages 5 & 6).
	Notification: • Ashford Ave Residences: Given the risk of exceedance of the Noise Management Level, these residences should be notified with respect to work on western edge of the site. The notification should detail: - Proposed start and finish date for each of the stages. - Typical daily start time. - Proposed start time (8am) for use of a hydraulic hammer when working on western boundary. • Child Care Centre: Given the risk of exceedance of the Noise Management Level, the Childcare centre should be notified with respect to works in Stages 5 and 6 (Stages 1, 2, 3, 4 and 7 are highly unlikely to result in noise and vibration impacts on the childcare centre). The notification should detail: - Proposed start and finish date for each of the stages. - Proposed respite period with respect to use of Hydraulic Hammer during sleep times. • Mount St Joseph Catholic School: Given the risk of exceedance of the Noise Management Level, the school should be notified with respect to work in Stages 5 and 4. The notification should detail: - Proposed start and finish date for each of the stages. - Proposed respite period with respect to use of Hydraulic Hammer during class times.
	• Dilapidation surveys should be carried out for the childcare centre and the school buildings located along the western edge of the Mount St Joseph Catholic School grounds if a hydraulic hammer is to be used within the buffer distances specified in Table 8-10.
	• Notification by letterbox drop would be carried out for all occupied buildings within 50m of the construction site. These measures are to address potential community concerns that perceived vibration may cause damage to property.
	• Establishment of buffer distances between construction equipment and the School and Childcare centre as detailed in Section 6. In the event that works will be required within the safe buffer distance, vibration monitoring should be conducted during those works. The monitor should be capable of provided SMS notification to contractor in the event that vibration levels reach designated thresholds.
	• Where vibration is found to exceed threshold limits with respect to building/infrastructure damage, management measures should be implemented to ensure vibration compliance is achieved. Management measures may include modification of construction methods such as using smaller equipment (hammer size), use of concrete saws/munchers in place of hammers, and use of non-vibratory compaction rollers.
	• A management procedure will need to be put in place to deal with noise complaints that may arise from construction activities.

Consultant	Mitigation Measure
Biodiversity and Tree Removal	
Temporal Tree Management	Prior to the commencement of practical works: • A Project Arborist must be appointed for the duration of this development to ensure compliance with the requirements outlined in Section 7 of this report. • Fenced TPZs compliant in design with Section 4.3 of AS4970 (2025) must be installed around all retained trees (Figure 7). • Site boundary fencing will provide suitable protection for all trees positioned outside the subject site (Trees 1, 2, 4-14, 22-27, 29-35, 37-51, 84, 156-159, 212, 213, 237-241, 404-406, 411-414, 427-433, 478-482, 567-571 and 576-582). No additional protection measures are required for these externally owned trees. • Fourteen fenced TPZs compliant in design with Section 4.3 of AS4970 (2025) must be installed around Tree 62, Trees 63-79, Trees 122-127, Trees 129-138, Trees 139-143, Trees 145-149, Tree 151, Trees 207-208, Trees 209-211, Trees 315-319, Trees 335-349, Trees 355-358, Trees 360-367 and 371-375 to ensure the trees within the subject site are suitably protected. • Fenced protection zones must extend to the NRZ boundary of the adjacent retained tree where feasible. Fencing must be established no more than 0.3 metres from the nearest edge of proposed bulk earthworks in all other cases. • Tree Protection Zone signage compliant with the specifications outlined in Section 4.4 of AS4970 (2025) must be installed on all specified fenced protection zones and be adequately visitable from all surrounding portions of the site. • Shade-cloth must be installed on all fence panels for fenced protection zones to mitigate the transport of dust and liquid contaminants into the protection areas. • Coarse-grained wood-chip mulch must be applied to a depth of 50-70mm within all fenced tree protection areas that are within the boundaries of the subject site. • A Root Mapping Assessment was undertaken on 05/07/2024 by Temporal Tree Management Pty Ltd, which demonstrated that the proposed driveway within the NRZ of Tree 62 will not impact its viability within the landscape. This element of the proposed development is therefore supported without amendment. • A second Root Mapping Assessment was undertaken between 20-28/10-2025 by Temporal Tree Management Pty Ltd to accurately determine the impact of the unmitigated Major encroachments sustained by Trees 1, 43, 44, 46, 48, 50, 122, 141, 142, 143, 151, 157, 158, 159, 208, 209, 210, 211, 212, 237, 238, 239, 240, 241, 317, 318, 319, 340, 341, 343, 344, 349, 353, 354, 364, 365, 367, 371, 373, 576 and 577. • Amendments to the proposed pathway design within the Central Park are recommended adjacent to Trees 1, 319, 354 and 364 to ensure large major roots (diameters of greater than 60mm) are not impacted. The recommended amendments to the pathway design within the Central Park have been suitably incorporated into the Central Park Landscape Concept Plan prepared by Urbis (11/2024) (Figure 9). • The proposed stormwater line within the northern boundary must also be installed at a minimum depth of 600mm below a large major root growing from Tree 142. • The impacts of the Major encroachments sustained by the thirty-seven remaining trees that were included in this Root Mapping Assessment were determined to be acceptable and require no design amendments. • All test pit excavation required for the AEC01a and AEC03 impacted soil areas that will encroach within the TPZs of Trees 66, 339, 340, 341, 343, 344, 345, 346, 347, 348, 349, 353, 354, 355, 356, 357, 358, 360, 361, 362, 363, 364, 365, 366, 367, 371, 372, 373, 374, 375 or 493 must be undertaken using hand tools only and supervised by the Project Arborist. • A detailed assessment of the impact of any additional excavation required within the AEC01a and AEC03 impacted soils must be provided by the Project Arborist prior to commencement.
	During construction works:

Consultant	Mitigation Measure
	• No access is permitted within the specified fenced protection zones. Any required access within the fenced protection zone must be approved by the Project Arborist prior to entry. • Ground protection measures compliant with Section 4.5.3 of AS4970 (2025) must be installed prior to any approved access within a fenced protection zone (Figure 8). • Fill stockpiles for soil remediation or storage must be located outside specified fenced protection zones for retained trees. • Plant equipment is to be kept away from the crown of each tree. No work is to be conducted within the TPZ of each tree. Where required, work is to be conducted from outside of the TPZ, by reaching into the fenced protection zones to minimise soil disturbance and compaction and avoid any branch and trunk damage. • The Project Arborist must supervise and inspect demolition and excavation works proposed within the NRZs of Trees 19, 355, 357 and 427. These supervised works must confirm that minimal excavation (max depth 50mm) below the base layer of existing roads and pathways occurs within the NRZs of Trees 19, 355, 357 and 427. • The Project Arborist must certify that a maximum excavation depth of 150mm is not exceeded during construction of the footpath in front of Tree 1. • The Project Arborist must also supervise the installation of stormwater services within the NRZs of Trees 142 and 143 and certify that the new line is installed under a large major root growing from Tree 142. • The recommended design amendments within the central park have been incorporated into the proposed Landscape Plan, which will suitably mitigate the impact of the encroachments sustained by Trees 319, 354 and 364. • Root pruning recommended in the Root Mapping Assessment prepared by Temporal Tree Management Pty Ltd. will be required to facilitate the proposed development. The recommended pruning of twenty-three smaller major roots (maximum diameter of 55 mm) and minor roots was determined to be acceptable and is unlikely to impact the viability of the assessed trees. Approval for all root pruning recommended in the Root Mapping Assessment must be obtained in the Conditions of Consent. • There must be no unapproved major root (diameter of 40mm or greater) damage or disturbance during the required excavation within the TPZs of retained trees. • All root pruning must be undertaken by the Project Arborist using a handsaw in compliance with AS4373 (2007) (p. 18). Documentation of all major root cutting and an ongoing monitoring schedule for all affected trees must be provided by the Project Arborist as part of the final arboricultural checklist. • There must be no other access within the specified fenced tree protection zones. The Project Arborist must be notified and must provide certification if any access is required during the construction process. • The installation of utilities is required within the eastern boundary of the central park is required within the SRZs of Trees 371, 372 and 373. Installation of this section of services must be undertaken using a directional drill at a minimum depth of 800 mm to mitigate the potential impact on these trees.
	Post Construction – Landscaping: • Where required, excavation for planting within a retained Tree's TPZ is to be undertaken manually, to prevent damage to structural roots. Existing soil grades should be maintained with plant container size restricted to a maximum size of 5 litres. No more than 2 plants per square metre for 5 litre pots and 5 plants per square metre for 150 mm pot size. Remedial pruning to crown of tree/s as required to be conducted per AS4373 (2007), to be determined by the Project Arborist. • The installation of boundary fencing must be undertaken using hand tools only. Fences must be installed with excavated holes to a maximum depth of 600 mm for posts. Boundary fencing must have the flexibility of design to move a post or pier to be 100 mm clear of any structural root (a root greater than >40 mm diameter) to protect such roots and provide sufficient space for future growth without conflict between the 2 structures. Any posts to be relocated must be approved and certified by a structural engineer or architect.

Consultant	Mitigation Measure
	• A Level 3 – Advanced Assessment must be undertaken prior to practical completion of works for Trees 344, 345 and 353 to accurately determine the level of risk they pose within the landscape. Risk mitigation works may be required for these three large trees to facilitate their retention within the proposed central park
Bushfire	
BlackAsh	• All lots within the residential stages that fall within the area designated on the Figure 7 BAL map are to be maintained as an Inner Protection Area (IPA) in accordance with Appendix 4 of Planning for Bush Fire Protection 2019 and the NSW RFS Asset Protection Zone Standards. • Installation of new water, electricity and gas supplies (where installed) through the proposed development must comply with section 5.3.3 of PBP 2019. • All new roads on bushfire prone land that fall within the area designated on the Figure 7 BAL map must comply with section 5.3.2 of PBP 2019 as appropriate.
Crime Prevention Through Environmental Design	
Urbis	Surveillance: • Incorporate lighting in any areas intended for nighttime use (such as sensor lighting along the entry pathways, or any seating areas in communal areas) to increase perceptions of safety and avoid dark areas which may act as points of entrapment. In particular: - Ensure that lighting is permanently on, or movement activated, along pedestrian paths, carpark and public transport access points to provide visibility at night. • Seating should be positioned along the main footpath and around the basin to encourage legitimate use of the space and provide opportunities for passive surveillance. Benches should be placed in locations with clear sightlines to other park areas, paths, and entrances, avoiding hidden or obscured spots. • Consider incorporating further seating options throughout the park, particularly at high use areas such as the playground and oval. The inclusion of additional seating can encourage longer-stay use and deliver greater levels of accessibility, enhancing opportunities for passive surveillance and regular usage. • Consider embellishments such as bubblers, bins, and dog waste bins to encourage longer-stay use. These embellishments can lengthen the duration of visitor's stay, increasing opportunities for passive surveillance while also increasing regular levels of activation. These embellishments can also increase the ability for visitors to care for the park, contributing to a greater perception of a well-maintained and cared for space. This can be considered during detailed design stages. • Design lighting to ensure all activity and areas intended for nighttime use such as key pathways and entry points remain visible, avoiding glare and shadowed pockets that could reduce visibility. • Provide targeted lighting for the active wall to ensure it is visible and monitored during use, reducing opportunities for concealment or anti-social behaviour, and integrating it into active circulation routes. • Position seating and gathering areas to overlook main pathways, entries, and activity nodes, increasing casual observation by legitimate users. • Maintain clear sightlines across the amphitheatre lawn, sport court, and fitness zone by avoiding dense planting or structures that obstruct views. • Encourage activation of the park during daylight hours through programming and community events, increasing the presence of legitimate users. • Ensure that the communal open space areas have low-level lighting at all times, with sensor lighting at seating areas, to provide visibility at night.
	Access Control and Movement: • Provide a signage and wayfinding map at all entrances to the park showing clear pedestrian paths and key activity points to enable users to identify direct and accessible routes, as well as the locations of available entrance/exit points throughout the day and night.

Consultant	Mitigation Measure
	• Install lighting along the Basin edges to improve visibility at night and reduce the risk of accidental falls. Consider opportunities to embellish lighting surrounding the basin into a form of artwork or attraction, further activating the space, particularly at nighttime. • Implement wayfinding with universal legibility throughout Central Park to differentiate uses and to define formal 'safe routes' through Central Park to key destinations. Areas lacking movement cues are susceptible to anti-social behaviour. • Clearly define entry points along Horsley Road and adjoining streets with wayfinding elements, signage, and landscape cues to guide visitors into active areas and along pedestrian footpaths. • Maintain the main north–south pathway as the primary circulation spine, ensuring it connects all major activity nodes and supports predictable movement. • Ensure the northern traverse pathway and secondary permeable pavement path above the overflow turf area (as detailed in the Landscape Design Report) are well-lit and connected to active spaces. • Provide suitable alternative pathways to stairways and terraced areas to ensure accessibility for all users, including those with mobility needs. • Address the lack of formal footpaths along Horsley Road by incorporating clear pedestrian entry routes into the park design, ensuring safe and legible access from the street.
	Territorial Reinforcement: • Consider incorporating programmed activities into the unstructured open spaces of the park (e.g. giant chess) in order to activate the space and promote increased passive surveillance. • Install signage that explains the ecological significance of the Basins to encourage community care and connection to these natural assets, as well as to minimise environmental impacts. • The materials and designs of seating should be durable, comfortable, and low-maintenance. Lighting should be adequate to ensure visibility during evening hours, and seating should be arranged to allow users to face both the basin and pedestrian movement along the path, supporting natural observation and a sense of safety. • Incorporate changed pavement, contrasting colour, and/or raised elevation in areas where footpaths transition from public space towards private, such as at the main entry points to each dwelling. These small changes in material, colour, or texture can act as a subtle reinforcement for people to avoid entering areas where they are not permitted, as well as a symbolic boundary of public/private space. • Consider program activations in the open lawn area, informal trails, and bush tucker garden (e.g. regular exercise classes, gardening sessions) to encourage incidental interaction, sense of ownership and community building. • Use low-level native planting and terraced seating to further define basin edges. The inclusion of further territorial reinforcements will help to guide movement and discourage informal or unsafe access to steep or sensitive areas. • The external façade and streetscape interfaces should be well-lit and visually interesting. This enhances community ownership and passive surveillance while deterring vandalism, in line with CPTED principles of natural surveillance, territorial reinforcement, and maintenance. • Consider the inclusion of public art throughout the public domain to enhance the estate's identity, encourage community ownership, and increase legitimate use of the space. Statement art pieces can also contribute to wayfinding and ease of navigation, acting as a landmark to guide residents and visitors. • Ensure that the external façade and streetscape interfaces are well-lit, visually interesting (i.e. public art, robust fixtures) and use a darker coloured paint in order to reduce graffiti. This can enhance community ownership and passive surveillance from the site, whilst deterring graffiti by having elements that are not able to be easily vandalised.

Consultant	Mitigation Measure
	• To further enhance the delineation of public and private space, consider incorporating elements which reinforce territorial boundaries, such as changed material or colour for driveways, as well as landscaping or fencing which can serve as natural barriers.
	Space and activity management: • Adhere to the requirements and compliance regulations outlined in the maintenance notes (Landscape Design Report, 2025) to ensure the site is well kept and remains activated. • If any additional programming or amenities are included, ensure to include details relating to regular cleaning, monitoring, and maintenance within the Plan of Management. • Establish clear operational responsibilities for litter collection, lighting maintenance, and landscape upkeep to ensure the park remains in good condition. • Program spaces for seasonal events, fitness activities, and community gatherings to maintain activation and support legitimate and diverse use throughout the year. This could include regular yoga or fitness classes, pop-up holiday markets, outdoor movie nights, or community gardening classes. • Regularly monitor high-use areas such as the sport court, amphitheatre lawn, and active wall to ensure they remain safe, functional, and free from damage. • Integrate habitats for native species into active areas to avoid creating isolated or unused pockets, balancing biodiversity with safety. • Use robust, vandal-resistant materials such as stone, concrete, timber, and steel to maintain a high-quality appearance and reduce long-term maintenance need. • Ensure that the Plan of Management clearly indicate the designated areas of responsibility for the management of anti-social behaviour. • The Plan of Management must also clearly indicate the designated areas of responsibility for the management of private land and the public domain to ensure the precinct is well kept.
Construction Traffic Management	
TTPP	Vehicle Access • Construction vehicles would be required to radio the site office on approach to the site to ensure access to the site is available. • General vehicle access along all public roads would be maintained at all times. • Construction vehicles would enter and exit the site in a forward direction. No reversing movements in/out of the site would be permitted. • Construction vehicles waiting to complete loading cycle are to queue within the site and not on public roads. • Any materials loaded on the construction vehicle would be fully covered to avoid spillage. Similarly, vehicle loads would be covered when hauling to/ from the site. • Any material spill onto the road would be rectified by qualified site personnel using appropriate equipment, subject to suitable WHS provision.
	Construction Vehicle Routes • The following protocols must be in place to minimise the impacts associated with the nominated construction vehicle routes: • Site induction shall include procedures for accessing the site. • Drivers shall adhere to the designated transport routes. • Drivers shall be aware of pedestrians and cyclists in the vicinity of the site. • Drivers shall be aware of existing sign posted speed limits. • Site induction shall promote road safety and obey the NSW road rules at all times.

Consultant	Mitigation Measure
	• Truck drivers must not drive under the influence of drugs and alcohol.
	Heavy Vehicle Loads • All drivers will be required to adhere to the posted vehicle load limits on all roads and not overload vehicles beyond its maximum loading limits and/or relevant approvals. • All trucks entering or leaving the site with loads must have their loads covered and must not track dirt onto any public road. Prior to leaving site, covering truck loads is mandatory and when required, tailgates must be swept clean before leaving site.
	Worker Induction Training All construction workers employed at the site by the Construction Contractor shall be required to undergo a site induction training. The induction shall include nominated construction transport routes to and from the proposed work site for site personnel and construction vehicles, along with standard environmental, WH&S, driver protocols and emergency protocols. This training would be the responsibility of the Construction Contractor