Ethos Urban

Appendix E

Consolidated Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed below. These measures have been derived from the assessment in Section 6.0 of the EIS and those detailed in appended consultants' reports.

Ref No.	Potential Impact	Stage of Project	Mitigation Measure
Traffic and Transport			
TT-1	**Construction Traffic Management**	Construction	• A detailed Construction Traffic Management Plan (CTMP), providing traffic and pedestrian management measures is to be implemented for the construction phase of the project.
TT-2	**Sustainable Travel**	Operation	• A detailed Green Travel Plan is to be prepared prior to operation of the development.
Biodiversity			
B-1	**Unexpected Finds**	Construction	• In the unlikely event that unexpected threatened species are identified during the project, work is to cease, and an ecologist is to be contacted for advice.
B-2	**Erosion and Sediment Control**	Construction	• Appropriate erosion and sediment control measures are to be installed to avoid impacts to nearby waterways via stormwater collection systems.
B-3	**Dam Dewatering**	Construction	• As dams within the study area will be decommissioned and backfilled as part of the project. A dam dewatering plan will be prepared and implemented. • Dam dewatering is to be undertaken under supervision of a suitably qualified ecologist to ensure that dewatering activities are undertaken appropriately and any fauna within the dams is salvaged and relocated (an ecologist would only be required on site when dam water levels are below 1/3 capacity).
B-4	**Trunk Drainage**	Operation	• Design of the truck drainage will utilise substrates designed to lower flow spreads and minimise erosion.
Air Quality			
AQ-1	**Earthworks**	Construction	• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable

			• Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Only remove the cover in small areas during work and not all at once.
AQ-2	**Construction**	Construction	• Avoid scabbling (roughening of concrete surfaces) if possible. • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
AQ-3	**Trackout**	Construction	• Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Record all inspections of haul routes and any subsequent action in a site log book. • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. • Access gates to be located at least 10 m from receptors where possible.
Noise and Vibration			
NV-1	**Construction Noise and Vibrations**	Construction	• A Construction Noise and Vibration Management Plan (CNVMP) will be prepared before any work begins. This would identify all potentially impacted receivers, assess the potential noise and vibration impacts from the project and provide details regarding how the impacts would be minimised through the use of all feasible and reasonable mitigation measures. The CNVMP is to also contain procedures for handling complaints, should they occur, and detail any compliance monitoring requirements.
NV-2	**Operational Noise Source Control**	Operation	• Use quieter mobile plant and equipment options, such as electric forklifts instead of gas forklifts; • Use broadband and/or ambient sensing alarms on trucks and forklifts where they are required to reverse during the night-time.;

			• Appropriate specification and location of mechanical plant during detailed design to use lower noise emitting plant; • Appropriate design of warehouses during detailed design; • Roller doors to be kept closed when loading/unloading is not occurring to minimise noise breakout; • Appropriate design of site layout to minimise the need for trucks to stop or brake outside of loading docks with line of sight to residential receivers; and • Production of an Operational Noise Management Plan.
NV-3	**Operational Noise Path Control**	Operation	• Construction of noise barriers along boundary fence locations or other strategic locations to reduce noise levels where plant or equipment are in line of sight of the nearest receivers if exceedances are identified.
NV-4	**Operational Noise Receiver Control**	Operation	• The NPfI notes that noise mitigation at a residence may be required to be considered where the residual impact exceeds the PNTLs by ≥3 dB. At-property treatments typically include mechanical ventilation to allow windows to be closed as a noise mitigation measure, together with upgraded facade elements such as windows, doors and acoustic seals.
NV-5	**Operational Noise Verification Monitoring**	Operation	• Verify post-construction operational noise levels are in-line with predictions and the mitigation is working as intended through noise monitoring processes.
Ground and Water Conditions			
GWC-1	**Sediment and Erosion Control**	Construction	• A detailed Soil and Water Management Plan (SWMP) is to be prepared. • Regular site inspection and maintenance is to be carried out while earthworks and quarrying is being conducted. • A number of measures are recommended to minimise the impact of sedimentation due to construction works, including: – Diversion of surface runoff from undisturbed areas away from disturbed areas and discharge via suitable scour protection. – Provision of hay bale type flow diverters to catch drainage and divert to 'clean; water drains. – Diversion of sediment-laden water into temporary sediment control basins to capture the design storm volume and undertake flocculation (if required). – Provision of construction traffic shaker grids and wash-down to prevent vehicles carrying soils beyond the site. – Provision of catch drains to carry sediment-laden water to sediment basins. – Provision of silt fences to filter and retain sediments at source. – Rapid stabilisation of disturbed and exposed ground surfaces with hydro-seeding areas where future construction and building works are not currently proposed. – All temporary sediment basins will be located clear of the 1% AEP flood extents from local overland flow within the site. Bio-retention basins are to be utilised as temporary sediment control basins. The bio-retention basins shall not be converted into the final/ultimate basins until such time as all building and construction works within the Site has been completed and 90% of the Site is stabilised.
GWC-2	**Soil Management (Earthworks)**	Construction	To minimise earthworks the following recommendations will be implemented:

			• Importation of soil. • Vegetation cover is to be estimated and maintained on permanent batters upon completion to control erosion. • Final surface of all areas of the development is to be graded to prevent the ponding of surface water. • Erosion control of temporary batters, stockpile and disturbed areas are to be planned prior to undertaking the earthworks and implemented during earthworks. Consideration is to be given to: – Grading and sealing partially completed surfaces. – Installation of clearly visible fencing and traffic control measures to prevent unnecessary trafficking of areas and ensuring site disturbance. – Establishing set vehicular access points and roads. – Protecting stockpiles. – Sediment control shall be implemented by means of sediment traps and silt fencing when necessary.
GWC-3	**Importation of Soil**	Construction	• May be required to import topsoil or other soil onto site. Highly saline or contaminated soils are not to be imported to site.
GWC-4	**Gardens and Landscaped Areas**	Detailed Design	• Selection of plant species is to consider the soil conditions, including moderate salinity, relatively poor fertility and clayey low permeability soil profiles. Promotion of successful revegetation is likely to require use of nutrient rich topsoil. Saline topsoils are not to be imported to site. • Potential for water logging is to be minimised by: – Adopting plant species with minimal watering requirements. – Adopting 'waterwise' gardening principles – Minimising use of potable water in landscaped areas – Properly designed and implemented irrigation systems – Establishment of perennial species and deep rooted trees
GWC-5	**Roads, Footpaths, and Hardstand Areas**	Detailed Design	• Roads, footpaths and hardstand surfaces are to be graded, and the grades maintained at all times to prevent ponding of surface water at location where this can result in infiltration into the underlying soils (e.g. pavement joints). • Connections between the roads, footpath and hardstand surfaces and the surface water and stormwater drainage infrastructure is to be designed, constructed and maintained to restrict infiltration into underlying soils. • Services that are to be located below the roads, footpath and hardstand surfaces are to be installed where practical, at time of construction. • Provision for a damp-proof course or membrane beneath slabs are to be considered by the slab designer.
GWC-6	**Surface Water, Stormwater and Drainage**	Detailed Design	• Surface water, stormwater and drainage design will restrict infiltration into the ground resulting in groundwater recharge. • Disturbance of natural drainage patterns will be reduced. Where these are disturbed or altered appropriate artificial drainage will be installed. • Temporary water retaining structures used during construction will be managed to restrict infiltration. • Stormwater and surface water infrastructure will be designed and constructed to minimise the likelihood of leakage.

			• Guttering and down pipes will be connected and maintained. • Surface water runoff will be directed around all exposed surfaces, temporary stockpiles and landscaped areas.
Water Management			
WM-1	**On-going Management and Maintenance**	Operation	• An Inspection and Maintenance Plan will be prepared and lodged with the construction certificate for the subdivision works once final design details and the extent and layout of all proposed water management measures is confirmed. • It is anticipated that the Inspection and Maintenance Plan would be prepared using current best practice guidance such as Water sensitive urban design inspection and maintenance guidelines (Blacktown City Council, 2019) and would describe: - Each of the functional components of each water management measure; - Expertise required to inspect, maintain and (where necessary) repair or replace components; - Minimum required frequency of inspection, repair or replacement activities; and - Inspection and maintenance forms that list all necessary activities and contain a record of activities completed. • The Estate Arrangement would incorporate some estate-based measures such as on-lot rainwater tanks, GPTs and an estate-wide detention basin. These measures would be managed and maintained by the proponent, with inspection and maintenance requirements consistent with those described above. The planned regional stormwater management scheme, which would incorporate measures to manage stormwater quality and volume across the MRP, would be managed and maintained by Sydney Water.
Hazards and Risks			
HR-1	**Construction hazard and risk management across the proposal**	Construction	Prepare a hazard and risk management plan (HRMP) as a sub-plan of the CEMP. As a minimum, the plan would: • Include an emergency response plan • Be prepared by a suitably qualified hazard management specialist • Provide for the implementation, monitoring and maintenance of the identified hazard controls.
HR-2	**Accidental spillage and discharge across the proposal during construction**	Construction	• Keep wet and dry spill kit, sand-filled/gravel-filled socks and geotextile matting on the site at all times. Train staff in the appropriate deployment, use, removal and disposal of spill kit.
HR-3	**Workforce and public safety during construction across the site**	Construction	• Fence off and secure the site to prevent public access.
HR-4	**Workforce and public safety during construction across the site**	Construction	• Use terracing excavation methods where applicable. • Backfill / cover all open excavations with boards/plates outside of working hours.
HR-5	**Workforce and public safety during construction across the Proposal**	Construction	• Inspect the entry connection into the site ahead of any required demobilisation to ensure there are no road-user or pedestrian hazards.

HR-6	**Hazardous material and dangerous goods transportation to the construction site during construction**	Construction	Handle and use dangerous goods and hazardous materials in accordance with: • the *NSW Work Health and Safety Act 2011* and associated regulations; • the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005); • *NSW Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998*; and • Australian Government's Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2008).
HR-7	**Utility or services strike across the site during construction**	Construction	• Undertake detailed utility surveys as part of the detailed design along with utility-provider consultation.
HR-8	**Utility or services strike across the site during construction**	Construction	• Prepare and work to a utility and services plan. No work would take place outside of this plan without additional consultation and utility searches.
HR-9	**Hazardous material and dangerous goods transportation and storage across the site during operation**	Operation	Handle, store and use hazardous and dangerous goods and in accordance with: • the *NSW Work Health and Safety Act 2011* and associated regulations; • the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005); • *NSW Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998;* and • Australian Government's Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2008). • All storage and transport of dangerous goods to remain below the Applying SEPP 33 screening thresholds.
HR-10	**Hazardous material and dangerous goods storage during operation**	Operation	• Hazardous materials and dangerous goods will be store within a bunded and secure storage facility on the site as required by the tenant.
HR-11	**Driver safety across the site during operation**	Operation	• Incorporate car park signage to indicate direction of travel and traffic calming devices including speed humps and speed limits.
Contamination and Remediation			
CR-1	Site Management	Construction	• A general site management plan for the operational phase of site remediation is included in Appendix H of the RAP. The management plan includes soil, noise, dust, work health safety, remediation schedule, hours of operation and incident response. The Remediation Contractor is to implement the general site management plan for the duration of remedial works by incorporating the plan into their over-arching construction environmental management plan.
CR-2	Site Responsibilities	Construction	• The site management plan (Appendix H of the RAP provides a summary of the general management and associated responsibilities. Contact details for key utilities are also to be included in the event of needing to respond to any incidents.
CR-3	Contingency Plan, Unexpected Finds Protocol and Asbestos Finds Protocol	Construction	• Plans for contingency situations (e.g., encountering asbestos in fill where not previously identified), along with an unexpected finds and asbestos finds protocol for dealing with unexpected / asbestos finds during remediation work / earthworks are included in Appendix I of the RAP.

CR-4	Validation Report	Construction	• A validation assessment report will be prepared by the Environmental Consultant in accordance with NSW EPA (2020). The validation report shall describe the remediation approach adopted, methodology, results and conclusion of the assessment and make a statement regarding the suitability of the site for the proposed industrial warehouse development.
Waste Management			
WASM-1	**Waste Storage Area Features**	Operation	In accordance with better practice waste management and the Penrith DCP, the developments waste storage areas are to have the following features: • Blend in with the design of the wider development and the surrounding streetscape; • Be well lit and well-ventilated; • Fully enclosed and walled; • Adequate vermin prevention measures; • Reduce potential noise and odour impacts; • Enhance safety for the public; • Be connected to a water outlet for washing purposes; • Equipped with a hot and cold tap-based water supply centralised mixing valve; • Floor graded to a central drainage point which is connected to the sewer; • Have water discharge from washing flow to a sewer approved by the relevant authority; • Waterproofed and sealed non-slip floor constructed in accordance with the BCA; • Waste equipment is protected from theft and vandalism; • Be fully enclosed, walled and not permit through access to other on-site waste infrastructure; • Have a minimum 2.7 m unobstructed internal room height in accordance with the BCA; • Adequate lighting and natural or mechanical ventilation in accordance with the BCA; • Provide suitable dual door access with a minimum width of 1.8 m and a minimum 1.8 m unobstructed access corridor for the service of bins; • Provide administrative management, including signage to ensure appropriate use; • Be screened from public areas, preferably with landscape buffer planting, to reduce the impacts of noise, odour and visual amenity; and • Flexible in design to allow for future changes in operation, tenancies and uses.
WASM-2	**Waste Servicing**	Operation	• The following general waste servicing access requirements are to be implemented: - Waste will be removed regularly; and - Arrangements will be in place so that the waste and recycling storage rooms are not accessible to the general public. • In accordance with the Penrith DCP, the following is required for the access provisions for of waste collection vehicles: - Collection vehicles must be able to enter and exit the collection area in a forward direction; - Drawings must show the site's entry point, vehicle's route of travel and manoeuvring - Swept path models must illustrate how a standard waste collection vehicle will enter, service and exit the site

			- A 0.5 m unobstructed clearance is required from all obstructions for the vehicle's ingress and egress manoeuvres - Unobstructed access, adequate driveways and ramps of sufficient strength to support waste collection - Access for the collection vehicles must be separate from the entry and exit driveway of any car parking areas to and from public areas - An acoustic assessment is to accompany the DA and account for waste collection location and times, and - A structural engineer's report is to accompany the DA and confirm that all infrastructure used for vehicle ingress and egress movements can support the waste collection vehicle's weight. The Penrith DCP consists of dimensions for waste collection vehicles. • Once a private waste contractor is engaged, a valid waste and recycling collection contract is recommended to demonstrate disposal at a waste facility lawfully able to accept it. Written evidence of the valid contract will be kept on-site.
WASM-3	**Waste Avoidance, Reuse and Recycling Measures**	Operation	• Waste avoidance measures include: - Participating in take-back services to suppliers to reduce waste further along the supply chain; - Avoiding printing where possible; - Review of packaging design to reduce waste but maintain 'fit for purpose'; - Providing ceramic cups, mugs, crockery and cutlery rather than disposable items; - Purchasing consumables in bulk to avoid unnecessary packaging; - Presenting all waste reduction initiatives to staff as part of their induction program; and - Investigating leased office equipment and machinery rather than purchase and disposal. • Possible re-use opportunities include establishing systems with in-house and supply chain stakeholders to transport products in re-useable packaging where possible. • Recycling opportunities include: - Collecting and recycling e-waste; - Flatten or bale cardboard to reduce number of bins required; - Paper recycling trays provided in office areas for scrap paper collection and recycling; - Collecting printer toners and ink cartridges in allocated bins for appropriate contractor recycling; and - Development of 'buy recycled' purchasing policy.
WASM-4	**Communication Strategies**	Operation	• Waste management initiatives and management measures will be clearly communicated to building managers, owners, employees, customers and cleaners. Benefits of providing this communication include: - Improved satisfaction with services · increased ability and willingness to participate in recycling; - Improved amenity and safety; - Improved knowledge and awareness through standardisation of services; - Increased awareness or achievement of environmental goals and targets - Reduced contamination of recyclables stream - Increased recovery of recyclables and organics material, if implemented; and

			- Greater contribution to targets for waste reduction and resource recovery, the environment and heritage conservation.
WASM-5	**Signage**	Operation	• As outlined in the Penrith DCP, the waste storage and collection areas will be provided with appropriate signage. These signs will clearly identify waste management procedures and provisions to contractors, tenants and visitors will be distributed around the Project. • Signs which clearly identify waste management procedures and provisions to staff and visitors will be distributed around the Project. Key signage considerations are: - Clear and correct labelling on all waste and recycling bins, indicating the correct type or types of waste that can be placed into a given bin; - Signposts and directions to location of waste storage areas; - Clear signage in all waste storage areas to instruct users how to correctly separate waste and recycling; - Maintaining a consistent style colour scheme and system for signs throughout the Project; and - Emergency contact information for reporting issues associated with waste or recycling management. • Colour-coded and labelled bin lids are necessary for identifying bins. All signage will conform to the relevant Australian Standard and use labels approved by the NSW EPA16. The design and use of safety signs for waste rooms and enclosures will comply with Australian Standard AS 1319 Safety Signs for the Occupational Environment and clearly describes the types of materials designated for each bin.
WASM-6	**Monitoring and Reporting**	Operation	• Monitoring is to be carried out to ensure waste and recycling management arrangements and provisions for the Project are functional, practical and are maintained to the standard outlined in this plan, at a minimum. • Visual assessments of bins and bin storage areas will be conducted by the building manager, at minimum: - Weekly, in the first two months of operation to ensure the waste management system is sufficient for the operation; and - Every six months, to ensure waste is being managed to the standards outlined in the WMP.
WASM-7	**Roles and Responsibilities**	Operation	• It is the responsibility of the Building Manager, or equivalent role, to implement this WMP and a responsibility of all warehouse tenants and staff to follow the waste management procedures set out by the WMP. All subcontractors enlisted by the Client are to have roles and responsibilities identified and the Project's waste management system clearly explained
Aboriginal Cultural Heritage			
ACH-1	**Development of a Cultural Heritage Management Plan**	Construction	• A Cultural Heritage Management Plan (CHMP) be developed in order to appropriately manage Aboriginal cultural heritage identified within the study area. This will identify how to properly manage Aboriginal heritage for the project and would include unanticipated finds protocols and a heritage induction to be undertaken by the site personnel prior to works. • The CHMP must be prepared by a suitably qualified archaeologist in consultation with the Registered Aboriginal Parties (RAPs) for the project.

ACH-2	**Long Term Care Agreement**	Operation	• The establishment of a long term care agreement in consultation with RAPs will be developed in order to ensure the artefacts identified as part of this assessment are adequately cared for. Several management options are possible depending on the wishes of RAPs. Artefacts recovered from the excavations can be given back to the Aboriginal community through a care and control agreement where they can then be used to teach subsequent generations about Aboriginal culture or can be reburied in a culturally appropriate place. • This approach considers the principles of Ecologically Sustainable Development (ESD) and intergenerational equity and more importantly ensures that recovered artefacts are managed according to the wishes of RAPs.
ACH-3	**Continued Consultation with RAPs**	Construction, Operation	• As per the consultation guidelines the proponent is to provides a copy of this report to the RAPs and considers all comments received. The Applicant will continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project.
ACH-4	**Native Landscaping**	Detailed Design	• Consultation with Kamilaroi Yankuntjatjara Working Group has also recommended that native landscaping be implemented for the project. ESR Australia are to consult with the landscape architect for the project to provide for native landscaping where practical in the detailed design phase.
ACH-5	**Discovery of Unanticipated Aboriginal Objects**	Construction	• If any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find will not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations.
ACH-6	**Discovery of Unanticipated Historical Relics**	Construction	• If unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find.
ACH-7	**Discovery of Human Remains**	Construction	• If any suspected human remains are discovered during any activity you must: - Immediately cease all work at that location; - Notify the NSW Police and the Environmental Line; and - Not recommence work at that location unless authorised in writing by Heritage NSW and/or NSW Police.
Environmental Heritage			
EH-1	**Discovery of unanticipated historical relics**	Construction	• Relics are historical archaeological resources of local or State significance and are protected in NSW under the Heritage Act. Relics cannot be disturbed except with a permit or exception/exemption notification. If unanticipated historical archaeology be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. Heritage NSW will require notification if the find is assessed as a relic.
Social Impact			
SI-1	**Ongoing Consultation**	Construction, Operation	• ESR will continue to consult with all relevant parties including surrounding landowners during both construction and operation. ESR will implement a community consultation and complaints handling as part of the Construction Environmental Management Plan at the post-approval stage to ensure consultation with surrounding landowners during construction.

Bush Fire Risk			
BFR-1	**NCC Compliance**	Detailed Design	• The construction shall comply with the National Construction Code (2019), Australian Standard AS 3959:2018, Construction of buildings in bush fire-prone areas and/or NASH Standard (1.7.14 updated), National Standard Steel Framed Construction in Bushfire Areas – 2014, and Section 7.5 of Planning for Bush Fire Protection 2019 on a prescriptive (deemed to satisfy and/or acceptable solution) basis and/or performance basis.
BFR-2	**BCA Compliance**	Detailed Design	• Fire hydrants are provided in accordance with Building Code of Australia E1.3, AS2419.1:2005, including the ring main requirements for large, isolated buildings and those identified in Section 7.7 of the Bushfire Hazard Assessment.
BFR-3	**Inner Protection Area**	Detailed Design	• The entire site is to be maintained as an Inner Protection Area (IPA) in accordance with Appendix 4 of PBP 2019 and the NSW RFS “Asset protection zone standards”.