

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
Visual Impact			
VI-1	Alleviation	Detailed Design	<ul style="list-style-type: none"> In regard to alleviation, consideration of specific building material and building facades and landscaping during the detailed design phase will be undertaken in order to minimise the visual impacts of the built form will be undertaken.
VI-2	Management	Construction	<ul style="list-style-type: none"> A Construction Environmental Management Plan (CEMP) will be prepared for the construction phase of the Proposal by the responsible construction contractor which outlines management measures for environmental impacts including impacts on sensitive receivers.
Traffic and Transport			
TT-1	Construction Traffic Management	Construction	<ul style="list-style-type: none"> 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	Monitoring and Communication	Construction	<ul style="list-style-type: none"> Both monitoring and communication strategies are to be developed as part of the future CTMP, to monitor its effectiveness and to ensure that there is adequate information within the community.
TT-3	Sustainable Travel	Operation	<ul style="list-style-type: none"> A detailed Green Travel Plan is to be prepared prior to operation of the development.
Soil and Water			
SW-1	Dam Dewatering	Construction	<p>In order to minimise impacts of dam dewatering, the following steps and procedures will be followed:</p> <ul style="list-style-type: none"> Pre-start: <ul style="list-style-type: none"> Ecological clearance prior to commencement of pumping; and Check rainfall forecasts. If rainfall greater than 3mm is forecast or appears imminent, then do not commence irrigation.

- Pump Set-up:
 - Locate pumps at least 3m to 4m from dam bank so that excessive sediment from bank isn't sucked up; and
 - The pump inlet will be screened with a fine mesh (10mm) to prevent the transport of nuisance weed infestations.
- Irrigation:
 - Operate pumps/sprinklers for at least 1 hour each morning, unless it is raining or heavy rain is forecast;
 - A site representative will be at site each day when sprinklers are operating. During irrigation periods visually monitor soil moisture in the irrigation area. Keep soils moist but avoid saturating the soil to the extent that water begins to pond at surface or run-off;
 - The sprinkler operation time each day will vary, depending on soil moisture present from the preceding day, any rainfall that has occurred, and the evapotranspiration rates (which vary day to day and seasonally). It is anticipated that times will typically be 1 to 2 hours in winter, and 3 to 4 hours in summer; and
 - Stop irrigating if run-off starts to occur, or rainfall greater than 1mm depth occurs or is imminent.
- Completion:
 - When the dam is empty, a surface drain will be constructed to divert catchment runoff past the dam, and/or the dam wall breached so that the dam doesn't refill. The surface drain should also divert runoff around sediments accumulated in the dam base, so that sediments can't get washed away;
 - Sediment within all dams is analysed to check that the contaminant levels are acceptable for the intended land-use. This will be best carried out when the dams are dewatered; and
 - At the completion of dewatering, the irrigation area should be mowed to remove any excessive grass growth.

SW-2	Stormwater Run-off	Construction/Operation	<p>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:</p> <ul style="list-style-type: none"> • 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.
SW-3	Interim Evaporation Basin and Storage Pond	Construction/Operation	<ul style="list-style-type: none"> • Regular monitoring of the interim storage pond and evaporation basin and application of wildlife dispersal as required. • Implementation of a Wildlife Hazard Management Plan to document activities, responsibilities and passive or active management techniques.

SW-4	Sediment Basin Maintenance and Monitoring	Construction/Operation	<ul style="list-style-type: none"> • The Contractor will inspect the Site after every rainfall event and at least weekly, and will: <ul style="list-style-type: none"> - Inspect and assess the effectiveness of the ESCP and identify any inadequacies that may arise during normal work activities or from a revised construction methodology. - Construct additional erosion and sediment control works as necessary to ensure the desired protection is given to downstream lands and waterways. - Ensure that drains operate properly and to affect any repairs. - Remove spilled sand or other materials from hazard areas, including lands closer than 5 metres from areas of likely concentrated or high velocity flows especially waterways and paved areas. - Remove trapped sediment whenever less than design capacity remains within the structure. - Ensure rehabilitated lands have affectively reduced the erosion hazard and to initiate upgrading or repair as appropriate. - Maintain erosion and sediment control measures in a fully functioning condition until all construction activity is completed and the Site has been rehabilitated. - Remove temporary soil conservation structures as the last activity in the rehabilitation. - Inspect the sediment basin during the following periods: <ul style="list-style-type: none"> - During construction to determine whether machinery, falling trees, or construction activity has damaged and components of the sediment basin. If damage has occurred, repair it. - After each runoff event, inspect the erosion damage at flow entry and exit points. If damage has occurred, make the necessary repairs. - At least weekly during the nominated wet season (if any), otherwise at least fortnightly; and - Prior to, and immediately after, periods of 'stop work' or Site shutdown. - Clean out accumulated sediment when it reaches the marker board/post and restore the original volume. Place sediment in a disposal area or, if appropriate, mix with dry soil on the Site. - Do not dispose of sediment in a manner that will create an erosion or pollution hazard. - Check all visible pipe connections for leaks, and repair as necessary. - Check all embankments for excessive settlement, slumping of the slopes or piping between the conduit and the embankment, make all necessary repairs. - Remove the trash and other debris from the basin and riser; and - Submerged inflow pipes must be inspected and de-silted (as required) after each inflow event. • Ongoing review of sediment basin performance will need be carried out throughout the construction phase of the development. Site-specific water quality management practices such as those suggested in 'IECA Appendix B' will be implemented by the Contractor responsible for implementation of the ESCP.
SW-5	Construction Salinity - Earthworks	Construction	<p>Design and construction of the earthworks should consider the following strategies and recommendations:</p> <ul style="list-style-type: none"> • Importation of soil as per Section 4.3 of Appendix D of Appendix Error! Reference source not found. • Vegetation cover should be estimated and maintained on permanent batters upon completion to control erosion • The final surface of all areas of the development should be graded to prevent the ponding of surface water

- Erosion control of temporary batters, stockpiles and disturbed areas should be planned prior to undertaking the earthworks and implemented during the earthworks. Consideration should 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 (temporary vegetation or mulching) where these are to be left in place for long durations.
- Sediment control shall be implemented by means of sediment traps and silt fencing where considered necessary.

SW-6	Construction Salinity – Importation of Soils	Construction	<ul style="list-style-type: none"> • Materials to be imported to site should be assessed for suitability for the intended use. Very to high saline soils shall not be imported to site. • Salinity testing shall be undertaken on imported soil and in accordance with "Site Investigations for Urban Salinity", Department of Land and Water Conservation (2002). Material with Ece > 8 dS/m; i.e., very to high saline shall not be imported.
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SW-7	Construction Salinity – Gardens and Landscaped Areas	Construction	<p>The design and construction of the gardens and landscaped areas should consider the following recommendations:</p> <ul style="list-style-type: none"> • Irrigation of rehabilitated or landscaped areas will utilize low-water-use fixtures such as drippers, subsurface irrigation or similar. Water will be applied sparingly and only in quantities sufficient to promote plant growth. Subsoil moisture will be physically checked (through visual observation) regularly during irrigation to ensure watering rates are not excessive • Selection of plant species should 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 should not be imported to site • Potential for water logging should be minimised by: <ul style="list-style-type: none"> - Adopting plant species with minimal watering requirements - Minimising use of potable water in landscaped areas - Properly designed and implemented irrigation systems • Establishment of perennial species and deep rooted trees.
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SW-8	Construction Salinity – Roads, Footpaths and Hardstand Areas	Construction	<ul style="list-style-type: none"> • The design and construction of roads, footpaths and hardstand areas should consider the following recommendations: <ul style="list-style-type: none"> - Roads, footpath and hardstand surfaces should be graded, and the grades maintained at all times to prevent ponding of surface water at locations 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 should be designed, constructed and maintained to restrict infiltration into underlying soils - Services that are to be located below the roads, footpath and hardstand surfaces should be installed, where practical, at the time of construction
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- Provision for a damp-proof course or membrane beneath slabs should be considered by the slab designer.

SW-9	Construction Salinity – Surface Water, Stormwater and Drainage	Construction	<ul style="list-style-type: none"> • The design and construction of surface water, stormwater and drainage measures should thus consider the following recommendations: <ul style="list-style-type: none"> - Disturbance of natural drainage patterns should be reduced. Where these are disturbed or altered appropriate artificial drainage should be installed - Stormwater and surface water should be managed to restrict infiltration - Temporary water retaining structures used during construction should be managed to restrict infiltration - Stormwater and surface water infrastructure should be designed and constructed to minimise the likelihood of leakage - Guttering and down pipes should be connected and maintained - Surface water runoff should be directed around all exposed surfaces, temporary stockpiles and landscaped areas - Disturbance to the natural hydrological system shall be minimised by maintaining good surface drainage and reducing water logging on the Site • Groundwater recharge is to be minimised to the extent it does not adversely impact groundwater dependent ecosystems downstream.
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SW-10	Durability of Concrete Structures in Contact with The Ground	Construction	<ul style="list-style-type: none"> • Based on the salinity and aggressivity test results (ref. PSM3530-005L REV2, dated 7 July 2021 and PSM3530- 020L, dated 8 February 2024), it is recommended that: <ul style="list-style-type: none"> - 1. The design of structural concrete members in contact with the ground (excluding piles) adopt an A2 exposure classification as defined in AS3600:2018. - 2. The design of concrete cast in situ piles adopt a mild classification as defined in AS2159:2009.
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Noise and Vibration

NV-1	Construction Noise	Construction	<p><u>General Noise Management Measures</u></p> <p>The following general noise management measures are recommended for all receiver locations:</p> <ul style="list-style-type: none"> • Use less noisy plant and equipment , where feasible and reasonable; • Plant and equipment must be properly maintained; • Provide special attention to the use and maintenance of 'noise control' or 'silencing' kits fitted to machines to ensure they perform as intended; • Strategically position plant on-site to reduce the emission of noise to the surrounding neighbourhood and to site personnel; • Avoid any unnecessary noise when carrying out manual operations and when operating plant; • Any equipment not in use for extended periods during construction work must be switched off; • Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be limited/avoided where possible; • The offset distance between noisy plant and adjacent sensitive receivers is to be maximised where practicable;
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- Plant used intermittently to be throttled down or shut down when not in uses where practicable;
- Noise-emitting plant to be directed away from sensitive receivers where possible;
- Staging of construction works so as to erect solid external walls first and utilising them to provide noise shielding to the noise sensitive receivers. However, the structural integrity of the external walls should be investigated prior to implementing this measure and should be prioritised over the noise benefits;
- A management procedure will need to be put in place to deal with noise complaints they may arise from construction activities. Each complaint will need to be investigated and appropriate noise amelioration measures put in place mitigate future occurrences.
- Good relations with people living and working in the vicinity of a construction site should be established at the beginning of a project and be maintained throughout the project.

Noise Monitoring

The following approach will be adopted with regard to noise monitoring procedures during the construction works:

- Where potential noise impacts are predicted to be up to 10 dB(A) above the noise criteria, all feasible and reasonable noise reduction measures must be investigated, where necessary.
- Where potential noise impact are predicted to be more than 10 dB(A) above the noise criteria, the potential construction noise nuisance is considered to be moderate. In the event of a complaint, noise monitoring may be carried out to confirm predicted noise impacts. Reasonable and feasible noise reduction measures must be investigated.

NV-2 Construction Vibration

Construction

Management Procedure

- A management procedure will be implemented to deal with vibration complaints. Each complaint will be investigated and where vibration levels are established as exceeding the set limits, appropriate amelioration measures will be implemented to mitigate future occurrences.

Management Measures

- Management measures will be implemented when vibration is found to be excessive. Management measures may include modification of construction methods such as using smaller equipment, establishment of safe buffer zones, and if necessary, time restrictions for the most excessive vibration activities. Time restrictions are to be negotiated with the affected receivers.

Vibration Testing

- Where construction activity occurs in close proximity to sensitive receivers, vibration testing of actual equipment on-site will be carried out prior to their commencement of site operation to determine acceptable buffer distances to the nearest affected receiver locations.

Dilapidation Surveys

- Dilapidation surveys will be conducted at all residential and other sensitive receivers within 50 metres of the construction site. Notification by letterbox drop would be carried out for all occupied buildings within 100m of the construction sites. These measures are to address potential community concerns that perceived vibration may cause damage to property.

Complaints Management

- Both noise and vibration levels generated by construction activities associated with the construction of the development must aim to comply with the noise and vibration goals set by the relevant regulations and guidelines. The contractor is responsible for ensuring that all reasonable and feasible mitigation and management measures are implemented such as the provision of a Noise and Vibration Complaints

Program, to minimise the generation of excessive noise and/or vibration levels from the Site to nearby sensitive receivers.

NV-3 Operational Noise

Operation

Application of Best Management Practice Measures

The NPfl presents the implementation of 'best management practice' (BMP) which is the adoption of operational procedures that minimise noise while retaining productive efficiency. Application of BMP will include the following types of practice:

- Reducing peak 15-minute heavy vehicles movements across the Site by staggering delivery / pickup times;
- Minimising concurrent use of mobile plant outside warehouses and/or limiting their use to the less sensitive daytime and evening periods;
- Minimising use of reversing alarms by providing forward manoeuvring where practicable;
- Switching vehicles and plant off when not in use;
- Keeping equipment well-maintained and operating it in a proper and efficient manner; and
- Training staff and drivers on the effects of noise and the use of quiet work practices (e.g. informing drivers of the noise impacts from sudden braking or accelerating, bangs and clangs, etc).

Application of Best Available Technology Economically Achievable

In conjunction with BMP, the NPfl refers to 'best available technology economically achievable' (BATEA) with which equipment and plant incorporate the most advanced and affordable technology to minimise noise output. Examples of uses of BATEA include:

- Use of broadband reversing alarms "quackers" on permanent on-site mobile plant (e.g. reach stacker and forklift);
- The use of quieter mobile plant, such as electric forklifts instead of gas-powered forklifts;
- Using equipment with efficient muffler design;
- Fitting and maintaining noise reduction packages on plant and equipment;
- Ensure hardstand surfaces, roadways and vehicular access points are smooth as to not result in jolting of the truck; and
- Damping or lining metal trays or bins.

Operational Noise Management Plan

In accordance with the Conditions of Consent, the Applicant will prepare an Operational Noise Management Plan. There should also be regular reviews of onsite noise mitigation and management practices to incorporate and capture opportunities for reductions of site noise emissions, with considerations of the following:

- Review of noise reduction opportunities during changes or refinements of site noise generating activities
 - Reviewing noise levels of plant, equipment and activities, during both ongoing compliance checks and in response to complaints
 - Improvements in Best Management Practice (BMP)
 - Improvements in Best Available Technology Economically Achievable (BATEA).
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Hazard and Risk			
HZ-1	Construction hazard and risk management across the proposal	Construction	<p>Prepare a hazard and risk management plan (HRMP) as a sub-plan of the CEMP. As a minimum, the plan would:</p> <ul style="list-style-type: none"> • 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.
HZ-2	Accidental spillage and discharge across the proposal during construction	Construction	<ul style="list-style-type: none"> • 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.
HZ-3	Workforce and public safety during construction across the site	Construction	<ul style="list-style-type: none"> • Fence off and secure the site to prevent public access.
HZ-4	Workforce and public safety during construction across the site	Construction	<ul style="list-style-type: none"> • Use terracing excavation methods where applicable. • Backfill or cover all open excavations with boards/plates outside of working hours.
HZ-5	Workforce and public safety during construction across the Proposal	Construction	<p>Inspect the entry connection into the site ahead of any required demobilisation to ensure there are no road-user or pedestrian hazards.</p>
HZ-6	Hazardous material and dangerous goods transportation to the construction site during construction	Construction	<p>Handle and use dangerous goods and hazardous materials in accordance with:</p> <ul style="list-style-type: none"> • 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 <p>Australian Government's Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2008).</p>
HZ-7	Utility or services strike across the site during construction	Construction	<ul style="list-style-type: none"> • Undertake detailed utility surveys as part of the detailed design along with utility-provider consultation.
HZ-8	Utility or services strike across the site during construction	Construction	<ul style="list-style-type: none"> • Prepare and work to a utility and services plan. No work would take place outside of this plan without additional consultation and utility searches.
HZ-9	Hazardous material and dangerous goods transportation and storage across the site during operation	Operation	<p>Handle, store and use dangerous goods and hazardous materials in accordance with:</p> <ul style="list-style-type: none"> • 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). <p>All storage and transport of dangerous goods to remain below the Applying SEPP 33 screening thresholds.</p>
HZ-10	Hazardous material and dangerous goods storage during operation	Operation	<ul style="list-style-type: none"> • Hazardous materials and dangerous goods will be store within a bunded and secure storage facility on the site as required by each tenant.

HZ-11	Driver safety across the site during operation	Operation	<ul style="list-style-type: none"> Incorporate car park signage to indicate direction of travel and traffic calming devices including speed humps and speed limits.
Biodiversity			
B-1	Sedimentation of native vegetation and downstream aquatic environment.	Construction and Operation	<p>Erosion and sediment controls</p> <ul style="list-style-type: none"> Implementation of Erosion and Sediment Control Plan (ESCP) measures
B-2	Direct impact to a TEC from unauthorised clearing and/or damage to vegetation to be retained.	Construction	<p>Delineation of clearing limits</p> <ul style="list-style-type: none"> Clearing limits are delineated with high visibility tape, temporary fencing, or other appropriate boundary markers. Materials and methods of marking trees to be removed or retained and protected will be agreed to prior to their employment.
B-3	Direct and indirect impact to fauna	Construction	<p>Instigating clearing protocols including pre-clearing surveys, prior to tree removal with a trained ecological or licensed wildlife handler during clearing events</p> <ul style="list-style-type: none"> Pre-clearing surveys will be undertaken by a suitably qualified ecologist ahead of clearing, to limit fauna injury and mortality and to identify habitat features to be relocated Animals found to be occupying trees and habitat will be safely removed and relocated into nearby wooded habitat.
B-4	Harm / death of fauna	Construction	<p>Clearance staging</p> <ul style="list-style-type: none"> The clearing will be conducted using a two-stage clearing process as follows: Stage 1: Clearing will commence following the identification of potential habitat features by a qualified ecologist. Habitat trees marked during pre-clearing will not be cleared during the first stage; however, all vegetation around these trees will be cleared to enable isolation of the feature. Identified habitat trees will be left at a minimum overnight after Stage 1 clearing to allow resident fauna to voluntarily move from the area. Stage 2: After habitat trees have been left overnight, the trees will be cleared using the following protocols: Trees marked as containing habitat will be shaken by machinery prior to clearing to encourage any animals remaining to leave the hollows and move on; Use a bulldozer or excavator to start pushing the tree over. Move the bulldozer over the roots and continue gently pushing the tree over; and All habitat trees will be investigated by an ecologist for the presence of fauna following felling of the tree. <ul style="list-style-type: none"> The felled habitat tree will be left overnight to allow any remaining fauna time to leave the hollows and move on. The two-stage clearing process enables fauna a chance to self-relocate upon nightfall, when foraging typically occurs.
B-5	Indirect impacts such as weed spread into downstream environments	Construction	<p>Biosecurity management/ Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas</p>

- Implementation of hygiene measures to prevent the introduction and / or spread of introduced flora and fauna species, pathogens and / or disease.

Aboriginal Cultural Heritage

ACH-1	Salvage and test excavation	Construction	<ul style="list-style-type: none"> • If harm is unavoidable surface collection of artefacts is recommended for all sites. • If harm is unavoidable salvage is recommended to mitigate total loss of values for the following sites: <ul style="list-style-type: none"> - EP AS 02 (AHIMS ID 45-5-5236; (site has been partially destroyed. Salvage may be required to mitigate total loss of values. To be determined in consultation with RAPs). • If harm is unavoidable salvage of artefacts is recommended for the following sites: <ul style="list-style-type: none"> - EP AS 03 (AHIMS ID 45-5-5624); - ED AFT 1 (AHIMS ID 45-5-5259); • EEP2024 AS01(AHIMS ID Pending);
ACH-2	Archaeological salvage excavation	Construction	<ul style="list-style-type: none"> • Where harm is avoidable, SSD consent must be in place to authorise harm. • Archaeological salvage of artefacts from EP AS 02 (AHIMS ID 45-5-5236), EP AS 03 (AHIMS ID 45-5-5624) and EEP2024 AS01 (AHIMS ID pending) must take place prior to authorise harm. • EP AS 02 (AHIMS ID 45-5-5236) has been subject to partial impact and salvage may be required to mitigate total loss of value. This would be determined in consultation with the RAPs. A methodology for the completion of the salvage excavation should be developed in consultation with the RAPs.
ACH-3	Surface collection of artefacts	Construction	<ul style="list-style-type: none"> • The following surface artefact sites would be collected prior to the commencement of any ground disturbing works in the study area: <ul style="list-style-type: none"> - EP IF 01 (AHIMS ID 45-5-5232); - EP IF 02 (AHIMS ID 45-5-5231); - EP IF 03 (AHIMS ID 45-5-5230) - EP IF 04 (AHIMS ID 45-5-5331); - EP IF 05 (AHIMS ID 45-5-5330); - EP IF 06 (AHIMS ID 45-5-5659); - EP AS 01 (AHIMS ID 45-5-5233); and - ED AFT 1 (AHIMS ID 450505259). • A methodology for the completion of the surface collection should be developed in consultation with the RAPs.
ACH-4	Site conservation	Construction	<ul style="list-style-type: none"> • The current assessment has identified that EP PAD 03 (AHIMS ID 45-5-5234) would not be impacted by the proposed works; however, due to proximity to the boundary of the works area the boundary of this site would be marked on construction and environmental site plans, and barrier fencing established outside of the perimeter of the site.
ACH-5	Ongoing consultation with Aboriginal stakeholder groups	Construction	<ul style="list-style-type: none"> • Consultation with the RAPs would continue throughout the life of the project, as necessary. Ongoing consultation with the RAPs will take place where required, namely regarding the reburial of retrieve artefacts and in the event of any unexpected Aboriginal objects being identified during works.

ACH-6	Changes to the project area	Construction	<ul style="list-style-type: none"> Advice provided within this ACHAR is based upon the most recent information provided by the proponent at the time of writing. Any changes made to the project should be assessed by an archaeologist in consultation with the RAPs. Any changes that may impact on Aboriginal sites not assessed as part of the project may warrant further investigation and result in changes to the recommended management and mitigation measures.
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Non-Aboriginal Cultural Heritage

NACH-1	Impact on items of non-aboriginal cultural heritage	Construction	<p><u>A program of archaeological monitoring and salvage</u></p> <ul style="list-style-type: none"> This program will be carried out within the study area prior to subsurface excavations. It will include both monitoring and targeted salvage excavation, focused on intact artefact bearing deposits of local significance. <p><u>Additional assessment and further approval</u></p> <ul style="list-style-type: none"> If archaeological remains of State significance, or locally significant remains not identified in the SoHI or ARD, are unexpectedly identified during archaeological salvage program, works in affected area would cease and Heritage NSW, DPC would be notified. As such additional assessment and approval would be required.
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Social Impact

SI-1	Ongoing management/minimisation of social impacts	Construction & Operation	<p><u>Collaboration with Key Stakeholders</u></p> <ul style="list-style-type: none"> Collaborate with the Council, Aerotropolis, TfNSW, DPHI and other stakeholders to ensure sufficient infrastructure provision within the broader precinct, to meet the demand based on the broader jobs targets for the area. <p><u>Monitoring and Management Framework</u></p> <p>To monitor and measure the ongoing impact of the Proposal on relevant stakeholders and the surrounding community, the following framework is to be implemented:</p> <ul style="list-style-type: none"> During Construction: <ul style="list-style-type: none"> Development and implementation of a Construction Environmental Management Plan that includes a complaint handling procedure for identifying and responding to community issues related to construction impacts. Implementation of the Communications and Engagement Strategy developed for the Project that detail the processes and communication strategies to ensure that key stakeholders are advised and consulted about major changes and disruptions, and the process for providing feedback and further consultation during the Project. During Operation: <ul style="list-style-type: none"> Development and implementation of an Operational Plan of Management that mandates data collection (e.g. complaints register, user surveys) to enable ongoing monitoring of the performance of the precinct over time. Ongoing consultation with relevant stakeholders, including future tenants of the Site, local residents and workers in the emerging Elizabeth Enterprise Precinct to identify impacts promptly.
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Contamination

C-1	Unexpected Finds	Construction	As a precautionary measure, to facilitate the protection of the workforce and surrounding community, should unexpected potentially hazardous substance be encountered, works will cease immediately before being assessed by a suitably qualified and experienced environmental professional in accordance with a site-specific unexpected finds protocol.
C-2	Excessive Odours from Works	Construction	Based on the nature of the identified contaminants, off-site odour complaints are not likely. Where complaints do occur, the following will be undertaken: <ul style="list-style-type: none"> • Installation of an odour screening / masking system at the site boundaries; • Disturbance of soils during meteorologically favourable periods only; and Covering of impacted soils.
C-3	Remediation Strategy Unsuccessful	Construction	Should validation be deemed not suitable for intended land uses at the Site, the RAP will be required to be revised to manage exposure pathways and potential risks to site users. In this case, other remediation options may need to be considered.
C-4	Site Management	Construction	Safety and environmental controls are to be implemented as part of the first stage of the remediation works. Controls will be implemented in accordance with the site-specific CEMP and may include: <ul style="list-style-type: none"> • Locate and isolate required utilities in proximity proposed area of remediation; • Work area security fencing or barricades; • Site signage and contact numbers; • Work specific signage and barricades will be installed by the appropriately qualified and experienced asbestos removalist/hygienist and HAZMAT specialist; • Assess the requirements of dust and odour control measures; • Sediment fencing (attached to security fencing – as deemed necessary); and • Stormwater runoff, sediment controls (hay bales - as deemed necessary). Controls may be revised or modified based on-site conditions encountered prior to and/or during the remediation program of works or on advice of the clients Site Manager.
C-5	Health and Safety Plan	Construction	The principal remedial contractor will prepare a CEMP and Health and Safety Plan prior to remediation works commencing. The information presented below is not exhaustive and is to be included along with additional relevant information in the CEMP and/or Health Safety Plan. The objectives of the health and safety plan are: <ul style="list-style-type: none"> • To apply standard procedures that reduce risks resulting from the above works; • To make sure employees are provided with appropriate training, equipment, and support to consistently perform their duties in a safe manner; • To have procedures to protect other site workers and the public. These objectives will be achieved by: <ul style="list-style-type: none"> - Assignment of responsibilities; - An evaluation of hazards; - Establishment of personal protection standards and mandatory safety practices and procedures; and Provision for contingencies that may arise while operations are being conducted at the Site.

C-6	Fill Validation	Construction	<p>A validation report will be prepared (by a Mirvac's nominated Environmental Consultant) to ensure that all materials imported to the site meet the requirements of the Protocol. The validation report should include the following:</p> <ul style="list-style-type: none"> • A review of source site documentation; • Copies of the completed forms from Appendix B of the Fill Management Plans; • A review of gate keeping records (Mircac's nominated Environmental Consultant should undertake the gate keeping role); • A review of site drawings / surveys identifying where imported materials were placed within the site; • Records of non-conformances with this Protocol; • Assessment of the overall compliance with the Protocol; • Review and summary of all available fill sampling analytical results to ensure that concentrations are consistent with NEPM (2013) land use criteria; • Ensure that data relied upon for fill quality assessment have been validated in accordance with QA/QC requirements outlined in NEPM (2013) and are reliable for interpretive use; • Document the results of any removal, validation or other management of material considered to be unsuitable for site use; • Document the disposal of any material from the site (estimate volume disposed, waste classification of the material disposed, receiving landfill is licensed to receive the waste, weighbridge dockets are consistent with the volume removed and the waste class); and • Concluding statement, based on all of the available information regarding the suitability of the land for the proposed land uses.
Bushfire			
BF-1	Asset Protection Zones	Construction	<ul style="list-style-type: none"> • At the commencement of building works and in perpetuity, the entirety of each proposed warehouse lot shall be maintained as an APZ. The APZ shall be established and maintained as an inner protection area as outlined within Planning for Bushfire Protection 2019 and the NSW RFS document 'Standards for Asset Protection Zones'.
BF-2	Water Supply	Operation	<ul style="list-style-type: none"> • Fire hydrants are provided in accordance with Building Code of Australia E1.3, AS2419.1:2021, including the ring main requirements for large, isolated buildings.
BF-3	Building Standards	Operation	<ul style="list-style-type: none"> • New buildings will be constructed to 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 to the extent identified.
BF-4	Roads	Operation	<ul style="list-style-type: none"> • All proposed roads will comply with section 5.3.2 of Planning for Bush Fire Protection 2019 as appropriate
Air Quality			
AQ-1	Communications	Construction	<ul style="list-style-type: none"> • Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary. This may be the environment manager/engineer or the Site Manager.

			<ul style="list-style-type: none"> • Display the head or regional office contact information. • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.
AQ-2	Site Management	Construction	<ul style="list-style-type: none"> • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
AQ-3	Monitoring	Construction	<ul style="list-style-type: none"> • Carry out regular on-site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority, when asked. • Increase the frequency of on-site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
AQ-4	Preparing and Maintaining the Site	Construction	<ul style="list-style-type: none"> • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Where possible, avoid site runoff of water and mud. • Keep site fencing, barriers and scaffolding clean using wet methods. • Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed, or fence stockpiles to prevent wind whipping.
AQ-5	Operating Vehicle/Machinery and Sustainable Travel	Operation	<ul style="list-style-type: none"> • Ensure all vehicles switch off engines when stationary - no idling vehicles • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable • Impose and signpost a maximum-speed-limit of 15 kph on surfaced and 10 kph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
AQ-7	Operations	Operation	<ul style="list-style-type: none"> • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate • Use enclosed chutes and conveyors and covered skips • Minimise drop heights from loading shovels and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate
AQ-8	Waste Management	Operation	<ul style="list-style-type: none"> • Avoid bonfires and burning of waste materials.

AQ-9	Measures specific to earthworks	Construction	<ul style="list-style-type: none"> • 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-10	Measures specific to construction	Construction	<ul style="list-style-type: none"> • 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-11	Measures specific to trackout	Construction	<ul style="list-style-type: none"> • 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. • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • Record all inspections of haul routes and any subsequent action in a site log book. • 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 permit. • Access gates to be located at least 10 m from receptors where possible.

Waste Management

WM-1	Communication	Operation	<p>Waste management initiatives and management measures will be clearly communicated to building managers, owners, employees, customers and cleaners. Benefits of providing this communication include:</p> <ul style="list-style-type: none"> • 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.
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WM-2	Signage	Operation	<p>Signs which clearly identify waste management procedures and provisions to staff and visitors will be distributed around the Development. Key signage considerations are:</p> <ul style="list-style-type: none"> • 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, as shown in Figure 6 · 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 Development; and • Emergency contact information for reporting issues associated with waste or recycling management.
WM-3	Monitoring and Reporting	Operation	<p>Visual assessments of bins and bin storage areas will be conducted by the building manager, at minimum:</p> <ul style="list-style-type: none"> • 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 this document. • Any deficiencies identified in the waste management system, including, but not limited to, unexpected waste quantities, is to be rectified by the Building Manager as soon as it is practical.
WM-4	Roles and Responsibilities	Operation	<ul style="list-style-type: none"> • 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.

Greenhouse Gas and Energy Efficiency

GG-1	Energy Usage	Operation	<p>In order to reduce energy consumption, the following measures are proposed to be implemented:</p> <ul style="list-style-type: none"> • Buildings will be net-positive for carbon emissions with the Proposal set to be net carbon zero and deliver a net positive development for embodied carbon emissions. • On-site renewable energy production will be implemented in the design of the development to minimise utilisation of energy from the grid system with a target Energy Production of 99kW Solar System per building achieved. • Energy efficient lighting systems (internal and external) will be implemented to reduce the electrical load on the grid significantly for the same illuminance output in comparison to traditional incandescent lights. • Controls of lighting systems will be implemented to reduce base building energy consumption by assuring artificial lighting is turned off when not required. This may include zoned switching, lighting control systems with time clocks and lighting sensors where appropriate. • Building envelope thermal performance is to comply with NCC 2019 Section J requirements (conditioned spaces), reducing the reliance on mechanical cooling and heating and bring down HVAC operational energy consumption. • Efficient HVAC systems with high COPs will be appropriately designed and sized for the development including a high efficiency centralised plant. • Provisions for electric vehicle and truck charging infrastructure will be provided to allow of future electrical vehicle charging stations in addition to those proposed to be constructed.
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Ecologically Sustainable Development

ESD-1	Water Efficiency	Operation	<ul style="list-style-type: none"> Water efficient fixtures and fittings will be fitted with low-flow water fixtures implemented for taps, wash basins, WCs, urinals, showers and supplementary water uses. Water efficient appliances will be used where applicable; Rainwater tanks will be implemented to offset irrigation water consumption, wash down and potentially toilet flushing and industrial processes. Water usage monitoring will be implemented to monitor water usage and identify leaks and amend losses before greater water loss occurs.
ESD-2	Building Management	Operation	<ul style="list-style-type: none"> Building commissioning and tuning procedures will be implemented prior to practical completion/12 months post practical completion to ensure operational efficiency and building operation is optimised in accordance with the intended building design. Smart metering will be implemented to provide relevant data for the use & management of building staff. This will provide detailed information about the project energy use and profile on a regular basis and through an easily accessible online
Airport Safeguarding			
AS-1	Overall	Construction	Complete wildlife hazard assessment
AS-2		Construction	<p>Develop a Wildlife Hazard Management Plan for the site. It should include:</p> <ul style="list-style-type: none"> Roles and responsibilities Regular monitoring surveys Wildlife hazard assessments by qualified ornithologists or biologists Wildlife awareness and management training for relevant staff Wildlife population triggers/thresholds Activities to reduce hazardous wildlife populations <p>An annual review to assess implementation against performance indicators, identify gaps, and ensure currency.</p>
AS-3		Operation	<p>Regularly monitor the site for wildlife activity to help identify high and moderate risk species using the site. Monitoring should:</p> <ul style="list-style-type: none"> Determine the level of wildlife attraction, the features that are attractive (e.g. water, food) and wildlife behaviour. Identify variation of wildlife activity (i.e., how wildlife uses the site at different times of the day, year or climatic phase). Identify emerging risks. Locate evidence of wildlife shelter/nesting provided by infrastructure (e.g., buildings, equipment and/or vegetation). Note nesting activity, unusual bird activity, and effectiveness of mitigation devices. <p>Validate plant species choice and landscaping structure, or other mitigation applied.</p>
AS-4		Operation	<p>Develop a monitoring procedure that:</p> <ul style="list-style-type: none"> Establishes a standard survey route around the designed site.

			<ul style="list-style-type: none"> Designate stopping points whose areas are scanned for wildlife. Record wildlife data on a standardised form (electronic or paper) that records date, time, species, number of wildlife, behaviour, habitat utilised, and weather. <p>Assists in determining thresholds for acceptable bird numbers on site.</p>
AS-5		Detailed design	Include actions to manage landscape and waste in the Wildlife Management Plan or refer to existing landscape and waste management plans.
AS-6		Operation	<p>Where ongoing monitoring of the site identifies increased wildlife attraction, complete regular dispersal to discourage birds from the area particularly when WSI is operational. Coordinate with dispersal at WSI to ensure birds do not relocate closer to the airfield.</p> <p>Dispersal methods may include auditory or visual deterrents such as stock whip, starter pistol, sirens, kites, and lasers.</p> <p>If species thresholds cannot be maintained, additional passive or active management techniques must be applied to reduce presence of hazardous species. This may include but not limited to modifying the site's waterbodies and drainage, installing a one way valve for waterflow, installing pumping systems, and placing wires across or netting waterbodies.</p>
AS-7	Landscaping	Detailed design	Document species palette, acceptable and unacceptable species, and guidance for landscaping and maintenance to reduce overall wildlife attraction in a Landscaping Plan or in the Wildlife Management Plan.
AS-8		Detailed design	For proposed landscaping works that do not meet approved guidelines, request an evaluation and assessment from a suitably qualified aviation ecologist.
AS-9		Operation	Regularly prune and lop trees and shrubs to improve their health and vigour and prevent the establishment of communal roosts and nesting colonies which, if allowed to establish, can be difficult to remove.
AS-10		Operation	<p>Where ongoing monitoring identifies increased wildlife attraction associated with landscaping:</p> <ul style="list-style-type: none"> Conduct wildlife dispersal to discourage birds from the area particularly when WSI is operational. Coordinate with dispersal at WSI to ensure birds do not relocate closer to the airfield. Where ongoing monitoring determines that wildlife dispersal is insufficient to address wildlife attraction, complete vegetation pruning or removal to reduce attraction. <p>Where ongoing monitoring identifies increased wildlife attraction to landscaped areas, update relevant management schedules.</p>
AS-11		Operation	Maintain grass height between 200-400 mm.
AS-12		Operation	Irrigate landscaped areas at night to reduce wildlife attraction during peak aircraft movements.
AS-13		Operation	Monitor irrigation system regularly for potential leaks. Where leaks are identified, immediately fix taps to reduce ponding water on site and associated attraction.
AS-14	Water	Operation	<ul style="list-style-type: none"> Regularly monitor waterbodies on site during and post construction.

AS-15	Operation	<p>For the temporary evaporation basin, apply interventions to reduce the overall wildlife attraction including:</p> <ul style="list-style-type: none"> • Ensure areas are accessible for people conducting wildlife dispersal. • Minimise open water within treatment wetlands (<40%) by planting macrophytes in shallower areas of the wetland that are subject to regular inundation. • Encourage recreational use in areas surrounding stormwater infrastructure to encourage visitation by people and pets. • Conduct wildlife dispersal to discourage birds from the area particularly when WSI is operational. Coordinate with dispersal at WSI to ensure birds do not relocate closer to the airfield. • Where ongoing monitoring determines that wildlife dispersal is insufficient to address wildlife attraction, break up open water areas with physical barriers such as pool lanes placed across open water bodies. • Where ongoing monitoring determines that wildlife dispersal is insufficient to address wildlife attraction, create steep-sided (4V:1H) concrete-lined channels to reduce open water. • Where ongoing monitoring determines that wildlife dispersal is insufficient to address wildlife attraction, install wires or net to restrict wildlife access.
AS-16	Operation	<p>For Basin A apply interventions to reduce the overall wildlife attraction including:</p> <ul style="list-style-type: none"> • Install a net or wires over the basin to restrict wildlife access. • Once the Sydney Water a Regional Solution is completed and the basin consistently drains within 48 hours after a rainfall event, reassess the netting requirement and consider net removal. <p>After removal of the net, when ongoing monitoring indicates wildlife attraction, conduct wildlife dispersal to discourage birds from the area particularly when WSI is operational. Coordinate with dispersal at WSI to ensure birds do not relocate closer to the airfield.</p>
AS-17	Detailed design	<p>Any above ground water storage structures should avoid gantries or other overhanging structures where birds may perch to access water.</p>
AS-18	Operation	<p>Ponding outside of the temporary evaporation basin and Basin A should not exceed 100 m2 of open water.</p>
AS-19	Operation	<p>If the ponding surface area outside of the temporary evaporation basin and Basin A exceeds 100 m2 and ongoing wildlife monitoring indicates wildlife attraction:</p> <ul style="list-style-type: none"> • Conduct wildlife dispersal to discourage birds from the area particularly when WSI is operational. Coordinate with dispersal at WSI to ensure birds do not relocate closer to the airfield. • Where ongoing monitoring determines that wildlife dispersal is insufficient to address wildlife attraction, install wires or net to restrict wildlife access, wires or nets can be fitted over the waterbody to reduce the attractiveness to larger birds
AS-20	Operation	<p>Stormwater pipes, drains and culverts can provide an ideal nesting habitat for species suchas Fairy Martins and Welcome Swallows. Drains should be completely circular, free of 90° angles, including at the central join. This will prevent stable foundations for nest building.</p>

AS-21		Operation	To limit access to drains, including circular drains, can be fitted with exclusion devices to prevent bird access.
AS-22		Operation	Use underground drains and water storage where possible to reduce the availability of water to wildlife.
AS-23	Waste	Operation	The detailed waste management plan does not include on-site composting.
AS-24		Operation	Building structures include enclosed areas for the facilitation of waste storage.
AS-25		Operation	All external waste bins have fixed lids and are kept closed when not in use. This restricts access to opportunistic urban forages such as Feral Pigeon and Australian White Ibis.
AS-26		Operation	Install signage throughout the site to inform the public that feeding of wildlife on site is prohibited.
AS-27	Infrastructure	Detailed design	Detailed designs include exclusion devices such as netting under awnings.
AS-28		Operation	Where ongoing monitoring identifies increased wildlife attraction install exclusion devices to reduce wildlife attraction.
AS-29	Construction	Construction	Include wildlife management actions in all construction environmental plans. During construction, operators should be vigilant to increased wildlife activity, particularly during and immediately after any earthworks.
AS-30		Operation	Cover all temporary basins with netting or wires on site to prevent access for wildlife until decommissioned.