APPENDIX 2 APPLICANT'S MANAGEMENT AND MITIGATION MEASURES

The following section provides recommendation for mitigation measures in response to potential impacts identified as part of SSD-1027349. The structure of mitigation measures is based on the DPE's hierarchy of approaches for managing impacts identified in the Draft Environmental Impact Assessment Guidance Series released by DPE in June 2017, as:

- Performance based measure – identify performance criteria that must be complied with to achieve an appropriate environmental outcome but do not specify how the outcome is to be achieved.
- Prescriptive measure – require action to be taken or specify something that must not be done.
- Management based measure – identify one or more management objectives that must be achieved through the implementation of a management plan.

Following the implementation of appropriate mitigation measures as recommended, it is determined that the proposal will not result in any significant adverse impacts on the surrounding environment. The following table illustrates how the matters raised within the SEARs and CIP Conditions will be addressed.

This analysis comprises a qualitative assessment consistent with AS/NZS ISO 31000:2009 Risk Management–Principles and Guidelines (Standards Australia 2009). The level of risk was assessed by considering the potential impacts of the proposed development prior to application of any mitigation or management measures. In accordance with the SEARs, the Environmental Risk Assessment (ERA) addresses the following significant risk issues:

- The adequacy of baseline data;
- The potential cumulative impacts arising from other developments in the vicinity of the Site; and
- Measures to avoid, minimise, offset the predicted impacts where necessary involving the preparation of detailed contingency plans for managing any significant risk to the environment.

Risk comprises the likelihood of an event occurring and the consequences of that event. For the proposal, the following descriptors were adopted for 'likelihood' and 'consequence'.

Likelihood		**Consequence**	
A	Almost certain	1	Widespread and/or irreversible impact
B	Likely	2	Extensive but reversible (within 2 years) impact or irreversible local impact
C	Possible	3	Local, acceptable or reversible impact
D	Unlikely	4	Local, reversible, short term (<3 months) impact
E	Rare	5	Local, reversible, short term (<1 month) impact

The risk levels for likely and potential impacts were derived using the following risk matrix.

		LIKELIHOOD				
		A	**B**	**C**	**D**	**E**
CONSEQUENCE	**1**	High	High	Medium	Low	Very low
	2	High	High	Medium	Low	Very low
	3	Medium	Medium	Medium	Low	Very low
	4	Low	Low	Low	Low	Very low
	5	Very low	Very low	Very low	Very low	Very low

The results of the environmental risk assessment for the proposed development are presented in the below table and are based upon the range of technical and specialist consultant reports appended to the EIS. The table has directly related mitigation measures responding to each impact also based upon the range of technical and specialist consultant reports appended to the EIS.

N.B. 'O' – Operational; 'C' – Construction

'Pe' – Performance based mitigation measure; 'Pr' – Prescriptive based mitigation measure 'Ma' – Management based mitigation measure

SEAR	Potential Impact	Stage of Project	Likeli-hood	Conseq-uence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
Traffic & Transport	Increased traffic, impacting the local road network, specifically the adjoining Altis Industrial Complex (SSD-10448).	C & O	A	3	Medium	Traffic control would be required to manage and regulate construction vehicle traffic movements to and from the Site during construction. All vehicles transporting loose materials will have the load covered and/or secured to prevent any items depositing onto the roadway during travel to and from the Site. All vehicles are to enter and depart the Site in a forward direction, with reverse movements to occur only within the Site boundary. All contractor parking is to be wholly contained within the site; and Pedestrian and cycle traffic along the site frontage will be managed appropriately at all times.	Pe	Management of traffic and transport impacts specifically during the construction phase and ongoing during operational.
Biodiversity	Delineation of clearing areas	C	D	3	Low	To avoid unnecessary removal or damage to the TEC's or other retained vegetation, the clearing area will be clearly demarcated with temporary fencing and signed, where appropriate, to ensure no vegetation beyond these boundaries will be inadvertently cleared during the construction process.	Pe	Unnecessary damage to trees to be retained.
	Erosion, sedimentation and pollution control	C	C	3	Medium	Construction activities will be undertaken in accordance with "The Blue Book" (Landcom 2004). These include implementation of the following measures: Installation of sediment control fences; Covering soil stockpiles; and Avoiding soil disturbance prior to heavy rainfall.	Pr	Sedimentation into retained and adjoining vegetation
	Pre-clearance survey	C	C	3	Low	Pre-clearance surveys will be conducted in all areas of vegetation that are required to be cleared.		Increased and unnecessary

SEAR	Potential Impact	Stage of Project	Likeli-hood	Conseq-uence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						Pre-clearing surveys will be undertaken within one week of clearing. Habitat features will be marked during the preclearing survey.		mortality of native fauna.
	Staging of clearing	C	B	2	High	Animals disturbed or dislodged during the clearance but not injured will be assisted to move to adjacent bushland or other specified locations If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal		Increased and unnecessary mortality of native fauna.
	Weed management	Prior to C	C	2	High	Appropriate weed control activities will be undertaken in accordance with the Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022		Spread of weeds throughout the subject land and surrounding land.
	Vegetation clearance timing	C	C	3	Medium	The clearance of trees and vegetation would only occur outside of winter (June, July and August) to ensure fauna is less disturbed.	Ma	Increased and unnecessary mortality of native fauna.
	Impacts to fauna during construction	C	D	3	Low	Pre-clearance surveys will be conducted in all areas of vegetation that are required to be cleared. Pre-clearing surveys will be undertaken within one week of clearing. Habitat features will be marked during the pre-clearing survey. Any fauna found will be captured and relocated to nearby remnant vegetation and released.	Pe	Increased and unnecessary mortality of native fauna.
	Clearance of habitats during construction	C	C	3	Medium	Vegetation clearing will be conducted using a two-stage clearing process. Animals disturbed or dislodged during the clearance but not injured will be assisted to move to adjacent bushland or other specified locations If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal	Pr	Increased and unnecessary mortality of native fauna.

SEAR	Potential Impact	Stage of Project	Likeli-hood	Conseq-uence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
	Spread of weeds throughout site	C	D	4	Low	Appropriate weed control activities will be undertaken in accordance with the Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022 (LLS: Greater Sydney 2017).	Pe	Spread of weeds throughout the study area and surrounding land.
	Dam dewatering	C	B	4	Low	Prior to dam dewatering activities a Dam Dewatering Plan prepared that includes a strategy for dewatering of the three dams within the subject land and a relocation site for any fauna captured.	Pr	Increased and unnecessary mortality of native fauna.
	Erosion and transport of sediments as a result of soil disturbance during construction	C	C	3	Medium	Construction activities will be undertaken in accordance with "The Blue Book" (Landcom 2004). These include implementation of the following measures: Installation of sediment control fences; Covering soil stockpiles; and Avoiding soil disturbance prior to heavy rainfall	Pr	Sedimentation into retained and adjoining vegetation
Urban Design & Visual	Loss of existing visual landscape and threat to view corridors of local residents/ sensitive receivers.	C	C	3	Medium	Extensive planting with a lix of low, medium and high-level planting Retention of existing vegetation where possible. Implementation of a landscape maintenance and management regime to ensure the planting successfully establishes and thrives. Selection of colours for the buildings which are complementary palate to the existing and emerging landscape colours.	Pe	Loss of existing landscape and intrusion by unacceptable level of development.
Noise & Vibration	Construction noise	C	C	3	Medium	Avoiding the coincidence of noisy plant working simultaneously close together would result in reduced noise emissions. Equipment which is used intermittently is to be shut down when not in use. Where possible, equipment with directional noise emissions should be oriented away from sensitive receivers.	Pe	Disturbance to local amenity, including proximal sensitive receivers. Given the high level of construction

SEAR	Potential Impact	Stage of Project	Likeli-hood	Conseq-uence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						Regular compliance checks on the noise emissions of all plant and machinery used for the proposal would indicate whether noise emissions from plant items were higher than predicted. Where possible, heavy vehicle movements should be limited to standard construction hours. Non-tonal reversing alarms should be used on all items of plants and heavy vehicles used for construction. Inform all potentially impacted residents of the nature of works to be carried out, the expected noise level and duration, as well as contact details. Where possible, times identified by the community when they are less sensitive to noise to further understand best measures of when and how to manage noise impacts. Selection of quietest feasible construction equipment. Use of saw cutting in preference to rock-breakers where feasible. Localised treatment such as barriers, shrouds, and the like around fixed plant, such as pumps, generators, and concrete pumps. Plant Noise Audit – Noise emission levels of all critical items of mobile plant and equipment should be checked for compliance with noise limits appropriate to those items prior to the equipment going into regular service. To this end, testing should be established with the contractor. Operator Instruction – Operators should be trained in order to raise their awareness of potential noise problems and to increase their use of techniques to minimise noise emission. Equipment Selection – All fixed plant at the work sites should be appropriately selected, and where necessary, fitted with silencers, acoustical enclosures, and other noise attenuation		within the precinct, cumulative impact form construction remains a concern.

SEAR	Potential Impact	Stage of Project	Likeli-hood	Conseq-uence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						measures in order to ensure that the total noise emission from each work site complies with EPA guidelines. Site Noise Planning – Where practical, the layout and positioning of noise-producing plant and activities on each work site should be optimised to minimise noise emission levels.		
	Operational noise	O	C	4	Low	Relocating heavy vehicle access routes away from the site boundary, taking advantage of screening afforded by the building envelope. Reducing peak 15-minute heavy vehicle movements across the development by staggering delivery/pickup times. Reducing peak 15-minute light vehicle movements across the development by staggering shift change times for employees. Minimising the concurrent use of forklifts and other mobile plant outside the warehouses (i.e., in the hardstand areas) and/or limiting their use to the less sensitive daytime and evening periods. The use of quieter mobile plant options, such as electric forklifts instead of gas-powered forklifts. Locating fixed mechanical plant away from the most-affected sensitive receivers, such as ground level locations instead of rooftop locations, and/or shielded behind the warehouse/office structures. The use of quieter fixed mechanical plant options, noting that this assessment assumes an indicative noise level for modelled mechanical plant. Acoustic screening, no less than 500 mm higher than the top of the plant, located as close as practicable to the plant. Best management practice – such as switching vehicles and plant off when not in use, education of staff and drivers regarding noise impacts, regular maintenance of plant and	Pr	Risk of disturbance from cumulative operational impact with multiple tenants operating logistics facilities that has the potential to cause impact to nearby sensitive receivers.

SEAR	Potential Impact	Stage of Project	Likeli-hood	Conseq-uence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						equipment to minimise noise emissions, use of silent or non-tonal reverse alarms instead of tonal alarms, minimising use of reverse alarms by providing forward manoeuvring where practicable. Minimise use of reversing alarms or alternatively installing “squawkers”. Turning off all engines when not required. Where possible, schedule heavy vehicle movements during the day and/or evening periods. Training of staff and employers should include noise awareness component, community consultation and response to complaints. Keeping roller shutter doors closed when not in use. Warehouse noise sources such as roof top mechanical plant and forklifts in hardstand areas have been modelled throughout the development.		
Indigenous Heritage	Disturbance to sub-surface objects and artefacts.	C	C	2	Medium	An Archaeological Research Design & Methodology is to be prepared for the sub-surface investigation of the identified landscape features and their potential for retaining Aboriginal objects and archaeological resources.	Pr	Potential destruction of sub-surface objects are artefacts that have cultural value.
	Construction workers/ contractors inappropriately handling or destroying potential artefacts	C	C	2	Medium	Induction materials be prepared for inclusion in site inductions for any contractors working at the subject area.	Pr	A lack of education awareness could result in a contractor not following the correct procedure when finding a

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	or items of significance.							potential artefact or item of significance.
	A recovered item is not respectfully handled upon being found on site.	C	D	2	Low	Aboriginal objects recovered from the test excavation program will be reburied within the study area, outside the proposed impact area.	Pe	A recovered item is not respectful reburied on site in line with the methodology as presented in the ACHA.
Stormwater & Drainage	Water Quality Management	C	D	3	Low	Detention storage via OSD/ Bio-Retention Basin	Pe	A lack of detention storage on site will result in increased local outflows from the development.
	Stormwater Quality	C	D	3	Low	Stormwater Treatment Measures (STM's) are to be incorporated into the civil design.	Pe	Development impervious areas such as roofs, hardstand, car parking, roads and other impervious areas will threaten the quality of water being output via stormwater.
Waterways & Riparian Areas	Realignment of an existing watercourse and the construction of	C	D	3	Medium	A VMP be prepared outlining how the creek systems and native vegetation within the re-aligned corridor are to be revegetated and managed.	Ma	The removal of vegetation throughout the land will result in

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	a trunk drainage corridor.					Rocks will be placed to recreate the natural appearance of a creek-bed with sufficient space between rocks for planting with riparian/aquatic plant species. The watercourse channel will also incorporate instream woody debris to create instream aquatic habitat, have a range of different surfaces along the bed and banks of the channel to create different geomorphic features such as pools and riffles during high flow events.		alterations to drainage pathways and will alter flows as a result. The construction of the roads and other hardstand areas that was previously vegetated will have potential to alter surface hydrological conditions and increase volume and velocity flows impacting water quality.
	Dewatering and decommission of three farm dams	C	B	3	Medium	A Dam Dewatering Plan will be prepared as specified in the VMP which will include provision for staged dewatering under ecologist supervision to enable relocation of aquatic species recorded from the dams. The loss of aquatic habitat will also be compensated for by the creation of a watercourse as well as water detention basins in the subject land.	Pe	Loss of habitat for aquatic species on site.
	Discharge into creeks and drainage lines.	O	D	3	Low	WSUD has been incorporated into the design of the YLE to maintain quality of discharge into creeks and drainage lines	Pe	Ensuring no impact to discharge form the site into local waterways or

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								drainage infrastructure.
	Erosion and sediment control	C	D	3	Low	Erosion and sediment control measures will be implemented throughout the construction periods in order to minimise potential impacts to the existing hydrological processes of the site. A Sediment and Erosion Control Plan has been lodged as an appendix to the EIS.	Pr	Potential for runoff and impact the existing hydrological processes of the site.
Soil & Water	Groundwater dewatering	C	C	3	Medium	Groundwater dewatering to be undertaken in accordance with the Groundwater Management Plan.	Pe	Incorrect procedure may result in contamination as the as the site can be exposed to and affect potential receptors (e.g. demolition, construction workers and future site users).
Bushfire	Impact to the proposed development by threat of bushfire.	O	D	4	Low	An emergency evacuation plan is to be prepared for the site. Rainwater tanks and hydrants are to be provided with each warehouse development. All hazardous materials and gas infrastructure is to be appropriately located from fire hazard. Tree canopy cover of less than 15% should be located greater than 2m from any part of the roofline of a building. Garden beds or flammable shrubs are not to be located under trees or closer than 10m from an exposed window/door.	Ma	Potential damage to life and property as a result of threat from bushfire and inappropriate mitigation measures.

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						Trees should have lower limbs removed up to a height of 2m above the ground.		
Hazards & Risk	Dangerous goods stored on site	O	D	3	Low	All DGs shall be stored in a manner which complies with the applicable storage standards (i.e. AS/NZS 3833:2007 or class specific standards such as AS 1940-2017). The documentation required by the Work Health and Safety (WHS) Regulation 2017shall be prepared to demonstrate the risks have been assessed and minimised So Far As Is Reasonably Practicable (SFARP) as required by the WHS Regulations. Where flammable gases or liquids are stored, a hazardous area classification in accordance with AS/NZS 60079.10.1:2009 shall be prepared to ensure that an ignition source does not enter a hazardous atmosphere as required by the WHS Regulations.	Pr	Potential risk from future dangerous goods to be stored in site within warehouse tenancies.
Waste Management	Amassing of waste as a result of both construction and operation	C & O	C	4	Low	Practical building design and construction techniques, including construction staging and ordering pre-cut materials at the required sizes. Appropriate collection and subsequent reuse, recycling or treatment offsite for items such as batteries, cardboard, timber, plastic, glass etc. during construction, demolition and operational phases. Careful on-site storage, sorting and separation of different waste products, especially for waste appropriate for recycling and reuse. Returning certain waste products (e.g. packaging) to the suppliers where possible. Acquiring materials and goods from waste reducing sources (e.g., recycled materials, fit for purpose packaging, leased equipment and machinery).	Pr	Threat of incorrect disposal of waste streams which have potential for environmental risk.

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						Other operational, waste reduction and management practices (e.g., provision of take back services to clients, flattening cardboard waste, recycle collection in offices and tearooms). Hiring of qualified contractors for handling waste removal properly informing sub-contractors of waste management procedures. Waste Storage and Management during the demolition, construction and operational phases is to be undertaken in accordance with the Waste Management Plan		
Greenhouse Gas & Ecologically Sustainable Development	Development note being undertaken in a manner that adopts ESD principles.	C	D	4	Low	Use natural ventilation to reduce mechanical ventilation costs. Incorporate standard solar design principles to maximise natural heating and cooling (e.g., managing levels of glazing, wall insulation, use of louvres and curtains). Investigate the viability of sustainable energy sources for operations (e.g., solar panels). Adopt air conditioning design features that improve efficiency (e.g., window sensors, sub-metering, temperature sensors). Utilize light saving technologies and principles (e.g., LED lighting, light sensors, natural lighting). Use of energy efficient appliances.	Ma	Development potentially resulting in increased greenhouse gas emissions and not adopting best practice in ESD principles.
Flooding	Threat of flooding from overland flow and the existing dam to the north-eats of the site.	C & O	D	3	Low	Overland flow can be managed by conveying through the realigned trunk drainage corridor while also draining portions via an inter-allotment pipe. The final conveyance arrangement will be subject to the precinct layout and trunk drainage strategy for the precinct. Development adjacent to the existing dam to the north east will be built with a minimum flood planning level	Ma	Flooding occurring to the site and causing associated damage.