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APPENDIX D - ENVIRONMENTAL RISK ASSESSMENT AND MITIGATION MEASURES

The following section provides recommendation for mitigation measures in response to potential impacts identified in **Section 6** of the EIS. The structure of mitigation measures is based on the DPIE'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 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

Likelihood		Consequence	
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

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
Traffic and Transport	Impacts on road network from construction and operational phase. Additional demand on car parking spaces.	C & O	B	3	Medium	<u>Construction Traffic and Pedestrian Management</u> ▪ The preliminary CTMP outlines the following management measures: ▪ A detailed site establishment plan will be developed by the appointed builder prior to the commencement of any works. ▪ All construction vehicles will access and egress the site via Coal Pier Road. ▪ All construction vehicles will access and agree the site in a forward direction. ▪ All loading and unloading activities are to be contained wholly within the site. ▪ All adjacent property accesses will be maintained at all times. ▪ All vehicles are not to obstruct any pedestrian crossings or footpaths. ▪ Safework accredited traffic controllers will be utilised at site vehicle access points. ▪ Chain mesh fencing and shade clothes will be installed along the perimeter of the site to maintain safety and pedestrian thoroughfare.	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ All material, plant and spoil bin storage is to be accommodated within the site at all times during construction. ▪ No building materials shall be placed, dumped or left on council footpath or roads at anytime with footpaths to remain in a safe condition for use at all times. ▪ All trucks will be linked via CB radio and/or hands free mobile and will only be called to the site when required and there is sufficient capacity to accommodate the proposed trucks ▪ All trucks are to use the proposed truck routes as specified in the preliminary CTMP. ▪ The following further mitigation measures are recommended for the proposal. <u>Prior to Occupation Certificate</u> ▪ A signage and line-marking plan be prepared to manage vehicle circulation in the car park and to assist with way finding across the Site. The signage and line-marking plan would be prepared prior to Occupation Certificate (OC) and if		

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						deemed necessary by the assessing authority. ▪ Construction Traffic Management Plan ▪ A Construction Traffic Management Plan will be prepared and endorsed by the PCA prior to issuance of a Construction Certificate. The CTMP will reflect the content and recommendations of the Preliminary CTMP prepared by Traffix dated November 2024. Operational Traffic Management Plan ▪ An Operational Traffic Management Plan is to be prepared and endorsed PCA prior to issuance of a Construction Certificate.		
Noise and Vibration	Impacts of construction and operation noise on surrounding sensitive receivers	C, O	B	3	Medium	Construction ▪ Use quieter and less noise/vibration emitting construction methods where feasible and reasonable. Where loud plant and/or equipment are being used in construction works, where feasible and reasonable the selection of alternative quieter plant and/or equipment should be considered for tasks. ▪ Plant and equipment must be properly maintained. Provide special		

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						attention to the use and maintenance of ‘noise control’ or ‘silencing’ kits fitted to machines to ensure they perform as intended. ▪ The noise levels of plant and equipment items are to be considered in rental decisions, with quieter and less noise/vibration emitting construction methods where feasible and reasonable. ▪ Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. ▪ The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. ▪ Plant used intermittently to be throttled down or shut down. ▪ Noise-emitting plant to be directed away from sensitive receivers. ▪ Any equipment not in use for extended periods during construction work must be switched off. ▪ Non-tonal reversing beepers (or an equivalent mechanism) (ie. broadband “quacker” type) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours		

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level. ▪ Loading and unloading of materials/deliveries is to occur as far as possible from sensitive receivers. Select site access points and roads as far as possible away from sensitive receivers. Dedicated loading/unloading areas to be shielded if close to sensitive receivers if possible. Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible ▪ Where possible reduce noise from mobile plant through additional fittings including: ▪ Residential grade mufflers ▪ Air Parking brake engagement is silenced. Ensure plant including the silencer is well maintained. ▪ Where practicable, pre-fabricate and/or prepare materials off-site to reduce noise with special audible characteristics occurring on site. Materials can then be delivered to site for installation.		

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ Limit the use of engine compression brakes in residential areas. Ensure vehicles are fitted with a maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission's 'Inservice test procedure' and standard. ▪ Construction hoarding, large onsite structures (ie. site sheds), spoil mounds or stockpiles can be beneficial when the line of sight is broken between source and receiver. As part of construction planning, opportunities to use these items strategically where feasible and reasonable to break the line of site between loud construction works and nearby sensitive receivers. This should be done considering other requirements, such as erosion and sediment control, potential dust and visual impacts. ▪ Site sheds to be strategically located to provide shielding to nearby residences. ▪ Locate laydown and stock piling as far from residences within the construction works areas. Alternatively, where this is not		

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						possible, they should be considered for use as noise mounds. ▪ Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained. ▪ Where works are to be completed away from any permanent construction hoarding, relocatable noise barriers e.g. acoustic blankets hung from temporary construction fencing would be used, where practicable. ▪ Where practicable, a mobile noise screen would be used to reduce noise from moving plant items e.g. concrete saw. Mobile noise screens utilise aluminium mobile scaffold (or similar), with acoustic blanket/ quilt (e.g. Echo-barrier, FlexShield or similar) attached on up to 4 sides (including the top, where no solid platform). Mobile noise screens can provide 5 to 10 dB noise reduction, where they can break line of site between the source and the receiver. ▪ The CEMP including at minimum relevant section for construction noise and vibration management must be prepared prior to the		

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						commencement of construction and regularly updated to account for changes in noise management issues and strategies ▪ Periodic notification (monthly letterbox drop and website notification) detailing all upcoming construction activities delivered to sensitive receivers at least 7 days prior to commencement of relevant works. ▪ A register of most affected noise and vibration sensitive receivers (NVSRs) would be kept on site. ▪ All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include: ▪ All relevant project specific and standard noise and vibration mitigation measures ▪ Permissible hours of work ▪ Any limitations on noise generating activities with special audible characteristics ▪ Location of nearest sensitive receivers ▪ Construction employee parking areas		

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ Designated loading/unloading areas and procedures ▪ Site opening/closing times (including deliveries) ▪ Environmental incident procedures. ▪ Where feasible and reasonable, construction should be carried out during the standard ICNG construction hours. Any proposed works outside of standard ICNG construction hours would require a separate approval process. Work generating high noise levels and vibration intensive plant identified within minimum working distances for human response should be scheduled during less sensitive time periods, such as after 9 am and before 5 pm. ▪ Where high noise generating works are proposed nearby to sensitive receivers, and noise levels at residential receivers could be above 75 dB(A) and so the receivers considered highly noise affected, respite periods should be considered where feasible and reasonable ▪ Where high noise generating works are expected to impact non-		

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						residential receivers and it is determined through consultation that noise impacts could affect the receiver operations, feasible and reasonable management measure could be considered to manage impacts. ▪ No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors. No excessive revving of plant and vehicle engines. Controlled release of compressed air. ▪ Construction heavy vehicles and delivery vehicles should be scheduled during standard construction hours, unless permitted as part of approved construction works outside of standard construction hours. ▪ Develop a Heavy Vehicle Code of Conduct (HVCC) for all drivers to adhere to. The HVCC would require appropriate training of project contractors. It would include noise management methods such as limiting idling and compression braking, and traffic management		

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						practises to minimise noise emissions from vehicles entering and leaving the site ▪ In response to noise complaints, a noise monitoring program should be carried out for the duration of works in accordance with the Construction Noise and Vibration Management Plan (CNVMP) or CEMP and any approval conditions. ▪ In addition to the noise mitigation measures outlined above, a management procedure will need to be put in place to deal with noise complaints that may arise from construction activities. Each complaint will need to be investigated, and appropriate noise amelioration measures put in place to mitigate future occurrences, where the noise in question is in excess of allowable limits. ▪ Community feedback received through the project hotline or other methods, should be used where relevant, to review and gauge key sources of noise impacts and issues and identify any unknown or unexpected noise or vibration impacts. Where feasible and		

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						reasonable, this feedback should be used to update mitigation or management measures where appropriate. This feedback could relate to either the Proposal construction activities in isolation, multiple onsite works occurring concurrently, or cumulative impacts (concurrent or consecutive construction works) from the Proposal and other construction projects. ▪ Coordinating work between construction sites to manage cumulative noise impacts, where feasible and reasonable. An example would be to ensure that where multiple sites are undertaking noise intensive works, such as demolition works, and these construction works could occur concurrently on multiple construction sites in proximity to the same noise sensitive receivers, these impacts are managed with consideration of both projects (ie. ensure that works from one project do not occur during designated respite periods of the other). ▪ Consideration of cumulative construction noise impacts during the		

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						development of noise mitigation and management measures for the worksites, including coordination between construction projects, where reasonable and feasible (ie. consideration of respite periods provided by other projects for approved OOH, so that timetables between projects don't result in other projects or the Proposal impacting the same noise sensitive receivers during designated periods of respite). ▪ <u>Operation</u> ▪ Broadband reversing alarms "quackers" shall be adopted across the tenant truck fleet that operates through warehouse facility. This should be adopted for all permanent and tenant owned/controlled vehicles where feasible and reasonable. Where tenants do not have control over vehicles that operate through the facility, management of potential impacts should be reviewed further as part of the tenant operational management plan, with particular consideration as to whether these trucks would operate during the night period.		

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						▪ Any PA systems required as part of normal operation that emit sound within the facility, are to be designed so that they would result in a negligible increase in overall noise emissions from the facility. PA announcements as part of normal operations would be restricted to within the enclosed areas of the facility during the night period. ▪ Ensure that for all non-enclosed areas of the facility (ie. hardstand/ramp interface), and entry and exit areas – ▪ All pavement is smooth (ie. no speed bumps) ▪ Transitions from the external public road to the site or between internal road elements (ie. hardstand to ramp) are smooth, as to not result in jolting, or unnecessary accelerating of the truck the truck is required. ▪ Drainage grates are designed to not result in noise events. ▪ Design elements should also minimise the requirement for trucks to not have to stop/brake and then accelerate (ie. pedestrian crossing points) outside of dock areas with		

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						line of sight to nearby sensitive receivers, in particular where they are required to operate during the night period. These will be reviewed at detailed design to avoid competing traffic issues and traffic management at required pedestrian interfaces like footpath crossings. ▪ Alternate methods and practices to the use of horns as a safety warning for onsite moving forklifts should be reviewed for external operations and incorporated into site/tenant operations and safety practices, where feasible and reasonable and ensuring safety requirements are maintained. ▪ Materials of the warehouse facility facade and roof construction would be selected during detailed design, so that any noise break-out from internal activities would result in a negligible increase in overall noise emissions from the facility and maintain the outcomes detailed in this SSDA NVIA. This includes any noise break-out from internal activities, including through louvres, opening or penetrations. Section 6.1.5 details the base internal noise		

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						level assumptions for this SSD NVIA assessment and Section 6.2.4 details the assumed acoustic performance of the building envelope which was incorporated in the noise modelling. Warehouse façade and roof building elements are to be constructed to achieve the minimum installed acoustic performance as detailed in Section 6.2.4 or alternative construction systems adopted where an analysis demonstrates the overall noise emissions from the facility will achieve any approved noise emissions requirements. Any acoustic analysis must include consideration of the composite transmission loss from the building element, where the element is made up of different constructions (ie. metal sheeting construction with transparent infill elements). ▪ Development of a methodology to manage the individual contributions of tenants within any approved noise requirements for the Proposal as part of the Operational Noise Management Plan/ Operational Management Plan developed for the Proposal.		

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						▪ When a new tenant or change of tenant is proposed for a warehouse space an acoustic review is to be undertaken. During the preparation for occupancy of a warehouse tenancy (ie. warehouse fit-out design stage) for any specific tenant, the potential noise emissions from the tenant's proposed operations are to be reviewed to confirm that: ▪ The tenant operational noise emissions will satisfy any noise emission allowances and noise mitigation/management measures identified for the individual tenant in the Proposal Operational Noise Management Plan/ Operational Management Plan to satisfy M1.6, and if there are any further mitigation and/or management measures required to do so. ▪ Confirm if any further mitigation and/or management measures are required to ensure that noise emissions from the warehouse tenancy will be consistent with the noise emission outcomes presented in this NVIA. ▪ Review operations that are non-typical tenant activities but could		

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						have the potential to exceed noise emission allowances (ie. waste management, garbage compactor operations, infrequent scheduled waste truck operations, etc.). Determine if/what feasible and reasonable controls would be required to manage these infrequent activities in a feasible and reasonable manner ▪ Noise walls are to be installed ▪ Acoustic absorption lining is to be installed along the walls of the ground floor southern façade truck access point to minimise reflections and internal hardstand noise breakout. Acoustic absorption is to be installed from 2m to 6m above ground level and extend for 10m into tunnel. This is to be installed on both sides of the access tunnel. Minimum acoustic performance of NRC 0.8. The extent and materials is to be reviewed at detailed design. ▪ Acoustic absorption lining is to be installed along the external southern façade of the Warehouse B 02/03/04 to maximise the noise barrier effectiveness and minimise reflections of the warehouse façade.		

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						Acoustic absorption is to be installed from RL14m to RL18m (4m high), except for areas covered by façade louvres. Minimum acoustic performance of NRC 0.8. The extent and materials is to be reviewed at detailed design. ▪ Blank off from soffit to 6m above ground (RL 16.5) with a solid and non-perforated facade element. ▪ Close off from floor to soffit the western carpark with a solid and non-perforated facade element. The construction is to be a solid non-perforated continuous construction, with sufficient transmission loss that breakthrough does not contribute to the overall noise emission levels from internal noise levels ▪ Relocate the dedicated motorbike parking to the eastern side of the carparking area ▪ A detailed assessment of noise emissions from building services, mechanical plant and equipment is to be undertaken during detailed design. All building services, mechanical plant and plantroom spaces are to be designed to not increase total site noise emissions,		

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						cumulatively with other onsite noise generating operations (ie. trucks and loading activities). This will likely include selection of quiet plant/equipment, acoustic absorption, noise barriers, and the use of acoustic louvres and attenuators as part of the design. Contributions from direct noise emissions and internal noise breakout as a result of increased internal noise levels must be considered.		
Air Quality and Odour	Dust and human health impacts due to construction work at sensitive receptors.	C	B	3	Medium	▪ A detailed review of the recommendations should be performed, and the most appropriate measures be adopted as part of the Construction Air Quality Management Plan (**CAQMP**). ▪ To confirm that the controls are adequately controlling dust emissions from the site, visual inspections of dust levels are to be performed on a daily basis. These daily inspections should include, but not be limited to: ▪ Visual inspection of any airborne dust being generated on-site or being observed blowing off-site.	Pe, Ma	Low

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						▪ Ensuring roads leaving the Site are free of soil and dust, and that there is no observable soil or dust tracking onto the road network. ▪ Inspection of any the erosion and sediment control systems for silt build-up. ▪ Inspection of any stockpiles and waste storage areas to ensure no significant wind erosion is observable. ▪ Any inspection reports should include the above observations, with remedial or corrective actions noted (as appropriate). Any remedial or corrective actions must be reported to the Site Manager as soon as is practicable.		
Air Quality and Odour	Air quality impacts to sensitive receivers	O	D	3	Low	▪ Recommended air quality management measures for the operational phase of the Project include: ▪ Mobile heavy lift equipment and other vehicles operated on site are to be maintained and operated as per manufacturer specifications or best practice requirements. ▪ Mobile heavy lift equipment and other vehicles are to be turned off	Ma	Very low

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						when not in use, where safe to do so. All unnecessary engine idling is avoided. ▪ Any spillages are cleaned up in a timely manner. ▪ Sealed access roads and hardstand areas are to be maintained and the surface kept free of significant dust-generating materials.		
Visual Impacts	Visual impacts to residential sensitive receivers	O	C	3	Medium	▪ All existing trees are to be retained including a number of trees within the site. ▪ A landscape buffer of 10m is to be provided to Stephen Road consisting of native canopy trees and layered planting to create a dense visual screen. ▪ Consideration of high-quality building finishes and colours is to be incorporated as part of the façade design.	Pre	Medium
Contamination	Contamination sources present on the site.	C	A	2	High	▪ To address the contamination risks, the following broad mitigation measures are recommended: ▪ Develop a Remediation Action Plan (RAP) outlining the strategy for remedial works.	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ Implement capping and long-term management of soils impacted by lead and asbestos. ▪ Remove and validate aboveground and underground storage tanks and associated infrastructure. ▪ Conduct ex situ treatment of soils contaminated with VOC and TRH/TPH, particularly from the eastern grassed area and tank farms. ▪ Complete and implement an Acid Sulphate Soils Management Plan (ASSMP) for soils near or below the water table. This plan will be required prior to commencing site works. ▪ Collaborate with geotechnical, civil, and structural consultants to develop the final remediation approach, considering subsurface contaminants and ASS. ▪ Implement an unexpected finds/additional finds protocol during the works. ▪ Conduct hazardous building material surveys on existing structures and appropriately remove identified materials.		

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ Develop a long-term environmental management plan post-remediation to manage retained contamination. ▪ **Area 1** - the Alkyd Plant building in the north-western section of the site ▪ Appropriate site management practices are to be incorporated into the works so as to not allow movement of soils from this area without appropriate tracking and / or assessment ▪ Commercially, to reduce longer term risks from retained contamination, consideration may be given to some *in situ* soil treatment in the upper portion of the groundwater table ▪ **Area 2** – the northern UST farm, associated pump room and adjacent areas ▪ Removal and validation of the USTs from the northern UST farm, including removal of the inground infrastructure. ▪ Removal and validation of the redundant USTs, including removal of the inground infrastructure (e.g. pipe work, etc.). ▪ It is recommended that where the odorous soils are encountered and		

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						excavated as part of the general UST removal and validation works. ▪ **Area 3** – encompasses the area subject to the central / western groundwater remediation being undertaken via the VMP. ▪ Removal and validation of the USTs from the central UST farm, including removal of the inground infrastructure (e.g. pipe work, etc.). ▪ For soils excavated from the AST and UST farms requiring remediation, *ex situ* treatment (e.g. biopiling, etc.) is to be undertaken until soils are suitable for placement below the capping layer. ▪ **Area 4** – encompasses the area to the south of the Nuodex Plant building ▪ Removal and validation of the ASTs from the south-eastern (Nuodex Plant) AST farm, including removal of the inground infrastructure (e.g. pipe work, etc.). ▪ **Area 5** – encompasses the grassed area to the east of the Nuodex Plant building ▪ Excavation of the soils in this area for *ex situ* treatment (e.g. biopiling, etc.)		

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						to address VOC and TRH impacts in the soils below 2 m above the water table below (i.e. between ~2-5 m). Treatment of soils to be undertaken until soils are suitable for placement below the capping layer. ▪ **Area 6** – the unsealed filled area in the south-eastern section of the site ▪ Appropriate site management practices are to be incorporated into the works so as to not allow movement of soils from this area without appropriate tracking and / or assessment ▪ Given the variability in depths from the results to date, it is suggested additional boreholes are drilled in this area to better focus the area (and depths) of excavation prior to commencing remedial works		
Remediation	Contamination sources present on site.	C	A	2	High	▪ Remediation and validation of both aboveground and underground storage tank farms. ▪ Placement of soils with organochlorine pesticide (OCP) concentrations above the Remediation Acceptance Criteria into a containment cell lined with a low permeable liner.	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ Ex situ remediation (biopiles) of soils contaminated with volatile organic compounds (VOC) and total recoverable hydrocarbons (TRH) / total petroleum hydrocarbons (TPH) from above the groundwater table. ▪ Capping all asbestos and lead-contaminated soils (including all fill and non-validated natural soils) across the entire site with a geotextile marker layer and a minimum 1-metre thick capping layer of imported soils. The capping layer is expected to be generally around 1.5-2 metres thick to meet earthworks design levels. ▪ Managing existing soils during the works, ensuring that no chemically contaminated soils are placed within 1.5 metres of the groundwater table without further consideration by the Environmental Consultant. ▪ Assessing and validating inground infrastructure (e.g., pits, sumps, drains, and services) encountered during works that are considered to pose significant contamination concerns.		

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						▪ For long-term commercial risk management of the site, ESR Australia may also consider: ▪ Placing soils with elevated OCP concentrations (above 40 mg/kg) and high lead concentrations (above 15,000 mg/kg) in a containment cell. ▪ In situ partial immobilisation treatment of soils below the groundwater table contaminated with volatile contaminants (e.g., VOC, TRH / TPH). ▪ Sealing ground-level building slabs using polyurethane sealants, such as paint-on sealants, mastics, and expansion bands, applied to all joints and service conduits and internal risers that penetrate the ground floor building slabs. ▪ Intrusive hazardous building materials (HBM) surveys should be conducted by an Occupational Hygienist on existing buildings/structures and inground infrastructure (where appropriate). Any identified HBM should be appropriately removed by a qualified contractor before demolition. The Occupational Hygienist should inspect the structure to confirm the		

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						suitability of HBM removal before demolition and provide written confirmation. ▪ Before starting remediation works, relevant plans, including a remediation works plan and a construction quality assurance plan, should be developed by the Environmental Consultant and Remediation Contractor and submitted to the Site Auditor for review and approval. ▪ The successful completion of the remediation will be required to be validated and reported. A long-term environmental management plan should be created for the site upon completion of the development works (or remediation works if completed earlier and appropriate) to address the maintenance of the capping layer, which serves as a barrier between site users and retained contamination.		
Soils and Water	Development contributing to site erosion and/or impacts as a result of	C	C	3	Medium	▪ A Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP), or equivalent, shall be implemented for the construction of the Proposal. The	Ma	Low

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	salinity and acid sulfate soils.					SWMP and ESCPs must be developed in accordance with the principles and requirements of Managing Urban Stormwater – Soils & Construction Volume 1 ('Blue Book') (Landcom, 2004) with a staged approach. ▪ All existing structures, pavements, vegetation and root affected soils, and existing fill from the development footprint and stockpile are to be removed for reuse, or removed from the site, as per the following requirements and those outlined in the contamination assessment report. ▪ Proof roll the exposed surface using a minimum 10-tonne smooth drum roller in non-vibratory mode. The surface should be rolled a minimum of six times with the last two passes observed by an experienced geotechnical engineer to detect any soft or heaving areas. Remove any additional unsuitable soil identified during proof rolling. ▪ Compact the exposed base of any rework area to a minimum dry density ratio of 98%, relative to Standard compaction, maintaining		

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						the moisture content within 2% of Standard optimum moisture content (OMC) or alternatively to a relative density index of 70%. ▪ Place suitable site materials, or suitable imported fill, within the rework depth in 300 mm maximum thickness layers and compact to a minimum dry density ratio of 98%, relative to Standard compaction, maintaining the moisture content of the filling within 2% of Standard OMC or alternatively to a relative density index of 70%. ▪ Geotechnical inspection and testing of the fill will be carried out in accordance with a Level 1 standard, as defined in AS3798-2007 Guidelines for Earthworks for Commercial and Residential Developments. ▪ Site stripping will be assessed by a geotechnical engineer, who should also advise on any specific requirements for material reuse.		
Flooding	Development impacted by flooding.	C & O	C	4	Low	▪ Relocation of the existing stormwater drainage line and associated 2.5m wide easement along the southern boundary.	Ma	Low

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	Development impacting flood paths.					▪ All buildings are sited 500mm above the 1% AEP design flood level of local flow paths. ▪ Overland flow paths to manage runoff in large storm events are to be made following the existing pathway including achieving at least 500mm freeboard to building levels from the flow paths. ▪ Consideration to flood requirements is to be made per Council Flood Management Policy. ▪ The site has been assessed to be generally flood free from major overland flow paths, including those associated with the Springvale Drain and Floodvale Drains. ▪ Conveyance of a local sub-catchment from Stephen Road is required as part of the management measures for the development. This is managed by an inground drainage system, associated easement and an overland flow path.		
Trees and Landscaping	Impacts to trees to be retained during construction	C	C	3	Medium	▪ No tree works are to be performed on tree located on adjoining property land, it is noted further advice be sought in relation to the removal of Trees 107, 109, 152 and 153.	Pr	Low

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						▪ All approved tree removal works shall be carried out by a qualified, Arborist with a minimum Level 3 AQF in arboriculture and in accordance with WorkCover's Code of Practice. ▪ Trees that will come into contact with or overhang the proposed development footprint, will require limbs to be trimmed which includes Tree 130 and 131. ▪ Replacement planting to compensate for the loss of the trees will be required with offset planting should reflect the number of trees removed and the initial loss of amenity and biomass.		
Light Spill	Lighting impacts to sensitive residential receivers	O	D	3	Low	▪ General Mitigation ▪ Lights will be directed downwards as much as possible. ▪ Luminaires that are aimed to minimise light spill will be used, e.g. full cut off luminaires where no light is emitted above the horizontal plane. ▪ Energy is not to be wasted and over lighting should be monitored to reduce light pollution. ▪ Wherever possible use floodlights with asymmetric beams that permit	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						the front glazing to be kept at or near parallel to the surface being lit. ▪ Site-Specific Recommendations ▪ Pole lighting must face inward toward the middle of the site or toward the west and away from the east and south. ▪ Pole lighting must be set at the lowest possible mounting height. ▪ Luminaires with minimal backlight rating are to be used. ▪ Lights with an upward waste light ratio of 0% are to be used. ▪ Lights placed on the outside of the building are to be kept as low as possible. ▪ Lighting must be recessed into awnings or eaves where possible. ▪ The balustrade for the ramp and mezzanine carpark must shield the dwellings from vehicle headlights (likely 1.4 metres high). ▪ Office lighting on the western facade will be off or a timer employed during curfew hours.		
Waste	Waste management and risks of the	C	C	4	Low	▪ Education and communication on waste management initiatives and measures will be regularly and	Ma	Low

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	removal of hazardous materials					clearly conveyed to staff, cleaners and visitors. ▪ Signs which clearly identify waste management procedures and provisions to contractors, staff and visitors will be posted at the Development as appropriate. ▪ Waste avoidance measures include: ▪ Returning packaging materials like cardboard to the suppliers through the services of the supplier delivery trucks, allowing the reduction of waste further along the supply chain. ▪ Providing ceramic cups, mugs, crockery and cutlery rather than disposable items. ▪ Bulk purchasing and the purchasing of items that use minimal packaging. ▪ Presenting all waste reduction initiatives to staff and tenants as part of their induction program. ▪ All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Development, will undergo induction training regarding waste management. ▪ All personnel have a responsibility for their own environmental performance		

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						and compliance with all legislation. It will be the responsibility of the site manager, or equivalent role, to implement the WMP, and the responsibility of employees and subcontractors to ensure that they comply with the WMP at all times. ▪ The following specific procedures should be implemented: ▪ concrete, tiles and bricks should be reused or recycled off-site ▪ steel should be recycled off-site, and all other metals should be recycled where economically viable ▪ framing timber should be reused on-site or recycled off-site ▪ windows, doors and joinery should be recycled off-site, where possible ▪ all used crates should be stored for reuse unless damaged ▪ all glass that can be economically recycled should be recycled ▪ all solid waste timber, brick, concrete, rock that cannot be reused or recycled should be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner		

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						▪ all asbestos, hazardous and/or intractable wastes should be disposed of in accordance with SafeWork NSW and NSW EPA requirements ▪ The WMP will be reviewed and updated: ▪ To remain consistent with waste and landfill regulations and guidelines ▪ If changes are made to site waste and recycling management, or ▪ To take advantage of new technologies, innovations and methodologies for waste or recycling management. ▪ Copies of the original WMP and its future versions should be retained by the building manager. Changes made to the WMP, as well as the reasons for the changes made, should be documented by the building manager as part of the review process.		
Aboriginal Heritage	Unexpected finds	C	D	3	Low	▪ Aboriginal Cultural Heritage Awareness Induction ▪ All relevant contractors and personnel should also be made aware of their legal responsibilities under the NPW Act and the need to	Ma	Very Low

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						avoid impacts to Aboriginal objects and/or sites not identified in this ACHA. ▪ Previously Unrecorded Aboriginal Objects and/or Sites ▪ Management strategies relating to the identification of unrecorded Aboriginal archaeological objects and/or sites identified within the Project Area throughout the life of the Project will comprise the following procedure: ▪ 1. All works would cease immediately in the area to prevent any further impacts to the object(s). ▪ 2. Notify the appropriate Project Manager/Site Supervisor or equivalent immediately. ▪ 3. A qualified heritage consultant would be engaged to determine the nature, extent and scientific significance of the object(s). RAP representatives are to be notified in writing regarding the nature of the find and if required, proposed management actions. RAP representatives will be requested to provide comments within seven (7) days.		

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						▪ 4. An AHIMS site card would be completed and submitted to Heritage NSW in compliance with Section 89A of the NPW Act. The site cards will be lodged within 21 days and a copy provided to those RAPs who wish to have a copy. ▪ Human Skeletal Remains ▪ In the event that potential human skeletal remains are identified throughout the life of the Project (including construction, operations and decommissioning phases), the following standard procedure outlined below will be followed: ▪ All work in the vicinity of the remains must cease immediately. ▪ The location must be cordoned off and the appropriate authorities notified (including NSW Police and if considered of possible Aboriginal descent, NSW Heritage). ▪ Subject to any alternative instruction from the NSW Policy or Heritage NSW, a physical or forensic anthropologist would be commissioned to inspect the remains in situ and make a determination of ancestry (Aboriginal or non-		

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						Aboriginal) and antiquity (pre-contact, historic or modern). ▪ Subsequent management actions will be dependent on the findings of the inspection undertaken under Point 3. ▪ If the remains are identified as modern and human, the area will become a crime scene under the jurisdiction of the NSW Police. ▪ If the remains are identified as pre-contact or historic Aboriginal, the site will be secured, and Heritage NSW and all RAP representatives notified in writing. ▪ If the remains are identified as historic (non-Aboriginal), the site is to be secured, and the Heritage NSW contacted. ▪ If the remains are identified as non-human, work can recommence immediately. ▪ Connecting with Country ▪ Umwelt recommends that ESR engage with the Connecting with Country Framework (Government Architect NSW, 2023) in the design and operation phases of the Project. The Connecting with Country Framework intends to support and		

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						promote Aboriginal culture in built environments through a Country centred approach, guided by Aboriginal stakeholders.		