

# 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 demolition.	C	B	4	Low	Implement strategies outlined in the Demolition Traffic Management Plan to manage impact, including using specified truck haulage routes and scheduling truck movements outside of peak hours where possible.	Ma	Low
	Impacts on road network from construction.	C	B	3	Medium	Preparation of a Construction Pedestrian Traffic Management Plan which includes: <ul style="list-style-type: none"> <li>▪ Proposed construction vehicle routes;</li> <li>▪ Indicative construction programme;</li> <li>▪ Expected construction vehicle types and volumes;</li> <li>▪ Car parking arrangements and site access during construction;</li> <li>▪ Safety measures to minimise impacts to pedestrians and cyclists; and</li> </ul>	Ma	Low
	Impacts on the road network during operation	O	C	3	Medium	Implement strategies set out in the Green Travel Plan to encourage active transport use.	Ma	Low
Contamination	Contaminated land	C	B	3	Medium	Several mitigation measures would be implemented at future development stages including: <ul style="list-style-type: none"> <li>▪ Remediation of the site in accordance with the RAP.</li> <li>▪ Preparation of a Validation Assessment Report for the remediation works undertaken at the site.</li> <li>▪ The implementation of an Unexpected Finds Procedure for</li> </ul>	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						<p>unexpected contamination finds during works.</p> <ul style="list-style-type: none"> <li>If required, a Long-term Environmental Management Plan for the ongoing management or mitigation of contamination-related risks will be prepared.</li> </ul>		
Tree removal	Impacts of demolition works on adjacent street trees,	C	C	C	Medium	Implement tree protection measures including the installation of trunk, branch and ground protection, the establishment of Tree Protection Zones (TPZs) and Structural Root Zones (SRZs), and the installation of scaffolding and hoarding outside TPZs where practical.	Pr/Ma	Low
	Impacts of construction works on adjacent street trees	C	C	3	Medium	<p>To minimise impacts to Tree No. 2:</p> <ul style="list-style-type: none"> <li>Trunk and branch battening should be provided prior to demolition.</li> <li>Supervision of any and all excavation works within the TPZ should only be undertaken after assessment and with supervision from the project Arborist.</li> </ul> <p>To retain Tree Nos. 3 and 4:</p> <ul style="list-style-type: none"> <li>Raise the proposed ground floor FFL to ensure excavation will not require the removal of woody roots</li> <li>Careful demolition of existing structures should be undertaken after the trees are adequately protected.</li> <li>Root mapping should be undertaken after demolition, in order to guide the required</li> </ul>	Pr/Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						<p>foundation/basement excavation setback.</p> <ul style="list-style-type: none"> <li>Preference would be to raise the Ground Floor FFL to suspend or cantilever the ground floor slab over existing grades thus minimising or avoiding unnecessary root loss.</li> </ul> <p>Any earthworks within the TPZ of retained trees should be carried out under project arborist supervision by first excavating a narrow trench to the depth required by hand or equivalent. Severing roots by earthmoving equipment is unacceptable.</p> <p>A Tree Protection Plan should be prepared to guide construction final design and methodology, Tree Protection barrier installation and Project Arborist supervision/direction as necessary to protect the trees during construction works.</p> <p>Pedestrian and machinery access, material storage and other construction activities which compact the soil should be designated to be outside of TPZs of all retained trees.</p>		
<b>Social impacts</b>	Social impacts resulting from the proposed development	O	D	4	Low	<p>The SIA recommends:</p> <ul style="list-style-type: none"> <li>Prepare an Operational Management Plan to manage communal spaces and programming</li> <li>Provide the community with a forum to provide feedback around opportunities to further enhance</li> </ul>	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						<p>expected positive impacts, such as enhanced local amenity and community wellbeing.</p> <ul style="list-style-type: none"> <li>▪ During the Design Excellence process, ensure the successful architecture firm adequately addresses the design objectives relating to protecting and enhancing the local character of the site</li> <li>▪ Prepare a Traffic Impact Assessment at the detailed design stage should outline measures to mitigate a possible increase in demand for on-street parking resulting from the proposed retail space.</li> </ul>		
<b>Heritage Impacts</b>	Loss of historical building fabric	C	D	1	Low	The HIS recommends the existing building on the site is photographically archivally recorded in accordance with Heritage NSW's guidelines for digital capture prior to its demolition.	Pr	Low
	Potential impacts to archaeological resources on the site	C	D	3	Low	The PHAA recommends the preparation of a Historical Archaeological Impact Assessment (HAIA) to be prepared prior to the lodgement of a detailed application on the site.	Ma	Low
<b>Aboriginal cultural heritage</b>	Potential impacts to Aboriginal objects or areas of archaeological potential	C	D	3	Low	The ACHAR recommends the implementation of an Archaeological Unexpected Finds Procedure and Human Remains Procedure for future construction works.	Ma	Very low
<b>Ground &amp; Water Conditions</b>	Impacts of the demolition works on surrounding ground and groundwater conditions.	C	C	3	Medium	Implementation of erosion and sediment control measures in accordance with the Erosion and sediment Control Plan, including installation of sediment	Ma	Low

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						fencing, mesh and gravel inlet filters and stabilised site access to manage erosion and prevent sediment from leaving the site.		
<b>Waste Management</b>	Waste generation associated with the proposed demolition works.	C	C	3	Medium	<p>Building waste materials shall be reused, recycled or disposed to approved landfill sites. Reuse and recycling of materials is to be maximised and disposal is to be minimised.</p> <p>Hazardous waste, including asbestos, is to be managed in accordance with the Work Health and Safety Regulation 2017 and disposed of at licensed facilities.</p> <p>Records of the waste volumes recycled, reused or removed off-site are to be maintained. Details of how this waste will be re-used, recycled or disposed of and the name and contact details for each receiving waste facility are required. Dockets or receipts verifying recycling and/or disposal in accordance with the WMP must be kept and presented to relevant authorities when required.</p>	Pr	Low
<b>Noise and Vibration</b>	Impacts of the demolition works on surrounding properties.	C	A	3	Medium	<p><b>Noise</b></p> <ul style="list-style-type: none"> <li>Retention of external walls during staged demolition to reduce breakout noise, noting demolition works carried out within the building while external façade elements are retained will be approximately 25-30dB lower than works carried out externally/with the façade removed.</li> </ul>	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						<ul style="list-style-type: none"> <li>▪ Selection of quieter machinery and equipment</li> <li>▪ Installation of a minimum 2.4m high acoustic hoarding surrounding the site</li> <li>▪ Scheduling works within approved hours</li> <li>▪ Locating material drop zones within the site and at maximum distances from nearby noise sensitive receivers</li> <li>▪ Strict truck operating protocols.</li> </ul> <p><b>Vibration</b></p> <ul style="list-style-type: none"> <li>▪ Break structural links to adjoining buildings prior to demolition</li> <li>▪ Break-up slabs, beams and columns into smaller pieces of rubble (i.e. less than 300mm) to minimise vibration generation at material drop zones</li> <li>▪ Use lower-vibration equipment where possible</li> <li>▪ Minimise drop heights</li> <li>▪ Limit hammer attachments to smaller machines.</li> </ul>		
<b>Hazardous Materials</b>	Management of the potential to disturb hazardous building materials during demolition.	C	D	3	Low	<p>Preparation of a hazardous materials survey prior to demolition, and an asbestos management plan if required.</p> <p>All asbestos removal works are to be carried out by a licenced asbestos removalist and a clearance certificate is to be obtained following the completion of asbestos removal works.</p>	Ma	Low