



APPENDIX D - ENVIRONMENTAL RISK ASSESSMENT AND MITIGATION MEASURES | SSD-77175998

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 DPHI's hierarchy of approaches for managing impacts identified in the *Draft Environmental Impact Assessment Guidance Series* released by DPHI 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
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 Measures (Pe/Pr/Ma)	Residual Impact
CPTED	Risk of crime and the fear of crime.	O	C	3	Med	<ul style="list-style-type: none"> ▪ Provide wayfinding signage and building identification signage where appropriate to reinforce perceptions of safety and legibility in the development. ▪ Ensure that landscaping is well maintained and cared for to prevent vegetation from becoming overgrown. ▪ Ensure that a clear delineation between the public retail space and the residential entrance area is maintained to minimise loitering and access by non-residents and visitors. ▪ Repair any damage promptly and undertake regular maintenance of all internal and external fixtures and surfaces. Repairs and maintenance should be documented clearly to enforce accountability to relevant staff. ▪ Ensure that vehicle entry and exit points provide appropriate signage and sightlines to increase safe access. ▪ Maintain sightlines to and from the proposed development and the surrounds by ensuring signage and equipment do not create a significant visual obstruction. ▪ Ensure the main residential entrance foyers are unobstructed by structures to remove opportunities for concealment and ensure sightlines are provided to and from the development and minimise 'blind spots' and 'blind corners' that allow potential offenders to conceal themselves and/or entrap victims. ▪ Ensure that future landscaping and plant selection is appropriate so sight-lines are not blocked as the landscaping matures or by movable objects such as awnings. ▪ Maintain a consistent level of lighting throughout the exterior of the proposed development. Lighting should be adequate to permit facial recognition and provide visibility into a vehicle. It should be placed at the building's primary entrance, along the footpaths and perimeter of the site. Lighting types should be of a high quality and be vandal resistant to ensure longevity and allow for less maintenance or replacement. ▪ Install surveillance systems (e.g., CCTV) in areas of restricted natural and organised surveillance, most notably in the rear areas between Buildings A and B at the end of Osmund Lane. ▪ Walls and ceilings of the parking levels be painted white and proper surveillance devices be installed in accordance with CPTED requirements. ▪ Adequate lighting should be provided over the main residential entrance to ensure that the coming and going of residents and the surrounding public domain areas, especially at night, are clearly visible from the street, from other buildings, and from a distance. ▪ If possible, provide secure access (card/key controlled entries/lifts etc.) to all residential entrances of the building to facilitate in defining and securing the site's privately accessible areas. ▪ Implement measures for safe pedestrian access across Osmund Lane, especially for people using the through site link to access Building B. In addition to the specific pavement treatment indicated on plan to define the shared space, the provision of a pedestrian crossing, and adequate signage indicating the shared space area will increase the safety for pedestrians in this space, especially in peak delivery periods to service retail uses. ▪ Implement clear wayfinding signage with definitional legibility throughout all internal and external areas onsite. ▪ The garbage bays in the basement should be lockable and only accessed by authorised persons. ▪ The residential car parking areas should be secured within the basement and accessed via the driveways and residential lifts. This minimises the opportunity for motor vehicle theft and stealing from a motor vehicle. ▪ Implement safety procedures for workers and contractors accessing the site. ▪ Ownership and/or management of the site should be clearly displayed at the building's entrances. 	Pr, Ma	Low
Trees and Landscaping	Damage to retained trees as a result of construction.	C	C	3	Med	<p>Tree protection measures</p> <ul style="list-style-type: none"> ▪ Protection Fencing: A 1.8m high protection fencing must be installed and comply with AS4970. Signs will indicate that a tree protection zone has been established. ▪ Trunk, Branch, and Ground Protection: Any TPZs outside the protective fencing must be covered in ground protection in accordance with AS4970 until there is no risk of damage from demolition and construction activities. This protection must be installed near Tree 1 if and when the existing asphalt surface is removed and replaced. Trunk and major limb protection shall be undertaken on Tree 1 prior to the commencement of demolition and construction, installed by a qualified arborist (AQF2 or 3). ▪ Root Zone Protection: All hoarding support columns are to be placed a minimum of 300mm from the edge of the existing tree pits/setts to prevent sinking or damage. Supporting columns must not be placed on any exposed tree roots. ▪ Precautions in TPZs: <ul style="list-style-type: none"> – Removal of Existing Surfacing/Structures and Replacement with New Surfacing: Tree 1 may be adversely affected by the replacement of the asphalt pavement. – Removal of Existing Surfacing/Structures and Replacement with New Soft Landscaping: Tree 1 may be adversely affected by the removal of the existing asphalt and its reinstatement to soft landscaping. – Installation of New Soft Landscaping: All landscaping activity within TPZs has the potential to cause severe damage and must be minimised. 	Pr, Ma	Low

SEARs	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measures (Pe/Pr/Ma)	Residual Impact
						<ul style="list-style-type: none"> – Installation of New Services or Upgrading Existing Services: Where possible, existing services should be used, and new services should be kept outside TPZs. If new services must be installed within TPZs, trenchless installation is preferred. If not feasible, excavation must be carried out by hand. – Damage to Street Trees: Any damage to street trees due to construction works must be immediately reported to Council's Street Tree Contract Coordinator. ▪ Site Storage, Cement Mixing, and Washing Points: All site storage areas, cement mixing, and washing points for equipment and vehicles must be outside TPZs unless otherwise agreed with the project arborist or Council. Heavy-duty plastic sheeting and sandbags must be used to contain spillages and prevent contamination. ▪ Pruning: Any pruning required to accommodate hoardings, scaffolding, or unloading/loading of vehicles and approved by the Council should be carried out by a qualified arborist (AQF3). 		
Traffic, Transport and Accessibility	Impacts of construction activities on the surrounding road network.	C	A	3	Med	<p>Prepare a Construction Pedestrian Traffic Management Plan comprising the following:</p> <ul style="list-style-type: none"> ▪ Description of construction activities and duration. ▪ Construction work hours. ▪ Detailed assessment of construction traffic impacts including any cumulative impacts. ▪ Details regarding any one-off activities for the installation of cranes and other equipment. ▪ Swept path analysis of heavy vehicle access to the site and Works Zone. ▪ Detailed assessment of on-street parking impacts. ▪ Emergency vehicle access. ▪ Impacts on public transport services. ▪ Traffic Guidance Scheme(s). ▪ Implement the recommendations of the Green Travel Plan 	Ma	Low
Noise and Vibration	Impact of construction activities on surrounding receivers	C	A	3	Med	<p>To manage construction noise and vibration impacts, the following measures are recommended:</p> <ul style="list-style-type: none"> ▪ Develop a detailed noise management plan by the main contractor, describing construction phases, programme, processes, equipment used, noise impact assessment, and proposed mitigation and management strategies. ▪ Adopt quiet work methods and technologies, such as: <ul style="list-style-type: none"> – Using non-tonal reversing beacons for trucks and bobcats (subject to OH&S requirements) to minimize potential disturbance to neighbours. – Avoiding careless dropping of construction materials into empty trucks. – Turning off engines during idling to reduce noise impacts (unless truck ignition needs to remain on during concrete pumping). ▪ Ensure site induction includes the location of the Noise Management Plan and details the site contact for noise complaints. A copy of the Noise Management Plan should be available to contractors, and its location should be advised during site induction. 	Ma	Low
Noise and Vibration	Amenity for Future Tenants	O	A	3	Med	<ul style="list-style-type: none"> ▪ Comply with the glazing thicknesses to satisfy the acoustic requirements of AS2021, ensuring the Rw rating of the glazing fitted into operable frames and fixed into the building opening is not lower than the values listed in Table 7 & Table 8 of the NVIA. Future suppliers should provide evidence that the window systems proposed have been tested in a registered laboratory with the recommended glass thicknesses and comply with the minimum Rw requirements ▪ Use acoustic seals around the full perimeter of operable frames, and ensure the frame is sealed into the building opening using an approved acoustically rated sealant. ▪ Construct any glass door or glazed panels set into solid doors using the specified glazing thickness, with full perimeter acoustic seals around the doors. ▪ Ensure timber external doors (including apartment entry doors along external corridor areas) are a minimum 40mm solid core timber with appropriate acoustic seals. 	Pr	Low
Noise and Vibration	Operation noise impacts	O	C	3	Med	<ul style="list-style-type: none"> ▪ Adopt typical mitigation measures for the mechanical plant, such as: <ul style="list-style-type: none"> – Acoustic barriers/screens. – Internally lined ductwork. – External lagging. – Silencers. 	Pr	Low
Water Management	Adverse stormwater runoff impacts	O	D	4	Low	<p><u>Stormwater Drainage & Water Quality</u> Waverly Council's Condition of Consent No. 36 for the parent consent outlines the requirements for providing a stormwater drainage system for the site</p> <ul style="list-style-type: none"> ▪ The inclusion of 2x On-site Detention (OSD) systems designed to meet the requirements of Councils. 'Water Management Technical Manual 2021'. Our calculations indicate a Site Storage Requirements (SSR) of 41m³ for tank A 	Pr	Low

SEARs	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measures (Pe/Pr/Ma)	Residual Impact
						<p>and 36m³ for Tank B contained within a cast-situ concrete tank and a maximum Permissible Site Discharge (PSD) of 41.52l/s for tank A and 34.46l/s for tank B, for all storms up to the 20yr storm event.</p> <ul style="list-style-type: none"> The Rainwater reuse system has a 50yr design life. <p>As such, Condition 36 under the Parent Consent will reduce the site's stormwater discharge rate, and the recommended water quality management measures will reduce contaminants in the receiving water ways. With the implementation of the recommended mitigation measures, the remaining impacts associated with the development are appropriate and acceptable.</p>		
Social	Potential social impacts as a result of the development	C & O	C	3	Med	<ul style="list-style-type: none"> Consideration for the strata/building management of noise impacts associate with the location of the communal spaces for residents on levels 11,12 and 13 of Building A Preparation of new or update to existing Construction Noise and Vibration Management Plan. This should consider maximising noise insulation during construction and providing adequate information, and implementing a complaints/feedback mechanism. Monitoring and reporting of noise and vibration, provision of building awnings, restricting heaving vehicle access to specific loading docks after hours, specification of building materials and dimensions, and the installation of isolation equipment. Incorporate CPTED measures and initiatives in detailed design and management plans for the site both throughout the construction and operation phases. Throughout the construction phase, any changes to traffic and/or pedestrian access should be clearly communicated and a safe, barrier-free alternative access should be provided that prioritises the safety and access of people in and around the sites. A Green Travel Plan (GTP) to increase the use of active and public transport modes by residents and workers be implemented. Ongoing engagement particularly with existing residents and businesses will be critical to ensure those people most impacted by the site redevelopment and the ongoing operation of the site will be consulted as the project progresses. 	Ma	Low
ESD	Development not being undertaken in a manner that adopts ESD principles.	O	E	5	Very Low	<p>Minimum building fabric utilised in the simulations include:</p> <ul style="list-style-type: none"> Roof/Ceiling: Total R-value of R3.7 with a solar absorptance of the upper surface of the roof not more than 0.45. Walls: External walls with a minimum total R1.5 thermal insulation and internal walls with a minimum total R1.0 thermal insulation. Glazing: All glazing components with a total system U-Value ≤ 5.0 and a total system SHGC ≤ 0.50. Floors: No insulation needed for suspended floors (addressed via J1V3) and no added insulation required for concrete slab on ground. Building services: minimum DTS performance or better. Minimum Solar PV capacity of 2 kW (Energy to be used on site). 	Pe	Low
Visual Impacts	Potential visual impact to surrounding receivers	O	C	3	Medium	<ul style="list-style-type: none"> implement a high quality building design including articulation (as per he proposed architectural plans) implement a selection of high quality materials and finishes (as per the proposed architectural plans) façade greening and ground level planting (as per the proposed landscape plans) to integrate the proposal into the site 	Pe	Low
Wind Impacts	Potential impacts to pedestrian amenity level.	O	C	3	Medium	<ul style="list-style-type: none"> 1m setback to the entrance at to the Building A lobby 2m high landscaping is recommended around specific areas around the ground floor area. 	Pr	Low

