APPENDIX E - 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
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	Potential traffic impacts from increased population Construction traffic impacts on car parking and local streets	C and O	D	4	Low	▪ No on-site car parking and tenancy agreements with future student occupants to reduce private vehicle use. ▪ 102 on-site bicycle spaces to encourage cycling as transport mode. ▪ Detailed CTMP to be finalised prior to the commencement of construction activities. ▪ GTP to be implemented during the operational phase and monitored.	Pr Ma	Low
Noise and Vibration	Acoustic environment is highly dominated by traffic noise from Regent Street. Predicted noise emissions from construction activities exceed Noise Affected Level criteria. Potential noise from outdoor communal areas impacting surrounding neighbours Potential construction vibration impacts on Sydney Metro rail tunnel below the site, 32 metres below the ground surface.	C and O	C	3	Low	▪ Construction of hoarding around the site perimeter to provide noise screening to low level receivers. ▪ Work vehicles, trailers and concrete trucks should turn off engines when on site. ▪ Use of silencing devices fitted to exhausts where possible. ▪ In the event of continuous exceedance of 'highly noise affected level', respite periods should be considered. ▪ Implement the recommended façade treatments and glazing schedule in the detailed design.	Pr Ma	Low
Visual Impacts	Tower component of building dominating visual skyline Podium component impacting on streetscape	O	C	4	Low	▪ Slender tower form selected with architectural modulation and high-quality materials. ▪ Podium design complements existing retail tenancies in terms of design and scale and provides visual interest.	Pe	Medium
Tree removal	Proposed removal of 1 semi-mature London Plane tree on the Regent Street frontage has biodiversity impacts	C	D	5	Very low	▪ Extensive replacement tree planting in the public domain.	Pr	Low
Safety and security	Potential opportunity for crime based on existing street lighting, security measures and crime statistics	O	E	5	Very low	▪ Provide adequate lighting; install CCTV and ensure the landscaping maintains clear sightlines and does not allow opportunities for concealment. ▪ Landscaping should be maintained to have low shrubs and reduce density. ▪ Maximise natural surveillance through the provisions of windows and doors. ▪ Provide lighting at entry/exit points, service areas and loading areas. ▪ CCTV should be installed at all entry/exit points and external areas of the building.	Pe Pr Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ Materials and fixtures utilised should not create opportunities for vandalism.		
Solar Reflectivity	Potential glare impacting upon vehicle drivers	O	D	4	Low	▪ The facades are to have a reflectivity coefficient of less than 20%. ▪ Existing and proposed landscaping is recommended to be retained to the surrounds of the proposed development. ▪ Façade elements including setbacks and mullion protrusions are to be retained as specified unless otherwise stated within the body of this report. ▪ The development should retain current proportions and orientation of glazing.	Pr	Low
Light spill	Potential light spill from street lighting, common areas and retail premises on ground floor and outdoor terraces.	O	D	4	Low	▪ Direct lights downward where possible. ▪ Use luminaires which aim to minimise light spill. ▪ Minimise glare by keeping the main beam angle less than 70 degrees. ▪ Direct site lighting away from sensitive locations such as residential properties. ▪ Lighting shall be placed as far away from site boundaries as possible.	Pe Pr	Low
Heritage	Potential visual impacts on heritage items and a heritage conservation area.	C and O	C	3	Low	▪ The slender tower above is setback partially 4m and 8m from Regent Street and 7.6m from Margaret Street to allow the spire and street frontage of St Luke's Presbyterian Church to retain a level of prominence. The proposed slender tower form selected with architectural modulation and high-quality materials. ▪ The podium level is broken into multiple sections by vertical fin elements, which responds to the fine grain quality of the historic Victorian and Federation era streetscape that formed the original setting of St Luke's Presbyterian Church.	Pe	Low
Aboriginal cultural heritage	Aboriginal objects are unlikely to be present in remnant natural soil deposits below the existing development.	C	E	4	Low	▪ An unexpected finds procedure to be in place throughout the proposed works.	Ma	Low
Air quality	Construction works have medium risk of dust soiling impacts.	C	D	4	Low	▪ Communications: Develop and implement a stakeholder communications plan that includes community engagement before construction work commences on site. Display the name and contact details of the Responsible Person accountable for air quality and dust issues on the site boundary. Develop and implement a Dust Management Plan (DMP) that considers, as a minimum, the measures identified herein. ▪ Site management: Record all dust and air quality complaints, identify cause, take appropriate measures to reduce emissions in a timely manner, and record the measures taken. Make the complaints log available to relevant authorities (Council, EPA, DPIE). Record any exceptional incidents that cause dust and/or air emissions, either on or off site, and the action taken to resolve the situation in the log book. ▪ Preparing and maintaining the site: Avoid site runoff of water or mud. Keep site fencing, barriers and scaffolding clean using wet methods. Remove materials that	Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						have a potential to produce dust from site as soon as possible, unless being re-used on site. If being re-used, keep materials covered. ▪ Construction vehicles and sustainable travel: Ensure all vehicles switch off engines when stationary - no idling vehicles. ▪ Measures specific to trackout (haulage): Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). ▪ Prior to the commencement of construction works, the dust mitigation management measures recommended should be considered and, where practicable, included in the Construction Environmental Management Plan (CEMP) for the project. ▪ The garbage storage room is located towards the centre of the development and enclosed. ▪ The common area kitchens, and SOU kitchenette have all been design for localised façade discharges distributing the potential for odour impacts. ▪ The retail kitchen exhaust has been designed to exhaust through the roof.		
Waste	Potential impacts from waste generated during construction and operational phases	C and O	C	4	Low	▪ Waste and recycling contractors will be required to comply with the Operational WMP requirements to achieve and maintain best practice. ▪ Education will be provided for all site users as part of the general building and orientation and on a regular basis. ▪ Residents will be encouraged to separate food waste in their apartments and bring the material to the Level 2 communal area for depositing into compost bins. ▪ Comply with the Waste storage requirements in accordance with the City of Sydney's Guidelines for Waste Minimisation in New Developments 2018 (and specific in Section 8.4 of the Operational WMP). ▪ The waste and recycling contractors are to comply with the following requirements: ▪ Reliable and efficient servicing, and meeting all agreed schedules ▪ Having collection vehicles fitted with suitable weighing technology ▪ Maintaining accurate and comprehensive tracking systems for all materials collected, and current details of processing facilities used ▪ Working with the site to improve materials diversion rates ▪ Providing detailed monthly and annual reports on diversion and financial outcomes.	Pe Ma	Low
Stormwater run off	Potential impacts of proposed development on existing stormwater flow and quality.	C and O	D	4	Low	▪ An erosion and sediment control plan has been designed in accordance with principles outlined in the "Blue Book" Managing Urban Stormwater - Soils and Construction by Landcom (2004).	Pr Ma	Low

SEARS	Potential Impact	Stage of Project	Likelihood	Consequence	Risk Level	Approach	Mitigation Measure (Pe/Pr/Ma)	Residual Impact
						▪ The downstream perimeter of the entire site is to be protected with sediment fence. ▪ All vehicles that enter and exit during the construction site shall be washed down. ▪ All existing grated inlet pits to be retained shall be surrounded by a geotextile mesh and gravel inlet filter. ▪ The site storage and material handling areas shall be located adjacent to easy access for vehicle movements.		
Flooding	Potential localised flooding impacts to proposed development.	C and O	C	3	Medium	▪ The proposed minimum flood planning levels will be adopted to comply with City of Sydney requirements for 500mm freeboard of the habitable areas and 300mm freeboard for garage and above floodwater for non-habitable areas.	Pr	Low
Soil and water	Construction activities have potential to impact on stormwater system.	C	D	4	Low	▪ An erosion and sediment control plan has been designed in accordance with principles outlined in the “Blue Book” Managing Urban Stormwater - Soils and Construction by Landcom (2004). ▪ The downstream perimeter of the entire site is to be protected with sediment fence. ▪ All vehicles that enter and exit during the construction site shall be washed down. ▪ All existing grated inlet pits to be retained shall be surrounded by a geotextile mesh and gravel inlet filter. ▪ The site storage and material handling areas shall be located adjacent to easy access for vehicle movements.	Pe Ma	Low
Ecologically sustainable development	Potential increase in energy consumption associated with demolition, construction and operational phases	C and O	D	4	Low	▪ ESD measures to be implemented through each stage of the project to achieve sustainability targets	Pe	Low
Utility services	Increased demand for potable water, wastewater, power and gas services	O	D	4	Low	▪ New 1MVA mini chamber substation to be provided ▪ Sydney Water requirements to inform upgrades to water infrastructure ▪ New lead-in connections for NBN and gas	Pr	Low