

Appendix C

Synthesis of Mitigation Measures



Table C.1: Synthesis of Mitigation Measures

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
Traffic and Access Section 7.2	Sustainable Transport – wayfinding to and within development site.	Clear wayfinding from sustainable transport options to MLS Building.	1. Signage within the Campus will be modified to show direction to the new MLS Building, in a manner consistent with existing signage.	Improvement to wayfinding both with signs and visual cues.
Traffic and Access Section 7.2	Pedestrian connectivity through the development site.	Maintain and enhance pedestrian connectivity through the development site.	2. Implementation of the landscape plan, including north-south and east-west pedestrian connections across the site.	Increased passive surveillance.
Traffic and Access Section 7.2	Parking and Access – residential areas surrounding the UOW campus are sensitive to additional car parking demand.	Sufficient car parking to be provided, prior to the occupation of the MLS building, to avoid additional on street car parking demand in the adjoining residential areas.	3. Construction and operation of the P5 car park prior to the occupation of the MLS Building 4. Construction and operation of the P7 east car park access and Building 32 undercroft car park prior to the occupation of the MLS Building 5. Paving treatments and signage will identify key areas of vehicle access, including deliveries, emergency access and pick-up/drop-off areas. 6. Two motorcycle parking spaces are to be provided.	Shifting the car parking on the Campus would result in an overall decrease of private cars on internal roads within the Campus. This is likely to generate an improvement in pedestrian and cyclist amenity and safety within the campus.
Traffic and Access Section 7.2	Waste collection and deliveries	Provide sufficient turning paths for waste collection and delivery vehicles.	7. Adjust the width of Sciences road to facilitate the turning paths of service and emergency vehicles if required.	Road widening of Sciences Road
Traffic and Access Section 7.2	Cycle Access – provision of infrastructure to encourage increase in active transport mode share.	Support active transport mode share through the provision of new infrastructure.	8. Modification of the secure bike storage facility within Building 32 to accommodate two rows of 18 bicycles prior to the occupation of the MLS Building.	The additional infrastructure will assist in future proofing cycle infrastructure for the campus as cycle infrastructure external to the Campus increases.
Traffic and Access Section 7.2	Construction – construction activities have the potential to obstruct accessibility or cause injury if not appropriately managed. Car parking displacement during construction may result in an increase in parking demand in the residential	Install appropriate construction management processes, signage and fencing to minimise potential for injury to the public. Reduce car parking demand on residential streets by investigating alternative car parking arrangement	9. Construction vehicle and pedestrian management plans will maintain pedestrian accessibility in a north south direction throughout the construction period. 10. In the event of an overlap in the P5 extension car park and the MLS Building Construction, car parking to equal the displaced car parking from the P7 car park would be leased from TAFE.	Traffic control will increase the safety around the development site and reduce the overall day to day car numbers on Sciences Road.

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
	streets.	with neighbouring uses where possible.		
Built Form and Urban Design Section 7.3.2	Accessibility – accessible access across the development site	DDA compliant access to/from/through the MLS Building as well as internally within the building.	11. Accessibility recommendations detailed in the Access Review would be incorporated into final designs including compliance with BCA and Australian Standards including: a. Accessible paths of travel within the building i. The designated accessible parking spaces to include dimensions and a layout to meet the requirements of AS2890.6 (2009) and identification signage. This includes a dedicated (non-shared) space with dimensions 2.4m wide x 5.4m long; a shared area on one side of the dedicated space 2.4m wide x 5.4m long; a shared area at the end of each space 2.4m x 2.4m and a 1200mm high bollard located in the centre and 800mm from the front edge of the shared space. ii. Parking space related walking and wheelchair unloading areas comprise a slip- resistant, firm plane surface with a fall not exceeding 1:40 in any direction or 1:33 if the surface is a bituminous seal. b. Accessible paths of travel within the building i. Circulation space at the sliding doors on the bridge link to IHMRI is to provide circulation space in accordance with AS1428.1 2009 clause 13.3, or be automated. ii. Ensure in ongoing design that all frameless or fully glazed door, sidelights and any glazing capable of being mistaken for a doorway or opening, is clearly marked in accordance with AS1428.1 clause 6.6. iii. Doorways are to be provided with luminance contrast to meet the requirements of AS1428.1 (2009) clause 13.1. iv. To meet the Premises Standards and BCA (2016) part D3.7, if an inbuilt amplification system is installed in the conference room and meeting rooms, a hearing augmentation system is to be provided, to not less than 80% of the floor area of the room. v. Development of a performance based solution is required to address	An outcome of the development of the MLS Building will be an improvement in the wayfinding through the precinct. Pedestrian connectivity through the site would be enhanced with clear pedestrian routes, visual interest features, passive surveillance measures and building access arrangements.

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			the small breakout areas that are not linked by lift access. vi. In ongoing design, ensure the door to the meeting room on Level 1 provides circulation space to meet AS1428.1. c. Vertical links i. The ramp link to the atmospheric chemistry platform to meet the requirements of AS1428.1 clause 10.3 and figures 13-19 to include: ii. A maximum slope of 1:14 iii. A constant gradient between level landings iv. Handrails and kerbs on both sides v. Adequate space for landings to meet AS1428.1 clause 13. vi. A performance solution for the deletion of tactile ground surface indicators (tgsi) due to the equipment used d. To meet the BCA (2016) part D3.3 (a) stairways, (except for stairways in exempted areas and fire isolated stairs) are required to comply with AS1428.1 clause 11 and BCA D3 to include handrails on both sides that include a 300mm horizontal extension at the top and bottom set back by a minimum of 600mm so that the handrail does not protrude into the transverse path of travel as per AS1428.1 (2009) figure 26(A); nosing profiles which include 50-75mm wide solid slip resistant highlighting strips on the tread at the nosing that includes a minimum luminance contrast of 30% with the tread to comply with AS1428.1 figures 27(a) and (b); tgsi in a band 600mm deep set back 300mm from the top and bottom tread and opaque risers. e. A performance solution is proposed for stair B – handrails on both sides, reduced length handrail ending and inclusion of tgsi as this fire stair is proposed to be used as a communication stair. f. To comply with BCA D3.3 (b) and E3.6, the new lift is to be one of the types identified in BCA Table E3.6a, and include the following features in accordance with AS1735.12: i. A handrail complying with the provisions for a mandatory handrail in	

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			AS 1735.12 clause 5.3 ii. Minimum clear door opening of 900mm as in AS 1735.12 section 2 iii. Passenger protection system complying with AS 1735.12 clause 4.2 iv. Lift car and landing control buttons complying with AS 1735.12 section for Braille, tactile and luminance contrast v. Lighting complying with AS 1735.12 section 10 vi. Emergency hands-free communication, including a button that alerts a call centre of a problem and a light to signal that the call has been received g. Sanitary facilities & emergency egress. i. If showers are provided in the building, to meet the Premises Standards and BCA F2.4(b), an accessible shower will be provided in the building. This may be combined with one of the unisex accessible sanitary facilities. ii. Ensure in ongoing design the unisex accessible sanitary facilities include fittings to meet AS1428.1 clause 15. iii. Ensure in ongoing design the cubicles for people with an ambulant disability include fittings to meet AS1428.1 clause 16. iv. Development of individual evacuation plans for staff or students with a disability is recommended as part of the facility operational management strategy. v. To meet AS3745 (2009) Planning for Emergencies in Facilities consideration would be given to the inclusion of suitable emergency evacuation devices for people to be carried down the stairwell.	
Built Form and Urban Design Section 7.3.2	Accessibility – Operation of the building to facilitate diversity inclusion.	Develop operational strategies for people with sensory and mobility impairment to facilitate appropriate working environments.	12. An Operational Management Strategy will be prepared prior to occupation of the MLS Building including the following: a. emergency egress for people with sensory and mobility impairment b. evacuation plans for people with mobility impairment who use refuges to wait for assistance c. modification of individual work areas to meet individual staff and	The MLS Building will facilitate the disabled access for researches and provide for a safe and well thought out research environment.

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
			- student requirements d. allocation of accessible parking to individuals as required e. allocation of wheelchair seating spaces within conference room - flexible seating arrangements as required by individuals f. the facilitation of access by visitors and staff with a disability to required laboratory areas by the provision of individually required equipment (including mobility equipment) and the adaption of required areas (including possible counter/bench heights and additional circulation space) g. navigating access restrictions around CRYO-EM interference zones h. landscape management / maintenance	
Environmental Amenity Section 7.4.3	Wind – Wind impacts at ground level covered pedestrian footpath and rainforest landscape area	The project would be designed so that wind conditions are acceptable for the intended use of outdoor areas.	13. The proposed landscape scheme illustrated in the concept landscape drawing offset is to include densely foliating shrubs/hedge plantings at the following locations: a. Along southern boundary of the rainforest landscaped area b. Within the north east planter box of the outdoor informal learning terrace.	Wind conditions are expected to be acceptable for the intended use of this area as mitigation measures are expected to improve the wind conditions.
Environmental Amenity Section 7.4.3	Views – passive surveillance and safety at night.	Encourage the 24/7 use of the Campus through safe design.	14. Integrated lighting will be designed in collaboration with the landscape concept plan considering the following outcomes: a. crime prevention (deterrence); b. personal safety after dark (perceived levels of anxiety of either staff or students using the area after dark); c. support of CCTV camera operations; d. support of security officers on patrol around the campus facilities; e. integration with existing campus external lighting infrastructure.	Lighting will improve the passive surveillance and increase the perception and reality of safety in the precinct.
Noise and Vibration Section 7.5.1	Operational noise and vibration at residential receivers and UOW receivers		15. MLS Building operational noise limits including mechanical plant noise not to exceed the acceptable noise levels in the following table. Final design to consider appropriate measures including: a. noise enclosures as required b. noise barriers as required	Some operational noise will be experienced by sensitive receivers which are expected to be within normal operational levels.

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact																				
			c. acoustics as required d. in-duct attenuation e. in-built attenuation for noisy equipment f. sound absorptive panels g. acoustic plinths h. vibration isolating mounts i. louvres <table><thead><tr><th>Type of Receiver</th><th>Period</th><th>Noise Criteria (L_{Aeq, period})</th></tr></thead><tbody><tr><td rowspan="3">Residential – Suburban (external) – includes graduate housing</td><td>Day</td><td>55 intrusive, 55 amenity</td></tr><tr><td>Evening</td><td>53 intrusive, 45 amenity</td></tr><tr><td>Night</td><td>52 intrusive, 40 amenity</td></tr><tr><td>Commercial (external)</td><td>When in use</td><td>65 amenity</td></tr><tr><td rowspan="2">Classroom (Internal) (derived external, windows open)</td><td>Noisiest 1-hr period when in use</td><td>40 amenity (internal)</td></tr><tr><td>Noisiest 1-hr period when in use</td><td>50 amenity (external)</td></tr></tbody></table>	Type of Receiver	Period	Noise Criteria (L _{Aeq, period})	Residential – Suburban (external) – includes graduate housing	Day	55 intrusive, 55 amenity	Evening	53 intrusive, 45 amenity	Night	52 intrusive, 40 amenity	Commercial (external)	When in use	65 amenity	Classroom (Internal) (derived external, windows open)	Noisiest 1-hr period when in use	40 amenity (internal)	Noisiest 1-hr period when in use	50 amenity (external)			
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Noise and Vibration Section 7.5.1	Noise and vibration for construction activities	Implement practical and reasonable methods to reduce or eliminate noise and vibration impacts on sensitive receivers during construction activities.	16. Airborne construction noise is not to exceed the noise criteria in the following table. <table><thead><tr><th>Receiver location</th><th>Noise Criteria</th><th>Distance from nearest site boundary (m)</th><th>Maximum sound pressure level (L_{Aeq,15min}) at the site boundary to meet noise criterion</th></tr></thead><tbody><tr><td rowspan="3">Residences > 300m from site boundary (external noise level)</td><td>61 – Weekday standard</td><td rowspan="3">> 300</td><td>110</td></tr><tr><td>58 – Saturday standard</td><td>107</td></tr><tr><td>52 – Saturday Out of hours</td><td>101</td></tr><tr><td rowspan="3">Educational Buildings</td><td>65 (external – windows closed)</td><td rowspan="3">> 20</td><td>91 – Windows closed</td></tr><tr><td>55 (external – windows open)</td><td>81 – Windows open</td></tr><tr><td>45 (internal)</td><td></td></tr></tbody></table> 17. If construction equipment or activities exceeds the noise criteria at any location additional best practice noise management measures would be considered including: a. Hoarding is to be erected as close to commencement of construction as possible, particularly if required to protect pedestrian walkways from excessive noise. b. If a generator is required, use petrol generator rather than diesel, or	Receiver location	Noise Criteria	Distance from nearest site boundary (m)	Maximum sound pressure level (L _{Aeq,15min}) at the site boundary to meet noise criterion	Residences > 300m from site boundary (external noise level)	61 – Weekday standard	> 300	110	58 – Saturday standard	107	52 – Saturday Out of hours	101	Educational Buildings	65 (external – windows closed)	> 20	91 – Windows closed	55 (external – windows open)	81 – Windows open	45 (internal)		Some construction noise will be experienced by sensitive receivers which are expected to be within normal construction levels.
Receiver location	Noise Criteria	Distance from nearest site boundary (m)	Maximum sound pressure level (L _{Aeq,15min}) at the site boundary to meet noise criterion																					
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			inside an enclosure to reduce noise by at least 10dB. Use mains power as soon as practicable during works. c. Use local noise curtains around noisy equipment such as concrete saws / jackhammers. d. Low noise and vibration piling should be considered. e. Excavation and piling activities may require vibration monitoring for the nearby UoW buildings and underground services if they are identified as vibration-sensitive. f. Consider quieter methods for compacting and tipping fill. g. Keep windows closed during internal works. 18. Noise monitoring should be undertaken for at least 1.5 days per week during the first four weeks of demolition and construction at north-facing graduate residential colleges and the nearest off campus residential receivers. The requirement for further monitoring should be determined by the Acoustic Consultant and the Project Manager. If results indicate exceedances, action should be taken. 19. Implement reasonable and feasible mitigation measures for all internal and underground works to minimise adverse impacts to surrounding receivers when noise goals cannot be met due to safety or space constraints. 20. Undertake a more detailed vibration investigation prior to construction for activities generating high vibration levels and where necessary, modify equipment or construction methods or reschedule activities. A vibration monitoring system, including vibration surveys during key vibration generating activities, should be put in place. If required, consider alternative construction methods and equipment or rescheduling activities to less sensitive times. 21. Maximum construction vibration criteria or outlined in the following table:	

Reference	Potential Impact Description	Performance Outcome	Mitigation						Residual Impact
			Location	Assessment Period	RMS velocity, mm/s(dB re 10 ⁻⁶ mm/s)		Peak velocity, mm/s(dB re 10 ⁻⁶ mm/s)		
					Preferred	Maximum	Preferred	Maximum	
			Residences	Daytime	0.20mm/s (106dB)	0.40mm/s (112dB)	0.28mm/s (109dB)	0.56mm/s (115dB)	
				Night-time	0.14mm/s (103dB)	0.28mm/s (109dB)	0.20mm/s (106dB)	0.40mm/s (112dB)	
			UoW Precision laboratories	When in use	0.10mm/s (100dB)	0.20mm/s (106dB)	0.14mm/s (103dB)	0.28mm/s (109dB)	
			UoW Classrooms and other laboratories	When in use	0.40mm/s (112dB)	0.80mm/s (118dB)	0.56mm/s (115dB)	1.1mm/s (121dB)	
			Commercial and retail	When in use	0.40mm/s (112dB)	0.80mm/s (118dB)	0.56mm/s (115dB)	1.1mm/s (121dB)	
Notes: Daytime is 7.00 am to 10.00 pm and night-time is 10.00 pm to 7.00 am									
22. Maximum impulsive construction vibration criteria or outlined in the following table:									
			Location	Assessment Period	RMS velocity, mm/s(dB re 10 ⁻⁶ mm/s)		Peak velocity, mm/s(dB re 10 ⁻⁶ mm/s)		
					Preferred	Maximum	Preferred	Maximum	
			Residences	Daytime	6.0mm/s (136dB)	12mm/s (142dB)	8.6mm/s (139dB)	17mm/s (145dB)	
				Night-time	2.0mm/s (126dB)	4mm/s (132dB)	2.8mm/s (129dB)	5.6mm/s (135dB)	
			UoW Precision Laboratories	When in use	0.10mm/s (100dB)	0.20mm/s (106dB)	0.14mm/s (103dB)	0.28mm/s (109dB)	
			UoW Classrooms and other laboratories	When in use	13mm/s (142dB)	26mm/s (148dB)	18mm/s (145dB)	36mm/s (151dB)	
			Commercial and retail	When in use	13mm/s (142dB)	26mm/s (148dB)	18mm/s (145dB)	36mm/s (151dB)	
Notes: Daytime is 7.00 am to 10.00 pm and night-time is 10.00 pm to 7.00 am									
23. Acceptable value of vibration dose for the MLS Building are:									

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact																					
			<table><tr><th rowspan="2">Location</th><th rowspan="2">Assessment Period</th><th colspan="2">Vibration Dose Values, m/s^{1.75}</th></tr><tr><th>Preferred</th><th>Maximum</th></tr><tr><td rowspan="2">Residences</td><td>Daytime</td><td>0.20</td><td>0.40</td></tr><tr><td>Night-time</td><td>0.13</td><td>0.26</td></tr><tr><td>UoW Precision Laboratories</td><td>When in use</td><td>0.10</td><td>0.20</td></tr><tr><td>UoW Offices, Standard laboratories</td><td>When in use</td><td>0.40</td><td>0.80</td></tr></table> 24. The Contractor should prepare a noise and vibration monitoring report each month for review by the Project Manager. The report should summarise and interpret the results of the noise and vibration monitoring carried out during the past month. 25. The Contractor shall carry out a preliminary vibration assessment at the commencement of operations for each vibration generating plant to determine whether the existence of significant vibration levels justifies a more detailed investigation. A more detailed investigation will involve methods of constraining activities generating high vibration levels. A method of monitoring vibration levels will then need to be put in place.	Location	Assessment Period	Vibration Dose Values, m/s ^{1.75}		Preferred	Maximum	Residences	Daytime	0.20	0.40	Night-time	0.13	0.26	UoW Precision Laboratories	When in use	0.10	0.20	UoW Offices, Standard laboratories	When in use	0.40	0.80	
Location	Assessment Period	Vibration Dose Values, m/s ^{1.75}																							
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Noise and Vibration Section 7.5.2	Out of hours works	Minimise noise and vibration generated during out of hour's works.	26. Implement out of hours noise control measures for any work out of hours Monday to Friday and after 1pm on Saturdays as stated in noise and vibration for construction activities mitigation measures.	Noise management after hours will reduce impacts on sensitive receivers.																					
Noise and Vibration Section 7.5.2	Complaints handling	Address noise and vibration complaints efficiently and sensitively.	27. A communications register will be established for recording and managing complaints. On receipt of a complaint, the Contractor would investigate the problem and modify construction methods or take necessary action where necessary. If the activity is occurring outside normal working house, this would be immediately stopped (or, if required, continued until the area/work is safe to cease work). The activity should not recommence until the Project Manager is satisfied that the noise and vibration limits can be met. A report on the incident would be provided to the relevant stakeholders.	Complaints will be managed and reported to the Project Manager regularly.																					
			28. Upon receipt of a complaint the Contractor should: a. Try to ascertain from the complaint which appliance is causing the																						

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			problem i.e. inside or outside the site and in what position. b. Establish from the monitoring equipment if the allowable noise levels have been complied with. c. Establish if the appliance positioning has previously been highlighted as a problem area. If not and the noise levels are above the allowable limit, then the equipment and its position shall be noted. d. Move machinery if the allowable levels have been exceeded or take other acoustic remedial action. 29. A 24 hour telephone number would be prominently displayed on the site.	
Noise and Vibration Section 7.5.2	Construction traffic	Minimise disturbance on sensitive receivers by construction traffic.	30. Braking and accelerating noise would need to be managed for heavy goods vehicles travelling to or from the work site. 31. Truck movements to be minimised. Avoid unnecessary idling and reversing.	Sensitive receivers will have minimal impacts from construction traffic.
Contamination Section 7.5.2	Exposure of contaminated material during construction impacting workers, services, groundwater or ecosystems	Implementation of an unexpected finds protocol to minimise potential for harmful exposure to contaminated materials.	32. An unexpected finds protocol would be implemented during construction earthworks and site excavation.	The environment will be protected in the event contamination is found on site.
Contamination Section 7.5.2	Accidental spills or leaks during construction resulting in contamination of soils or waterways	Any contamination on project sites would be remediated to suit future land use.	33. Spill kits would be kept on site during construction and regular inspections of plant and equipment would be undertaken to check for any spills or leaks. 34. Best practice measures would be implemented in regards to storage of fuels and chemicals on site during construction.	Protection of the environment during construction activities against accidents.
Drainage and Flooding Section 7.5.3	Impacts on stormwater quality during construction	Minimise the potential for erosion and sedimentation impacts through implementation of control measures	35. Erosion and sediment controls during construction would be implemented in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008a)	Protection of the environment and waterways from materials and sediment from construction activities.
Flooding Section 7.5.3	Impacts to existing flooding characteristics or to the MLS Building during construction.	The project minimises adverse impacts on existing flooding characteristics or flood risk to	36. Include in the Construction Environment Management Plan provision for the handling and temporary storage of construction materials and machinery outside of the 100 year flood impact zone.	Management and protection of materials from flood events. Protection of the surrounding natural

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact										
		construction processes and storage of materials.		and built environment from damage from construction activity machinery and materials.										
Drainage Section 7.5.3	Stormwater falling on the hard surfaces of the site picking up nutrients and discharging into the ecosystem.	Reduce annual pollutant loads to achieve the following: <table><tr><th>Pollutant</th><th>Reduction objective</th></tr><tr><td>Total Nitrogen</td><td>40%</td></tr><tr><td>Total Phosphorous</td><td>55%</td></tr><tr><td>Total Suspended Solids</td><td>80%</td></tr><tr><td>Gross Pollutants</td><td>90%</td></tr></table>	Pollutant	Reduction objective	Total Nitrogen	40%	Total Phosphorous	55%	Total Suspended Solids	80%	Gross Pollutants	90%	37. Install vegetated raingardens to treat stormwater prior to discharge from site to the legal point of discharge.	Stormwater quality treatment devices will provide low maintenance gardens that improve the aesthetics of the landscaping around the MLS Building.
Pollutant	Reduction objective													
Total Nitrogen	40%													
Total Phosphorous	55%													
Total Suspended Solids	80%													
Gross Pollutants	90%													
Waste – Operational Section 7.5.4	Waste collection facilities not included within the MLS Building.	Operational waste collection facilities to be provided prior to the occupation of the MLS building.	38. Construction and operation of the waste storage area adjacent to Buildings 41 and 32 prior to the occupation of the MLS Building.	Waste collection and contractors will be prepared to begin collection on the opening of the MLS Building.										
Waste – Operational Section 7.5.4	Waste generated by operational uses of the MLS building.	Achieve 66% reuse or recycle of waste from the operation of the MLS Building.	39. An Operational Waste Management Plan (OWMP) will be prepared for the MLS Building that contributes to the objectives of the UoW Waste Management Action Plan. The OWMP should include regular compositional and/or observational waste audits, staff and student surveys, and inspections of waste storage areas and procedures. 40. The following additional measures should also be investigated and implemented where appropriate and not currently in place: a. Fit-out of the new MLS Building to utilise unwanted but otherwise high quality office furniture from other buildings as appropriate. A range of contractors offering this service are available and studies have shown that up to 60% or more of waste can be reused and recycled during office strip out and refurbishment activities – a large proportion of this could be minimised through reuse of unwanted	One third of operational waste generated by proposed uses would be disposed to landfill. Ongoing development of UOW waste management procedures may decrease this over time.										

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			materials during fit-out activities. b. Implementation of double-sided, black and white printing defaults and other office paper use minimisation measures should be investigated to reduce paper and confidential paper recycling generation rates. c. Removal of under desk bins and replacement with consistently placed recycling stations throughout office and kitchen / staff common areas. Small on desk bins can be made available for staff for personal use. d. Food organics composting to be implemented in staff eating areas and kitchens as per the Waste Management Action Plan 2015 – 2018. Composting of other materials such as paper towels from bathrooms to be investigated. e. Recycling of electronic waste (or e-waste) through return to suppliers or collection by an appropriately licensed contractor. f. Recycling of hazardous wastes such as batteries, printer toners and ink cartridges (free recycling options available via planet ark) and fluorescent tubes / light bulbs through available schemes. g. Recycling of gloves and solvents to be investigated. h. Recycling of coffee pods where applicable in kitchen areas (free return to supplier arrangements available). i. Reductions in the amount of compressed gas consumed through modification of low tank alarms. j. Implementation of a sustainable purchasing policy and guideline for events, laboratories and offices. k. Use of compostable packaging and promotion the use of reusable kitchenware, reusable water bottles, reusable coffee cups and reusable or compostable takeaway containers. l. Compositional waste audits undertaken annually for MLS Building to track progress against resource recovery targets, and determine further areas for improvement. m. Review signage, audit data and surveys of staff and students to	

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			determine awareness of reuse and recycling measures, and to pin point any confusing messaging around recyclable items. n. Implementing a policy/ban on the provision of single use plastic cups, plates and cutlery for university events (incorporating Waste Wise principles) and within staff common areas and water dispensers of the MLS Building.	
Waste – Construction Section 7.5.4	Waste generated by demolition and construction process will become landfill.	Achieve 75% reuse or recycle of materials (internal or external to the development site) during demolition and construction processes.	41. A Construction Waste Management Plan to be prepared in accordance with Section 4 of the Waste and Recycling Management Plans prepared by Jacobs and attached in Appendix V is to be prepared. 42. Implement the following measures to reduce waste where practical or economically feasible: a. During deconstruction activities, materials will be carefully dismantled and sorted for reuse and recycling where applicable. b. Framing timber, windows, doors and joinery will be reused on site or recycled off site where feasible. c. Plumbing, fittings and metal elements will be recycled off site where feasible. d. Formwork (temporary or permanent moulds) will be reused where possible. e. Appropriate sorting and segregation of wastes will be undertaken to ensure efficient reuse and recycling of materials throughout construction and demolition activities. f. Site disturbance will be minimised to limit unnecessary excavation and excavated material will be reused on site where possible. g. Green waste (i.e. garden organics) will be mulched and reused in landscaping. h. Construction materials will be selected taking into consideration their long lifespan and potential for reuse at the end of their initial use. i. Pre-cut and prefabricated materials will be carefully ordered to size, and prefabricated components will be used for internal fit-outs where possible.	It is estimated that 25% of waste generated during demolition and construction will be disposed to landfill.

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
			j. Materials will be delivered on an 'as needed' basis to prevent degradation of materials through weathering and moisture damage. k. Materials, including reuse and recycling materials, will be stored and kept in good condition. l. Trade work on site will be coordinated and appropriately sequenced to increase efficiency and reduce waste materials. m. Packaging waste will be reduced by the return of packaging to suppliers where possible, use of returnable bulk packaging, through bulk purchasing and requesting cardboard or metal drums, and metal straps, in place of plastics that can't be recycled. n. Staff/subcontractors will be informed of waste and resource management procedures and resource recovery targets. o. Contractors will be made aware of the legal requirements for disposing of waste in NSW. p. Contracts will include measures which reinforce the requirement to sort wastes effectively for reuse and recycling.	
Flora and Fauna Section 7.5.5	Protection of trees 1, 2, 7-10 and 22	Protect trees from damage that may impact on health.	43. Implementation of Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) including chain mesh fencing with a minimum height of 1.8 metres to be erected around trees to be retained and protected. 44. If any damage occurs to vegetation outside of the nominated work area (as shown in the EMP), the Environmental Representative will be notified so that appropriate remediation strategies can be developed. 45. If any threatened or native species (flora or fauna) are discovered during the works, all work will stop immediately and the Environmental Representative will be notified. Work will only recommence once the impact on the species has been assessed and appropriate control measures provided. A Construction Site Plan will be prepared to show the: a. No go areas and boundaries of the work area/disturbance corridor. b. Locations of parking, lay-down and storage areas for materials, plant and stockpiles.	Residual impacts are not anticipated with the implementation of mitigation measures.

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
			c. Location and full extent of any lopping, trimming, clearing or other vegetation disturbance required for the works. 46. Construction crews will be made aware that any native fauna species encountered must be allowed to leave site without being harassed and WIRES must be called for assistance where necessary.	
Indigenous Heritage Section 7.5.6	Damage or removal to heritage relics	Aboriginal heritage objects are protected.	47. If Aboriginal objects are uncovered once works commence, work in the vicinity of the find must cease and an archaeologist, OEH, and the Local Aboriginal Land Council should be informed. It is an offence under the National Parks and Wildlife Act 1974 (as amended 2010) to disturb or destroy an Aboriginal object without appropriate approvals. Further assessment and permits may be required before works can re-commence.	Relics, sites or places may be disturbed with approval from the NSW Office of Environment and Heritage.
Built Form and Urban Design Section 7.3.2	Accessibility – accessible access across the development site	DDA compliant access to/from/through the MLS Building as well as internally within the building.	48. Accessibility recommendations detailed in the Access Review would be incorporated into final designs including compliance with BCA and Australian Standards including: a. Accessible paths of travel outside the building i. The designated accessible parking spaces to include dimensions and a layout to meet the requirements of AS2890.6 (2009) and identification signage. This includes a dedicated (non-shared) space with dimensions 2.4m wide x 5.4m long; a shared area on one side of the dedicated space 2.4m wide x 5.4m long; a shared area at the end of each space 2.4m x 2.4m and a 1200mm high bollard located in the centre and 800mm from the front edge of the shared space. ii. Parking space related walking and wheelchair unloading areas comprise a slip- resistant, firm plane surface with a fall not exceeding 1:40 in any direction or 1:33 if the surface is a bituminous seal. b. Accessible paths of travel within the building i. Circulation space at the sliding doors on the bridge link to IHMRI is to provide circulation space in accordance with AS1428.1 2009 clause 13.3, or be automated. ii. Ensure in ongoing design that all frameless or fully glazed door,	An outcome of the development of the MLS Building will be an improvement in wayfinding through the precinct. Pedestrian connectivity through the site would be enhanced with clear pedestrian routes, visual interest features, passive surveillance measures and building access arrangements.

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
			sidelights and any glazing capable of being mistaken for a doorway or opening, is clearly marked in accordance with AS1428.1 clause 6.6. iii. Doorways are to be provided with luminance contrast to meet the requirements of AS1428.1 (2009) clause 13.1. iv. To meet the Premises Standards and BCA (2016) part D3.7, if an inbuilt amplification system is installed in the conference room and meeting rooms, a hearing augmentation system is to be provided, to not less than 80% of the floor area of the room. v. Further investigation and discussion is required regarding areas that require a performance based solution to provide equitable access to meet the Premises Standards and BCA – such as specialised lab areas or clean areas. vi. Development of a performance based solution is required to address the small breakout areas that are not linked by lift access. vii. In ongoing design, ensure the door to the meeting room on Level 1 provides circulation space to meet AS1428.1. c. Vertical links i. The ramp link to the atmospheric chemistry platform to meet the requirements of AS1428.1 clause 10.3 and figures 13-19 to include: ii. a. A maximum slope of 1:14 iii. b. A constant gradient between level landings iv. c. Handrails and kerbs on both sides v. d. Adequate space for landings to meet AS1428.1 clause 13. vi. e. A performance solution for the deletion of tgsi due to the equipment used vii. To meet the BCA (2016) part D3.3 (a) stairways, (except for stairways in exempted areas and fire isolated stairs) are required to comply with AS1428.1 clause 11 and BCA D3 to include handrails on both sides that include a 300mm horizontal extension at the top and bottom set back by a minimum of 600mm so that the handrail does	

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
			not protrude into the transverse path of travel as per AS1428.1 (2009) figure 26(A); nosing profiles which include 50-75mm wide solid slip resistant highlighting strips on the tread at the nosing that includes a minimum luminance contrast of 30% with the tread to comply with AS1428.1 figures 27(a) and (b); tactile ground surface indicators (tgsi) in a band 600mm deep set back 300mm from the top and bottom tread and opaque risers. viii. A performance solution is proposed for stair B – handrails on both sides, reduced length handrail ending and inclusion of tgsi as this fire stair is proposed to be used as a communication stair. d. To comply with BCA D3.3 (b) and E3.6, the new lift is to be one of the types identified in BCA Table E3.6a, and include the following features in accordance with AS1735.12: i. A handrail complying with the provisions for a mandatory handrail in AS 1735.12 clause 5.3 ii. Minimum clear door opening of 900mm as in AS 1735.12 section 2 iii. Passenger protection system complying with AS 1735.12 clause 4.2 iv. Lift car and landing control buttons complying with AS 1735.12 section for Braille, tactile and luminance contrast v. Lighting complying with AS 1735.12 section 10 vi. Emergency hands-free communication, including a button that alerts a call centre of a problem and a light to signal that the call has been received e. Sanitary facilities & emergency egress. i. If showers are provided in the building, to meet the Premises Standards and BCA F2.4(b), an accessible shower will be provided in the building. This may be combined with one of the unisex accessible sanitary facilities. ii. Ensure in ongoing design the unisex accessible sanitary facilities include fittings to meet AS1428.1 clause 15. iii. Ensure in ongoing design the cubicles for people with an ambulant	

Reference	Potential Impact Description	Performance Outcome	Mitigation	Residual Impact
			disability include fittings to meet AS1428.1 clause 16. iv. Development of individual evacuation plans for staff or students with a disability is recommended as part of the facility operational management strategy. v. To meet AS3745 (2009) Planning for Emergencies in Facilities consideration would be given to the inclusion of suitable emergency evacuation devices for people to be carried down the stairwell.	