

LIVERPOOL HEALTH & ACADEMIC PRECINCT CONSERVATION AND HABITAT MANAGEMENT SUB PLAN

15/09/2021 | Template Revision No: 3.0



Document Issue Template Status				
Date	Document Issue (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
30/01/2017	2.0	General update including LLB GMR and legislative amendments.	Tracey Wallbridge	Brian Falls
15/09/2021	3.0	General Update	Tracey Wallbridge	Ross Trethewey

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Project Revision Status				
Date	Project Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
07/07/2021	Rev 1	Draft approved. Review only	Lilly Cauchi	Michael Niedzwiecki
05/08/2021	Rev 2	Plan reviewed as per John staff comments	Lilly Cauchi	Daniel Puljic
17/11/2021	Rev3	Template change	Ian Sheils	Daniel Puljic
09/12/2021	Rev 4	General review	Ian Sheils	Daniel Puljic
02/03/2022	Rev 5	Review only no changes	Ian Sheils	Daniel Puljic
02/06/2022	Rev 6	Changes to Appendix 1 diagram, to show current site layout	Dylan Stewart	Daniel Puljic
05/09/2022	Rev 7	Changes to Appendix 1 diagram to show current site layout	Dylan Stewart	Daniel Puljic
02/12/22	Rev 8	Review only no changes	Dylan Stewart	Daniel Puljic

2/05/23	Rev 9	General review & references to LLB removed & LLC inserted	Nigel Rose	Daniel Puljic
7/11/2023	Rev 10	General review & updated EMD	Nigel Rose	Daniel Puljic

SCOPE OF PROJECT AND SUB PLAN

Project Details	
Scope of the Sub Plan	<p>This Conservation and Habitat Management Sub Plan identifies strategies and mitigation measures for the identification and protection of significant environmental areas and features, and flora and fauna including street trees, remnant vegetation, waterways, terrestrial and aquatic habitats, and significant species that may occur on or adjacent to a project site.</p> <p>(NOTE: If the site and/or immediate surrounds have been identified as supporting significant flora or fauna or populations listed under relevant Commonwealth and State legislation, a Species Impact Statement or specific management plan (e.g., wetland management plan, frog habitat management plan) may be required in addition to this Sub Plan. These requirements are likely to be identified in the project approval and will require specialist input. Time and resource considerations should be addressed in the construction program.)</p> <p>Refer to Section 1.1 and 3.1 of the Project EHS Management Plan for clarification on how the EHS Sub Plans form part of the Lendlease Construction (LLC) EHS management system.</p>
Objectives of the Sub Plan	<ul style="list-style-type: none"> ● To prevent or minimise as far as practical, impacts on the natural environment. ● To protect significant trees and vegetation communities present on and immediately adjacent to the site. ● To protect habitat and native fauna identified within and immediately adjacent to the site. ● To avoid impacts on natural habitats from introduced plants and animals (weeds and vermin) during the LHAP project.
Scope of Works	<p>This Sub Plan has been prepared based on the following scope of works:</p> <p>The Liverpool Hospital is a Principal Group A1 tertiary referral hospital, managed by South Western Sydney Local Health District (SWSLHD). Liverpool Hospital currently has 713 inpatient beds and provides a wide range of tertiary and quaternary services. The redevelopment will increase the inpatient bed numbers to 900, as well as expanding tertiary and quaternary services.</p> <p>Site establishment including office and compound setup, and the construction of access points and internal roadways.</p> <ul style="list-style-type: none"> ● Demolition of Thomas & Rachel Moore education centre, Alex Grimson, Oncology and Pathology buildings. ● Excavation of approximately 10,000m³ of material and backfilling of approximately 4,00m³ of clean fill. ● Installation of bored and Continuous Flight Auguring (CFA) type piles ● Construction of new Integrated Services Buildings over 2 stages, including basements to each, ● Refurbishment of numerous areas within the existing Caroline Chisholm and Clinical Services Building of the hospital ● Construction of Campbell St shared Zone

	<ul style="list-style-type: none"> ● On Grade Car Park Works, ● External works
<p>Key Issues and Risks</p>	<p>The site is located on the Corner of Elizabeth and Goulburn Street opposite Bigge Park.</p> <p>The Environmental Impact Statement prepared for the site by Ethos Urban indicates that the area is largely characterised by both Australian native and exotic species. A total of 97 trees were investigated as part of the assessment. The proposed development requires the removal of 68 trees. To offset the removal of these trees, the proposed development will include the provision of 150 new trees.</p> <p>The report also indicates that flora or fauna populations listed under the Threatened Species Conservation Act 1995 or Environment Protection and Biodiversity Conservation Act 1999 do not exist on the site or in its vicinity.</p> <p>Construction activities have the potential to impact directly and indirectly, adversely on terrestrial and aquatic flora because of:</p> <ul style="list-style-type: none"> ● Removal or relocation to allow for construction. ● Root compaction or damage to the trunk or limbs of trees. ● Unauthorised entry into protected areas. ● The release of pollution into local waterways e.g., spillage, sediment, litter, oil, and grease. ● Excessive noise causing disturbance to breed and habitat; and ● Dust deposition on surfaces and food sources and existing flora. <p>On this project, impacts are expected to be associated with:</p> <ul style="list-style-type: none"> ● Tree removal: 68 Trees ● Vegetation clearing and civil / ground works, road construction and services installation. <p>The following aspects (activities) have been identified as the key risk sources on this Project:</p> <ul style="list-style-type: none"> ● Fauna mortality during clearing activities (i.e., physical impact by plant). ● Unnecessary/over clearing of vegetation (i.e., design issue, clearing area not clearly marked out, unauthorised access to vegetated areas). ● Excessive ground disturbance in areas not immediately required for construction (i.e., program issue) ● Disturbance to ground cover resulting in erosion and impacts offsite (i.e., area not left stable). ● Removal of hollow bearing, habitat trees or limbs. ● Unauthorised vehicle and plant movements outside the corridor or site boundary into vegetated areas.

- Temporary and permanent changes in hydrology and drainage regimes.
- Compaction of root zones due to parking or the inappropriate storage of materials in protection zones.
- Inadequate rehabilitation/revegetation of disturbed areas.
- Potential introduction and dispersal of exotic plants (weeds).
- Inappropriate waste disposal encouraging feral animals and pests to frequent the construction site; and
- Accidental spills of hazardous chemicals and/or hydrocarbons.

The implementation of the control measures identified in the Workplace Delivery Code, EHS Plan and this Sub Plan are intended to mitigate these risks and any potential impacts on the environment and species.

Legislation,
Approval and
Guidelines

Federal/National:

- AS4970 – 2009 Protection of Trees on Development Sites

State:

- Protection of the Environment Operations Act 1997 POEO
- Biodiversity Conservation Act 1999

Local:

- Liverpool LEP 2008

Lendlease Requirements:

- 4.13 Degradation or Pollution of the Environment
- 4.15 Uncontrolled Release of Stored Energy (non-electrical)
- Lendlease Construction Workplace Delivery Code (WDC)

SSDA-10389

Tree Protection

C23. For the duration of the construction works:

- (a) street trees must not be trimmed or removed unless it forms a part of this development consent or prior written approval from Council is obtained or is required in an emergency to avoid the loss of life or damage to property.

	<p>(b) all street trees immediately adjacent to the property boundary along Campbell Street, Forbes Street, Goulburn Street and Elizabeth Street, unless approved for removal, must be protected at all times during construction in accordance with Council's tree protection requirements. Any street tree, which is damaged or removed during construction due to an emergency, must be replaced, to the satisfaction of Council.</p> <p>(c) all trees on the site that are not approved for removal must be suitably protected during construction as per the recommendations of the <i>Arboriculture Impact Assessment Tree Protection Specification</i>, prepared by treeIQ, dated 5 March 2020: and</p> <p>(d) if access to the area within any protective barrier is required during the works, it must be carried out under the supervision of qualified arborist. Alternative tree protection measures must be installed, as required. The removal of tree protection measures, following completion of the works, must be carried out under the supervision of a qualified arborist and must avoid both direct mechanical injury to the structure of the tree and soil compaction within the canopy or the limit of the former protective fencing, whichever is the greater.</p>
<p>Summary of Site Controls</p>	<p>Works must be planned, implemented, and monitored in accordance with the Lendlease Global Minimum Requirements (GMRs), the Project EHS Plan and Lendlease Construction Workplace Delivery Code. These documents detail Lendlease's approach and commitment to pro-active and responsible site management.</p> <p>Site specific controls, monitoring, reporting and performance measures have been identified in this Sub Plan to prevent or minimise the impacts of construction on natural areas and features. Prior to the commencement of any works, a flora, fauna and/or vegetation assessment, tree plan or arborist report must be available/obtained to identify:</p> <ul style="list-style-type: none"> ● The location and type of significant trees and vegetation located within and adjacent to the site. ● The location of local waterways and their aquatic habitat value. ● Trees and vegetation directly impacted by construction (approved for removal) and those requiring protection. ● Fauna species likely to be disturbed or encountered including any specific breeding/seasonal habitat requirements. ● Suitable protection and mitigation measures (e.g., connectivity structures, planting, regeneration); and ● Inspection and maintenance requirements for retained trees and vegetation. <p>A Tree, Vegetation and Habitat Environmental Management Diagram (EMD) must be prepared prior to any site activities commencing including service relocation, earthworks and/or clearing. (Refer Appendix 1).</p> <p>Site inspections, monitoring and reporting will be undertaken by Lendlease, and subcontractors as detailed in the EHS Plan and following implementation table.</p>
<p>Unexpected Find Protocol</p>	<ol style="list-style-type: none"> 1. Cease work, turn off machines and clear the area immediately if a potentially unidentified flora and fauna species has been discovered. 2. Contact the EHS Coordinator, Site Manager or Construction Manager immediately. 3. Construction Manager to notify the principle

4. Erect barricades to isolate the immediate area and prevent entry. Establish a buffer of 10m between the potential flora and fauna species and the barrier (as a minimum where possible).
5. The appropriate regulatory authorities should be notified as soon as possible if applicable. Contact the nominated appropriately qualified Ecologist or flora and fauna specialist.
6. No person shall enter the barricaded area unless expressly permitted by the qualified Ecologist. A clearance certificate or approval should be given in writing prior to entry.
7. Sampling / inspection of the fine is to be carried out by the Ecologist (environmental specialist) as advised by the LLC construction manager.
8. The nominated Environmental Specialist (in liaison with LLC senior site personnel and/or relevant authorities) will determine if further management actions are necessary based on an available information.
9. All permits to carry out additional actions are to be obtained prior to the commencement of any new works and the nominated Environmental Specialist must provide written clearance approval.
10. The barricade may then be removed, and work activities may resume under the direction of the LLC Construction Manager.

IMPLEMENTATION OF THE SUB PLAN

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Obtain a copy of the environmental/flora and fauna assessment if applicable, tree or arborist report for the site and adjacent areas (including footpath landscape trees).	Prior to commencing work	Ecologist/Arborist to prepare depending on the significance of the site/species present. Assessment/report reviewed, and recommendations communicated and captured in subcontractor documents.	CM Consultant	Pre-commencement checks documented. Protected trees/vegetation/habitat identified. Weeds identified.	Register of species prepared. Tree/vegetation/habitat protection diagram prepared.
Identify any bio-security risks that may be associated with the site including noxious weeds, biological soil contamination, pathogens, and plant diseases.	Prior to commencing work	Identify if any specific bio-risks exist within or near the site. Engage a specialist to undertake an assessment/testing and to provide management recommendations. Consider resource requirements in construction program. Include requirements in specifications and contract documents. Subcontractor WMS to address requirements.	CM Consultant	weekly inspections	No transfer of pathogens outside the site. No health risk to workers or project neighbours.
Prepare a Tree, Vegetation and Habitat Environmental Management Diagram (EMD) for the site and surrounds.	At site establishment and prior to works commencing	Prepare EMD (Appendix 1). Prepare diagram showing the location of vegetation approved for removal, protected trees, clearing limits, nearby natural habitats, and control measures.	CM SM	Tree, Vegetation and Habitat EMD prepared.	No unauthorised tree removal. No unauthorised access outside of clearing limits.

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Include information in the Site Induction about the risks and potential impacts of construction activities on flora, fauna, and habitats (terrestrial and aquatic).	Before works commence and ongoing	Revise Lendlease standard induction package to include site specific information.	CM SM EHS	WMSs prepared by subcontractors address environmental protection.	Site induction delivered to all workers on site.
Clearly mark out the excavation footprint, trees, natural features, and vegetation to be retained and protected to minimise habitat loss.	Prior to commencing work	In conjunction with the ecologist/ arborist, clearly identify protected trees/vegetation and those that have been approved for removal. Minimise habitat loss through accurate mark out and consideration of the project footprint and access requirements.	CM SM Engineers	Pre-commencement check to confirm protection measures are correctly installed and boundaries/ footprint correctly identified. Final check that habitat and natural features retention has been maximised.	Fencing installed prior to works commencing. Clearing minimised.
Maximise the retention of existing landscape and trees (additional to those required to be protected, where possible to improve environmental outcomes).	At all times	Consider existing landscape features at design and site setup stages and retain where possible/desirable. Maintain works within the building footprint.	CM	Check extent of disturbance and compliance with clearing limits.	No unnecessary clearing. Buffer zones maintained. Disturbance restricted to work area.
Maintain and/or provide wildlife corridors to facilitate the movement of native fauna around/through the site.	Prior to and during construction.	Identify requirements for wildlife corridors/connectivity (refer to environmental assessment/project approval). Establish wildlife crossing structures or corridors in consultation with an ecologist (as applicable).	CM SM	Monitor construction works for the presence of wildlife.	No construction impacts on wildlife. Minimal impact on fauna movement.

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Install tree, vegetation and waterway protection measures to protect habitat and natural features.	Prior to works commencing	<p>Establish tree and waterway (riparian) protection zones and install barriers, fencing and signage around retained vegetation.</p> <p>Ecologist/Arborist to advise and oversee works identified in specialist reports/management plans and the project approval.</p> <p>This may include pre-clearing surveys, installation of nest boxes, corridor enhancement works, early planting.</p>	SM Engineers	<p>Pre-commencement inspection and sign-off.</p> <p>Inspections in accordance with ecologist advice.</p> <p>Weekly/monthly inspection</p>	Compliance with requirements achieved in nominated timeframes.
Identify and remove noxious weeds and provide on-going control.	Prior to works commencing and ongoing	<p>Mark out weed infested areas.</p> <p>Undertake weed control in accordance with local government requirements.</p> <p>Avoid re-using weed infected topsoil.</p>	SM	Monitor re-occurrence	No weeds present after construction is completed.
During Construction: Protecting Flora (trees, vegetation, and habitat)					
<p>Undertake clearing and lopping strictly in accordance with agreed plans/protocols.</p> <p>(List appropriate requirement e.g.: Conditions of Consent, approvals).</p>	During clearing activities	<p>Develop a clearing WMS/protocol incorporating the requirements of the environmental assessment, project approval and specialist plans.</p> <p>Consult with the ecologist/arborist and undertake an inspection of the area being cleared. Arborist to perform works where required.</p> <p>Communicate with relevant subcontractors.</p>	SM Consultant/ Arborist Contractor	<p>Supervise and monitor clearing activities to assess compliance with agreed protocols.</p> <p>Arborist report on clearing process (if required).</p>	<p>Correct type and extent of vegetation removed.</p> <p>No unauthorised tree removal or disturbance.</p> <p>Cleared vegetation reused in landscaping where suitable (i.e., native vegetation and weed free)</p> <p>No protected flora damaged or fauna injured.</p>

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
		Limit disturbance to the minimum necessary using clear delineation of clearing limits/excavation footprint.			
Prohibit vehicle parking and the storage of building materials, spoil, and waste within tree protection zones. (Note: driving/parking of vehicles is not permitted within 4m of the trunk of any tree to be retained).	At all times.	Tree protection fencing and NO ENTRY signs installed in appropriate locations to prohibit access.	CM SM	Weekly inspection checklist.	No damage to retained vegetation or trees. All materials and waste stored correctly in designated areas of the site.
Mulch suitable cleared vegetation for reuse in landscaping and reclaim timbers of commercial value for use on/off-site.	At all times	Identify opportunities to reclaim felled timber for reuse or milling. Seek advice from the ecologist/arborist and landscape designer on the suitability of mulched vegetation for reuse. Establish appropriate storage areas on site for mulch.	SM Engineers Contractor	Monitor vegetation clearing to identify mulching and reclamation opportunities.	All timber suitable for re-use is mulched or reclaimed for use on/off site. Register of recycling and reuse maintained.
Implement landscape works in accordance with approved landscape design/management plans.	Project completion	Where required/practical collect native seed prior to clearing for propagation and use in the revegetation of disturbed areas.	CM/ SM	Monitor and maintain new works to ensure survival. Weeds identified and removed.	No planting other than approved species. Native plant regeneration.
Imported hay/straw bales to be seed free.	At all times	Hay/ Straw Bale product specifications reviewed prior to purchase.	SM/Contractor	Check for compliance prior to use.	No seeding from bales.

During Construction: Protecting Fauna (animals and habitat)

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Inspect known habitat areas and identify fauna and habitat features for relocation and/or salvage.	Prior to clearing.	Check hollow-bearing limbs/trees for the presence of birds, nests, and arboreal animals (e.g., possums, gliders, and bats) prior to felling. If present, arrange for the safe removal of fauna by a qualified ecologist/wildlife handler and relocate into suitable adjacent habitat.	SM Contractor	Pre-clearing surveys conducted. Monitor activities to assess compliance with agreed protocols and work methods.	Habitat and habitat features identified and inspected as per agreed timeframes. No injured fauna.
Minimise the potential for vermin or introduced (feral) species entering the site.	At all times	Provide an adequate number of waste receptacles with secure lids. Communicate site requirements to dispose of food waste appropriately.	SM	Weekly inspection checklist	No vermin or feral animals identified on site.
Implement the Unexpected Find Protocol (UFP) and Fauna Recovery Procedure if a significant species of wildlife is identified or suspected on the site e.g., Koala.	At all times	Initiate a response in accordance with the UFP and Fauna Recovery Procedure. Document the find as an event in Enablon.	All	Monitor construction works for the presence of wildlife.	No injured fauna.
Post Construction (completion)					
Implement landscape works in accordance with approved landscape design/management plans.	Project completion	Where required/practical collect native seed prior to clearing for propagation and use in the revegetation of disturbed areas.	CM Engineers SM	Monitor and maintain new works to ensure survival. Weeds identified and removed.	No planting other than approved species. Native plant regeneration.
Undertake habitat rehabilitation and revegetation works strictly in accordance with the landscape design/management plan.	Project completion	Discuss habitat and revegetation requirements with the landscape designer and ecologist.	CM Engineers SM	Monitor and maintain new works	High landscape planting survival rate. Disturbed areas stable.

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
		Undertake revegetation works progressively. Ensure all disturbed areas are stabilised.			

APPENDIX 1 ENVIRONMENTAL MANAGEMENT DIAGRAM (EMD)

ENVIRONMENTAL MANAGEMENT DIAGRAM – LIVERPOOL HEALTH & ACADEMIC PRECINCT PROJECT



EXTENT MAP



LEGEND

Icon	Descriptions
	Site Accommodation
	A-Class Hoarding
	Shaker Grid
	Spill Kit
	HS / DG Storage
	Tree Protection Zone
	Stormwater Inlet
	Radiation Monitor
	Noise Monitor
	Ground Vibration Monitor
	Rubbish Skip

KEY ENVIRONMENTAL ISSUES

- Unexpected finds
- Noise to general public / Hospital
- Water run off
- Sediment run off

SENSITIVE RECEPTORS

- Local Residents in Goulburn & Campbell Streets
- Alex Grimson Building
- Caroline Chisholm Building
- Existing Clinical Services Building
- Liverpool TAFE – College Street Campus
- Ingham Institute

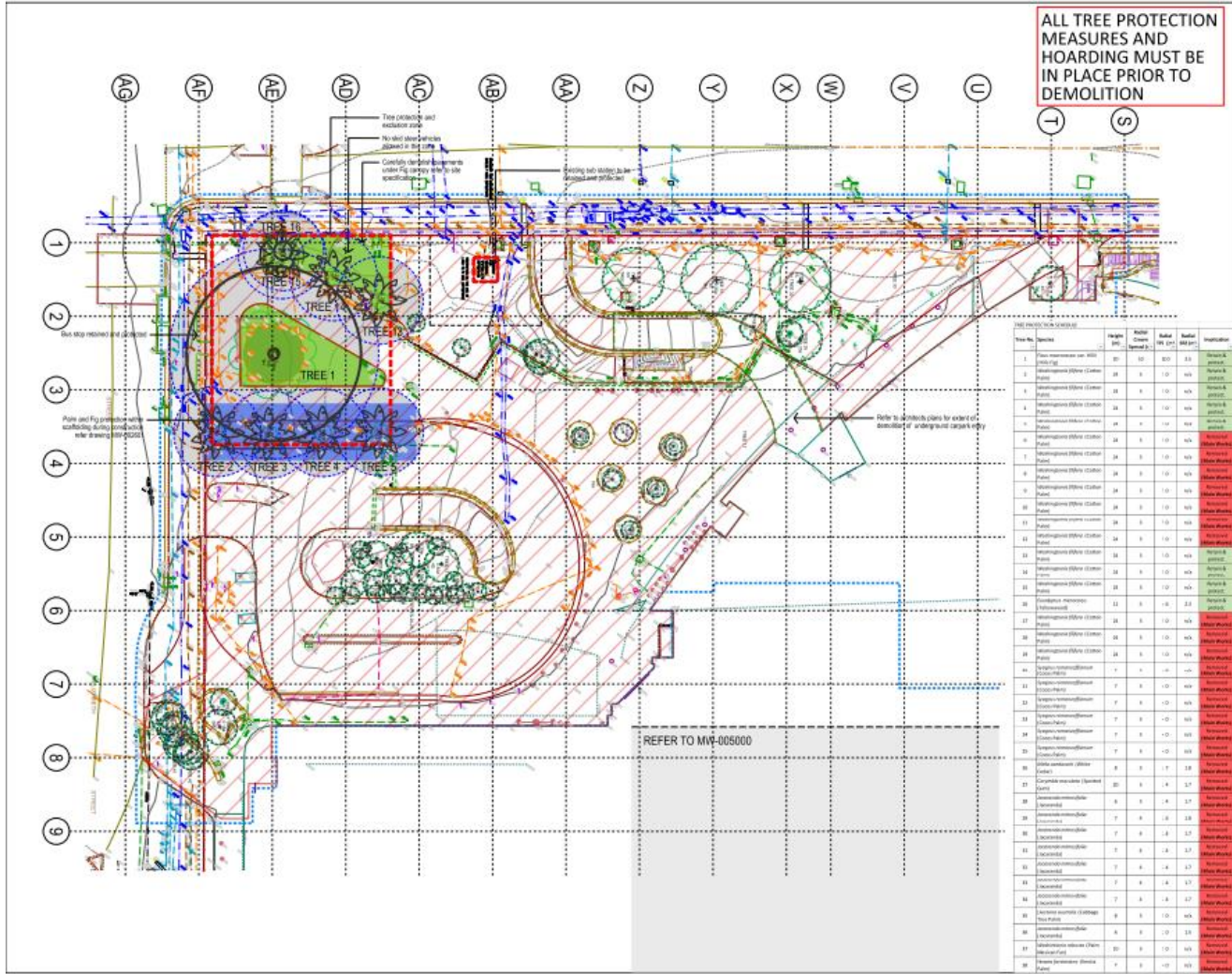
KEY CONTROL MEASURES

- Blue metal to cap exposed soil
- Geofabric under pit grates to stormwater inlets to filter water
- Radiation monitoring of cancer bunker
- Shaker grid located inside of gates 2 & 3
- High pressure washer to clean tyres in inclement weather

KEY CONTACTS

Senior Construction Manager Daniel Puljic 0477 393 259	Senior Site Manager Damien Smith 0437 559 361	General Foreman James Hall 0429 801 618	Senior EHS Coordinator Nigel Rose 0428 741 878	Emergency Services 000
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TREE PROTECTION ZONE – STAGE 1



CLOUSTON ASSOCIATES
 15/15000 STATION ROAD, WILLOWBUSH NSW 2157
 TEL: 02 9339 1000
 WWW.CLOUSTON.COM.AU

PROJECT
 UNIPUS COLLEGE HEALTH & ACADEMIC FACILITY

ARCHITECT
 #patrick-partners

STRUCTURAL / CIVIL
 TTW

MECHANICAL / ELECTRICAL / SECURITY
 JACOBS

HYDRAULIC / FIRE
 [Logo]

LANDSCAPE
 [Logo]

PROJECT NORTH
 0 10 20 30m

DATE
 15/09/2021

100% DESIGN DEVELOPMENT

DRAWING
 UNIPUS COLLEGE HEALTH & ACADEMIC FACILITY
 DEMOLITION PLAN
 SHEET 1 OF 1

DRAWN [Name] **APPROVED** [Name] **DATE** [Date]

PROJECT NO. [Number] **SCALE** [Scale] **SPACE** [Space]

DRAWING NO. [Number] **ISSUE** [Issue]

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