HAWKESBURY CENTRE OF EXCELLENCE

Environmental Impact Assessment (SSD 15001460)

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Approval for issue

Rob Dwyer  5 August 2021

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Prepared for:

School Infrastructure NSW

C/o Colliers International

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STATEMENT OF VALIDITY

This Environmental Impact Statement (EIS) has been prepared in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulation 2000.*

Environmental Assessment Prepared by:

Name:	**Robert Dwyer** – Planning Manager, RPS *Bachelor of Science (Newcastle University)* *Graduate Diploma of Urban and Regional Planning (University of New England)* **Sam Mitchell** – Senior Environmental Scientist, RPS *Bachelor of Environmental Science and Management – Earth Sciences (Newcastle University)* **Christine Bower** – Planner, RPS *Bachelor of Arts - Major in Urban Studies (University of Calgary)*
Address:	RPS Australia East Pty Ltd Unit 2A, 45 Fitzroy Street Carrington NSW 2294
In respect of:	SSD 15001460 – Hawkesbury Centre of Excellence

Applicant and Land Details:

Applicant:	NSW Department of Education – C/o Colliers International
Applicant Address:	Level 8, 259 George Street, Sydney NSW 2000
Land to be developed	Part of Lot 2 DP1051798, Vines Drive, 2 College Street, Richmond.
Project:	The construction and operation of the new Hawkesbury Centre of Excellence (CoE) in agricultural education on leased land within the Western Sydney University (Hawkesbury Campus) site, Richmond. The CoE will provide new agricultural / STEM teaching facilities with general learning and administration spaces to be utilised by rural, regional, and metropolitan school students. The CoE will be a state-wide resource with short-term accommodation facilities and online project/subject content to enable students from both the locality and across the state to access the education facilities on offer.

I certify that I have prepared the contents of this Environmental Impact Statement and to the best of my knowledge, has been prepared as follows:

- In accordance with, and meet the minimum requirements of, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.
- All available information that is relevant to the environmental assessment of the development to which the statement relates; and
- To the best of my knowledge the information contained in this report is neither false nor misleading.

Robert Dwyer

05 Aug2021

Sam Mitchell

05 Aug 2021

Christine Bower

05 Aug 2021

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EXECUTIVE SUMMARY

Preliminary

This Environmental Impact Assessment (EIS) has been prepared by RPS Australia East Pty Ltd (RPS) on behalf of the Department of Education NSW (the applicant) in support of a State Significant Development (SSD) Application (SSD-15001460) for the construction and operation of the new Hawkesbury Centre of Excellence in agricultural education herein referred to as Centre of Excellence (CoE) at Richmond, NSW. The CoE will provide new agricultural / STEM teaching facilities for secondary students with general learning and administration spaces to be utilised by rural, regional, and metropolitan school students. The CoE will be a state-wide resource for up to 325 students, including short-term accommodation facilities for up to 62 visiting students and teaching professionals. It will provide online project/subject content, to enable students from both the locality and across the state to access facilities, classes, research, and joint work with the Western Sydney University, TAFE and industry. The CoE will be located on part of 2 College Street Richmond which is land to be leased from Western Sydney University to the Department of Education NSW on a long-term basis.

This EIS should be read in conjunction with the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning, Industry and Environment (DPIE) on 19th March 2021 and attached at **Appendix A**, and the supporting technical documents provided at **Appendix D** – **Appendix GG**.

Site

The site is located on part of the Western Sydney University (Hawkesbury Campus) site in the southwestern corner. The site is bounded by student residences to the northwest, microbiology building directly southeast and the campus sports and recreation centre to the northeast. An internal road known as Vines Drive to the north and Maintenance Lane to the far east.

The site has a total site area of approximately 11.37 hectares (ha) and is currently described as part Lot 2 DP 1051798.

The site is currently vacant, with natural grassland and a few trees bordering its perimeter, most notably along the southern portion of the site. Drainage channels are present within the site, running on a north to south axis. The University campus buildings to the northeast and northwest display original and contemporary education buildings.

Proposed Development

The proposed development will provide new agricultural / STEM teaching facilities with general learning and administration spaces to be utilised by rural, regional and metropolitan school students. The CoE will accommodate up to 325 students and up to 25 employees consisting of farm assistants, administration staff and teachers and up to five itinerant staff members. The CoE will also include short-term on-site accommodation facilities for up to 62 visiting students and teaching professionals from regional and rural NSW who will attend the site for short courses, in-service teacher training and / or conferences related to agricultural / STEM education.

Consultation

The project team has undertaken consultation with various agencies, government departments and other stakeholders, as well as the local community, as required by the SEARs. The issues discussed and raised during these consultations have been addressed as part of the proposal. Consultation and outcomes have been addressed in detail at Section 5 of the EIS and appended Community Consultation Summary Report at **Appendix H**.

Planning Framework and Assessment

The proposed development is classified as state significant development (SSD) on the basis that it falls within the requirements of Clause 15 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development)* 2011 (SRD SEPP). The development is for the purpose of a new school and regardless of the capital investment meets the requirements of State Significant Development.

The CoE project has been assessed in accordance with the requirements of Section 4.15(1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and against the SEARs issued for the project.

The proposed development has been assessed against relevant strategic policies and planning controls and is found to be generally consistent with these, as detailed within Section 6 of this EIS.

Environmental impacts

This EIS provides an assessment of the environmental impacts of the proposed development in accordance with the SEARs and sets out the undertakings made by the applicant / proponent to avoid, minimise and manage impacts arising from the development. Key matters addressed within the EIS are summarised below and all environmental impacts are addressed within the EIS.

Transport and accessibility

The overall transport and accessibility strategy for the CoE is as follows.

- Pedestrians.
  - Minimal demand expected however the proposed development will provide connectivity to bus services and to local network.
- Cyclists.
  - Minimal demand expected however the proposed development will provide on-site storage.
- Public transport
  - Strong demand expected by bus and rail - bus connectivity to train stations will be required due to long walking distance.
- Freight & deliveries.
  - Agricultural vehicles accommodated within the site for specialty purposes.
- Kiss & ride.
  - Minimal demand expected; on-site provision for car and bus access to be operated at separate times.
- Car parking
  - Reasonable demand expected; on-site provision within the CoE for general usage and potential shared parking with WSU for peak usage (e.g. for occasional school-related events).

The above strategy has been proposed to and discussed with a Transport Working Group comprising of representatives from Hawkesbury City Council and Transport for NSW (TfNSW). The project has been refined during the last six months in response to feedback received.

Due to the unique nature of the CoE, comprising a specialist non-catchment school and serving external visitors from Sydney and NSW schools, pedestrian and cyclist mode share is anticipated to be low. Nevertheless, new pedestrian facilities are proposed within the WSU campus to provide access to the external road network, and new facilities to cross Londonderry Road to northbound bus services and the Hobartville area via a signalised pedestrian crossing at Londonderry Road.

Public transport accessibility will be improved through construction of new formalised bus bays on Londonderry Road, as bus services from this interchange to Richmond and Penrith train stations forms a key part of the transport strategy for the site. Future consultation will be required with TfNSW during the life of the project once enrolment grows and demand can be demonstrated.

An on-site vehicle area is provided which will cater for kiss & ride during school peak periods and will be sized to cater for private bus/coach services to the site for program and other visitors (outside peak times). Due to the nature of the non-catchment school, it is not expected that kiss & ride would be the most appealing mode of transport for most users, however capacity has been incorporated into the design.

Finally, car parking is considered the lowest priority mode, which is in accordance with state government policy such as the Road User Space Allocation Policy (TfNSW, January 2021) and other guidelines. By considering the combination of train (with connecting bus) and bus/coach services, a low car parking demand is expected for students and program visitors, however it is anticipated that car will be a highly used mode for school staff and for other visitors. Typical daily car parking demands are accommodated within the CoE car park.

It is anticipated that the signalised pedestrian crossing along Londonderry Road would function as an interim road work only, however has considered all future demands of the Centre of Excellence. TfNSW presented a

proposed preferred corridor and concept design for Richmond Bridge duplication project which includes a new road parallel to Southee Road and an upgraded intersection at Londonderry Road with traffic lights improving access to Western Sydney University. Given that the intersection upgrade is unlikely to begin until at least 2024 with completion in around 2026/27, the proposed signalised pedestrian crossing is an interim solution to provide a safe and effective means for students to cross Londonderry Road..

Following approval of this SSD project it is anticipated that a Construction Traffic Management Plan and School Transport Plan would be fully developed prior to construction and operation of the CoE respectively. Preliminary versions of these documents have been provided as part of this TAIA.

The proposed development is deemed suitable on consideration of the traffic and transport elements of the site and its surrounds, and the transport strategy proposed for its management.

Heritage

The site does not contain any structures or buildings of heritage significance however four buildings on Lot 2 DP 1051798, grouped as two local heritage items under the *Hawkesbury Local Environmental Plan 2012*, are within the sites' vicinity. A Statement of Heritage Impact has been prepared and notes design changes made during the concept development phase. The design changes, culminating in the current design, along with the landscaping proposed will ensure no adverse impact on the listed heritage items external to the subject site. An archaeologist will be on-call so that if items associated with the agricultural history of the study area are located during constructions work the archaeologist can attend the site to identify the item and assess the significance of the item. All work should cease in the vicinity of the item until the archaeologist has assessed the item and its context and provided advice.

Aboriginal Archaeology

An Aboriginal Cultural Heritage Assessment Report and notes an absence of Aboriginal objects and/or deposits or features of cultural and archaeological significance on the site and concludes that further investigation is not warranted, and works may proceed with caution. Ongoing consultation with the registered Aboriginal stakeholders will continue through the construction and operational phases of the development. An Aboriginal Cultural Heritage Management Plan will be prepared prior to construction commencing.

Biodiversity

The site is mostly dominated by agricultural grassland. Scattered areas of trees exist which include both native and exotic species. A Biodiversity Development Assessment Report has been prepared and the proposed development is expected to impact one (1) Plant Community Type (PCT) 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. Three ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development.

Flooding

The site is affected by two sources of flooding - riverine flooding and local overland flooding. The peak flood levels from riverine flooding for the site are 17.5m AHD for the 1% Annual Exceedance Probability (AEP) flood event and 26.4m AHD for the probable maximum flood event. A conventional flood planning level of 1% AEP plus 0.5m has been applied to the proposed buildings and is considered sufficiently protected against overland flow flooding. Prior to operation of the CoE an evacuation procedure will be finalised and incorporated into the overall Project Emergency Management Plan.

Contamination

A portion of the site has identified contaminated material within it. A Detailed Site Investigation (DSI) for contamination and a Remediation Action Plan (RAP) have been prepared. These documents outline a strategy for the ensuring the site will be suitable for the proposed uses. Remediation in accordance with the RAP will occur and will include establishment of a containment cell on-site.

Bush fire

According to the Bush Fire Threat Assessment prepared for the proposed development the site is classified as Category 2 - Bushfire buffer and Category 3 – Grass lands as per the PBP 2019. The Bush Fire Threat Assessment recommends an asset protection zone of a minimum of 50m surrounding the curtilage of a number of buildings along with other measures to reduce the potential for bush fire attack.

Suitability of the site

There are no known site conditions which would prevent the development including geotechnical conditions, contamination, flooding, biodiversity, bush fire and Aboriginal cultural heritage, and historical archaeology.

Where there are environmental impacts, these can be sufficiently ameliorated through mitigation measures and design development.

The site is therefore suitable for the proposed development.

Public Interest

The proposed CoE offers significant public benefits to the users of the school and broader community.

It will involve farming enterprises, learning facilities and a residential accommodation to support teaching and learning to students in agricultural education. In addition, the CoE will support teaching and learning for industry, overseas students, and educators in NSW. This will be delivered through programs facilitated directly through the CoE with other high schools in NSW. In addition, the CoE:

- Will provide permanent and state of the art teaching facilities for students.
- Will provide new buildings that will be sympathetic to the existing natural and built landscape and be designed to equivalent 4-star Green Star Design.
- Will generate 166 construction Full Time Equivalent jobs during construction phase, and 25 additional jobs during the operational phase. Hence, these jobs, together with the value of the project, will stimulate the economy.

On balance, accounting for site suitability, environmental impacts, risk assessment and key benefits, the proposed development is in the public interest.

Given the above it is considered that the SSD Application has merit and can be supported by the Department of Planning, Industry and Environment and the Minister for Planning and Public Spaces.

Secretary's Environmental Assessment Requirements

The SEARs for the CoE project were issued by the Department of Planning, Industry, and Environment (DPIE) on 19th March 2021. This EIS addresses each of the SEARs.

The table below provides the SEARs issued for the project alongside a brief description of how the proposed development will achieve each requirement.

SEARs Requirements	
General Requirements	**Comment/ Description**
The Environmental Impact Statement (EIS) must be prepared in accordance with, and meet the minimum requirements of, clauses 6 and 7 of Schedule 2 the *Environmental Planning and Assessment Regulation 2000* (the Regulation). Notwithstanding the key issues specified below, the EIS must include an environmental risk assessment to identify the potential environmental impacts associated with the development. In addition, the EIS must include: • an executive summary. • a complete description of the development, including: - the need for the development - justification for the development - suitability of the site - alternatives considered. - likely interactions between the development and existing, approved, and proposed operations in the vicinity of the site. - a description of any proposed building works. - site survey plan, showing existing levels, location and height of existing and adjacent structures/ buildings and site boundaries. - a detailed constraints map identifying the key environmental and other land use constraints that have informed the final design of the development.	The EIS has been prepared in accordance with the Secretary's Requirements and meets the minimum requirements specified in Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*. The EIS includes a comprehensive assessment of the environmental risks and impacts associated with the development.

SEARs Requirements	
- plans, elevations, and sections of the proposed development. - cladding, window, and floor details, including external materials. - a site plan showing all infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process). - Plans and details of any advertising/ business identification signs to be installed, including size, location and finished. - A description of any proposed construction or operational staging including timing and dependencies. - Details of construction and decommissioning including timing. - An estimate of the retained and new jobs that would be created during the construction and operational phases of the development along with details of the methodology to determine the figures provided. • A detailed assessment of the key issues identified below, and any other significant issues identified in the risk assessment including: - A description of the existing environment, using sufficient baseline data and methodology to establish baseline conditions. - An assessment of the potential impacts of all stages of the development on all potentially impacted environments, sensitive receivers, stakeholders, and future developments. The assessment must consider any relevant legislation, policies, and guidelines. - Consideration of the cumulative impacts due to other related development proposed or underway on the site, including development progressed under other assessment pathways and all other developments in the vicinity (completed, underway or proposed). - Identification of all proposed monitoring or required changes to existing monitoring programs. - Measures to avoid, minimise and if necessary, offset predicted impacts, including detailed contingency plans for managing any significant risks to the environment and triggers for each action. - Details of alternative measures considered. • A consolidated summary of all the proposed environmental management and monitoring measures, identifying all commitments included in the EIS. • The reasons why the development should be approved and a detailed evaluation of the merits of the development, including consequences of not carrying out the development. The EIS must be accompanied by a report from a qualified quantity surveyor providing a detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Regulation) of the proposal, including details of all assumptions and components from which the CIV calculation is derived.	
Key Issues	
The EIS must address the following specific matters: Statutory Context, Strategic Context and Policies Address the statutory provisions contained in all relevant legislation and draft environmental planning instruments, including but not limited to: • State Environmental Planning Policy (State and Regional Development) 2011. • State Environmental Planning Policy (Infrastructure) 2007. • State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.	Section 6

SEARs Requirements	
• State Environmental Planning Policy No 64 – Advertising and Signage. • State Environmental Planning Policy No 55 – Remediation of Land. • Draft State Environmental Planning Policy (Remediation of Land). • Draft State Environmental Planning Policy (Environment). • Draft State Environmental Planning Policy (Educational Establishments and Childcare Facilities). • Draft State Environmental Planning Policy (SEPP) for strategic conservation planning. • Draft State Environmental Planning Policy (Housing Diversity). • Hawkesbury Local Environmental Plan 2012. Having regard to the relevant environmental planning instruments: • Address the permissibility of the development, including the nature and extent of any prohibitions. • Identify compliance with the development standards applying to the site and provide justification for any contravention of the development standards. • Adequately demonstrate ad document how each of the provisions in the listed instruments are addressed, including reference to necessary technical documents. Address the relevant planning provisions, goals and strategic planning objectives in all relevant planning policies including but not limited to the following: • NSW State Priorities. • State Infrastructure Strategy 2018 – 2038 Building the Momentum. • Future Transport Strategy 2056. • Crime Prevention Through Environmental Design (CPTED) Principles. • Better Places: An integrated design policy for the built environment of New South Wales (Government Architect NSW (GANSW), 2017). • Healthy Urban Development Checklist (NSW Health, 2009). • Draft Greener Places Design Guide (GANSW). • Koala Habitat Protection Guideline (DPIE, 2020). • The Greater Sydney Region Plan – A Metropolis of Three Cities. • Western City District Plan. • Hawkesbury Development Control Plan 2002. • Hawkesbury Local Strategic Planning Statement 2040. • Hawkesbury – Nepean Valley Flood Risk Management Strategy. • Hawkesbury City Council's Draft Flood Policy 2020. • Draft Hawkesbury Employment Lands Strategy. • Draft Cumberland Plain Conservation Plan.	
• Built Form and Urban Design • Address: - The height, density, bulk and scale, setbacks and interface of the development in relation to the surrounding development, topography, streetscape and any public open spaces. - Design quality, built form, with specific consideration of the overall site layout, streetscape, open spaces, façade, rooftop, massing, setbacks. Building articulation, materials and colour palette. - How Crime Prevention through Environmental Design (CPTED) principles are to be integrated into development. - How good environmental amenity would be provided, including access to natural daylight and ventilation, acoustic separation, access to landscape and outdoor spaces and future flexibility.	Section 4, Appendix D Architectural Plans Appendix G Visual Impact Assessment Appendix E Architectural Design Report

SEARs Requirements	
- How design quality will be achieved in accordance with Schedule 4 Schools – design quality principles of State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 and the GANSW Design Guide for Schools (GANSW, 2018). - How services, including but not limited to waste management, loading zones, and mechanical plant are integrated into the design of the development. • Provide: - A detailed site and context analysis to justify the proposed site planning and design approach including massing options and preferred strategy for future development. - A visual impact assessment that identifies any potential impacts on the surrounding built environment and landscape including views to and from the site and any adjoining heritage items.	Appendix E Architectural Design Statement and Report.
2. Trees and Landscape • Provide: • Where relevant, an aboricultural impact assessment prepared by a Level 5 (Australian Qualifications Framework) Arborist, which details the number, location, and condition of trees to be removed and retained, includes detailed justification for each tree to be removed and details the existing canopy coverage on-site. • A detailed site-wide landscape strategy, that: • Details the proposed site planting, including location, number and species of plantings, heights of trees at maturity and proposed canopy coverage. • Provides evidence that opportunities to retain significant trees have been explored and/or informs the plan. • Considers equity and amenity of outdoor play spaces, and integration with built form, security, shade, topography and existing vegetation. • Demonstrates how the proposed development would: • Contribute to long term landscape setting in respect of the site and streetscape. • mitigate the urban heat island effect and ensure appropriate comfort levels on-site. • Contribute to objectives to increase urban tree canopy cover. • A detailed landscape plan prepared by a suitably qualified person. Relevant Policies and Guidelines: • Australian Standard 4970 Protection of trees on development sites. • Draft Greener Places Guide (GANSW). • Objective 30 of The Greater Sydney Region Plan – A Metropolis of Three Cities. • Technical Guidelines for Urban Green Cover in NSW (Office of Environment and Heritage (OEH), 2015).	Section 7.2, Appendix P Arboricultural Impact Assessment Report, Appendix F Landscape Plans, Appendix DD Landscape Design Statement
3. Environmental Amenity Assess amenity impacts on the surrounding locality, including solar access, visual privacy, visual amenity, overshadowing, wind impacts. • and acoustic impacts. A high level of environmental amenity for any surrounding residential land uses must be demonstrated. • Provide: - Shadow diagrams. - A view analysis, where relevant, of the site from key vantage points and streetscape locations and public domain including	Section 7.3, Appendix D Architectural Plans, Appendix G Visual Impact Assessment and Appendix N Noise and Vibration Assessment Report.

SEARs Requirements	
photomontages or perspectives showing the proposed and likely future development. - An analysis of proposed lighting that identifies lighting on-site that will impact surrounding sensitive receivers and includes mitigation management measures to manage any impacts. - Details of the nature and extent of the intensification of use associated with the proposed development and detail measures to manage and mitigate the impacts.	
4. Transport and Accessibility Provide a transport and accessibility impact assessment, which includes, but is not limited to the following: • Analysis of the existing transport network to at least the existing or proposed enrolment boundary, including: - Road hierarchy. - Pedestrian, cycle and public transport infrastructure. - Details of current daily and peak hour vehicle movements based on traffic surveys and/ or existing traffic studies relevant to the locality. - Existing transport operation for 1 hour before and after (existing or proposed) ell times such as span of service, frequency for public transport and school buses, pedestrian phasing for signals. - Existing performance levels of nearby intersections utilising appropriate traffic modelling methods (such as SIDRA network modelling). • Details of the proposed development, including: - A map of the proposed access which identifies public roads, bus routes, footpaths and cycleways. - Pedestrian site access and vehicular access arrangements, including for service and emergency vehicles and loading/ unloading, including swept path analysis (complying with Australian Standards) demonstrating the largest design vehicle entering and leaving the site and moving in each direction through intersections along the proposed transport routes. - Car and motorcycle parking, bicycle parking and end-of-trip facilities. - Drop-off / pick-up zone(s) and arrival/ departure bus bay(s). - Pedestrian, public transport or road infrastructure improvements or safety measures. • Analysis if the impacts due to the operation of the proposed development, including: - Proposed modal splits for all users of the development including vehicle, pedestrian, bicycle riders, public transport, school buses and other sustainable travel modes. - Where necessary, the need/ associated funding for upgrading for road improvement works (such as the alignment of the Londonderry Road and Southee Road/ Vines Drive intersection) at nearby intersections to ensure traffic safety. • Examination and modelling (but not limited to) of the following intersections: - Londonderry Road at Vines Drive and Southee Road. - Lennox and Paget Street - Blacktown Road at Bourke Street and Campus Drive • Estimated total daily and peak hour vehicular trip generation. • A clear explanation and justification of the: - Assumed growth rate applied. - Volume and distribution of proposed trips to be generated. • Type and frequency of design vehicles accessing the site.	Section 7.4, Appendix I Traffic Impact Assessment

SEARs Requirements	
- Details of performance of nearby intersections with the additional traffic generated by the development both at the commencement of operation and in a 10-year time period (using SIDRA network modelling). - Cumulative traffic impacts from any surrounding approved development(s). - Adequacy of pedestrian, bicycle and public transport infrastructure and operations to accommodate the development. - Adequacy of car and motorcycle parking and bicycle parking provisions for the site and the wider Western Sydney University campus when assessed against the relevant car/ bicycle parking codes and standards. - Adequacy of the drop-off/ pick-up zone(s) and bus bay(s), including assessment of any related queuing during peak- hour access. - Adequacy of the existing / proposed pedestrian infrastructure to enable convenient and safe access to and from the site for all users. • Measures to ameliorate any adverse traffic and transport impacts due to the development based on the above analysis, including: - Travel demand management programs to increase sustainable transport (such as Green Travel Plan/ School Transport Plan). - Arrangements for the Travel Coordinator roles. - Governance arrangements or relationships with state and local government transport providers to update roads safety. - Infrastructure improvements, including details of timing and method of delivery. • A preliminary school transport plan detailing an operational traffic and access management plan for the site, pedestrian entries, the drop-off/ pick-up zone(s) and bus bay(s). • Analysis of the impacts of the traffic generated during construction of the proposed development, including: - Construction vehicle routes, types, and volumes. - Construction program (duration and milestones). - On-site car parking and access arrangements for construction, emergency, and construction worker vehicles. - Cumulative impacts associated with other construction activities in the locality (if any). - Road safety at identified intersections near the site due to conflicts between construction vehicles and existing traffic in the locality. - Measures to mitigate impacts, including to ensure the safety of pedestrian and cyclists during construction. • A preliminary Construction Traffic and Pedestrian Management Plan. *Note: Further guidance is provided in the TfNSW advice attached to the SEARs.* *Relevant Policies and Guidelines:* • Guide to Traffic Generating Developments (Roads and Maritime Services, 2002). • EIS Guideline – Road and Related Facilities (Department of Urban Affairs and Planning (DUAP), 1996). • Cycling Aspects of Austroads Guides. • NSW Planning Guidelines for Walking and Cycling (Department of Infrastructure, Planning and Natural Resources (DIPNR), 2004). • Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020). • Australian Standard 2890.3 Parking Facilities, Part 3: Bicycle Parking (AS 2890.3).	

SEARs Requirements	
5. Ecologically Sustainable Development (ESD) • Identify: - How ESD principles (as defined in clause 7(4) of Schedule 2 of the Regulation) would be incorporated in the design and ongoing operation phases of the development. - Proposed measures to minimise consumption of resources, water (including water sensitive urban design) and energy. - How the future development would be designed to consider and reflect national best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include waste reduction design measures, future proofing, use of sustainable and low-carbon materials, energy, and water efficient design (including water sensitive urban design) and technology and use of renewable energy. - How environmental design will be achieved in accordance with the GANSW Environmental Design in Schools Manual (GANSW, 2018). • Provide: - An assessment against an accredited ESD rating system or an equivalent program of ESD performance. This should include a minimum rating scheme target level. - A statement regarding how the design of the development is responsive to the NARCliM projected impacts of climate change. - An Integrated Water Management Plan detailing any proposed alternative water supplies, proposed end uses of potable and non-potable water and water sensitive urban design. *Relevant Policies and Guidelines:* • NSW and ACT Government Regional Climate Modelling (NARCliM) climate change projections.	Section 7.5, Appendix J ESD Report
6. Heritage • Identify any archaeological potential or archaeological significance on and adjacent to the site and the impacts the development may have on this significance. • Provide a statement of significance and an assessment of the impact on the heritage significance of the heritage items on and adjacent to the site in accordance with the guidelines in the NSW Heritage Manual (Heritage Office and DUAP, 1996) and Assessing Heritage Significance (OEH, 2015).	Section 7.6, Appendix K Historical Archaeological Assessment and Appendix EE Statement of Heritage Impact
7. Aboriginal Cultural Heritage • Provide an Aboriginal Cultural Heritage Assessment Report (ACHAR) that: - Identifies and describes the Aboriginal cultural heritage values that exist across the site. - Includes surface surveys and test excavations where necessary. Has been prepared in accordance with the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and Code of Practice for - Archaeological Investigations of Aboriginal Objects in NSW (OEH, 2010). - Incorporates consultation with aboriginal people in accordance with Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment, climate Change and Water, 2010). - Documents the significance of cultural heritage values of Aboriginal people who have a cultural association with the land.	Section 7.7, Appendix L Aboriginal Cultural Heritage Assessment Report

SEARs Requirements	
- Identifies, assesses and documents all impacts on the Aboriginal cultural heritage values. - Demonstrates attempts to avoid any impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR and EIS mist outline measures proposed to mitigate impacts. - Demonstrates attempts to interpret the Aboriginal cultural heritage significance identified into the development. • Any Aboriginal objects recorded as part of the Aboriginal Cultural Heritage Assessment Report must be documents and notified to the Aboriginal Heritage Information Management System (AHIMS) within Heritage NSW of the Department of Premier and Cabinet.	
8. Social Impacts • Include an assessment of the social consequences of the schools' relative location.	Section 7.8, Appendix M Social Impact Assessment
9. Noise and Vibration • Provide a noise and vibration impact assessment that: - Includes a quantitative assessment of the main noise and vibration generating sources during demolition, site preparation, bulk excavation, and construction. - Details the proposed construction hours and provide details of, and justification for, instances where it is expected that works would be carried out outside standard construction hours. - Includes a quantitative assessment of the main sources of operational noise, including consideration of any public-address system, school-bell, mechanical services (e.g., air conditioning plant), use of any school hall for concerts etc. (both during and outside school hours) and any out of hours community use of school facilities. - Outlines measures to minimise and mitigate the potential noise impacts on nearby sensitive receivers. - Considers sources of external noise intrusion in proximity to the site (including, road rail and aviation operations) and identifies building performance requirements for the proposed development to achieve appropriate internal amenity standards. - Demonstrates that the assessment has been prepared in accordance with policies and guidelines relevant to the context of the site and the nature of the proposed development. *Relevant Policies and Guidelines:* • NSW Noise Policy for Industry 2017 (NSW Environment Protection Authority (EPA) • Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009). • Assessing Vibration: A Technical Guideline 2006 (Department of Environment and Conservation, 2006). • Australian Standard 2363 Acoustics – Measurement of noise from helicopter operations (AS 2363).	Section 7.9, Appendix N Noise and Vibration Assessment
10. Biodiversity • Provide a Biodiversity Development Assessment Report (BDAR), that assesses the biodiversity impacts of the proposed development in accordance with the requirements of the *Biodiversity Conservation Act 2016*, Biodiversity Conservation Regulation2017 and Biodiversity Assessment Method, except where a BDAR wavier has been issued in relation to the development or the development is located on biodiversity certified land.	Section 7.10, Appendix O Biodiversity Assessment Report

SEARs Requirements	
• Where a BDAR is not required, because a BDAR waiver has been issued, in relation to the development, provide: - A copy of the BDAR waiver and demonstrate that the proposed development is consistent with that covered in BDAR waiver. - An assessment of flora and fauna impacts where significant vegetation or flora and fauna values would be affected by the proposed development. *Note: further guidance is provided in the Biodiversity and Conservation Division Standard Environmental Assessment Requirements attached to the SEARs.*	
11. Contributions • Identify: - any Section 7.11/7.12 Contribution Plans, Voluntary Planning Agreements or Special Infrastructure Contribution Plans that affect land to which the application relates or the proposed development type. - any contributions applicable to the proposed development under the identified plans and/or agreements. Justification is to be provided where it is considered that the proposed development is exempt from making a contribution. - any actions required by a Voluntary Planning Agreement or draft Voluntary Planning Agreement affecting the site or amendments required to a Voluntary Planning Agreement affected by the proposed development.	Section 7.11
12. Staging • Assess impacts of staging where it is proposed and detail how construction works, and operations would be managed to ensure public safety and amenity on and surrounding the site.	Section 7.12
13. Utilities • In consultation with relevant service providers: - assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. - identify any infrastructure upgrades required off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. - provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development.	Section 7.11, Appendix Q Infrastructure Management Plan
14. Stormwater Drainage • Provide: a preliminary stormwater management plan for the development that: - is prepared by a suitably qualified person in consultation with Council and any other relevant drainage authority. - details the proposed drainage design for the site including on-site detention facilities, water quality measures and the nominated discharge point. - demonstrates compliance with Council or other drainage authority requirements. • stormwater plans detailing the proposed methods of drainage without impacting on the downstream properties. • Where drainage infrastructure works are required that would be handed over to Council, provide full hydraulic details and detailed plans and specifications of proposed works that have been prepared in consultation with Council and comply with Council's relevant standards.	Section 7.12, Appendix R Integrated Water Management Report

SEARs Requirements	
15. Flooding • Identify any flood risk on-site in consultation with Council and other relevant agencies and having regard to all relevant flood studies for the development area and the potential effects of climate change, sea level rise and an increase in rainfall intensity. • Assess the impacts of the development, including any changes to flood risk on-site or off-site, and detail design solutions (including emergency evacuation plans) to mitigate flood risk where required. *Relevant Policies and Guidelines:* • NSW Floodplain Development Manual (DIPNR, 2005).	Section 7.13, Appendix FF Flood Impact Assessment, Appendix S Flood Emergency Management Report
16. Soil and Water • Provide: - an assessment of potential impacts on surface and groundwater (quality and quantity), soil, related infrastructure and watercourse(s) where relevant. - details of measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. - an assessment of salinity and acid sulphate soil impacts, including a Salinity Management Plan and/or Acid Sulphate Soils Management Plan, where relevant. *Relevant Policies and Guidelines:* • Managing Urban Stormwater - Soils and Construction Volume 1 (Landcom, 2004). • Acid Sulfate Soil Manual, (NSW Acid Sulfate Soil Management Advisory Committee, 1998). • Acid Sulfate Soils Assessment Guidelines (DoP, 2008). • Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (DECC, 2008).	Section 7.14, Appendix T Soil and Water Assessment
17. Waste • Identify, quantify and classify the likely waste streams to be generated during construction and operation. • Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste. • Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site. • Provide a hazardous materials survey of existing aboveground buildings that are proposed to be demolished or altered. *Relevant Policies and Guidelines:* • Waste Classification Guidelines (EPA, 2014).	Section 7.16, Appendix CC Construction Waste Management Plan Appendix W Operational Waste Management Plan
18. Contamination • Assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable for the proposed use in accordance with SEPP 55. This must include the following prepared by certified consultants recognised by the NSW Environment Protection Authority: - Preliminary Site Investigation (PSI). - Detailed Site Investigation (DSI) where recommended in the PSI. - Remediation Action Plan (RAP) where remediation is required. This must specify the proposed remediation strategy.	Section 7.17, Appendix U Detailed Site Investigation, Appendix V Remediation Action Plan

SEARs Requirements	
- Preliminary Long-term Environmental Management Plan (LEMP) where containment is proposed on-site. *Relevant Policies and Guidelines:* • Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP, 1998). • Sampling Design Guidelines (EPA, 1995). • Consultants Reporting on Contaminated land – Contaminated Land Guidelines (EPA, 2020). • National Environment Protection (Assessment of Site Contamination) Measure (National Environment Protection Council, as amended 2013).	
19. Bush fire • Provide a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with Planning for Bush Fire Protection (NSW RFS, 2019).	Section 7.18, Appendix X Bushfire Threat Assessment
20. Aviation • Provide a report prepared by a suitably qualified person: • identifying whether the proposed school is located within any of the following Australian Noise Exposure Forecast (ANEF) contours as specified in Table 2.1 of Australian Standard 2021:2015 Acoustics - Aircraft noise intrusion - Building siting and construction (AS 2021:2015): - <20. - Between 20 – 25. - or >25. • providing details of any flight paths that may be impacted by the proposed development. • identifying and assessing the potential impacts of the future development on the aviation operations of any nearby airports and affected flight paths of any existing on shore Helicopter Landing Site (HLS) in accordance with the relevant sections of the National Airports Safeguarding Framework (NASF). *Relevant Policies and Guidelines:* National Airports Safeguarding Framework and associated guidelines.	Section 7.19, Appendix Y Aeronautical Impact Assessment

1 INTRODUCTION

This EIS has been prepared by RPS on behalf of Department of Education NSW in support of State Significant Development Application (SSD) (SSD- 15001460) for the construction and operation of a new Centre of Excellence in agricultural education (CoE) at Richmond, NSW. The CoE will provide new agricultural / STEM teaching facilities for secondary students with general learning and administration spaces to be utilised by rural, regional and metropolitan school students. The CoE will be a state-wide resource with short-term accommodation facilities and online project/subject content, to enable students from both the locality and across the state to access facilities, classes, research, and joint work with the Western Sydney University, TAFE and industry.

In 2015, an SSD application to relocate Hurlstone Agricultural High School from its existing site in Glenfield, to the subject site was submitted. The project was to build a new agriculturally focused, boarding, selective high school. The SSD application was withdrawn in 2018 to allow a review of the overall size and function of the project. Because of the review, a fresh SSD application (SSD- 15001460) has been lodged and is the subject of the environmental assessment contained within this EIS.

The CoE will involve farming enterprises, learning facilities to support teaching and learning to students in agricultural education. In addition, the CoE will support teaching and learning for industry and educators in NSW. This will be delivered through programs facilitated directly through the CoE with other high schools in NSW.

The CoE will work in collaboration with Richmond High School (RHS) to establish “Richmond Agricultural College”. The project will work as an operational model that will encompass the educational streams at RHS and the new CoE. Students will enrol directly through RHS and will attend the CoE on a regular basis as part of their regular curriculum. Students from other schools across the State will access the CoE through their school initiating engagement in an agricultural program or project-based learning opportunity managed by the CoE.

The site is located on part Lot 2 DP1051798, 2 College Street Richmond, refer to **Figure 1,** which is vacant land within the Western Sydney University (Hawkesbury Campus) site. The site will be leased to Department of Education NSW on a long-term basis by the land-owner Western Sydney University.

Department of Education NSW propose to establish a contemporary agricultural education facility on site delivering world class agricultural and STEM education for up to 325 secondary school students. This EIS seeks development consent for the following works:

- Three academic blocks (Block B, C and D).
- Short-term, dormitory site accommodation with capacity for 62 patrons (Block F).
- Dining hall, Conference space and canteen (Block E).
- Administrative building (Block A).
- Support facilities for management and maintenance of site.
- External works to accommodate circulation and covered walkways between buildings.
- Pedestrian walkways.
- Student and staff amenities.
- Covered Outdoor Learning Areas.
- Staff car parking area and minibus drop off and pick up area. The parking located in front of block A is for visitors.
- Upgrading of the Londonderry Road / Vines Drive intersection and the intersection approaches to accommodate traffic signals, turning lanes, bus stops and pedestrian footpaths.
- Short-term accommodation car parking area. The parking near Block F is for staff.
- Green house.
- Various agricultural and animal plots and associated agricultural workshop.
- Provision of waste facility area.

- Installation of all essential services including stormwater management devices where required.
- Landscape treatment.
- Signage and other ancillary infrastructure and utilities works.
- Operation of the CoE site.

A detailed description of the proposed development is provided at Section 4.1 of this EIS.

1.1 The applicant

The Department of Education NSW is the largest provider of public education in Australia with responsibility for delivering high-quality public education to two-thirds of the NSW student population. The Department of Education NSW is the applicant for the proposed development.

1.2 Project site

The site is identified in **Figure 1** and is located within an area of the Western Sydney University Hawkesbury Campus, at 2 College Street, Richmond, NSW. The Western Sydney University Hawkesbury Campus land is described as part of Lot 2 DP1051798 and is within the Local Government Area (LGA) of Hawkesbury.

The site subject of this EIS has been historically vacant and utilised for grazing purposes. To the north-east of the site are the Western Sydney University Hawkesbury Campus buildings which comprise buildings of varying sizes and age.

The site is approximately 11.37ha in area. To the north of the site are a number of university student residential townhouses, known as the Western Sydney University Hawkesbury Village. The Carol Alen Aged Care Facility adjoins the site's north-western boundary. Adjoining the site's north-eastern boundary is the Western Sydney University Microbiology Department. Rural land uses adjoin the majority of the remaining site boundaries. The site has a frontage onto an internal university road, Vines Drive.

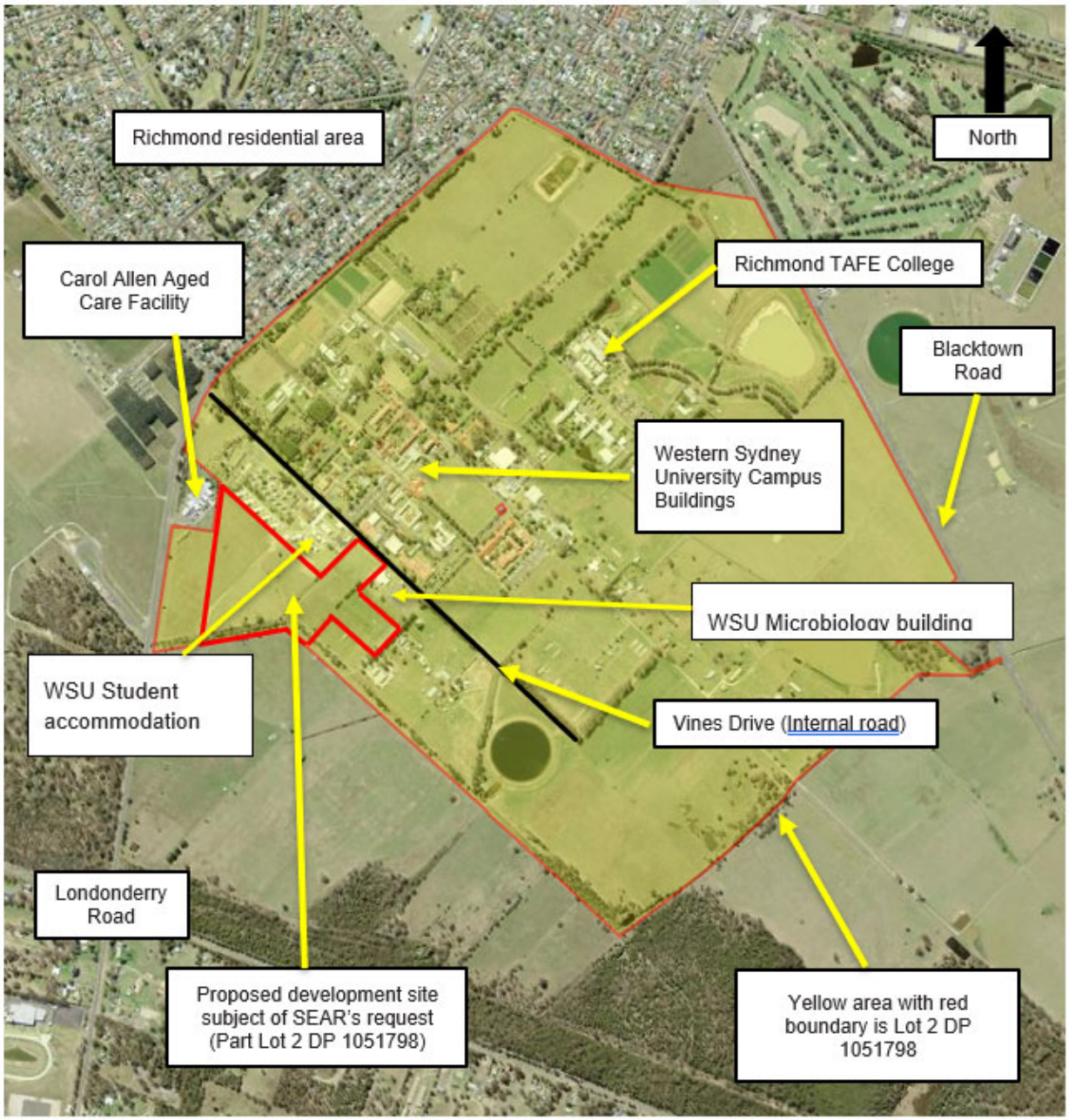

Figure 1 Location plan

(Source Six Maps)

1.3 Project background and history

The CoE is a project that was announced by the Minister of Education on 10 December 2019. A pilot phase has been conducted to establish the demand for Agriculture and STEM educational programs. The operation of this program has been undertaken without premises, on a smaller scale with no residential accommodation. Due to enrolment demand for the curriculum, the need for a physical campus with opportunity for students from other schools across the State has been identified.

In 2015, the NSW Government made an announcement to move Hurlstone Agricultural High School from its existing site in Glenfield, to Hawkesbury, and build a new agriculturally focused, boarding, selective high school on the Western Sydney University (Hawkesbury Campus) site.

A fresh SSD application (SSD- 15001460) has been lodged and is the subject of the environmental assessment contained within this EIS.

1.4 Approval pathway

The development assessment and approval system in NSW is subject to Parts 4 and 5 of the EP&A Act. Division 4.1 of Part 4 provides for the assessment and determination of State Significant Development (SSD). Pursuant to Section 4.36 of the EP&A Act, projects are classified as SSD if they are declared to be such under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP).

Under clause 15(1) of the SRD SEPP '*development for the purpose of a new school (regardless of the capital investment value)'* is categorised as SSD.

The Proposal is for the construction of an educational facility and therefore meets the definition of SSD. The consent authority under section 4.5 of the EP&A Act is the Minister for Planning and Public Spaces or their delegate.

1.5 Report structure

The EIS is structured as follows:

- Section 2: a detailed description of the site and surrounding context, and summary of site constraints.
- Section 3: a description of the project need, justification and project alternatives.
- Section 4: a detailed description of the proposed development.
- Section 5: a description of the consultation undertaken for the project, including the consultation process, issues raised and how the design of the development has responded to these issues.
- Section 6: an assessment of the proposed development against relevant strategic and statutory planning controls.
- Section 7: an assessment of key issues and impacts generated by the proposed development.
- Section 8: Environmental risk assessment.
- Section 9: recommended mitigation measures. and
- Section 10: justification of the project and conclusion.

The EIS should be read in conjunction with the SEARs attached at **Appendix A**, and the supporting technical documents provided at **Appendix D** – **Appendix GG**.

1.6 Project team

Specialist consultants were engaged to assist with the preparation of this EIS as identified in **Table 1**.

Table 1 Specialist Consultants

Discipline	Consultant
Architecture	NBRS Architecture
Project manager	Colliers International
Planner	RPS Group
Quantity Surveyors Report	MBM
Surveyor	Rygate and Company
Landscape Plan	NBRS Architecture
Visual Impact Assessment	NBRS Architecture
Traffic Impact Assessment	Taylor Thomson Whitting NSW Pty. Ltd
ESD Report	Norman Disney and Young
Heritage Impact	Comber Consultants
Aboriginal Cultural Heritage Assessment Report	AMAC and Streat Archaeological Services
Social Impact Assessment	RPS Group
Noise and Vibration Assessment	Marshall Day Acoustics
Biodiversity	Narla Environmental
Arboricultural Assessment	Sturt Noble Arboriculture
Infrastructure Management Plan	Norman Disney and Young
Civil Engineering	Woolacotts Consulting Engineers
Stormwater Management	Woolacotts Consulting Engineers
Flooding	Woolacotts Consulting Engineers
Structural Drawings	Woolacotts Consulting Engineers
Contamination	Douglas Partners
Waste	Richard Crookes Constructions
Acoustic Report	Marshall Day
Bush Fire	Bushfire Planning Australia
Aeronautical Impact	Avlaw consulting
Access Assessment Report	BCA Logic
BCA Assessment Report	BCA Logic

1.7 Estimated capital investment value.

The estimated Capital Investment Value (CIV) for the proposed development exceeds $39,088,624.00. A CIV Estimate has been prepared by MBM and accompanies this EIS. The CIV Estimate is included under separate cover.

2 SITE ANALYSIS

2.1 Site context

The site is located within the Western Sydney University (Hawkesbury Campus) site which is approximately 2.94km^2 in area, covering multiple parcels. The proposed development will be sited on part of Lot 2 DP 1051798 on a parcel of land approximately 11.37 ha in area. **Figure 2** provides a context plan of the site and surrounding features.

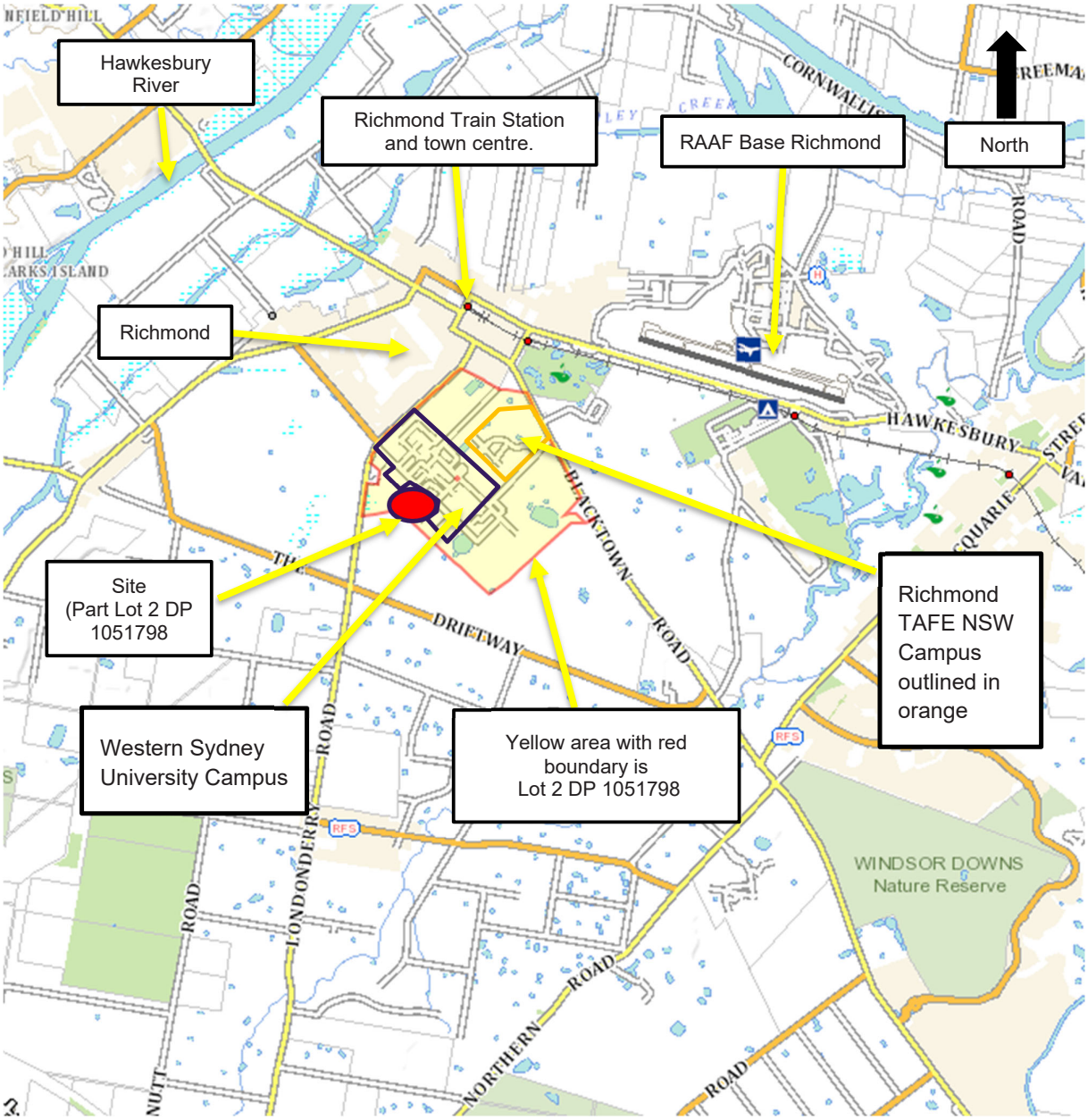

Figure 2 Context plan

(Source: Six Maps)

The site is located in the southwestern corner of Lot 2 DP 1051798. Surrounding landmarks include Richmond Train Station and Town Centre located approximately 1.9 km to the north. It is located approximately 50 kilometres to the north-west of the Sydney CBD, 30 km east of the Blue Mountains and 42 km north of the future aerotropolis.

2.2 Existing development

The site is currently vacant, with natural grassland and a few trees bordering the perimeter of the site, most notably along the southern portion of the site. Drainage channels are present withing the site, running on a north to south axis. The University campus buildings to the northeast and northwest display original and contemporary education buildings.

2.3 Site constraints

The CoE site presents the following key site constraints.

- Flooding – The site is affected by the probable maximum flood (PMF) riverine flooding and 1:100 overland flow path flooding is not affected by 1:100 riverine flooding. The topography will dictate building ground floor to be set 400-900mm above natural ground levels.
- Contamination – A portion of the site has identified contaminated material within it. A Detailed Site Investigation (DSI) for contamination and a Remediation Action Plan (RAP) have been prepared. These documents outline a strategy for the ensuring the site will be suitable for the proposed uses.
- Transport – Planning is required to ensure that cycle safety is on the public and internal roads leading to the site is paramount. A school zone may be required on the internal road of Vines Drive. Hawkesbury City Council has raised concern regarding potential additional traffic through the Western Sydney University. Transport for NSW (TfNSW) has a preliminary concept design for the Richmond Bridge duplication project which includes a new road parallel to Southee Road (north-west of the CoE site) and an upgraded intersection at Londonderry Road with traffic lights.
- Heritage - No heritage items are identified within the *Hawkesbury Local Environmental Plan 2012* (HLEP 2012) maps as being located on the project area. Heritage item I9 “Administrative block, blacksmith shop and stable square” and Item I10 Grand-Stand are located on the overall land parcel (Lot 2 DP 1051798) and are located to the north-east.
- Bush Fire – The site is classified as Category 2 - Bushfire buffer and Category 3 – Grass lands as per *Planning for Bushfire Protection 2019* (PBP 2019). An Asset Protection Zone (APZ) of a minimum of 50m will need to be provided surrounding the curtilage of a number of buildings.

2.4 Topography

The site displays relatively level topography with a drainage channel running the length of the north western boundary and a grassed swale borders the eastern boundary. The study area extends over one topographic zone belonging to the Berkshire Park (BP) alluvial landscape, consisting of mostly flat terrace tops as well as gently undulating low rises that have been modified to include small drainage channels and lines for agricultural purposes.

2.5 Vegetation and biodiversity

The site is mostly dominated by agricultural grassland. Scattered areas of trees exist which include both native and exotic species. Some vegetation within the site will require removal to accommodate the proposed development, with the exception of the vegetation to be managed as an APZ. The Arborist report states there are twenty-eight (28) trees on the site and a total of nine (9) trees need to be removed; four (4) of which are juvenile and can be replanted.

A Biodiversity Development Assessment Report (BDAR) prepared by Narla Environmental is contained in **Appendix O**. The BDAR assesses the biodiversity impacts of the proposed development in accordance with the requirements of the *Biodiversity Conservation Act 2016* and *Biodiversity Conservation Regulation 2017*. The proposed development is expected to impact one (1) Plant Community Type (PCT) 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin

Bioregion. Three ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development.

An Arboricultural Impact Assessment Report prepared by Sturt Noble Arboriculture is contained in **Appendix P** which identifies the trees that are to be retained and be protected from potential damage during the construction phase.

2.6 Flooding

The Section 10.7(2) & (5) Planning Certificate issued for Lot 2 DP 1051798 (Certificate PC1334/21) contained at **Appendix C** identifies that the lot is subject to riverine flood related development controls. An Integrated Water Management Report prepared by Woolacotts Consulting Engineers is contained in **Appendix R** and includes and assessment of flooding across the site. The report indicates that the site is affected by two sources of flooding - riverine flooding and local overland flooding. Riverine flooding occurs when heavy rainfall causes the water levels in a river to rise and escape the main channel. Local overland flooding is run-off that travels over the land during heavy rainfall events, affected by urban features such as stormwater infrastructure, roads, fences, walls and other structures. A finished floor level (FFL) of 23.5m AHD will be adopted for the proposed buildings.

A Flood Emergency Management Report prepared by Woolacotts Consulting Engineers is contained in **Appendix S** and provides a Flood Emergency Response Plan for the proposed development.

2.7 Contamination

The Section 10.7(2) & (5) Planning Certificate issued for Lot 2 DP 1051798 (Certificate PC1334/21) contained at **Appendix C** indicates that the site is not significantly contaminated land within the meaning of the *Contaminated Land Management Act 1997*.

A Detailed Site Investigation (DSI) prepared by Douglas Partners is contained in **Appendix U**. Areas of the central-southern portion of the site appear to have been backfilled with demolition waste and could have included filling a former dam or drainage channel. A small area in the central-northern portion of the site also includes some anthropogenic inclusions.

A RAP has been prepared by Douglas Partners and is contained in **Appendix V** and documents the remediation and validation procedures required to resolve the identified remediation works from the DSI.

2.8 Transport

The site can be accessed by various transport modes including vehicle, public transport, bicycle and pedestrians. The locality is serviced by rail transport via the Blacktown to Richmond Train Line providing multiple stops in proximity to the site. Bus transport connects to the Richmond Train Station approximately 2km to the north of the site.

A Transport and Accessibility Impact Assessment is contained in **Appendix I**. The Transport and Accessibility Impact Assessment has been developed to assess and address the traffic and transport impacts of the proposed development. This report covers the following areas:

- Site access.
- Car parking.
- Public and active transport.
- Pick-up and drop-off.
- Service vehicles and loading.
- Traffic generation.
- Travel mode analysis.
- Provision of bus bays within Londonderry Road, signalised pedestrian crossing in the same location and pedestrian access to Vines Drive.

2.9 Heritage

A Historical Archaeological Assessment has been prepared by Comber Consultants and is contained in **Appendix K**. The Assessment indicates that the study area was used for grazing and agricultural purposes and that buildings were not constructed. The Assessment concludes that the study area does not contain any significant historical archaeological features or relics. Therefore, the project can proceed without any constraints in respect of historical archaeology.

2.10 Aboriginal heritage

An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared by AMAC and Streat Archaeological Services and is contained in **Appendix L**. The ACHAR notes an absence of Aboriginal objects and/or deposits or features of cultural and archaeological significance on the site and concludes that further investigation is not warranted, and works may proceed with caution.

2.11 Bush Fire

The Section 10.7(2) & (5) Planning Certificate issued for Lot 2 DP 1051798 (Certificate PC1334/21) contained at **Appendix C** indicates that some of the land is bush fire prone.

A Bush Fire Threat Assessment has been prepared by Bushfire Planning Australia and is contained in **Appendix X**. According to the Bush Fire Threat Assessment the site is classified as Category 2 - Bushfire buffer and Category 3 – Grass lands as per the PBP 2019. The Bush Fire Threat Assessment recommends an APZ of a minimum of 50m surrounding the curtilage of a number of buildings along with other measures to reduce the potential for bush fire attack.

2.12 Stormwater

An Integrated Water Management Report has been prepared by Woolacotts Consulting Engineers and is contained in **Appendix R**. The stormwater management system developed for the proposed development will accommodate the increased impervious areas as well as comply with Council's requirements.

Water sensitive urban design principles have been incorporated into the stormwater drainage design to ensure the quality of discharged water meets Council requirements.

2.13 Site opportunities

The site has a number of opportunities that have been considered in the initial design process and these include:

- Orientation of buildings to reflect the Western Sydney University grid.
- Orientation of buildings for optimal Environmentally Sustainable Design principles.
- Views over the agricultural plots, grazing pastures, and the Blue Mountains beyond.
- Utilizing the buildings to protect the outdoor learning squares from the cold westerly winds.
- Utilizing a large eaves overhang for covered walkways and protecting the facades from the hot summer sun.

Figure 3 below illustrates the opportunities in diagrammatic form. Opportunities and constraints, as identified within this Section of the EIS have influenced and guided the proposed development as described in Section 3 and in the Architectural Plans contained in **Appendix D**.

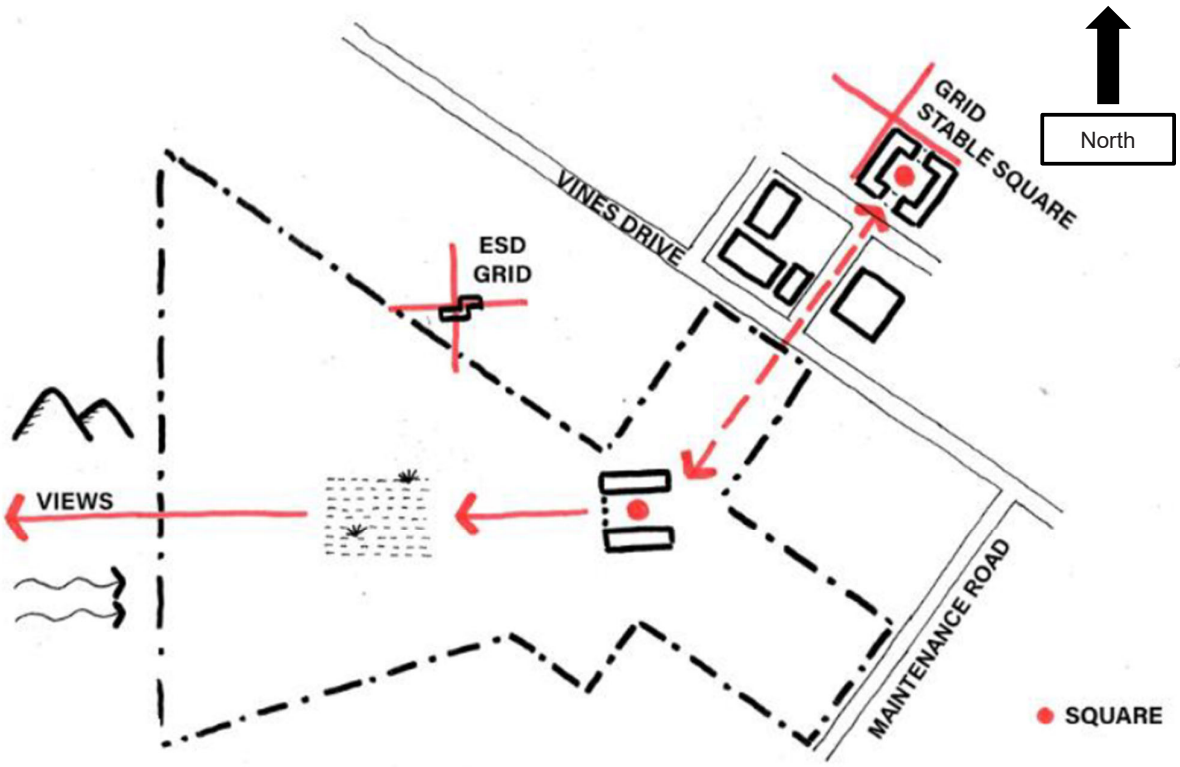

Figure 3 Opportunities across the site

3 NEEDS AND ALTERNATIVES

3.1 Project need

The NSW Government is investing $7 billion over a four-year period to provide more than 200 new and upgraded schools to support communities across NSW, prevent overcrowding in classrooms and accommodate for a growing population. In order to respond to the demand for school infrastructure and access to specialised training for high school aged students, the Department of Education NSW is to provide STEM education and agricultural education programs for high school students.

The current proposal for the CoE will involve farming enterprises, learning facilities and a residential accommodation to support teaching and learning to students in agricultural education. In addition, the CoE will support teaching and learning for industry, overseas students, and educators in NSW. This will be delivered through programs facilitated directly through the CoE with other high schools in NSW.

The CoE, alongside a neighbouring project at Richmond High School (RHS) will establish “Richmond Agricultural College”, an operational model that will provide access to the educational streams at RHS and available at the new CoE. RHS have created a pilot project to predict the need for agricultural and STEM education at the high school level. RHS and CoE have worked in partnership to create opportunities for students seeking a higher education in these subjects and to provide an immersive learning experience at the CoE campus. Students will enrol in these specific educational streams through RHS, and will attend these programs at CoE on the Western Sydney University (Hawkesbury Campus) site on a tailored basis through their course of study. Students from other schools across the State will access the CoE through their school initiating engagement in an agricultural program or project-based learning opportunity managed by the CoE.

The Business case for the CoE indicates a need for capital investment in agricultural programming in line with modern, best practice pedagogies to encourage students to engage in Agriculture and STEM related subjects. Education is considered a critical element to meet the changing agricultural landscape through technological disruption. Ongoing climatic conditions, the impact of environmental challenges, biosecurity issues and market forces on livestock and crop sustainability, quality and market placement contribute to the changing landscape. Demand for the next generation of researchers, innovators, entrepreneurs, and workers in the agricultural sector are needed to ensure NSW remains competitive in the agricultural sector.

3.2 Alternatives considered.

Master planning for the CoE site was undertaken by Fitzpatrick & Partners in August 2019. A total of nine (9) master plan options were prepared based on the following process.

Relationship Diagrams - From school and SI NSW briefings a relationship diagram was produced, identifying the required spaces and their relationships to each other.

Area Analysis - A detailed area analysis for the relationship diagrams was then prepared. Whilst initial reservations were raised to the appropriateness of applying EFSG guidelines to this project, it was found that in nearly all cases, the spatial guidelines were appropriate. As such, the only variations to the EFSG related to the number of defined spaces for this specific learning facility and the accommodation facilities.

Spatial Definition - The relationship diagrams and area analysis were used to define a series of spatial blocks. This documentation cross referenced the relationships to neighbouring spaces, appropriate EFSG guidelines and spatial proportions.

Site Planning - Key objectives that were stated by the Project Control Group were:

- Entry via Vines Drive, with Maintenance Lane only suitable for service vehicle access.
- Facility to make a clear statement to Vines Drive - not just a gateway.
- Architecture to express its purpose - an agricultural immersion learning facility, where every space should relate to the agricultural uses surrounding the built form - the enterprises.
- Efficient and flexible spaces as the needs and uses will change over time.
- Appropriate relationships between administration, learning, dining/rec and accommodation.
- A safe environment for all users at all times.

- As with all agricultural facilities, the layouts should be driven by function, but the buildings should also be part of the learning curriculum: expression of structure, orientation and sun paths, winds. Winter and Summer use, water and energy management, technology to monitor and share information throughout related to environment, buildings, and the enterprises.
- Securable lockdown zone for evenings and emergencies, where the buildings are understood generally not to be the lockdown line.

NBRS was commissioned in November 2020 to commence concept design based upon the preferred option (Option 8) as detailed in the Architectural Design Statement and Report contained in **Appendix E**.

3.3 Consequences of not carrying out the development.

The consequences of not carrying out the development is a reiteration of the project needs for the proposed development referred at Section 1.4 of this EIS above, i.e., that:

- In order to respond to the demand for school infrastructure and access to specialised training for high school aged students, the Department of Education NSW needs to provide STEM education and agricultural education programs for high school students. Not carrying out the development in this location would place pressure on other sub-optimal sites.
- A state-wide resource with short-term accommodation facilities and online project/subject content, to enable students from across the locality to access facilities, classes, research, and joint work with the WSU, TAFE and industry will be provided. Not carrying out the development would see the loss of this unique opportunity.
- Opportunities for a closer and a more cohesive engagement with tertiary students, allowing for the development of educational pathways and industry engagement, collaborative research opportunities, and a hands-on experience with modern agriculture would be lost if the development was not carried out.
- The short-term accommodation facilities at the CoE will also allow for students from remote areas to access educational facilities and tertiary partnerships which may not be available in their regions, increasing equity of access to a quality education. Onsite learning experience means students can spend longer periods in the centre and experience a more immersive impactful experience. Affording students, the opportunity to visit the CoE can result in enhanced student exposure to and understanding of tertiary education options. Not carrying out the development would remove the opportunity for students from remote areas to attend.

4 PROPOSED DEVELOPMENT

4.1 Project overview

The CoE will be a state-wide resource providing online project/subject content, to enable students from both the locality and across the state to access facilities, classes, research, and joint work with the Western Sydney University, TAFE and industry. This enables opportunities for a closer and a more cohesive engagement with tertiary students, allowing for the development of educational pathways and industry engagement, collaborative research opportunities, and a hands-on experience with modern agriculture.

The short-term accommodation facilities at the CoE will allow for students from remote areas to access educational facilities and tertiary partnerships which may not be available in their regions, increasing equity of access to a quality education. Onsite learning experience means students can spend longer periods in the centre and experience a more immersive impactful experience. Affording students, the opportunity to visit the CoE can result in enhanced student exposure to and understanding of tertiary education options.

4.2 Project description

The proposed development will provide new agricultural / STEM teaching facilities with general learning and administration spaces to be utilised by rural, regional and metropolitan school students. The CoE will accommodate up to 325 students and up to 20 full-time employees consisting of farm assistants, administration staff and teachers and up to five itinerant staff members. The CoE will also include short-term on-site accommodation facilities for up to 62 visiting students and teaching professionals from regional and rural NSW.

The CoE will include five science laboratories, ten general learning spaces, practical activity teaching areas, seminar, botany room, administration block and accommodation facilities. It will also include covered outdoor learning areas, dining / recreation hall, canteen and kitchen, agricultural plots, significant landscaping spaces, car parking and provision of necessary infrastructure.

The proposed development has been designed to be well integrated into the Western Sydney University site, having due regard for scale, bulk and orientation of existing buildings. The educational facilities will display linear open building forms in single storey design with open spaces and lightweight construction techniques. The site is benefitted by views Blue Mountains to the west and the building and landscape plans have incorporated viewing opportunities into the design.

The EIS seeks development consent for the following works.

- Three academic blocks (Block B, C and D).
- Short-term, dormitory site accommodation with capacity for 62 patrons (Block F).
- Dining hall, canteen and space for short courses, in-service teacher training and / or conferences related to agricultural / STEM education (Block E).
- Administrative building (Block A).
- Support facilities for management and maintenance of site.
- External works to accommodate circulation and covered walkways between buildings.
- Pedestrian walkways.
- Student and staff amenities.
- Covered Outdoor Learning Areas.
- Staff car parking area and minibus drop off and pick up area. The parking located in front of block A is for visitors.
- Upgrading of the Londonderry Road / Vines Drive intersection and the intersection approaches to accommodate traffic signals, turning lanes, bus stops and pedestrian footpaths.
- Short-term accommodation car parking area. The parking near block F is for staff.
- Green house.

- Various agricultural and animal plots and associated agricultural workshop.
- Provision of waste facility area.
- Installation of all essential services including stormwater management devices where required.
- Landscape treatment (Staged).
- Signage and other ancillary infrastructure and utilities works.
- Operation of the CoE site.

A Proposed Site Plan is provided as **Figure 4**. The complete Architectural Drawing Set, prepared by NBRS Architecture, is contained in **Appendix D.**

4.3 Design intent

The proposed development has been designed in cognisant of the speciality function of the educational facility. The development recognises the history of the site and provides a strong connection to country. The learning environment offers a strong focus on Agriculture and STEM skills, as such the external learning environment has equal if not more significance to the facility than the internal arrangements.

The building form consists of a series of single storey linked pavilions in a landscape setting in keeping with the Western Sydney University campus. The buildings have been designed and orientated to capture views of the landscape and to maximise the connection between internal and external agricultural teaching spaces.

The concept design focuses on developing a strong axial link back to the Western Sydney University campus and Stable Square with a pedestrian plaza and promenade, flanked by buildings on one side and the school's technology enterprise area designed to showcase agriculture. It establishes a square and village green, the school's heart that talks to Stable Square.

The village green has been orientated to a north south ESD grid and designed to capture views over the agriculture plots and the Blue Mountains.

At the end of the square are large sliding barn doors designed to allow the space to be closed down to create a sun trap in winter and shield the square from cold westerly winds in Winter or open the site up in summer.

The circulation and building forms have been inspired by the natural environment, the Hawkesbury River, the flood plains and also draw on traditional first Nations cultural elements, such as the weaving pattens found in food bowls, and fish traps.

4.4 Built form.

The proposed CoE buildings are sited to the south of Vines Drive which provides the primary access. The proposed development includes new educational buildings, short-term accommodation building, open spaces and parking facilities as described below.

4.4.1 School buildings

Five (5) main educational buildings and two (2) farm buildings are proposed as part of the development.

- Block A Administration: One (1) single- storey building on the site will accommodate the administrative activities, shared office space and staff located at the main entrance from Vines Drive.
- Block B Learning: One (1) single storey building provides a central practical activities/ seminar room and four general learning areas (two on the northeast elevation and two on the southwest elevation) to be used as teaching areas. Oriented generally north to south.
- Block C Learning: One (1) single storey building offers two (2) areas for practical activities, one (1) seminar, one (1) semi commercial food tech with kitchen prep and six (6) general learning areas. Generally oriented east to west.
- Block D Learning: One (1) single storey building to provide five (5) labs, one (1) botany/ zoology room two (2) practical spaces and one preparation area. Oriented east to west.

- Block E Hall/Dining: One (1) Single story building containing the dining hall and conference area with canteen and kitchen. Oriented north to south.
- Block H Farming: One (1) Single storey Agricultural workshop.
- Block G Farming: One (1) Single storey green house.

Buildings have been oriented on the site in linear open building forms utilising a 7.5m x 9m DfMA grid for a lightweight steel structure and portal frame structures. The buildings are connected by Covered Outdoor Learning Areas providing shade and shelter, facilitating pedestrian movement. Agricultural plots are sited to the west of the buildings and accessed by internal circulation path. The arrangement of the outdoor learning spaces and buildings create a comprehensive site wayfinding strategy with landscaping utilised to reinforce the site plan.

4.4.2 Short-term accommodation

Short-term accommodation will be provided in one (1) Single storey building (Block F). Accommodation will be in the form of dormitory style bedrooms arranged around a central courtyard with a wellbeing area extending to the northeast. The short-term accommodation is integrated with the main educational buildings to maximise access to the agricultural curriculum of the school however based upon size and accommodation capacity of the building this component is relatively ancillary to the overall CoE function.

4.4.3 Site and parking facilities

The site planning focuses on separate private and public vehicular access with minibus / student drop off and pickup occurring at the north from Vines Drive. Five car parking spaces are provided in this location. A further thirty-three (33) car parking spaces and one (1) wheelchair accessible space for staff and short-term accommodation is provided in an area is located to the eastern side of the site, along with loading, waste removal and maintenance area. Accessway will be provided as connection between all buildings on site used for school purposes, including from accessible parking spaces opposite Block A to Block A pedestrian entry and to main pathways, accessway provided to Block G and H, from accessible parking spaces adjacent Block F to main pathways in accordance with AS 1428.1:2009.

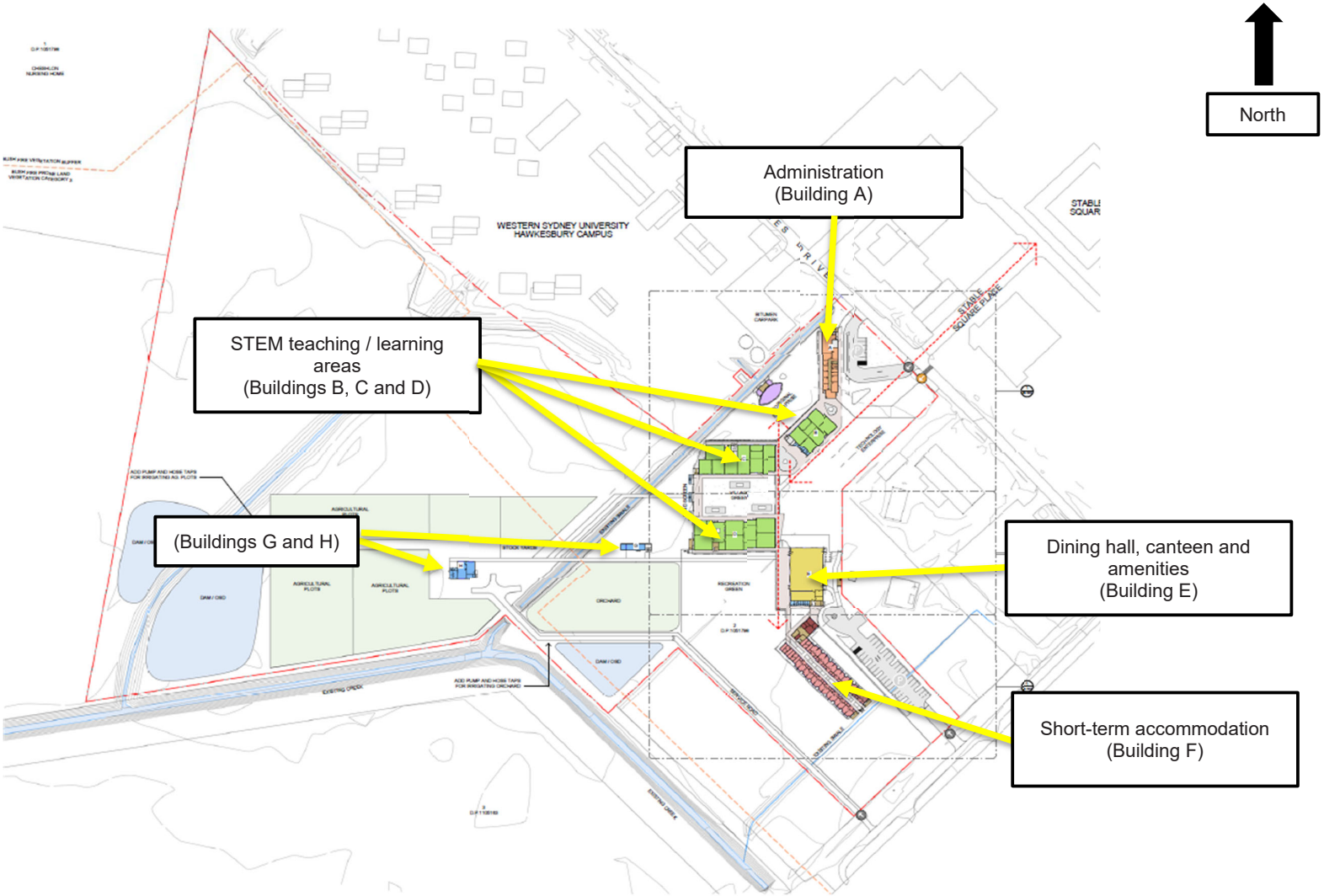

Figure 4 Proposed Site Plan

4.4.4 Building height

There is no prescribed maximum building height for the site under HLEP 2012.

The proposed block style architecture will present single storey forms with sloped skillion roofing. Block A (Administration building) is visible from the street and displays a maximum building height of 4.82m from finished floor level, refer to **Figure 5**. Block E (Dining Hall and recreation area) represents the tallest building with a maximum ridgeline height of 5.82m from natural ground level, refer to **Figure 6**. Opportunities for direct overlooking into adjacent sites and overshadowing have been limited by the modest building heights.

The education blocks (Blocks B, C and D) achieve a maximum height of 5.05 m. An elevation for Block B is provided in **Figure 7**.

The intention of the design is to establish a low-scale rural typology for the building form with a strong presence and connection to the existing WSU Campus. The built form is considered consistent with the established built form on the Western Sydney University Campus and respects the human scale while responding to the surrounding environment.

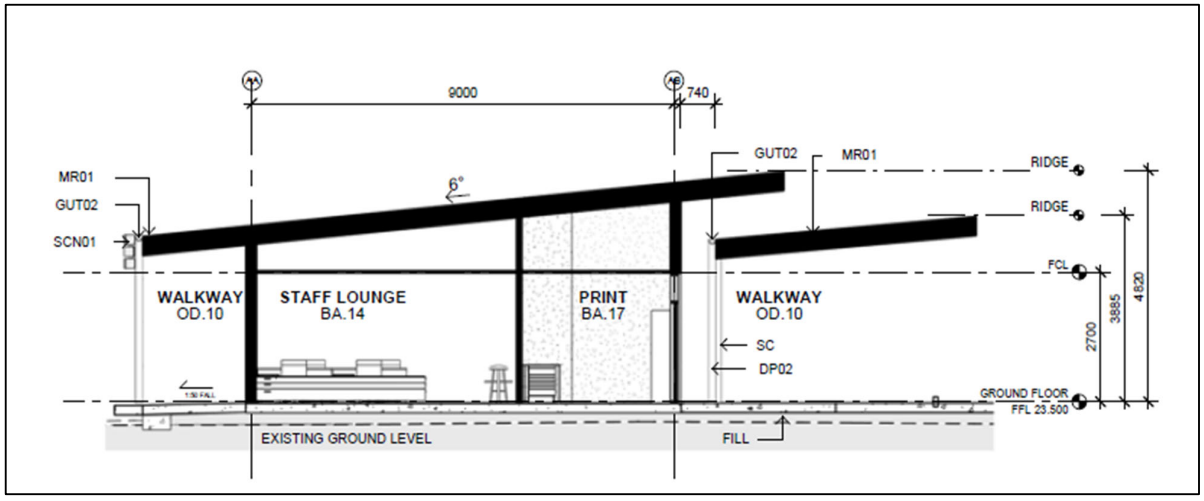

Figure 5 Building height Block A north western elevation.

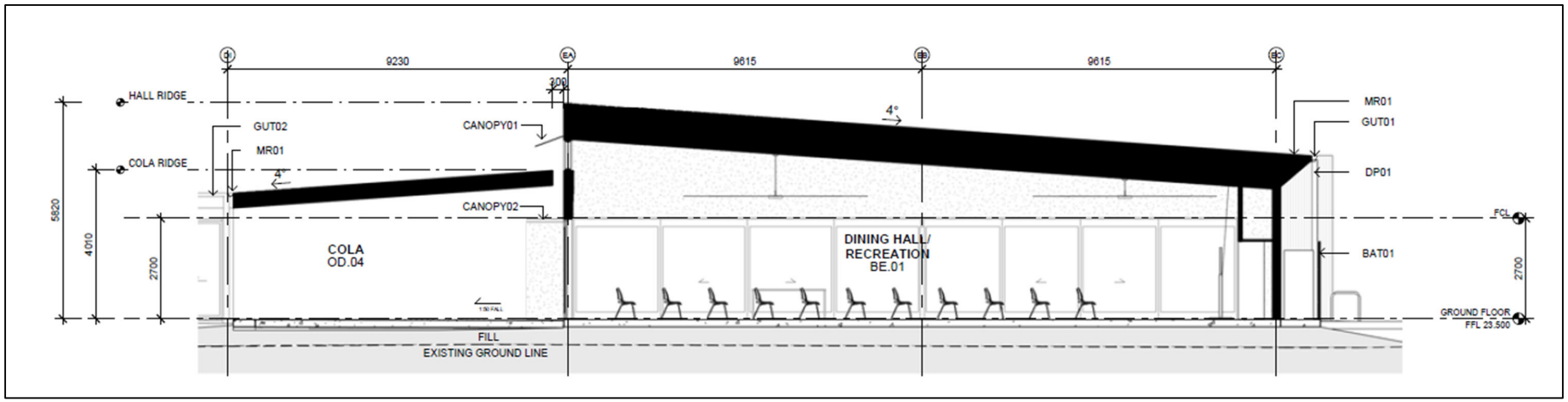

Figure 6 Building height of Block E: South-eastern elevation.

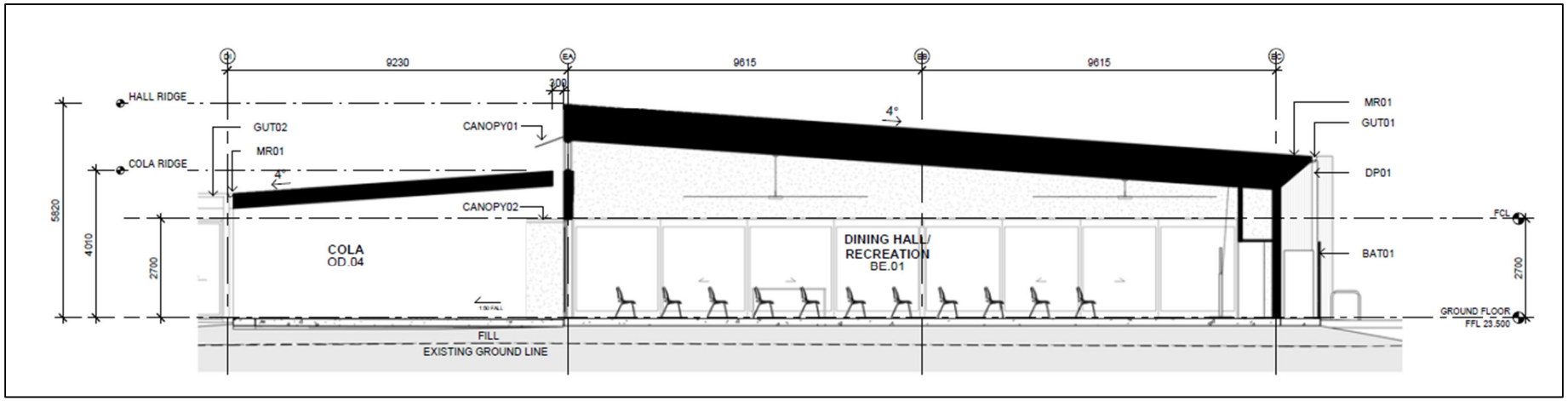

Figure 7 Building height of Block B: south-eastern elevation

4.4.5 Building siting

The site design and form of building creates simplicity in the arrangement of the buildings by aligning the Administration building and the three (3) education blocks along a central spine, as shown in **Figure 4**. The administration block is visible from the primary frontage, ample articulation has been provided through hardstand access to the site and landscaping. The buildings have been arranged intuitively to promote wayfinding and circulation at the site and reserve the site boundaries for outdoor educational opportunities and landscaping.

The architecture has been developed to utilise the interstitial spaces between buildings, including edges and transitions. The built form has been sited to the centre of the site to promote additional active and passive learning space for students.

4.4.6 Building setbacks

Building A of the CoE will be setback 10 metres from Vines Drive with all other buildings progressively further away from Vines Drive. Building B will be located approximately 60 metres west of the WSU Microbiology complex. WSU student accommodation is located approximately 65 metres west of proposed Building A, B and C.

4.4.7 Materials and finishes

The materiality and finishes have been discussed in the Architectural Design Statement completed by NRBS Architecture in **Appendix E**. The buildings have been designed with respect to the new educational standard of the DFMA (Design for Manufacture and Assembly) method of construction.

The proposed materiality will display a combination of natural finishes and neutral colour palette with external features to complement the outdoor surroundings and enhance the connection to the natural environment. Materials and finishes are designed to complement the landscape and provide clear wayfinding. Materiality has been selected for durability, low levels of maintenance and to be cost effective. The project will not require considerable expenditure on building enclosures at the expense of the core interior educational spaces.

Materiality has been selected from several references including traditional Australian agricultural buildings, Aboriginal architecture and modern technologies for architectural design as identified in **Figure 8** and **Figure 9**. Metal sheeting and Compressed Fibre cement (CFC) Barestone will comprise the façade of the buildings with Vitra panel Timber look CFC and timber look battens and metal woven screen to be applied to the COLAs (Covered outdoor learning areas).

4.4.8 Ecologically sustainable development

The Ecologically Sustainable Development (ESD) initiatives considered for the proposed development are outlined in the ESD Report found in **Appendix J**. The ESD principles aim to mitigate environmental impacts associated with the built form throughout construction and operation. The proposal incorporates sustainable measures with consideration for issues with energy, water and materiality in accordance with Clause 7(4) of the ESD Regulation. The building is to be built to a four star green star rating.

4.5 Signage

The proposed signage associated with the development provides site and building identification in addition to wayfinding at CoE. Signage will include a signage wall on Vines Drive, a totem sign at the site entry, signage on each building, a totem sign at the car park entry and wall and post mounted wayfinding signage throughout the CoE as illustrated in **Figure 9**.

Figure 8 **Materiality and Finishes Selection** (source: Architectural Design Report - NRBS Architecture)

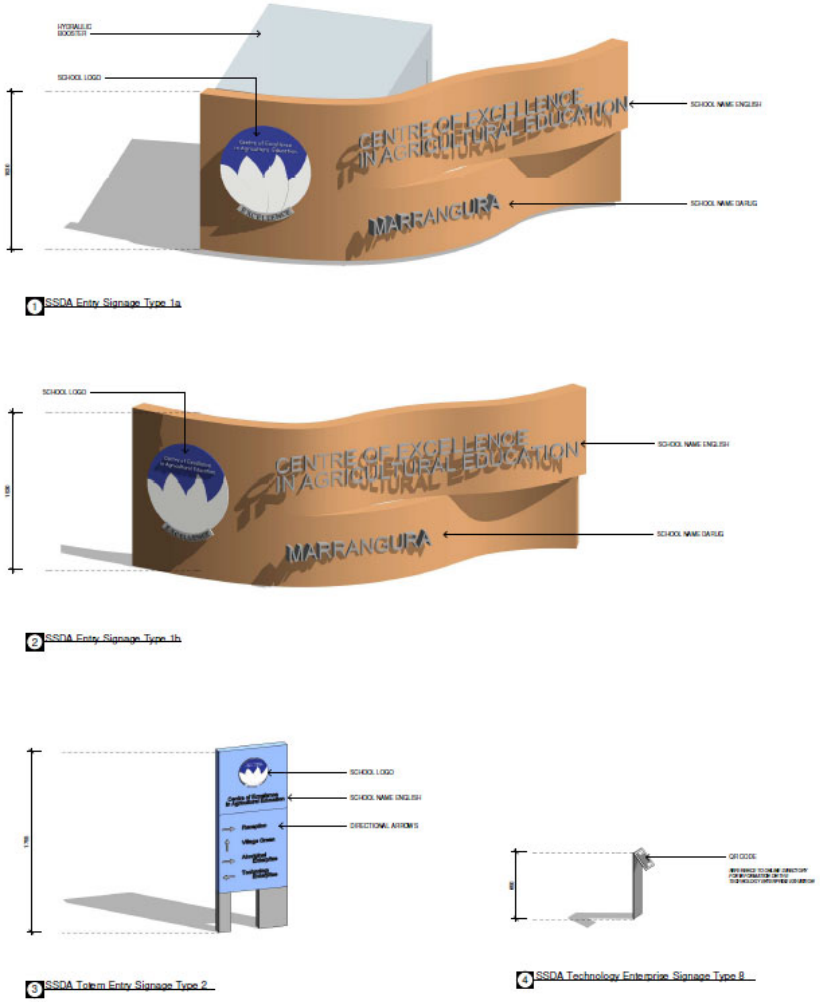

Figure 9 Signage Plan

4.6 Landscaping

Landscape Plans have been prepared by NRBS Architecture and are contained in **Appendix F** with an extract of the landscape elements provided at **Figure 10**. The landscaping strategy for the site seeks to emphasise the natural assets of the site to create active and passive recreational facilities. The landscape design recognises the significance of the site's natural environment and terrestrial biodiversity. A Landscape Design Statement is contained in **Appendix DD**.

Soft Landscape

The landscape will incorporate the existing mature native vegetation and trees, with provision for the future planting of indigenous plant species. Low allergenic species will be selected for the soft plantings and garden areas at the site. The inclusion of landscaping will provide urban cooling and reduce the impact of the summer heat by providing shaded areas at the site. The retention of mature native tree species will lend to the educational functionality of the school and offer learning opportunities for students along with a physical functionality to delineate open spaces.

New garden areas are to be used to define separate specific site uses, fencing and play groups, encouraging a greater degree of interaction with nature. Tree planting will be provided to shade play spaces and create interest through seasonal displays of flowers and foliage. Tree planting will achieve a canopy cover of 48% at maturity at the site in accordance with the four-star Green Star standard, as calculated from the landscape plans in **Appendix F**. It should be noted that a staged delivery of the landscape treatment will be provided whereby the orchard elements and indigenous experience areas will be planted in the first semester of the CoE opening.

4.7 European heritage

The site has been identified in proximity to multiple items of heritage significance associated with the Western Sydney University. A Statement of Heritage Impact has been prepared and is contained in **Appendix EE**. The report identifies items of heritage significance in proximity to the site, refer to **Figure 11**, including the Administrative Block, blacksmith shop and stable square, and grandstand. The proposal is not expected to visually impact the heritage items due to their location from the site. The landscaping strategy seeks to incorporate native plantings to be consistent with that of the surrounding development.

4.8 Lighting

The sensitive receivers surrounding the campus are outlined in **Table 2**.

Table 2 Sensitive light receivers in proximity to the site

Location	Receiver type	Description
North of the proposed development approximately 549m	Residential	Single lot residential housing area to the north of the proposed development corner Southee Road and Londonderry Road. It includes two level dwellings.
Northwest of the proposed site 118m	Residential Care	Multistorey residential care building nearby the proposed development. This residential receiver represents the closest sensitive residential type receivers located adjacent the western extremities of the subject site.
Northwest of the proposed site 52m	Student Accommodation	Single-storey residential buildings nearby the proposed development. This group of residential receivers represents the closest sensitive residential type receivers located northwest of the subject site.
North of the proposed site 17m	Educational	WSU Forensic and Biology Labs(K16) to the north of the proposed development, separated by Vines Drive.
East of the proposed site 21m	Educational	WSU Microbiology (J4) Labs Building with a common boundary with the proposed development. This receiver is identified as the closest educational building to the subject site.

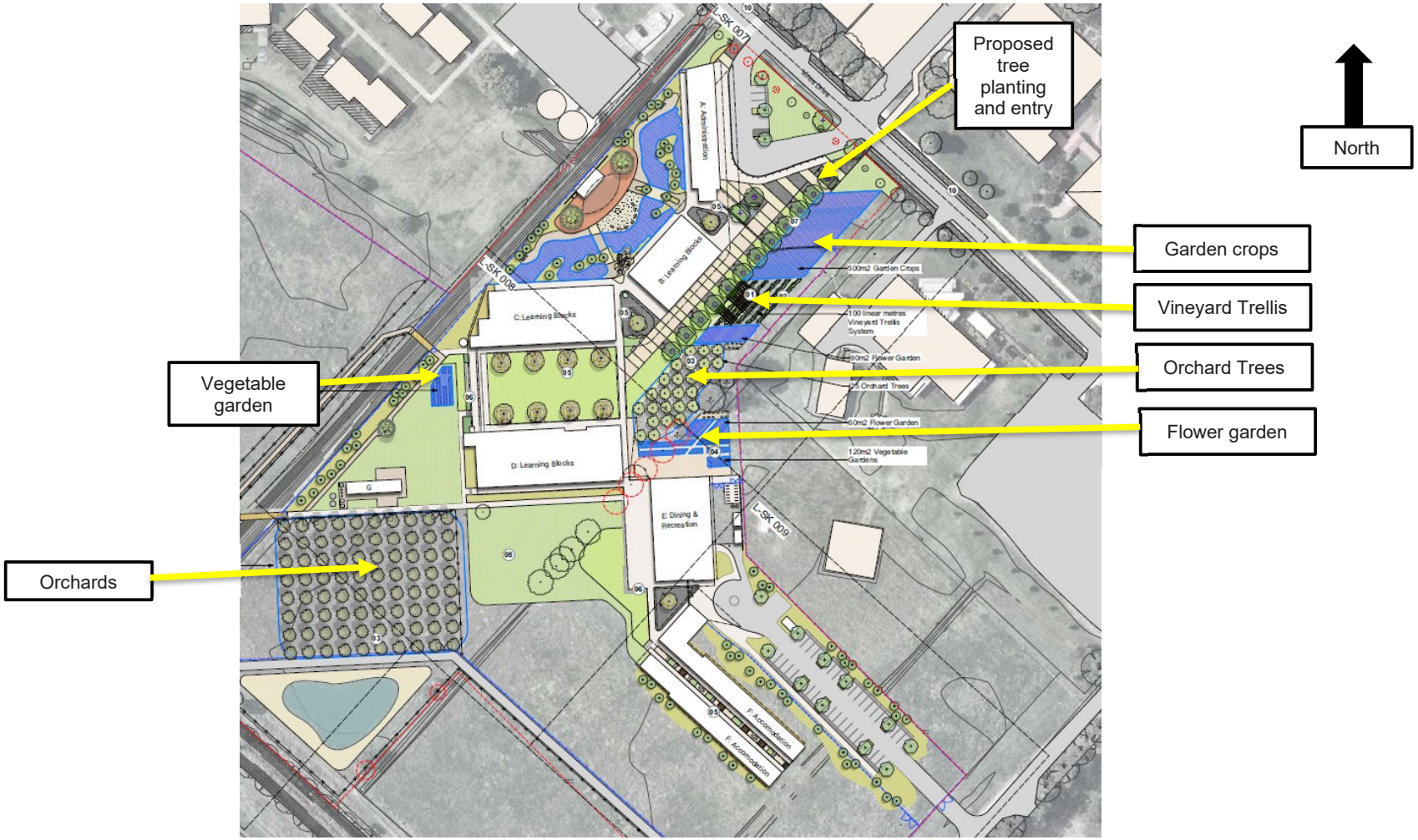

Figure 10 **Proposed Landscaping plan** (source: NRBS Landscape Plans)

An external lighting and lighting control strategy will be prepared prior to commencement of works and will outline the external lighting proposed to ensure compliance with the requirements of the National Construction Code of Australia, including AS 4282, AS/NZS 1680.23 and AS2293.1.

It is likely that the proposed development's external lighting will be designed, but not limited to:

- Emergency lighting
- External lighting and lighting control.
- Obtrusive lighting control.

All external lighting will use LED technology.

4.9 Employment

The proposed development will generate 166 Full Time Equivalent (FTE) jobs during construction phase, and 25 additional jobs during the operational phase. This is reflected in the Capital Investment Value Report which is provided under separate cover.

4.10 Transport and accessibility

Due to the unique nature of the CoE, comprising a specialist non-catchment school and serving external visitors from Sydney and NSW schools, pedestrian and cyclist mode share is anticipated to be low. Nevertheless, new pedestrian facilities are proposed within the WSU campus to provide access to the external road network, and new facilities to cross Londonderry Road to northbound bus services and the Hobartville area via a signalised pedestrian crossing at Londonderry Road. On-site bicycle storage would be provided in accordance with the NSW Department of Education's Educational Facilities Standards & Guidelines (EFSG). Public transport accessibility will be improved through construction of new formalised bus bays on Londonderry Road, as bus services from this interchange to Richmond and Penrith train stations forms a key part of the transport strategy for the site. Further detail is provided in Section 7.5 and within the Transport and Accessibility Impact Assessment contained in **Appendix I**.

4.11 Indigenous heritage

An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been undertaken by AMAC and Streat Archaeological Services and is contained in **Appendix L**. The report has determined that the site is of nil-low archaeological significance and the review of test excavation results were absent of any Aboriginal objects and/or features of cultural or archaeological significance.

4.12 Site services

The Infrastructure Management Plan prepared by Norman Disney & Young (**Appendix Q**) indicates that the site can be adequately serviced by power, telecommunications, water, sewer and gas services. No external infrastructure upgrades have been identified as required to service this development. It is noted that formal applications to relevant authorities for site servicing / supply can only be made after development consent for SSD 15001460 has been granted.

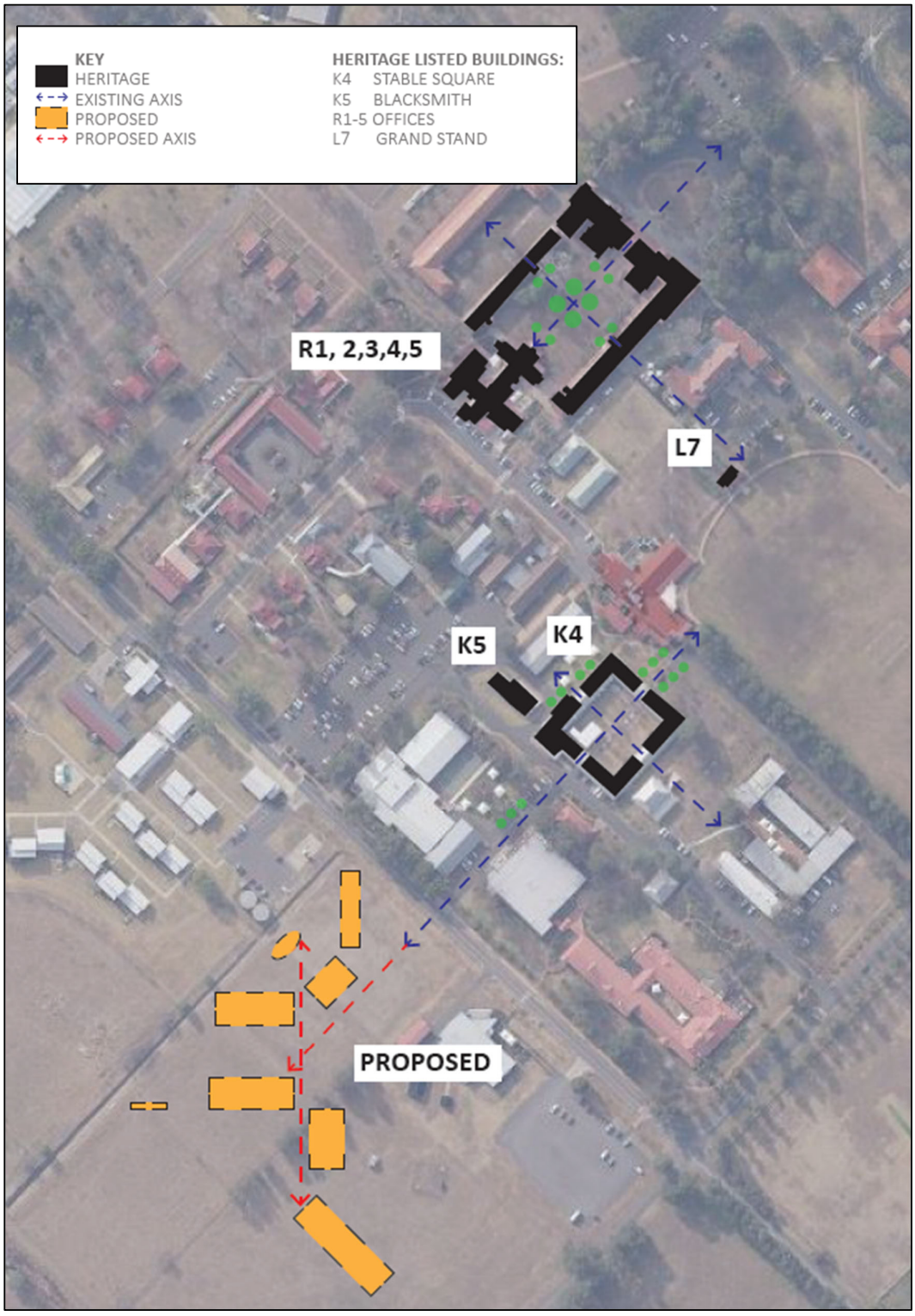

Figure 11 Heritage items in proximity to the site

4.13 Stormwater management

A Concept Stormwater Management Report has been prepared by Woolacotts Consulting Engineers and is contained in **Appendix R**. The stormwater management system developed for the proposed development will accommodate the increased impervious areas as well as comply with Council's requirements.

Stormwater will be piped to the existing stormwater drainage system will be designed to carry runoff from storms up to and including the 5% AEP event, with pipes graded at a minimum fall of 1 in 100 where possible. For runoff from storms up to and including the 1% AEP event, overland flow paths will be provided. External surfaces will be graded at a minimum fall of 1 in 100 where possible to the stormwater collection and drainage system.

To ensure the future flow rate of the post-developed site does not exceed the existing pre-developed site, the total site runoff will be diverted to 3 new detention basins. These detention basins will have an appropriately sized outlet pipe to maintain a maximum discharge equivalent to the pre-development discharge rate during all storm events up to and including the 1% AEP storm event in accordance with Hawkesbury Council's Development Control Plan.

Water sensitive urban design principles have also been incorporated into the stormwater drainage design including treatment devices that ensure the quality of discharged water meet Council requirements.

4.14 Staging

The proposed development will be constructed in one stage.

4.15 Construction hours and duration

The proposed development will be undertaken during the following hours:

- Monday to Friday 7am to 6pm; and
- Saturday 7am to 5pm.

No work or delivery of materials will occur on Sundays or public holidays.

The indicative construction timeframe is 15 months for SSD works.

4.16 Construction environmental management plan

During construction, environmental safeguards referred to in this EIS shall be implemented. A Construction Environmental Management Plan (CEMP) will be prepared to ensure that all mitigation measures / safeguards are implemented, and that construction impacts on the locality are managed.

4.17 Accessibility and BCA

An Access Assessment Report has been prepared by BCA Logic and is contained in **Appendix Z** and provides an assessment of the architectural design drawings against the Deemed-to-Satisfy provisions of the provisions relating to Access for Persons with a Disability.

The accessibility report has indicated that further information is to be provided at the detailed design stage with regard for the following:

- Tactile ground surface indicators to be installed at the top and bottom of stairways and ramps.
- Confirmation of external accessways provided to all accessible buildings with suitable gaps between timber boards if proposed.
- Block B/C/D: The Architect is to nominate accessible entry doors and pathways within buildings.
- Block F: The Architect is to nominate which common room/s will be used by students and therefore require accessible door and turning spaces.

A Building Code of Australia (BCA) Assessment Report has been prepared by BCA Logic and is contained in **Appendix AA.** This document provides an assessment of the architectural design drawings against the

Deemed-to-Satisfy provisions of the *Building Code of Australia 2019* (BCA 2019*)*, Volume 1 Amendment 1. The BCA Assessment Report confirms that the proposed development will accord with the relevant principles and provisions of the BCA 2019 subject to the installation of nominated fire safety systems and compliance with conditions of consent.

4.18 Operation

CoE will operate on a 24/7 basis year-round, with the exception of school holidays, to accommodate the residential accommodation. Local students will attend the site between the hours of:

- The core hours of operation for the CoE are to be from 8:25am to 2:45pm.
- Extended days for senior students will be from 7:45am to 4:30pm to facilitate school curriculum opportunities and spread travel arrival/ departure load.
- Onsite day trips with generally operate from 9am to 2:15pm.

Residence arrivals will be generally from 9am and visitors ae to be back on campus by 6pm.

- The dining hall and associated spaces of Block E may be used by the community in the evening times. Block F comprises student accommodation and would be expected to be in use during the night-time hours given its intended function.

At full capacity, the school will accommodate 90 students per cohort, with a total of 325 AgSTEM RAC students in attendance during regular school hours. In addition, the campus can accommodate 60 visitors in the short-term accommodation and day trips from other visiting schools / educators..

The staff will include 20 fulltime including farm, administration and teaching plus up to 5 itinerant staff between campuses.

The total maximum population from Monday to Friday will be 325 students, 25 staff, 100 visitors (including 62 in the short-term accommodation for a total of 450 people. On weekends, the CoE can accommodate up to 150 people attending the site for short courses, in-service teacher training and / or conferences related to agricultural / STEM education.

5 CONSULTATION

In accordance with the SEARs issued for the project (Page 12 – Consultation), consultation was undertaken with relevant local and State authorities, service providers, the affected landowner and other stakeholders.

5.1 Government authorities and agency consultation

Table 3 below provides an outline of stakeholder meetings held, correspondence and outcomes.

Table 3 Stakeholder meeting and correspondence

Stakeholder meeting and correspondence			
Stakeholder	**Meeting dates**	**Feedback topic**	**Outcomes**
Department of Planning, Industry and Environment (DPIE)	19/03/2021	The SEAR for the project state that this EIS must describe and provide evidence of the consultation process and identify where the design of the development has been amended in response to these issues.	The SEARS for the project have identified the requirements of DPIE for the project. Attendance of the DPIE Planner at the SDRP meetings have provided further consultation on the project.
Hawkesbury City Council – Transport representatives	16/03/21, 13/04/21, 27/04/21	• Traffic movements • Site access • Vehicle circulation • Car parking spaces • Vehicle movements • Non-car travel modes • Traffic impacts • Construction Traffic Management Plan	Council requested the addition of Campus Drive- Blacktown Road intersection to the proposed traffic study scope. Council advised that Council has 10-year projected program re Stage 2 Funding list for pedestrian and cyclist path upgrade but unable to advise where this is at.
Government Architect (State Significant Design Review Panel)	17/03/21	• Low scale rural typology for the built form • Strong presence and connection to existing WSU • Prioritising pedestrian amenity • Landscape species endemic to the site • Connection with Country • Connectivity and access • Masterplan and landscape Buildings	SDRP requested the project to review and incorporate where appropriate to the recommendations received. Responses have been addressed within the EIS and Architect Design response. Further comment on the design amendments is provided below in Section 5.2.
Western Sydney University (WSU)	Fortnightly meetings: 21/01/21, 11/02/21, 25/02/21, 11/03/21, 23/03/21, 25/03/21, 01/04/21	• Substation Location • Infrastructure services connection • Landscape • ESD Principles Landlord Consent Submission	Agreement on the preferred location of the sub-station Option 4- Behind Fire Water Tanks. Agreement in principle obtained from WSU for services connection. SINSW confirmation to WSU regarding ESD targets. Submission of the Drawings and Documentation to WSU 17 March 2021 for approval.
Transport for NSW	16/03/21, 13/04/21,	• Traffic movements	Introduction of the project to the Transport Working Group.

Stakeholder meeting and correspondence			
Stakeholder	**Meeting dates**	**Feedback topic**	**Outcomes**
	27/04/21	• Site access Vehicle circulation • Car parking spaces • Vehicle movements non-car travel modes • Traffic impacts Construction Traffic Management Plan	Additional information to be provided with respect to the modes of transportation for the students at CoE. Confirmation of the proposed study areas for counts and modelling. TfNSW advised that the status of the Preferred Option Report for the Richmond Bridge Duplication is still under investigation with no preference. TfNSW advised that there is no masterplan for future bus transport services for this area. Providing signalised crossings for pedestrian movements. Upgrade of Vines Drive, Londonderry Road to signalised T-intersection.
Special interest groups: Local Aboriginal Land Council	30/03/21 and 20/04/21	• Utilisation of Aboriginal Enterprise • Opportunity for connection through stories, language • Opportunity for artwork on site and opportunity for community involvement Opportunity for propagating aboriginal architecture	Architects and landscape architects have walked the site with local Elders as part of the process of designing in country process. Project team to explore furniture and seating to allow for gatherings in aboriginal enterprise area. Review artwork opportunities and community artists. An expression of interest process will identify Indigenous artists to undertake this work, with interpretive signs providing further insight into the area's Aboriginal history. School curriculum addressing facets of agricultural practices. Inclusion of yarning circle and area for dance.
Rural Fire Service (RFS)	13/10/2009	Consultation with staff and residents will be undertaken during the preparation of the Bushfire Management Report.	The following Bushfire Protection Measures (RFS 2006) are required in combination and build upon a detailed site analysis: • Asset protection zones and defensible space • Access standards (public roads, private access and fire trails) • Water supply and utility services • Emergency management arrangements • Landscaping and Construction standards and design.

5.2 Government Architect NSW

The project was presented to the Government Architect NSW (GANSW) on the 10th of March 2021. The aim of the design review session was to demonstrate the strategy for achieving design excellence, in accordance with Schedule 4, School design quality principles of *State Environmental Planning Policy (Education and Child Care Facilities) 2017* (Education SEPP).

Commentary within **Table 4** provides advice and recommendations for the project.

Table 4 Government Architect comments

Government Architect advice and response		
Connection with Country	An understanding of Country can inform richer and more place responsive design solutions. The following recommendations apply: • Demonstrate how engagement with Traditional Custodians, including Indigenous parents and local organisations has informed a meaningful approach to Country. Consider opportunities for participatory design. • Anchor the connection to Country by allowing the cultural complexities of the floodplain's history, which culminated in the Battle of Richmond Hill, to inform the design approach. Consider the role of food in this history and how stories might be woven into the Centre's fabric, practices, operation, and pedagogy. • Incorporating the Aboriginal Enterprise focused teaching area and indigenous planting with the school's pedagogical approach is commended. The location of the facilities, however, feels singular and disconnected from the rest of the centre and its processes. Demonstrate how Indigenous Culture and Heritage can be integrated with the architectural and landscape design strategy in a more holistic way: for example, opportunities for practices & processes (including foraging), naming, the incorporation of stories and history, massing, materiality, form, circulation and movement, landscape, plant selection, art installations/murals, wayfinding devices, play equipment, paving, colour and texture.	Consultation with the AECG (Durag) regarding the use and integration of the aboriginal enterprise for learning outcomes, way finding and integrating artwork into the architecture.
Connectivity and access	As articulated by the design team, the concept layout has the potential to develop a strong link to the WSU campus. As yet, this potential is not demonstrated and the site's connectivity to the campus and broader community is unrealised. The project has the potential to act as catalyst to improve the broader campus' lack of pedestrian and cycle amenity and connectivity with the wider community and active networks. The following is recommended: • The road network is not conducive to cycle safety. Provide an analysis of how students will access the centre and connect with relevant WSU campus facilities. This will include an analysis of the pedestrian and cycle experience and sequence of movement. The results will support the development of targeted strategies for improving the site's connectivity with the campus and community, and the prioritisation of pedestrian and cycle safety. • Create safe, accessible and legible connections with public transport. • Provide undercover bike parking in the vicinity of the school entrance. • Strengthen the amenity, quality and legibility of circulation along the north south axis and connection with	A traffic management report has been prepared since the GANSW presentation which address the concerns raised. A green travel plan is also being established for public transport / cycling systems focusing on student safety.

Government Architect advice and response

	the campus to the north. Consider: space allocation, landscaping, accessibility, safety and/or other strategies. • Work has been undertaken to provide a level surface between the village green and adjoining built form. Demonstrate how the school, its pathways and buildings are accessible and inclusive to people with different needs and capabilities.	
Masterplan and landscape	There is an opportunity to develop the masterplan to amplify the site's rural character and embed a systems-based approach to inform a richer and more place responsive scheme. The following is recommended: • Demonstrate how the centre's agricultural purpose and operational functions have informed the site strategy and pedagogical approach. Address the following: - Water sensitive urban design, including management, detention and reuse across the site. Consider how the dam(s), creek and/or swales might inform the site strategy, while ensuring student safety. - Climate conditions: prevailing winds, the mitigation of seasonal temperature variations, (consider landscape buffers, canopy cover and distribution and species selection). - Landscape characteristics: contours, soil type - Agricultural principles including regenerative farming principles incorporation of future technologies. - Opportunities for foraging, for example along fencing. - Structured use of planting to define edges, buffers (perhaps to supplant traditional fencing) - Agricultural infrastructure: potting and tool sheds, manure, structural planting, fencing, paddocks, orchards, grazing, vehicular access. • Investigate best practice approaches to improving the site's ecology. • Integrate the site's remnant vegetation into the landscape strategy. • Explore how a rich connection with the landscape might support an ambitious sustainability strategy. • Maximise tree retention. Provide an arborist assessment that indicates the significance of existing trees and a drawing that identifies trees to be retained, removed and new trees proposed. • Maximise tree canopy for biodiversity, shade and amenity. Increase the tree canopy along site boundaries, within and surrounding carparks, and along walkways. Consider a double avenue of trees in certain locations to provide strength and definition, maximise shade, minimise surface temperatures, and provide windbreaks. • Maximise the site's permeable surfaces, including carparks and the village green. • Explore opportunities to amplify the varied character of the outdoor spaces so that they might reflect and integrate the needs of the different uses and adjacencies. There is an opportunity for the accommodation in Block 'F' to better frame and define the adjoining agricultural plot to its south.	The masterplan for the landscaping has developed with a focus on the local rural character of the area with ensuring the design integrates well with the learning outcomes of the school. The on-site detention dams will be used to irrigate the agricultural plots. Minimal trees are being removed this is outlined further in the Arborist Report. A tree planting / finishes schedule developed to show the biodiversity, shade and amenity.
Buildings	• The expression of the built form was noted as preliminary. In developing the architecture, consider the character, material, and spatial quality of the interstitial	The development from concept to schematic design has seen the built form, character and materiality

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	spaces between buildings, including edges and transitions. These should be viewed as an opportunity to mediate the external climate and gain additional active and passive learning space for students with the dining, hall and functions of the centre. The location of the commercial kitchen in Block 'C' appears disconnected from relevant functions within the site. Revisit the location and configuration of the kitchen to allow for greater integration, communication and coordination with the dining and hall in Block 'H' and the agricultural processes across the site.	transition into a comfortable solution for the client. Buildings have been designed for active and passive learning with each General Learning Space including the dining hall opening out to a landscaped area. The location of semi-commercial kitchen works with the pedagogy of the school and is connected to other learning areas. The dining facilities are supported by a canteen / kitchen which operationally is very separate from the semi-commercial learning kitchen.

5.3 Service providers

An Infrastructure Management Plan has been prepared and is contained in **Appendix Q**. Consultation with the following service providers has occurred and will continue through the development and construction process.

- Sydney Water – a new potable water connection will be made to the existing water main located within Londonderry Road. Potable cold-water supply shall be provided to each building. The school site will connect to the existing Western Sydney University (WSU) sewer infrastructure in Vines Drive. A site inspection was undertaken with WSU on the 16th of April to confirm connection locations.
- Jemena natural gas – The existing natural gas mines within Londonderry Road appear to have adequate capacity to service the proposed development, subject to preliminary service advise from Jemena.
- Endeavor Energy- The existing campus is supplied with an HV meter near the intersection of Londonderry Road and Vines Drive. A new electrical supply to the campus is proposed from an Endeavor Energy padmount substation. The maximum demand for the site is 462kVa and a 500kVA Endeavor Energy padmount substation will be required to be installed for the development.
- NBN and Telstra – Based on DBYD documentation, there is an existing Telstra/ NBN pit on the corner of Yarramundi Road and Vines Drive. The school is to be supplied with a Telstra Fibre connection which shall service Government Wideband Internet Protocol (GWIP), connectivity to the school departments systems located in the NSW Government Data Centres and Telstra Internet Direct (TID) services The NBN/ Telstra pits are to be located in a new main communications room in Building A.

5.4 Community consultation

Stakeholder and community feedback have been integral to the development of this proposal. Feedback was sought from stakeholders and communities through the consultation activities and communication channels listed in Section 4.

In February 2020 the project team held 2 community information sessions which resulted in approximately 55 attendees, 45 feedback forms, and numerous face-to-face comments to project team members. The project team has also responded to 2 direct emails and 1 phone call about the project.

Consultation identified key issues of community interest for consideration during the preparation of the EIS and included the following.

- Interest in the coordination, logistics and relationship between RHS and the COE, as well coordination of all agricultural schools in the area.
- Concern about travel time and logistics to transport students between RHS and COE, including teacher supervision, mode of travel and frequency.

- Suitability of location.
- Incorporation of Aboriginal farming.
- Integration with the Aerotropolis plan for Western Sydney.
- Practical experience essential, including crop trials and large-scale farming.
- Recruitment process for academic staff to ensure best practices are taught.

Community consultation will occur through the exhibition of the SSDA and through the construction and operational phases and incorporate the feedback received into the designs and studies lodged with the SSDA. A community consultation summary report prepared by NSW Department of Education is contained in **Appendix H**.

6 STATUTORY AND STRATEGIC PLANNING CONTEXT

6.1 Legislation

6.1.1 EP&A Act 1979

The proposed development is consistent with the objects of the EP&A Act, in particular:

- Promotes social welfare of the community.
- Promotes the sustainable management of built and cultural heritage and
- Promotes good design and amenity of the built environment.

The proposed development is consistent with Division 4.7 of the EP&A Act, particularly for the following reasons:

- The development promotes education services and stimulates social welfare of the community and
- The development has been evaluated and assessed against the relevant heads of consideration under Section 4.15(1).

6.1.2 EP&A Regulation 2000

The EIS has addressed the criteria within Clause 6 and Clause 7 of Schedule 2 of the EP&A Regulation.

6.1.3 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* seeks to maintain a healthy and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecological sustainable development. The provisions provide a guideline to maintaining and conserving biodiversity on a state scale.

The SEARs identify the need for a Biodiversity Development Assessment Report (BDAR) to accompany the application. A BDAR is contained in **Appendix O**. The proposed development is expected to impact one PCT, being 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. Three ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development.

6.1.4 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is relevant to the protection of Aboriginal artefacts and the protection of native flora and fauna. Consent is required under Section 90 (2) of the NPW Act to destroy an Aboriginal artefact. The objects of the NP&W Act are the conservation of nature and the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation, and providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation.

An ACHAR has been prepared and is contained in **Appendix L.** The ACHAR notes an absence of Aboriginal objects and/or deposits or features of cultural and archaeological significance on the site and concludes that further investigation is not warranted, and works may proceed with caution. It is recommended that the CEMP for the works include an unexpected finds protocol to be developed and implemented in the event that any potential heritage items are uncovered during excavation.

6.1.5 Heritage Act 1977

The Heritage Act 1977 protects the states natural and cultural heritage. The site has not been listed on the State Heritage Register. As the project is being undertaken as a State Significant Development approval is not required under the Heritage Act.

6.2 Environmental planning instruments

In accordance with Item 1 of the SEARs, the following statutory policies have been considered in the assessment of the proposal:

- *State Environmental Planning Policy (State and Regional Development) 2011.*
- *State Environmental Planning Policy (Infrastructure) 2007.*
- *State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.*
- *State Environmental Planning Policy No 64 – Advertising and Signage.*
- *State Environmental Planning Policy No 55 – Remediation of Land.*
- Draft *State Environmental Planning Policy (Remediation of Land).*
- Draft *State Environmental Planning Policy (Environment).*
- Draft *State Environmental Planning Policy (Educational Establishments and Child Care Facilities).*
- Draft *State Environmental Planning Policy (SEPP) for strategic conservation planning.*
- Draft *State Environmental Planning Policy (Housing Diversity).*
- *Hawkesbury Local Environmental Plan 2012.*

The relevant controls contained within the statutory planning policies listed above are discussed in detail below.

6.2.1 State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy (State and Regional Development) 2011 identifies development types that are of state significance, state significant infrastructure and critical State significant infrastructure and development that is regionally significant. The proposed development is defined as 'Educational Establishments' under the *Schedule 1* of the SEPP:

(1) Development for the purpose of a new school (regardless of the capital investment value).

(2) Development that has a capital investment value of more than $20 million for the purpose of alterations or additions to an existing school.

(3) Development for the purpose of a tertiary institution (within the meaning of State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017), including associated research facilities, that has a capital investment value of more than $30 million.

The development is for the purpose of a new school (regardless of the capital investment) and meets the requirements of State Significant Development.

6.2.2 State Environmental Planning Policy (Infrastructure) 2007

The requirements for educational buildings under the *State Environmental Planning Policy (Infrastructure) 2007* have been superseded by the Education SEPP. The provisions have been addressed in the above section.

6.2.3 State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017

The Education SEPP provides state-wide planning controls for educational establishments. The Education SEPP came into force on 1 September 2017 and replaces the education provisions in the *State Environmental Planning Policy (Infrastructure (2007)*.

Development for the purpose of a school must consider the following in accordance with Clause 35(6) for the proposed to be permitted with consent:

(6) Before determining a development application for development of a kind referred to in subclause (1), (3) or (5), the consent authority must take into consideration—

(a) the design quality of the development when evaluated in accordance with the design quality principles set out in Schedule 4, and

(b) whether the development enables the use of school facilities (including recreational facilities) to be shared with the community.

Pursuant to Clause 35(6), the design principles are outlined in Schedule 4 of the Education SEPP and are to be considered against the proposed school development. The proposed development responds to the design quality principles as detailed in e Architectural Design Statement in **Appendix E** and **Table 5** below.

Table 5 Schedule 4 Schools: Design Quality Principles

Design Quality Principles	Compliance
Principle 1- Context, Built Form and Landscape	The school is sited along Vines Drive (internal road within the Western Sydney University campus) and has been appropriately sited to respond to the site constraints and provides an established articulation at the entrance. The design contains features that enhance the interaction with the surrounding landscape, adjacent University and agricultural parcels. The spatial organisation considers the impact on the streetscape and is not expected to significantly adversely impact neighbouring sites.
Principle 2 – Sustainable, Efficient and Durable	The proposal has integrated Environmentally Sensitive Development (ESD) principles into the design of the school. The buildings have been favourably oriented on a north to south axis with windows and sunshades adorning the facades to promote passive heating in the winter and cooling in the summer months. Water tanks are to be utilised on site to reticulate stormwater to cisterns, toilets and irrigation purposes. The buildings have been designed to facilitate natural ventilation and lighting.
Principle 3 – Accessible and Inclusive	The site is accessed by private road from the north and east of the site. Public access is limited to drop off and pick up areas to at these access points. The configuration of buildings at the site provides an intuitive route throughout the campus that promotes good circulation and wayfinding through the site. The exterior covered pathways connect the school buildings and accommodate for persons with differing capabilities and needs. These areas are also to be utilised as areas for outdoor educational opportunities. The design provides easily traversable access for all students, staff, users and visitors, including people with differing needs and abilities. This is achieved through compliance with the requirements of AS 1428.1, As1428.2 (where applicable) accessible pathway grades and surfaces, clearances at door entries.
Principle 4 – Health and Safety	The development provides a safe environment for students and other users by arranging the buildings in a hierarchy at the site, with the front articulation the primary entrance for drop off and pick up. The site expands to the south and east of the primary entrance. The inclusion of open floor plan and windows allows for good surveillance at the site. Fencing will border the perimeter of the site to provide further security to the site. The design allows opportunities for natural ventilation and light to enter the buildings. The design allows for the mitigation of acoustics through the built form and interior arrangements. The landscaping onsite caters to the agricultural students and creates an interactive aspect of the development. Crime Prevention through Environmental Design (CPTED) principles have been incorporated into the architectural design.
Principle 5 – Amenity	The school has been designed to offer a high level of amenity to its users. The buildings have been assigned specific uses to cluster the class types. Each building is connected by covered outdoor learning areas resulting in good use of interior and exterior space. The school buildings contain open learning areas with shared learning areas. The building interiors contain dynamic spaces that are able to be reconfigured to cater to a variety of class types and uses.

Design Quality Principles	Compliance
Principle 6- Whole of Life, Flexible and Adaptive	The school is to lease the land from Western Sydney University. The adjacent land has been historically utilised for the purposes of a school at the tertiary level. The school has access to a large parcel of land for the purpose of agricultural education and STEM education opportunities. In the context of the community, the addition of the school is considered a positive addition to the locality. The materiality of the proposal provides a durable, safe construction that mitigates the impacts on the built form overtime. The interior arrangements of the buildings are flexible and adaptive and are capable of being reconfigured to accommodate different use. The school provides a variety of learning spaces that can be utilised by the Western Sydney University future if the lease is not continued in future.
Principle 7 - Aesthetics	The school buildings have been deigned to integrate into the surrounding landscape with a prioritisation on the external environment and engaging learning spaces. The structures will display single storey heights with combined natural materials to integrate into the surrounding environment. The use as an educational establishment provides a positive contribution to the neighbourhood and will cater to the surrounding high school students with an interest in agriculture or STEM education. The passive environmental principles that have been integrated into the design of the building create a thoughtfully designed campus with a natural aesthetic that complement the surrounding landscaping. The combination of building forms and landscape setting result in an attractive addition to the neighbourhood.

Clause 34 of the ESEPP relates to development for the purpose of student accommodation whereby development for the purpose of a school does not include development for the purpose of residential accommodation for students. However, Clause 35 of the ESEPP states that development permitted with consent can include residential accommodation as per the extract below.

> *(11) Development for the purpose of residential accommodation for students that is associated with a school may be carried out by any person with development consent on land within the boundaries of an existing school.*

The CoE will include short-term on-site accommodation facilities for up to 62 visiting students. The residential component of the CoE is considered to be permissible under the ESEPP.

Clause 57 of the *ESEPP* refers to traffic generating development and applies to development for the purpose of an educational establishment that will:

> *(a) that will result in the educational establishment being able to accommodate 50 or more additional students, and*
>
> *(b) that involves—*
>
> *(i) an enlargement or extension of existing premises, or*
>
> *(ii) new premises,*
>
> *on a site that has direct vehicular or pedestrian access to any road.*

Ongoing consultation with Transport for NSW (TfNSW) has been conducted to determine the future accessibility to the site and the efficient movement of people and freight to and from the site. A Transportation Impact Assessment is contained in **Appendix I**. The performance of traffic generated by the development is not of a scale that will overwhelm the surrounding intersections. The final design has been amended to reflect the concerns of TfNSW.

6.2.4 State Environmental Planning Policy No. 64 – Advertising and Signage

State Environmental Planning Policy No. 64 – Advertising and Signage (SEPP 64) is designed to regulate the location and design of outdoor signage including advertising. It aims to ensure that signage:

- Is compatible with the desired amenity and visual character of the area.
- Provides effective communication in suitable locations.
- Is of high-quality design and finish.

Clause 8 of SEPP 64 states the following:

"A consent authority must not grant development consent to an application to display signage unless the consent authority is satisfied:

- *that the signage is consistent with the objectives of this Policy as set out in clause 3(1)(a), and*
- *that the signage the subject of the application satisfies the assessment criteria specified in Schedule 1."*

It is considered that the proposed signage is of a reasonable size, scale and bulk to that existing and will continue to satisfy the relevant criteria as described in Clause 8 of SEPP 64. The assessment criteria in Schedule 1 of the SEPP relates to matters for consideration such as character of the area, amenity of residential areas, views and vistas, streetscape, setting and landscape, site and building, associated illumination, and safety.

Consistency of the proposed signs with clause 3(1)(a) and a detailed assessment of the proposal against the Schedule 1 Assessment Criteria is provided in **Table 6.**

Table 6 Compliance with SEPP 64

Schedule 1 Assessment Criteria	Comment	Compliance
1) Character of the area		
Is the proposal compatible with the existing or desired future character of the area or locality in which it is proposed to be located?	The proposed signage is compatible with the existing locality.	Yes.
Is the proposal consistent with a particular theme for outdoor advertising in the area or locality?	There is no applicable advertising theme for the locality. However, the proposed sign is consistent with other signage in the area.	Yes.
2) Special Areas		
Does the proposal detract from the amenity or visual quality of any environmentally sensitive areas, heritage areas, natural or other conservation areas, open space areas, waterways, rural landscapes or residential areas?	The proposed signage does not detract from any environmentally sensitive areas, heritage areas, natural or other conservation areas, open spaces, waterways, rural landscapes or residential areas.	Yes.
3) Views and vistas		
Does the proposal obscure or compromise important views?	The proposed signage does not obscure or compromise any important views.	Yes.
Does the proposal dominate the skyline and reduce the quality of vistas?	The proposed signage will be directional style and be in keeping with the landscape setting.	Yes.
Does the proposal respect the viewing rights of other advertisers?	The proposal does not obscure advertising on surrounding development.	Yes.
4) Streetscape, setting or landscape		
Are the scale proportion and form of the proposal appropriate for the streetscape, setting or landscape?	The proposed signage is consistent with the scale, proportion and form of the proposed building and is appropriate for the surrounding WSU Campus.	Yes.
Does the proposal contribute to the visual interest of the streetscape, setting or landscape?	The proposed signage will not impact the established visual interest of the streetscape and building.	Yes.
Does the proposal reduce clutter by rationalising and simplifying existing advertising?	The proposal represents a simple yet effective expression of advertising for the building.	Yes.

Schedule 1 Assessment Criteria	Comment	Compliance
Does the proposal screen unsightliness?	The proposal does not screen unsightliness.	Yes.
Does the proposal protrude above buildings, structures or tree canopies in the area of the locality?	The proposed signage will not protrude above the building.	Yes.
Does the proposal require ongoing vegetation management?	No.	Yes.
5) Site and building		
Is the proposal compatible with the scale, proportion and other characteristics of the site or building, or both, on which the proposed signage is to be located?	The signage is compatible with the existing built form and site characteristics.	Yes.
Does the proposal respect important features of the site or building, or both?	The proposed signage does not detract from important features of the building or site.	Yes.
6) Associated devices and logos with advertisements and advertising structures		
Have any safety devices, platforms, lighting devices or logos been designed as an integral part of the signage or structure on which it is to be displayed?	The proposed signage provides building identification and business identification for the school. The signage complies with the surrounding development.	Yes.
7) Illumination		
Would illumination result in unacceptable glare?	The illuminated signs will not produce glare.	Yes.
Would illumination affect safety for pedestrians, vehicles or aircraft?	The illumination of the signs is to be emitted from the sign will be safe for pedestrians, vehicles or aircrafts.	Yes.
Would illumination detract from the amenity of any residence or other form of accommodation?	The illumination will not detract from the amenity of any residence or other form of accommodation.	Yes.
Can the intensity of the illumination be adjusted, if necessary?	The illumination can be adjusted if deemed necessary.	Yes.
Is the illumination subject to a curfew?	The illumination may be subject to a curfew at Council's discretion.	Yes.
8) Safety		
Would the proposal reduce the safety for any public road?	The proposed signage will not reduce safety as sightlines will not be affected and there will be no cause of distraction for drivers. The signage is well separated from adjacent traffic controls and will not conflict or interfere with their interpretation.	Yes.
Would the proposal reduce the safety for any public road?	Th proposed signage will not reduce existing safety for pedestrians and cyclists.	Yes.
Would the proposal reduce the safety for pedestrians, particularly children, by obscuring sightlines from public areas?	The proposed signage will not obscure sightlines from public areas.	Yes.

6.2.5 State Environmental Planning Policy No. 55 – Remediation of Land

The *State Environmental Policy No 55 – Remediation of Land* (SEPP 55) provides a state-wide planning approach to the remediation of contaminated land. Contaminated land is defined in SEPP 55 and the EP&A Act as:

> *Contaminated land means land in, on or under which any substance is present at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.*

Pursuant to Clause 7(1) of SEPP 55, a consent authority must not grant consent to a development application unless it has considered whether the land is contaminated.

A Detailed Site Investigation is contained at **Appendix U**. Areas of the central-southern portion of the site appear to have been backfilled with demolition waste and could have included filling a former dam or drainage channel. A small area in the central-northern portion of the site also includes some anthropogenic inclusions.

A RAP is contained in **Appendix V** and documents the remediation and validation procedures required to resolve the identified remediation works from the DSI.

6.2.6 Draft State Environmental Planning Policy (Remediation of Land)

DPIE is currently undertaking a review of SEPP 55 (Draft SEPP 55) and has publicly exhibited a proposed new Remediation of Land SEPP. DPIE will identify further steps in consultation and plan making which will include further consultation with stakeholders.

New provisions that may be gazetted in the new Remediation of Land SEPP include:

- Requiring all remediation works to be carried out without development consent to be reviewed and certified by a certified contaminated land consultant.
- Categories remediation work based on the scale, risk and complexity of the work.
- Require environmental management plans relating to post-remediation management of sites or ongoing operation, maintenance and management of on-site remediation measures (such as containment cell) to be provided to Council.

Draft SEPP 55 contains similar content that is not dissimilar to the gazetted SEPP 55. The proposal aligns with the aims and objectives of Draft SEPP 55. Refer to the Detailed Site Investigation contained at **Appendix U** and the RAP contained in **Appendix V.**

6.2.7 Draft State Environmental Planning Policy (Environment)

The Draft SEPP (Environment) is a proposed new SEPP that will form part of the broader land use planning framework in NSW. The proposed new SEPP aims to deliver a planning framework that protects the four catchments, maintaining:

- Water quality and flows within watercourses.
- Native plants, animals, habitats and ecosystems.
- Recreational, scenic and environmental amenity.

6.2.8 Draft State Environmental Planning Policy (Educational Establishments and Child Care Facilities)

The proposed amendments are aimed at clarifying the operation and usability of the Education SEPP, as well as addressing community feedback regarding the impact of childcare centre developments in the low-density residential zone. Some of the significant amendments that are proposed include:

- Introducing minimum separation distance between centre based childcare facilities on land situated within Zone R2 Low Density Residential pursuant to an environmental planning instrument. The Department states that it is considering a distance of at least 200 metres, with the intention of addressing the cumulative traffic and noise impacts of such developments when located in close proximity to one another.
- Making “student housing” as referred to in the Housing Diversity SEPP Explanation of Intended Effect development that is permitted with consent within the boundaries of an existing educational establishment.
- Increasing the maximum number of storeys of buildings that are allowed to be constructed by or on behalf of a public authority without development consent within an existing school, tertiary institution or TAFE from one to two storeys.

The Draft SEPP suggests that a definition for 'student housing' would be contained within the Standard Instrument LEP and would refer to a building that:

- Provides accommodation and communal facilities principally for students enrolled to study at an education establishment during teaching periods and
- May incorporate some fully self-contained dwellings.

6.2.9 Draft State Environmental Planning Policy for strategic conservation

Through strategic conservation planning, the NSW Government has developed a conservation plan for Western Sydney to help meet the future needs of our community while protecting threatened plants and animals in the long term.

The Cumberland Plain Conservation Plan is one of the largest strategic conservation plans to be undertaken in Australia and is the first strategic biodiversity certification to be undertaken under the *Biodiversity Conservation Act 2016*.

The Plan will contribute to the Western Parkland City by supporting the delivery of housing, jobs and infrastructure while protecting important biodiversity such as threatened plants and animals.

The Plan will deliver on commitments and a series of planned and managed actions designed to improve ecological resilience and function, and offset biodiversity impacts from housing and infrastructure development. Taking a landscape-scale approach to conservation and assessment will deliver the greatest safeguards for Western Sydney's natural environment over the long term.

6.2.10 Draft State Environmental Planning Policy (Housing Diversity)

The *Draft State Environmental Planning Policy (Housing Diversity)* was introduced on exhibition on 29 July 2020 to 9 September 2020 as a way to mitigate the loss of existing affordable housing. The policy was introduced to consolidate three existing housing-related SEPPs, listed below:

- *State Environmental Planning Policy (Affordable Rental Housing) 2009*.
- *State Environmental Planning Policy (Housing for Seniors and People with a Disability) 2004 and,*
- *State Environmental Planning Policy No. 79 Affordable Housing (Revised Schemes) (SEPP 70).*

The draft SEPP is to include new definitions and planning provisions for build-to-rent housing, student housing and co-living. It is considered that the CoE will not be inconsistent with the draft SEPP, and it is noted that the CoE does not provide for long term student housing.

6.2.11 State Regional Environmental Plan No 20- Hawkesbury – Nepean River (No 2-1997)

The site is located within the catchment of the Hawkesbury Nepean River. Part 2 of this Plan contains general planning considerations and strategies requiring Council to consider the impacts of development on water quality, aquaculture, recreation and tourism. The proposed development includes suitable measures for the implementation of sediment and erosion control measures and stormwater management to protect water quality.

6.2.12 Hawkesbury Local Environment Plan 2012

The HLEP2012 is the relevant planning instrument to the site. The parcel of land has been assessed against the relevant controls for the site as per **Table 7.**

Table 7 Hawkesbury LEP 2012 Compliance

Clause	Comment	Complies
2.1 Land Zone		
Land Use Zone	SP1 Special Activities	
Special Purpose Zone – SP1 Special Activities	The objectives of the SP1 zone are as follows: • To provide for special land uses that are not provided for in other zones. • To provide for sites with special natural characteristics that are not provided for in other zones. • To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land. The proposed development of an educational establishment is considered consistent with the objectives of the zone.	Yes.
Permissibility	The Purpose identified on the HLEP 2012 zoning map is 'Education, Agriculture Research Station'. The proposed school is considered permissible under the HLEP 2012 in so far as it relates to Education. It is noted that various forms of student accommodation are located and operational on the Western Sydney University campus. It is also noted that given the proposed development is SSD consent can be granted to it even if components of the proposed development are deemed to be prohibited by the SP 1 zone within the HLEP 2012.	Yes.
4.3 Height of Buildings		
The Height of Building on any land is not to exceed the maximum height shown for the land on the Height of Building Map	The site is not mapped as having a restriction under the Height of Buildings Map in the HLEP 2012.	n/a.
4.4 Floor Space Ratio		
Not adopted under HLEP 2012.	n/a.	n/a.
5.10 Heritage Conservation		
The objectives of this clause are as follows: (a) To conserve the environmental heritage of Hawkesbury. (b) To conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views. (c) To conserve archaeological sites. (d) To conserve Aboriginal objects and Aboriginal places of heritage significance.	The site does not contain any heritage listed items however a number are located on the Western Sydney University campus. A Historical Archaeological Assessment has been prepared and is contained in **Appendix K**. An ACHAR has been prepared is contained in **Appendix L**. The ACHAR notes an absence of Aboriginal objects and/or deposits or features of cultural and archaeological significance on the site and concludes that further investigation is not warranted, and works may proceed with caution.	Yes.
6.1 Acid Sulphate Soils		

Clause	Comment	Complies
Classification	Acid Sulfate Class 5	
Development consent is required for the carrying out of works in a class 5 zone require- Works within 500meters of adjacent Class 1, 2, 3 or 4 and that is below 5 metres AHD and by which the water table is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 lands.	The site has been identified as wholly within an Acid Sulfate Soils Class 5 zone. The site is located in excess of 500m from the nearest Class 1, 2, 3 or 4 zone. The development is not expected to negatively impact the neighbouring lands.	Yes.
6.3 Flood planning		
The consent authority must satisfied that the development— (a) is compatible with the flood hazard of the land, and (b) is not likely to significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and (c) incorporates appropriate measures to manage risk to life from flood, and (d) is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses, and (e) is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding	A Flood Impact Assessment is found within the Concept Stormwater Management Report contained in **Appendix R**. A Flood Emergency Management Report is contained in **Appendix S**. A finished floor level (FFL) of 23.5m AHD will be adopted for the proposed buildings. The Flood Emergency Management Report provides a Flood Emergency Response Plan for the proposed development.	Yes
6.4 Terrestrial Biodiversity		
(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that – (a) the development is designed, sited and will be managed to avoid any significant adverse or environmental impact, or (b) if that impact cannot be reasonably avoided by adopting feasible alternatives- the development is designed, sited and will be managed to minimise that impact, or (c) if that impact cannot be minimised -the development will be managed to mitigate that impact	A BDAR is contained in **Appendix O**. The proposed development is expected to impact one PCT, being 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. Three ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development.	Yes.

6.3 Strategic

In accordance with Item 1 of the SEARs, relevant strategic planning policies are addressed below in assessment of the proposed development:

- NSW State Policies
- State Infrastructure Strategy 2018 – 2038 Building the Momentum
- Future Transport Strategy 2056
- Crime Prevention Through Environmental Design (CPTED) Principles

- Better Placed: An integrated design policy for the built environment of New South Wales (Government Architect NSW (GANSW), 2017).
- Koala Habitat Protection Guideline (DPIE, 2020).
- Healthy Urban Development Checklist (NSW Health, 2009).
- Draft Greener Places Design Guide (DPIE, 2020).
- The Greater Sydney Region Plan – A Metropolis of Three Cities.
- Western City District Plan.
- Hawkesbury Development Control Plan 2002.
- Hawkesbury Local Strategic Planning Statement 2040.
- Hawkesbury-Nepean Valley Flood Risk Management Strategy.
- Hawkesbury City Council's Draft Flood Policy 2020.
- Draft Hawkesbury Employment Lands Strategy.
- Draft Cumberland Plain Conservation Plan.

6.3.1 NSW State Priorities

The NSW State Priorities is the State Government's plan to guide policy and decision making across the State. The proposed redevelopment at the site is consistent with key objectives contained within the proposal, including:

- **Building Infrastructure** – Key metropolitan, regional and local infrastructure projects to be delivered on time and on budget.

The proposal will deliver a high-quality education facility for students within the Hawkesbury area. The new development will provide state of the art educational buildings for STEM and agricultural high school aged students. The development will create jobs, deliver a vital piece of community infrastructure and provide education facilities beyond the capacity of the previous site.

- **Improving education results** – Increase the proportion of public-school students in the top two NAPLAN bands (or equivalent) for literacy and numeracy by 15% by 2023, including through the state-wide rollout of Bump it Up.

The proposed development provides speciality programs for local high school students who seek opportunities to further pursue STEM and agricultural education. The facility will offer an inclusive environment with speciality program rooms, access to recreational space and outdoor learning areas. The school will offer engaging educational training to improve numeracy and literacy outcomes.

The proposed development has committed to building to the Green Star four-star standard whereby a minimum canopy coverage of 40% needs to be achieved. The landscaping strategy seek to plant 226 new trees which are to result in a site canopy coverage of 48%. The site vegetation is currently limited to grasslands with a few mature trees bordering the rear boundary. The proposal will increase the total vegetation across the site to contribute to a healthy learning environment.

6.3.2 State Infrastructure Strategy 2018- 2038 Building the Momentum

The *State Infrastructure Strategy 2018-2038 Building the Momentum* is a 20- year strategy that sets out infrastructure NSW 's advice on the current state of NSW's infrastructure and the priorities within the next 20 years. Their strategic objective for education in NSW is to deliver infrastructure to keep pace with increased student numbers and provide modern, digitally enabled learn environments for all students.

This strategy acknowledged NSW's population is forecast to grow to over 12 million by 2056. To support this growing population, supporting infrastructure such as schools are required for a fast-growing population. It is projected that nearly 200,000 ore students will be enrolled into public schools by 2036.

The proposed development is consistent with the State infrastructure Strategy through:

- Delivering school infrastructure to keep pace with student numbers.

- Providing modern learning environments.

6.3.3 Future Transport Strategy 2056

The Future Transport Strategy 2056 outlines a 40-year framework for customer mobility in NSW. The strategy presents directions and outcomes for transportation networks to provide an integrated system for the state.

This strategy identifies that importance of access for children to school. The strategy emphasises the safety of customers as a priority, safe behaviours with children and the education of children to utilise active travel and public transport.

The proposed development is consistent with the Strategy by providing increased educational student capacity in the Hawkesbury area and encouraging active transport modes to and from the site. Staff and students will be able to safely walk, cycle or use public transport to access the facility, in turn reducing reliance on public vehicles. This will result in a decrease in traffic congestion and promote sustainable transport outcomes to the site.

A School travel plan has been prepared by Taylor Thompson Whitting which promotes active transport strategies and is contained in **Appendix I**.

Crime Prevention Through Environmental Design (CPTED) Principles

The Crime Prevention Through Environmental Design (CPTED) guidelines are prepared by the NSW Police in conjunction with the DPIE. CPTED principles offer a straightforward approach to the '*planning, design and structure of cities and neighbourhoods.'* CPTED aims to create a perception that the costs of committing crime is greater than the likely benefits. This can be conducted by applying the following strategies to limit crime associated with the development. These strategies have been outlined in **Table 8**.

Table 8 CPTED Principles Assessment

Principle	Commitment
Territorial Re-enforcement	The Site is oriented with frontage access to Vines Drive to the northeast and rear access from private road to the southeast. In accordance with SINNSW security requirements the site will contain boundary fencing along the perimeter to delineate private and public space. The front entry point will be clearly marked by identification signage.
Surveillance	The proposed development emphasises strong passive surveillance with its clear circulation paths, internally and externally. • Alarm systems • Fencing. • Appropriate external lighting.
Access Control	Access to the site is controlled through the proposed fencing and limited access points. The fences will be constructed of optically permeable materials in accordance with the Education Facilities Standards and Guidelines (EFSG).
Space/ Activity Management	Space and activity management is achieved through the arrangement of the buildings and proposed uses for each building. The administration building faces the entrance to the site and provides passive surveillance to the access point. During school operation, students will be contained within the interior of the site.

A CPTED Assessment prepared by NBRS Architecture is contained within the Architectural Design Statement in **Appendix E**.

6.3.4 Better Placed: An integrated design policy for the built environment of New South Wales (Government Architect NSW (GANSW), 2017).

Better Places (ANSW, 2017) is an integrated design policy that seeks to create a clear approach for places where we work. Live and play, ensuring the importance of good design as the centre of all development processes. New development can improve quality of life for people and enhance the environment. The design of buildings, place and space that supports inclusiveness, connectivity and diversity is important to provide optimal opportunity and reduce social disparity.

The design of the proposed development will provide a vibrancy to the neighbourhood and ensures it provides a welcoming and accessible environment. The proposed development will be designed to be practical and purposeful, resulting in better learning and teaching outcomes, and increased productivity.

The project team have had two consultation meetings with the Government Architect through the development of the project. These consultation meetings have shaped and guided the design. Consultation with the Government Architect is further explained in Section 4 of this EIS.

6.3.5 Healthy Urban Development Checklist (NSW Health, 2009)

The Healthy Urban Development Checklist (NSW Health) outlines the development provisions to support sustainable and healthy outcomes for the community. In order to accommodate for population growth, communities need access to social infrastructure, education, employment, housing, air quality and health care.

The proposed development promotes the checklist's 11 themes through the design and function of the site as follows.

- Reduce car dependency and encourage active transport.
- Improve location of jobs in terms of housing and community options.
- Encourage incidental physical activity by promoting opportunities for walking, cycling and other forms of active transport.
- Consider crime prevention and a sense of security.
- Promote quality streetscapes that encourage activity.
- Engender a sense of cultural identity, sense of place and incorporate public art.
- Provide access to a range of facilities to attract and support a diverse population.
- Promote access to quality open spaces, including green space and recreational facilities, and
- Provide environments that will encourage social interaction and connection.

The proposal aids in promoting a healthy and sustainable built environment.

6.3.6 Draft Greener Places Design Guide (GANSW)

The Draft Greener Places policy provides information on how to design, plan and implement green infrastructure in urban areas throughout NSW. The draft guide provides strategies, performance criteria and recommendations to assist planning authorities, and design and development communities to deliver green infrastructure.

The Greener Places Design Guide has three main objectives:

- Open space for Recreation: green infrastructure for people.
- Urban tree canopy; green infrastructure for adaptation and resilience and
- Bushland and waterways: green infrastructure for habitat and ecological health.

The Draft Greener Places Policy has guided the delivery of green infrastructure of the site together with the NSW Educational Facilities Standards and Guidelines (EFSG). Consultation has been undertaken with the Government Architect and will continue to ensure that the project will deliver and provide the required green infrastructure for the site.

The proposal seeks to provide high quality open space within the school site in various forms such as the COLA, outdoor classrooms, productive gardens, active open recreation space and other gathering spaces. These spaces serve a variety of purposes including encouraging social interaction, facilitating learning opportunities in the outdoors, encouraging both purposeful and incidental physical activity.

Significantly increasing the tree canopy at the site to provide shade and shelter, improve air quality, absorb carbon and rainfall, contribute to the cooling of the local environment and support wildlife. On a small scale, the proposed development contributes to the creation of greener places.

6.3.7 Koala Habitat Protection Guideline (DPIE, 2020) and SEPP Koala Habitat Protection 2021

The Koala SEPP 2021 reinstates the policy framework of SEPP Koala Habitat Protection 2019 to 83 Local Government Areas (LGA) in NSW. In the Hawkesbury LGA the Koala SEPP 2021 applies to all land use zones under HLEP 2012. **Appendix O** contains the BDAR prepared for the site and assessed the site to establish whether it or part of the site meets the definition of core Koala habitat as defined by the Koala SEPP 2021.

The BDAR found that whilst listed feed trees were located within the site, no evidence of Koalas was identified during the time of the site assessment and there are no proximal records with a 2.5km buffer. The BDAR concludes that vegetation within the site does not meet the criteria to be listed as Core Koala Habitat.

6.3.8 The Greater Sydney Plan - A Metropolis of Three Cities

The Greater Sydney Region Plan, A Metropolis of Three Cities aims to rebalance growth and deliver benefits to residents across Greater Sydney through implementing appropriate infrastructure, productivity and liveability guidelines.

Between 2016 and 2036, the population of infants aged 0-4 years is projected to increase by 85,000, with 333,000 more children and young people aged 5-19 than today. This strategy acknowledges there is an increase in number of children across the region, leading to pressure for access to education services. The proposed development addresses the relevant objectives of this plan below.

- Objective 1: The proposed development will support the three cities through delivering education infrastructure in Western Sydney. This will support the population growth in the area, and across the region.
- Objective 2: The proposed development will accommodate the growing population of children and respond to the residential and employment growth in Richmond.
- Objective 3: The proposed development is responded to the future needs of social and school infrastructure in Greater Sydney. It will provide a modern, and innovative learning space that will respond to the needs of a young growing population.
- Objective 6: The proposed development supports this objective, providing a service and infrastructure to meet the significant increase in young children. Schools are essential infrastructure, and this development will support young families in the Southwest Growth Area.
- Objective 7: The proposed development will contribute to a more healthy, resilient and socially connected community. It is well placed to support a vibrant neighbourhood and will increase foot and cycle traffic within the area. North of the proposed development provides for open space and sport facilities contributing to an active healthy lifestyle.
- Objective 14: The proposed development provides safe walking and cycling links to the new school and encourages children to be more active through incidental exercise. As it is already close to established bike paths, residential development and bus routes, students and teachers will be encouraged to use these for active and public transport. In result, this will reduce car use and congestion on the roads.

In summary, the proposed development will deliver a sustainable, well-designed educational establishment that promotes the use of public and active transport for students and employment opportunities for staff. the architectural and landscape design seek to embrace the surrounding natural environment and existing context and create unique and well-considered open spaces and learning environments across the site.

6.3.9 Western City District Plan

The Western City District Plan, updated in March 2018, includes a range of priorities and actions to appropriately support the strategic growth of Sydney's Western City District. The Western City District Plan (Greater Sydney Commission) identifies the following:

- Within the next 20 years to 2036, an increase of 24,950 children aged four or younger is projected, with approximately twenty percent of this growth to be located in the Hawkesbury LGA.

- The Department of Education estimates an extra 77,978 students will need to be accommodated in both government and non-government schools in the district by 2036.

In order to accommodate the growing population of students by 2036, it is necessary to provide school infrastructure capable of servicing this population. The Western City District Plan has identified this as a priority:

> *Planning for new schools, and the use of existing schools, must respond to growth and changing demand in innovative ways such as more efficient use of land contemporary design, greater sharing of spaces and facilities, and flexible learning spaces. Safe walking and cycling links to schools encourage young people to be more active and better connect schools with local communities.*

As outlined in Planning Priority W3, facilities such as schools can be the focus of neighbourhoods. School design must consider how it contributes vibrancy to a neighbourhood, and how it can provide safe and easy access for children. The proposed development is designed to provide safe and easy access for all users.

6.3.10 Hawkesbury Development Control Plan 2002

Hawkesbury Development Control Plan 2002 (HDCP 2002) consists of the local development controls for the Hawkesbury LGA. The proposed development has been assessed against the relevant controls for the site in **Table 9**.

Table 9 Hawkesbury DCP 2002 Compliance

Clause	Comment	Complies
Part C: General Guidelines		
Landscaping		
A landscape plan is required for the development.	Landscape Plans are contained in **Appendix F**. The Landscape Plans show the retention of much of the natural environment as possible with regard for the surrounding environment designed into the built form.	Yes
Car parking and Access		
Ensure that adequate and convenient off-street parking facilities are provided for all vehicles generated by new development. Encourage the efficient flow of traffic through car parks and to minimise the potential for pedestrian/vehicle and vehicle/vehicle conflict. Ensure a minimum of interference to the flow of traffic on the street network. Ensure adequate traffic safety and management and to improve the amenity of car parking areas.	The DCP states that for Schools and Educational Establishments parking must be provided at a rate of: -1 space for each staff, plus -Space for delivery vehicles and buses, plus -1 space per 5 seats or 1 space per 7m2 of floor area in assembly hall, whichever is greater, plus. -1 space per 3 Year 12 students. Parking has been designed to accommodate the above provisions with overflow able to be accommodated by the existing capacity at the university campus.	Yes
Signs		
	The proposed signage associated with the development provides internal site and building identification in addition to wayfinding at Hawkesbury Centre of Excellence. Approval for signage is not sought as part of this application	Yes
Bushfire Prone Land		
	A Bush Fire Threat Assessment has been prepared and is contained in **Appendix X**. According to the Bush Fire Threat Assessment the site is classified as Category 2 - Bushfire buffer and Category 3 – Grass lands as per the PBP 2019. The Bush Fire Threat Assessment recommends an APZ of a minimum of 50m surrounding the curtilage of a number of buildings along with other measures to reduce the potential for bush fire attack.	Yes

Clause	Comment	Complies
Management of Construction and Demolition Waste		
	A Construction Waste Management Plan has been prepared and is contained in **Appendix CC**. Construction and operational works will conform to the proposed safe management of waste.	Yes

6.3.11 Hawkesbury Local Strategic Planning Statement 2040

The Hawkesbury Local Strategic Planning Statement (LSPS) 2040 was publicly exhibited from 1 October 2019 to 13 November 2019. The LSPS sets out a 20-year vision for land use in the Hawkesbury LGA and aims to guide and maintain the high level of amenity, liveability and quality of life within the Hawkesbury LGA. The Hawkesbury Centre of Excellence is a key piece of infrastructure in the LGA that can respond to the evolving needs and opportunities for the community.

The development of CoE is consistent with the following planning priorities:

Planning Priority 1 Ensure infrastructure aligns with current needs and future growth.

The population of Richmond, Hawkesbury and the Western Sydney sprawl is projected to rise significantly, providing educational infrastructure is necessary to support and provide for the educational demands of the growing community. The CoE is to provide specialised programming in STEM and Agricultural education, offer better opportunities for high school students and providing better pathways to tertiary education.

Planning Priority 2 Form partnerships with stakeholders and agencies.

In accordance with the SEARs issued for the project, the project team has engaged in consultation with Hawkesbury Council, Department of Planning, Industry and Environment, Government Architect NSW and Transport for NSW to provide high quality-built form at the site.

The proposal will offer higher level education opportunities, especially science and engineering disciplines, in a unique tertiary environment.

Planning Priority 4 Protect and Promote Aboriginal and European heritage and its transition into innovative, creative and adaptive re-uses.

The Aboriginal Cultural Heritage Assessment Report (ACHAR) in **Appendix L** and the Heritage Impact Assessment **Appendix K**, note an absence of Aboriginal objects and/or deposits or features of cultural archaeological significance on the site and works may proceed with caution.

Planning Priority 7 Promote and support all sectors of industry and businesses in the Hawkesbury to meet current and future demands and trends.

The school will offer innovative and high-tech agricultural education to promote students to participate in the agricultural sector to evolve and create jobs into the future.

Planning Priority 8 Explore opportunities at the Western Sydney University, Richmond RAAF Base and other industries to create value chain at the Western Sydney Airport.

The school will encourage targeted pathway education opportunities to university education. The school provides access to knowledge- based industries and will result in a more diverse, young workforce in the area. Hawkesbury is able to utilise the Western Sydney University Campus to take advantage of the NSW Trade and Investment assistance to facilitate future economic health for the area.

Planning Priority 12 Champion, educate and support a transition to renewable waste and energy.

The design has incorporated Environmentally Sustainable Design (ESD) principles into the built form to promote the use of renewable energy information and initiatives provided to the community.

6.3.12 Hawkesbury- Nepean Valley Flood Risk Management Strategy

The Hawkesbury- Nepean Valley Flood Risk Management Strategy (The Strategy) sets out a clear path for the NSW Government, local councils, businesses and the community to work together to understand, reduce and manage the flood risk in the Hawkesbury-Nepean Valley.

The Flood Strategy is designed to deliver nine key outcomes:

- Outcome 1 - Coordinated flood risk management across the Valley now and in the future.
- Outcome 2 - Reduced flood risk in the Valley by raising Warragamba Dam wall.
- Outcome 3 - Strategic and integrated land use and road planning.
- Outcome 4 - Accessible contemporary flood risk information.
- Outcome 5 - An aware, prepared and responsive community.
- Outcome 6 - Improved weather and flood predictions.
- Outcome 7 - Best practice emergency response and recovery.
- Outcome 8 - Adequate local roads for evacuation.
- Outcome 9 - Ongoing monitoring and evaluation, reporting and improvement of the Flood Strategy.

Outcome 4 and Outcome 7 are the most relevant to the proposed development. A Flood Emergency Management Report is contained in **Appendix S**. The Flood Emergency Management Report provides a Flood Emergency Response Plan for the proposed development.

6.3.13 Hawkesbury City Council's Draft Flood Policy 2020

The purpose of the Hawkesbury City Draft Flood Policy 2020 is to:

- Highlight Council's position in respect of the need for a collaborative approach across all levels of government to respond to issues associated with floodplain management across the Hawkesbury-Nepean Valley, and
- Set the information and development controls to be used for the preparation and assessment of Development Applications for land affected by the 1:100 ARI flood event to address the requirements of Clause 6.3 - Flood planning of HLEP 2012.

The Flood Policy 2020 includes a Schedule of Flood Related Development Controls, which provides up-to-date, relevant, and best practice controls to meet the requirements of Clause 6.3 – Flood planning of HLEP 2012, and to clearly express how a proposed development's suitability is assessed in relation to the impacts of flooding.

A Flood Impact Assessment is found within the Concept Stormwater Management Report contained in **Appendix R**. A Flood Emergency Management Report is contained in **Appendix S**. In accordance with the Flood Policy a finished floor level (FFL) of 23.5m AHD will be adopted for the proposed buildings. The Flood Emergency Management Report provides a Flood Emergency Response Plan for the proposed development.

6.3.14 Draft Hawkesbury Employment Lands Strategy

The Hawkesbury Employment Lands Strategy was prepared in order to respond to the Greater Sydney Region Plan and Western City District Plan and inform the Local Strategic Planning Statement 2040 and subsequent review of the Local Environmental Plan and Development Control Plan. Preparation of the Strategy included a review of the current Hawkesbury Employment Lands Strategy 2008.

The proposed development will generate 166 FTE jobs during construction phase, and 25 additional jobs during the operational phase.

6.3.15 Draft Cumberland Plain Conservation Plan

The Cumberland Plain Conservation Plan is one of the largest strategic conservation plans to be undertaken in Australia and is the first strategic biodiversity certification to be undertaken under the *Biodiversity Conservation Act 2016*.

The Plan will contribute to the Western Parkland City by supporting the delivery of housing, jobs and infrastructure while protecting important biodiversity such as threatened plants and animals.

The Plan will deliver on commitments and a series of planned and managed actions designed to improve ecological resilience and function, and offset biodiversity impacts from housing and infrastructure

development. Taking a landscape-scale approach to conservation and assessment will deliver the greatest safeguards for Western Sydney's natural environment over the long term.

The site will display a 48% canopy cover at full maturity with 120 proposed trees with a canopy of 7m and 106 orchard trees with a 4m canopy diameter. The proposed trees will include species of the Cumberland Plain Woodland characterised by the following species: *Eucalyptus tereticornis* and *Eucalyptus moluccana*. A large portion of the site will be reserved for agriculture.

The site is currently vacant, with natural grassland and a few trees bordering the perimeter of the site, most notably along the southern portion of the site. The proposed development will provide extensive landscaping but will continue with agricultural uses associated with the educational services it will provide.

7 IMPACT ASSESSMENT, MITIGATION, AND MANAGEMENT

This section assesses those matters as required under Section 4.15(1) of the EP&A Act and responds to the matters for consideration set out in the SEARs. The mitigation measures at Section 8 complement the findings of this section.

7.1 Built form and urban design.

The proposed development comprises six, single storey educational buildings, associated parking in a landscaped setting in the northern central part of the site, surrounded by outdoor education areas focusing on agricultural practices.

7.1.1 Built form and scale.

Built form and urban design considerations are summarised in the sections below and detailed further above under Section 3. Key elements of the built form and scale are:

- Buildings have been oriented on the site in linear open building forms. The buildings are connected by Covered Outdoor Learning Areas, providing shade and shelter to facilitate pedestrian movement. Agricultural plots are sited to the west of the buildings and accessed by internal circulation path. The arrangement of the outdoor learning spaces and buildings create a comprehensive site wayfinding strategy with landscaping utilised to reinforce the site plan as shown in **Figure 12.**

Figure 12 Learning blocks and Covered Outdoor Learning Areas (COLAs)

- The proposed block style architecture will present single storey forms with sloped skillion roofing. Block A (Administration building) is visible from Vines Drive and displays a maximum building height of 4.82m from finished floor level. The Administration block is setback from the primary frontage and displays an appropriate building height with regard to the existing streetscape which comprises of predominately single storey buildings. Block E (Dining Hall and recreation area) represents the tallest building with a maximum ridgeline height of 5.82m from natural ground level. Opportunities for direct overlooking into adjacent sites and overshadowing have been limited by the modest building height.
- The intention of the design is to establish a low-scale rural typology for the building form with a strong presence and connection to the existing Western Sydney University Campus as shown in **Figure 13**. The built form is considered consistent with the building height strategy with the established built form

on the Western Sydney University Campus and respects the human scale while responding to the surrounding environment.

Figure 13 Pedestrian Entry Axis

- The site design and form of building creates simplicity in the arrangement of the buildings by aligning the Administration building and the three education blocks along a central spine. The administration block is visible from the primary frontage, ample articulation has been provided through hardstand access to the site and landscaping show in **Figure 14**. The buildings have been arranged intuitively to promote wayfinding and circulation at the site and reserve the site boundaries for outdoor educational opportunities and landscaping.

Figure 14 Aerial view of building arrangement from Vines Drive

- The architecture has been developed to utilise the interstitial spaces between buildings, including edges and transitions. The built form has been sited to the centre of the site to promote additional active and passive learning space for students, see **Figure 15** below.

Figure 15 Covered Outdoor Aras between learning blocks

- The materiality and finishes have been discussed in the Architectural Design Statement completed by NRBS Architecture in **Appendix E**. The buildings have been designed with respect to the new educational standard of the DFMA (Design for Manufacture and Assembly) method of construction.
- The proposed materiality will display a combination of natural finishes and neutral colour palette with external features to compliment the outdoor surroundings and enhance the connection to the natural environment. Materials and finishes are designed to complement the landscape and provide clear wayfinding.
- Materiality has been selected from several references including traditional Australian agriculture, aboriginal architecture and modern technologies for architectural design.

In response to the SDRP meetings the design has incorporated the following elements as per **Table 10**.

Table 10 Response to recommendations of the SDRP Panel

SDRP Panel matters raised	Design response
Connection with Country	Consultation with the AECG (Durag) regarding the use and integration of the aboriginal enterprise for learning outcomes, way finding and integrating artwork into the architecture.
Connectivity and Access	A traffic management report has been prepared since the GANSW presentation which addresses the concerns raised. A School Travel Plan has been established for public transport/ cycling systems focusing on student safety.
Masterplan and Landscape	The masterplan for the landscaping has developed with a focus on the local rural character of the area with ensuring the design integrates well with the learning outcomes of the school. The onsite detention dams will be used to irrigate the architectural plots. Minimal trees are being removed this is outlined further in Section 7.3 below. A tree planting/ finishes schedule developed to shoe the biodiversity, shade and amenity.

SDRP Panel matters raised	Design response
Buildings	The development from concept to schematic design has seen the built form, character and materiality transition into a comfortable solution for the client.

7.1.2 CPTED Assessment

A CPTED Assessment has been prepared by NBRS Architecture and is contained within the Architectural Design Report in **Appendix E**.

The CPTED Assessment outlines the design elements and CPTED principles included in the proposed development that will deter unsocial and criminal behaviour from the site. The design elements are outlined in **Table 11** to **Table 13**.

Table 11 Building - general

Performance Criteria	Design Requirements	Purpose/Explanation	Proposed	Compliance
A. Avoid blind corners				
Avoid blind corners in pathways, stairwells and carparks	Pathways should be direct. All barriers along pathways should be permeable.	Blind corners or concealed areas make people feel uneasy and unsafe. Not knowing 'what is around the next corner' can discourage genuine users of a space to use and maximise it.	Corridors have been kept to a minimum with open planning.	Yes
B. Communal Areas				
Provide natural surveillance for communal and public areas	Position active uses or habitable rooms with windows adjacent to main communal/ public areas Communal areas and utilities should be easily seen. Where elevators or stairwells are provided, open style or transparent materials are encouraged on doors and/or walls of elevators/ stairwells. Waiting areas and entries to elevators / stairwells should be close to areas of active uses and should be visible from the building entry. Seating should be located in areas of active uses.	Enables users of a space feel safe as they 'are not alone' in a secluded area. There is always the potential for someone to 'help' if there are any problems. Deters illegitimate users as their presence in and misuse of the space will be rapidly noticed.	All communal or public areas for people to gather in are positioned adjacent to highly active walkways or buildings. Windows or half height glazed partitions exist along the majority of corridors and walkways.	Yes
C. Entry Points				
Provide entries which are clearly visible	Entrances should be at prominent positions. Design entrances to allow users to see in before entering.	Natural surveillance from street Users to feel safe and to easily access the area. Emergency services to access the property rapidly	The prominence of entry to the facility and the individual buildings are delineated by large entryways and sliding glass doors. Windows in the main Administration building are oriented towards the main entry forecourt and Vines Drive.	Yes

Performance Criteria	Design Requirements	Purpose/Explanation	Proposed	Compliance
			Glazed doors allow users to see in before entering. Emergency services can access the site through the frontage to Vines Drive and from the Maintenance Lane to the east of the site.	
D. Lighting				
Ensure lighting does not produce glare or dark shadows. Entrances, exits, service areas, pathways, car parks etc. should be well lit after dark when they are likely to be used	Use diffused flood lights and/or movement sensitive lights. Direct these lights towards access / egress routes to illuminate potential offenders, rather than towards buildings or resident observation points. Lighting should have a wide beam of illumination, which reaches to the beam of the next light, or the perimeter of the site or area being traversed. Avoid lighting spillage onto neighbouring properties as this can cause nuisance and reduce opportunities for natural surveillance. As a guide, the areas should be lit to enable users to identify a face 15m away. Use energy efficient lamps /fittings. /Switches to save energy.	Adequate lighting is essential in making people feel safe and in deterring illegitimate users. Allows people to see what is ahead. Encourages legitimate users to use a facility after daylight hours; their presence will deter potential illegitimate users. Allows natural surveillance after daylight hours Facilitates formal surveillance (by Police or security patrols).	External lighting will be provided in accordance with Australian Standards. All walkways, pathways and car park areas will be well lit in Accordance with Australian Standards.	Yes
E. Security				
Security grilles, shutters and doors should allow natural observation of the street and be sympathetic to the architectural style of the building	Security grilles and security doors should be permeable Avoid solid shutters on front windows and doors.	Traditional security related equipment will help make a space more difficult for intruders to break into, however its overuse may impinge on adequate levels of natural surveillance.	If security grilles are required, they will be of an open design.	Yes

Table 12 Access Control

Performance Criteria	Design Requirements	Purpose/Explanation	Proposed	Compliance
A. Building Identification				
Ensure buildings are clearly identified by street number.	Street/building numbers should be at least 7cm high and positioned between 0.6m and 1.5m above ground level on the street frontage. Street/building numbers should be made of	Clear building identification prevents unintended access and assists persons trying to find the building - particularly emergency vehicles in an urgent situation.	Building numbers will be made of durable materials, preferably reflective or luminous, and unobstructed. They will be	Yes

Performance Criteria	Design Requirements	Purpose/Explanation	Proposed	Compliance
	durable materials, preferably reflective or luminous, and unobstructed. Location maps and directional signage should be provided for larger development.		located at the entrance.	
B. Entry Points				
Clear entry points	Entrances should be recognisable through design features and directional signage. Minimise the number to entry Point.	Clear entries avoid confusion. Assist emergency personnel. Allow for easy monitoring of people entering/exiting the premises.	Directional signage will be located at the entries and exits for the ease of users.	Yes
C. Security				
Use security hardware and/or human measures ONLY where required to reduce opportunities for unauthorised access	Install quality locks on external windows and doors. Install viewers on entry doors. If security grilles are used on windows they should be openable from inside in case of emergencies. Ensure skylights and/or roof tiles cannot be readily removed or opened from outside. Consider monitored alarm systems. Provide lockable gates on side and rear access ways. Consider building supervisors or security guards.	Traditional security systems can be very effective in reducing illegitimate access. It is important however to be reasonable and not over secure a location as this may make genuine users feel unsafe and even restrict legitimate access.	Locks are and will be installed on windows and doors. Security grilles will not be installed on windows. A monitored alarm system may be considered.	Yes

Table 13 Ownership

Performance Criteria	Design Requirements	Purpose/Explanation	Proposed	Compliance
A. Maintenance				
Create a 'cared for' image	Ensure the speedy repair or cleaning of damaged or vandalised property. Provide for the swift removal of graffiti. Provide information advising where to go for help and how to report maintenance or vandalism problems.	Research indicates that well maintained and 'cared for' properties are less likely to experience crime.	DoE employs maintenance staff who will maintain the property on a regular basis.	Yes
B. Materials				

Performance Criteria	Design Requirements	Purpose/Explanation	Proposed	Compliance
Use materials which reduce the opportunity for vandalism	Strong, wear resistant laminate, impervious glazed ceramics, treated masonry products, stainless steel materials, anti-graffiti paints and clear over sprays will reduce the opportunity for vandalism. Flat or porous finishes should be avoided in areas where graffiti is likely to be a problem. External lighting should be vandal resistant. High mounted and/or protected lights are less susceptible to vandalism. Communal/ street furniture should be made of hard-wearing vandal resistant materials and secured by sturdy anchor points or removed after hours.	A reduction in vandalism through careful selection of materials will contribute to beautifying and maintaining an area. This will reduce expenditure on unscheduled maintenance.	Anti-graffiti products will be used where an opportunity is provided.	Yes
C. Spaces				
Spaces should be clearly defined to express a sense of ownership and reduce illegitimate use/entry.	Physical and/or psychological barriers can be used to define different spaces.	The definition of clear boundaries Allows people to know when they are trespassing on private property. Passers-by to clearly identify when someone is trespassing and illegally using the premises.	All spaces will be clearly identified with appropriate signage and division.	Yes
D. Pride and Involvement				
Encourage design that promotes pride and a sense of place for community	Encourage community involvement in design, volunteer management and maintenance of areas and community use of areas.	A sense of community pride in a particular area will help maintain an area. Identify and report any problems. Identify illegitimate behaviour.	DoE employ maintenance staff who maintain and monitor the property.	Yes

7.2 Visual Impacts

7.2.1 Methodology

A Visual Impact Assessment has been completed by NRBS Architecture under **Appendix G**. Views have been identified from different vantage points to assess the visual impact of the proposal on the surrounding heritage items and adjoining properties. The vantage points have been displayed with the proposed development overlayed to depict the perceived impacts.

The methodology used for the Visual Impact Assessment has been based on desktop and field analysis and involved the following main steps:

- Local character: identify local character.
- Visual catchment: identify the visual catchment based on consideration of matters such as landform, built form and vegetation.
- Viewpoints: identify key viewpoints from where the proposal may be visible.
- Visual impact: assessment against sensitivity and magnitude.
- Acceptability of visual impact: consideration of the visual impact against applicable and relevant planning instruments to determine acceptability.
- Recommendation: prepare a recommendation based on the findings of the method.

Central to the assessment of visual impact is the criteria of sensitivity, magnitude of change, consistency with applicable and relevant planning instruments and consideration of residual impact.

The visual impact of the proposed development will result in minor changes from all vantage points when viewed from the surrounding context. The Visual Impact Assessment concludes that considering all relevant factors, in its current form the proposed development has an acceptable visual impact.

Photomontages are provided in Section 7.3 – Environmental Amenity.

7.2.2 Existing Environment

The existing site is currently vacant and is proposed within the southern side of the Western Sydney University Hawkesbury campus. The site is accessed by Vines Drive which is an internal road within the WSU campus. The WSU site displays a relatively flat topography. WSU facilities are located adjacent the entrance to the site with educational facilities to the northeast and southeast and the student accommodation to the northwest. Traditional and contemporary brick building forms demonstrate a low-rise typology surrounding the site. The historically significant Stable Square is located within visual proximity to the site to the north.

7.2.3 Assessment

The proposed development has been designed to integrate into the Western Sydney University Campus with regard to scale, bulk and orientation of buildings. The building height will not exceed one storey or the height of the existing buildings adjacent the site. The VIA Report has modelled the proposed buildings to indicate their impact on the surrounding environment.

The proposed development has been designed with a strong presence to Vines Drive, with the Administrative Building identified as the principal entrance to the site. Regard for the WSU masterplan principles and the existing entry arrangements at the site with regard to the axial alignment of the proposed buildings. The administration building has been setback from the frontage of the site by a minimum of 20 metres with existing trees lining the frontage of the site.

The level topography of the site results in visibility of the proposed development when viewed from a distance directly north, east and west of the site. Due to the single storey form and gently sloped skillion roofing, the development integrates well with the existing surrounding development.

The materiality and colour scheme of the CoE utilises a similar palette to the Microbiology building to the SE. Mixed materiality provides visual interest and reduces the bulk of the buildings. The visual composition if altered through the introduction of elements of greater human scale.

The interior of the site demonstrates the following characteristics:

- Entry vistas that terminate at low level within the learning blocks.
- Intuitive educational “block’ organisation, assigning order to related function.
- Consideration given to the local heritage items within the WSU campus.
- Orientation and placement of buildings to correspond to the existing surrounding environment and enterprises.

- Positioning of internal spaces to be sympathetic to the existing vistas and Aboriginal heritage nature of the site.

The arrangement of the proposed built form will not result in dominate forms when viewed from the site exterior. Due to the building height, bulk, scale and materiality the visual changes will be consistent when viewed from the surrounding context. While the proposal will result in visual impacts from the six (6) vantage points, these impacts have been assessed as low to high the development is considered to be acceptable and maintain the character of the existing environment.

7.2.4 Mitigation Measures

The following mitigation measures will ensure the developments consistency with the existing site elements:

- Ongoing consultation with WSU and Aboriginal stakeholders to inform the design feasibility.
- Maintenance and landscaping works to be carried out on to ensure the buildings and site present a high-quality finish.
- The establishment of the orchard and future landscaping planting will diminish the visual dominance of the structures from southern vantage points.

7.3 Trees and landscaping

7.3.1 Methodology

Item 2 of the SEARs requires an assessment of the trees and the preparation of a detailed, site-wide landscape strategy. An Arboriculture Impact Assessment prepared by Sturt Noble Arboriculture is contained in **Appendix P**. A detailed site wide landscape strategy is documented in the landscape plans contained in **Appendix F**.

7.3.2 Existing Environment

The existing nature of the landscape of the site is predominantly grassed land, formerly used for agricultural purposes, with scattered trees mainly confined to the perimeter. Twenty-eight (28) trees are located within proximity to the development footprint of the CoE. The Arboricultural Impact Assessment Report identifies five (5) of these trees requiring removal to accommodate the proposed development with another four (4) juvenile street trees that can either be removed or transplanted.

7.3.3 Assessment

The proposed development seeks to retain nineteen (19) of the existing trees on site, with the landscaping plan to plant fourteen (14) new *Eucalyptus tereticornis* trees along the eastern boundary of the site entrance; ten (10) *Quercus rubra* between Learning Blocks C and E; Eucalyptus saplings will be planted heavily in the western corner of the site and the far south eastern corner outside of the accommodation area; seventeen (17) Orchard saplings to be installed by the school in the eastern corner, adjacent the opening between Learning Block C and D.

The landscape design strategy utilises natural and built elements to provide shading, seating, informal recreation and learning areas. The proposed canopy cover will be 48% of the site with 120 proposed trees with a 7m canopy diameter in addition to 106 orchard trees with a 4m canopy diameter resulting in roughly 5,460m2 of canopy cover. This will satisfy the minimum target of 40% canopy cover to meet the provision for the Green Star four-star landscaping requirements. Planting design for the site combines deciduous and native species to respond to the climatic attributes Planting design for the site combines deciduous and native species to respond to the climatic attributes and cultural heritage of the site.

Existing trees along the southern boundary of the site will be retained.

7.3.4 Mitigation Measures

The following mitigation measures are proposed:

- A site-specific Tree Protection Plan (TPP) is prepared to guide the construction process.
- Tree protection zones are recommended for all trees within the site that are to be retained.
- Tree protection fencing is to be utilised to protect trees to be retained during construction.
- If trees display signs of stress or deterioration, remedial action shall be taken to improve the health of the impacted tree.
- Hardstand is minimised across the site to promote natural spaces.
- Large canopy trees have been selected to prevent the urban heat island effect and provide shaded outdoor areas for students to play and learn.

7.3.5 Conclusion

The Landscape Plan prepared by NRBS Architecture at **Appendix F** provides an outline of proposed compensatory plantings native plantings, endemic indigenous planting, garden planting and rain gardens. The development includes areas dedicated to propagation fields to allow for opportunities for future soft plantings. The landscaping plan provides for the establishment of long-term vegetation at the site which results in mitigation impacts towards the urban heat island effect and ensures appropriate comfort levels onsite. Compensatory plantings include mature trees species that will contribute to the urban tree canopy cover.

7.4 Environmental amenity

Item 3 of the SEARs requires the EIS to address issues of Environmental Amenity. The following provides a response to this requirement.

7.4.1 Solar Access and Overshadowing

Overshadowing and solar access at the site has been modelled in the Architectural plan set by NRBS Architecture and located under **Appendix D**.

The shadow diagrams, refer to **Appendix D, Figure 16** and **Figure 17**, provide visual confirmation that the proposed will not result in overshadowing to adjoining WSU buildings or to the Vines Drive frontage.

7.4.2 Visual Privacy

The building height, scale and orientation of the CoE buildings contribute to the visual privacy of the site. The buildings are oriented in a hierarchy, with the administrative building to the frontage of the allotment. The education blocks, dining hall, short term accommodation and agricultural buildings are sited behind the primary building line of the Administration building and are not visible from the street frontage. Surrounding development is setback from the site boundaries, preventing the impacts of direct overlooking.

View from Vines Drive Facing West

The viewpoint from Vines Drive facing west will result in a high level of urban fabric change with a prominent change of visual composition through the introduction of elements of greater human scale when compared to the existing condition, refer to **Figure 18** and **Figure 19**.

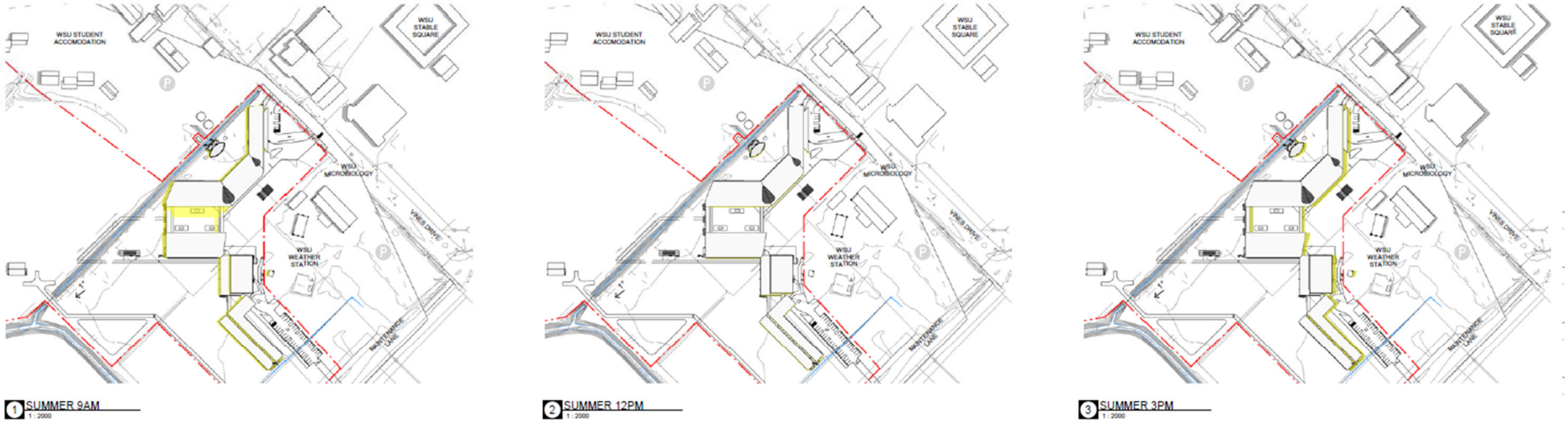

Figure 16 Shadow diagrams – Summer

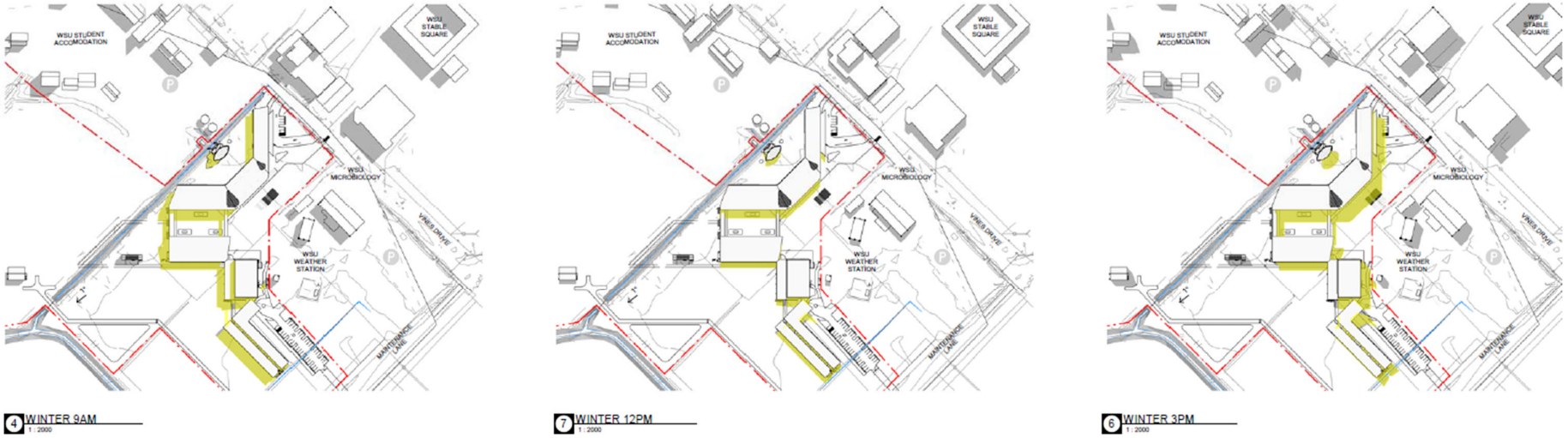

Figure 17 Shadow diagrams – Winter

Figure 18 Photo of existing site taken from Vines Drive looking West towards the Blue Mountains

Figure 19 Photomontage overlaying proposed Block A, B & C onto the site

Vista from Vines Drive facing South.

The vantage point from the Stable square will result in a high level of urban fabric change, the new building fabric will be quite noticeable compared to the existing site (**Figure 20** and **Figure 21**).

Figure 20 Photo taken from existing Stable Square and Vines Drive looking south towards the proposed development site.

Figure 21 Photomontage overlaying proposed Block A and the pedestrian / vehicular entry to the site.

Vista from Vines Drive Facing East

The proposal will result in a high level of composition change and a dominant building fabric that will result in a prominent change to the existing landscape (**Figure 22** and **Figure 23**).

Figure 22 Photo from Vines Drive looking East towards the existing WSU Microbiology Building.

Figure 23 Photomontage overlaying proposed block A and the proposed aboriginal enterprise onto the site.

7.5 Transport and Accessibility

7.5.1 Methodology

A Transport and Accessibility Impact Assessment (TAIA) has been prepared by Taylor Thompson Whitting and is contained in **Appendix I.** The TAIA has been prepared in response to Item 4 of the SEARs and has been developed to assess and address the traffic and transport impacts of the proposed development. The TAIA covers the following areas.

- Site access.
- Car parking.
- Public and active transport.
- Pick-up and drop-off.
- Service vehicles and loading.
- Traffic generation.

- Travel mode analysis.

The TAIA also includes a preliminary School Transport Plan and a Preliminary Construction Traffic and Pedestrian Management Plan.

The TAIA was prepared in the context of and with the knowledge of a variety of relevant documents including:

- Australian Standards, including but not limited to:
  - AS2890 – Parking facilities.
- Austroads Guidelines, including but not limited to:
  - Guide to Road Design.
  - Guide to Road Safety.
  - Guide to Traffic Management.
- RMS Guides to Traffic Generating Developments, including:
  - Roads and Maritime Service Trip Generating Surveys – Schools – Analysis Report (GTA, 25 August 2014).
- Road User Space Allocation Policy (TfNSW, January 2021).

The TAIA was prepared and discussed with, both Hawkesbury City Council and Transport for NSW (TfNSW) during ongoing liaison through a Transport Working Group (TWG) for the project. The TWG has met a number of times since March 2021, and the project has refined the transport strategy during that period in response to feedback received.

7.5.2 Existing Environment

The site is mainly an undeveloped site. Directly to the northeast of the site is the P47 car park for the WSU Campus, an at-grade asphalt car park with capacity for around 142 vehicles. Currently there are no formalised vehicular access points to the site development area. The site has a frontage to the internal road named Vines Drive that allows for two-way traffic and has a footpath along the northern side of the road. The secondary point of access to the site, which is owned and maintained by WSU, is from Maintenance Lane to the east of the site. Maintenance Lane provides a single travel lane in each direction.

Londonderry Road runs along the western boundary of the WSU Campus. There are single travel lanes in each direction, with a general speed limit of 60 km/hr. In addition, there is a shoulder lane on each direction.

Public transport available within the vicinity of the site is primarily bus services. Public bus services operate along Londonderry Road and Blacktown Road. Bus route 677 services Londonderry Road at a bus stop around 600 metres from the site, while route 675 services College Street around 1.4 kilometres from the site. All bus services in the area are operated by Busways and have a low daily frequency.

The nearest train stations to the site are East Richmond (2.0km) and Richmond (2.5km). Walking distances are approximately 24 minutes and 30 minutes, respectively. Route 677 connects Richmond Station to Londonderry Road and could be used as a transfer to the site.

No existing school bus routes operate within the University campus. Busways operates school services to several local schools in the area, including Richmond High School, Richmond North Public School and Richmond Public School. In addition to servicing residential areas, these services typically provide a connection between each school and local amenities such as Richmond Station.

WSU shuttle buses travel to and from campus via Richmond Marketplace and East Richmond railway station with a frequency of approximately 30 minutes. The shuttle stops at Richmond Marketplace and East Richmond station and within the campus at Fairy Circle, Residential College, The Stables, and the Library.

There are limited pedestrian footpaths available outside the Western Sydney University. It is noted within the Western Sydney University has fair internal footpaths available for pedestrians. Footpaths are not provided on either side of Londonderry Drive and Southee Road.

There is generally good provision of cyclist connections in the region, including a marked on-street bike lane in each direction on Blacktown Road outside the WSU campus site.

The location of the site within the immediate surrounding road network is shown in **Figure 24.**

Figure 24 Local Road network

The main intersections connecting the WSU Campus to the public road network are:

- Vines Drive at Londonderry Drive.
- College Drive at Bourke Street.
- Campus Drive at Blacktown Road.

To determine the existing traffic generation of the site and surrounding traffic conditions, intersection movement counts, and mid-block tube counts were completed at various locations in the vicinity of the site with results displayed in **Table 14.**

Table 14 Summary of Existing Conditions Intersection Modelling

	2021 – Existing Operation Without Development			
Intersection / Peak	Average Delay (sec)	DoS	95% Queue Length (m)	LoS
Londonderry Rd / Vines Dr. (AM)	11.8	0.071	1.8	A
Londonderry Rd / Vines Dr (PM)	10.7	0.161	4.1	A
Londonderry Rd / Southee Rd (AM)	9.2	0.301	8.8	A
Londonderry Rd / Southee Rd (PM)	10.1	0.179	4.4	A
Lennox St / Paget St (AM)	11	0.604	33.2	A
Lennox St / Paget St (PM)	11.9	0.709	44.8	A
Blacktown Rd / Bourke St (AM)	18	0.443	74.3	B
Blacktown Rd / Bourke St (PM)	21.2	0.594	103.9	B
Campus Dr / Blacktown Rd (AM)	34.5	0.119	2.6	C
Campus Dr / Blacktown Rd (PM)	33.1	0.359	9.7	C

Data for signalised intersections is intersection total

Data for unsignalized intersections is manoeuvre with worst delay

Based on the results outlined in **Table 14** the nominated study intersections operate at a satisfactory level of service during both the AM and PM peak conditions.

7.5.3 Assessment

The majority of students will visit the school by way of private bus, directly from the base schools. Pedestrian access to the site is limited due to non-catchment nature school, which is thought to result in fewer local pedestrians. The long distance to train stations is an impediment to public transport usage. The need to get pedestrians safely across Londonderry Road to buses will require minor infrastructure upgrades to improve connectivity and safety.

Proposed development

The proposed development will provide the following.

- Access points on Vines Drive and along Maintenance Lane, to the drop-off and pick up area and main car park, respectively.
- Connection to the external pedestrian pathway network via a pedestrian entry from Vines Drive. A new footpath is proposed to link from the bus drop off along Londonderry Road to the School entrance.
- Emergency vehicles (e.g. police, ambulance, fire) access will remain in same location via the access along Vines Drive or via the Maintenance Lane. Emergency protocols for the school would include on-site staff assisting with emergency access. Any vehicle impeding the emergency vehicle access should be cleared, and any planned vehicle movements should be suspended.
- A new service driveway is to be constructed along the southern boundary of the site connecting to Maintenance Lane.
- On-site bicycle storage would be provided in accordance with the NSW Department of Education's Educational Facilities Standards & Guidelines (EFSG). It is recommended that the CoE provide 1 unisex shower with change room (separate to accessible bathrooms) plus lockers for staff.
- Construction of new formalised bus bays on Londonderry Road, as bus services from this interchange to Richmond and Penrith train stations. The Londonderry Road bus bay will operate as the primary bus stop servicing the school. Both publicly operated school bus and public bus services will be using the bus bay. This bay has capacity for up to 2 northbound and 2 southbound buses at one time.
- A drop-off and pick-up area will provide approximately 45 metres or 7 vehicles of straight kerbside space, accessed from Vines Drive and located outside Block A. The entry is located east of the exit, such that vehicles movements to and from Londonderry Road would not overlap.

- A main car park off Maintenance Lane with a capacity of 34 parking spaces including 1 accessible parking space. Additionally, 5 visitor parking spaces including 1 accessible parking space will be provided outside the main administration block, with access from Vines Drive. Total on-site provision is therefore 39 parking spaces.
- The existing Vines Drive / Londonderry Road intersection is to be maintained as a give way intersection. However, a signalised pedestrian crossing along Londonderry Road south of Vines Drive is proposed to accommodate the pedestrian demand. The proposed pedestrian crossing includes footpaths into the WSU campus for pedestrian connectivity. Long bus bays are proposed in each direction of Londonderry Road near Vines Drive which will serve the Centre of Excellence and will continue to serve the WSU Campus. Proposed works are illustrated in the extract from the TAIA as per **Figure 25.**

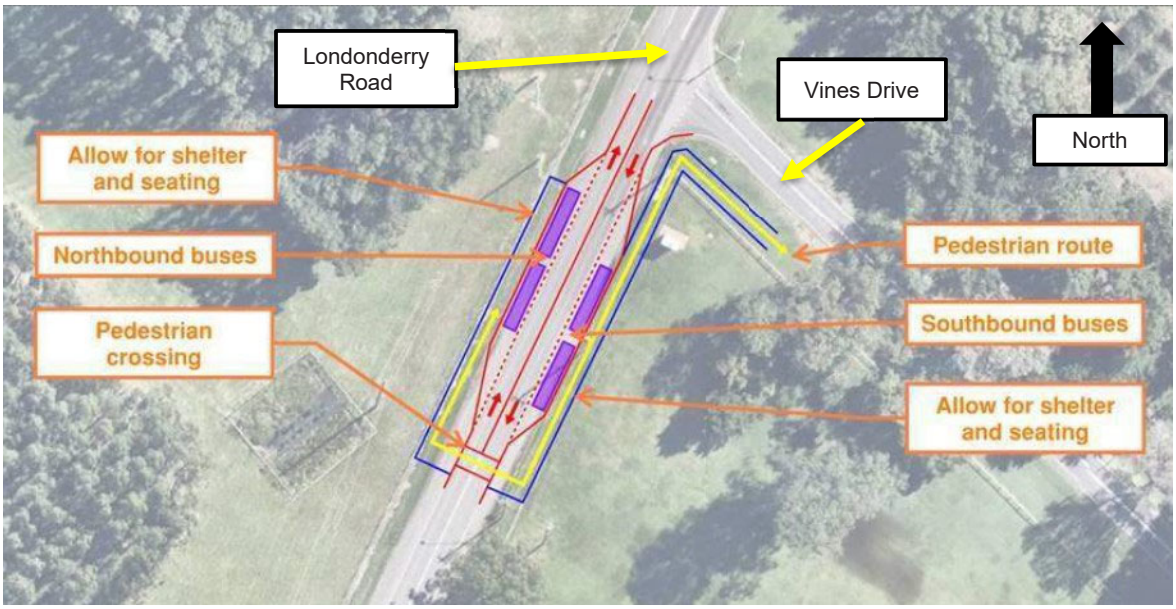

Figure 25 Proposed Londonderry Road / Vines Drive bus bay and improvements concept

The concept provided in **Figure 25** is a potential alternative to the preferred solution, which would be the implementation of TfNSW's concept design for the Southee Road and Vines Drive intersection which forms part of the overall concept design for the Richmond Bridge duplication project which includes a new road parallel to Southee Road and an upgraded intersection at Londonderry Road with traffic lights.

Travel Mode

The travel demands of CoE are summarised in **Table 15** and **Table 16**. Across the varying operational modes and expected school activities, travel mode also varies.

Table 15 Travel mode expectations

Travel Mode	Richmond Ag College Staff	Richmond Ag College Students	Program Visitors	Other Visitors
Train	5%	60%	25%	10%
Connecting Bus	5%	60%	25%	10%
Bus (public)	-	-	75%	10%
Bus (private)	5%	30%	-	-
Car driver Inc. truck and motorbike	80%	4%	0%	80%
Car passenger	8%	4%	0%	0%
Bicycle	0%	0%	0%	0%
Walk only	0%	0%	0%	0%
Total	100%	100%	100%	100%

Table 16 Travel mode expectations (numbers)

Travel mode	Richmond Ag College Staff	Richmond Ag College Students	Program Visitors	Other Visitors
Train	1	195	25	30
Connecting Bus	1	195	25	30
Bus (public)	1	98	-	-
Bus (private)	-	-	75	0
Car driver Inc. truck and motorbike	20	13	0	120
Car passenger	2	13	0	0
Bicycle	0	0	0	0
Walk only	1	7	0	0
Total	25	325	100	150

Travel to CoE is predicted to be through vehicle and public bus modes. In order to encourage active transport, a review of the pedestrian infrastructure has identified that the existing infrastructure will need to be updated for safe access to the site.

Future traffic conditions

The transport strategy for the site requires a large number of pedestrians to be able to safely cross Londonderry Road. Therefore, the proposed strategy of a signalised pedestrian crossing, refer to **Figure 25**, has been put forward. It is proposed to install signalised pedestrian crossings at the south of Vines Drive because of the high number of pedestrians crossing the intersection. Therefore, any potential risks of pedestrians' accident getting off/on buses that stop at bus stops located at Londonderry Road (one at Vines Drive and one opposite Vines Drive) would be minimised.

The performance of nearby intersections with existing background traffic without and with the development traffic generated has been assessed using SIDRA traffic modelling. The TAIA provides the modelling outcomes under various forecast conditions. These results consider the intersection of Londonderry Road / Vines Drive with the proposed signalised pedestrian crossing arrangement. All intersections listed in **Table 14** will currently operate or will operate at an acceptable level of service under the scenarios of:

- In 2021 with without the development of the CoE.
- In 2021 with the development of the CoE.
- In 2031 with without the development of the CoE.
- In 2321 with the development of the CoE.

The performance of the Londonderry Road corridor with development of the CoE is acceptable with regards to the average delay, level of service and degree of saturation of the modelled junctions including the pedestrian crossing, Vines Drive/Londonderry Road and Southee Road/Londonderry Road.

The TAIA notes a change of level of service occurs at the intersection of Campus Drive and Blacktown Road for vehicles turning right out of Campus Drive in the 2031 scenario. The change of average delay from 40.2 seconds to 44.8 seconds during AM peak and from 42.3 seconds to 48.7 seconds occur due to background traffic growth.

Table 17 to **Table 19** provides the results of SIDRA modelling of the intersection of Londonderry Road and Vines Drive and the intersection of Londonderry Road and Southee Road.

Table 17 Summary of modelling results for 2021 with development of the CoE.

Intersection / Peak	2021 – Existing operation without development			
	Average Delay (sec)	DoS	95% Queue length (m)	Level of service
Londonderry Road / Vines Drive (AM)	10.4	0.07	1.6	A
Londonderry Road / Vines Drive (PM)	10.2	0.174	4.3	A
Londonderry Road / Southee Road (AM)	9.3	0.303	8.9	A
Londonderry Road / Southee Road (PM)	10	0.18	4.4	A

Data for signalised intersections is intersection total
Data for unsignalized intersections is manoeuvre with worst delay

Table 18 Summary of modelling results for 2031 without development of the CoE.

Intersection / Peak	2021 – Existing operation without development			
	Average Delay (sec)	DoS	95% Queue length (m)	Level of service
Londonderry Road / Vines Drive (AM)	13.3	0.091	2.3	A
Londonderry Road / Vines Drive (PM)	11.8	0.197	5	A
Londonderry Road / Southee Road (AM)	10.2	0.357	11.3	A
Londonderry Road / Southee Road (PM)	10.9	0.216	5.3	A

Data for signalised intersections is intersection total
Data for unsignalized intersections is manoeuvre with worst delay

Table 19 Summary of modelling results for 2031 with development of the CoE.

Intersection / Peak	2021 – Existing operation without development			
	Average Delay (sec)	DoS	95% Queue length (m)	Level of service
Londonderry Road / Vines Drive (AM)	13.5	0.102	2.5	A
Londonderry Road / Vines Drive (PM)	12	0.22	5.7	A
Londonderry Road / Southee Road (AM)	10.3	0.359	11.4	A
Londonderry Road / Southee Road (PM)	11	0.218	5.4	A

Data for signalised intersections is intersection total
Data for unsignalized intersections is manoeuvre with worst delay

Car parking

It is proposed to provide a total of 39 parking spaces on the site, which is less than the Hawkesbury DCP car parking requirements. It should be noted that for the operation of CoE, the dining hall would either be used by students and staff already on the site (thereby creating zero demand) or would be used for events outside school times (such as short courses, in-service teacher training and / or conferences related to agricultural / STEM education) at which point the shared usage of WSU parking would apply. Therefore, if this category is removed from the DCP car parking requirements, the resulting calculation would be 43 spaces. The proposed provision is therefore only marginally below the suggested DCP car parking requirements.

It is estimated that approximately 20 staff members and 13-15 students are expected to drive to the site. These volumes, plus some allowance for visitor parking, would be accommodated within the CoE car park. Overflow parking for peak usage periods (e.g. for other events) would be on arrangement with WSU, in available parking areas such as the adjacent P47 car park.

Overall, the strategy for provision of parking is consistent with the transport strategy of the development as proposed to the Transport Working Group and achieves the sustainable transport goals of the project and of state planning policies more broadly.

Car parking will be designed to be compliant with the latest Australian Standard AS2890.1. The car park is generally classified as a Class 2 car park (to cater for visitors and occasional users), comprising 2.5m wide spaces and 5.8m wide parking aisles.

The existing P47 car park, which will act as an overflow car park in high-usage scenarios, would be maintained in its existing condition and layout.

The Building Code of Australia (BCA) defines accessible parking requirements as a portion of total capacity depending on the land use. To cater for the school development, accessible parking is to be provided at a conservative rate of 1 space for every 100 car parking spaces or part thereof (1%). The development is required to provide a minimum of 1 accessible parking space.

The proposed design provides 2 accessible spaces, located at the parking area adjacent to Block A and in the staff car park, complying with the BCA.

Car pick-up and drop off

The most significant impacts at any school usually occur around school start and finish times, particularly during the afternoon pick-up period as families arrive in advance and queue to collect their children. All activity typically clears in a period of 15-20 minutes. Morning drop-off is less impacting to traffic, as activity is spread over a longer time (45-60 minutes) and does not require vehicles to queue and wait.

The functional capacity of the kiss & ride zone is assessed as follows.

- Total capacity: 7 vehicles
- Peak period: 15 minutes
- Vehicle turnover time: 90 seconds
- Vehicle cycles: 10 per peak period
- Vehicle flow capacity: 70 vehicles per peak period.

The capacity of the kiss and ride drop off area is considered sufficient to accommodate the forecast usage levels.

Bus zones

The Londonderry Road bus bay will operate as the primary bus stop servicing the school. Both publicly operated school bus and public bus services will be using the bus bay. This bay has capacity for up to 2 northbound and 2 southbound buses at one time.

The overall estimated demand for bus movements, including bus connections to and from Richmond and Penrith train stations, is approximately 300 persons, which is the equivalent to approximately 6 buses. Therefore, the Londonderry Road bus bays would have sufficient capacity to cater for these buses in 2 cycles or less.

7.5.4 Mitigation Measures

Measures to ameliorate adverse traffic impacts have been identified in the TAIA and are outlined below.

School Transport Plan

The TAIA has outlined a School Transport Plan (STP) to promote active transport to the site, support mode shares and sustainable management of the transport needs of staff and students to the development. This is to be reviewed regularly and updated as required, the plan includes the following measures:

- Information campaigns to educate staff and students on available ulterior travel methods to and from the site including end-of-trip facilities ad safe routes to surrounding neighbourhoods.

- Reduced car parking, by limiting the car parking spaces staff are more likely to engage in active and public transport options. This is considered to result in reduced traffic congestion.

Preliminary Construction Traffic and Pedestrian Management Plan

A draft Construction Traffic and Pedestrian Management Plan (CTPMP) has been prepared as part of the TAIA. It discusses the management of construction vehicles and activities and requires an investigation of the local traffic and safety conditions throughout the construction process.

A detailed CTPMP will be prepared by the builder with consideration of all final design selections.

A CTPMP is to be developed to satisfy the duties of various work health and safety legislation, regulations and codes of practice including those from SafeWork NSW. Traffic Guidance Scheme (TGS) will also need to be developed in association with a final CTPMP for the future site to demonstrate the traffic control procedures to be implemented. These must be developed in accordance with Transport for NSW and the relevant Australian Standards.

7.5.5 Conclusion

The TAIA analysed the proposed development and the found the following.

- Forecast pedestrian and vehicle volumes can be accommodated within the proposed concept design for a signalised pedestrian crossing at Londonderry Road south of Vines Drive. The proposed concept works would be sufficient as a permanent solution (based on traffic modelling results), however would be preferable as an interim solution to be replaced by the TfNSW Richmond Bridge duplication project and new road parallel to Southee Road.
- Forecast additional vehicle traffic volumes are low and can be comfortably accommodated in the local and state road network while sustaining good levels of intersection performance.
- Northbound (from Penrith to Richmond) and southbound (from Richmond to Penrith) bus services will be critical for moving people to the respective train stations, for connecting access to Greater Sydney (an expected part of the site operations).
- The proposed car parking provision is considered suitable, accommodating general daily demands within the CoE site and accommodating peak demands within the WSU Campus car park (which has availability and would be used off-peak).

7.6 Ecologically Sustainable Development (ESD)

Item 5 of the SEARs stipulates that the EIS demonstrate how the design incorporates ecologically sustainable development principles through an assessment against an accredited ESD rating system or an equivalent program of ESD performance. An Ecologically Sustainable Development Statement has been prepared by Norman Disney and Young and can be found in **Appendix J**. The ESD Report examines the following:

- The proposed development has been assessed against the 4 Star Green Star Design and As Built v1.3 ‘in principle’ rating system. The 4 Star Green Star rating system is deemed to represent Australian Best Practice Development.
- The ESD Report provides a statement regarding how the design of the development is responsive to the NARCliM impacts of climate change accompanies the ESD statement with regard for NSW and ACT Government Regional Climate Modelling (NARCliM) climate change projections.

An Integrated Water Management Plan detailing proposed alternative water supplies has been included in the Soil and Water Assessment prepared by Woolacotts and contained in **Appendix T**.

7.6.1 Existing environment

The site of the proposed development is located on a parcel of land on Western Sydney University’s Hawkesbury campus. The site is currently vacant and has been historically used for grazing purposes. The site displays generally level topography with the surrounding development limited to buildings associated

with the university to the north and vacant land to the south. The site provides ample opportunity to utilise ESD best practices to maximise the efficiency of the proposal.

7.6.2 Assessment

The proposed development has adopted ESD principles to contribute to the conservation of resources and future resilience, across the whole lifecycle of the project, from construction to operational phase. The ESD Principles (as defined in clause 7(4) of Schedule 2 of the Regulation) are incorporated into the design and ongoing operational phases of the development as identified in **Table 20** below:

Table 20 ESD Principles

ESD Principles	Proposed Assessment Strategy	Measurement
Precautionary Principle		
	The design has been reviewed against holistic sustainability principles to ensure a high ecologically sustainable design (ESD) outcome is achieved. Sustainability measures have been incorporated, spanning across the project's design, construction and operations, based around the core principles of: • Efficient use of resources (energy, water and materials), • Enhancing indoor environment quality and occupant comfort • Minimising ecological impacts	A climate change risk assessment has been completed to assess the anticipated impacts of climate change and implement design strategies to mitigate these impacts.
Intergenerational Equity		
	Student and staff health will be considered through the incorporation of Indoor Environmental Quality design features such as daylight and glare analysis for natural lighting, best-practice lighting, indoor air quality, thermal comfort assessment, acoustic design, and responsible material selection.	Appropriate finishes have been selected to reduce internal pollutants and resource depletion for future generations.
Conservation of biological diversity and ecological integrity		
	The proposed design will consider design strategies to minimise the urban heat island effect and improve ecological value of the site.	Access to views will be considered to increase student engagement with the natural environment.
Improved Valuation, pricing and incentive mechanisms		
	Total cost of operation will be reduced through sustainable considerations to reduce energy, water and waste requirements, taking into consideration whole-of-life costing. The project will ensure sustainable principles are extended to include value for money, fit for purpose, long term reliability/ resilience and flexibility. Designing with the long-term operation of the building in mind will create further buy in and cooperation from the operating stakeholders.	Strategies to reduce operational waste will be considered such as the development of an operational waste management plan and separation of waste stations.

7.6.3 Mitigation Measures

The project impacts on climate change have been assessed based on predicted climate change models. Potential adaptations and design strategies to mitigate the risks of climate change include:

- Set and document operational environmental performance targets for the project (generally energy and water or waste consumption) in early design phase.
- Building owner to make a written commitment to at least 2 environmental performance targets (GHG emissions, potable water consumption, operational waste, indoor environmental quality).
- Passive design including careful use of shading and building layout/ orientation to minimise peak heat loads in summer and use passive heating in winter.
- Well insulated building fabric and high-performance glazing.
- Water efficient fixtures to be installed, further water sensitive design measures include rainwater reuse, onsite retention/ detention, erosion and sediment control and stormwater treatment are detailed in the Integrated Water Management Report in **Appendix R.**
- Energy efficient HVAC systems selected for each space type and usage.
- Energy efficient LED lighting with automated controls.
- Eliminate use of gas for heating and cooling (all-electric services).
- Rooftop PV array across as many buildings as possible.
- Purchasing Power Agreements for Green Power can provide additional GHG reduction.

A climate Adaptation Plan is to be developed for the building to address specific climate risks of the design and how they might be mitigated to reduce risk. As the construction of the development progresses, the feasibility of implementing the suggested opportunities for better ESD outcomes is to be investigated further.

7.6.4 Conclusion

Preliminary consideration of the proposed development has been undertaken to assess how the proposed design is responsive to future climate impacts by undertaking a climate change risk assessment with regard for energy, water, and waste reduction. Commitment to adopting Green Star ‘management’ credits across the development where feasible provides resilience to future climate change. The proposed development has been well designed to provide indoor environmental quality, thermal comfort and visual comfort resulting in a positive impact on the health and wellbeing of students and staff occupying the building.

7.7 Heritage

The Statement of Heritage Impact has been prepared by Comber Consultants and is contained in **Appendix EE.** The statement provides comment of significance and an assessment of the impact of the heritage significance of the heritage items in proximity to the site.

7.7.1 Existing environment

Four buildings on Lot 2 DP 1051798 are grouped as two local heritage items in Schedule 5 - Environment Heritage - of HLEP 2012 as follows:

- Item I9; Administrative Block, Blacksmith Shop and Stable Square Building.
- Item I10; Grandstand.

These buildings are not located on the site of the proposed development as illustrated in **Figure 26**.

Desktop analysis and a site investigation has been undertaken to determine the presence of heritage and/ or archaeological items at the site.

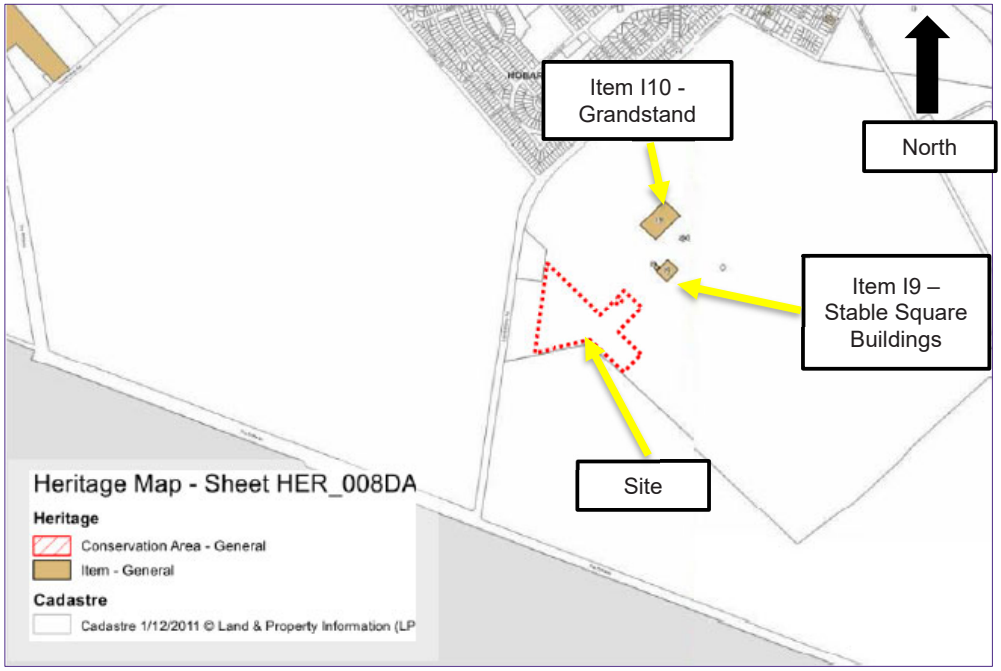

Figure 26 Extract from HLEP 2012 heritage map

Of the two local heritage items, the closest structure and in line of sight of the proposed development of the CoE is the Stable Square Building. The adjacent Blacksmith Shop is further to the west and not in direct line of sight, so it is not considered further in terms of visual or setting/curtilage impacts due to the proposed development.

The nature of the Stable Square Building is four L shaped wings around a 16m square courtyard which allows a 4-way crossing of axes. The east-west axis is of limited visual duration however the north-south axis is open to the north across the Oval, with its adjacent Grandstand, as well as open to the south to open farmland with paddocks, tree lines and distant Blue Mountains slopes.

Due to proximity and open sightlines, it is considered that the original Stable Square (south façade) and the new buildings (in particular Blocks C & D) have a material relationship.

7.7.2 Assessment

The proposed development has negligible impact on the recognized Heritage items- specifically the Administration blocks, cottages, Grandstand, and a low impact on Stables Square.

The Stables axis running north south has its southern entry portal approximately 106m from Vines Road. The proposed termination where the two paths intersect between Blocks C and D is 114m. The new structures are set at sufficient distance to overcome any immediate concerns regarding adversely impacting upon the setting and curtilage of Stable Square.

However, both the original Stables and Admin have large courtyards with 4-way crossings of axes. These tend to flow out to the rural landscape/horizon. There are both contained and non-contained views. In this case the open vista from the southern portal of the Stable Square will become contained by the diagonal Block B. This result in a loss of open paddock views.

Generally, the mid-points on the long elevations of both the Administration and Stable Square are marked by turrets, towers, fleches that signify entry points.

The proposed design has been reviewed and initial concerns were raised concerning curtilage and sight lines. The only structure in line of sight of the new development of the CoE is the Stables Square (1896). In order to invoke the essential character of the traditional Hawkesbury Agricultural site (now WSU Campus),

the design was amended to recognise the axis from Stables Square by terminating it with a raised inflection or square arch in the otherwise uniform awning veranda to Block B. The axis leading from the Stables Square is to be lined by significant landscaping which will assist in defining the south-eastern side of the path.

In respect of the heritage significance of the surrounding environment, the proposed design will now have no adverse impact on the listed heritage items, specifically the Administration Block, the cottages, the Grandstand, the Blacksmiths Shop and the Stables Square.

7.7.3 Mitigation measures

- An archaeologist should be on-call so that if items associated with the agricultural history of the study area are located during constructions work the archaeologist should be contacted and should attend the site to identify the item and assess the significance of the item. All work should cease in the vicinity of the item until the archaeologist has assessed the item and its context and provided advice.

No mitigation measures are proposed with respect to heritage significance.

7.8 Archaeological Assessment

Item 6 of the SEARs stipulates that the EIS identify any archaeological potential or archaeological significance on and adjacent to the site. A Historical Archaeological Assessment has been prepared by Comber consultants and is contained in **Appendix K**. The Historical Archaeological Assessment identifies any archaeological potential or significance on land adjacent the site and the impacts the development may have on this significance.

7.8.1 Existing Environment

The Archaeological Report indicates that the study area is currently vacant, in an area of Nepean River flats. There are no extant structures present apart from fencing and drain lines. The desktop assessment and site inspection indicate that the site does not contain any significant historical archaeological features or relics. There site displays low archaeological potential.

7.8.2 Assessment

The site has been found to be of nil-low archaeological significance on account of the test excavation resulting in no Aboriginal objects and/or deposits of cultural or archaeological significance being located.

7.8.3 Mitigation Measures

The Historical Archaeological Assessment concludes that the study area does not contain any significant historical archaeological features or relics. The project can proceed without any constraints in respect to historical archaeology.

Notwithstanding the following mitigation measures are recommended:

- Consultation with the registered Aboriginal stakeholders should continue. Stakeholders have been given the opportunity to comment on the recommendations of this report and these comments are included in this report.
- An Aboriginal Cultural Heritage Management Plan should be devised upon approval of the State Significant Development application (SSD-15001460) and prior to construction commencing, in order to manage any unexpected Aboriginal archaeological and cultural constraints that may arise.
- Archaeological test excavation conducted in 2017 in accordance with Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010) revealed no Aboriginal archaeological objects or deposits. The development should be allowed to ‘proceed with caution’. After this and before any ground disturbance takes place all development staff, contractors and workers should be briefed prior to works commencing

on site as to their responsibilities regarding any Indigenous archaeological deposits and/or objects that may be located during the following development.

7.9 Aboriginal cultural heritage

7.9.1 Methodology

Item 7 of the SEARs requires an ACHAR to be undertaken. AMAC and Streat Archaeological Services has prepared an ACHAR, which is contained **Appendix L.** The ACHAR highlights the following information in response to the SEARS:

- Identifies and describes the cultural heritage values that exist across the site.
- Includes site surveys and test excavations where necessary.
- Has been prepared in accordance with the Guide to investigating, assessing, and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2021) and *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (OEH, 2010).
- Incorporates consultation with Aboriginal people in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment, Climate Change and Water, 2010).
- Documents the significance of cultural heritage values of Aboriginal people who have had a cultural association with the land.

Pursuant to the SEARs, the ACHAR has provided a complete examination of the requested information.

7.9.2 Existing Environment

The site has been assessed to understand the environment of the study area and the potential for archaeological evidence created by the Aboriginal inhabitants. Historical reports have identified the area as a resource rich zone due to the proximity to fresh water and distance to the Nepean River.

The land has been historically cleared soon after European settlement due to the relatively high agricultural value of the soils upon which they are situated. The site is part of the Cumberland Lowlands where the most common Aboriginal archaeological site is Open Artefact Scatters or Open Campsites. Much of the Cumberland Lowlands area has been developed to an extent that has resulted in destruction of archaeological evidence.

7.9.3 Assessment

The ACHAR has undertaken research and consultation with the Heritage NSW library of archaeological reports, Hurstville. Historical test excavation and salvage excavation reports, and the Archaeological Heritage and Information Management System Database (AHIMS) were reviewed for the most relevant recent studies and artefacts that have been identified within the vicinity of the study area.

Test excavation at the site was undertaken in 2017 by Streat Archaeological Services in association with AMAC Group whereby findings concluded that the site displayed low to moderate potential in containing Aboriginal objects.

Aboriginal consultation for this report has been undertaken in accordance with Heritage NSW and *National Parks and Wildlife Act 1974: Part 6 National Parks and Wildlife Act Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010)*. The concerns and views of the Aboriginal stakeholders listed in the ACHAR have been collected over a mandatory 28-day period.

7.9.4 Mitigation measures

As no archaeological and/ or Aboriginal cultural material was located as a result of the programme of test excavation, no Aboriginal educational, scientific, representative or aesthetic significance can be assigned to the area. Furthermore, the test excavation has not resulted in the findings of any items of Aboriginal objects or features of cultural significance. Therefore, further investigation is not warranted, and works may proceed with caution.

The ACHAR provides recommendations for the lifecycle of the proposed development:

- Ongoing consultation with the registered Aboriginal stakeholders should continue through the construction and operational phases of the development.
- An Aboriginal Cultural Heritage Management Plan should be devised upon approval of SSD-15001460, prior to commencing construction.
- Prior to any ground disturbance taking place, all development staff, contractors, and workers should be briefed prior to works commencing on site as to their responsibilities regarding any Indigenous archaeological deposits and/or objects that may be located during the following development.
- An unexpected finds protocol is to be followed in the event that Aboriginal archaeological deposits and/or objects are located during the development. All work is to cease in the immediate vicinity of the deposits and/or objects, the area is to be demarcated and DPIE should be contacted along with a qualified archaeologist and the participating RAPs are to be notified.
- In the event that human remains are discovered during the development, the following should take place:
- All excavation in the immediate vicinity of any objects of deposits shall cease immediately.
- The NSW police and Heritage NSW Enviroline be informed as soon as possible.
- Once it has been established that the human remains are Aboriginal ancestral remains, DPIE, and the relevant Registered Aboriginal Parties will identify the appropriate course of action.

7.10 Social Impacts

7.10.1 Methodology

Item 8 of the SEARs' identifies the need for a social impact assessment to accompany the EIS with an assessment of the social consequences of the Centre of Excellence's relative location. The Social Impact Assessment has been undertaken by RPS Group and is contained in **Appendix M**.

The Social Impact assessment has been completed in accordance with the *Social Impact Assessment Guideline for State-significant projects* and Technical Supplement issued in October 2020 by DPIE and are used to evaluate the likely significance of both positive and negative social impacts.

Information has been retrieved from the following sources to support this assessment:

- Census Data from the Australian Bureau of Statistics (ABS).
- Review of the relevant Council and State Strategic Documents.
- Bureau of Crime Statistics and Research.
- Hawkesbury City Council website.

7.10.2 Existing Environment

The proposal is sited within 1.6km from Richmond High School and encourages students to access the school through public, private, or active transport. The site is located approximately 2km south of the Richmond train station and Richmond townsite and approximately 600m from the nearest residential area. Contextually, the site affords easy direct access for the students and staff of the CoE.

The predominate influence on the site is unique due to the surrounding University facilities, resulting students and faculty. The CoE provides a local resource to students for access to facilities, classes and research opportunities. The development enables students to immerse themselves in a tertiary learning environment resulting in better development of educational pathways and industry engagement, collaborative research opportunities and experience with innovative agricultural practices.

The methodology undertaken in the Social Impact Statement is presented in accordance with the Draft Social Impact Assessment guideline for state significant projects from NSW Government. The SIA includes a comprehensive desktop assessment to identify the key impacts of the site on the surrounding environment and local community. Review of Census data from the Australian Bureau of Statistics (ABS), Council and State strategic documents, Bureau of Crime Statistics and Research and Hawkesbury City Council website was undertaken as part of this process.

The SEARs require consultation to be undertaken with the relevant local, State or Commonwealth Government authorities, service providers, community group, relevant special interest groups, including local Aboriginal land councils and registered Aboriginal stakeholders and affected landowners. Consultation for the project was undertaken with Hawkesbury Council, Department of Planning, Industry and Environment (DPIE), Transport for NSW, Government Architect NSW, Western Sydney University and the local Aboriginal and residential communities.

7.10.3 Assessment

Desktop analysis has been undertaken in the social impact assessment to identify the main influences on the site and contextual environment and surrounding local community. This data is interpreted to analyse and predict the likely impacts of the proposed development on the locality as documented in **Table 21**.

Table 21 Expected and perceived social impacts

Item	Social impact
Land Use	The proposal is sited on land that has been identified as within SP1 Special Activities. The proposal will result in improved utilisation of the land for the purpose of an Educational Establishment. The development reflects the significant need for contemporary additional public education and community infrastructure in the area. The project is a new facility for high school students within the local catchment area to receive skilled training in STEM and agricultural education.
Access to Education and Social Infrastructure	The CoE provides a local resource to students from Richmond High School access to facilities, classes and research opportunities. The development enables students to immerse themselves in a tertiary learning environment resulting in better development of educational pathways and industry engagement, collaborative research opportunities and experience with innovative agricultural practices. The result is greater access to higher education pathway within the locality.
Economy	The inclusion of the Hawkesbury CoE increases the opportunities for diversity in the locality, potentially attract new demographics for attendance at the school and employment opportunities.
Community Values and Cohesion	Community composition expected to remain unchanged. Project is considered to result in a more vibrant, inclusive community.
Crime and Safety	The area displays relatively stable crime statistics. The inclusion of a school in the community is considered to have a high likelihood of reducing preventable risk.
Accessibility	The proposal has been designed as a shared multi-functional space for school and community use. Provisions have been outlined in the Access Report and integrated into the design to provide persons of all abilities safe, inclusive access to the site.

7.10.4 Mitigation Measures

Key mitigation measures to reduce the social impact of the project include:

- Undertaking regular community consultation.

- Facilitating channels for complaints and feedback.
- Implementing traffic management plans to reduce access and safety issues.
- Reducing construction impacts through a construction environmental management plan.

7.10.5 Conclusion

The Social Impact Assessment concludes that the negative social impacts are primarily associated with the construction phase of the project both directly and as a result of cumulative construction works. The development is considered a positive social inclusion to the environment through equity of access to education and associated services for different social and cultural groups.

7.11 Noise and Vibration

7.11.1 Methodology

Marshall Day Acoustics (MDA) was engaged to prepare an assessment of noise and vibration relating to the construction and operation of the proposed CoE and address the requirements of section 9 of the SEARs Noise and Vibration. Assessment of the school has considered the following:

- Planning Secretary's Environmental Assessment Requirements (SEARs) (Application Number: SSD 15001460) issued 19th March 2021.
- NSW Noise Policy for Industry 2017 (NSW Environment Protection Authority (EPA).
- Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009).
- Assessing Vibration: A Technical Guideline 2006 (Department of Environment and Conservation, 2006).
- Australian Standard 2363 Acoustics - Measurement of noise from helicopter operations (AS 2363).

Additional standard and guidelines are referenced, comprising:

- Protection of the Environment Operations Act 1997, NSW Environment Protection Authority (POEO).
- Noise Guideline for Local Government, NSW Environment Protection Authority 2013 (NGLG).
- AS 2021:2015 Acoustics - Aircraft Noise Intrusion - Building Siting and Construction.

A long-term unattended survey of background noise levels was conducted at a location close to the site boundary from 3 March 2021 to 8 April 2021, using a 01dB noise logger. Additionally, attended measurement has been carried out near the university student accommodation on 3 March 2021. Measurement locations are shown in the Acoustics Report located in **Appendix N**.

7.11.2 Existing Environment

The proposed site currently vacant agricultural with the intervening properties to the receptor zone being essentially flat land. Noise at five (5) existing primary receivers were considered as part of the assessment with details provided in **Table 22**.

Table 22 Noise sensitive receivers selected for assessment.

Location	Receiver type	Description
North of the proposed development approximately 549m	Residential	Single lot residential housing area to the north of the proposed development corner Southee Road and Londonderry Road. It includer two level dwellings.
Northwest of the proposed site 118m	Residential Care	Multistorey residential care building nearby the proposed development. This residential receiver represents the closest sensitive residential type receivers located adjacent the western extremities of the subject site.
Northwest of the proposed site 52m	Student Accommodation	Single-storey residential buildings nearby the proposed development. This group of residential receivers

Location	Receiver type	Description
		represents the closest sensitive residential type receivers located northwest of the subject site.
North of the proposed site 17m	Educational	WSU Forensic and Biology Labs(K16) to the north of the proposed development, separated by Vines Drive.
East of the proposed site 21m	Educational	WSU Microbiology (J4) Labs Building with a common boundary with the proposed development. This receiver is identified as the closest educational building to the subject site.

7.11.3 Assessment

The expected noise and vibration sources associated with the development of the Site are listed below. Vibration was considered as part of the assessment for the construction sources only as no operation sources are expected to give rise to perceptible vibration levels at residential receivers.

7.11.3.1 Construction

It is anticipated that all construction works will be completed during Standard daytime construction hours, Monday to Friday from 7 am to 6 pm, Saturday 8 am to 1 pm, with no work on Sundays or public holidays. The expected noise and vibration sources for construction are listed below:

- Site Preparation
- Bulk Excavation
- Construction

Noise criteria applicable to the project site with respect to construction activities have been derived considering the 'Interim Construction Noise Guideline' (ICNG). The ICNG defines noise management levels of "Noise Affected" and "Highly Noise Affected" for the purpose of managing construction noise.

The "Noise Affected" level is defined as the point above which there may be some community reaction to noise. The "Highly Noise Affected" level represents the point above which there may be a strong community reaction to noise. Noise from construction is expected to be below the derived "Highly Noise Affected" management goals for all the surrounding receivers and above the "Noise Affected" management goals,

Based on the assumed plant and equipment summarised in **Appendix N**, some vibration intensive activities may potentially exceed the applicable human comfort criteria outlined in NSW EPA document Assessing Vibration – a technical guideline (DEC 2006) at distances of up to around 100 meters.

7.11.3.2 Operation

With respect to operational noise, noise emissions from the following sources have been considered:

- Public Address System.
- School Bell.
- Mechanical Services.
- Outdoor Activities.
- Use of dining hall and presentation space.
- Aircraft Noise.
- Limited reviews of agricultural equipment and carparks.

Primary use of the school will be during the Daytime period (0700-1800 hrs) Additionally, the dining and multipurpose space may be used by in the evening period (1800-2200 hrs). **Table 23** outlines the long-term measured average background and ambient noise levels recorded between March and April.

Table 23 Measured Average background and ambient noise levels – long-term.

Period	Time of day	RBL L_{A90} dB	L_{Aeq} dB
Day	0700-1800 hrs	35	48
Evening	18:00-22:00 hrs	45	52
Might	22:00-0700 hrs	38	47

L_{A90} = A-weighted noise level equalled or exceeded for 90% of the measurement period. This is commonly referred to as the background noise level.

L_{Aeq} = The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.

During the attended measurement, it was noted that the ambient noise of the environment was controlled by noise from nature (insects and frogs) as well as distant traffic noise from Londonderry Road.

7.11.4 Mitigation Measures

Construction

Based on the assumed construction plant items, it is recommended that the noise control measures detailed in **Table 24** are implemented on-site.

Table 24 Construction noise control recommendations for site

Phase	Equipment/Location	Recommendation
Site Preparation	Generator Air compressor	• Localised noise barriers should be utilised when this equipment is in use. • Barriers should be mobile and extend to a height 1 m above noise source. • Barrier should envelop the work location to ensure no direct line of sight to nearby receivers. • Practical and feasible measures should be taken to allow the noise barrier to be located within 4 m of the noise source.
Bulk Excavation	Jack hammer & breaker Concrete saw Generator Air compressor De-watering plant Mobile Plant e.g., excavator, trucks etc	• Localised noise barriers should be utilised when this equipment is in use. • Barriers should be mobile and extend to a height 1 m above noise source. • Barrier should envelop the work location to ensure no direct line of sight to nearby receivers. • Practical and feasible measures should be taken to allow the noise barrier to be located within 4 m of the noise source.
Construction	Brick saw. Concrete saw/ring saw Generator Air compressor De-watering plant	• Localised noise barriers should be utilised when this equipment is in use. • Barriers should be mobile and extend to a height 1 m above noise source. • Barrier should envelop the work location to ensure no direct line of sight to nearby receivers. • Practical and feasible measures should be taken to allow the noise barrier to be located within 4 m of the noise source.

The above noise control recommendations are provided in the absence of a detailed construction methodology. Where vibration intensive activities are proposed close to sensitive receivers, site measurements and alternative equipment or methodologies should be employed. A full Construction Noise and Vibration Management Plan (CNVMP) will be required later, to be prepared by the principal construction contractor, and detailed construction methodology is available.

Operation

The following outlines the operational mitigation measures to be implemented during the operation phase of the project. Further details and building performance requirements for the proposed development to achieve appropriate internal amenity standards can be found in **Appendix N**.

At this early point in the development of the project design, the specification of the public address system, school bell and mechanical services is not sufficiently progressed such that noise emissions can be evaluated in detail. General comments and derived maximum noise levels have, however, been provided in order to assist the ongoing design and ensure noise emissions from these sources can be properly controlled.

Noise generated within most of the school's internal spaces will be typically low and can be controlled with standard building constructions in most instances. Therefore, noise from the school's internal spaces is not generally assessed in detail in this report.

Noise from use of school dining hall and presentation space (Block E), during school time and out of hours evening time, has been quantitatively evaluated based on assumed maximum internal sound levels for expected activities. This has informed preliminary performance requirements for building enclosure elements including external walls, roofs, glazing and door systems. Based on the anticipated use, standard building envelope construction types will provide adequate acoustic containment of the anticipated activities.

Outdoor activity noise has been qualitatively assessed based on the subjective assessment guidance described in the Protection of the Environment Operations Act 1997, and the EPA Noise Guideline for Local Government. Noise from general outdoor activities has been clearly established as not qualifying for description as offensive noise, although some restrictions may apply to the use of the COLA area.

Details on possible farming plant and equipment is not known at this stage. It would however be necessary to develop an operational noise management plant to limit noise impacts from equipment associated with the agricultural plots, orchards and dams.

Traffic noise intrusion across the site is low, with standard building construction sufficient to control noise from traffic. There may be a minor exceedance of the criteria with windows open, however.

The site lies outside the ANEF 20 Zone associated with the Richmond RAAF base. As such, the site is defined as "acceptable" within table 2.1 of AS 2021 and a formal assessment of aircraft noise is not required. This does not mean that there are no aircraft noise impacts, only that the numbers of movements nearby the site and the associated noise is sufficiently low as to be considered as "Acceptable" within AS 2021.

The bell systems have not yet been nominated; however, the following mitigation measures will ensure that bell systems will limit noise spill. Operation of the bell systems such that it does not interfere unreasonably with the amenity of nearby residences. External speaker use should be limited to the provision of short PA announcements and bell functions only and should not be used for playing music, radio or other continuous noise sources. Speakers will be positioned to minimise noise spill.

7.11.5 Mitigation Measures

- Strategically locate and select mechanical plant to ensure cumulative nose at the receiver boundaries is not adverse.
- Acoustically assess the public address and school bell systems once the location, number and type of loudspeakers has been determined.
- Operate the bell systems such that it does not interfere unreasonably with the amenity of nearby residences.

7.12 Biodiversity

7.12.1 Methodology

Item 10 of the SEARs require a Biodiversity Development Assessment Report (BDAR) for the Centre of Excellence. The BDAR has been prepared by Narla Environmental and is contained in **Appendix O.** The BDAR responds to SEARs by:

- Providing a BDAR that assesses the biodiversity impacts of the proposed development in accordance with the requirements of the *Biodiversity Conservation Act 2016*, *Biodiversity Conservation Regulation*

2017 and Biodiversity Assessment Method, except where a BDAR wavier has been issued in relation to the development or the development is located on biodiversity certified land.

7.12.2 Existing Environment

The subject site covers an area of approximately 11.37ha which is a vacant parcel of grassland with a frontage to Vines Drive to the north and is bounded by similar agricultural landscapes to the east, south and west. The site area comprises of grass pastures with some remnant native and exotic trees.

The proposed development has been divided into three components, which are collectively referred to as the 'Subject Land': the operational footprint (3.67ha); the construction footprint (0.52ha); and the retained vegetation to be managed as an APZ (2.49ha).

7.12.3 Assessment

Figure 27 depicts the vegetation communities that have been identified and measured by patch size at the site by the BDAR.

Vegetation Integrity Survey Plots (VIS) Plots – six (6) BAM VIS Plots were established within the subject area. Vegetation Integrity scores are attributed to each plot based on the existing vegetation. Further analysis has been provided in the BAM.

Most vegetation within the site will require removal to accommodate the proposed development, with the exception of the vegetation marked for retention (which will be managed as an Asset Protection Zone). The proposed development has been purposefully designed to minimise impacts on biodiversity values. The removal of vegetation within the site has largely been avoided, as the proposed development is mostly positioned in an area that has been historically cleared and having the least biodiversity values.

The proposed development is expected to impact one (1) Plant Community Type (PCT) 835: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. The proposed development will require the removal of approximately 4.19ha of PCT 835 across the site. The following ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development:

- Three (3) ecosystem credits for PCT 835.

Plant Community Type 835 conforms to the Endangered Ecological Community (EEC) River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and Southeast Corner bioregions (RFEF). River-flat eucalypt forest is not listed as an 'SAII entity' within the BioNet Threatened Biodiversity Data Collection (DPIE 2020b).

It is noted that the BDAR states that the following threatened species have been assumed present within the site and will require the purchase and retirement of Biodiversity Offset Credits.

- *Callocephalon fimbriatum* (Gang-gang Cockatoo).
- *Haliaeetus leucogaster* (White-bellied Sea Eagle).
- *Hieraaetus morphnoides* (Little Eagle).
- *Litoria aurea* (Green and Golden Bell Frog).
- *Lophoictinia isura* (Square-tailed Kite).
- *Myotis macropus* (Southern Myotis).
- *Ninox connivens* (Barking Owl).
- *Ninox strenua* (Powerful Owl).
- *Pandion cristatus* (Eastern Osprey).
- *Phascolarctos cinereus* (Koala).
- *Pilularia novae-hollandiae* (Austral Pillwort).

- *Pomaderris brunnea* (Brown Pomaderris).
- *Tyto novaehollandiae* (Masked Owl).

Targeted surveys will be required to be conducted within the DPIE approved survey periods to avoid purchasing offset credits for these species. The following species credits are required to be offset in order to mitigate the impacts upon these species as a result of the proposed development (pending the results of targeted surveys).

- Six (6) species credits for *Callocephalon fimbriatum* (Gang-gang Cockatoo).
- Three (3) species credits for *Haliaeetus leucogaster* (White-bellied Sea Eagle).
- Two (2) species credits for *Hieraaetus morphnoides* (Little Eagle).
- Ten (10) species credits for *Litoria aurea* (Green and Golden Bell Frog).
- Two (2) species credits for *Lophoictinia isura* (Square-tailed Kite).
- Ten (10) species credits for *Myotis macropus* (Southern Myotis).
- Three (3) species credits for *Ninox connivens* (Barking Owl).
- Three (3) species credits for *Ninox strenua* (Powerful Owl).
- Two (2) species credits for *Pandion cristatus* (Eastern Osprey).
- Three (3) species credits for *Phascolarctos cinereus* (Koala).
- Fourteen (14) species credits for *Pilularia novae-hollandiae* (Austral Pillwort)
- Ten (10) species credits for *Pomaderris brunnea* (Brown Pomaderris).
- Three (3) species credits for *Tyto novaehollandiae* (Masked Owl).

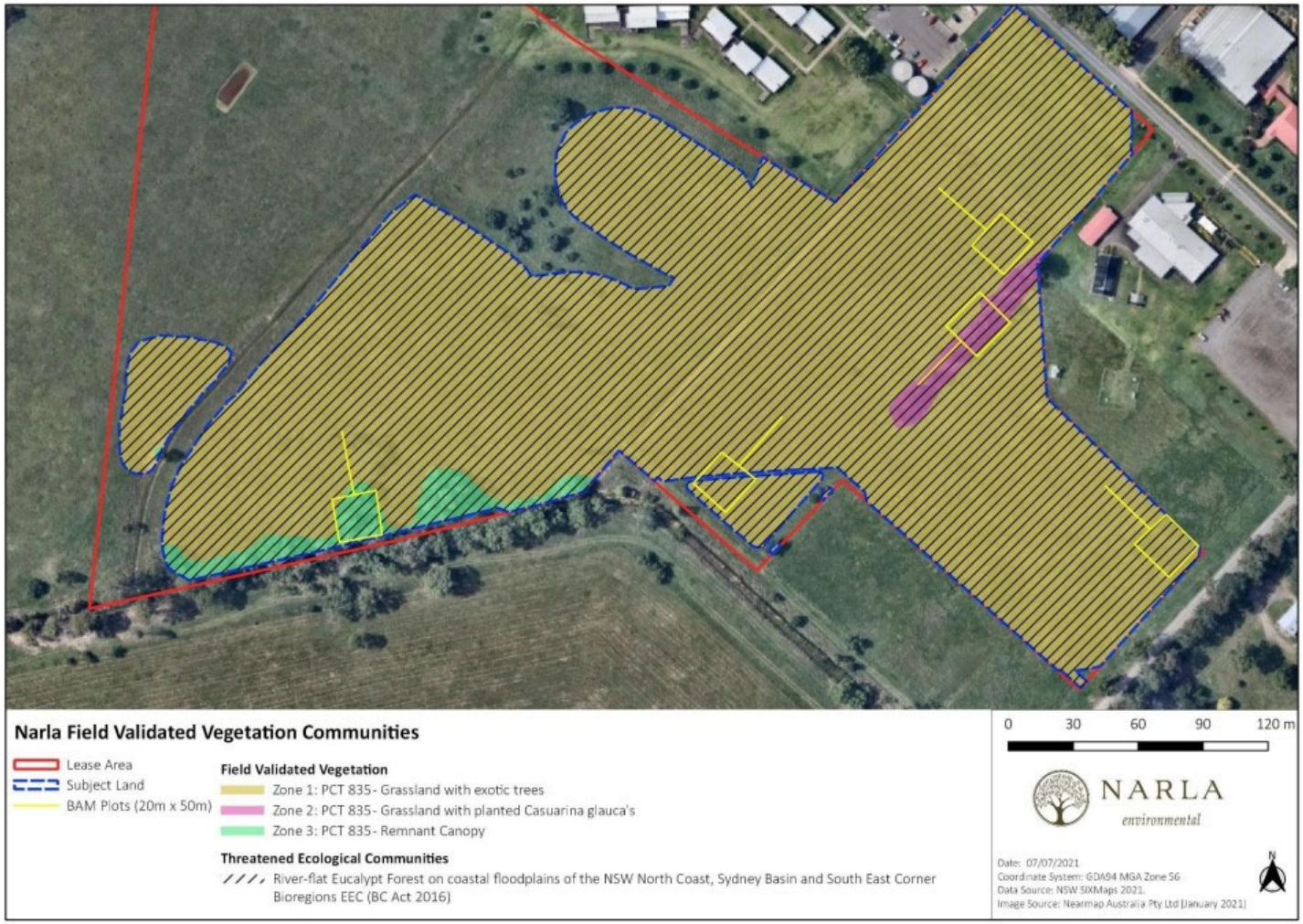

Figure 27 Existing vegetation communities onsite

7.12.4 Mitigation Measures

In order to avoid and minimise potential impacts of the proposed development on local biodiversity values, a series of mitigation and management measures have been identified, which are to be implemented as part of any Construction Environmental Management Plan produced for the site. This includes assigning a Project Ecologist to undertake an extensive pre-clearing survey, and to supervise the clearing of all vegetation in relation to the proposed development. The mitigation measures to be implemented before, during and post construction to avoid and minimise the impacts of the proposed development are provided below.

- Any temporary structures required for construction works should be located within areas of grassland that have minimal biodiversity values. This will avoid unnecessary impacts on native vegetation and habitat elsewhere within the site.
- In order to address the potential impacts of the proposed development on biodiversity, the biodiversity mitigation and management measures should be implemented as part of the CEMP for the site.
- Prior to construction, the applicant should commission the services of a qualified and experienced Ecologist Consultant (minimum 3 years' experience) with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management. The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act. The Ecologist will be commissioned to:
  - Undertake any required targeted searches for threatened flora prior to vegetation clearing.
  - Undertake an extensive pre-clearing survey, delineating habitat-bearing trees and shrubs to be retained/removed.
  - Supervise the clearance of trees and shrubs (native and exotic) in order to capture, treat and/or relocate any displaced fauna.
- All trees proposed for removal should be replaced at a ratio of 2:1 elsewhere within the site, with mature, locally mature species representative of the River-flat Eucalypt Forest Endangered Ecological Community.
- Landscaping works across the site should implement where possible, native vegetation representative of the River-flat Eucalypt Forest Endangered Ecological Community, to provide increased habitat features across the site.
- Appropriate erosion and sediment control must be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004).
- Temporary fencing should be erected around retained native vegetation that may incur indirect impacts on biodiversity values due to the construction works.
- All storage, stockpile and laydown sites should be located within the Construction Footprint only. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values.
- Potential impacts relating to stormwater and runoff will be managed during construction and operation phases. The CEMP will guide stormwater management during the construction phase of development.

7.12.5 Conclusion

The proposed development has been sited strategically to minimise impacts on native vegetation and habitat, as much as possible. The vegetation proposed for removal within the subject site is deemed of low quality due to extensive periods of clearing, as well as being overrun with exotic species.

APZ requirements will be able to be achieved with tree removal to be kept to a minimum.

The proposed development is expected to impact one (1) Plant Community Type (PCT) 835: Forest Red Gum – Rough- barked Apple. Three (3) biodiversity credits are required to mitigate the impacts upon

biodiversity as a result of the proposed development. Targeted surveys will be undertaken within the DPIE approved survey periods to avoid purchasing offset credits for impacted species that have not been surveyed.

7.13 Hawkesbury Section 7.12 Contributions Plan 2015

Local infrastructure contributions are legislated under the provisions of Section 7.12 of the EP&A Act and authorise Hawkesbury City Council to levy a monetary contribution, if it so wishes, which is used towards the provision of public amenities and services.

Clause 4.33 of the EP&A Act refers to the determination of Crown development applications whereby:

(1) A consent authority (other than the Minister) must not—

(a) refuse its consent to a Crown development application, except with the approval of the Minister, or

(b) impose a condition on its consent to a Crown development application, except with the approval of the applicant or the Minister.

(2) If the consent authority fails to determine a Crown development application within the period prescribed by the regulations, the applicant or the consent authority may refer the application—

(a) to the Minister, if the consent authority is not a council, or

(b) to the applicable Sydney district or regional planning panel, if the consent authority is a council.

(2A) A Crown development application for which the consent authority is a council must not be referred to the Minister unless it is first referred to the applicable Sydney district or regional planning panel.

(3) An applicable Sydney district or regional planning panel to which a Crown development application is referred may exercise the functions of the council as a consent authority (subject to subsection (1)) with respect to the application.

(4) A decision by a regional panel in determining a Crown development application is taken for all purposes to be the decision of the council.

(5) If an applicable Sydney district or regional planning panel fails to determine a Crown development application within the period prescribed by the regulations, the applicant or the panel may refer the application to the Minister.

(6) The party that refers an application under this section must notify the other party in writing that the application has been referred.

(7) When an application is referred under this section to an applicable Sydney district or regional planning panel or the Minister, the consent authority must, as soon as practicable, submit to the panel or the Minister—

(a) a copy of the development application, and

(b) details of its proposed determination of the development application, and

(c) the reasons for the proposed determination, and

(d) any relevant reports of another public authority.

(8) An application may be referred by a consent authority or applicable Sydney district or regional planning panel before the end of a relevant period referred to in subsection (2) or (5).

On this basis the consent authority has no power to issue a refusal or issue an approval subject to conditions of consent to which the Department of Education does not agree. The limitation on the power to impose a condition of consent extends to the consent authority's ability to require contributions to be paid, including contributions pursuant to sections 7.11 and 7.12.

DPIE Planning Circular D6 represents the consistently held view that the Department of Education, as a Crown authority, provides critical community infrastructure and that to levy any developer contribution on provision of public education facilities increases the cost of such infrastructure for all taxpayers in the State. The currency of circular D6 is confirmed in the draft development contributions practice note from July 2005

which states that, "*The current limitation on imposition of levies on crown developments as outlined in circular D6… remain in force*."

The Draft Local development contributions guidelines for Hawkesbury Council outline the best practice approach to development contributions for the public sector. The Hawkesbury Contributions Plan 2015 states the education establishments are exempt from contributions under this plan.

The Department of Industry, Environment and Planning (DPIE) has not required development contributions for recent school development including Alexandra Park Community School (SSD 8373), Parramattta West Public School (SSD 8790), Jordon Springs public School (SSD 9354) or Fort Street Public School (SSD 10340). It is therefore submitted that the contributions will not be required to be paid in this instance.

7.14 Utilities

Item 13 of the SEARs requires the following.

- In consultation with relevant service providers:
  - Assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.
  - Identify any infrastructure upgrades required off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained.
  - Provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development.

7.14.1 Methodology

An Infrastructure Management Plan has been prepared by Norman Disney and Young and is contained in **Appendix Q.** The Infrastructure Management Plan outlines the outcomes of initial authority consultation, to determine the capacities of existing services and utilities available for the proposed development.

The Infrastructure Management Plan was prepared to provide sufficient information to demonstrate servicing can be provided to support the proposed development. In general, it should be noted that formal applications to relevant authorities for site servicing/supply can only be made after development consent has been granted.

7.14.2 Existing Environment

The proposed site is currently vacant, located off Vines Drive within the University Campus. An overview of the existing infrastructure available at the site is as follows:

- Potable water services - Sydney Water Corporation (SWC) own and operate the potable water infrastructure on Londonderry Road (DN200 CICL main) that is available for connection.
- Sewer drainage services - existing Western Sydney University (WSU) sewer infrastructure in Vines Drive.
- Natural Gas Supply - The site has frontage to the following Jemena natural gas mains:
  - 50mm Nylon 210kPa natural gas main within Londonderry Road.
  - 75mm Nylon 210kPa natural gas main within Londonderry Road.
- High Voltage (HV) Supply. The existing WSU campus is supplied with an HV meter near the intersection of Londonderry Road and Vines Drive. A HV network reticulates through the WSU campus to several private substations, which provide low voltage (LV) to the various buildings on site.
- Communication Services - existing Telstra/NBN pit on the corner of Yarramundi Road and Vines Drive.

7.14.3 Assessment

The maximum infrastructure utility demands are outlined in **Table 25**.

Table 25 Infrastructure Demands

Services	Unit	Maximum Demand	Remarks
Electricity	KVA	462	Based on AS3000
Potable Water	L/s	4.6	peak
Sewer Drainage	490FU ADWF = 0.26 L/s PDWF = 1.88 L/s		Sydney Water Average Water Usage Data
Fire Hydrant	L/s	20	AS2419.1-2005
Fire Sprinklers	No sprinklers required		
Fire Drenchers	No sprinklers required		
Natural Gas	MJ/h	1720	F&B, Domestic Hot Water Plant

KVA = kilovolt-amperes
L/s = Litres per second
FU = fixture unit
MJ/h = Megajoules per hour

Potable Water

A new potable water connection shall be made to the existing Sydney Water potable water main located within Londonderry Street. Final confirmation of the connection location shall be made during detailed design. Though initial investigations have been undertaken with a Sydney Water - Water Servicing Coordinator (WSC), NDY recommend lodging a Sydney Water feasibility application, via a WSC to confirm the adequacy of the above main for the proposed development once the DA is received.

Sewer Drainage Services

Gravity flow sewer drainage systems will collect waste and effluent from all fixtures, fittings and appliances from the proposed buildings and discharge into a central sewer pump out pit. The school site will connect to the existing WSU sewer infrastructure in Vines Drive.

Proposed Natural Gas Supply

The existing Jemena natural gas mains within Londonderry Road appears to have adequate capacity to service the proposed development works subject to preliminary service advise from Jemena. Final location of connection will be determined during detailed design. An application shall be lodged with Jemena for connection once the development application is approved.

Electrical High Voltage Services

WSU has stated that the campus's supply is at capacity and there is insufficient spare power available to supply the new development. A new electrical supply to the campus is proposed from an Endeavour Energy pad mount substation.

The substation is proposed to be located adjacent to the site with a new access road constructed as per **Figure 28**. The consumer mains cabling reticulation will be via underground electrical conduits and pits to the school's main switchboard (MSB), which will be located inside the main switchboard room (MSR). It is proposed that the MSR will be located in an adjacent building closer to the substation's location.

Communication Services

It is proposed to use the existing Telstra/NBN pit on the corner of Yarramundi Road and Vines Drive as the connection point to the NBN network. The school will be provided with a Telstra Fibre connection (separate to the NBN) which shall service:

- GWIP Service (Government Wideband Internet Protocol).
- Provides connectivity from the school to the departments systems located in the NSW Government Data Centres.
- TID Service (Telstra Internet Direct).
  - Provides connectivity from the school to the internet.
  - Provides telephone services using SIP and VOIP phones.

New NBN/Telstra pits and lead-in conduits will be terminated in a new main communications room to be located in Building A, which is a preferred location as this building is a secure, staff-only area on the campus.

7.14.4 Mitigation Measures

The project can be adequately serviced by power, telecommunications, water, sewer and gas services. No external infrastructure upgrades have been identified as required to service this development. Approvals will be obtained from relevant services providers to deliver utilities infrastructure to the proposed development.

7.15 Stormwater drainage

Item 14 of the SEARs requires the EIS to provide:

- A preliminary stormwater management plan for the development that:
  - Is prepared by a suitably qualified person in consultation with Council and any other relevant drainage authority.
  - Details the proposed drainage design for the site including on-site detention facilities, water quality measures and the nominated discharge point.
  - Demonstrates compliance with Council or other drainage authority requirements.
- Stormwater plans detailing the proposed methods of drainage without impacting on the downstream properties.
- Where drainage infrastructure works are required that would be handed over to Council, provide full hydraulic details and detailed plans and specifications of proposed works that have been prepared in consultation with Council and comply with Council's relevant standards.

7.15.1 Methodology

A Concept Stormwater Management Report has been prepared by Woolacotts Consulting Engineers to identify the stormwater and flood management requirements for the proposed schematic design and meet the above-mentioned requirements of Section 14 of the SEARs. The Concept Stormwater Management Report is contained in **Appendix R** and is summarised below.

The preparation of the concept stormwater management plan was undertaken in a number of stages:

- Desktop investigation - A review of available data and detailed survey was undertaken to identify the existing levels and features on-site.
- Site investigation - A site investigation was undertaken to ground truth the survey and observe the existing vegetation on-site, likely soil composition and hydraulic controls.
- Concept design - A concept stormwater design for the subject site was formulated based on the plans provided. This included allowance for water sensitive urban design features, on-site retention and reuse and drainage infrastructure.
- MUSIC modelling - A Model for Urban Stormwater Improvement Conceptualisation (MUSIC) has been developed as a conceptual design tool for the purpose of estimating generated pollution within the catchment area. The model has been used to demonstrate the performance of implemented stormwater quality improvement systems.

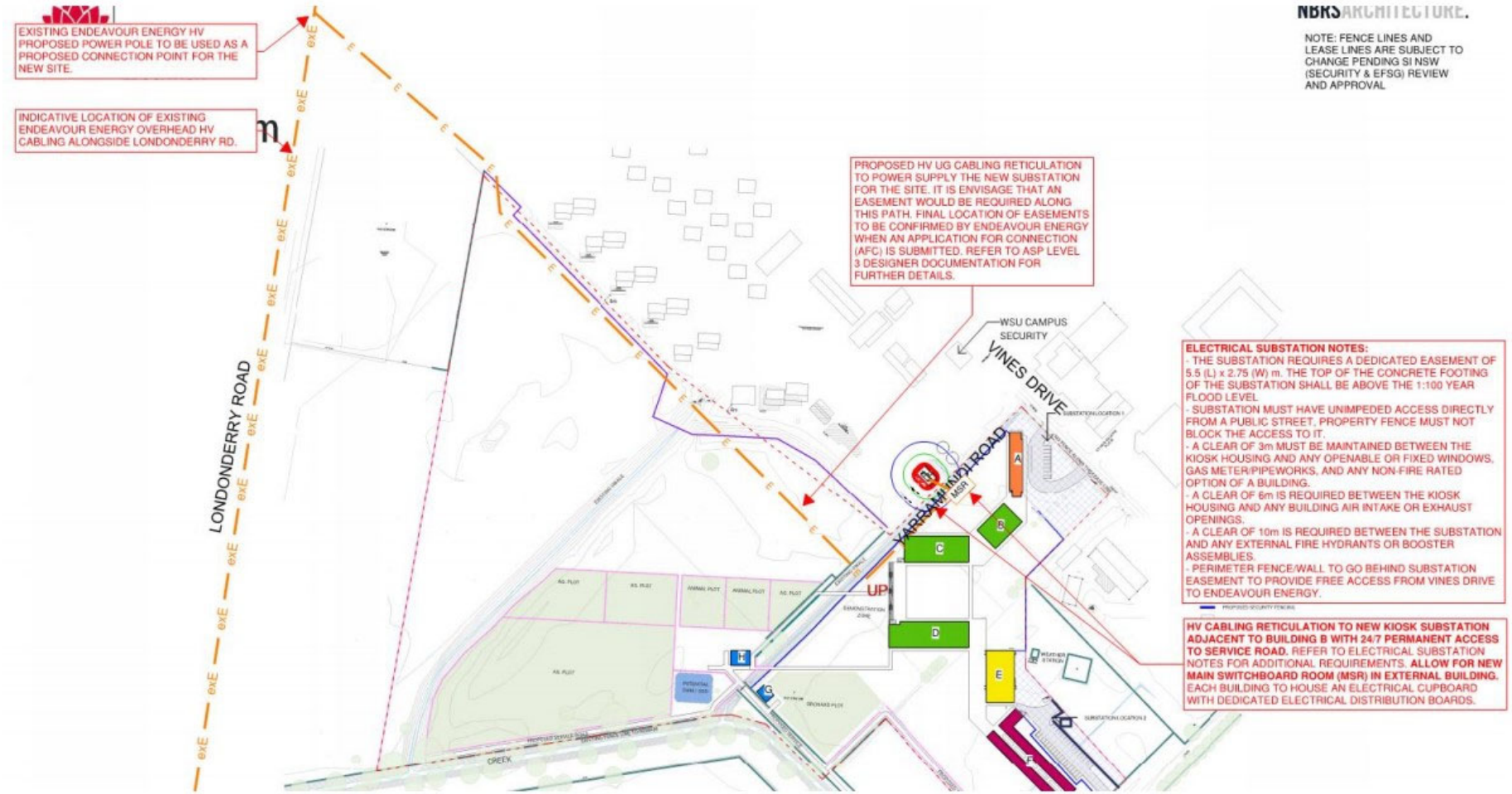

Figure 28 Electrical Infrastructure Site Plan

7.15.2 Existing Environment

The total site area is approximately 11.37ha. The site is generally flat with a gentle slope that falls towards the southern boundary of the site. The site is largely used for agricultural purposes and there are several swales that run across the site from the north-east boundary to an open channel watercourse along the south-west boundary.

7.15.3 Assessment

The area of the proposed buildings and the associated pavement is approximately 11,000m^2. The new buildings and associated pavements / landscaping will be constructed with on-site detention basins and stormwater drainage infrastructure designed to accommodate the proposed works as outlined in Hawkesbury Council's Development Control Plan.

A stormwater management system has been developed to accommodate the development works resulting in the increased impervious areas, as well as comply with Council's requirements. The piped stormwater drainage system will be designed to carry runoff from storms up to and including the 5% AEP event, with pipes graded at a minimum fall of 1 in 100 where possible. For runoff from storms up to and including the 1% AEP event, overland flow paths will be provided. External surfaces will be graded at a minimum fall of 1 in 100 where possible to the stormwater collection and drainage system.

To ensure the future flow rate of the post-developed site does not exceed the existing pre-developed site, the total site runoff will be diverted to 3 new detention basins. These detention basins will have an appropriately sized outlet pipe to maintain a maximum discharge equivalent to the predevelopment discharge rate during all storm events up to and including the 1% AEP storm event in accordance with Hawkesbury Council's Development Control Plan.

Three on-site detention storage (OSD) basins with a combined storage volume of 2320m^3 are proposed within the site. Each OSD basin has an outlet pipe that meets the permissible site discharge (PSD) requirements. The outlet pipe of each OSD basin will be connected to the existing swales for the stormwater discharge.

Water sensitive urban design principles have also been incorporated into the stormwater drainage design. The proposed stormwater drainage system has been designed to incorporate treatment devices that ensure the quality of discharged water meets the requirements.

7.15.4 Mitigation Measures

During construction, erosion and sediment control measures will be provided in accordance with the requirements of "Managing Urban Stormwater Soils and Construction, 4th Edition (Blue Book)". These measures will include silt fences on the low side of the site, silt traps at stormwater pits and a construction exit to remove silt from vehicles before they leave the site. Dust control measures will also be provided.

Ongoing management and maintenance of the stormwater system inclusive of the pits, pipes, and detention tank are required to form part of the school's maintenance schedule. The periodic cleaning of the system to remove rubbish and debris is recommended to be undertaken at 6-month intervals and following any storm greater than the 10% AEP event.

7.16 Flooding

With respect to flooding Item 15 of the SEARs requires the EIS to provide:

- Identify any flood risk on-site in consultation with Council and other relevant agencies and having regard to all relevant flood studies for the development area and the potential effects of climate change, sea level rise and an increase in rainfall intensity.
- Assess the impacts of the development, including any changes to flood risk on-site or off-site, and detail design solutions (including emergency evacuation plans) to mitigate flood risk where required.

7.16.1 Methodology

Woolacotts Consulting Engineers were engaged to prepare a Flood Emergency Management Report and Flood Impact Assessment which are contained in **Appendix S**.

The purpose of the Flood Emergency Management Report is to:

- Raise awareness of the existing flood behaviour for the site.
- Allow for effective preparation for a flood emergency.
- Provide site user personnel and others with a clear understanding of how to respond before, during and after a flood event.
- Ensure the safety of site user personnel and others before, during and after a flood event.

Flood information relating to the site has been obtained from the following documents:

- Hawkesbury Floodplain Risk Management Study & Plan – Volume 3 by Bewsher Consulting Pty Ltd City, December 2012 (Bewsher Flood Study 2012)
- Civil Engineering Report and Stormwater Management Plan by TTW dated 11 May 2018 (TTW Civil Report 2018)

7.16.2 Existing Environment

The new facility is to be located within the Western Sydney University site off Vines Drive, Richmond. The site is bounded by Londonderry Road that runs along the north-west of the site and Vines Drive that runs along the north-east of the site. The total site area is approximately 11.37ha and will be located approx. 4.1 km from the Hawkesbury River. The proposed high school includes a single-story complex of 6 buildings and ancillary structures located mainly over the eastern side of the site. The site has been identified as prone to two sources of flooding, riverine flooding and local overland flooding.

7.16.3 Assessment

Riverine flooding occurs when heavy rainfall causes the water levels in a river to rise and escape the main channel. Local overland flooding is run-off that travels over the land during heavy rainfall events, affected by urban features such as stormwater infrastructure, roads, fences, walls and other structures.

Riverine Flooding

Flood mapping from the Bewsher Flood Study 2012 shows that the site is only impacted by riverine flooding from the Probable Maximum Flood (PMF) event, refer to **Figure 29** below for flood extents. Note: The PMF is the largest flood that could conceivably occur at a particular location. The PMF defines the extent of the floodplain.

The peak flood levels from riverine flooding for the site are 17.5m AHD for the 1% AEP flood event and 26.4m AHD for the PMF event. Site levels generally vary from 23.5m AHD to 22.5m AHD.

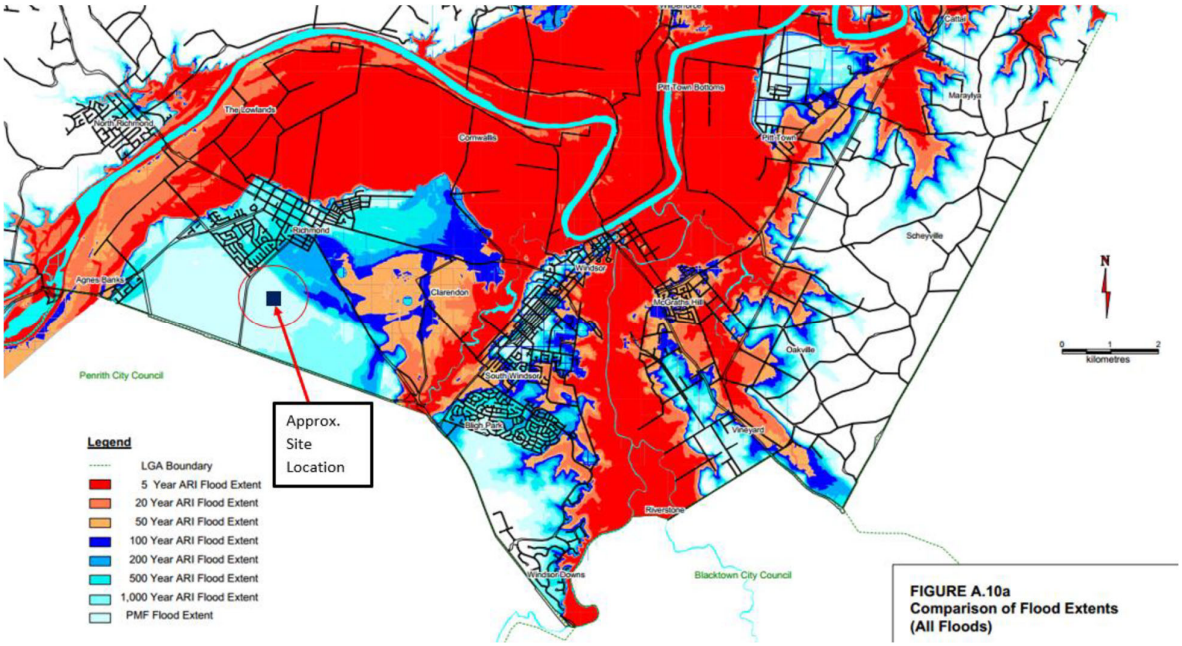

Figure 29 Riverine flood mapping extract

Overland Flooding

Civil Engineering Plans, refer to **Appendix GG**, show that the pre-developed site is impacted by overland flow flooding from the 1 in 100-year flood event. **Figure 30** below shows the 1 in 100-year flood extents is mostly contained within the existing swales through the site with the exception of the eastern corner of the site.

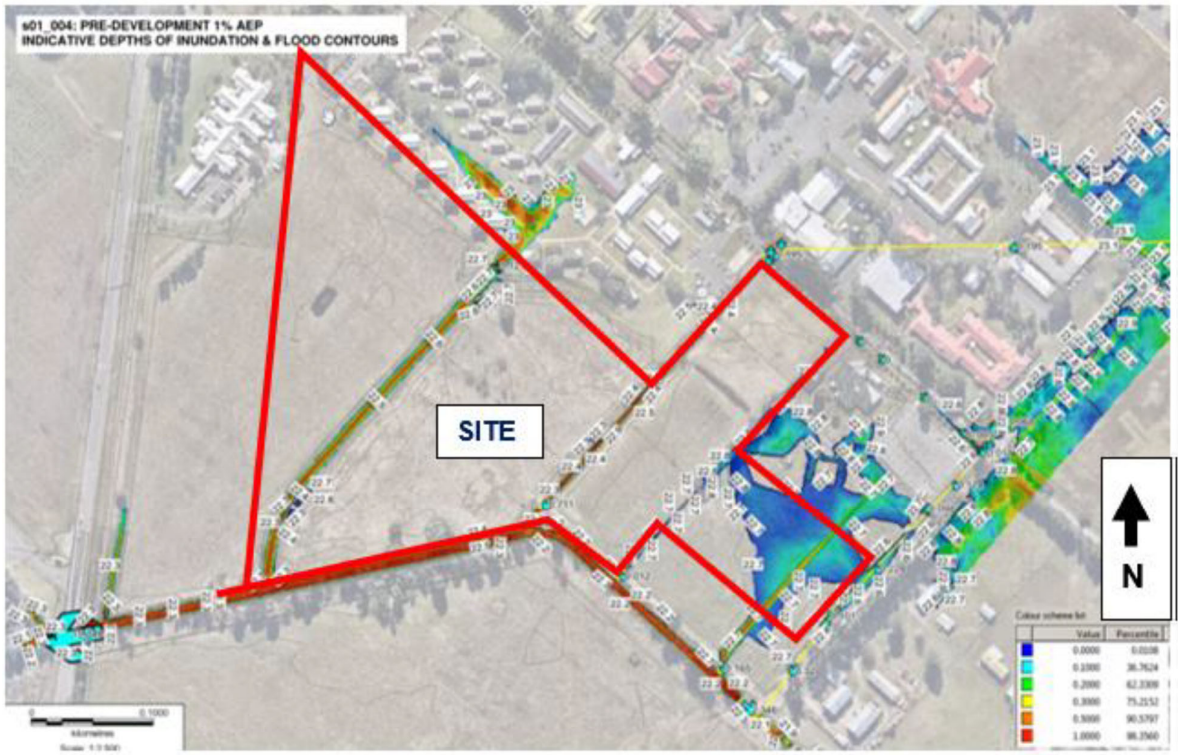

Figure 30 Overland flooding map 1% pre-development

The Flood Impact Assessment provides flood hazard mapping to demonstrate the assessment of hydrological flows, potential flooding impacts and flood hazard considerations. The results show that there

are several shallow overland flood paths that pass through the subject site, generally from northeast to south west. The mapping identifies that virtually all areas display the lowest level of hazard, which is typically safe for people, vehicles and buildings. The western drainage path contains localised areas that are unsafe for vehicles, children and the elderly.

Climate Change has been accounted for with an assumed potential 10% increase in rainfall which translates to an overall 0.01 – 0.02m or less increase in peak water levels. Due to the small size of the catchment, the climate change scenario does not produce a significant effect on flood risk at the site.

The floor levels for the proposed development are all set to 23.5m AHD. The highest corresponding flood level is 23.0m AHD near Block A, with Blocks B – F having flood levels around 22.9m AHD. A conventional flood planning level of 1% AEP plus 0.5m has been applied to the proposed buildings and is considered sufficiently protected against overland flow flooding.

7.16.4 Mitigation Measures

Due to the flood risks identified as part of the assessment process the need for mitigation measures to safeguard persons and property is required in the form of a Flood Emergency Response Plan.

The two main responses to a flood emergency include evacuation or Shelter in Place. Evacuation involves moving to an area that is outside the reach of floodwaters, while Shelter in Place refers to staying within the building until floodwaters have receded and it is safe to leave.

Shelter in place is only possible if the proposed “shelter” is located above the PMF level of 26.4m AHD. Given the site is single storey with a proposed FFL (23.6m AHD) 2.8m below the PMF flood level Shelter in place is not considered a feasible option. Therefore, an evacuation response is required for the proposed development.

Flood Evacuation Response

The following evacuation procedure should form part of the CoE’s overall Emergency Management Plan, including fire and medical emergencies.

- Flood Alert / Warning - In the event that a flood warning is received from BoM or SES. The Chief Flood Warden shall monitor the situation and shall liaise with WSU’s Chief Flood Warden.
- Activate Flood Emergency Alarm - Once confirmation is received that riverine flooding is occurring, the Chief Flood Warden shall activate the Flood Emergency Alarm, which includes an emergency tone.
- Evacuation to Emergency Muster Point - Once the Flood Emergency Alarm has been activated all personnel on the CoE site are to make their way to the Emergency Muster Point (eastern car park) under the direction of the Flood Wardens. The Flood Wardens shall ensure everyone on the campus is accounted for and aware of the situation. The Flood Wardens shall ensure that nobody leaves The Site.
- Confirm Occupancy Numbers - Once everyone is in the nominated Emergency Muster Point the Flood Wardens shall obtain the names of all the occupants within the muster point and ensure that everyone is accounted for.
- SES / Contact Bus Companies - While everyone is making their way to the Emergency Muster Post the Chief Flood Warden along with WSU, shall contact the SES and inform them of the situation. The SES shall nominate an off-site evacuation location and offer any assistance that is required. Once occupancy numbers have been confirmed by the Flood Wardens and the Chief Flood Warden is satisfied that everyone is accounted for, the Chief Flood Warden, with help from WSU, shall then organise buses for CoE personnel.
- Evacuation from Emergency Muster Point - Once the buses arrive at the Emergency Muster Point. The Flood Wardens shall direct all CoE personnel onto the buses that will take them to the nominated off site evacuation area as confirmed by the SES.
- Off-site evacuation area - Once the buses arrive at the off-site evacuation area, the Chief Flood Warden is to liaise with the SES and emergency services for the safe return CoE personnel to their homes (if located outside the flood extents).

Prior to operation of the CoE the evacuation procedure contained within **Appendix S** should be finalised and incorporated into the overall Emergency Management Plan.

7.17 Soil and Water

With respect to soil and water Item 16 of the SEARs requires the EIS to provide:

- An assessment of potential impacts on surface and groundwater (quality and quantity), soil, related infrastructure and watercourse(s) where relevant.
- Details of measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles.
- An assessment of salinity and acid sulphate soil impacts, including a Salinity Management Plan and/or Acid Sulphate Soils Management Plan, where relevant.

7.17.1 Methodology

Woolacotts Consulting Engineers was engaged to prepare a Soil and Water Assessment located in **Appendix T**. The purpose of the assessment was to:

- Assess potential impacts on surface and groundwater, soil, related infrastructure and watercourses.
- Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles.
- Assess of salinity and acid sulphate soil impacts.

Soil and water information relating to the Site has been obtained from the following documents:

- Douglas Partners – Remediation action Plan, Project 85644.05 Dated March 2021
- Douglas Partners – Detailed Site Investigation (Contamination), Project 85644.04 Dated March 2021
- Douglas Partners – Detailed Asbestos Delineation Investigation, Project 85644.06 Dated August 2018
- Douglas Partners – Additional Geotechnical Investigation, Project 85644.02 Dated January 2018
- Douglas Partners – Preliminary Site Investigation (Contamination), Project 85644.00 Dated November 2016

7.17.2 Existing Environment

Subsurface Soil Profile

The site contains ‘very loose’ to ‘loose’ topsoil / filling at depths of approximately 1.0m to 1.5m below natural ground level. Beneath the layer of topsoil / filling is alluvial soils which comprise of ‘very stiff’ to ‘hard’ clays / silty clays and ‘medium dense’ to ‘very dense’ clayey sands / silty sands. The alluvial soils reach depths of approximately 17m to 19m below natural ground level. Beneath the soils is assumed to be either gravels or weathered bedrock.

Groundwater Conditions

Groundwater was encountered at relatively shallow depths in some areas of the site (approximately 0.3m) and was not observed to depths of up to 10m in others. This suggests that perched groundwater exists within the soils and that the regional groundwater table is deeper than observed. Long term monitoring will be required to confirm groundwater levels.

Soil and Groundwater Contamination

The Site has historically been used for agricultural purposes. In addition to agricultural use, a southern portion of the Site appears to have been backfilled with demolition waste and is contaminated. Refer to **Section 7.19** and **Appendix V** for the extent of contamination on the Site.

7.17.3 Assessment

The proposed development will potentially impact the Site’s soil and water during the construction of the building foundations, external pavements, car parks and landscaped areas. Potential impacts include the erosion of soils and sedimentation entering into watercourses.

With respect to the contamination present on site, a remediation action plan has been provided detailing the appropriate methodologies to remediate the site. The current strategy involves placing contamination that can be retained on-site below the building footprints and placing more serious contamination in a containment cell.

For further details on the contamination management refer to **Section 7.19** and **Appendix V**.

Soil samples were taken from the Site and laboratory tested for aggressivity (electrical conductivity, pH, chloride, and sulphates). The aggressivity testing indicated non-aggressive conditions suggesting salinity and acid sulphates are not a concern for this site.

7.17.4 Mitigation Measures

Throughout the construction phase of the project, erosion and sediment control measures are to be provided in accordance with the requirements of “Managing Urban Stormwater Soils and Construction, 4th Edition (Blue Book)”. These measures will include silt fences on the low side of the site and silt traps at stormwater pits. Dust control measures will be provided in the CEMP.

Other measures to be provided on site during construction include construction exits for all vehicles leaving the site, and revegetation of the site as soon as practicable. Erosion control measures must be inspected and maintained after each rain event and at intervals not exceeding two weeks.

Refer to the **Section 7.15** and **Appendix R** of Concept Stormwater Management Report by Woolacotts for the Erosion and Sediment Control Plan.

7.18 Geotechnical

7.18.1 Methodology

Douglas Partners Pty Ltd (DP) were engaged to prepare a Geotechnical Investigation for the Site. The Geotechnical Investigation is located in **Appendix BB**. Geotechnical investigations were undertaken to provide information on the subsurface conditions on the site and included the drilling of boreholes, cone penetration tests, the excavation of test pits, laboratory testing and engineering analysis.

7.18.2 Existing Environment

The Penrith 1:100 000 Geological Series Sheet indicates that the site is underlain by the Tertiary-aged Londonderry Clay which comprises clay with patches of cemented, consolidated sand. The area to the north is shown as being underlain by the Quaternary-aged Clarendon Formation which comprises clay, clayey sand and silt. The topography of the site suggests that groundwater maybe shallow and possibly a beneficial resource in sandy zones of the aquifer.

7.18.3 Assessment

The site appears to be underlain by very loose to loose topsoil/filling to depths in the order of 1 m to 1.5 m, and uncontrolled filling including building rubble in the vicinity of BH6. The possible extent of the filling that includes building rubble, based on the test pit results. The filling is underlain by alluvial soils which comprise very stiff to hard clays/silty clays and medium dense to very dense clayey sands/silty sands. The alluvium appears to be present to depths in the order of 17 m to 19 m in the area of the CPTs and is likely to be underlain by either gravels or weathered bedrock.

The laboratory testing programme indicates that the clays are highly plastic and of moderate to high reactivity. The CBR results show that the near-surface sandy filling is of reasonable strength when compacted. The aggressivity testing indicates non-aggressive conditions.

Groundwater was observed at depths of between 0.3 m and 2.5 m in some areas of the site, 7.8 m in CPT105, and was not observed within 10 m of the surface in others. This indicates that perched water exists within the soils and that the regional groundwater table is deeper than observed. Long term monitoring would be required to confirm levels if this is important (e.g., for basements).

The project involves the construction of a new agricultural high school campus on a largely undeveloped parcel of land adjoining WSU. The new buildings will comprise multi storey structures with relatively high column loads due to the spans required. Pavement areas will typically surround the new buildings.

The geotechnical issues considered relevant to the proposed development include site classification, site preparation, excavation, excavation support, groundwater, foundations and pavements.

7.18.4 Mitigation Measures

Site Classification

The natural sandy soils in the upper 4 m of the site are expected to be largely non-plastic and therefore experience only slight movements due to changes in moisture content. As such, a site classification of Class S would be appropriate for the natural medium dense sands and re-worked non- reactive filling if footings are to be designed in accordance with Australian Standard AS 2870 – 2011 Residential slabs and footings. Class S sites may experience unrestrained, free-surface movements of between 0 mm and 20 mm as a result of changes in moisture content.

Areas on the site in which more than 0.4 m of filling is present, and areas in which very loose to loose sand remains, would be classified as Class P. These areas will require re-working prior to re- classification if the footings are to be designed in accordance with AS 2870 – 2011.

Site Preparation

Any existing filling that is required to support structures and pavements will need to be reworked to reduce the potential for unacceptable settlements associated with poorly or variable compacted filling. New filling will also need to be placed in accordance with an engineering specification.

Excavation

Excavation during earthworks and construction is expected to be required in filling and sandy soils. This should be readily achievable using conventional earthmoving equipment such as hydraulic excavators with bucket attachments, scrapers and dozers. Excavation in rock will not be required.

Excavation Support

Vertical excavations in filling and sandy soils are not expected to be stable. Temporary batters of 1.5(H):1(V) could be used to support the sides of excavations up to 3 m deep above the perched groundwater. Flatter batters and/or dewatering will be required for excavations below groundwater.

Permanent batters for excavations and embankments should be no steeper than 2(H):1(V) and possibly flatter where vegetation maintenance is required. Erosion protection should be provided for all permanent batters.

Surcharge loads should be placed no closer to the crest of the batter than a distance equal to the vertical height of the batter, unless specific stability analysis shows that the loads can be placed closer.

Foundations

A range of foundation options are available at the site and should be designed and constructed in accordance with the parameters outlined in **Appendix BB**. Foundations options include, spread footings (i.e., pad or strip footings), continuous flight auger (CFA) piles or steel screw piles.

Pavement

The Geotech report outlines that the onsite sands will provide good support for the pavement once the pavement layers provide some confinement. A design California bearing ratio (CBR) of 10% is considered suitable, with weaker areas of subgrade (if encountered) requiring improvement during construction. The CBR of any imported filling should also be assessed to confirm this suggested design value is appropriate. Suitable cross-fall and drainage should be provided to reduce the risk of the subgrade becoming saturated during the life of the pavement.

7.19 Waste

7.19.1 Methodology

A Construction Waste Management Plan has been prepared by Richard Crookes in **Appendix CC** and an Operational Waste Management Plan (OWMP) is contained in **Appendix W** was prepared by EcCell Environmental Management to address Item 17 of the SEAR's and Section 4.12(8) of the EP&A Act. In preparation of the OWMP the following waste specific guidelines were considered:

- NSW Environment Protection Authority (EPA) Waste Classification Guidelines 2014.
- NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012.
- NSW EPA's Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21 with expected future guidelines to replace this during the construction and operation phases of the development.

7.19.2 Existing Environment

The site currently consists of vacant paddocks with very few improvements and drainage swales are located across the wider investigation area and within the current proposed development. The surface is generally well-grassed and some trees area present on the site as well as along the southern boundary.

Contaminated land has been reported in the southern extent of the site consisting of heavy metal impacts and asbestos in soils. Further details and information on site contamination are located in Section 7.17 and **Appendix U** and **Appendix V**.

7.19.3 Assessment

Site Preparation and Construction

The potential environmental impacts and waste streams expected during site preparation and construction include:

- Generation of construction waste from production, assembly and installation of site infrastructure.
- Generation of soil waste from excavation.
- Generation of domestic waste from construction personnel.
- Generation or spread of contaminated waste/soils, e.g., groundwater, used or expired chemicals, or construction materials.
- Water pollution due to surface water runoff from exposed areas.

Remediation Works

The potential environmental impacts associated with the remediation of contaminated land identified on site include the following and are outlined in detail in the RAP contained in **Appendix V**.

Disposal of

- Generation of waste from excavation and remediation works.
- Generation of domestic waste from remediation contractor personnel.
- Inappropriate disposal of hazardous waste.
- Spread of contaminated waste/soils, e.g., spread of asbestos impacted soils.
- Water pollution due to surface water runoff from exposed areas e.g., heavy metal contaminated stockpiles.

Operation

The NSW EPA Waste Classification Guidelines (NSW EPA, 2014a) groups wastes that pose similar risks to the environment and human health, as defined in the Protection of the Environment Operations Act 1997. The primary waste streams expected to be generated and corresponding EPA classifications for the ongoing operation of the development are summarised below:

- General solid waste (putrescible) – food and garden organics etc.
- General solid waste (non-putrescible) – Metals, Plastics, Paper, Cardboard etc.
- Potentially hazardous waste – chemical liquids, solid waste, batteries, printer cartridges, e-waste etc.

As there is no reference in Hawkesbury Development Control Plan 2002 (DCP): PART C for waste strategies for schools, a desktop assessment of waste generated from similarly structured schools with a variety of student numbers to provide indicative waste volumes, was conducted. The following waste generation estimates were calculated as outlined in **Table 26** and **Table 27** below. Assumptions used to derive the indicative quantities of waste are located in **Appendix W**.

Table 26 Waste Generation Estimates – School Waste

Material Type	Weekly Vol. (L)	Bin Volume (L)	# Bins	Bin Size (m^2)
Paper Cardboard	482	660	1	1.16
Comingled	540	660	1	1.16
Soft Plastics	521	660	1	1.16
Organics	96	120	1	0.27
Return & Earn*	58	240	1	0.43*
General	714	1100	1	1.7
			Circulation Space	4
			Total Area Required	**9.45**

Table 27 Waste Generation Estimates – Short-term on-site accommodation facilities

Material Type	Weekly Vol. (L)	Bin Volume (L)	# Bins	Bin Size (m^2)
General	1760	3000	1	2.5
Comingled	880	3000	1	2.5
			Circulation Space	0
			Total Area Required	**5**

Areas for storage and collection of the applicable waste streams will be provided and marked out on a concrete waste pad. The waste pad area is estimated to be a minimum of $15m^2$ to accommodate all bins and containers, for all applicable waste streams, for at least one collection cycle.

7.19.4 Mitigation Measures

Site Preparation and Construction

Waste generated during construction will be managed in accordance with the Waste Management Plan and the Construction Environmental Management Plan (CEMP) to be prepared by the construction company undertaking the works. The following mitigation measures will be applied throughout the duration of the works:

- All waste generated during the course of the works will be reused or removed from the work areas as soon as practicable and disposed of in accordance with the waste disposal safeguards.
- All vessels used for contaminated or hazardous waste should be sealed, labelled according to their contents, and stored within bunded areas until their removal from the work site.
- Any fuel, lubricant or hydraulic fluid spillages will be collected using absorbent material and the contaminated material disposed of at an OEH licensed waste depot.
- The work site will be left clean and free of weeds, debris and other rubbish at the end of works.

- All hazardous wastes on site will be removed and disposed in accordance with the state and national regulations and guidelines and best practice for the removal of these materials.
- The Contractor's recycling and reuse proposal for all waste generated will be detailed in the CEMP.
- Green waste from vegetation clearing will be preferable reused on site as wood chips or disposed of in accordance with council requirements.
- Off-cuts of materials used in the construction will be recycled within the Project where possible.

Waste generated as part of the proposed remediation works will be managed under the RAP and Environmental Management Plan specifically prepared for the remediation works. Below is an overview of the waste disposal and management strategy during remediation works:

- All materials excavated and removed from the site shall be disposed in accordance with the POEO Act 1997 and to a facility / site legally able to accept the material. Confirmation on the landfill current licensing should be provided to the Environmental Consultant prior to commencement of disposal.
- A waste classification assessment should be carried out in accordance with NSW *EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste* (EPA, 2014) for any material requiring offsite disposal. The scope of the assessment will depend on the volume and type of material requiring disposal.
- Copies of all necessary approvals from the receiving site shall be given to the Environmental Consultant prior to any contaminated material being removed from the site. A record of the disposal of materials will be maintained and provided to the Environmental Consultant for waste reconciliation purposes.
- All relevant analysis results shall be made available to the Contractor and proposed receiving site/waste facility to enable selection of a suitable disposal location.
- Details of all contaminated and spoil materials removed from the site shall be documented by the Contractor with copies of weighbridge slips, trip tickets and consignment disposal confirmation where appropriate) provided to the Environmental Consultant and the Principal's Representative (PR). A site log will be maintained by the PR to track disposed loads against on-site origin.

Operation

The EFSG requires new and refurbished schools to identify opportunities for reuse and recycling in the operation of the facilities. The waste management practices that the proposed development has adopted are in accordance with the WARR and follow the waste hierarchy outlined in **Figure 31** below.

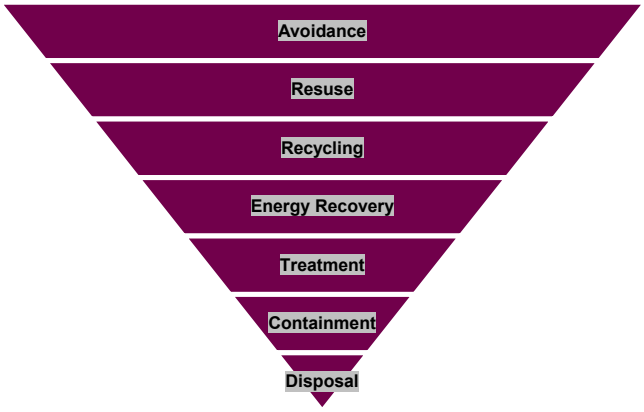

Figure 31 Order of Waste Hierarchy

It is anticipated that mobile garbage bins (MGBs) will be utilised within the school and a combination of MGBs suitable to use for waste streams and separation will be used. The area adjacent to the main pickup and set down area has been nominated as the waste collection point. The appointed waste contractors will collect each waste stream from the loading bay at nominated times in accordance with the relevant waste contract using standard plant and equipment. The waste collection truck will schedule collection out of normal school hours to reduce any risk from the truck and bin movements to the patrons of the CoE.

The waste pad storage area will be located north of the main school drop off and collection point. The waste pad size will be a minimum of 15m2 to accommodate all bins or containers, for all applicable waste streams, for at least on collection cycle. Swept path diagrams have been provided in the TAIA Report to show that the waste collection vehicles can access the waste collection point.

Waste will be segregated into separate streams, including paper and cardboard, collection of bottles and cans through a container deposit scheme, for eligible containers and general waste for the remaining material. Effective segregation is best achieved through:

- Education and training to all staff, contractors, visitors and students who generate waste, such as the waste wise schools program.
- Ensuring identifiable colour coding and labelling of bins for each waste stream is implemented and maintained.
- Waste will be collected by contractor; waste movements will occur before 8 am and after 4pm on school days to minimise noise disturbance to the students. Ideal waste collection times are between 6am and 7:30am. CoE will use Contract 9698 for waste management services.
- Ordering and provision of suitable containers at appropriate locations.
- Incorporation of quick and efficient waste disposal methods into staff areas.
- Ensuring all waste can be easily, safely and correctly segregated at the point of generation, for instance including appropriate bins in food preparation and administrative areas.

7.20 Contamination

7.20.1 Methodology

The SEARs require an assessment and quantification of any soil and groundwater contamination and demonstration that the site is suitable for the proposed use in accordance with SEPP 55. Douglas Partners Pty Ltd (DP) prepared a Preliminary Site Investigation (PSI) in November 2016 to address the requirements of the State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55) as part of a previous development application. Following changes to design and recommendations of the PSI a Detailed Site Investigation (DSI) was undertaken under SSD-15001460 to:

- Assess the general levels of soil contamination resulting from past and present activities on the site.
- Assess the potential for contaminant migration by examining the groundwater quality on the site.
- Assess the suitability of the site for the proposed development; and
- Provide recommendations for remediation works, if required.

The DSI indicated that no future contamination-specific works were required in the current proposed development footprint. Future contamination-specific works were identified for the remainder of the investigation area located outside of the current proposed development. The scope of the DSI is summarised below:

- A total of 130 test pits (C1 to C130) were excavated across the site at accessible locations to complement four boreholes (BH3, BH5, BH6 and BH9) carried out at the site as part of the PSI. Of these 130 test pits, 28 were located within the current proposed development.
- Six groundwater monitoring bores were drilled and installed at the site, two of which were located in the current proposed development area.
- Select soil samples collected from the test pits were analysed for a range of potential contaminants including total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and total xylenes (BTEX, polycyclic aromatic hydrocarbons (PAH), organochlorine and organophosphorus pesticides (OC / OP), polychlorinated biphenyls (PCBs), total phenols, heavy metals, asbestos and volatile organic compounds (VOCs). It is noted that select samples from the four boreholes completed at the site as part of the PSI was also carried out to inform the PSI. Groundwater samples were analysed for a similar suite of compounds as well as per- and poly-fluoroalkyl substances (PFAS).

- Two small stockpiles were encountered in the central-northern portion of the site (outside of the current proposed development) which was included in the sampling regime adopted for the DSI.
- As the proposed development (an agricultural high school) is likely to require a greater frequency of access to soils (compared to a typical high school), the adopted SAC comprises health investigations levels/health screening levels (HIL/ sites including primary schools and in turn more sensitive direct contact/ingestion/inhalation soil contact exposure scenarios which is considered by DP to be suitably representative for the site (as opposed to typical high schools which would be HIL/HSL C). Ecological investigation levels/ecological screening levels (EIL/ESL) were selected for a residential scenario for coarse-grained sites due to the sandy nature of the upper soil profile.

Following the DSI, DP carried out a detailed asbestos delineation investigation of the filling with non-soil anthropogenic material being encountered in the central-southern portion of the site. It was noted that the filling with anthropogenic material was located outside of the current proposed development area as shown in **Figure 32** and **Figure 33**. The findings of the delineation investigation are outlined below:

- A total of 50 test pits were undertaken across the filling area, each test pit excavated into natural soils underlying the filling.
- The scope of analysis included asbestos and targeted investigation of metal exceedances previously observed in the DSI.

A Remediation Action Plan (RAP) was developed by DP to provide a remediation strategy for the identified contaminated areas of the Site. The DSI (**Appendix U**) and RAP (**Appendix V**) were prepared by DP's Certified Environmental Practitioners (Site Contamination) (CEnvP (SC)) as recognised by the NSW Environmental Protection Authority (NSW EPA) in accordance with the following documents:

- Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP, 1998).
- Sampling Design Guidelines (EPA, 1995).
- Consultants Reporting on Contaminated land - Contaminated Land Guidelines (EPA, 2020).
- National Environment Protection (Assessment of Site Contamination) Measure (National Environment Protection Council, as amended 2013).

7.20.2 Existing Environment

The investigation area is bounded by Western Sydney University and an aged-care facility to the north, land used largely for agricultural purposes to the east and south, and Londonderry Road to the west. The current proposed development is bounded by Vines drive to the north east, playing fields to the south and south west and University departments to the south east. The ground surface on the site slopes very gently downwards to south-east; surface levels vary between about RL 23.5 m and RL 22.5 m relative to Australian Height Datum (AHD).

At the time of the DSI, the site comprised paddocks with very few improvements and drainage swales are located across the wider investigation area and within the current proposed development. The surface was generally well-grassed and some trees were present on the site as well as along the southern boundary of the original investigation area.

A Conceptual Site Model (CSM) was developed to identify sources of contamination, contaminant migration pathways, receptors and exposure mechanisms. The site history information indicates that the site has been used for agricultural teaching purposes since the late 19th Century. Activities of a rural nature have therefore been undertaken on the site for at least the last 120 years.

Potentially contaminating activities that may have occurred on the site include:

- The placement of filling on the site (including the identified stockpiles that are located outside the current proposed development area);
- Contaminants associated with farming/grazing (e.g.: pesticides);
- The placement of waste and/or incinerator ash which was prevalent in rural areas throughout the 20th Century; and
- Naturally occurring elements in the soils and rock underlying the site (e.g.: heavy metals).

The regional groundwater table is likely to be relatively shallow. Significant excavation is not proposed and the use of groundwater within the development will only be undertaken (if at all) following approvals for groundwater extraction. The quality of the groundwater from a land-use perspective would therefore only be of significance if volatile contaminants had been present.

No exceedances of volatile/ contaminants were observed during the DSI, therefore soil vapour intrusion and/or ground gas exposure pathways are not considered to be present at the site.

The human receptors to soil contamination are likely to be the teachers, students, support staff and visitors to the redeveloped site; given the type of education facility proposed (agricultural high school), exposure scenarios including direct contact with soil and accidental ingestion / inhalation of dust including fibres apply. Construction personnel, nearby workers/students/residents and the general public require consideration during the construction phase of the redevelopment project.

The ecological receptors are likely to include flora and fauna that grow/live on the site, and on adjacent sites as well as farmed animals. The area is not known to be ecologically significant. Any contamination present in the upper 2 m of the soil profile (root zone) is potentially in contact with fauna at the site.

7.20.3 Assessment

Based on the findings of the DSI, there is no remediation required within the current proposed development area. Whilst remediation works are not required within the current proposed development, the contingency for unexpected finds will apply, should these be encountered during the works. An unexpected finds procedure is included in the RAP.

The DSI and the delineation investigation, identified the extent of remediation required in the remainder of the site as follows:

- Filling with anthropogenic material including porcelain, bricks, glass, terracotta, sheet metal, concrete, plastic, scrap metal and bonded asbestos containing materials (ACM) in places was observed in the central-southern portion of the site as shown in **Figure 32** and **Figure 33**.
- Within this area bonded asbestos containing materials (ACM) has been identified in filling in five test pits (C27, C34, C41, C47 and C60 [notated incorrectly in the DSI as D80]). The location of identified filling is presented on **Figure 32** and **Figure 33**. Exceedances above human health and ecological criteria were also identified in the filling material at the following locations in **Table 28**.

Table 28 Exceedances above human health and ecological criteria

Test Pit Identification	Depth (m bgl*)	Contamination Details
C27	0.9 - 1.0	Lead (1,700 mg/kg) exceeds both human health and ecological criteria. Zinc (2,400 mg/kg) exceeds both human health and ecological criteria.
	1.4 - 1.5	Lead (1,000 mg/kg) exceeds human health criteria. Zinc (3,700 mg/kg) exceeds both human health and ecological criteria.
C47	0.4 - 0.5	Zinc in filling (730 mg/kg) exceeds both human health and ecological criteria.
C60	0 - 0.1	Zinc in filling (880 mg/kg) exceeds both human health and ecological criteria.
BH6	0.5	Benzo(a)pyrene toxic equivalence quotient (TEQ) in filling (8.2 mg/kg exceeds human health criteria.
	1.0	Benzo(a)pyrene toxic equivalence quotient (TEQ) in filling (7.3 mg/kg) exceeds human health criteria.

*m bgl = metres below ground level

The results of the detailed asbestos delineation investigation of the filling material were as follows:

- Filling at DSI locations C27, C60 and C47 is required to be remediated (disposed to landfill).
- Filling within yellow shaded areas excluding fill in the vicinity of BH6 (see **Figure 32**) is generally suitable for reuse at the site and should be managed in accordance with the RAP.
- Filling at location BH6 should be placed in an on-site containment cell in accordance with the RAP. The dimensions of filling to be removed is 5m x 5m to base of filling.

- Filling within the purple areas (see **Figure 33**) exceed adopted criteria including non-friable and friable asbestos. As such, filling in the purple areas will require remediation (i.e., placed in an on-site containment cell) in accordance with the RAP.

7.20.4 Mitigation Measures

Considering the nature and potential extent of remediation required and the proposed development, the recommended remediation approach as outlined in the RAP is summarised below (in order):

1. Excavate and dispose of metal and benzo(a)pyrene exceedances at locations C27, C47 and C60.
2. For all remaining filling material.
   - For within yellow shaded areas excluding fill in the vicinity of BH6 (**Figure 33**): place at depth at the site (burial), either below a slab/building or at a depth of 0.4 m or greater in areas of unconsolidated cover (e.g.: fields); and
   - For filling at location BH6 and within the purple areas (**Figure 33**): Construct a containment cell at the site below ground for asbestos and immobile metal and benzo(a)pyrene exceedances.
3. Validate the extent of the filling area after removal of all filling material. Refer to Section 8.6 for further details.

Metals (lead and zinc) and benzo(a)pyrene exceedances in filling in three test pits in the central southern part of the site (C27, C47 and C60) require remediation but are outside of the current proposed development area. It will be necessary to validate the remediation excavation of the locations after removal of the impacted material and “chase out” any remaining contamination.

Filling at location BH6 and within purple areas (**Figure 33**) is suitable for retention on site at depth. Therefore, it is recommended that all filling material that passes the remediation acceptance criteria is placed at depth at the site as follows:

- Below hard stand, e.g.: a slab or building; or
- At a minimum 0.4 m depth below unconsolidated ground cover.

The greater depth for unconsolidated areas of the site is to prevent exposure of the material during minor excavation works such as utility installation and maintenance and landscaping.

The following material shall be placed in a containment cell at the site:

- Filling at location BH6; and
- Filling within the purple areas (see Drawing 1, Appendix A).

The containment cell requires the following:

- A suitable size to house all impacted material and taking into account soil bulking factor.
- Survey of the excavated cell
- The Remediation Contractor shall place the impacted material into the cell; after placement of the material, the surface of the impacted material shall be covered using a coloured geotextile cover layer to act as a physical marker for any future excavation works.
- Suitable soil cover shall be placed above the geotextile cover; and
- the top of the containment cell (i.e., the geotextile cover) shall be a minimum 0.5 m below the final site level.

The Remediation Contractor shall survey the base and top of the containment cell and confirm the construction of the cell in as built. It will be necessary to include the survey as part of the Validation Report and a Long-term Environmental Management Plan (LEMP) will need to be prepared outlining the on-going management requirements for the containment cell and establish a monitoring program.

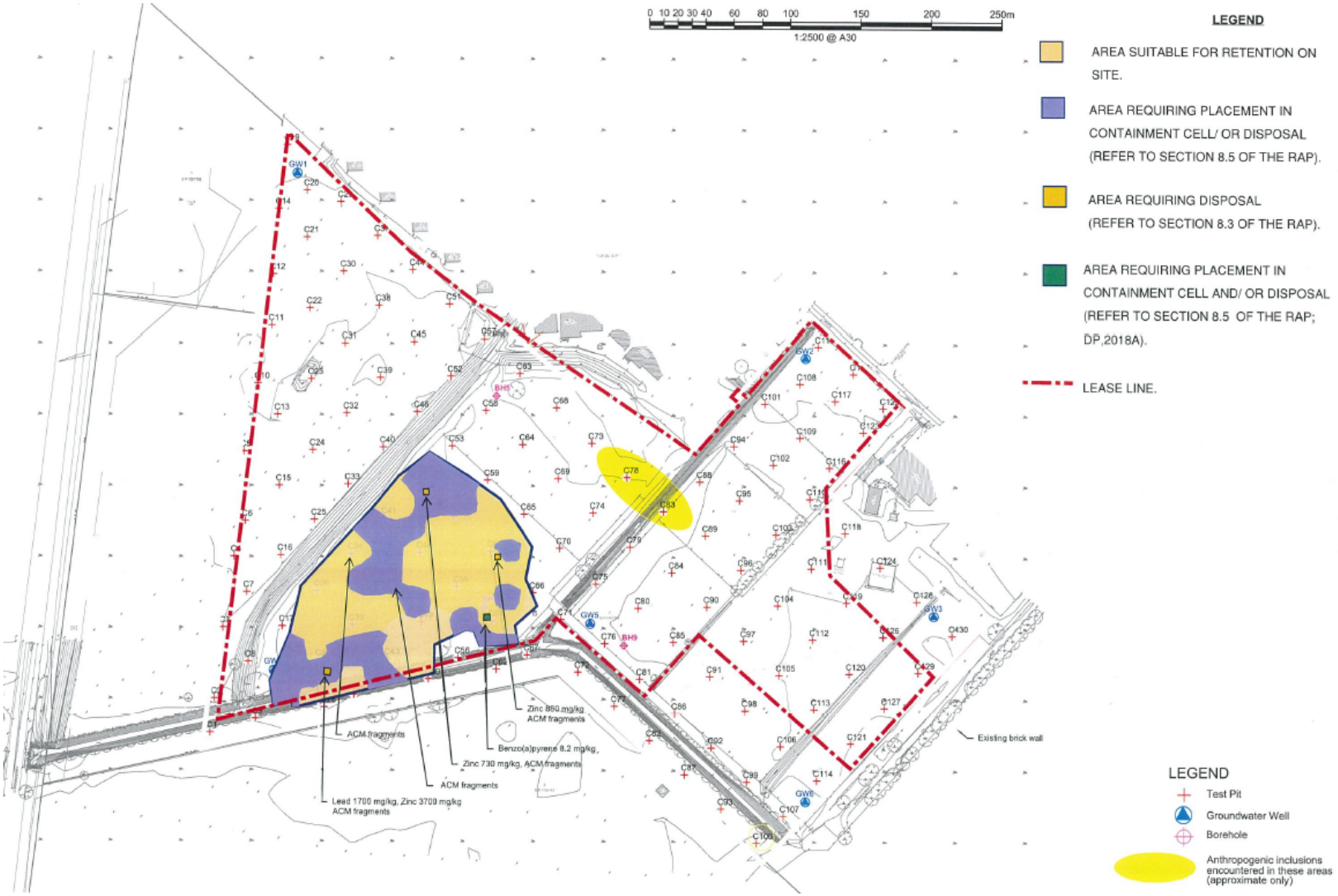

Figure 32 Location of significant contamination concentrations (Source: Douglas Partners)

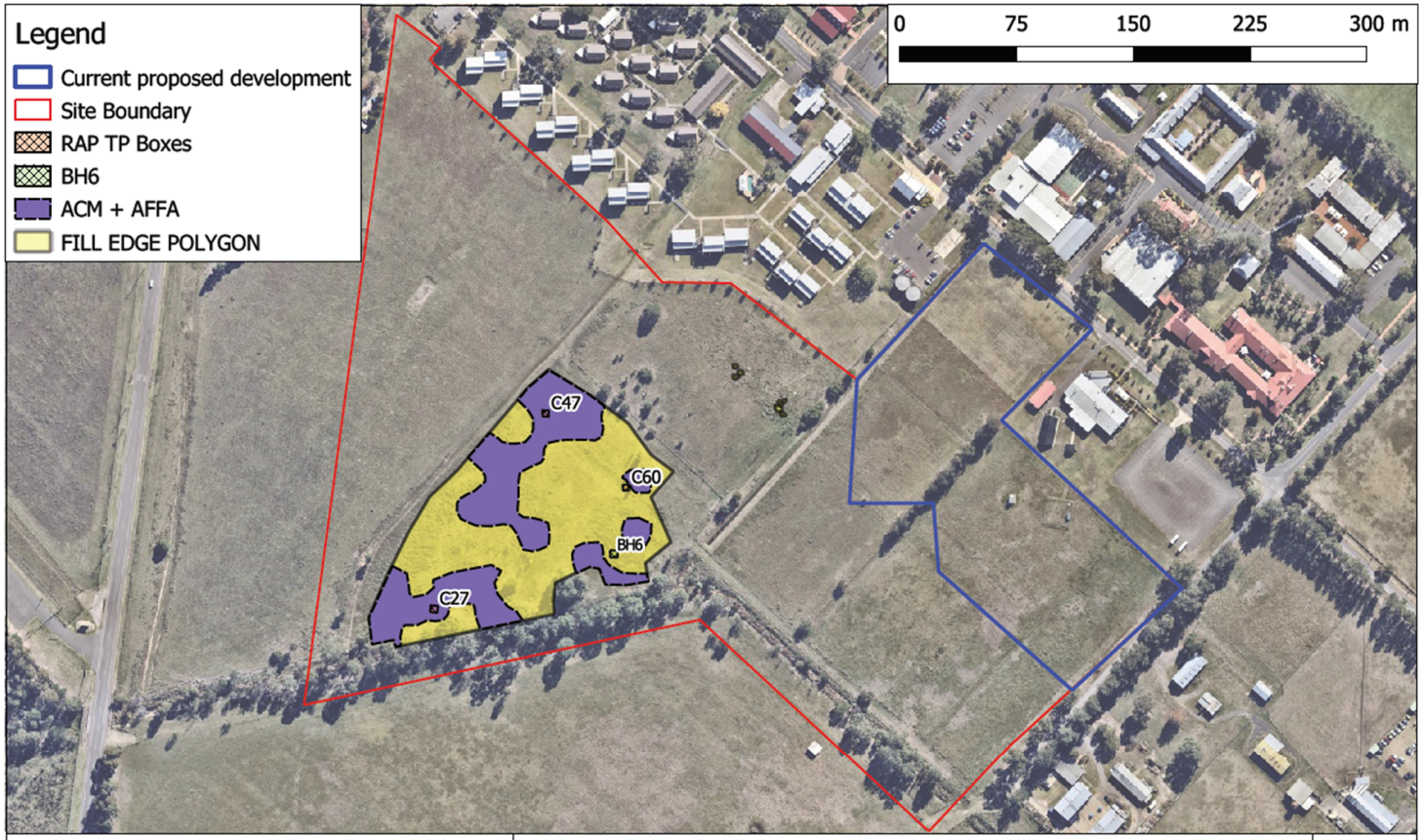

Figure 33 Site Layout of Remediation Areas

7.21 Bush fire

7.21.1 Methodology

Item 19 of the SEARs requires the preparation of a Bushfire Risk Assessment that details proposed bushfire protection measures and demonstrates compliance with Planning for Bushfire Protection 2019 (PBP 2019). **Appendix X** contains a Bush Fire Risk Assessment prepared by Bushfire Planning Australia and the following summarises the main observations, assessment and recommendations.

7.21.2 Existing environment

The predominant hazardous vegetation identified surrounding the site is considered grassland vegetation. The unmanaged vegetation is contained within grazing paddocks that have been historically used by Western Sydney University for teaching purposes. The existing Bushfire Mitigation Strategy for the parcel, prepared by Western Sydney University requires all land within the surrounding and lease area to managed in perpetuity as an Asset Protection zone.

Most of the site is not identified as designated bushfire prone land. Proposed Block G and Block H are in an area mapped as bushfire prone land however these are not considered habitable buildings. The paddocks surrounding the site to the west have been identified as *medium bushfire risk*, as outlined in **Figure 34**.

7.21.3 Assessment

The dominant vegetation that was observed throughout and surrounding the site that provides the greatest bushfire hazard was identified as a grassland, which was contained to the fenced paddocks to the south of the development site. However, all vegetation within the Western Sydney University campus is required to be managed as an APZ.

The effective slope across the site was generally flat, with small deviations associated with drainage channels to the south of the development.

The BAR confirmed that the buildings defined by the NSW Rural Fire Service as a Special Fire Protection Purpose (SFPP) are not located on designated bushfire prone land. The proposed development designation as a SFPP development mean the occupants of the proposed development may be more vulnerable to bush fire attack and therefore may require greater protection from such threats as well as assisted evacuation. SFPPs include schools, seniors housing, childcare centres, hospitals and tourist accommodation.

Section 6 of PBP 2019 provides protection measures for SFPP developments. In comparison to a standard residential development where radiant heat levels of no greater than 29kW/m2 are acceptable, radiant heat levels of greater than 10kW/m2 must not be experienced on any part of the building. To achieve radiant heat levels of less than 10kW/m2, APZs of 67m or greater are typically required (based on Table A1.12.1 of PBP 2019) for forest vegetation.

Objectives for SFPP developments place emphasis on the space surrounding buildings (as defendable space and APZs) and less reliance on construction standards. SFPP developments are highly dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats. Areas of defendable space (APZs) surrounding SFPP buildings can extend up to 60m wide.

The site is exposed to low bushfire threat primarily due to the landscape, dominance of low-threat vegetation and existing management practices in place throughout the campus and surrounding managed properties.

Notwithstanding, whilst the proposed development is able to provide appropriate separation between the nearest hazard and the proposed building/s precautionary measures are required. These recommendations will further minimise the potential impact of a bushfire on the property. In this instance the most effective bushfire protection measure is to ensure sufficient separation from the bushfire hazard which would require a portion of grassland outside of the proposed development to be suitably managed as an Asset Protection Zone (APZ) up to 50m from the outer elevation of the closest buildings to the vegetation.

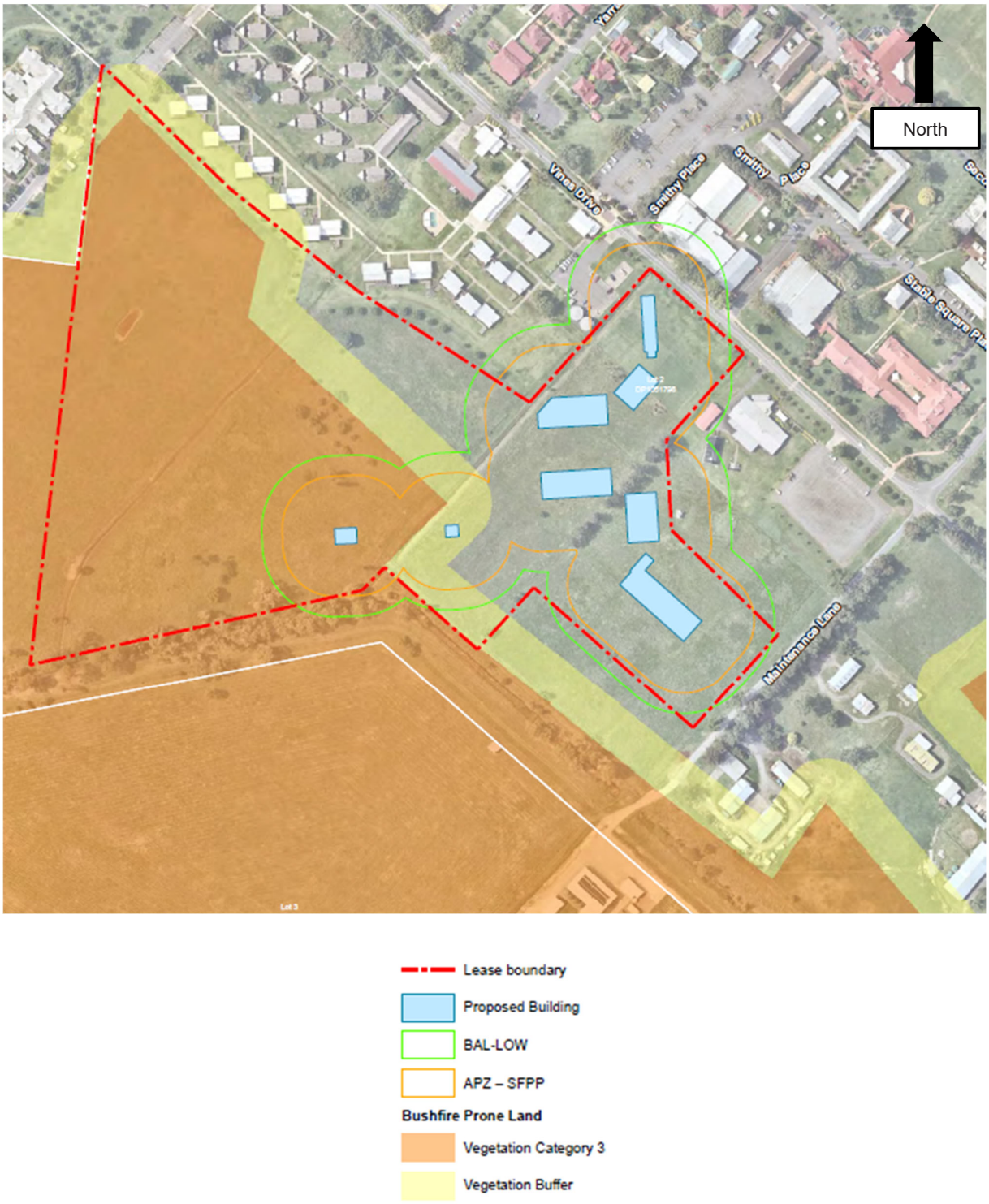

Figure 34 NSW Bushfire Prone Land Mapping

The required APZs for the proposed development are illustrated in **Figure 35.**

Figure 35 Plan showing recommended APZs.

7.21.4 Mitigation Measures

Recommendations to prevent damage and decrease vulnerability to bushfires are outlined below.

- All buildings to be used for a Special Fire Protection Purpose (SFPP) (Buildings A, B, C, D, E and F) are located to ensure they will not be exposed to radiant heat levels greater than 10kW/m^2.
- An Asset Protection Zone (APZs) a minimum of 50m is to be provided surrounding the curtilage of Buildings A, B, C, D and F; as shown in **Figure 35**. The APZs shall be managed in perpetuity as follows:
  - Tree canopy cover shall be less than 15% at maturity.
  - Trees at maturity shall not touch or overhang buildings.
  - Lower limbs shall be removed up to a height of 4m above the ground.
  - Tree canopies shall be separated by 2m to 5m.
  - Shrubs should not form more than 10% ground cover.
  - Shrubs shall not be located under trees.
  - Grass/ ground covers shall be kept mown and be no more than 100mm in height; and
  - Leaves and debris shall be removed regularly.
- The APZ needs to be established before any buildings are occupied. Surface fuel needs to be maintained frequently (< monthly) and an inspection of all trees within the APZ shall be carried out in August and April (pre and post bushfire season) to ensure vegetation remains in accordance with the requirements for APZs.
- No hazardous or flammable materials are to be stored between any buildings and the bushfire hazards without being suitably enclosed to prevent air borne embers from direct contact.
- All weepholes, ventilation openings, gaps shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2mm.
- Roof penetrations, including aerials, vent pipes and supports for solar collectors, or the like shall be sealed with a non-combustible mineral fibre at the roof to prevent gaps.
- Non-combustible gutter guards shall be installed on the new buildings.
- Any box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible materials.
- An updated Bushfire Survival Plan and Emergency Management Plan shall be prepared in accordance with the RFS Guide to development a Bush Fire Emergency Management and Evacuation Plan.

The Bushfire Assessment Report concludes that the site is exposed to low bushfire threat primarily due to the landscape, dominance of low- threat vegetation and existing management practices in place throughout the Western Sydney University campus and surrounding managed properties. The proposed development is considered to provide ample separation between the nearest hazard and the proposed built form.

7.22 Aviation

7.22.1 Methodology

An Aeronautical Impact Assessment (AIA) was prepared by Avlaw Pty Ltd (Avlaw) to address Item 20 of the SEARs for the proposed development and is contained in **Appendix Y**. The assessment was undertaken following the below regulations, standards, and guidelines:

- International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs)
- Defence Aviation Safety Regulation (DASR) 139 Aerodromes
- Part 12 of the Airports Act 1996 (Act) and the Airports (Protection of Airspace) Regulations 1996 (Regulations)

7.22.2 Existing Environment

The proposed development is made up of eight single storey buildings, with administration facilities, general and Science, Technology, Engineering and Maths (STEM) learning spaces, dining and conference hall, accommodation building, Aboriginal and technology enterprise areas, stock yards and agricultural plots. The tallest of the eight buildings is Block E which will be 29.32m AHD once constructed. The site is located 2,675m SW of threshold 10 of RWY 10/28 at Richmond Airport. The site is located in accordance with AS20212:2015 for a school or university being well clear of the 20 Australian Noise exposure Forecast (ANEF) for RAFF Base Richmond. The coordinates at the tallest building (Block E) on the site are 290988m E, 6278095m S.

The site is currently vacant. Only mobile cranes will be used during construction and will reach a maximum height of 55.5m AHD for Mobile Crane (MC) 1, 103.5m AHD for MC2, 129.5m AHD for MC3, and 168.5m AHD for MC4.

7.22.3 Assessment

The assessment found that the critical (i.e., lowest) airspace protection surface covering the site is the Inner Horizontal Surface of the Richmond Airport Obstacle Limitation Surfaces (OLS) at a height of 65.12m AHD. This surface will not be penetrated either by the building development or by MC1, however, MC2, MC3 and MC4 will penetrate this surface, therefore requiring controlled activity approval for the development to proceed.

With respect to helicopter operations, neither operational airspace or that which is protected under Guideline H of the NASF (i.e., hospital helipads) is penetrated by any of the proposed buildings or crane activity at the site and therefore there is no adverse impacts to mitigate with respect to rotary wing aircraft.

The assessment of lighting and animal hazards conducted as part of this AIA has not raised any concerns that would prevent the proposed development from proceeding as currently planned. Also, relevant standards for aircraft noise when applied to Richmond Airport identifies the Australian Noise Exposure Forecast (ANEF) is below 20 ANEF over the entire site and not a concern for development of schools or universities.

7.22.4 Mitigation Measures

Mitigation for the use of the three temporary construction cranes MC2, MC3 and MC4 can be provided by only utilising these cranes by negotiation with the RAAF Richmond, if necessary, which should include the issuing of a Notice to Airmen (NOTAM). All aviation approval should be sought through the Royal Australian Air Force (RAAF) Richmond.

7.22.5 Conclusion

The conclusion of the AIA is that no applications seeking aviation approvals for the buildings and associated crane MC1 is required, however controlled activity approval is required for MC2, MC3 and MC4 because they penetrate the OLS. Buildings and cranes (by mitigation) will not, however, penetrate any protected airspace or defined flight operational surfaces and therefore, will not adversely affect the safety, efficiency or regularity of operations of aircraft at Richmond Airport.

7.23 Accessibility

An Accessibility Design Review report has been prepared for the proposed development by BCA Logic. Refer to this at **Appendix AA.**

The Accessibility Design review provides a compliance overview of the project with respect to achieving compliance with the Building Code of Australia (BCA) and the Disability Discrimination Act (and Disability Standards) (DDA), within the project scope.

Subject to addressing the actions identified, BCA Logic confirm that the project documentation provides appropriate accessibility, capable of complying with the BCA & Disability (Access to Premises – Buildings) Standards 2010and the objectives of the DDA.

7.24 Cumulative Impacts

Cumulative impacts are those impacts likely to arise from the interaction of the proposed development and associated operations with other significant projects and activities in the area. The impacts may be caused by both construction and operational activities and can result in a greater impact to the surrounding area than would be expected if each project was undertaken in isolation.

This assessment is in accordance with the requirement to consider “any cumulative environmental effect with other existing or likely future activities” in Section 82(2)(o) of the EP&A Regulation.

The Hawkesbury City Council Development Application Tracker and DPIE’s Major Projects website do not identify any completed, underway or proposed developments in the immediate vicinity of the CoE at the time of writing.

Through its innovative and responsive design, the Hawkesbury CoE project has sought to avoid, minimise and mitigate potential impacts on environmental values within the site through a risk-based approach.

7.25 Site suitability

There are no known site conditions which would prevent the development including geotechnical conditions, contamination, flooding, biodiversity, bush fire and Aboriginal cultural heritage and historical archaeology.

The buildings have been designed and orientated to reflect the street and building grid pattern of the nearby Western Sydney University campus. Whilst the proposed development will require minor infrastructure upgrades to improve connectivity and safety for vehicles and pedestrians, in general the increase in traffic will not generate impacts that cannot be appropriately managed. The proposed development will remove from the site approximately 4.19 ha of vegetation that will require offsetting in accordance with the BC Act 2016 and *Biodiversity Conservation Regulation 2017*.

The site is impacted by two sources of flooding, riverine flooding and local overland flooding. A Flood Emergency Response Plan has been prepared and will form part of the COE’s overall Emergency Management Plan.

Parts of the site have been identified as containing contaminated material. These areas will be remediated and made suitable for the proposed uses according to the RAP prepared for the site.

Where there are environmental impacts, these can be sufficiently ameliorated through mitigation measures and design development.

The site is therefore suitable for the proposed development.

7.26 Public interest

The proposed CoE offers significant public benefits to the users of the school and broader community.

It will involve farming enterprises, learning facilities and short-stay accommodation to support teaching and learning to students in agricultural education. In addition, the CoE will support teaching and learning for industry, overseas students, and educators in NSW. This will be delivered through programs facilitated directly through the CoE with other high schools in NSW. In addition, the CoE:

- Will provide permanent and state of the art teaching facilities for students.
- Will provide new buildings that will be sympathetic to the existing natural and built landscape and be designed to equivalent 4-star Green Star Design.
- Will generate 166 construction Full Time Equivalent jobs during construction phase, and 25 additional jobs during the operational phase. Hence, these jobs, together with the value of the project, will stimulate the economy.

On balance, accounting for site suitability, environmental impacts, risk assessment and key benefits, the proposed development is in the public interest.

Given the above it is considered that the SSD Application has merit and can be supported by the Department of Planning, Industry and Environment and the Minister for Planning and Public Spaces.

8 ENVIRONMENTAL RISK ASSESSMENT

The assessment of the key issues in **Section 7** have been identified in the below risk assessment using *Australian Standard AS4369.1999 Risk Management and Environmental Risk Tools*. The Risk Assessment Matrix illustrates how the residual environmental impacts of a proposal are assigned. It provides an indicative ranking of potential residual impacts after the mitigation measures are implemented as follows:

The significance of impact is assigned a value between 1 and 5 outlined in:

- The receiving environment
- The level of understanding of the type and extent of impacts.
- The likely community response to the environmental consequence of the project.

The manageability of environmental impact is assigned a value between 1 and 5 based on:

- The complexity of mitigation measures
- The known level of performance of the safeguards proposed.
- The opportunity for adaptive management.

The sum of the values assigned provides an indicative ranking of potential residual impacts after the mitigation measures are implemented as per **Figure 36** below.

Significance of impact	Manageability of impact				
	5 Complex	4 Substantial	3 Elementary	2 Standard	1 Simple
1 – Low	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)	2 (Low)
2 – Minor	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)
3 – Moderate	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)
4 – High	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)
5 – Extreme	10 (High)	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)

Figure 36 Risk assessment matrix

In accordance with the SEARs, the 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.
- 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.

Table 29 sets out the risk assessment performed for the project.

Table 29 Risk Assessment

Item	Phase	Potential Environmental Impacts	Proposed Mitigation Measures and/or Comment	Significance of Impact	Manageability of impact	Residual impact
Built Form and Urban Design	O	• Visual impact of the development • Visual impact of the development when viewed from State Heritage items	• Incorporating appropriate measures to minimise visual impact of development.	O-2	O-2	O-4 (low/medium)
Surrounding Environmental Amenity	O	• Impact on privacy of neighbouring properties • Potential overshadowing of neighbouring properties	• The building has been designed to ensure minimal overshadowing of neighbouring properties. • Design inputs have been applied to ensure maximum privacy on neighbouring properties.	O-2	O-2	O-4 (low/medium)
Transport and Accessibility	C + O	• Increase in construction traffic on local roads. • Increase in traffic and parking on local roads	• Ensure appropriate road/street signs are displayed. • A Construction Traffic Management Plan is to be followed during the construction phase of the project to minimise traffic impacts arising from construction traffic. • The existing public roads will not be adversely impacted, and parking is allocated via on-site parking areas.	C-3 O-4	C-2 O-3	C-5 (low/medium) O-3 (medium/high)
Noise and Vibration	C + O	• Increased noise and vibration • Increased noise levels of the school	• Following Construction Noise and Vibration mitigation measures as per the Conditions of Consent • Appropriate selection of activity within hours of construction and operation	C-3 O-1	C-2 O-2	C-5 (low/medium) O-3 (low)
Flooding	O	• Risk to life and property damage	• Flood mitigation through design • Flood emergency response plan	O-4	O-3	O-7 (medium/high)
Contamination	C	• Exposure to contamination	• Implementation of RAP and CEMP	C-3	C-2	C-5 (low/medium)

Item	Phase	Potential Environmental Impacts	Proposed Mitigation Measures and/or Comment	Significance of Impact	Manageability of impact	Residual impact
		or cross contamination of site.	• Unexpected finds protocol			
Bushfire	O	• Risk to life and property damage	•	O-3	O-2	O-5 (low/medium)

Key: C – Construction / O – Operation

9 MITIGATION MEASURES

A range of mitigation measures are proposed to reduce the potential environmental and social impacts of the proposed development. **Table 30** provides a summary of the mitigation measures proposed to be undertaken as part of the proposed development.

Table 30 Mitigation Measures

Item	Potential Impact	Mitigation Measures
Trees		• A site-specific Tree Protection Plan (TPP) is prepared to guide the construction process. • Tree protection zones are recommended for all trees within the site that are to be retained. • Tree protection fencing is to be utilised to protect trees to be retained during construction. • If trees display signs of stress or deterioration, remedial action shall be taken to improve the health of the impacted tree. • Hardstand is to be minimised across the site to promote natural spaces.
Transport and accessibility		• Prior to the commencement of operation, a School Transport Plan must be submitted to the satisfaction of the Planning Secretary. • Prior to commencement of construction a final Construction Traffic and Pedestrian Management Plan must be submitted to the satisfaction of the Planning Secretary.
ESD		• Set and document operational environmental performance targets for the project (generally energy and water or waste consumption) in early design phase. • Building owner to make a written commitment to at least 2 environmental performance targets (GHG emissions, potable water consumption, operational waste, indoor environmental quality). • Passive design including careful use of shading and building layout/ orientation to minimise peak heat loads in summer and use passive heating in winter. • Well insulated building fabric and high-performance glazing. • Water efficient fixtures to be installed, further water sensitive design measures include rainwater reuse, onsite retention/ detention, erosion and sediment control and stormwater treatment are detailed in the Integrated Water Management Report in Appendix R. • Energy efficient HVAC systems selected for each space type and usage. • Energy efficient LED lighting with automated controls. • Eliminate use of gas for heating and cooling (all-electric services). • Rooftop PV across as many buildings as possible.
Heritage		• An archaeologist should be on-call so that if items associated with the agricultural history of the study area are located during constructions work the archaeologist should be contacted and should attend the site to identify the item and assess the significance of the item. All work should cease in the vicinity of the item until the archaeologist has assessed the item and its context and provided advice. • All employees, contractors and sub-contractors are to be inducted as to the provisions of the Heritage Act 1977.
Aboriginal Archaeology		• Ongoing consultation with the registered Aboriginal stakeholders should continue through the construction and operational phases of the development.

Item	Potential Impact	Mitigation Measures
		• An Aboriginal Cultural Heritage Management Plan should be devised upon approval of SSD-15001460, prior to commencing construction. • Prior to any ground disturbance taking place, all development staff, contractors, and workers should be briefed prior to works commencing on site as to their responsibilities regarding any Indigenous archaeological deposits and/or objects that may be located during the following development. • An unexpected finds protocol is to be followed in the event that Aboriginal archaeological deposits and/or objects are located during the development. All work is to cease in the immediate vicinity of the deposits and/or objects, the area is to be demarcated and DPIE should be contacted along with a qualified archaeologist and the participating RAPs are to be notified. • In the event that human remains are discovered during the development, the following should take place: • All excavation in the immediate vicinity of any objects of deposits shall cease immediately. • The NSW police and Heritage NSW Enviroline be informed as soon as possible. • Once it has been established that the human remains are Aboriginal ancestral remains, DPIE, and the relevant Registered Aboriginal Parties will identify the appropriate course of action.
Noise and vibration (Construction)		<u>Site preparation – generator and Air compressor usage</u> • Localised noise barriers should be utilised when this equipment is in use. • Barriers should be mobile and extend to a height 1 m above noise source. • Barrier should envelop the work location to ensure no direct line of sight to nearby receivers. • Practical and feasible measures should be taken to allow the noise barrier to be located within 4 m of the noise source. <u>Bulk excavation – Mobile plant, generators, air compressors etc</u> • Localised noise barriers should be utilised when this equipment is in use. • Barriers should be mobile and extend to a height 1 m above noise source. • Barrier should envelop the work location to ensure no direct line of sight to nearby receivers. • Practical and feasible measures should be taken to allow the noise barrier to be located within 4 m of the noise source. <u>Construction – Brick saw, concrete saw, drop saw, generators and air compressors.</u> • Localised noise barriers should be utilised when this equipment is in use. • Barriers should be mobile and extend to a height 1 m above noise source. • Barrier should envelop the work location to ensure no direct line of sight to nearby receivers. • Practical and feasible measures should be taken to allow the noise barrier to be located within 4 m of the noise source.
Noise and vibration (Operation)		• Strategically locate and select mechanical plant to ensure cumulative nose at the receiver boundaries is not adverse. • Acoustically assess the public address and school bell systems once the location, number and type of loudspeakers has been determined. • Operate the bell systems such that it does not interfere unreasonably with the amenity of nearby residences.

Item	Potential Impact	Mitigation Measures
Biodiversity		• A Project Ecologist to undertake an extensive pre-clearing survey, and to supervise the clearing of all vegetation in relation to the proposed development. • Any temporary structures required for construction works should be located within areas of grassland that have minimal biodiversity values. This will avoid unnecessary impacts on native vegetation and habitat elsewhere within the site. • In order to address the potential impacts of the proposed development on biodiversity, the biodiversity mitigation and management measures should be implemented as part of the CEMP for the site. • Prior to construction, the applicant should commission the services of a qualified and experienced Ecologist Consultant (minimum 3 years' experience) with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management. The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act. The Ecologist will be commissioned to: ➢ Undertake any required targeted searches for threatened flora prior to vegetation clearing. ➢ Undertake an extensive pre-clearing survey, delineating habitat-bearing trees and shrubs to be retained/removed. ➢ Supervise the clearance of trees and shrubs (native and exotic) in order to capture, treat and/or relocate any displaced fauna. • All trees proposed for removal should be replaced at a ratio of 2:1 elsewhere within the site, with mature, locally mature species representative of the River-flat Eucalypt Forest Endangered Ecological Community. • Landscaping works across the site should implement where possible, native vegetation representative of the River-flat Eucalypt Forest Endangered Ecological Community, to provide increased habitat features across the site. • Appropriate erosion and sediment control must be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004). • Temporary fencing should be erected around retained native vegetation that may incur indirect impacts on biodiversity values due to the construction works. • All storage, stockpile and laydown sites should be located within the Construction Footprint only. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values. • Potential impacts relating to stormwater and runoff will be managed during construction and operation phases. The CEMP will guide stormwater management during the construction phase of development.
Stormwater		• During construction, erosion and sediment control measures will be provided in accordance with the requirements of “Managing Urban Stormwater Soils and Construction, 4th Edition (Blue Book)”. These measures will include silt fences on the low side of the site, silt traps at stormwater pits and a construction exit to remove silt from vehicles before they leave the site. Dust control measures will also be provided. • Ongoing management and maintenance of the stormwater system inclusive of the pits, pipes, and detention tank are required to form part of the school’s maintenance schedule. The

Item	Potential Impact	Mitigation Measures
		periodic cleaning of the system to remove rubbish and debris is recommended to be undertaken at 6-month intervals and following any storm greater than the 10% AEP event.
Flooding		The following evacuation procedure should form part of the CoE's overall Emergency Management Plan, including fire and medical emergencies. • Flood Alert / Warning - In the event that a flood warning is received from BoM or SES. The Chief Flood Warden shall monitor the situation and shall liaise with WSU's Chief Flood Warden. • Activate Flood Emergency Alarm - Once confirmation is received that riverine flooding is occurring, the Chief Flood Warden shall activate the Flood Emergency Alarm, which includes an emergency tone. • Evacuation to Emergency Muster Point - Once the Flood Emergency Alarm has been activated all personnel on the CoE site are to make their way to the Emergency Muster Point (eastern car park) under the direction of the Flood Wardens. The Flood Wardens shall ensure everyone on the campus is accounted for and aware of the situation. The Flood Wardens shall ensure that nobody leaves The Site. • Confirm Occupancy Numbers - Once everyone is in the nominated Emergency Muster Point the Flood Wardens shall obtain the names of all the occupants within the muster point and ensure that everyone is accounted for. • SES / Contact Bus Companies - While everyone is making their way to the Emergency Muster Post the Chief Flood Warden along with WSU, shall contact the SES and inform them of the situation. The SES shall nominate an off-site evacuation location and offer any assistance that is required. Once occupancy numbers have been confirmed by the Flood Wardens and the Chief Flood Warden is satisfied that everyone is accounted for, the Chief Flood Warden, with help from WSU, shall then organise buses for CoE personnel. • Evacuation from Emergency Muster Point - Once the buses arrive at the Emergency Muster Point. The Flood Wardens shall direct all CoE personnel onto the buses that will take them to the nominated off site evacuation area as confirmed by the SES. • Off-site evacuation area - Once the buses arrive at the off-site evacuation area, the Chief Flood Warden is to liaise with the SES and emergency services for the safe return CoE personnel to their homes (if located outside the flood extents).
Soil and Water		• Throughout the construction phase of the project, erosion and sediment control measures are to be provided in accordance with the requirements of "Managing Urban Stormwater Soils and Construction, 4th Edition (Blue Book)". These measures will include silt fences on the low side of the site and silt traps at stormwater pits. Dust control measures will be provided in the CEMP. • Other measures to be provided on site during construction include construction exits for all vehicles leaving the site, and revegetation of the site as soon as practicable. Erosion control measures must be inspected and maintained after each rain event and at intervals not exceeding two weeks.
Geotechnical		• Any existing filling that is required to support structures and pavements will need to be reworked to reduce the potential for unacceptable settlements associated with poorly or variable compacted filling. New filling will also need to be placed in accordance with an engineering specification. • Permanent batters for excavations and embankments should be no steeper than 2(H):1(V) and possibly flatter where vegetation

Item	Potential Impact	Mitigation Measures
		maintenance is required. Erosion protection should be provided for all permanent batters. • Surcharge loads should be placed no closer to the crest of the batter than a distance equal to the vertical height of the batter, unless specific stability analysis shows that the loads can be placed closer. • Suitable cross-fall and drainage should be provided for pavement areas to reduce the risk of the subgrade becoming saturated during the life of the pavement.
Waste		Waste generated during construction will be managed in accordance with the Waste Management Plan and the Construction Environmental Management Plan (CEMP) to be prepared by the construction company undertaking the works. The following mitigation measures will be applied throughout the duration of the works. • All waste generated during the course of the works will be reused or removed from the work areas as soon as practicable and disposed of in accordance with the waste disposal safeguards. • All vessels used for contaminated or hazardous waste should be sealed, labelled according to their contents, and stored within bunded areas until their removal from the work site. • Any fuel, lubricant or hydraulic fluid spillages will be collected using absorbent material and the contaminated material disposed of at an OEH licensed waste depot. • The work site will be left clean and free of weeds, debris and other rubbish at the end of works. • All hazardous wastes on site will be removed and disposed in accordance with the state and national regulations and guidelines and best practice for the removal of these materials. • The Contractor's recycling and reuse proposal for all waste generated will be detailed in the CEMP. • Green waste from vegetation clearing will be preferable reused on site as wood chips or disposed of in accordance with council requirements. • Off-cuts of materials used in the construction will be recycled within the Project where possible. Waste generated as part of the proposed remediation works will be managed under the RAP and Environmental Management Plan specifically prepared for the remediation works. Below is an overview of the waste disposal and management strategy during remediation works: • All materials excavated and removed from the site shall be disposed in accordance with the POEO Act 1997 and to a facility / site legally able to accept the material. Confirmation on the landfill current licensing should be provided to the Environmental Consultant prior to commencement of disposal. • A waste classification assessment should be carried out in accordance with NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste (EPA, 2014) for any material requiring offsite disposal. The scope of the assessment will depend on the volume and type of material requiring disposal. • Copies of all necessary approvals from the receiving site shall be given to the Environmental Consultant prior to any contaminated material being removed from the site. A record of the disposal of materials will be maintained and provided to the Environmental Consultant for waste reconciliation purposes. • All relevant analysis results shall be made available to the Contractor and proposed receiving site/waste facility to enable selection of a suitable disposal location. • Details of all contaminated and spoil materials removed from the site shall be documented by the Contractor with copies of weighbridge slips, trip tickets and consignment disposal confirmation where appropriate) provided to the Environmental

Item	Potential Impact	Mitigation Measures
		Consultant and the Principal's Representative (PR). A site log will be maintained by the PR to track disposed loads against on-site origin.
Contamination		The recommendations from the RAP prepared by Douglas Partners are to be followed and include: • Excavate and dispose of metal and benzo(a)pyrene exceedances at locations C27, C47 and C60. • For all remaining filling material. ➢ For within yellow shaded areas excluding fill in the vicinity of BH6 (Figure 33): place at depth at the site (burial), either below a slab/building or at a depth of 0.4 m or greater in areas of unconsolidated cover (e.g.: fields); and ➢ For filling at location BH6 and within the purple areas (Figure 33): Construct a containment cell at the site below ground for asbestos and immobile metal and benzo(a)pyrene exceedances. • Validate the extent of the filling area after removal of all filling material. <u>Filling</u> All filling material that passes the remediation acceptance criteria is placed at depth at the site as follows: • Below hard stand, e.g.: a slab or building; or • At a minimum 0.4 m depth below unconsolidated ground cover. <u>Containment cell</u> The containment cell requires the following: • A suitable size to house all impacted material and taking into account soil bulking factor. • Survey of the excavated cell • The Remediation Contractor shall place the impacted material into the cell; after placement of the material, the surface of the impacted material shall be covered using a coloured geotextile cover layer to act as a physical marker for any future excavation works. • Suitable soil cover shall be placed above the geotextile cover; and • The top of the containment cell (i.e., the geotextile cover) shall be a minimum 0.5 m below the final site level. The Remediation Contractor shall survey the base and top of the containment cell and confirm the construction of the cell in as built. It will be necessary to include the survey as part of the Validation Report and a Long-term Environmental Management Plan (LEMP) will need to be prepared outlining the on-going management requirements for the containment cell and establish a monitoring program.
Bush Fire		• All buildings to be used for a Special Fire Protection Purpose (SFPP) (Buildings A, B, C, D, E and F) are located to ensure they will not be exposed to radiant heat levels greater than 10kW/m2. • An Asset Protection Zone (APZs) a minimum of 50m is to be provided surrounding the curtilage of Buildings A, B, C, D and F; as shown in Figure 35. The APZs shall be managed in perpetuity as follows: ➢ Tree canopy cover shall be less than 15% at maturity. ➢ Trees at maturity shall not touch or overhang buildings. ➢ Lower limbs shall be removed up to a height of 4m above the ground. ➢ Tree canopies shall be separated by 2m to 5m. ➢ Shrubs should not form more than 10% ground cover. ➢ Shrubs shall not be located under trees.

Item	Potential Impact	Mitigation Measures
		➢ Grass/ ground covers shall be kept mown and be no more than 100mm in height; and ➢ Leaves and debris shall be removed regularly. • The APZ needs to be established before any buildings are occupied. Surface fuel needs to be maintained frequently (< monthly) and an inspection of all trees within the APZ shall be carried out in August and April (pre and post bushfire season) to ensure vegetation remains in accordance with the requirements for APZs. • No hazardous or flammable materials are to be stored between any buildings and the bushfire hazards without being suitably enclosed to prevent air borne embers from direct contact. • All weepholes, ventilation openings, gaps shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2mm. • Roof penetrations, including aerials, vent pipes and supports for solar collectors, or the like shall be sealed with a non-combustible mineral fibre at the roof to prevent gaps. • Non-combustible gutter guards shall be installed on the new buildings. • Any box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible materials. • An updated Bushfire Survival Plan and Emergency Management Plan shall be prepared in accordance with the RFS Guide to development a Bush Fire Emergency Management and Evacuation Plan
Aviation		• Construction cranes of type MC2, MC3 and MC4 can be used but with issuing of a Notice to Airmen (NOTAM) sought through Royal Australian Air Force (RAAF) Richmond.

10 JUSTIFICATION AND CONCLUSION

This EIS has been prepared for the Hawkesbury CoE that will provide new agricultural / STEM teaching facilities for secondary students with general learning and administration spaces to be utilised by rural, regional and metropolitan school students. The CoE will be located on part of 2 College Street Richmond which is land to be leased from Western Sydney University to the Department of Education NSW on a long-term basis. The EIS has been prepared in accordance with the SEARs issued by DPIE on 19 March 2021, Schedule 2 of the EP&A Regulation, and Section 4.15(1) of the EP&A Act. It includes assessment of the proposal against the relevant strategic and statutory planning framework, undertakes a merit assessment of the environmental impacts including assessment of site suitability, a risk assessment, and an evaluation of the public interest.

Having regard to the above, the carrying out of the project is justified for the following reasons:

- The assessment of the proposed development has demonstrated that the new educational facility will not generate environmental impacts that cannot be appropriately managed and is consistent with the relevant planning controls for the site.
- The development will provide a significant new piece of social and educational infrastructure to the area, with permanent teaching spaces to accommodate 325 students and short-term on-site accommodation facilities for up to 62 visiting students and teaching professionals from regional and rural NSW.
- The proposed development allows for the provision of new teaching and educational facilities that meet the special design requirements for the proposed uses, whilst not resulting in any significant adverse impacts on the site or surrounding uses.
- The proposed development is consistent with the principles of ecological sustainable development as defined by Schedule 2(7)(4) of the EP&A Regulation 2000.
- The proposed works for the CoE are anticipated to create 166 jobs during the construction phase and 25 full time jobs during the operational phase.
- The proposed development will require the removal of approximately 4.19ha of PCT 835 across the site. Three ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development.
- The proposed upgrade works will not result in any adverse traffic impacts on the surrounding road network, and parking demand associated with the proposed development can be accommodated.

On balance, accounting for site suitability, environmental impacts, risk assessment and key benefits, the proposed development is in the public interest.

Given the above it is considered that the SSD Application has merit and can be supported by the Department of Planning, Industry and Environment and the Minister for Planning and Public Spaces.

Appendix A

Secretary's Environmental Assessment Requirements – Issued by DPIE 19th March 2021.

Appendix B

Detailed Site Survey – Prepared by Rygate and Company

Appendix C

Section 10.7(2) (5) Planning Certificate – issued by Hawkesbury City Council

Appendix D

Architectural Plans – prepared by NBRS Architecture.

Appendix E

Architectural Design Statement including CPTED Report- prepared by NBRS Architecture.

Appendix F

Landscape Plans - prepared by NBRS Architecture.

Appendix G

Visual Impact Assessment - prepared by NBRS Architecture.

Appendix H

Community Consultation Summary Report - prepared by NSW Department of Education.

Appendix I

Transport and Accessibility Impact Assessment – prepared by Taylor Thomson Whitting.

Appendix J

ESD Report – prepared by Norman Disney and Young.

Appendix K

Historical Archaeological Assessment – prepared by Comber Consultants.

Appendix L

Aboriginal Cultural Heritage Assessment Report – prepared by AMAC and Streat Archaeological Services

Appendix M

Social Impact Assessment – prepared by RPS.

Appendix N

Noise and Vibration Assessment – prepared by Marshall Day Acoustics

Appendix O

Biodiversity Assessment Report - prepared by Narla Environmental.

Appendix P

Arboricultural Impact Assessment Report – prepared by Sturt Noble Arboriculture

Appendix Q

Infrastructure Management Plan – prepared by Norman Disney and Young

Appendix R

Integrated Water Management Report - prepared by Woolacotts Consulting Engineers

Appendix S

Flood Emergency Management Report - prepared by Woolacotts Consulting Engineers

Appendix T

Soil and Groundwater Assessment - prepared by Woolacotts Consulting Engineers

Appendix U

Detailed Site Investigation (Contamination) - prepared by Douglas Partners.

Appendix V

Remediation Action Plan - prepared by Douglas Partners.

Appendix W

Operational Waste Management Plan - prepared by Richard Crookes Constructions

Appendix X

Bush Fire Threat Assessment - prepared by Bushfire Planning Australia

Appendix Y

Aeronautical Impact Assessment - prepared by Avlaw Consulting.

Appendix Z

Access Assessment Report – prepared by BCA Logic.

Appendix AA

BCA Assessment Report – prepared by BCA Logic.

Appendix BB

Geotechnical Investigation - prepared by Douglas Partners.

Appendix CC

Construction Management Plan

Appendix DD

Landscape Design Statement

Appendix EE

Statement of Heritage Impact

Appendix FF

Flood Impact Assessment

Appendix GG

Civil Engineering Report