



Prepared for
NSW Department of Education

Date
25 August 2022

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Appendix D Environmental Assessment and Mitigation Measures

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25 August 2022

Revision history

Issue Reference	Issue Date	Issue Status
A	21 January 2022	Draft
B	8 March 2022	Test of Adequacy
C	14 April 2022	Final
D	25 August 2022	Submissions Report
File Ref: \\architectus.local\DFS\Projects\200466.00\Docs\C_Client\EIS		

Contents

1. Environmental Risk Assessment	4
2. Mitigation Measures	8

1. Environmental Risk Assessment

In accordance with the SEARs, this section addresses the following significant environmental risk issues:

- Adequate baseline data;
- Consideration of potential cumulative impacts due to other development in the vicinity; and
- Measures to avoid, minimise and if necessary, offset the predicted impacts, including detailed contingency plans for managing any significant risks to the environment and triggers for each action.

The following table sets out the anticipated impacts, the level of respective impact in terms of severity (low, medium, high), identifies mitigation measures, and once these measures are applied, identifies residual risks (low, medium, high).

Table 1 Environmental Risk Assessment

Impact Theme	Impact Detail	Level of Impact	Mitigation Measures	Residual Risk
Traffic				
Construction	Road traffic volumes in the vicinity are likely to be lower during construction than they are currently, given the school site will be closed. Vehicle volumes for a development of this scale are subject to confirmation by an appointed contractor however given the scale of the development it is not considered that there will be any noticeable impact on traffic levels for road users arising from construction users. No impacts of construction on vehicles / safety of kiss and ride facility nor implications for school users given the school will not be in use during construction. Two parking areas are to be provided on-site for construction workers, with spare capacity in the surrounding road network to accommodate additional overflow. Therefore, there will be minimal implications on nearby residents. The CTMP prepared by Bitzios does not recommend any mitigation measures.	Low	<u>Construction traffic and pedestrian management</u> – A Detailed Construction Traffic and Pedestrian Management Plan (CTPMP) will be developed prior to construction and incorporated into a detailed Construction Environmental Management Plan (CEMP).	Low
Operation	It has been determined that the proposed development will likely increase the pick-up/drop-off demand. Furthermore, proposed car parking at the site can accommodate 82% of the staff where currently the mode share for staff is 99%. A preliminary School Transport Plan (STP) has been prepared which outlines strategies to	Medium	<u>School Transport Plan</u> - Implement recommendations from the STP including arranging a Travel Coordinator for the duration of works and first year post-occupancy. <u>Bus Operational Plan</u> - In addition, a separate Bus Operational Plan for MEC would be developed in partnership between	Low - Medium

achieve a modal shift at the site, particularly offsetting demand in pick-up/drop-off activity with uptake in cycling and walking modes. A total of 161 parking spaces are proposed to be provided on-site as part of the MEC. A review of on-street parking occupancy was undertaken which demonstrated the availability of 383 on-street spaces available during school peaks (8.30- 9.30am and 3.00 -4.00pm). The Kiss and Drop trips, high school student vehicle parking and potential demand for staff parking provides the potential to generate a total demand for 233 overflow parking spaces. Factoring in the above additional overflow parking, it is clear there is still sufficient on-street capacity to cater for this parking overflow. With the amalgamation of the four schools brings an opportunity to review the bus service structures as well as introduce initiatives to streamline operations, increase student catchments as well as improve the experience for students and increase utilisation. As part of on-going consultation with Transport for NSW's (TfNSW's) Bus Planning team, they have advised that changes to bus services and contracts are scheduled to occur in 2025. Given MEC plans to open in 2024 these changes to contracts will be required to be fast-tracked or revised in consultation with each of the service operators. Through the Transport Working Group (TWG) process, attendees agreed that a separate Bus Operational Plan for the MEC would be required to be developed.		School Infrastructure, TfNSW and service providers.	
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Noise & Vibration

Noise

Construction	No receivers are anticipated to be highly noise affected (i.e., exceed an LAeq,15min of 75 dB(A)). A noise assessment demonstrated no exceedance in acceptable noise levels with the exception of one location, RC1, being residential receivers on the northern boundary. The exceedance (of 3 dB beyond noise management level) only occurs during piling work. As a result, this work will have to be conducted during the day to avoid the possibility of sleep disturbance, and rest breaks will have to be provided. Noise monitoring at the most affected noise-sensitive receivers, as well as the implementation of a one-hour respite period per day to coincide with the most intensive periods of work on the site is also recommended. Construction traffic would have a negligible impact in terms of changes to road traffic noise.	Medium	A Detailed Construction Noise and Vibration Management Plan (CNVMP) will be required to be prepared prior to construction and included in the CEMP.	Low
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Operation	The main sources of operational noise are additional traffic, mechanical servicing for the new buildings, and the PA and bell system. The noise emissions associated with these items are expected to comply with the applicable noise criteria, subject to mitigation measures. Furthermore, in relation to internal noise levels, with suitable mitigation measures to be resolved through detailed design, rooms within the new building will achieve a level that is appropriate for students. Additional analysis of noise generated by the development has been undertaken in the revised NVIA (Appendix R) for the following: – An assessment of the noise generated by students conversing and playing outdoors during recess and lunch; – An assessment of noise from general indoor teaching and learning within Building 1 whilst classrooms are in session; – An assessment of noise from outdoor learning spaces in Building 1 to residential receivers across the street facing the façade of Building 1 has also been considered; – An assessment of noise emissions from the kiss and drop facility; and – Predicted façade noise levels have been assessed to the nearest façade of the residential noise-sensitive receiver closest to Nullum Street. Given the results from the additional analysis, it is considered that the proposed development complies with the applicable noise criteria from relevant policies and is therefore unlikely to result in any negative noise and vibration impacts to surrounding residential receivers during operation of the MEC.	Medium	The operational noise from the school is expected to be within manageable levels. Several general mitigation measures were recommended by E-lab including: – Positioning mechanical plant away from nearby noise sensitive receivers; – Acoustic attenuators fitted to duct work; – Screening around mechanical plant; – Acoustic insulation within duct work; – Acoustically insulated bends fitted to duct work; – Reselection of mechanical plant.	Low
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Vibration

Construction	The most-affected receivers are predicted to be residential receivers on the northern boundary (Location "RC1"), approximately 14 metres from future Building 1.	Medium	Although the vibration assessment indicated a lower magnitude than the German Standard DIN 4150 criteria (structural damage) for dwellings, vibration monitoring will still be conducted at the most-affected receivers in accordance with the monitoring program proposed in the Noise and Vibration report (Appendix AB), given the working and ground conditions will be different than that of the provided results.	Low
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Historical Archaeology

Construction and operation	There is low potential for historical archaeological items at the site, due to the disturbed nature of the site and there being no records of previous archaeological finds on the site.	Low	An unexpected finds protocol will be triggered by any archaeological remains found. A heritage-interpretation strategy is to be developed by a heritage specialist to identify the interpretive values of the study area, and specifically Aboriginal heritage values across the study area.	Low
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Aboriginal Heritage

Construction and operation	There are no known Aboriginal cultural heritage constraints for the proposed development.	N/A	None required. If any Aboriginal objects, sites and/or human remains are identified during the works within the impact footprint, works should cease immediately and the Police and NSW Heritage should be contacted.	N/A
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Hazardous Materials

Construction and operation	Hazardous materials are present in some existing buildings. These buildings are being demolished to slab level under a separate 'development without consent' planning pathway. Notwithstanding, removal of building footings, demolition of Building E and refurbishment of Building A is proposed under this SSDA, which may present risk from hazardous materials (e.g. lead paint, asbestos).	Low	Recommendations of the Hazardous Building Materials Survey (Appendix AC to the EIS) be adhered to throughout the course of works, including unexpected finds protocols and adherence to NSW SafeWork practices.	Low
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Contamination

Construction and operation	The potential for contamination constraints at the site is relatively low. However, as with any site, there is always the potential that concealed structures and / or contaminated materials may be present at the site, and this should be considered during bulk earthworks for the proposed development. A revised Detailed Site Investigation (Appendix L to the RtS) concluded that the site does not require further investigation, remediation and/or validation to render the site suitable for the proposed use.	Low	An Unexpected Finds Protocol will need to be established for use during earthworks, to ensure that due process is carried out in the event of a possible contaminated find.	Low
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2. Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed development are detailed in Table 2 below.

These measures have been derived from the environmental risk assessment and those detailed in appended consultant reports.

Table 2 Recommendations and Mitigation Measures

Item	Mitigation Measures
Aboriginal Heritage	An “Unexpected Finds Protocol” will be put in place prior to the commencement of work for the instance that any archaeological remains are found. If human remains, or suspected human remains, are found during excavation, all work in the vicinity should cease immediately. The site should be secured and the NSW Police and the Department of Planning and Environment (DPE) notified. A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the study area, and specifically Aboriginal heritage values across the study area and to provide direction for potential interpretive installations and devices.
Historical Archaeology	As the site is unlikely to hold any known archaeological relics of state or local significance, the proposal is likely to have nil impact. However, should unexpected archaeological relics of local of state significance be uncovered during site works, workers are expected to follow an unexpected finds procedure.
Built Heritage	The revised Heritage Impact Assessment (HIA) (Appendix T) provides the following recommendations to be incorporated as part of ongoing design development: – A revised SoHI would be required if changes to the works proposed to Block A occurs in future iterations of the design. – A separate demolition and reconstruction plan for the demolition of Block E is to be prepared by a nominated heritage consultant or heritage architect that provides: ○ A physical assessment of the areas of intersection between Block E and Block A, prior to demolition works, that identifies all points of structural connection between both buildings and identifies missing original fabric; ○ A clear definition of the correct processes that would inform the careful demolition of Block E with minimal impacts to Block A; and ○ A detailed process for the restoration and reconstruction plan for the impacted sections of Block A. – A Conservation Management Strategy (CMS) for the Block A building and surrounding original fabric be prepared by a nominated heritage consultant, to be implemented prior any works to the building.

	– Consideration must be made in future iterations of the detailed design of the maintenance of view lines to the Block A building along Riverview Street and nearby residential zone. – Landscape works are to maintain the surrounding natural ridge and setting that the Block A building is situated on and avoid landscaping that may affect the prominence of Block A or impede on sightlines, particularly as viewed along Riverview Street to the north; – Retaining walls framing the courts to the north of Block A and the original retaining wall were introduced in the 1930s and are early additions to the site. While they are not part of the original intent or design of the original Block A, they do contribute to the setting and the significance. It is recommended that these retaining walls be maintained and integrated into the design, if possible. If their removal is unavoidable then a full archival recording of the features is to be conducted and the brickwork salvaged and stored for use in repairs or brickwork replacements to Block A or the original retaining wall. – A full archival recording of the entire school site is recommended prior to the commencement of any works. – A full external and internal archival recording of Block A, particularly the east elevation and built elements that are to be demolished, is recommended to be completed prior to the commencement of site preparation, pre-construction and construction stage works. This recording is inclusive of the surrounding landscape and context to Building A as well as the brick retaining wall to the north. The HIA also outlines a number of recommendations to specific work elements. However, these items are subject to further detailed design and it is anticipated these will be considered by the design team as part of ongoing design processes.
Operational Traffic	Traffic and accessibility management measures will be implemented in accordance with the Transport and Accessibility Impact Assessment prepared by Bitzios at Appendix X to the EIS. A STP will be further implemented to achieve a shift in sustainable modes of traffic. A separate Bus Operational Plan for the MEC will be developed in partnership between School Infrastructure, TfNSW and service providers. In conjunction with additional bicycle spaces and end of trip facilities, implementation of the STP will ensure that a greater uptake of active travel modes and public transport modal share thereby limiting the number of private vehicle trips and demand for parking and drop-off/pick-up area. Additionally, through the upgrade of the kiss and drop, bus interchange, pathway upgrade and new crossings on High School Lane, communications and transport programs under the STP, it is anticipated that the usage of private vehicles as a travel mode would reduce in the future.

	The TIA provides further measures to manage demand and the daily operation of existing staff car park and pick-up/drop-off area on Nullum Street.
Construction Traffic	Construction traffic measures will be addressed in accordance with the Preliminary CTPMP within the TIA prepared by Bitzios at Appendix X to the EIS. A detailed CTPMP will be required to be prepared. The CTPMP will address traffic impacts during construction, concerns raised by the community during consultation, through several measures: – Parking – providing on-site parking for workers where possible and implementing mitigation measures for on-street parking of workers to reduce nuisance to neighbours; – Vehicle Management – managing deliveries and truck visits to the site to ensure congestion of streets is avoided.
Geotechnical	The proposed development is to be carried out in accordance with the recommendations outlined in the Geotechnical Investigation Report prepared by Douglas Partners at Appendix R to the EIS. The proposed development will be completed in accordance with the Acid Sulphate Soil Management Plan (ASSMP), which is included as part of the Geotechnical report. The ASSMP recommends an on-site location for treatment of acid sulphate soils, at the north end of the oval. Free groundwater was encountered at 3.8 m depth in Bore 103 while auger drilling and was not encountered during auger drilling. It is acknowledged however that groundwater conditions vary over time and are influenced by weather/climate. As a result, Douglas Partners recommended: – Further investigation comprising the installation of groundwater monitoring wells will be required to confirm on site groundwater levels.; and – Piling contractors should include a provision for the use of temporary steel liners, drilling muds, cleaning buckets and to remove groundwater. Douglas Partners did not identify the need for a detailed groundwater investigations report or management plan for the proposed development.
Structural	It is anticipated the following requirements will be imposed on the development: – All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the development, must be constructed in accordance with the relevant requirements of the BCA; and – Structural drawings must be prepared and signed by a suitably qualified practising Structural Engineer
Contamination	No contaminants were uncovered on the site. Notwithstanding, construction of the proposed development will be delivered in accordance with the recommendations in the revised DSI

	prepared by Douglas Partners (Appendix L to the RtS), namely that: – If soil disturbance is required within the eastern part of the site, as well as at depths below 1.25 m bgl near TP2, an ASSMP would be implemented; and – An unexpected finds protocol will be implemented if any contamination were uncovered that were not assessed as part of this application. An ASSMP has been prepared and is included in Appendix M to the EIS. The DSI recommended the preparation of a Hazardous Materials Investigation. This was prepared and is attached at Appendix AC to the EIS.
Arboriculture	A total of 439 trees were assessed as part of the site. This equates to a tree canopy of 33.5% of the site area (39,200m²). A total of 158 trees are identified for removal to accommodate the proposed development and for bushfire management. The Arboricultural Impact Assessment notes which trees will require Tree Protection Zones (TPZ) to be installed during construction. This will ensure that only the trees that have been identified for removal are impacted because of the proposed development.
Bushfire Asset Protection	The proposed development is to be carried out in accordance with the Bushfire Management Plan (BMP) (Appendix U of the RtS). The BMP was prepared to guide the APZ implementation phase and mitigate any harm to specific environmental values to <i>Rhodamnia rubescens</i> and Hoop Pine retention areas. This ensures the environmental values are protected while achieving the APZ performance standards in perpetuity.
Biodiversity	The proposal has direct and indirect biodiversity impacts due to the loss of native planted vegetation, threatened flora species and marginal foraging habitat for microbats (although it is noted that no microbats were encountered during site inspections). The following mitigation measures are proposed to protect the biodiversity values of the site: – A Site Plan should be included in the construction environmental management plan that details the extent of approved clearing, all threatened plants, stockpile, material laydown areas and site compounds; – Clearing limits will be defined using clearly visible barrier, such as flagging tape; – A pre-clearance inspection will be completed by a qualified ecologist to inspect buildings, remove any microbats (if encountered) prior to demolition and relocate them to a suitable habitat within the locality; – Any bats injured during works would be taken to a veterinarian; – Sediment controls, including fencing and sediments traps, should be installed in any areas where works will occur in proximity to low lying vegetation or streams; – Weed monitoring is to be undertaken within the indirect impact zone at the Hoop Pine Plantation at

	regular intervals post construction for a period of 6 months and corrective weeding actions taken to manage the establishment and spread of weeds into the Hoop Pine Plantation. Refer Biodiversity Development Assessment Report at Appendix O to the EIS.
Dangerous Goods	Consideration of Department of Education's (DoE's) "Chemical Safety in Schools" will be incorporated into the project.
Accessibility	As detailed within the Accessibility Report (Appendix AH to the EIS), access performance solutions will be developed as part of the detailed design phase. It is considered the proposed design is capable of compliance with the relevant statutory accessibility legislation to provide reasonable access provisions for people with disability to and within the proposed development. This will be achieved through a combination of compliance with the deemed to satisfy (DTS) provisions and/or the Performance Requirements of the BCA.
Flooding	<u>Design</u> Proposed building floor levels will be set at the minimum of RL 7.50m to be above flood levels required by School Infrastructure and Tweed Shire Council. Additionally, to prevent shallow upstream flows entering the building, a solid wall will be constructed, with a top of wall level approximately 300mm above the boundary level of High School Lane. <u>Operation</u> A Flood Emergency Response Plan (FERP) has been completed as part of the ongoing development of documentation for the MEC development (Appendix H to the RtS) which includes; – Communication with SES, Council, Staff & Authorities – Response for storm events up to the Probable Maximum Flood (PMF) event that affects the site and the surrounding township – Evacuation recommendations – Shelter location recommendations.
Ecologically Sustainable Development	The proposal aligns with targeted initiatives under the Green Star scorecard and proposes a 4-star Green Star Rating. Through early design input the proposed design has incorporated various sustainability initiatives: – Passive cooling and heating design principles to reduce the school's reliance on artificial lighting and heating, ventilation and air conditioning systems, including external shading, operable windows and clerestory windows; – All mechanical equipment will be selected for maximum operational efficiency and support to life cycle cost analysis. This will be supported by sustainable electrical services, including long life LED lighting, internal blinds and screens, energy and water monitoring screens for students and staff monitoring and implementation of solar photovoltaics (PV) system;

	Regarding hydraulic services, the project team will adopt efficient hydraulic services to assist water efficient design, including, however not limited to rainwater reuse, water sub-metering and electric hot water supply. More broadly the project will seek to encourage a shift towards more sustainable transport modes through measures detailed in the STP. The proposed development will be delivered in accordance with the ESD Report prepared by E-lab attached at Appendix W to the EIS.
Waste	Construction and operational waste will be managed in accordance with the measures identified in the Operational Waste Management Plan by EcCell Environmental Management at Appendix AJ, and the Construction Waste Management Plan prepared by EcCell Environmental Management at Appendix AL to the EIS.
Infrastructure Management	The proposed development is to be designed in accordance with the measures outlined in the Building Services Infrastructure Report Plan prepared by JHA Services (Appendix AE to the EIS) and Civil Report prepared by TTW (Appendix U to the EIS).
Operational Noise and Vibration	Amelioration strategies would be required to sufficiently treat noise emissions to minimise possible acoustic impacts on neighbouring areas as well as the impacts of surrounding uses on the proposed school facilities are identified in the Noise & Vibration Impact Assessment in Appendix R to the Rts. - Recommendations have been provided to minimise the impact of external noise emissions associated with the public address and school bell systems of the proposed development to the nearest sensitive receivers. Refer to Appendix R; - Acoustic treatments to be incorporated into the design to limit acoustic emissions from, including lined ductwork for each outdoor condenser unit and screening around mechanical plant. Overall, no noise is expected during operation that will have a negative amenity impact for residents.
Construction Noise and Vibration	A detailed CNVMP shall further assess the noise impact of construction works and shall include a protocol to minimise any potential noise impacts to identified sensitive receivers and ensure that appropriate noise control measures are defined and implemented to comply with all relevant noise guidelines.
Construction management	Construction will be managed in accordance with the measures identified in the Preliminary CMP prepared by Built at Appendix M to the Rts. A Detailed CEMP is to be prepared prior to construction commencing on site.
Light spill	External lighting is to be carried out in accordance with the design initiatives outlined in the Lighting Strategy at Appendix AF to the EIS. It is anticipated that a requirement will be made for all outdoor lighting to be designed to comply with AS 1158.3.1:2005 Lighting for roads and public spaces – Pedestrian area (Category P) lighting – Performance and design

	requirements and AS 4282-2019 Control of the obtrusive effects of outdoor lighting.
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