Department for Education
Construction of a new Whyalla Secondary School, comprising a multi-storey educational establishment and sporting facilities.

109-115 Nicolson Avenue, Whyalla Norrie
850/V004/19

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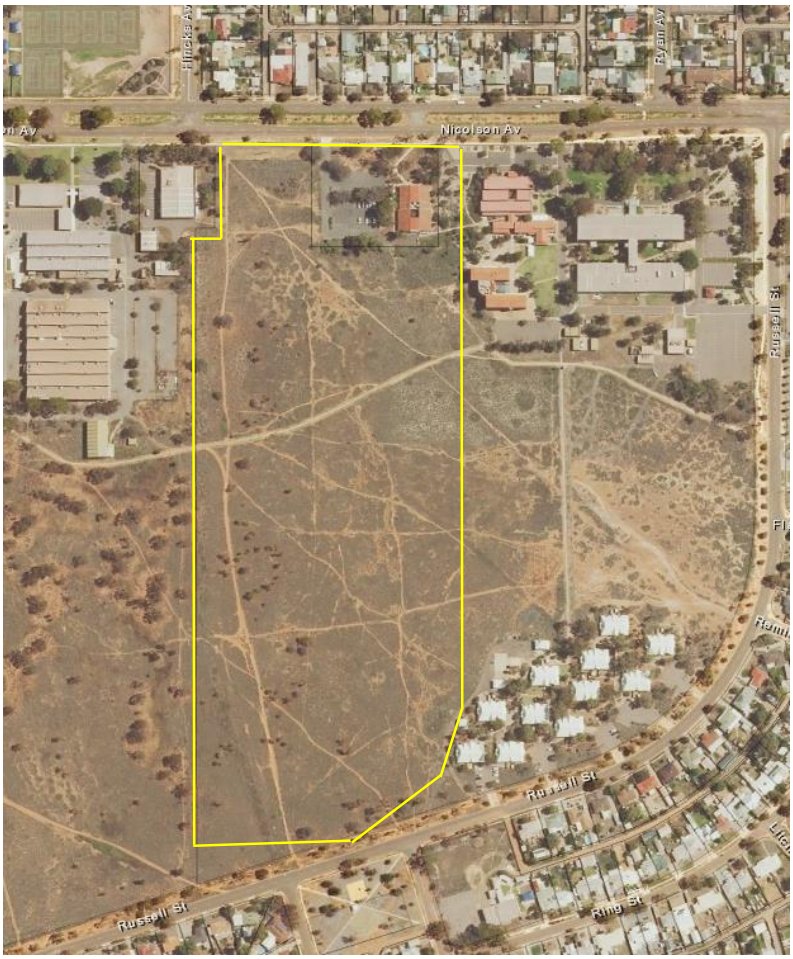


OVERVIEW

Application Summary	
Application No	DA 850/V004/19
Unique ID	APPIAN 4730
KNET Reference	2019/16696/01
Applicant	Department for Education
Proposal	Construction of a new Whyalla Secondary School, comprising a multi-storey educational establishment and sporting facilities, with associated landscaping, car parking, infrastructure and civil works
Subject Land	109 Nicolson Avenue and 22 Russell Street, Whyalla Norrie
Relevant Authority	Minister for Planning
Zone/Policy Area	Community Zone and Residential Zone
Lodgement Date	25 November 2019
Categorisation	Merit
Council	The Corporation of the City of Whyalla
Development Plan	Whyalla Council Development Plan consolidated 14 June 2017
Public Notification	Section 49: Development exceeds $4 million
Representations	One – not to be heard
Referral Agencies	The Corporation of the City of Whyalla & Government Architect of South Australia
Report Author	Sarah Elding

EXECUTIVE SUMMARY

The Department for Education has lodged a Crown (*Development Act 1993* s.49) development application for the construction of a new Whyalla Secondary School, comprising a multi-storey educational establishment and sporting facilities, with associated landscaping, carparking, infrastructure and civil works.

The subject site located in Whyalla Norrie and is bound by Nicolson Avenue to the north and Russell Street to the south. It shares a western boundary with TAFESA and an eastern boundary with the University of South Australia (UniSA) Whyalla Campus. The educational hub will benefit from shared use facilities and will provide a continuum of educational opportunities for Whyalla secondary school students.

The School will cater for up to 1518 students from years 7 to 12, within a contemporary and inclusive learning environment commensurate with modern pedagogy practices. The proposed school seeks to provide a flexible learning environment that can adapt to the changing needs of the community. The diverse needs of all students will be accommodated, including tailored learning environments for indigenous students and young parents.

Public Notification was held in late 2019 with one representation received from a nearby resident. The main concerns raised were the alienation of land set aside for tertiary education facilities, lack of engagement with the Whyalla community, the heavy emphasis in the design on motor vehicles and parking and the lack of clarity on the re-use of the (soon to be) vacant existing high school campus'.

The applicant provided a response, addressing the issues raised by the representor. Where relevant, the applicant has demonstrated how the issues have been mitigated, either through previous work conducted before lodgement of the application or through other

measures prescribed in the application itself. The applicant's response also noted the representor's participation in the Whyalla Education Review, a pre-cursor to the new Whyalla Secondary School project.

No objection was raised by the local Council or relevant State Agencies, with the school to be constructed in accordance with recognised planning, design and building standards.

Based on an assessment of the development application, a review of relevant planning policies, public submissions, council comments and the technical advice of referral bodies, the proposal demonstrates sufficient merit to be recommended for approval, subject to appropriate conditions.

ASSESSMENT REPORT

1. STRATEGIC CONTEXT

The Eyre and Western Region Plan (2012) identifies that infrastructure plays a crucial role in the development of a region and that it should be planned and developed to maximise investment, support business and employment growth and provide for community health, safety and well-being. It also states that infrastructure should be planned in proximity to related developments to take advantage of economies of scale.

2. BACKGROUND

In 2019, the Department for Education established a local high level reference group comprising of a number of technical expertise and the three existing secondary schools Principals. Sessions led by the design team enabled the establishment of a suite of design principles to guide the development of the school. The design team also met with each of the three school Governing Councils, school staff and selected students.

To generate meaningful engagement, specialist consultants were appointed to gauge feedback and desires from Primary and Secondary students and staff across the three High Schools and selected Primary Schools. In addition, a nationally recognised specialist was retained to undertake workshops with the Barngarla Determination Aboriginal Corporation. Additional presentations were also prepared for representatives of the University of South Australia and TAFESA Whyalla.

The New Whyalla Secondary School (NWSS) is underpinned by the following objectives:

- All children and young people learn in inclusive and positive climates; and
- Inclusive design means providing the environment that promotes and enables inclusion.

In the process of amalgamating the three existing schools for this project, the following design principles apply:

- Integrate the history and traditions of the existing high schools
- Promote connections and collaborations with UniSA and TAFE SA
- Promote integration with the community
- Create a sense of identity and a strong sense of belonging
- Develop exemplary practice Environmentally Sustainable Design

- Integrate buildings with the natural environment by providing activated outdoor learning spaces
- relaxation spaces and social spaces
- Respect the diversity and cultural backgrounds of all students
- Develop cutting edge innovation and integration of the latest and emerging technologies
- Provide a safe and secure environment

The proposed New Whyalla Secondary School seeks to make use of current underutilised land and is situated in an established education precinct in the heart of Whyalla, allowing for the consolidation of three existing schools into one state-of-the-art learning and community facility.

The school will cater for up to 1518 students at its capacity and 144 full time equivalent employees, including teaching, support, administration and ancillary staff.

3. DESCRIPTION OF PROPOSAL

The proposal comprises the construction of a new, multi-storey educational establishment (secondary school) and the demolition of an existing pre-school.

The school will comprise a number of functional spaces including general, specialist and inclusive learning areas (classrooms), outdoor learning areas, administration/staff facilities, a library, gymnasium, theatre, outdoor communal and recreation areas and outdoor sports fields and facilities.

3.1 Internal Arrangement of Spaces

There are five main structures that comprise the new Secondary School including:

- A 250 seat performing arts theatre fronting Nicolson Avenue;
- A combined administration building and library with inclusive learning facilities fronting Nicolson Avenue;
- Two learning precincts separated by a community courtyard located to the rear of the performing arts building and library;
- A linked walkway on levels 1 and 2 connecting the internal spaces; and
- A gymnasium located to the south of the learning precincts.

The total Gross Leasable Floor Area of the school buildings will be 15,827m^2 with the ground floor occupying approximately 6,814m^2, which represents 6.4% of the total site area.

A breakdown of the floor areas for the various space is provided in table 1 below.

While the school has been designed to present a 360º approach, the entrance to the school administration building will be from Nicolson Avenue in the northern portion of the subject site. This entrance serves as the main focal point from Nicolson Avenue, containing landscaping, a sunken amphitheatre, and drop-off points. Access to the various sports fields in the southern portion of the subject site is primarily via Russell Street.

The arrangement of buildings incorporates many outdoor elements, featuring a covered communal courtyard joining the two learning precincts.

Table 1 - Floor Area Breakdown

Internal Space	Ground m²	Level 1 m²	Level 2 m²	Total m²
Performing Arts	793	773		1566
Administration & Library	941	1093		2034
Learning Precinct (West)	1524	1547	1622	4691
Learning Precinct (East)	1522	1547	1622	4691
Link Bridge		317	140	457
Gym	2034	283*		2317
Total	**6814**	**5632**	**3381**	**15,827**

*Mezzanine Level

3.2 Site Access and Parking

Access to the school is via multiple access points on the northern, western and southern boundaries. The primary access point is located off Nicolson Avenue, in the northern portion of the subject site. This access services the main car park for visitors and staff, in addition to the administration building and performing arts centre. Two secondary access points are located in the eastern portion of the subject site from Nicolson Avenue which services the inclusive onsite drop off area and carpark.

A third access point is located off Russell Street, in the southern portion of the subject site, providing access to the car park area associated with the main oval.

A peak time, on-site drop off area ("kiss-and-drop zone") is proposed along the Nicholson Avenue frontage, consistent with the primary visual entrance to the school.

Parking is provided at three locations on the site to provide a total of 192 spaces. Staff car parking is provided along the western boundary of the site with direct access to the school. This carpark also services the Performing Arts Theatre.

The proposal also includes 250 bicycle parking spaces is located at various locations within the site.

A service and delivery area is located adjacent the north-western car park. This is also designed to accommodate 12.5 m long Heavy Rigid Vehicles. A 29-seater bus will be able to access the site using the inclusive drop off area at the eastern portion of the site.

3.3 Landscaping

The proposal includes extensive landscaping along the Nicolson Street frontage providing visual interest and a focal entry point for the school. The landscaped outdoor learning areas incorporate drought-tolerant and local species. There is a strong reference to local vegetation species and where possible, these have been incorporated into the design.

The landscaping includes a number of feature elements, such as an entry landscape (welcome to land) central to the primary frontage presenting to Nicolson Avenue, and outdoor gathering areas (yarning circles) that aim to encourage respectful and honest interactions between students. Other feature elements include stone wall seating, exterior amphitheatre style seating, outdoor long sharing tables and high café style tables and chairs.

The proposed landscaping plan incorporates natural materials and textural elements such as five different types of paving, with a focus on South Australia products (Kanmantoo Stack bond and pave slate) that contribute to a varied and intriguing environment.

3.4 Stormwater Management

The proposal incorporates an open stormwater swale along the western boundary of the subject site which extends south approximately 230m from Nicolson Avenue. The soccer/hockey pitches, located south of the Centenary Trailway, will act as a temporary flow path in peak flooding events. A detention basin is also proposed in the south east pocket of the subject site.

It is anticipated that all stormwater run-off will be managed on site, prior to entering council's stormwater management system.

3.5 Waste Services

The waste area is strategically located between the western car park and the performing arts centre. It is located in close proximity to the food and design technical areas and the theatre kitchen service entrance with access via the western entrance from Nicolson Avenue. The secured waste storage area is set back behind the primary building façade and will be screened from public view.

3.6 Native Vegetation

The subject site does not include any Regulated or Significant trees under the Development Act, noting the tree provisions do not apply to Whyalla Council area.

However, the proposed development will require the removal of Native Vegetation under the *Native Vegetation Act 1991*. A Native Vegetation Clearance application for the project will be lodged under separate cover.

Application details are contained in ATTACHMENT 1 and 2 to this report.

4. SITE AND LOCALITY

4.1 Site Description and Locality

The subject site is approximately 10.5ha in area, largely regular shaped and located on Nicolson Avenue in Whyalla Norrie. The subject site consists of two allotments described as follows:

Lot No	Plan	Street / Suburb	Hundred	Title Reference
Allotment 1	DP 44349	109-115 Nicolson Avenue, Whyalla Norrie	Randell	CR 5530/21
Allotment 6644	TP 560501	109-115 Nicolson Avenue, Whyalla Norrie	Randell	CT 4127/694

A copy of the Crown Record and Certificate of Title is attached (2A).

The subject site is bound by Nicolson Avenue to the north, Russell Street to the south, the University of South Australia Whyalla campus to the east and TAFE SA Whyalla campus to the west. The site enjoys a frontage of approximately 177m to Nicolson Avenue and approximately 205m to Russell Street. The site is mostly vacant, with the exception of an existing pre-school/family day care centre, which will be demolished as part of the school project.

The site is generally flat with a slight fall from north to south and is covered in dense low-level vegetation. The vegetation is native to the land and subject to the *Native Vegetation Act 1991* as a result, however is not 'regulated' under the *Development Act 1993.* A sealed walking trail traverses the site from east-west and forms part of a larger continuous trail (Centenary Trailway).

The northern half of the site is located within the Community Zone and the southern half of the site is located within the Residential Zone of the Whyalla Council Development Plan (consolidated 14 June 2017).

There are two easements on the site, for the purpose of stormwater. The easements enable stormwater from the pre-school site to be directed to the western boundary of the proposed high school site and ultimately directed to Russell Street. It is anticipated that the easement from the pre-school site will be extinguished.

The locality has established itself as an education hub which include the adjoining UniSA and TAFE SA campuses located to the east and west of the site respectively. The Nicolson Avenue Primary School and Whyalla Special Education Centre are located adjacent the UniSA campus, across Russel Street to the east and the Edward John Eyre High school is located adjacent the TAFE campus, on Nicolson Avenue.

Built form in the locality generally comprises of single and double storey buildings with varied architectural styles and setbacks from Nicolson Avenue. Buildings of a larger scale such as the Middleback Theatre, a multi-storey building located on the TAFE SA campus, is located near the corner of Nicolson Avenue and Racecourse Road. To the west of Racecourse Road is an indoor recreational facility and Baptist Church within a District Centre Zone.

North of the subject site is an established residential area comprising of single storey detached dwellings and ancillary structures on Torrens title allotments, forming part of a rectilinear pattern of division. South of the subject site, on the opposite site of Russell Street is a small local park (Shambrook Park) and a pre-school (Win Newby Kindergarten) that provides a buffer between the subject site and the single storey detached dwellings to the south. To the south-east of the site are single storey student accommodation units associated with the UniSA campus.

The site is well connected to the wider locality via roads, sealed footpaths and walking paths. Nicolson Avenue is a collector road comprising two-lanes and a marked parking lane in each direction, separated by a wide raised medium strip. There is a shared walking and cycling path on the southern side of Nicolson Avenue and a sealed footpath on the northern side of the road. Russell Street is a local road with one traffic lane in each direction. Both Russell Street and Nicolson Avenue are under the care and control of the Whyalla Council.

A sealed walking trail traverses the subject site (Centenary Trailway) and provides pedestrian access from Norrie Avenue to the east through to Westland Shopping Centre to the west.

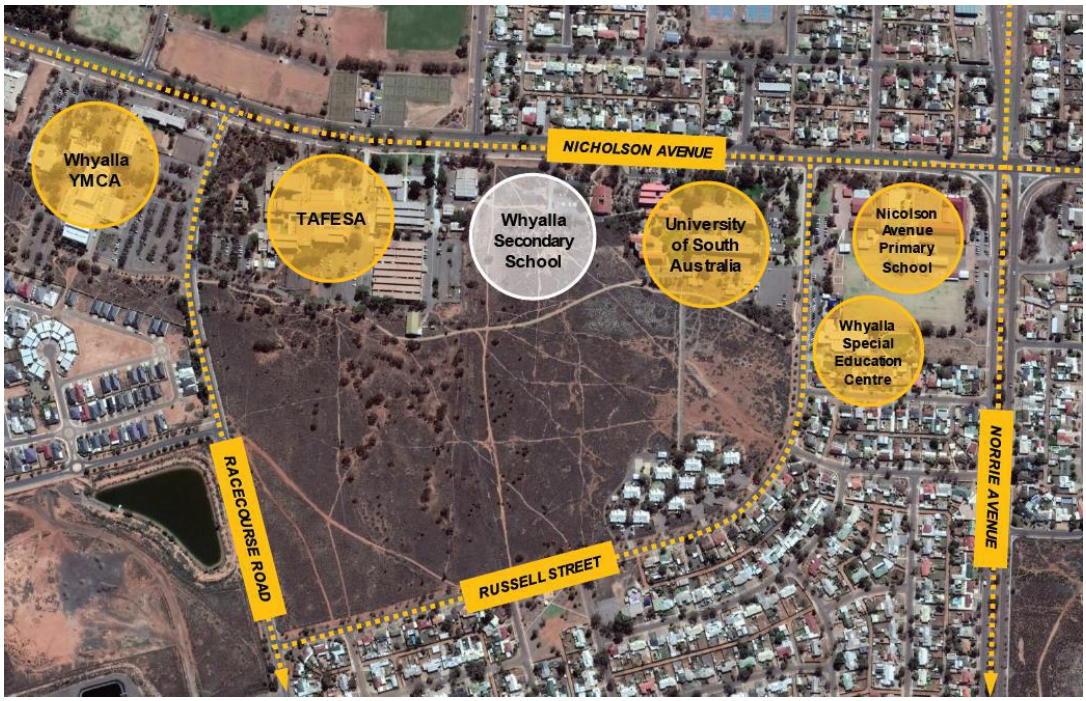


Figure 1 - Surrounding Land Uses and Street Network

Figure 2 - View looking west along Nicolson Avenue and main frontage

Figure 3 - View looking south across main school site from Nicolson Avenue

Figure 4 - View looking west (UniSA boundary) and Centenary Trailway traversing the site

Figure 5 - View looking north across school site from Russell Street

5. DESIGN REVIEW

The proposal was sent to the Design Review Panel three times where the design progressed. A pre-lodgement agreement was not reached in advance of lodgement.

6. PROCEDURAL MATTERS

The proposal was lodged and assessed under Section 49 of the *Development Act 1993* as a Crown Development.

7. COUNCIL COMMENTS

7.1 Whyalla City Council

The Whyalla City Council supports the application and applauds the Department for Education and Cox Architects for their vision and design of the new school buildings.

The proposal has been considered by several departments within Council. While council's engineering department is satisfied with the design works in relation to the stormwater management plan for the site, they still require the final design for sign off.

Council also has concerns in relation to the design of the entrance and exists from Nicolson Avenue and whether they are appropriate considering their proximity to Hincks Avenue intersection and the break within the median at the eastern end of the subject site. This arrangement could potentially create significant traffic banking at the right turn in to Nicolson Avenue, especially during peak morning periods in addition to restricted line of site and traffic movements at or within close proximity to the intersection of Hincks Avenue and the schools western exit onto Nicolson Avenue.

Council also considered the implications on surrounding property and local street network of the lack of onsite parking for students. A recommended solution put forward by Council is to extend the capacity of the southern car park off Russell Street (adjacent the oval) to accommodate student parking.

Council also recommends that a centrally located pedestrian crossing be considered for Nicolson Avenue for the safe and convenient movement of students during peak times.

Given the harsh climate of Whyalla, Council also considered the extent of covered/sheltered areas, particularly south of the school buildings between the tennis courts. Additional shade is also recommended in association with the soccer fields and playing oval. Council also stated that it would be beneficial to consider enhancing the interface of the southern boundary fronting Russell Street through landscaping.

Several conditions were also recommended pertaining to works external to the subject site and the preparation and submission of a Construction Management Plan (CMP) and Traffic Management Plan (TMP).

A copy of the Council's advice is provided as ATTACHMENT 3.

8. AGENCY REFERRALS

8.1 Government Architect

The Government Architect has provided support for the overall intent of the project, namely the centralised location and integration of the proposed school with existing

education establishments, the landscape concept for the site incorporating project ambition to maintain the school campus unfenced and the retention of the existing native vegetation along the western boundary.

However, the Government Architect expressed that there are further opportunities to strengthen the school's integration with the Centenary Trailway and enhance the spatial quality of the Central Courtyard in addition to the public realm of the main school entrance on Nicolson Avenue.

To ensure the most successful design outcome, the Government Architect has recommended the following:

- Review of the reconfigured Centenary Trailway arrangement and the location of the fenced sports courts to demonstrate a sense of openness and public accessibility of the public link.
- Confirmation of the surface treatment for the Trailway link within the subject site.
- Provision of further details of the swale design, including the culverts and foot bridges.
- Provision of additional information regarding the landscaping design for the northern forecourt.
- Review of the alignment of the glazed walls and doors on the ground floor facing the Central Courtyard.
- Provision of further information regarding the integrated ESD initiatives.
- A high quality of external materials for building and outdoor spaces supported by the provision of a materials and samples board.

A copy of the Government Architect's advice is provided as ATTACHMENT 4.

8.2 Technical Regulator

A signed declaration form was provided by the applicant in accordance with Schedule 5, Clause 2A of the *Development Regulations 2008**.***

8.3 Response from Applicant

The applicant has provided a formal response to each of the referral agencies as follows:

Submission	Comment	Response
Whyalla City Council **Jodie Perone, Acting Manager Environmental Health and Regulatory**	*Council Engineering Department have advised that they are satisfied with the design works so far in relation to the stormwater management for the site. However, they are still awaiting the final design. (pg. 1)*	Final detailed design will be prepared in collaboration with Council.

Submission	Comment	Response
Services/Planning Officer	*Concerns in relation to the design of the entrance and exits from Nicolson Avenue and whether they are appropriate considering their proximity to Hincks Avenue intersection and the break within the median at the eastern end of the subject site. (pg. 1)* *Potential for significant banking at the right turn in from Nicolson Avenue, especially in the morning (peak traffic), along with line of site and traffic movement issues at or close to the intersection of Hincks Avenue and Nicolson Avenue with the proposed exit at the western end of the subject site. (pg. 1)*	The western access point will have over 40 metres separation from Hincks Avenue which well exceeds the requirements of the relevant Australian Standard (as well as road design guidelines). The eastern access has been located to align with the median break to accommodate right-in movements (rather than require U-turns). The Traffic and Parking report prepared by CIRQA included SIDRA intersection analysis of the two Nicolson Avenue access points. The analysis confirmed that there would be high levels of service at the access point and on Nicolson Avenue with negligible queuing or impact on through movements.
	Parking for students should be provided within the school grounds. The parking area to the south of the site (marked staff/community car park) may be able to accommodate students with minimal amendments required (parking spaces added and signage included). (pg. 1)	Council's preference for on-site student parking is noted. Whyalla Council Development Plan does not include a ca parking rate for an educational facility. Notwithstanding this, the proposed development includes an additional 24 car parks more than the required amount outlined by the Department for Education guidelines. Further, it should be noted that the Department of Education's policy is that no student off-street car parking is provided for students.

Submission	Comment	Response
	Landscaping to the southern boundary of the site could include greater area of introduced landscaping to improve the appearance from the street. (pg. 1)	Noted. A detailed landscape plan has been prepared by Aspect Studios. The landscape plan notes, for the southern portion of the site, retention of existing vegetation and a new southern landscape area.
	Given the harsh climate in Whyalla during summer, consideration should be given to covered spaces to the south of the school building to provide shade to outdoor playing areas such as the tennis courts, soccer fields and football oval. (pg. 1)	Noted. The proposed development has been designed to recognise the climatic conditions of Whyalla. Should additional shade structures be considered necessary in the future, these will be installed later.
	The student/pedestrian crossing should be considered to provide safe and convenient access for students to cross Nicolson Avenue given the number of vehicle movements expected during drop off and pick up times. (pg. 2)	A student/pedestrian crossing is the subject of ongoing discussions with Council.
	All access and egress works required to be constructed outside of the school site shall be undertaken by the applicant at the applicant's expense. All existing access points no longer required shall be made good to the satisfaction of the Council and at the applicants' expense. (pg. 2)	Noted and agreed. We suggest this matter is addressed via a condition.
	A construction management plan and traffic management plan shall be provided to Council for consideration prior to the commencement of construction. (pg. 2)	Noted and agreed. We suggest this matter is addressed via a condition.

Submission	Comment	Response
Kirsteen Mackay, South Australian Government Architect (*Non-mandatory referral)*	*I am concerned by the proposed reconfiguration of the Centenary Trailway and the resultant change in character of the trailway within the new school campus. I acknowledge the widening of the path and the provision of the 'outdoor gathering space' in between the fenced courts. However, I am on the view that maintaining the existing sense of an open and public thoroughfare is critical for the wider Whyalla community. To that end I recommend review of the link path arrangement and the location of the fenced sport courts to demonstrate a sense of openness and public accessibility, and provide an intuitive travel sequence informed by the principles of Crime Prevention Through Environmental Design (CPTED) (pg. 2)*	The Centenary Trailway will be retained and enhanced through this development. The fencing around the sport courts is intended to consist of a transparent (likely chain mesh) material that will facilitate passive surveillance, in accordance with CPTED) principles.
	I request confirmation of the surface treatment for the realigned trailway. *I recommend further details of the swale design be provided, including the culverts and foot bridges, to demonstrate successful integration with the overall site strategy and creation of a safe area that does not hinder the envisaged physical and visual connection through the school site, as well as between the school and the TAFE campuses.* *I recommend additional information be provided regarding the landscaping*	Noted. To be addressed as part of the detailed design phase of the project.

Submission	Comment	Response
	design to the northern forecourt to ensure pedestrian safety while providing a visual buffer to the on—site vehicular areas and optimising presentation to the main public frontage.	

A copy of the applicant's response to the agency referrals is provided as ATTACHMENT 5.

9. PUBLIC NOTIFICATION

In accordance with Section 49(7d) of the *Development Act 1993*, *(which requires applications with a project cost to be publically notified),* the application was publically notified in the Adelaide Advertiser and the Whyalla News for four consecutive weeks from 5 December 2019 to 10 January 2020 inclusive.

The issues raised, and the response from the applicant are summarised as follows:

Representor Identification	Issue/Matter raised	Applicant's response
R1 – not supported	*If this proposal is approved it will result in alienation of almost 50 percent of the area currently dedicated for use by the University of South Australia. (pg. 2)*	The new Whyalla High School is a complimentary land use to the existing University and TAFE sites, creating a more holistic Education Precinct. The University of South Australia will remain as a critical component of the Education Precinct.
	The Whyalla General Public has not been engaged by the applicant and its agents in an open and effective interactive process in the leadup to this application to SCAP. *There has been no public meeting for discussion of the applicant's assertion that there is a need to close school sites.* *There has been no workshop with the general public (pg. 2)*	This application was subject to the statutory consultation processes required under the *Development Act 1993* and *Development Regulation 2008.* The project team undertook extensive stakeholder consultation with Council, key government agencies, schools, as well as community and Aboriginal groups. In addition, Mr Scott participated in the Whyalla Education Review which was

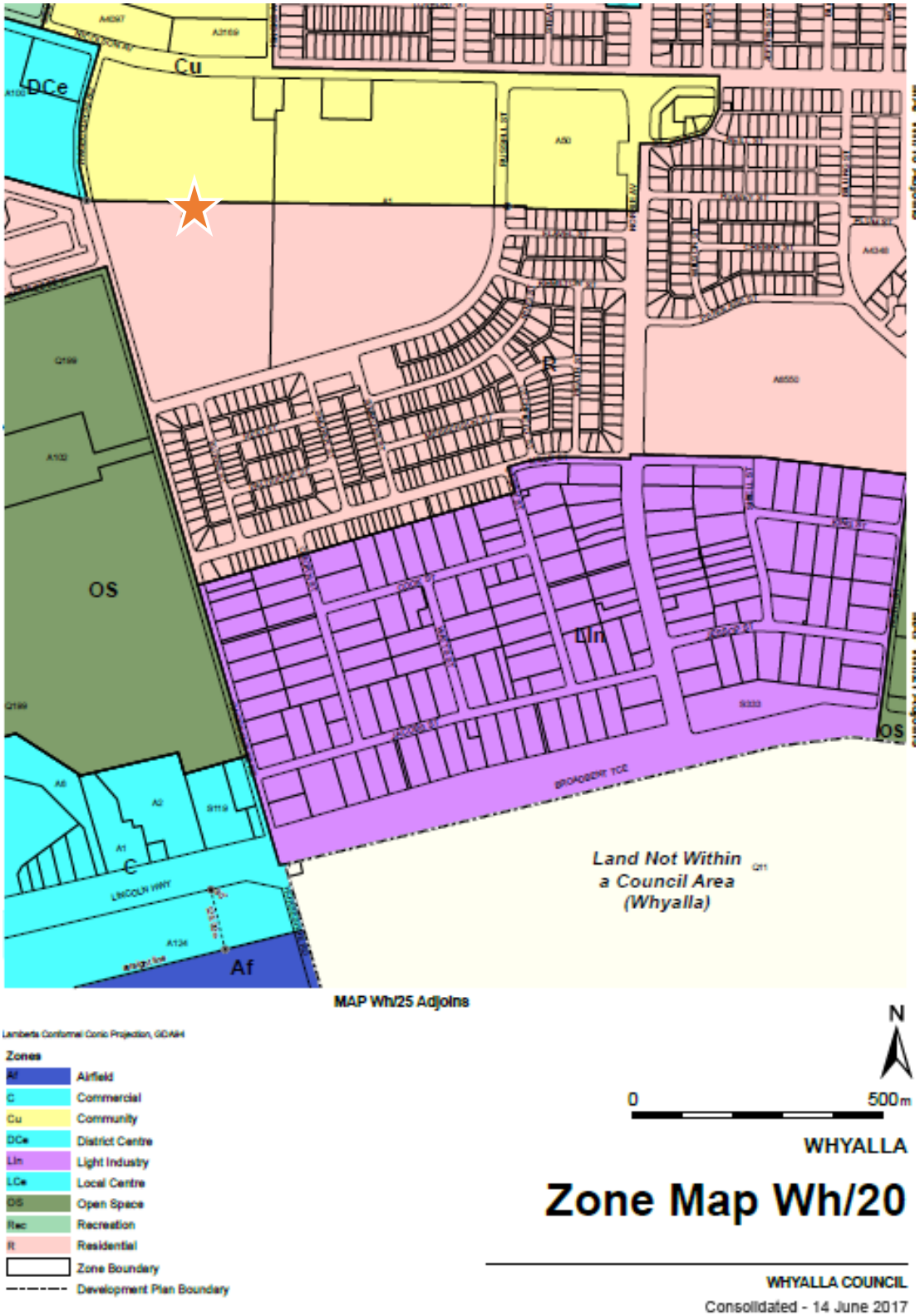
Representor Identification	Issue/Matter raised	Applicant's response
		an early stage of community consultation that helped to inform this project. It is also noted that Mr Scott has not requested to be heard by SCAP in support of his submission.
	The necessary holistic urban and strategic planning for Whyalla has not occurred in relation to this proposal. (pg. 3)	The suggested need for future strategic urban planning for Whyalla is beyond the planning merits of this Development Application.
	The proposal based on the University site has been laid out with heavy emphasis on access for Motor vehicles and parking. There is an inadequate understanding of pedestrian and cycling desire lines through the precinct and the importance of linkages to the east, west, north and south. There is inadequate provision for such linkages. (pg. 3)	Significant consideration has been given to pedestrian and cycle accessibility to the proposed school. Bike storage and parking spaces will accommodate up to 250 bikes on site, supported by End of Trip facilities. Existing east-west cycling infrastructure through the campus (centenary trailway) will be retained and enhanced. Further, additional north-south cycling links will be created as part of the project.
	No coherent plan has been developed and presented for re-use of the three secondary school sites. (pg. 3)	Consideration of the future of the proposed schools to be closed as a result of the consolidation of each school into the new facility is beyond the scope of this application.

A copy of the applicant's response and representation 1 forms ATTACHMENT 5 and 6.

10. POLICY OVERVIEW

The subject site is within both the Community Zone and Residential Zone as described within the Whyalla Council Development Plan (consolidated on 14 June 2017).

Figure 6 – Zone Map Wh/20



10.1 Community Zone

The Community Zone envisages accommodating a range of community, educational, recreational and health care facilities for the overall the publics benefit. It encourages the integration of such land uses and a coordinated base to promote efficient service provision for the Whyalla Community.

10.2 Residential Zone

The Residential Zone aims to facilitate the continued development of a range of housing types and densities. Infill development is encouraged as well as developing the vacant residential land west of the City. Existing development within the suburbs of Whyalla Norrie and Whyalla Sturt reflects the strong influence of housing construction carried out by the former South Australian Housing Trust.

10.3 General Section

The general policies relevant to this assessment include Community Facilities, Design and Appearance, Energy Efficiency, Infrastructure, Interface between Land Uses, Landscaping, Fences and Walls, Transportation and Access and Waste.

A copy of the Whyalla Development Plan Policy forms ATTACHMENT 7.

11. PLANNING ASSESSMENT

The application has been assessed against the relevant provisions of the Whyalla Council Development Plan (Consolidated 14 June 2017). The Minister for Planning must have regard to these policies but is not bound by them. The SCAP must consider whether a proposal is seriously at variance with the provisions of the local Development Plan.

11.1 Land Use

The northern portion of the subject site with frontage to Nicolson Road accommodates the majority of the school buildings and the sports courts are located in the Community Zone. The southern portion of the subject site contains the outdoor sports fields and is located in the Residential Zone. The subject site is not within a Policy Area.

The proposed New Whyalla Secondary School (educational establishment) land use is consistent with the intent of Objective 1 in the Community Zone. It is an envisaged use within the Community Zone and is comparable and complementary to surrounding land uses.

In addition, Objective 2 in the Community Zone encourages *"development that is integrated in function and provides a coordinated base to promote efficient service delivery".* The proposed development is co-located with a number of highly complementary land uses including the services offered at the adjoining UniSA and TAFE campus as well as the nearby primary school, pre-school and special education centre which are all within walking distance of the proposed new Whyalla Secondary School.

The integration of a secondary school with other educational uses is considered to be efficient use of the land, creating a centralised education hub in the City of Whyalla.

The consolidation of such facilities is encouraged by the development plan policies, particularly PDC 2 - Community Facilities.

While the Community Zone contains minimal planning provisions, there is a clear alignment between these uses and the proposal, confirming that the development of the new Whyalla Secondary School is a desired outcome within the Community Zone from a land use perspective.

The sporting facilities such as the oval, pitches, bike racks and staff carpark are located in the Residential Zone. While the intent of the zone as outlined in the Desired Character Statement, is to continue to facilitate residential land uses, PDC 1 lists secondary schools as a desired non-residential land use. Furthermore, PDC 4 in the Residential Zone encourages non-residential development such as *"shops, schools and consulting rooms"*, that:

a) serves the needs of the local community
b) is consistent with the character of the locality
c) does not detrimentally impact on the amenity of nearby residents

The desire to consolidate three existing secondary schools into one, all-purpose secondary school has been designed with the Department for Education's pedagogy model to produce the next generation of contemporary learning facilities in South Australia. Spaces within the development will be agile to adapt to evolving school programs as the community requires. In addition, and of particular interest to the City of Whyalla, will be the schools ability to provide Australian School Based Apprenticeships due to the flexible nature of its learning spaces. These aspects of the school are additional services to the community.

The land use is consistent with the existing character of the locality, with existing adjoining land uses including a university and a TAFE. In addition, a local primary school is located east of Russell Street. The combined co-location of multiple school facilities creates a dedicated education hub, further enhancing the local character.

The open nature of the sporting facilities in the southern portion of the subject site will provide visual interest which could be further enhanced with additional landscaping to that proposed at the school and residential area interface on Russell Street.

11.2 Design, Appearance and Character

The New Whyalla Secondary School proposal has a modern appearance, representing a high architectural standard that responds to its locality, particularly the landscape and surrounding land uses. This is consistent with the intent of Objective 1– Design and Appearance. The design and siting of the school provides multiple access points, enhancing its accessibility.

Its built form is a cluster of five, two and three storey buildings arranged along a north-south spine which acts as a covered central courtyard. This arrangement provides both horizontal and vertical physical and visual connectivity. The incorporation of extensive windows, internally and externally, along with window walls, delivers generous natural light and views both into the central courtyard and the wider locality which satisfies PDC 2 and 3 - Design and Appearance.

There are a number of integrated open spaces which function as outdoor learning spaces that are a combination of soft and hard landscaping within the recess of the

buildings and the courtyard. The main administration building and the performing arts centre provide visual interest to the Nicolson Street frontage by way of a sunken amphitheatre and a variety of building setbacks consistent with PDC 16 - Design and Appearance. The architectural expression of the buildings has been inspired by the Whyalla landscape, including texture and colour.

Figure 7- Nicolson Avenue Presentation

Many of the two storey sections of the built form presenting to Nicolson Avenue are finished in a 'sand and/or grey' coloured metal cladding (Figure 7).

Aluminium veil mesh projecting from the built form in similar colours to the metal cladding adorns the east and west, three storey elevations. Horizontal openings provide additional visual interest and passive solar access (Figure 8). Where possible, non-reflective materials have been used as guided by PDC 6 - Design and Appearance.

Figure 8 - South-west view - Learning Precinct

The weather protected central courtyard extends north-south connecting the key community, administration and learning areas at all levels. At the ground level, learning areas include operable doors, providing physical connectivity to the courtyard, with higher levels entertaining large windows which allow natural light and provide opportunities for passive surveillance into this space and adjacent buildings.

While its function is predominantly as a shared use space, the courtyard enables natural light and ventilation to the built form. East-west walkways at either end of the courtyard also connect the buildings.

The canopy over the Central Courtyard comprises a series of metal clad angled solid roof panes, which, from the eastern elevation, appears as a 'sawtooth' configuration; a nod to Whyalla's industrial history (Figure 9).

Figure 9 - Central Courtyard Internal View

Reflecting the importance of outdoor connections, generous central elevated outdoor courtyards provide internal spaces with immediate access to external outdoor learning opportunities and the complimentary views to the distant landscape from these high vantage points.

The multi-storey, compact nature of the built form has enabled the amount of open space for both passive and structured use. The open spaces also provide connectivity to surrounding land uses and the Centenary Trailway as desired by PDC 9 - Design and Appearance.

Plant and equipment are located on the roof, deliberately set back from the primary building façade. Louvre screening provides additional screening in accordance with PDC 7 - Design and Appearance.

11.3 Hazards and Infrastructure

The subject site is relatively flat, with some fall from north to south and is prone to some flooding during peak storm events. There are two existing easements for the purpose of stormwater which allow stormwater from the existing pre-school to be directed to the western boundary of the subject site and then redirected south to Russell Street. This easement will be extinguished due to the demolition of the pre-school as part of this application.

The proposed interim stormwater solution includes a large open swale extending approximately 230m north to south along the western boundary of the subject site. It is anticipated that overflow from the northern portion of the subject site will be directed to the swale, which will be lined with dryland grass to improve the stormwater quality. This approach is consistent with PDC 7 and 8 – Landscaping, Fences and Walls. Drainage pits are proposed in the north-western carpark to enable stormwater runoff to flow into the swale. The swale intersects the Centenary Trailway before it runs east, splitting the subject site. Culverts are proposed where the Centenary Trailway intersects the swale, maintaining pedestrian access. The swale continues to the eastern boundary where it transitions to the existing ground level.

In the southern portion of the site, the overland flow will be directed to the detention basin located in the south east pocket of the subject site. The low flows from both systems will be directed to the stormwater quality device at the discharge location for the site located at Russell Street, consistent with PDC 10 - Natural Resources.

It is also important to note that further stormwater system design will be prepared at the detailed design stage of the project, and the stormwater design will ultimately be prepared to the satisfaction of Council. A condition of approval is recommended.

11.4 Interface between Land Uses

The proposed school is a consistent land use within the locality and complements the existing tertiary institutions adjoining the subject site. The proposed built form is set back approximately 100m from residential land uses located on Nicolson Avenue with the interface softened by landscaping of varying textures and dimensions. Likewise, there is also significant separation distances between the built form and the university accommodation on Russell Street, located east of the subject site. Therefore, there are no overlooking or overshadowing factors affecting adjacent residential land uses. This arrangement satisfies the intent of PDC 3 in the Residential Zone.

The associated outdoor sporting facilities (oval, cricket nets, soccer pitch and hockey pitch) located in the southern portion of the subject site (Residential Zone), provide a visual buffer between the residential land uses south of Russell Street and the proposed multi-storey school buildings. Combined, the siting, setback and architectural design of the proposed school results in minimal adverse visual impacts on the locality and adjoining land uses as desired by Objective 1 and PDC 2 - Interface Between Land Uses.

It is anticipated that the proposed schools operating hours will be between 8.30am and 3.30pm, Mondays to Fridays. Schools in general do not operate on public holidays. It is anticipated that there will be minimal school activities outside of the proposed hours of operation. However, if there are programmed activities outside of these hours, the participation rate would be considerably less than that of a typical school day. In addition, it is likely that activities outside of schools hours would not be as a result of school programming but community based activities, involving both students and the broader community.

The inclusion of the school at this location also has indirect positive effects on the locality such as an increase in passive surveillance, particularly for the Centenary Trailway and the surrounding local street network.

While the Development Plan provisions stipulate policy to mitigate the impacts of noise and its interference, a secondary school is not considered to be a land use that would be likely to generate significant noise. Despite this, the proponent has considered the main acoustic issues, including separation between sensitive spaces, internal acoustic reverberation control, mechanical plant noise and vibration from hydraulic services. In its report, Resonate has considered all relevant standards and guidelines, including the Department for Educations' education facility standards. Resonate were also key participants in the design phase of the project.

11.5 Landscaping

The landscaping and outdoor learning areas associated with the proposed school have been designed around the principles of Water Sensitive Urban Design (WSUD).

There is a strong reference to local and drought tolerant species and wherever possible these are proposed be incorporated into the species pallets and landscape design. This approach satisfies PDC 1 and 2 – Landscaping, Fences and Walls. Established trees are proposed at multiple locations across the subject site to assist in shielding the built form from Whyalla's harsh climate and to provide natural shade for students.

Feature elements are proposed such as an entry landscape (welcome to land) central to the Nicolson Avenue approach, and outdoor gathering areas (yarning circles) that aim to encourage interaction between students. Other feature elements include stone wall seating, exterior amphitheatre seating, outdoor long sharing tables and high café style tables and chairs.

Inspired by the colours and textures of the local landscape, paving treatments are a mix of decaled materials, stone, compacted rubble and concrete and provide visual interest in predominantly functional areas.

The indicative planting palettes have drawn inspiration from a range of landscapes such as the Flinders Ranges and includes a wide variety of vegetation types including indigenous ground covers, native grasses, turf and established trees. Bush tucker gardens are also proposed at multiple locations within the school.

Landscaping is also proposed internally throughout the central courtyard and on each level of the learning areas. These will be integrated with seating and tables to encourage outdoor learning spaces and gathering areas for students.

Fencing is minimal across the proposal with the only fencing associated with the inclusive outdoor learning area and the playing courts. The exclusion of fencing allows for greater site permeability and encourages greater connectivity with adjoining land uses.

The Centenary Trailway dissects the subject site and runs in an east-west direction. It also provides a physical barrier between the built form and the outdoor sporting fields and ovals. The proponent intends to upgrade the surface treatment of the trail as part of the project.

Proprietary items are proposed throughout the school with some shelters proposed in the eastern portion of the subject site. Given the dry, hot climate of Whyalla, additional shelters, particularly in the eastern open space areas, playing courts and ovals. A condition to this effect is recommended.

The Landscape Design Development Plans forms ATTACHMENT 1.

11.6 Transportation and Access

Access to the school is predominantly from two access points on Nicolson Avenue. The eastern access accommodates left in, left out movements and is the entry point for the set-down and pick up zone for the inclusive learning facility. It is also the entry point for the on-site set-down and pick-up zone along the Nicolson Avenue frontage.

The north-western access on Nicolson Avenue accommodates two-way access to a staff car park as well as egress movements from the set-down and pick-up facility. This access point will be restricted to left-in and left-out movements only and has been designed to accommodate refuse collection vehicles and buses.

It should be noted that in the CIRQA Report (Attachment 2C), a sheltered right turn lane is recommended for the eastern Nicolson Avenue access to ensure queues associated with vehicles entering the site do not impact through bound movements on Nicolson Avenue. The proponent has advised that this off-site arrangement is to be discussed further with Council.

A third access point is proposed on the southern side of the subject site from Russell Street, servicing the car park associated with the sports fields.

Overall the proposal has sufficient access and egress options to accommodate anticipated vehicular movements and to separate the various functions of the school and satisfies PDC's 21 and 22 –Transportation and Access.

The proposed development also includes an on-site set down and pick up zone (Figure 10) parallel to Nicolson Avenue as required by PDC 6 - Transport and Access.

Figure 10 - On-site Set Down Area

The service and delivery area is located in the western portion of the school and has been designed to accommodate the movements of 12.5 m long Heavy Rigid Vehicles (HRV). While the proponent anticipates that service and delivery vehicles will be smaller than the HRV, the proposal needs to provide sufficient space to allow the manoeuvrability of large vehicles such as buses. The CIRQA Report has provided sufficient information confirming that the associated movements and vehicle turn paths can be accommodated in the proposal.

The proposed vehicle access arrangements facilitate safe and convenient vehicle movements, convenient traffic circulation across the site and promotes forward facing egress and access, consistent with the intent of PDC 33 - Transportation and Access.

A privately run bus service operates in the vicinity of the subject site with two stops on Russell Street as well as a stop on Nicolson Avenue, approximately 200m from the school's Nicolson Avenue entry. These bus routes provide a transport link to and from the school from Whyalla, Whyalla Playford, Whyalla Norrie, Whyalla Stuart and Whyalla Jenkins.

The proposed development is well serviced by existing transport networks and strongly encourages active transport modes as desired by PDC 5 and PDC 8 - Transportation and Access.

Vehicle parking

Planning policy in the Whyalla Council Development Plan is silent on car parking rates for education establishments.

Therefore, in lieu of prescribed rates, the proponent's traffic consultant CIRQA has applied the Department for Education's recommended parking requirements for secondary schools as follows:

- One parking space per FTE staff member;
- Four parking spaces for use by persons with disabilities; and
- An additional 10% (of the requirement resulting from the above rates) for visitor parking

The application of these rates yields the following car parking spaces:

Table 2 - Proposed On-Site Carparking

Rate	FTE	Yield
One space per FTE	144	144
Parking for the disabled		4
Total		**148**
10% Visitor Parking		14.8
Total Spaces		**162**

The proposed development yields 192 off-street car parking spaces, exceeding the Department for Education's recommendations by 24 car parks.

A comparable analysis between similar regional City's such as the Port Augusta (City) Development Plan and the Port Lincoln (City) Development yielded 247 and 399 car parking spaces respectively. In 2019 the Department of Planning, Transport and Infrastructure (DPTI) revisited a 2013 study into car parking rates for Greater Adelaide (Parking Spaces for Urban Places: Car Parking Study) to assist in informing the draft Planning and Design Code. This resulted in a much higher car parking rate than both the Department for Education's recommendations and the Port Augusta (City) Development Plan. (Refer Table 3).

Table 3 - Comparable Car Parking Rates

Council Area	Carparking Rate	FTE Employees	Students	Yield
Port Augusta Council Development Plan	1.2 car parking spaces per employee Plus 1 per 20 students	144	1518	**248.7**
Port Lincoln Council Development Plan	1.1 per employee plus 0.16 per child (drop off/pick up bays)	144	1518	**401.28**
Parking Spaces for Urban Places *(updated 2019)*	1 space per FTE plus 0.1 per FTE for visitors and 0.16 per student	144	1518	**401**

Given the centralised location of the New Whyalla Secondary School and the increase in students' numbers due to the Year 7 inclusion, it is more likely that private vehicle trips to and from the school during peak times will be higher than current figures. The difference between the lower of the car parking rates analysed may warrant further consideration as to its overall adequacy., or at least where additional off-street parking could be incorporated on the school grounds if future demand exceeded demand.

The proponent has advised that student parking will be accommodated in the surrounding street network as it is the Department for Education's policy to not provide on-site student parking. In their referral submission, the City of Whyalla requested that student parking be provided within the school grounds, namely in the southern carpark associated with the sporting fields.

The CIRQA Report has identified that the anticipated additional parking demand of 123-143 spaces can be accommodated within the nearby street network. This demand includes student parking and visitors to the school. The use of the local street network to accommodate overflow parking from the school has the potential to increase competition for the available visitor parks within a residential neighbourhood. Council's recommendation to expand the southern car park to enable additional on-site parking has merit and requires further consideration.

The proponent will construct the car parks in accordance with AS/NZS 2890 – Parking Facilities adhering to PDC 32 – Transportation and Access as follows:

- regular (staff) 90 degree angled parking spaces shall be a minimum of 2.4m wide and 4.8 m long with 600 mm overhang to low lying landscaping (wheel stops should not be utilised for this arrangement);
- car parks dedicated to people with disabilities will be 2.4 m wide and 5.4 m deep (with an adjacent shared space of the same dimension);
- the parking aisles adjacent 90 degree spaces shall be at least 5.8 m wide;
- parallel parking lanes shall be at least 2.5 m wide with an adjacent aisle width of at least 3.5 m, albeit the parallel parking for the inclusive learning facility will be 3.5 m to accommodate access to/from vehicles by persons with disabilities;
- 1.0m end-of-aisle extension shall be provided beyond the last parking space in dead-end aisles; and
- 0.3 m clearance shall be provided to all objects greater than 0.15 m in height.

Active Travel

Planning policy within the Whyalla Council Development Plan does not include desired bicycle car parking rates for secondary schools or similar land uses. However, it is anticipated that the centralised location will encourage a significant number of students to ride a bike to and from school. Given the proximity of the school to residential land uses, it is also likely that visitors and staff may also ride a bike to and from the school.

The Centenary Trailway is an existing shared use path, providing a crucial link to the adjoining educational campuses and wider locality. A large bicycle enclosure is proposed slightly north of the trail in the eastern portion of the subject site.

Pedestrian paths are also proposed throughout the school with connections to the external path network, including connections to Nicolson Avenue and Russell Street, to encourage active travel to and from the school.

The development proposes 250 bicycle parking spaces dispersed across the site including bike racks to the east and west of the main buildings and adjacent the oval. The number of bicycle parking proposed caters for approximately 15% of the total number of students and staff. Development Plan policy in other regional towns such as Mount Gambier and the City of Onkaparinga recommend a rate of 1 bicycle park per 5 students over age of 4 years old. In addition, research conducted by Austroads (2016)

identified a rate of 0.3 spaces per student and staff, based on a 30% mode share parking rate. The application of the above rates yields approximately 300 spaces and 498 respectively. While the provision of 250 bicycle parking spaces proposed for the new school is considered low when compared with other rates of bicycle parking, there is capacity on-site for additional bicycle parks. Notably, it is understood that there is not a current high rate of cycling activity to the existing schools. This may be due to the current dispersion of secondary schools across the region, lack of bicycle parking or poor connectivity with key residential areas. With this in mind, the provision of 250 bicycle parking spaces is considered to be appropriate.

Centenary Trailway

The proposal seeks to retain and widen the Centenary Trailway through the site to a 6m wide path so it can accommodate emergency access. A north-south 6m wide path is also proposed, linking the trail with the eastern carpark. This will act as the eastern emergency services access and will also provide a new north-south bike path, linking the existing path from Norrie Avenue, intersecting with the centenary path and continuing south to Russell Street. The proposed bicycle path from Norrie Avenue down through the site, aligns with Concept Plan Map Wh/3 Existing and Proposed Bike Path Network (Figure 11).

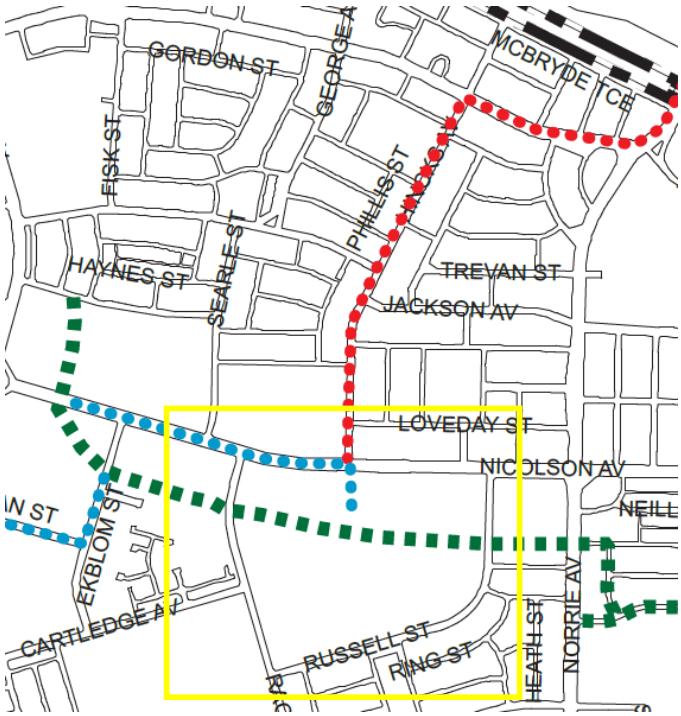


Figure 11 - Extract from Concept Plan WH/3

11.7 Crime Prevention

The integration of the proposal with other similar land uses increases the activation of the locality. The multi-faceted proposal has been sited and designed to ensure surveillance of public areas both within the school and its surrounds through the use of permeable cladding, windowed walls and open walkways. The overall design of the proposal satisfies PDC 1 and 2 – Crime Prevention.

Proposed footpaths and shared trails have been designed and aligned to make best use of the flat topography, enabling clear sight lines. The absence of fencing also facilitates good permeability and legibility throughout the proposal. This approach meets the intent of OBJ 1 – Crime Prevention.

The plans provided indicate that the current alignment of the Centenary Trailway will be re-aligned to accommodate the playing courts in the central portion of the subject site. It is proposed that the courts will be fenced. In the current proposed alignment, the fenced courts coupled with the proposed curvilinear trail, and with the hard stand area create an entrapment area, in addition to obscuring the east-west sight lines.

The Government Architect has also recommended a review of the proposed trailway, with the intent of demonstrating a *'sense of openness and public accessibility of the public link'*. It is recommended that the design of this space be reconsidered to reinstate the visibility along the trail. A condition to this effect is proposed.

Publically accessible toilets are proposed along the southern edge of the gymnasium. During school hours, these facilities will be accessible from inside the gymnasium and outside of school hours. An external access enables these facilities to be utilised outside of school hours by community users. To ensure the safety of patrons, external lighting to the built form and exterior pathways is recommended.

While the built form and its siting align with the principles of Crime Prevention Through Environmental Design, further consideration of lighting key walkways, pedestrian links, publically accessible facilities, car park areas and is recommended.

A detailed lighting plan will assist in meeting PDC 5 – Crime Prevention. A condition to this effect is recommended.

11.8 Vegetation Removal

The subject site does not include any Regulated or Significant Trees under the Development Act, noting the tree provisions do not apply to Whyalla Council area.

However, the proposed development will require the removal of Native Vegetation under the *Native Vegetation Act 1991.* A Native Vegetation Clearance application for the project is proposed to be lodged shortly.

A Preliminary Early Environmental and Engineering Site Investigation is attached (2E).

11.9 Waste Management

The waste storage area is located in the western portion of the subject site, between the western car park and the performing arts centre's storage area. The waste area is strategically located to enable sufficient servicing of the food technical learning areas and the arts centre's kitchen.

The waste storage area is setback behind the primary building façade, will be secured and screened from public view.

11.10 Management Plans

In their referral submission, the City of Whyalla has requested recommends the preparation of Construction and Environmental Management Plan (CEMP) and a Traffic

Management Plan (TMP). It is recommended that the applicant prepared these plans in consultation with the Council and then submit these for final approval by the State Commission Assessment Panel.

12. CONCLUSION

The construction of a new Whyalla Secondary School within an existing education hub is consistent with the intent of the objectives and principles of development control in the Community and Residential Zones of the Whyalla Council Development Plan.

The co-location of the school with existing primary and tertiary education establishments makes good use of underutilised land. The arrangement of the built form, the extensive landscaping and the schools accessibility has been well thought out, designed to a high architectural standard and provides a range of innovative learning spaces.

Construction impacts of the school will need to be proactively managed to ensure minimal disruption to the traffic movements of Nicolson Avenue and to minimise the impact on residential land uses located along Russell Street.

If no further information is required, and all relevant assessment matters have been considered, this planning report can be endorsed by the State Commission Assessment Panel pursuant to Section 49 (7e) of the *Development Act 1993*, and a formal recommendation with appropriate conditions provided to the Minister for Planning for his further review and decision.

SARAH ELDING
PRINCIPAL PLANNER
PLANNING AND LAND USE SERVICES (DPTI)

NEW WHYALLA SECONDARY SCHOOL

NICOLSON AVENUE, WHYALLA SOUTH AUSTRALIA

DA - DRAWING LIST		
Sheet Number	Sheet Name	Current Revision
DA-00	COVER PAGE	
DA-01	MASTER PLAN	
DA-02	SITE PLAN - ZONE A	
DA-03	SITE PLAN - ZONE B	
DA-04	SITE PLAN - ZONE C	
DA-05	DEMOLITION PLAN - ZONE A	
DA-06	DEMOLITION PLAN - ZONE B	
DA-07	DEMOLITION PLAN - ZONE C	
DA-08	FLOOR PLAN - GROUND - ZONE A-1	
DA-09	FLOOR PLAN - GROUND - ZONE A-2	
DA-10	FLOOR PLAN - GROUND - ZONE A-3	
DA-11	FLOOR PLAN - LEVEL 1 - ZONE A-1	
DA-12	FLOOR PLAN - LEVEL 1 - ZONE A-2	
DA-13	FLOOR PLAN - LEVEL 1 - ZONE A-3	
DA-14	FLOOR PLAN - LEVEL 2 - ZONE A-2	
DA-15	ROOF PLAN - ZONE A-1	
DA-16	ROOF PLAN - ZONE A-2	
DA-17	ROOF PLAN - ZONE A-3	
DA-18	ROOF PLAN - CENTRAL COURTYARD	
DA-19	ELEVATIONS 01	
DA-20	ELEVATIONS 02	
DA-21	SECTIONS	
DA-22	3D PERSPECTIVE - NICOLSON AVENUE	
DA-23	3D PERSPECTIVE - LEARNING PRECINCT	
DA-24	3D PERSPECTIVE - PERFORMING ARTS	
DA-25	3D PERSPECTIVE - GYMNASIUM	
DA-26	3D PERSPECTIVE - COURTYARD	

Grand total: 27

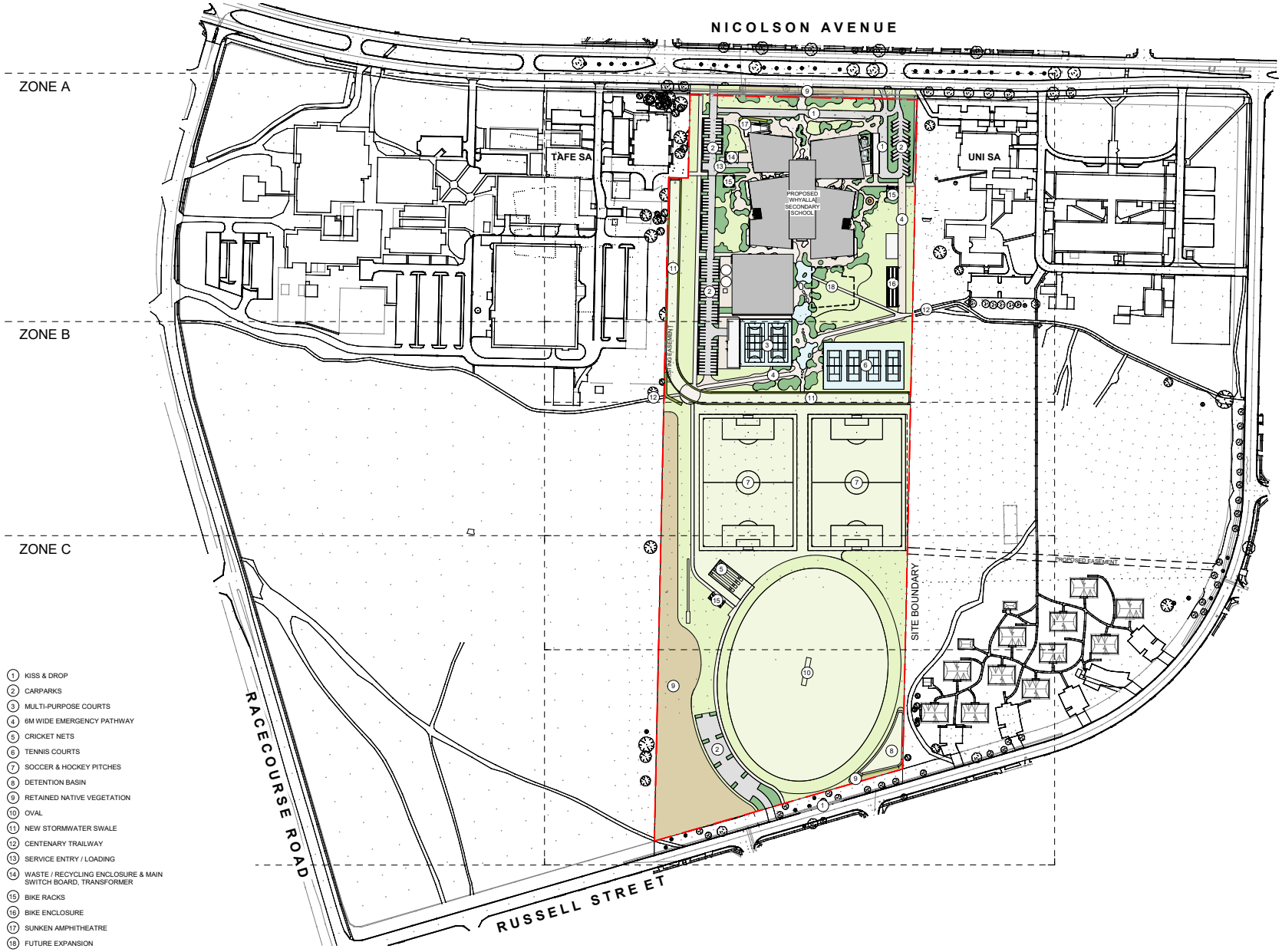
Project: **NEW WHYALLA SECONDARY SCHOOL**

Drawing Title: **COVER PAGE**

Drawing Number: **DA-00** Revision: **A** Date: **29/10/19** Scale: **@ A1**

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au



Project:
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Drawing Title:
MASTER PLAN

Drawing Number:	Revision:	Date:	Scale:
DA-01	A	29/10/19	1 : 1500 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

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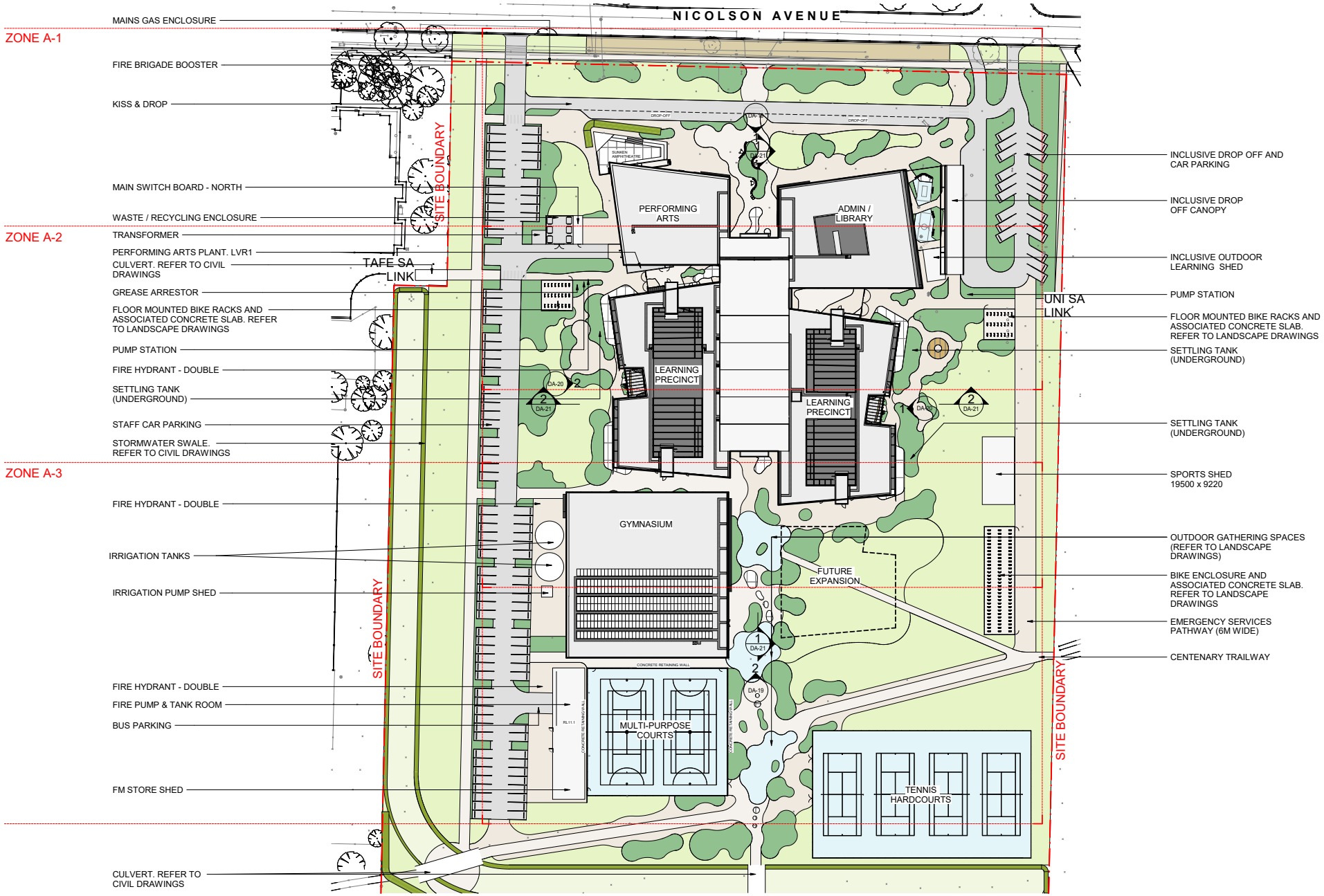

Project:
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SITE PLAN - ZONE A

Drawing Number:	Revision:	Date:	Scale:
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Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

Project:
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FLOOR PLAN - LEVEL 1 - ZONE A-1

Drawing Number:	Revision:	Date:	Scale:
DA-11	A	29/10/19	1 : 200 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

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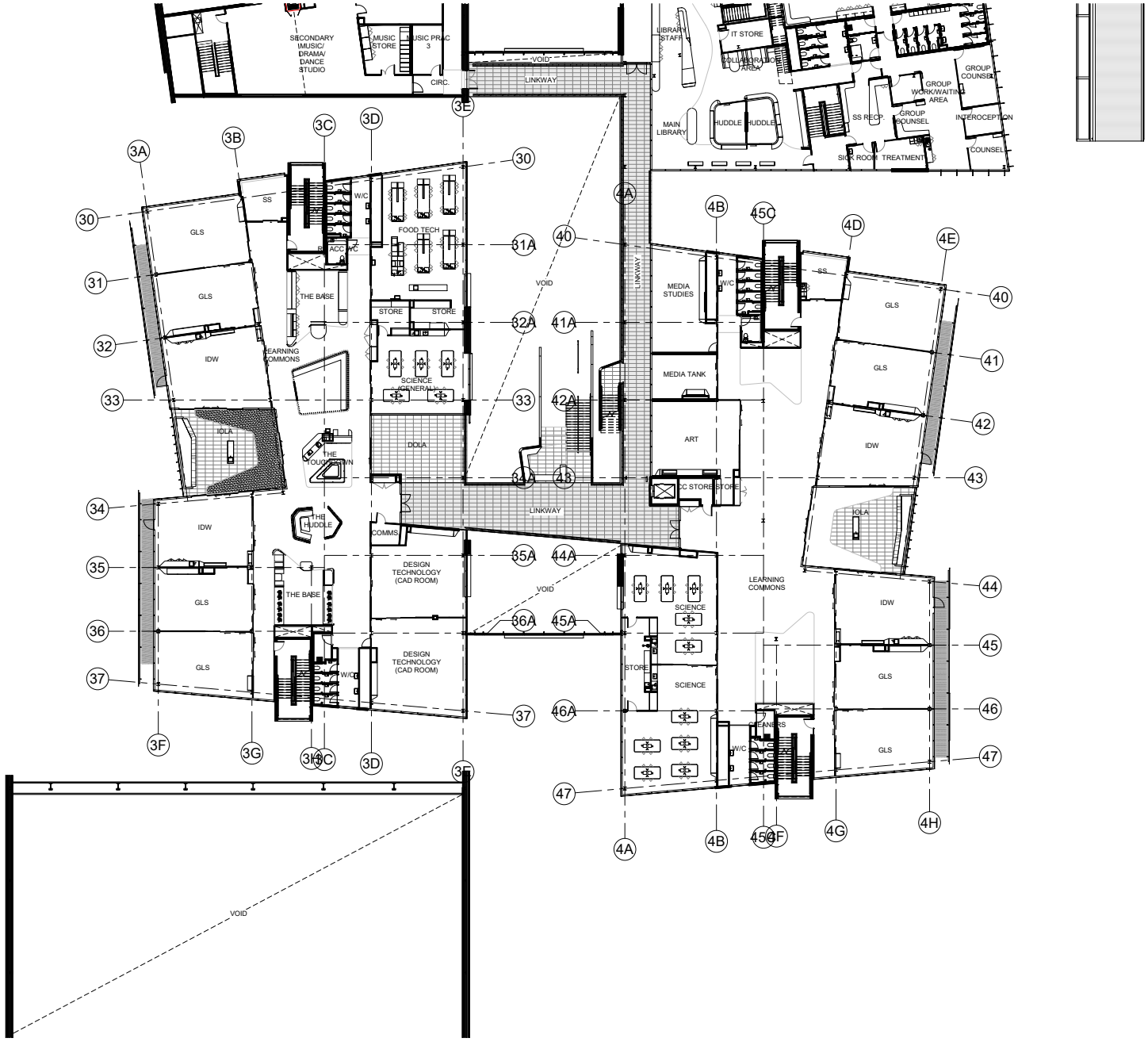

Project:

NEW WHYALLA SECONDARY SCHOOL

Drawing Title:

FLOOR PLAN - LEVEL 1 - ZONE A-2

Drawing Number:	Revision:	Date:	Scale:
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Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

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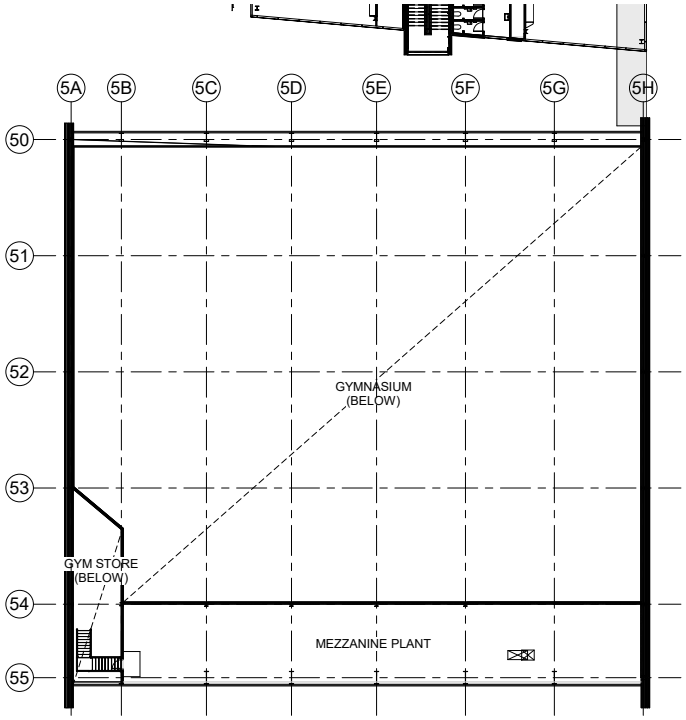
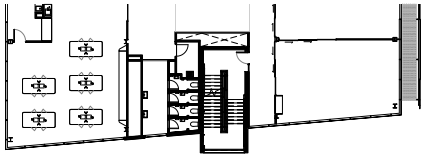




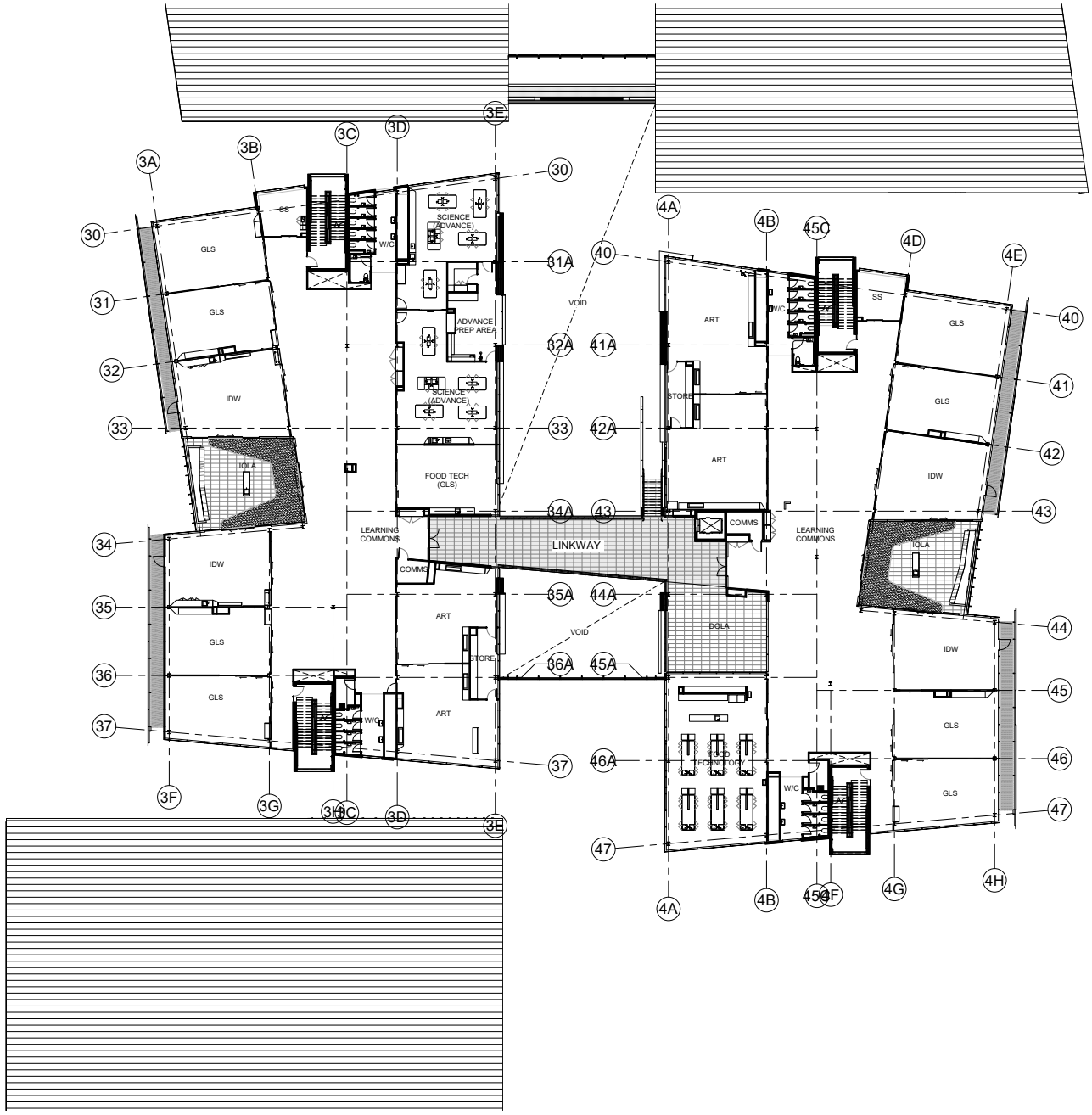
Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
FLOOR PLAN - LEVEL 1 - ZONE A-3

Drawing Number:	Revision:	Date:	Scale:
DA-13	A	29/10/19	1 : 200 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au



Project:

NEW WHYALLA SECONDARY SCHOOL

Drawing Title:

FLOOR PLAN - LEVEL 2 - ZONE A-2

Drawing Number:	Revision:	Date:	Scale:
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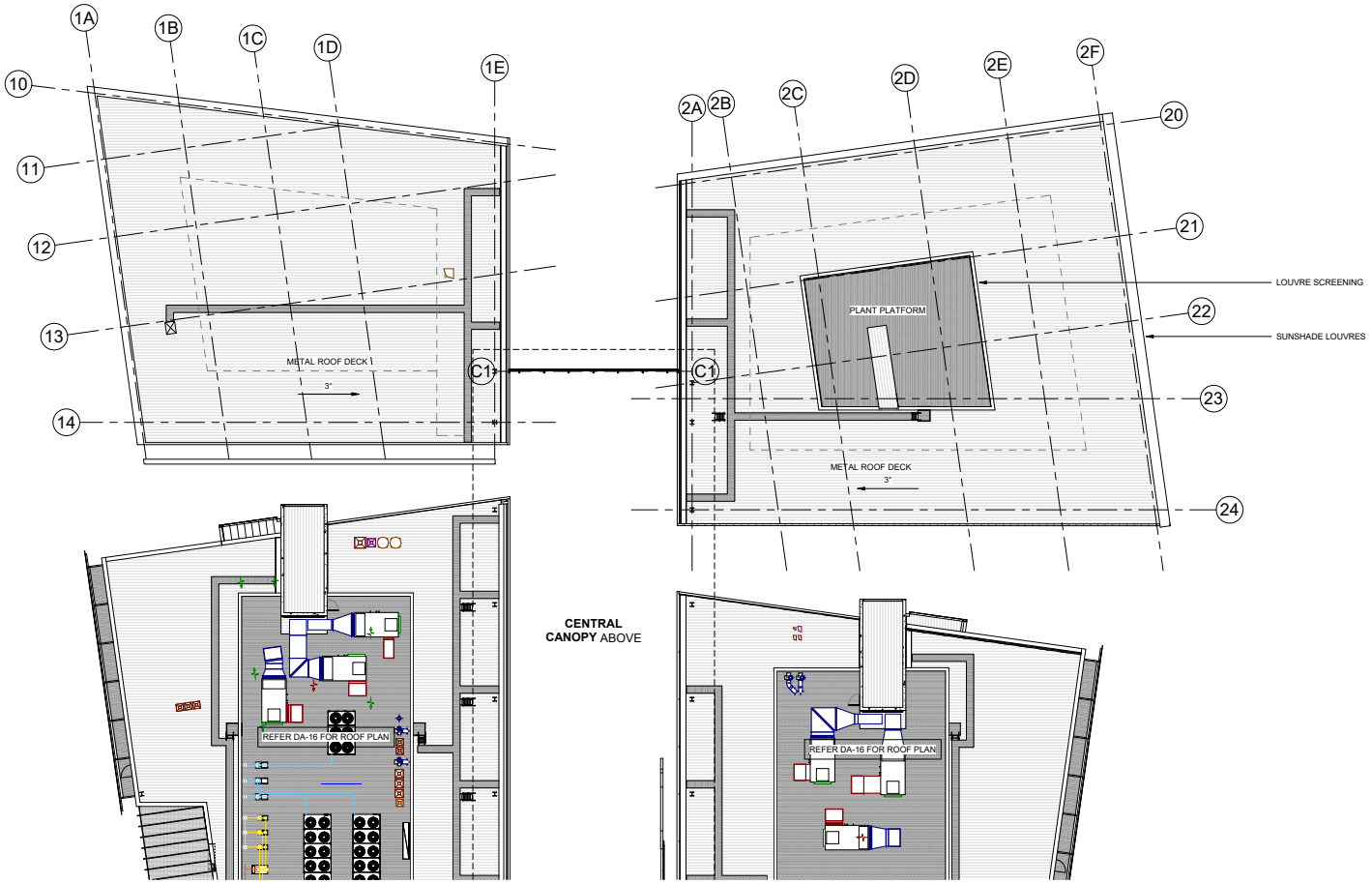
Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au



Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
ROOF PLAN - ZONE A-1

Drawing Number:	Revision:	Date:	Scale:
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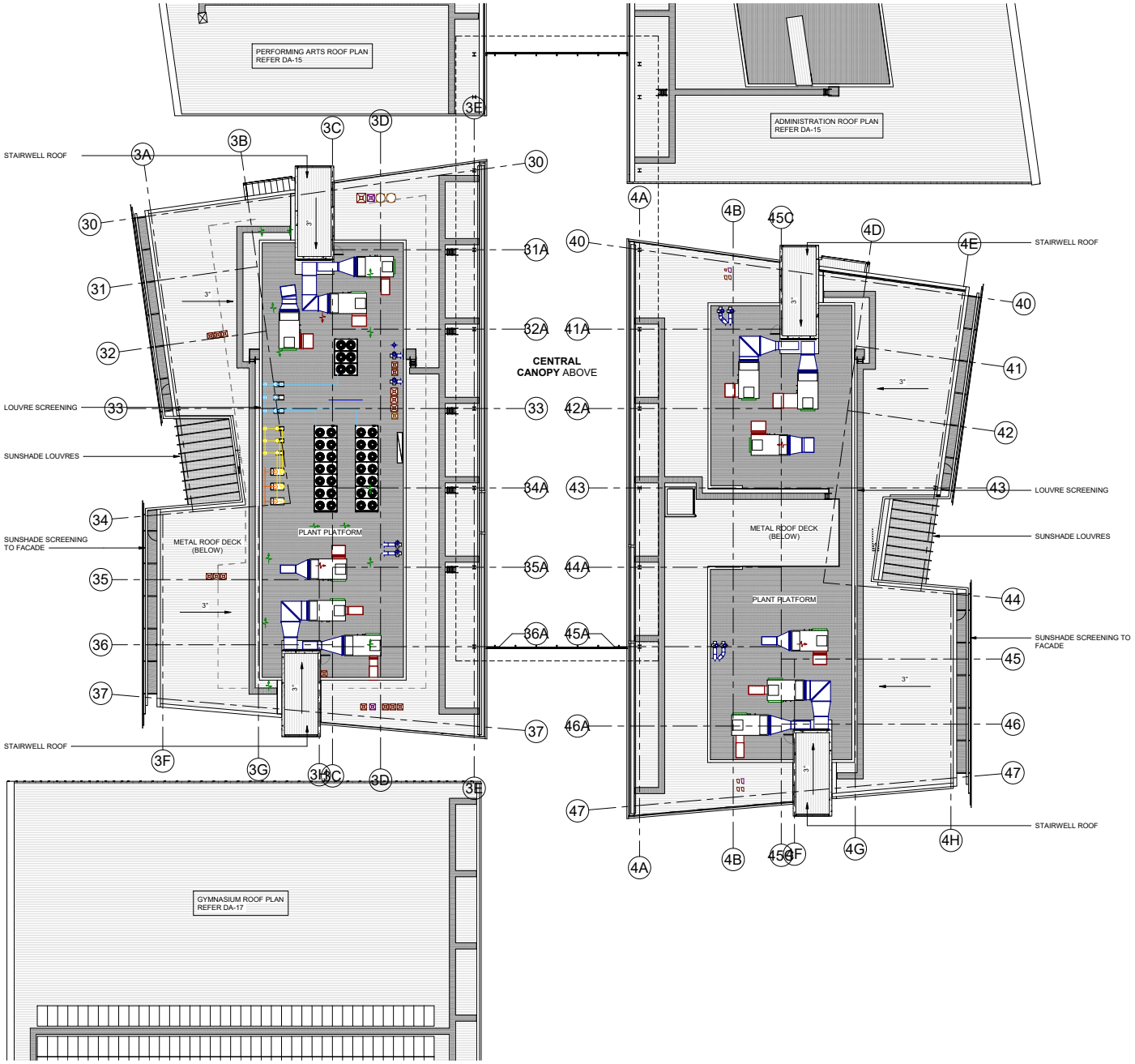
Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au



Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
ROOF PLAN - ZONE A-2

Drawing Number: **DA-16**
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Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
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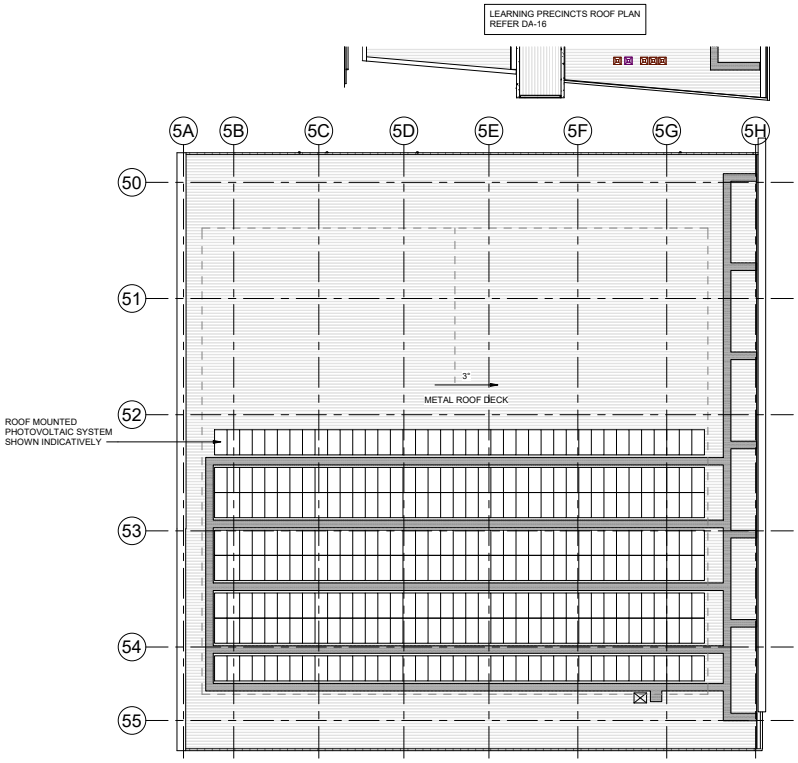

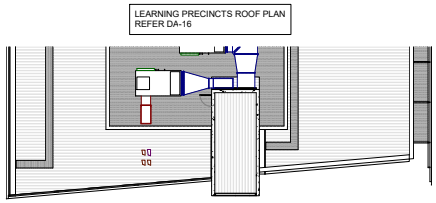

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
ROOF PLAN - ZONE A-3

Drawing Number:	Revision:	Date:	Scale:
DA-17	A	29/10/19	1 : 200 @ A1

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Project:

NEW WHYALLA SECONDARY SCHOOL

Drawing Title:

ROOF PLAN - CENTRAL COURTYARD

Drawing Number:	Revision:	Date:	Scale:
DA-18	A	29/10/19	1 : 200 @ A1

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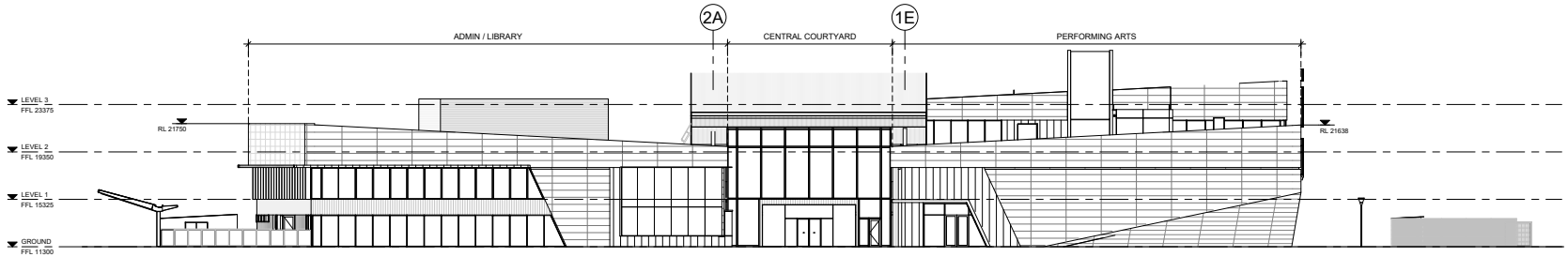
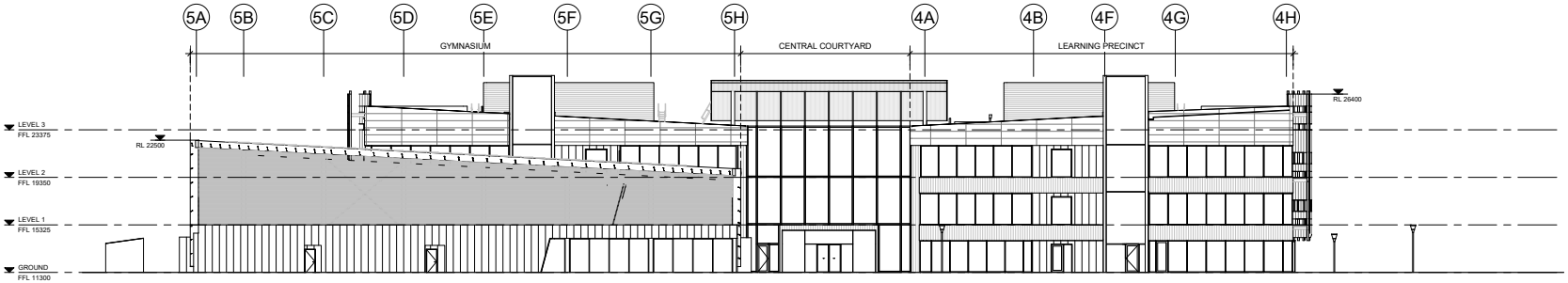


NORTH ELEVATION
SCALE 1 : 200



SOUTH ELEVATION
SCALE 1 : 200

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
ELEVATIONS 01

Drawing Number:	Revision:	Date:	Scale:
DA-19	**A**	**29/10/19**	**1 : 200 @ A1**

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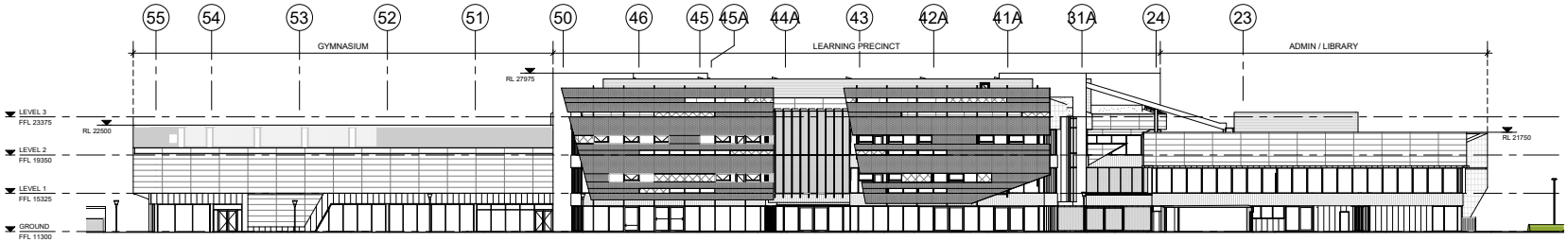
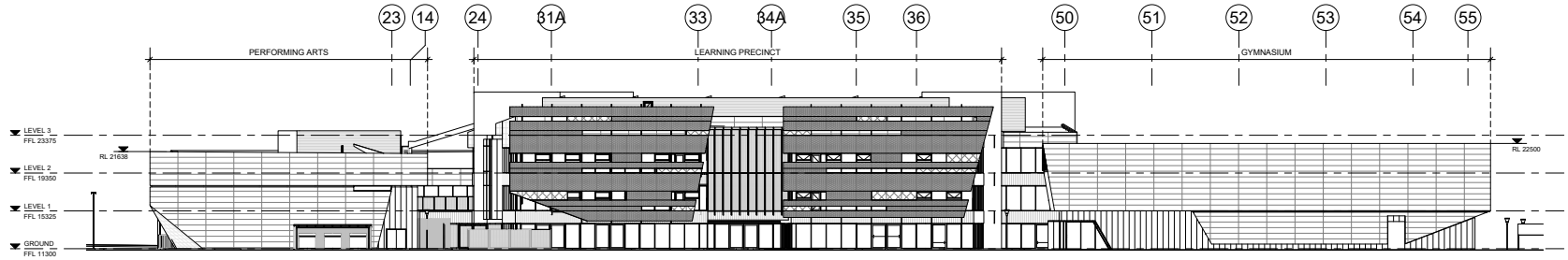


EAST ELEVATION
SCALE 1 : 250



WEST ELEVATION
SCALE 1 : 250

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
ELEVATIONS 02

Drawing Number:	Revision:	Date:	Scale:
DA-20	**A**	**29/10/19**	**1 : 250 @ A1**

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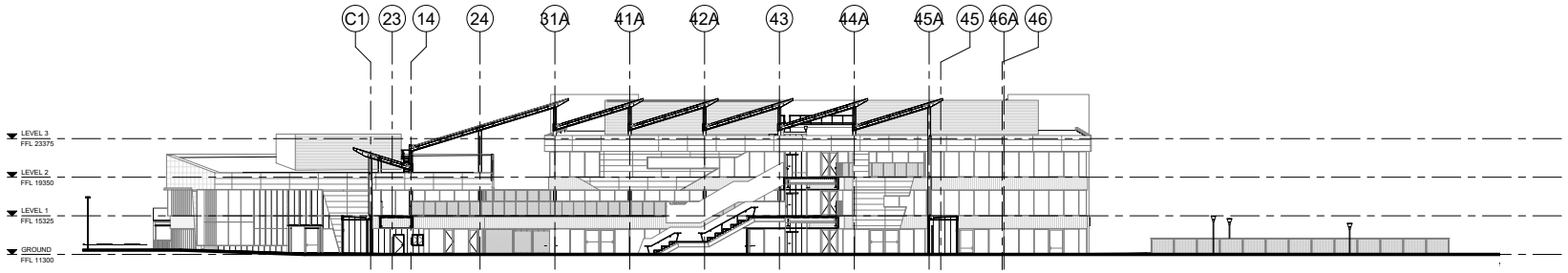
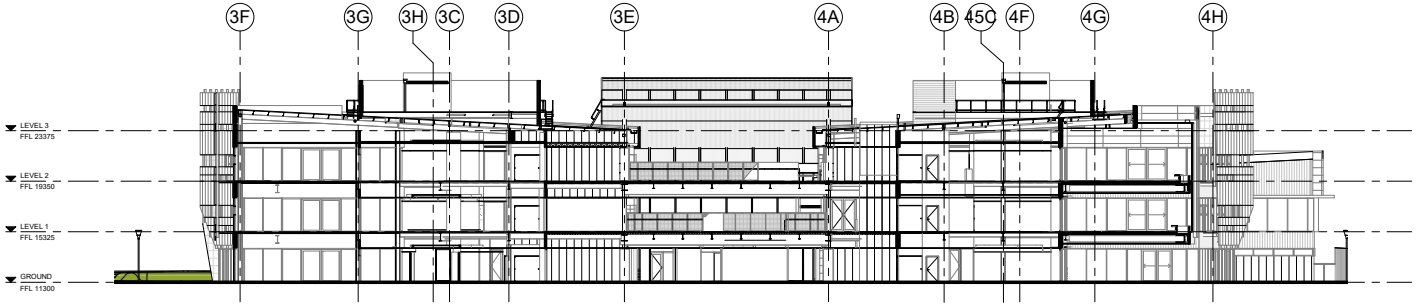


DA_AA (COURTYARD) EAST
SCALE 1 : 250



DA_BB (LEARNING PRECINCTS)
SCALE 1 : 200

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
SECTIONS

Drawing Number: **DA-21**
Revision: **A**
Date: **29/10/19**
Scale: **As indicated @ A1**

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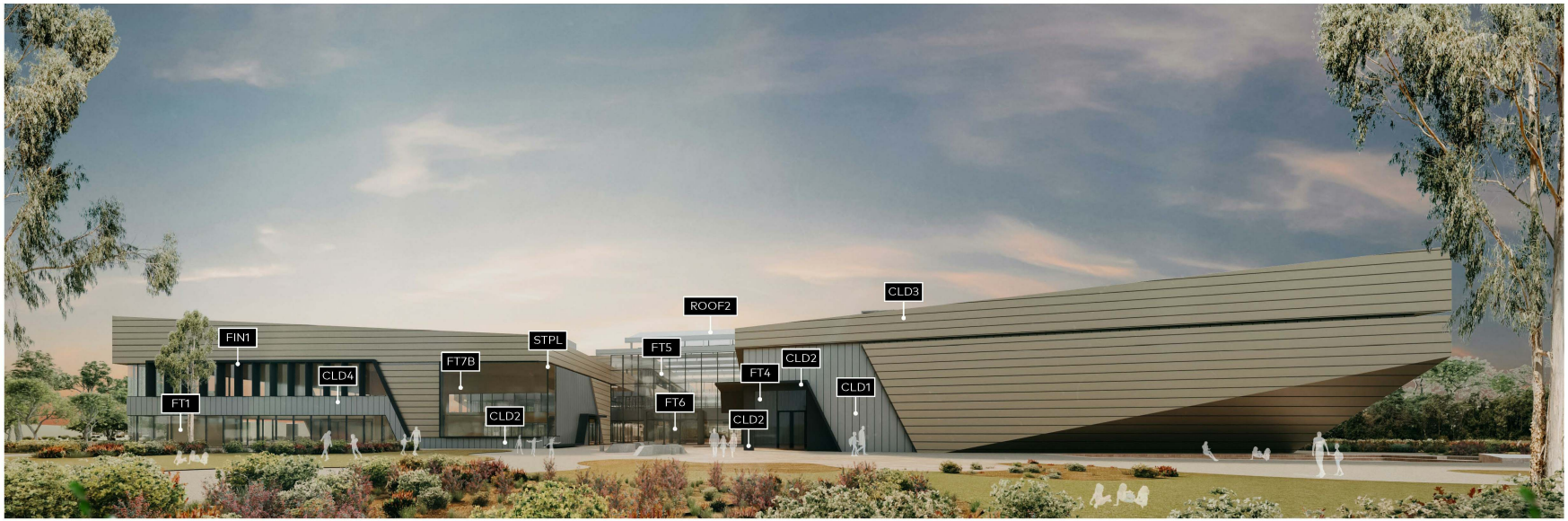
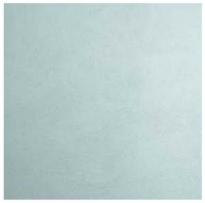


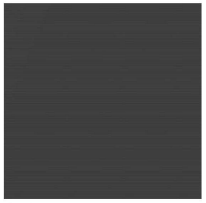

FT1


FT4


FT5

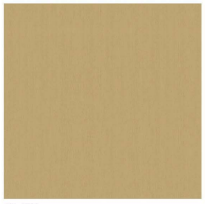

FT6


FT7B


FIN1

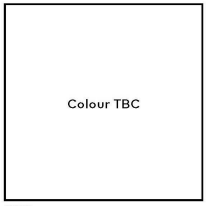

CLD1


CLD2


CLD3


CLD4


ROOF2



STPL

Materials

- FT1: Alspec ThermAFrame aluminum thermally broken captive window wall system 150mm
- FT4: Glazed window wall
- FT5: Glazed Kingswood Cassette system to steel mullion
- FT6: Atrium glazing
- FT7B: Aluminum window wall
- FIN1: Anodised aluminium to 25 microns in AAF 'Ebony' Matt exterior grade
- CLD1: Azure 100 steel cassette rainscreen cladding system in Colorbond 'Astro' Metallic
- CLD2: Azure 100 steel cassette rainscreen cladding system in Colorbond 'Monument' Matt
- CLD3: Azure 100 steel casette rainscreen cladding system in custom colour TBC
- CLD4: EuroPlus Interlocking Panel in Colorbond 'Astro' Metallic
- ROOF2: Metal roof sheeting in Colorbond Ultra 'Surfmist'
- STPL: Painted steel plate (colour TBC)

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
3D PERSPECTIVE - NICOLSON AVENUE

Drawing Number: **DA-22**

Revision: **A**

Date: **29/10/19**

Scale: **1 : 2500 @ A1**

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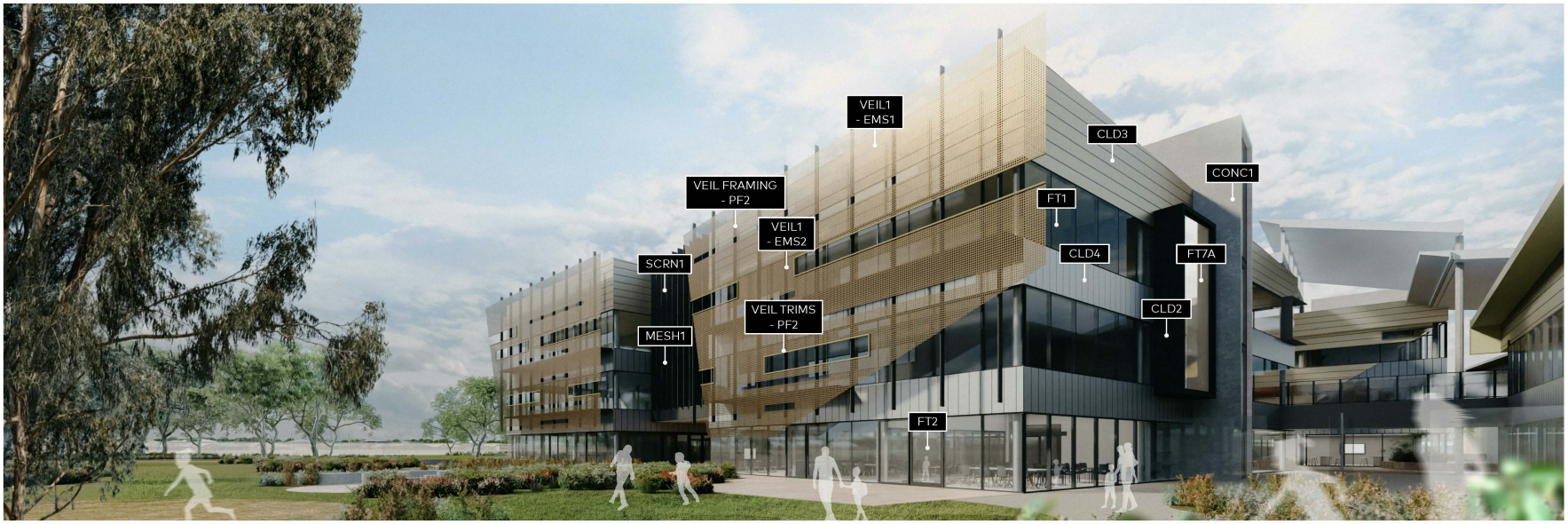
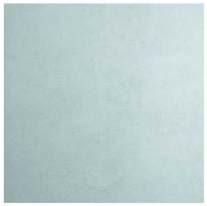
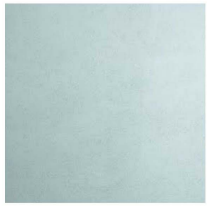
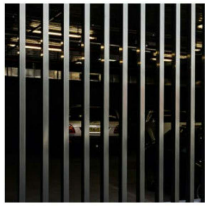



FT1


FT2

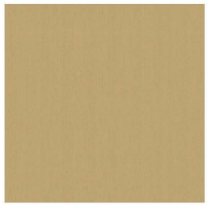

FT7A


SCRN1

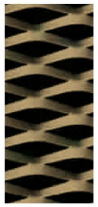

CONC1


MESH1


CLD2


CLD3


CLD4


VEIL1-EMS1


VEIL1-EMS2


VEIL TRIMS-PF2


VEIL FRAMING-PF2

Materials

- FT1: Alspec ThermAFrame aluminium thermally broken captive window wall system 150mm
- FT2: Alspec Hawksbury sliding door system
- FT7A: Alspec ThermAFrame aluminum thermally broken window wall system 150 mm
- SCRN1: Aluminum box section louvre and balustrade framing in AAF 'Ebony' Matt exterior grade
- CONC1: In-situ concrete smooth finish with high quality penetrating acid stain
- MESH1: X-Tend stainless steel cable mesh for fall protection application 2mm cable, 60mm mesh
- CLD2: Azure 100 steel cassette rainscreen cladding system in Colorbond 'Monument' Matt
- CLD3: Azure 100 steel casette rainscreen cladding system in custom colour TBC
- CLD4: EuroPlus Interlocking Panel in Colorbond 'Astro' Metallic
- VEIL1-EMS1: SUN34338A 3mm aluminium extruded metal mesh in AAF 'Portland Stone' Matt exterior grade
- VEIL1-EMS2: [Profile TBC] 3mm aluminium extruded metal mesh in AAF 'Portland Stone' Matt exterior grade
- VEIL TRIMS-PF2: Painted steel trim to mesh cut-out
- VEIL FRAMING-PF2: Veil secondary structure with paint finish

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
3D PERSPECTIVE - LEARNING PRECINCT

Drawing Number:	Revision:	Date:	Scale:
DA-23	A	29/10/19	1 : 2500 @ A1

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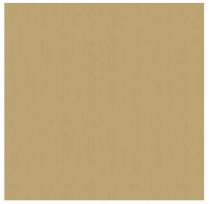
FT1


FT7B


CLD1


CLD2


CLD3


CLD4


FIN1

Colour TBC

STPL

Materials

- FT1: Alspec ThermAFrame aluminium thermally broken captive window wall system 150mm
- FT7B: Aluminum window wall
- CLD1: Azure 100 steel cassette rainscreen cladding system in Colorbond 'Astro' Metallic
- CLD2: Azure 100 steel cassette rainscreen cladding system in Colorbond 'Monument' Matt
- CLD3: Azure 100 steel casette rainscreen cladding system in custom colour TBC
- CLD4: EuroPlus Interlocking Panel in Colorbond 'Astro' Metallic
- FIN1: Anodised aluminium to 25 microns in AAF 'Ebony' Matt exterior grade
- STPL: Painted steel plate (colour TBC)

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
3D PERSPECTIVE - PERFORMING ARTS

Drawing Number: **DA-24**

Revision: **A**

Date: **29/10/19**

Scale: **1 : 2500 @ A1**

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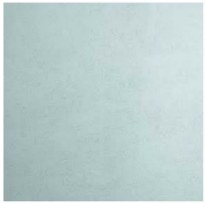
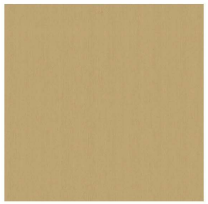

FT1

FT3


CLD2


CLD3


LVR2

Materials

- FT1: Alspec ThermAFrame aluminium thermally broken captive window wall system 150mm
- FT3: Stair glazed window wall
- CLD2: Azure 100 steel cassette rainscreen cladding system in Colorbond 'Monument' Matt
- CLD3: Azure 100 steel casette rainscreen cladding system in custom colour TBC
- LVR2: 2UL Universal Louvre to match Colorbond 'Monument' with polyester powdercoat in Duratec Zeus Matt

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
3D PERSPECTIVE - GYMNASIUM

Drawing Number: **DA-25**

Revision: **A**

Date: **29/10/19**

Scale: **1 : 2500 @ A1**

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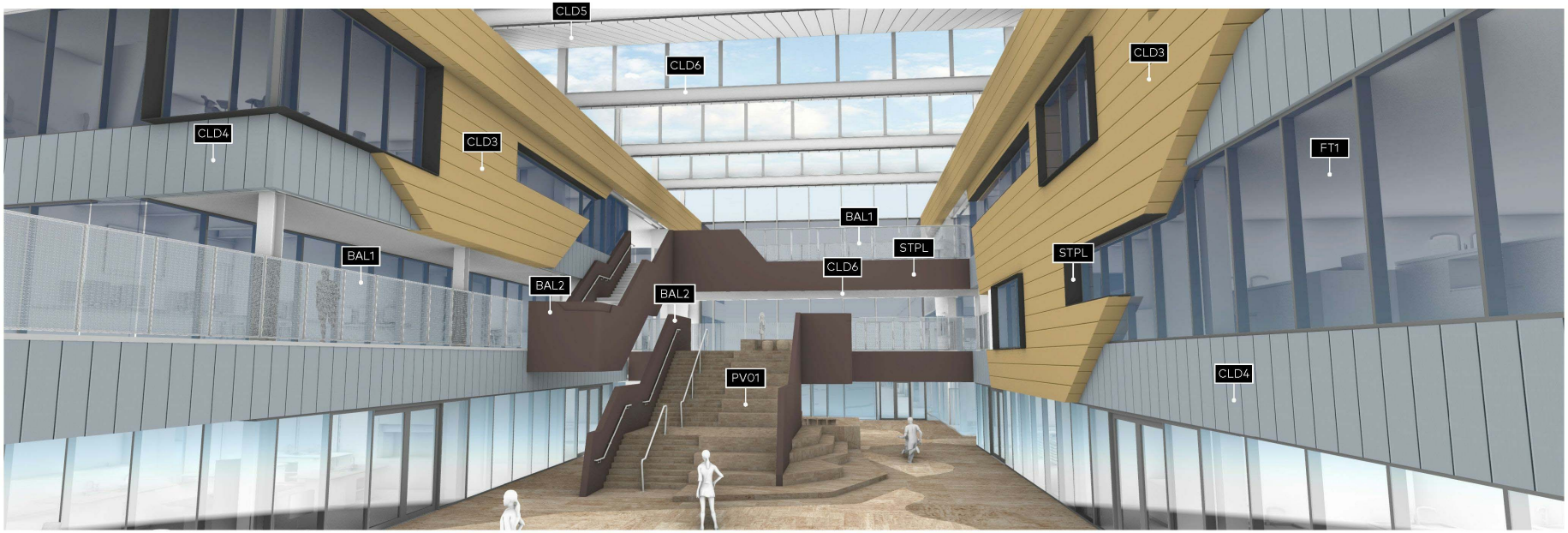
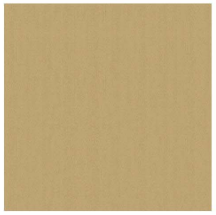


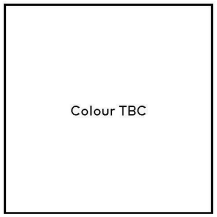

FT1


CLD3


CLD4

CLD5

CLD6



STPL


PV01


BAL1


BAL2

Materials

- FT1: Alspec ThermAFrame aluminium thermally broken captive window wall system 150mm
- CLD3: Azure 100 steel casette rainscreen cladding system in custom colour TBC
- CLD4: EuroPlus Interlocking Panel in Colorbond 'Astro' Metallic
- CLD5: Stramit corrugated acoustic panel system in Colorbond Off White
- CLD6: EuroPlus Interlocking Panel in Colorbond 'Cosmic' Metallic
- STPL: Painted steel plate (colour TBC)
- PV01: Stone paving
- BAL1: 1225A 3mm aluminium expanded mesh in anodised AAF 'Stella Grey'
- BAL2: Painted steel plate in Dulux 'Nocturnal Flight'

Project: **NEW WHYALLA SECONDARY SCHOOL**

Drawing Title: **3D PERSPECTIVE - COURTYARD**

Drawing Number: **DA-26**

Revision: **A**

Date: **29/10/19**

Scale: **1 : 2000 @ A1**

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New Whyalla Secondary School

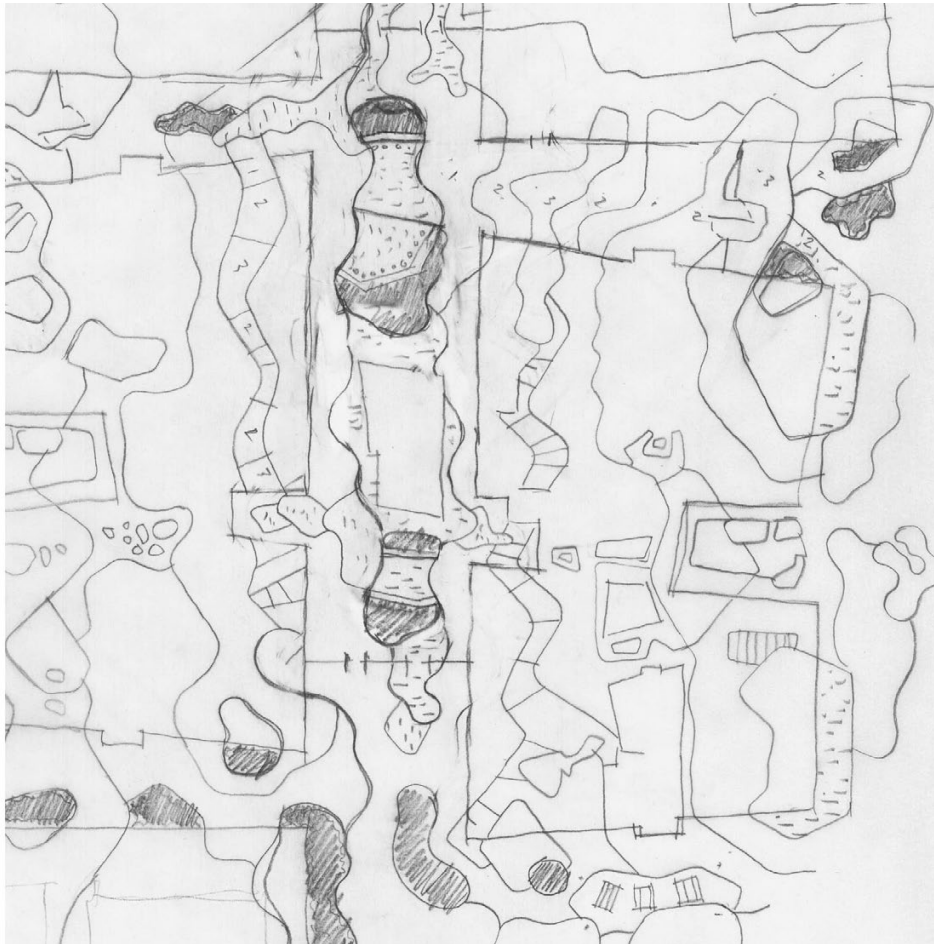
Landscape Design Development

11/9/2019
Project No.: PA19022

ASPECT Studios™

DESIGN DEVELOPMENT

A VEGETATION PATTERN DRAWN FROM THE LAND



MASTER PLAN

LEGEND

1. ENTRY/EXIT WITH CAR PARKING
2. MAIN PEDESTRIAN ENTRY TO SCHOOL
3. INTERNAL COURTYARDS
4. PRIMARY YARNING CIRCLE WITH ADJACENT PLANTING AND GREEN 'KICK-A-BOUT AREA
5. SOCCER PITCHES
6. TENNIS AND BASKETBALL COURTS
7. OVAL
8. OUTDOOR CLASSROOMS/INFORMAL SEATING AMONGST PLANTING
9. SWALE
10. UNI SA
11. TAFE SA

REFER TO FOLLOWING PAGES FOR MORE DETAIL CONCEPT PLANS OF THESE AREAS

NOT TO SCALE

ASPECT Studios™

MASTER PLAN

LEGEND

1. ENTRY LANDSCAPE (WELCOME TO LAND)
2. OUTDOOR THEATRE
3. OUTDOOR GATHERING SPACES
4. FEATURE PAVING (THE RIDGE)
5. INTERDISCIPLINARY OUTDOOR LEARNING AREA
6. DISCIPLINARY OUTDOOR LEARNING AREA
7. PICK UP/DROP OFF
8. IRRIGATED LAWN
9. RETAINED VEGETATION
10. CARPARKING
11. SOUTHERN ENTRY LANDSCAPE
12. SWALE
13. PICK UP DROP-OFF (SHELTERED)
14. NORTHERN PICK-UP DROP-OFF (NOT SHOWN IN THIS PLAN)
15. SOCCER PITCH
16. EXISTING SHARED USE PATH (REALIGNED THROUGH SCHOOL)
17. STORAGE/MAINTENANCE SHEDS
18. TENNIS COURTS WITH FENCING
19. AFL OVAL
20. SURFACE WATER CATCHMENT
21. SPORTS SHELTER
22. PEDESTRIAN LINK
23. FENCED BASKETBALL/NETBALL COURTS
24. PRACTICE CRICKET NETS
25. LONG JUMP
26. NON_IRRIGATED LAWN WITH TREES
27. BIKE PARKING
28. BIKE PARKING IN SHED
29. FLAG POLES

– – SITE BOUNDARY

SCALE 1:250 A3

MASTER PLAN

LEGEND

1. ENTRY LANDSCAPE (WELCOME TO LAND)
2. OUTDOOR THEATRE
3. OUTDOOR GATHERING SPACES
4. FEATURE PAVING (THE RIDGE)
5. INTERDISCIPLINARY OUTDOOR LEARNING AREA
6. DISCIPLINARY OUTDOOR LEARNING AREA
7. PICK UP/DROP OFF
8. IRRIGATED LAWN
9. RETAINED VEGETATION
10. CARPARKING
11. SOUTHERN ENTRY LANDSCAPE
12. SWALE
13. PICK UP DROP-OFF (SHELTERED)
14. NORTHERN PICK-UP DROP-OFF (NOT SHOWN IN THIS PLAN)
15. SOCCER PITCH
16. EXISTING SHARED USE PATH (REALIGNED THROUGH SCHOOL)
17. STORAGE/MAINTENANCE SHEDS
18. TENNIS COURTS WITH FENCING
19. AFL OVAL
20. SURFACE WATER CATCHMENT
21. SPORTS SHELTER
22. PEDESTRIAN LINK
23. FENCED BASKETBALL/NETBALL COURTS
24. PRACTICE CRICKET NETS
25. LONG JUMP
26. NON_IRRIGATED LAWN WITH TREES
27. BIKE PARKING
28. BIKE PARKING IN SHED
29. FLAG POLES

SITE BOUNDARY

SCALE 1:250 A3

INTERNAL LINKS AND DOLAS

LEGEND

1. DOLA:
   - _ RAISED DESKS WITH HIGH STOOLS
   - _ INTEGRATED STORAGE UNITS
   - _ DUAL SINKS
   - _ OPEN AREA FOR EXPERIMENTS/CLASS GATHERING
   - _ GARDEN BEDS WITH ADJACENT SEATING
   - _ TABLES AND STOOLS FOR SMALLER MEETING GROUPS
2. INTERNAL SEATING STAIRS
3. INTERNAL GARDEN BEDS
4. FEATURE PAVING

BENCH SEATING

BANDS OF EXPOSED AGGREGATE PAVING

5. INTERNAL FLOOR FINISHES TO BE SPECIFIED BY INTERIORS
6. SHARING TABLES

REFER TO MATERIAL PALETTE FOR PROPOSED FINISHES

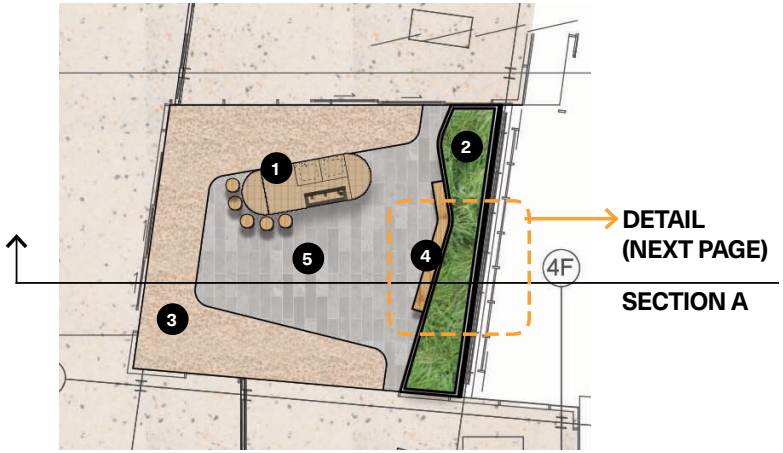
ASPECT Studios™

LEVEL 1 AND 2 DOLAS

LEGEND

1. DOLA:
   _ STORAGE UNIT WITH INTEGRATED SINKS, BINS AND SEATING
   _ OPEN AREA FOR EXPERIMENTS/CLASS GATHERING
   _ BALCONY GARDEN WITH CABLES FOR CREEPERS.
   _ CUSTOM BENCH SEATS WITH ADJACENT SEATING
2. GARDEN BED
3. FEATURE PAVING
4. BENCH SEATING
5. EXPOSED AGGREGATE PAVING

REFER TO MATERIAL PALETTE FOR PROPOSED FINISHES

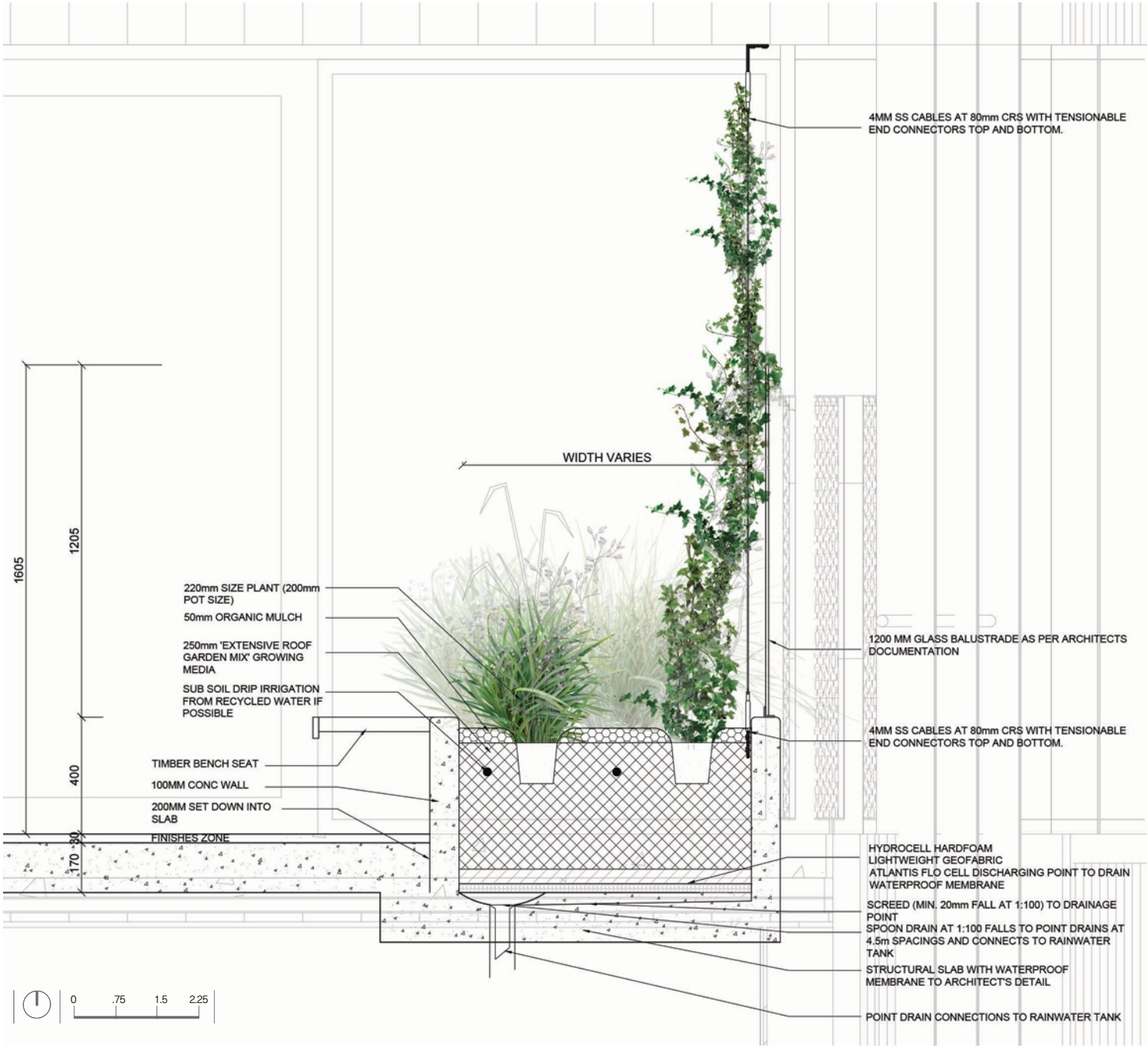


PLAN
SCALE 1.150 A3
0 1.5 3 4.5

SECTION A_ NOT TO SCALE

ASPECT Studios™

LEVEL 1 AND 2 DOLA DETAIL



EASTERN EXTERNAL SPACE AND IOLA

LEGEND

1. IOLA:
   _ CUSTOM STORAGE UNIT WITH BINS, DUAL SINKS AND DESK SPACE
   _ OPEN AREA FOR EXPERIMENTS/CLASS GATHERING
   _ GARDEN BEDS WITH CUSTOM SEATING
2. LARGE YARNING CIRCLE
   _ FIRE PIT
   _ STONE SEATING WALLS
3. SHADE STRUCTURE
4. GARDEN BEDS WITH LOW SHRUB PLANTING AND SHADE TREES
5. IRRIGATED LAWN
6. NON_IRRIGATED LAWN
7. OPEN BIKE/SCOOTER STORAGE (48 SPACES)
8. GRAVEL PATH FOR FIRE EGRESS
9. EXPOSED AGGREGATE PAVING
10. HANDBALL COURTS
11. TABLE TENNIS
    BENCH SEATING
12. CLASSROOM 'SPILLOUT SPACES' WITH COMBINATION LARGE AND SMALL GATHERING TABLES
13. ENCLOSED SHED FOR BIKE/SCOOTER STORAGE (180 SPACES)

REFER TO MATERIAL PALETTE FOR PROPOSED FINISHES

ASPECT Studios™

EASTERN EXTERNAL SPACE AND IOLA

MATERIALS AND ARTISTS IMPRESSION

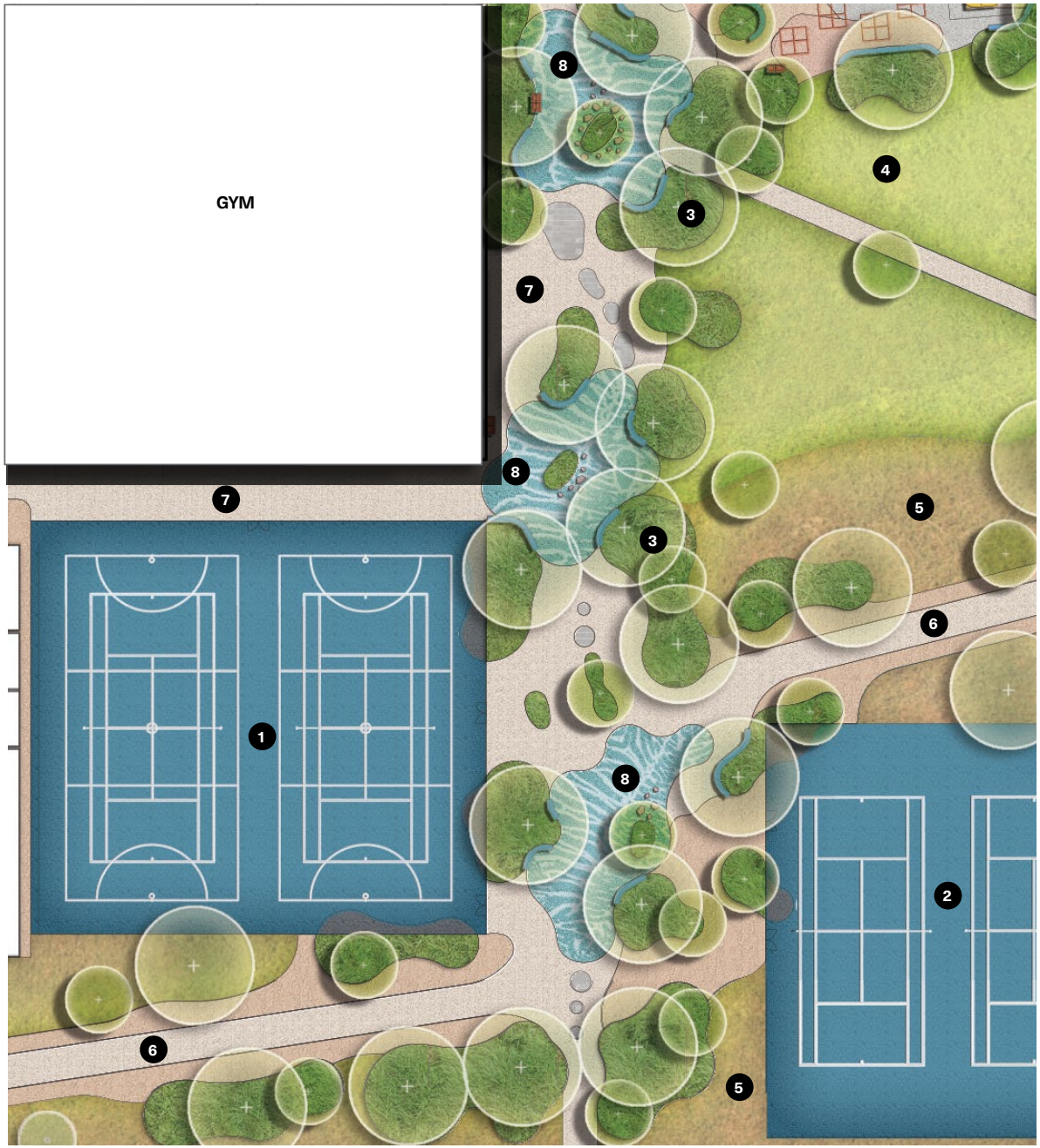
SOUTHERN EXTERNAL SPACE

LEGEND

1. OUTDOOR FENCED BASKETBALL/NETBALL COURTS (TWO TOTAL)
2. FENCED TENNIS COURTS (FOUR TOTAL)
3. GARDEN BEDS WITH LOW SHRUB PLANTING AND SHADE TREES
4. IRRIGATED LAWN
5. NON_IRRIGATED LAWN
6. CENTENARY SHARED USE PATH (REALIGNED THROUGH SITE)
7. EXPOSED AGGREGATE PAVING
8. SUPERGRAPHIC - POTENTIAL CLASSROOM 'SPILLOUT SPACES'

BENCH SEATING

REFER TO MATERIAL PALETTE FOR PROPOSED FINISHES



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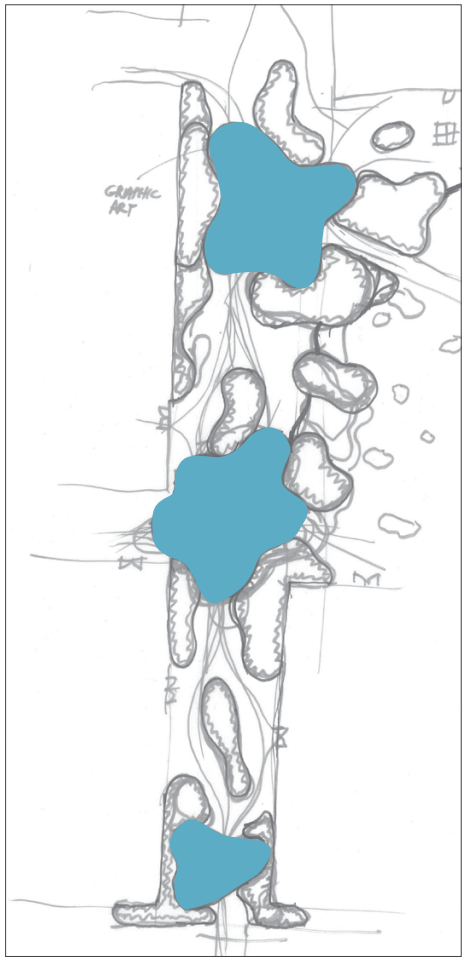
SOUTHERN EXTERNAL SPACE

SUPERGRAPHIC

SEA
Australian Giant Cuttlefish 'Sepia apama

LAND
Middleback Ranges

COMMUNITY



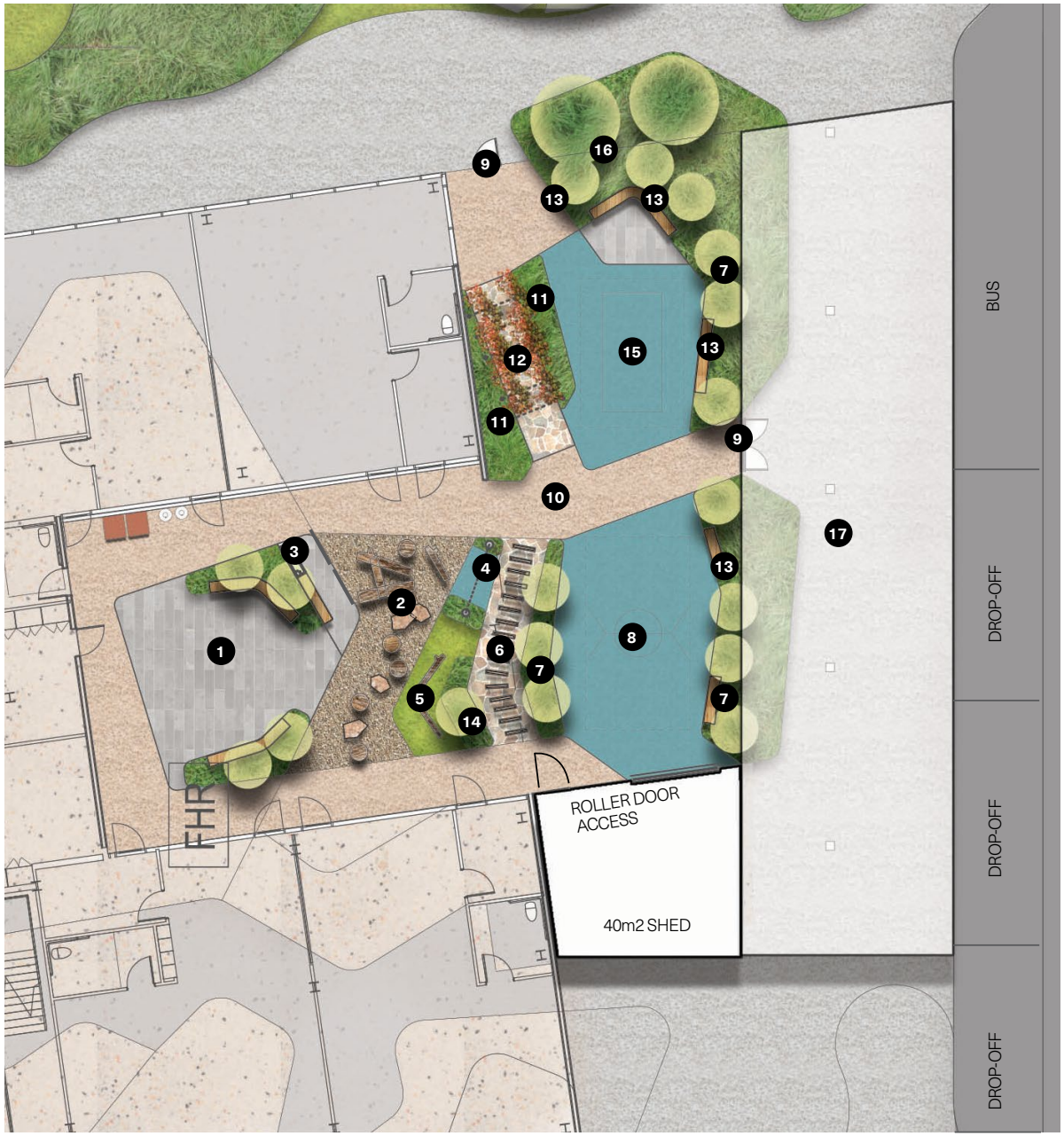
ILC SECURE OUTDOOR LEARNING AREA

LEGEND

1. PAVED AREA FOR FREE FORM PLAY AND SOCIAL GATHERINGS
2. NATURE PLAY AREA, INCLUDING CLIMBING ELEMENTS, BOULDERS, SEATING NOOKS
3. SINK, BUILT IN STORAGE, BUILT IN DISPLAY PANELS AND PERMANENT SEATING
4. HAMMOCK SWING LOCATION - WITH TWO SECURE SUSPENSION POSTS
5. LOG SEATING AREA
6. TIMBER SLEEPER TRAIL
7. GARDEN BED
8. ACCESSIBLE SWING ON RUBBER SOFTFALL
9. ENTRY GATE
10. EXPOSED AGGREGATE CONCRETE
11. SENSORY GARDENS WITH CABLES LEADING UP AND OVER TO CREATE ARBOR LIKE STRUCTURE
12. SENSORY TRAIL BENEATH ARBOR
13. BUILT IN BENCH SEAT
14. RAISED PRODUCTIVE GARDEN
15. INGROUND ACCESSIBLE TRAMPOLINE
16. FENCE
17. SHELTER

SCALE 1.150 A3

0 1.5 3 4.5



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ILC SECURE OUTDOOR LEARNING AREA

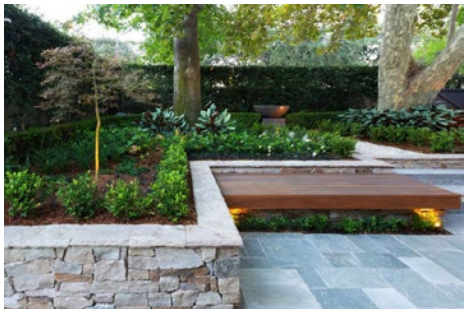
MATERIALS AND PRECEDENTS









MATERIAL PALETTE

CAFE ROUND TABLE AND STOOLS



MALL CURVED SLIM BENCH



WATER FOUNTAINS



NOTE: INDICATIVE COLOURS ONLY

MATERIAL PALETTE

BINS

BIKE HOOPS

BIKE CAGE

NOTE: INDICATIVE COLOURS ONLY

MATERIAL PALETTE

SHELTER
LANDMARK SKILLION SHELTER



WIND BREAKS



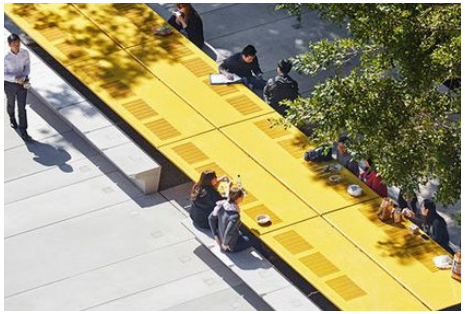
NOTE: INDICATIVE COLOURS ONLY

ASPECT Studios™

MATERIAL PALETTE

CUSTOM ELEMENTS

CUSTOM ELEMENTS
LONG SHARING TABLE

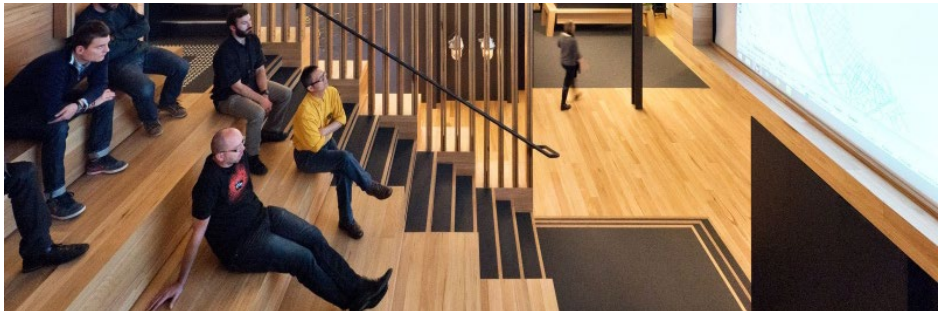




INTERNAL
HIGH CAFE TABLES



INTERNAL
TIERED TIMBER SEATS





NOTE: INDICATIVE COLOURS ONLY

MATERIAL PALETTE

CUSTOM ELEMENTS

SEATING STONE WALLS



YARNING CIRCLES BOULDERS AND FIRE PIT



EXTERIOR AMPHITHEATRE



NOTE: INDICATIVE COLOURS ONLY

MATERIAL PALETTE

PAVING

LEGEND

1. KANMANTOO STACK BOND SLATE (SOUTH AUSTRALIAN PRODUCT)
2. KANMANTOO CRAZY PAVE SLATE (SOUTH AUSTRALIAN PRODUCT)
3. HANSON IMAGECRETE FLINDERS STANDARD GREY
4. HANSON IMAGECRETE PENFIELD MOONSCAPE
5. HANSON IMAGECRETE FLINDERS

PLANTING

INDICATIVE PLANTING PALETTE

- FLINDERS RANGES PALETTE
- EREMOPHILA PALETTE
- ARID PALETTE
- AUSTRALIAN BUSH TUCKER GARDENS
- INDOOR PLANTING PALETTE
- SWALE
- TREES IN TURF
- RETAINED NATIVE VEGETATION
- CARPARK PALETTE

The following pages show indicative plant species of the proposed groups above. This palette will be expanded and refined through design development.

NATIVE VEGETATION ACT COMPLIANCE
Much of the existing vegetation on the site is Saltbush scrub and subject to the Native Vegetation Act 1991, in terms of its removal and or management.

As a result it is a requirement that an application for removal be submitted. Subject to further negotiation with Council regarding available land, it is possible that a significant environmental benefit (SEB) offset can be pursued. This process will need to be managed via an accredited Environmental Consultant (Environmental Planner) and may involve other organisations to ensure the appropriate SEB sites can be established and maintained.

PLAN: NOT TO SCALE

PLAN: NOT TO SCALE

ASPECT Studios™

PLANTING

FLINDERS RANGES GARDENS (INDICATIVE PALETTE)

TREES
Eucalyptus dumosa **White mallee**
Eucalyptus gillii **Silver mallee**
Casuarina pauper **Black Oak**

SHRUBS
Acacia victoriae
Callistemon teretifolius **Flinders Ranges Bottlebrush**
Eremophila scoparia **Silver emubush**

GROUND COVERS/SMALL SHRUBS
Eremophila glabra 'Kalbarri Carpet' **Tar bush**
Petalostylis labicheoides **Butterfly bush**
Ptilotus obovatus **Silvertails**









ASPECT Studios™

PLANTING

EREMOPHILA GARDENS (INDICATIVE PALETTE)

Eremophila glabra
Eremophila nivea
Eremophila maculata

ARID GARDENS (INDICATIVE PALETTE)

Hakea francisiana **Emu Tree**
Pycnosorus globosus **Billy Buttons**
Xanthorrhoea quadrangulata **Grass Tree**

BUSH TUCKER GARDENS (INDICATIVE PALETTE)

Kunzia pomifera **Native cranberries**
Rhagodia spinscens **Creeping Salt Bush**
Santalum acuminatum **Desert quandong**







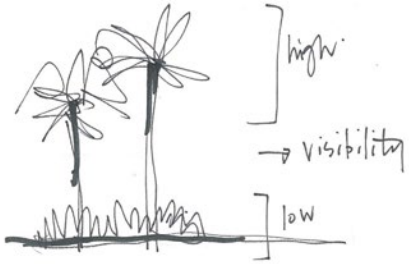


ASPECT Studios™

PLANTING

INDOOR GARDENS (INDICATIVE PALETTE)

Livistona sp.
Agave atttenuata
Ficus elastica **Rubber plant**
Philodentron 'Xanadu'
Rhapis excelsa **Rhapis Palm**
Zamioculus zalmiofolia **Zanzibar Gem**








DOLA GARDENS (INDICATIVE PALETTE)

Cycas revoluta Sago palm
Kniphofia **Red hot poker**
Sansevieria trifasciata 'Laurentii'



DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

COUNCIL: Whyalla Council

APPLICANT: Department for Education

Postal Address: 31 Flinders Street, Adelaide SA 5000

Owner: The Crown and The Minister of Education and Children's Services

Postal Address: _____

BUILDER: TBC

Postal Address: _____

_____ Licence No: _____

CONTACT PERSON FOR FURTHER INFORMATION

Name: Deb O'Riley (DfE)

Email: Deb.ORiley@sa.gov.au [work] _____ [Ah]

Fax: _____ [work] _____ [Ah]

EXISTING USE: Primarily vacant with small pre-school and associated car parking fronting Nicholson Avenue

FOR OFFICE USE

Development No:_____

Previous Development No:_____

Assessment No:_____

❒ Complying	Application forwarded to DA
❒ Non Complying	Commission/Council on
❒ Notification Cat 2	/ /
❒ Notification Cat 3	Decision: _____
❒ Referrals/Concurrences	Type: _____
❒ DA Commission	Date: / /

	Decision required	Fees	Receipt No	Date
Planning:	_____	_____	_____	_____
Building:	_____	_____	_____	_____
Land Division:	_____	_____	_____	_____
Additional:	_____	_____	_____	_____
Development Approval				

DESCRIPTION OF PROPOSED DEVELOPMENT: Multi-storey educational establishment

LOCATION OF PROPOSED DEVELOPMENT: 109-115 Nicolson Avenue, Whyalla Norrie, SA

House No: _____ Lot No: ____ Street: _____ Town/Suburb: _____

Section No [full/part] _____ Hundred: See Page i DA Report Volume: _____ Folio: _____

Section No [full/part] _____ Hundred: _____ Volume: _____ Folio: _____

LAND DIVISION:

Site Area [m^2] _____ Reserve Area [m^2] _____ No of existing allotments _____

Number of additional allotments [excluding road and reserve]: _____ Lease: **YES** ❒ **NO** ❒

BUILDING RULES CLASSIFICATION SOUGHT: _____ Present classification: _____

If Class 5,6,78 or 9 classification is sought, state the proposed number of employees: Male: _____ Female: _____

If Class 9a classification is sought, state the number o persons for whom accommodation is provided: _____

If Class 9b classification is sought, state the proposed number of occupants of the various spaces at the premises: _____

DOES EITHER SCHEDULE 21 OR 22 OF THE DEVELOPMENT REGULATIONS 2008 APPLY? **YES** ❒ **NO** ❒

HAS THE CONSTRUCTION INDUSTRY TRAINING FUND ACT 2008 LEVY BEEN PAID? **YES** ❒ **NO** ❒

DEVELOPMENT COST [do not include any fit-out costs]: $ 100M_____

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Development Regulations 2008.

SIGNATURE: _____ Dated: 20/11/19

Tom Hateley

DEVELOPMENT REGULATIONS 2008
Form of Declaration (Schedule 5 clause 2A)

Government of South Australia

To: DPTI

From: Department for Education

Date of Application: 20 / 11 / 19

Location of Proposed Development: 109-115 Nicholson Ave, Whyalla Norrie

The subject site is located at 109-115 Nicolson Avenue, Whyalla Norrie and is formally identified on:

- Crown Record Volume 5988, Folio 172 as Allotment 1 of Deposited Plan 44349; and
- Certificate of Title Volume 5509 Folio 439 as Allotment 6644 of Township Plan 560501.

Volume: _____ Folio: _____

Nature of Proposed Development: demolition of existing pre-school and construction of a mulit-storey educational establishment

I Tom Hateley **a person acting on behalf of the applicant for the development described above declare that the proposed development will in volve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of section 86 of the Electricity Act 1996. I make this declaration under clause 2A(1) of Schedule 5 of the Development Regulations 2008.**

Signed: _____ **Date:** 20 / 11 / 19

Government of South Australia

Note 1

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in section 4(1) of the Development Act 1993), other than where the development is limited to –

a) an internal alteration of a building; or
b) an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2

The requirements of section 86 of the Electricity Act 1996 do not apply in relation to:

a) an aerial line and a fence, sign or notice that is less than 2.0 m in height and is not designed for a person to stand on; or
b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3

Section 86 of the Electricity Act 1996 refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4

The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually also comply.

Particular care needs to be taken where high voltage powerlines exist; or where the development:

- is on a major road;
- commercial/industrial in nature; or
- built to the property boundary.

Note 5

An information brochure: 'Building Safely Near Powerlines' has been prepared by the Technical Regulator to assist applicants and other interested persons.

This brochure is available from council and the Office of the Technical Regulator. The brochure and other relevant information can also be found at **sa.gov.au/energy/powerlinesafety**

Note 6

In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.

Cox Architecture Pty Ltd
20-Nov-2019

Development Assessment Report

New Whyalla Secondary School

20-Nov-2019
Prepared for – Cox Architecture Pty Ltd – ABN: 95002535891

Development Assessment Report

New Whyalla Secondary School

Client: Cox Architecture Pty Ltd

ABN: 95002535891

Prepared by

AECOM Australia Pty Ltd
Level 28, 91 King William Street, Adelaide SA 5000, Australia
T +61 8 7223 5400 F +61 8 7223 5499 www.aecom.com
ABN 20 093 846 925

20-Nov-2019

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Development Assessment Report
Ref	\\auadl1fp001\aecom_projects\606x\60606510 - whyalla high school\500_deliv\501_da report\final whyalla secondary school development assessment report 201119.docx
Date	20-Nov-2019
Prepared by	Tom Hateley and Hannah Kennedy
Reviewed by	Brenton Burman

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	20-Nov-2019	For Lodgement	Tom Hateley Senior Planner	

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Executive Summary

Table 1 Executive Summary

Planning Matter	Details
Project	Whyalla Secondary School
Architect	Cox Architects and Tomson Rossi Architects
Site	109-115 Nicolson Avenue, Whyalla Norrie
Certificate of Title	• Crown Record Volume 5988, Folio 172 as Allotment 1 of Deposited Plan 44349; and • Certificate of Title Volume 5509 Folio 439 as Allotment 6644 of Township Plan 560501.
Existing Use	Predominantly vacant with small scale pre-school near Nicolson Avenue
Local Government	Whyalla Council
Relevant Authority	Minister for Planning
Development Plan	Whyalla Council Development Plan (consolidated 14 June 2017)
Zone	Community Zone and Residential Zone
Policy Area	N/A
Precinct	N/A
Proposal Description	Demolition of existing pre-school and construction of a multi-storey educational establishment
Assessment Pathway	Section 49 of the *Development Act 1993*–Crown Development and Public Infrastructure
Applicant	Department for Education
Contact Person	Tom Hateley, Senior Planner, AECOM (08) 7223 5437

1.0 Introduction

This planning statement has been prepared in relation to a development application by Cox Architects and Thomson Rossi Architects to develop a new Public Secondary School at Whyalla.

Developed from an extensive base of stakeholder engagement, unique regional sensitivities and striking Architecture and Interiors incorporating the latest thinking in future-focussed learning spaces, the new school will establish a high benchmark in regional education that is both Whyalla focussed and globally connected.

The new secondary school is proposed to be centrally located between the existing UniSA and TAFE SA facilities fronting Nicolson Avenue, Whyalla. The educational hub will benefit from potentially shared use facilities and will provide a continuum of educational opportunities for Whyalla secondary school students.

As a significant asset for the town, all students, parents, visitors and staff approaching from Nicolson Avenue will be met with an exciting building that incorporates dynamic architectural forms that are both welcoming through their transparency and memorable through their expression as the whole school entity creates a new landmark for Whyalla.

The School will cater for up to 1500 students from years 7 to 12, within a contemporary and inclusive learning environment commensurate with modern pedagogy practices. The proposed school seeks to provide a flexible facility that can adapt to the changing needs and evolution of the community. The diverse needs of all students will be accommodated, including tailored learning environments for indigenous students and young parents.

The proposed development will provide a consolidated, state of the art educational facility in Whyalla and will result in the subsequent closure of Edward John Wyre High School (Years 11 to 12), Stuart High School (Years 8 to 10) and Whyalla High School (Years 8 to 10) as well as the incorporation of Year 7 in the Secondary School.

This planning statement provides information about the proposed development and outlines the merits of the proposal against the relevant provisions of the Community Zone, Residential Zone and General Section of the Whyalla Council Development Plan (consolidated 14 June 2017).

This Planning Statement has been prepared on the basis of the following supporting documents that are appended to this report:

- Certificate of Title and Crown Record – Appendix A
- Architectural plans prepared by Cox and Thomson Rossi – Appendix B
- Traffic and parking report prepared by CIRQA – Appendix C
- Acoustic design report prepared by Resonate – Appendix D
- Preliminary Environmental and Engineering Site Investigation PEESI Report prepared by Golder – Appendix E
- Flooding assessment report prepared by Tonkin – Appendix F
- Landscaping documentation prepared by ASPECT Studios – Appendix G

2.0 Project Background

2.1 Project Vision

The proposed New Whyalla High School seeks to make excellent use of underutilised land and is situated in an established education precinct in the heart of Whyalla, allowing for the consolidation of three existing schools into one state-of-the-art learning and community facility.

The New Whyalla Secondary School will set a new benchmark in the physical form, design and function of a contemporary regional school, as well as the quality and range of the learning experiences and opportunities that it generates for students. In particular, the school will be an active platform to develop and showcase advances in teaching and learning in all disciplines, with a strong indoor and outdoor learning relationship.

The school's operation will be complimented by the development of co-operative relationships with adjacent key educational facilities including TAFE and the University of South Australia and Middleback Theatre to enrich the possibilities available to teachers and students whilst, in turn, the school's facilities and prized location will be accessible to the wider community. In this way the school will serve as a valuable asset contributing actively to this critical education precinct for the City of Whyalla.

2.2 Project Objective

The project aims to provide one of the most innovative regional learning environments in the world.

The New Whyalla Secondary School must reflect a series of Educational Aspirations and Design Vision, including aspirations from the *"Characteristics of SA Public Schools reflecting The Department for Education's principles"*. Two opening aspirations to be met by "the project" include the objectives that:

- All children and young people learn in inclusive and positive climates; and
- Inclusive design means providing the environment that promotes and enables inclusion.

Spaces within "the project" shall be planned so collaboration between teachers with different expertise can provide greater support for all students in the school. The opportunities that arise from integration have an enriching effect for all students, staff and the wider community.

2.3 Pedagogy Model

The New Whyalla Secondary School will embody the latest evolution of the Department for Education (Education) Pedagogy model to produce the next generation of contemporary learning in South Australia. In this regard, the project will deliver the very latest thinking in innovative learning environments (ILE) for South Australian Public Secondary school education, in addition to setting a new international benchmark for a regional school within a rural city. Key parameters referenced within the design include the following Education frameworks:

2.3.1 Pedagogy – SA Approach to Learning and Teaching:

A 'one size fits all' approach does not work, and responsive educators acknowledge diversity and foster relationships that respond to each individual child and family. From the educator's perspective, the design will continue to elicit the following aims:

- Wellbeing is essential for involvement
- Involvement is essential for deep level learning
- Wellbeing comes from relationships
- Involvement is increased through an active learning environment
- An active learning environment strengthens relationships

Learning and teaching in the junior secondary and senior secondary years: From the Education reference to its Teaching for Effective Learning (TfEL) Framework, particular attention is drawn to Domains 2-4 for effective learning, which will be a reference benchmark for the design of “the project”:

- Domain 2 – Create safe conditions for rigorous learning
- Domain 3 – Develop expert students
- Domain 4 – Personalise and connect learning

The Australian Curriculum: “The Project” will continue to reference the national Australian Curriculum. In particular, the three-dimensional design of the Year 7-10 Australian Curriculum recognises the importance of disciplinary knowledge, skills and understanding alongside general capabilities and cross-curriculum priorities.

Specifically, for South Australia, in Years 11 and 12, SACE is a 2 year internationally respected senior secondary education qualification that equips students with the knowledge, skills and capabilities they need to progress to further learning and work as confident and responsible global citizens. Spaces within “the project” will be agile enough i.e. re-configurable, to adapt to evolving programs within SACE. Vocational education and training (VET): “The project” will provide spaces that enable students to acquire skills and knowledge for work through a nationally recognised industry-developed training package or accredited course. In addition, and of particular importance to the City of Whyalla, Australian School Based Apprenticeships (ASBAs) are a flexible study option allowing students to start working on an apprenticeship or traineeship from year 10 providing students with a head start on a qualification and fast-tracking progress towards a rewarding career.

2.4 Design Principles

The physical setting is integral to the learning process. The physical setting of the proposed Whyalla Secondary School seeks to encapsulate the themes of Community, Identity and Belonging.

The New Whyalla Secondary School’s educational program is intentionally designed to draw on the rich array of natural settings and municipal facilities in close physical proximity to the school (namely UniSA, TAFE and the Middleback Theatre as a starting point), fosters the school as a community of students and is infused with the agility afforded by mobile, digital technology in a seamless ‘blended learning’ environment.

In the process of amalgamating the three existing schools for this project, the following design principles apply:

- Integrate the history and traditions of the existing high schools
- Promote connections and collaborations with UniSA and TAFE SA
- Promote integration with the community
- Create a sense of identity and a strong sense of belonging
- Develop exemplary practice Environmentally Sustainable Design
- Integrate buildings with the natural environment by providing activated outdoor learning spaces,
- relaxation spaces and social spaces
- Respect the diversity and cultural backgrounds of all students
- Develop cutting edge innovation and integration of the latest and emerging technologies
- Provide a safe and secure environment

2.5 Pre-lodgement consultation

As part of the design process, the project team have undertaken extensive consultation with key stakeholders, as summarised below:

2.5.1 Summary of consultation with Council, Government Agencies, Schools, Community & Aboriginal Groups)

A local high-level reference group was established between the three Principals of the existing High Schools in Whyalla and Education representatives. In order to establish wide ranging rapport, representations by the design team were also made with each of the three school Governing Councils, school staff and invited students.

To generate meaningful engagement, specialist consultants were appointed to elicit feedback and desires from Primary and Secondary students and staff across the three High Schools and selected Primary Schools. In addition, a nationally recognised specialist was retained to undertake workshops with the Barngarla indigenous community in the Whyalla region.

A series of workshops were programmed during the concept phase to encourage feedback on design principles. Post concept presentations with these stakeholder groups have continued to elaborate on the resolved concept and detailed presentation material. Additional presentations were also prepared for representatives of UniSA and TAFE Whyalla.

In terms of statutory and advisory bodies, the design team undertook three separate design reviews with ODASA, in addition to several presentations to both the City of Whyalla corporate staff and elected members of Council. Representations to all the above groups will continue during the finalisation of detailed design.

2.5.2 Summary of feedback from stakeholders on key design considerations (i.e. Stormwater and parking arrangement)

Support from stakeholders associated with the three existing High Schools, including leadership staff, student representatives and Governing Council members has been overwhelmingly positive, with some minor points for further review.

Initial workshops with the Barngarla community have been positive and welcoming, with feedback on their vision points leading to further on-going sessions to continue the dialogue of shared culture. All three ODASA design reviews produced positive design reports with recommendations that were incorporated during design development.

Extensive technical liaison with City of Whyalla Council staff has occurred in order to address planning issues related to flooding events and traffic management. Resolutions have been approved in principle to both the management of potential flooding events within the city centre and the provision of on-site vehicular drop-off during school hours.

Consultation with Council continues on possibilities related to the use of school facilities for community purposes after hours. The detailed design was also presented to a preliminary SCAP panel hearing, with positive feedback received as a lead up to formalise the development application and preparation of this assessment report.

3.0 Subject Site

The subject site is located at 109-115 Nicolson Avenue, Whyalla Norrie and is formally identified on:

- Crown Record Volume 5988, Folio 172 as Allotment 1 of Deposited Plan 44349; and
- Certificate of Title Volume 5509 Folio 439 as Allotment 6644 of Township Plan 560501.

A copy of the Crown Record and Certificate of Title is attached to this report in Appendix A.

The proposed development site incorporates a portion of CR 5988/172 and the whole of CT 5509/439, resulting in a largely regular shaped allotment comprised of approximately 10.5ha in area.

The site is bound by Nicolson Avenue to the north, Russell Street to the south, the University of South Australia Whyalla campus to the east and TAFE SA Whyalla campus to the west. The site enjoys a frontage of approximately 177m to Nicolson Avenue and approximately 205m to Russell Street.

The site is generally flat with a slight fall from north to south and is covered in dense low-level vegetation. The vegetation is native to the land and subject to the *Native Vegetation Act 1991* as a result, however is not 'regulated' under the *Development Act 1993*. A sealed walking trail traverses the site from east-west and forms part of a larger continuous trail (Centenary Trailway).

The subject site is split across two zones. The northern half of the site is located within the Community Zone and the southern half of the site is located within the Residential Zone of the Whyalla Council Development Plan (consolidated 14 June 2017).

A family day care (pre-school) building is located in the north-east corner of the site (on Allotment 6644) with associated car parking facilities. The building is setback approximately 30m from Nicolson Avenue and is proposed to be demolished to accommodate the proposed secondary school.

There are two easements on the site, for the purpose of stormwater. The easements enable stormwater from the pre-school site to be directed to the western boundary of the proposed high school site and ultimately directed to Russell Street. It is anticipated that the easement from the pre-school site will be extinguished, noting the pre-school will be demolished to facilitate the proposed development.

3.1 Native Title

Golder (contracted by DPTI) have advised that following investigations, there are no registered Aboriginal heritage sites within the project site.

DPTI has sought advice from Crown Solicitors Office for any Native Title issues and they have advised that native title has been determined as extinguished over the land proposed for the new school at Whyalla, being Allotment 1 in Deposited Plan 44349 Hundred of Randell, contained in Crown Record 5988 Folio 172.

This parcel is within the area covered by the Barngarla Native Title Determination (Croft on behalf of the Barngarla Native Title Claim Group v State of South Australia (No 2) [2016] FCA 724 and Croft on behalf of the Barngarla Native Title Claim Group v State of South Australia (No 3) [2018] FCA 552). That determination, which took effect earlier this year, confirms that native title has been extinguished over the above allotment.

3.2 Land Tenure

The proposed development is to be sited over two parcels of land: Allotment 1 is Crown Land, with the Custodian being the University of South Australia; and with the Minister for Education and Children's Services the Registered Proprietor of Allotment 6644.

The Department for Education is currently in negotiations to ensure the land tenure arrangements are suitable for the proposed development.

4.0 Locality

The locality comprises a mix of land uses and built form. Educational establishments are a key feature of the locality (see Figure 1), including the adjoining UniSA and TAFE SA campuses located to the east and west of the site respectively. The Nicolson Avenue primary school and Whyalla Special Education Centre are located adjacent the UniSA campus, across Russel Street and the Edward John Eyre High school is located adjacent the TAFE campus, across Nicolson Avenue.

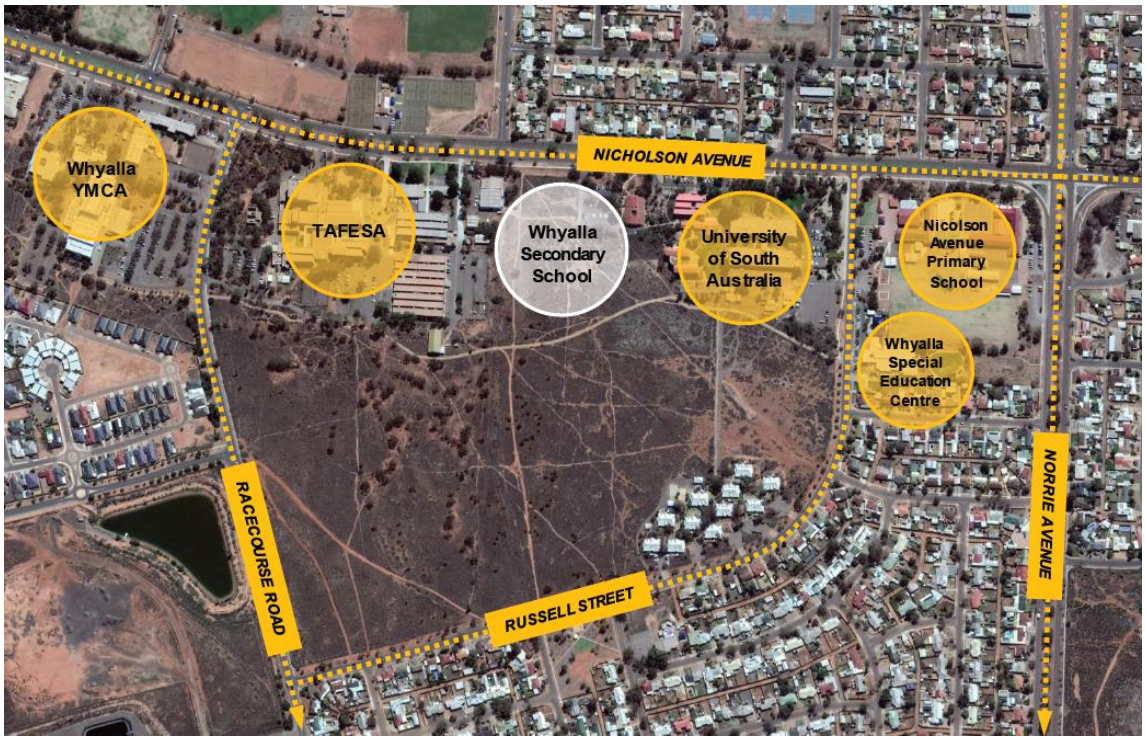
The adjoining educational establishments are generally comprised of single and double storey buildings with varied architectural styles and setbacks from Nicolson Avenue. Buildings of a larger scale such as the Middleback Theatre, a multi-storey building located on the TAFE SA campus, are located near the corner of Nicolson Avenue and Racecourse Road. To the west of Racecourse Road is an indoor recreational facility and Baptist Church within the District Centre Zone.

To north of the subject site, on the opposite side of Nicholson Avenue are a number of single storey detached dwellings and ancillary structures on Torrens title allotments, forming part of a rectilinear pattern of division. To the south of the subject site, on the opposite site of Russell Street is a small local park (Shambrook Park) and a pre-school (Win Newby Kindergarten) that provides a buffer between the subject site and the single storey detached dwellings to the south. To the south-east of the site are single storey student accommodation units associated with the UniSA campus.

The site is well connected to the wider locality via roads, sealed footpaths and walking paths. Nicolson Avenue is a collector road comprising two-lanes and a marked parking lane in each direction, separated by a wide raised medium strip. There is a shared walking and cycling path on the southern side of Nicolson Avenue and a sealed footpath on the northern side of the road. Russell Street is a local road with one traffic lane in each direction. Both Russell Street and Nicolson Avenue are under the care and control of the Whyalla Council.

The sealed walking trail that traverses the site (Centenary Trail) provides pedestrian access from Norrie Avenue to the east through to Westland Shopping Centre to the west.

Figure 1: Education Precinct



5.0 Proposed Development

5.1 School Buildings and Structures

The school will comprise a number of functional spaces including general learning areas, specialist and inclusive learning areas, outdoor learning areas, administration/staff areas, library, gymnasium, theatre, outdoor communal and recreation areas, and outdoor sports fields and facilities.

5.1.1 Internal Arrangement of Spaces

There are five main structures (Figure 2) that comprise the new Secondary School including:

- A performing arts building housing a 250 seat theatre fronting Nicolson Avenue;
- An admin/library and inclusive learning facilities fronting Nicolson Avenue;
- Two learning precincts separated by a community courtyard located to the rear of the performing arts building and library;
- Linkway on levels 1 and 2 connecting the internal spaces; and
- A gymnasium located to the south of the learning precincts.

The total Gross Leasable Floor Area of the school building will be 15,827m^2 with the ground floor occupying approximately 6,814m^2, which represents 6.4% of the total site area. A breakdown of the floor areas for the various space is provided in table 2 below

The main entrance to the school will be located on Nicolson Avenue, with the sports fields accessible primarily from the south via Russell Street. The complex of buildings incorporates many outdoor elements, featuring a covered communal courtyard joining the two learning precincts. In this courtyard is found the central staircase with various seating areas and provides the main access point from Nicolson Avenue. This entrance serves as the main focal point from the street, containing landscaping, a sunken amphitheatre, and drop-off points.

Table 2 Floor Area Breakdown

Internal Space	Ground m^2	Level 1 m^2	Level 2 m^2	Total m^2
Performing Arts	793	773		1,566
Admin/library	941	1093		2034
Learning Precinct (west)	1524	1619	1619	4762
Learning Precinct (east)	1522	1547	1622	4691
Link Bridge		317	140	457
Gym	2034	283*		2317
Total	**6814**	**5632**	**3381**	**15,827**

*Mezzanine level

Figure 2 Site plan - five main structures

5.2 Design and Appearance

The New Whyalla Secondary School has a contemporary appearance and functional design space. Conceived as a multi-storey solution of up to four levels, a compact arrangement of learning communities is achieved with extensive horizontal and vertical physical and visual connectivity between spaces.

Central to this concept is the establishment of a covered central community courtyard, a central ‘heart’ for the new school community, as shown in Figure 3. Everything feeds into this heart, including all learning spaces and entry trails from the adjoining UniSA and TAFE facilities. As a holistic proposal, the design of the school avoids the idea of a front and back; rather, it is a learning community viewed and connected to a 360 degree environment.

Figure 3 Central Courtyard

The compact built form and use of vertical space allows all learning precincts to connect via the central common courtyard, in addition to the Performing Arts and Administration/Staff/Student Services/Library/Inclusive Learning pods. The dynamic form of the Performing Arts building includes an intriguing yet subtle frontage to Nicolson Avenue (Figure 4).

The multi-level, three-storey learning precincts across the two pods incorporate innovative, highly transparent and flexible learning spaces with a wide range of both intimate and shared spaces. Reflecting the importance of outdoor connections, generous central elevated outdoor courtyards provide internal spaces with immediate access to external outdoor learning opportunities and the complimentary views to the distant landscape from these high vantage points.

Figure 4 Performing Arts building

5.3 Transport, Vehicle Access and Parking

The Traffic and Parking report prepared by CIRQA outlines the traffic and parking elements of the proposed development, which includes the following key components:

- Access to the school is via three access points from Nicolson Avenue, two adjacent the north-eastern and one adjacent the north-western corner of the site, and a single access point via Russell Street from the south.
- A quick drop off area ("kiss-and-drop") is provided along the site's frontage at the main entrance to the school accessed from Nicolson Avenue. Drop-off is a relatively quick and easy manoeuvre, particularly for high school students, as students are able to quickly disembark and walk to class;
- Parking is provided at three locations on the site to provide a total of 192 spaces:
    - Staff car parking along the western boundary of the site from the entrance to the Centenary Trailway, with direct access to the school
    - A smaller inclusive drop off and parking area on the north-east corner of the site with direct access to the school, and
    - Staff and community parking at the south of the site (accessed from Russell Street) next to the oval
- Bicycle parking is located at various locations within the site to a proposed total of 250 spaces;
- A service and delivery area in the north-western car park designed to accommodate 12.5 m long Heavy Rigid Vehicles; and
- Up to 29-seater buses will be able to access the site using the inclusive drop off area at the north-eastern location of the site.

5.4 Landscaping

The landscaping and outdoor learning areas associated with the proposed school have been designed around the principles of drought-tolerant and local species, and shading and screening benefits to the buildings. Strong reference to local vegetation types will be incorporated into the design using native vegetation wherever possible, incorporating trees, shrubs, and ground cover. The landscaping of the subject site will enhance the appearance and aesthetics of the school facility and will complement the regional setting and natural attributes of the locality.

The indicative planting palettes outlined within the Aspect Studios Landscaping Design Development documents (Appendix G) includes a range of planting palettes including a Flinders Ranges palette, eremophila palette, arid palette, Australian bush tucker gardens, indoor planning palette, swale palette, trees in turf, retained native vegetation and car park palette.

The indicative plants include a mix of trees, shrubs and ground covers strategically co-located to maintain visibility and clear lines of slight across the school. The indicative species include (part not limited to) the following:

- Trees
  - *Eucalyptus Dumosa,* White Mallee
  - *Eucalyptus gillii,* Silver Mallee
  - *Casuarina pauper,* Black Oak
  - *Hakea francisiana,* Emu Tree
  - *Xanthorrhoea quadrangulate,* Grass Tree
  - Santalum acuminatum Desert quandong
- Shrubs
  - *Acacia victoriae,* Bardi Bush
  - *Callistemon teretifolius,* Flinders Ranges Bottlebrush
  - *Eremophila scoparia,* Silver Emubush
- Ground Covers / Small Shrubs
  - *Eremophila glabra* 'Kalbarri Carpet', Tar bush
  - *Petalostylis labicheoides,* Butterfly bush
  - *Ptilotus obovatus,* Silvertails
  - *Kunzia pomifera,* Native cranberries

Feature elements are proposed such as an entry landscape (welcome to land) in the middle of the primary frontage facing Nicolson Avenue, and outdoor gathering areas (yarning circles) that encourage respectful and honest interactions between students. Other feature elements include stone wall seating, exterior amphitheatre seating, outdoor long sharing tables and high café style tables and chairs.

The proposed landscaping plan incorporates natural materials and textural elements such as five different types of paving, with a focus on South Australia products (Kanmantoo Stack bond and pave slate) that contribute to a varied and intriguing environment.

An artist impression of the proposed, high quality, contemporary and contextual landscaping design is provided in Figure 5.

Figure 5 Landscaping design (artist impression)

With the exception of a fence near the inclusive learning centre (ILC) secure outdoor learning area, no fencing is proposed as part of the development, to allow permeability between the New Whyalla High School and surrounding land uses and promote integration between the complementary educational facilities within the locality.

5.5 Vegetation Removal

The subject site does not include any Regulated or Significant trees under the Development Act, noting the tree provisions do not apply to Whyalla Council area.

However, the proposed development will require the removal of Native Vegetation under the Native *Vegetation Act 1991*. A Native Vegetation Clearance application for the project is proposed to be lodged shortly.

5.6 Waste Management

The waste storage area is located near the western boundary and of the site, between the car park and the theatre storage area. The waste area is strategically located near the food tech, design tech and theatre kitchen areas, whilst also sited near the western car park for convenient service vehicle access and egress.

The waste storage area is setback behind the primary building façade, will be secured and screened from public view.

6.0 Procedural Matters

6.1 Nature of Development

The proposed development is for a secondary school ('educational establishment'). An educational establishment is defined in Schedule 1 of the *Development Regulations 2008* as:

Educational establishment means - a secondary school, college, university or technical institute, and includes an associated pre-school or institution for the care and maintenance of children.

The proposed development is therefore described as: demolition of existing pre-school and construction of a multi-storey educational establishment.

6.2 Assessment Pathway

The proposed development of a public school is a form of public infrastructure under Section 49 of the Development Act:

public infrastructure means—

…

(d) schools, hospitals and prisons;

…

The proposed development will also be undertaken by the Department for Education with assistance from the Department of Planning Transport and Infrastructure and is therefore a form of Crown Development. The Minister for Planning is the relevant authority for the assessment of such applications, taking advice from the State Commission Assessment Panel (SCAP)

Given the above, the State Agency that is proposing to provide public infrastructure (DoE via DPTI), is required to lodge a development application with the SCAP pursuant to Section 49(2) of the Development Act.

The SCAP will give notice to the Whyalla Council of the development application who will be given two months to consider the proposed development and provide a subsequent report to assist the SCAP. It is considered that no other statutory referrals are required to Government agencies pursuant to Schedule 8 of the *Development Regulations 2008.*

6.3 Public Notification

Section 49 (7)(d) of the Development Act requires developments over $4 million to be publicly advertised and to invite written submissions to the proposal for a period of 15 business days. Further, representors are given an opportunity to be heard by the SCAP in support of their submission. The SCAP will then prepare a report for the Minister that includes any comments or concerns from the Whyalla Council and representors (if applicable).

7.0 Development Plan Assessment

The proposed Whyalla Secondary School is assessed against the current Whyalla Council Development Plan (consolidated 14 June 2017). The subject site is located across both a 'Community Zone' and a 'Residential Zone' and is not located within a Policy Area or Precinct.

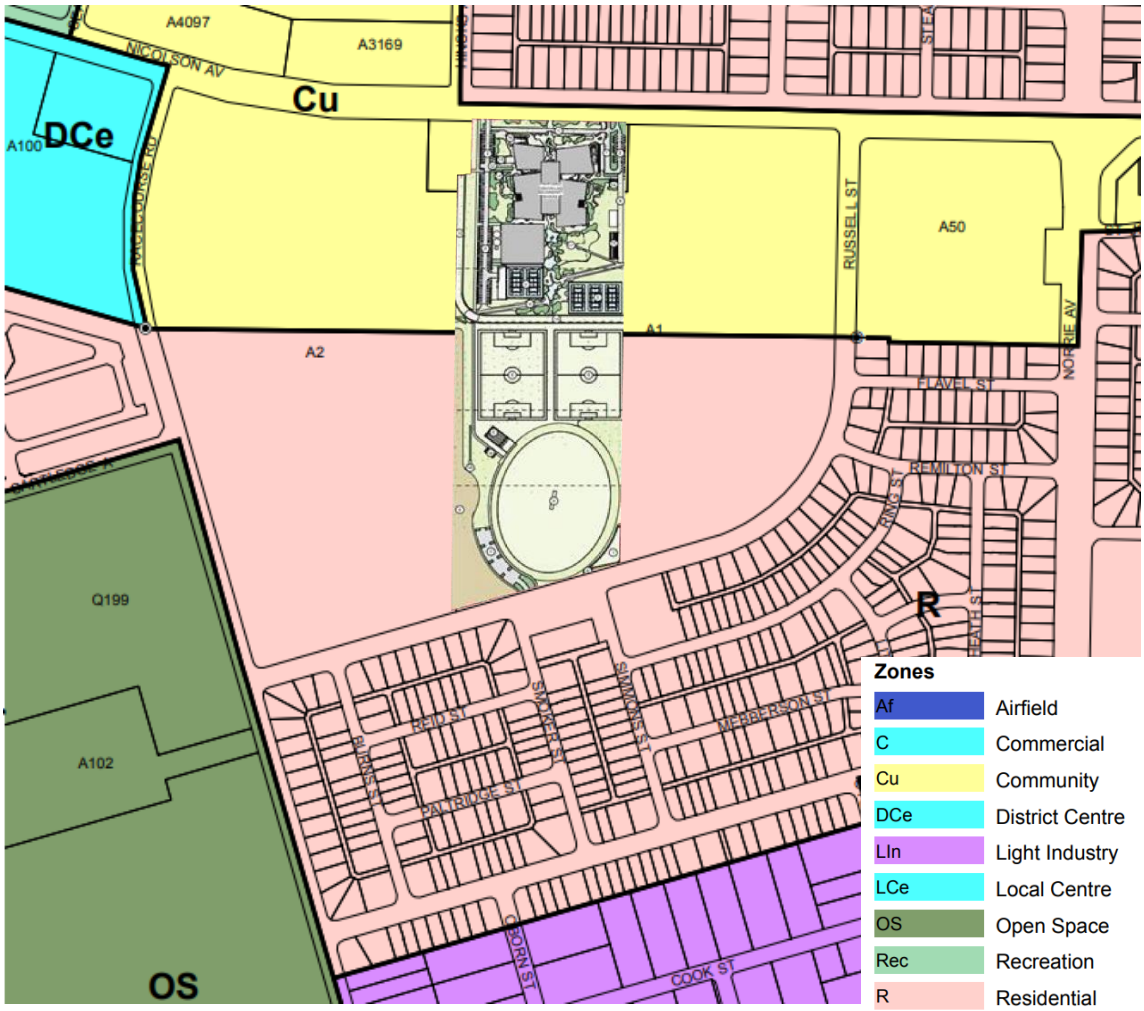
The following assessment is grouped under a series of headings to reflect the key relevant planning 'themes' from the Development Plan and provides an assessment of the proposal against the relevant Development Plan Objectives (OBJ) and Principles of Development Control (PDC).

Whilst all the relevant provisions of the Development Plan have been considered in undertaking a thorough planning assessment of the merits of the proposal, only those provisions considered most pertinent to the assessment have been discussed below.

7.1 Land Use

The site of the proposed development is located within the Community Zone (northern portion of the site) and the Residential Zone (southern portion of the allotment) as displayed in Figure 6)

Figure 6 Zoning map – extract from Zone Map Wh/20 of the Whyalla Council Development Plan (consolidated 14 June 2017) – with proposed development overlayed



Community Zone

The proposed public secondary school land use strongly aligns with OBJ 1 of the Community Zone that seeks to accommodate educational facilities for the general public's benefit. An educational establishment land use is also specifically listed as an envisaged form of development within the Community Zone which highlights the clear alignment between the proposed land use and the guiding objectives and principles of the Community Zone.

OBJ 1*: A zone accommodating community, educational, recreational and health care facilities for the general public's benefit.*

PDC 1*: The following kinds of development are appropriate within the zone:*

- *Educational establishment*

Further, OBJ 2 of the Community Zone seeks to achieve "*development that is integrated in function and provides a coordinated base to promote efficient service delivery".* The proposed development is co-located near a number of highly complementary land uses including the services offered at the adjoining UniSA and TAFE campus as well as the nearby primary school, pre-school and special education centre that are all within walking distance of the proposed Whyalla Secondary School, reaffirming the suitability of the proposed land use given the context of the locality.

The Community Zone contains minimal guiding provisions, only five, which elevates the importance of the provisions. The three relevant provisions are discussed above, and the alignment between the zone provisions and the proposed development is clear, confirming the Whyalla Secondary School is a desired development outcome within the Community Zone from a land use perspective.

Residential Zone

The built form of the proposed secondary school fronts Nicolson Avenue, in the Community Zone and the associated sporting facilities such as the oval, hockey and soccer pitches and ancillary bike racks and car parking are located in the Residential Zone.

The Desired Character of the Residential Zone generally speaks towards residential development, as expected. Notwithstanding, PDC 1 of the zone does list secondary schools as a desired, non-residential land use:

PDC 1: *The following forms of development are envisaged in the zone:*

- *Small scale non-residential uses that serve the local community, for example*
  - child care facility
  - health and welfare service
  - open space
  - primary and secondary school
  - recreation area
  - shops, offices or consulting room

The term *'small scale'* non-residential development is a common term within the Residential Zone of several Development Plans across the State. There is no associated quantitative guidance given that indicated the appropriate floor area or otherwise to assist in determining what constitutes a 'small scale' development. The fact that a secondary school is explicitly listed as an example of a land use that can be considered 'small-scale' is some respects, reinforces the likely suitability of secondary schools within the zone.

PDC 4 provides some qualitative guidance relating to the scale of non-residential development within the zone, stating that:

PDC 4*: Non-residential development such as shops, schools and consulting rooms should be of a nature and scale that:*

a) serves the needs of the local community

b) is consistent with the character of the locality

c) does not detrimentally impact on the amenity of nearby residents

It is reasonable to assume that secondary schools comprise typical elements that enable the broad high school curriculum to be taught to students such as classrooms, science laboratories, library, outdoor playing fields, common areas, performance space, auditorium, indoor sporting courts, teaching areas for tech skills (i.e. wood work, home education, metal work, etc.) maintenance and storage facilities, administration buildings, staff rooms and the like.

Considering these typical elements of secondary schools, the associated size and scale of the proposed secondary school reflects the need to accommodate such learning facilities for students and ultimately serve the needs of students within the local Whyalla community, as desired by PDC 4(b).

The proposed land use is consistent with the character of the locality, noting the adjoining UniSA and TAFE SA campuses as discussed above, and the built form is contemporary yet respectful of surrounding buildings, as desired by PDC 4(b) and discussed within the Design and Appearance section of this report (7.2).

Moreover, the proposed location of the secondary school outdoor sporting facilities within the Residential Zone near Russell Street and the buildings within the Community Zone, fronting Nicolson Avenue provides a buffer between the residential dwellings to the south of the site and the proposed secondary school, as to not detrimentally impact on the amenity of nearby residents, as desired by PDC 4(c) and is discussed further in the Interface section of this report (7.4).

Given the above, the proposed land use strongly aligns with the provisions of the Community Zone and is also appropriate within the Residential Zone.

7.2 Design and Appearance

The assessment below relates to the built form provisions within the General Section of the Development Plan, noting there are no built form provisions within the Community Zone and no buildings are proposed within the Residential Zone.

Through its contemporary design, the proposed development represents a high architectural standard that responds to and elevates the standard of educational buildings within the Community Zone, reinforcing and enhancing the positive aspects of the local environment and built form, as desired by OBJ 1, Design and Appearance:

OBJ 1 *Development of a high architectural standard that responds to and reinforces positive aspects of the local environment and built form.*

The staggered bulk and scale of the built form results in the taller buildings towards the middle of the site and subsequently lower buildings closer to the edge of the site. In particular, the buildings fronting Nicolson Avenue present a built form that is sympathetic to the design and scale of adjoining buildings within the Community Zone.

Figures 7-9 display the proposed built form of the educational establishment and highlight the natural colours and materials chosen to reflect the local environment. The built form includes a mix of high-quality, non-reflective materials and treatments, including:

- Azure 100 steel cassette rainscreen cladding in a variety of colours including:
    - Colorbond ‘Astro’ Metallic
    - Colorbond ‘Monument’ Matt
- Metal roof sheeting in Colorbond Ultra ‘Surfmist’
- Aluminium framed glazing

The design of the buildings incorporate extensive windows and window walls to provide a learning environment that incorporates generous natural light and views to the wider locality and natural landscape. The proposed development also avoids uninterrupted blank walls through a mix of vertical and horizontal lines, built form articulation, angled building footprints, focal entry points and a range of materials and colours. The proposed development is consistent PDC 2, 3 and 6 Design and Appearance:

PDC 2 *Buildings should be designed and sited to avoid creating extensive areas of uninterrupted walling facing areas exposed to public view.*

PDC 3 *Buildings should be designed to reduce their visual bulk and provide visual interest through design elements such as:*

(a) articulation
(b) colour and detailing
(c) small vertical and horizontal components
(d) design and placing of windows
(e) variations to facades

PDC 6 *The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare.*

Figure 7 View from Nicolson Avenue

Figure 8 View south-west towards Learning Precinct

Figure 9 View north-west towards Gymnasium

The development's contemporary appearance and innovative style provide a compact building footprint which increases the amount of useable open space available for recreational activities. The use of vertical space and compact footprint will result in convenient and efficient movement between different learning precincts within the school and also to the wider locality.

Links to surrounding areas, including maintaining the existing Centenary walking trail through the centre of the site, along with additional entry trails from the adjoining UniSA and TAFE facilities. The development will also see north-south linkages across the site formalised, replacing an existing dirt trail which connects Nicolson Avenue and Russell Street. As such, the design includes clearly recognisable links to adjoining areas and facilities, as desired by PDC 9, Design and Appearance:

PDC 9 *Development should provide clearly recognisable links to adjoining areas and facilities.*

The proposed building setback is also compatible with the setbacks of adjoining buildings as desired by PDC 16, Design and Appearance:

PDC 16 *The setback of buildings from public roads should:*

(a) be similar to, or compatible with, setbacks of buildings on adjoining land and other buildings in the locality

(b) contribute positively to the streetscape character of the locality

(c) not result in or contribute to a detrimental impact upon the function, appearance or character of the locality.

The plant equipment will be located on the roof and forms and integral part of the building design. As detailed within the Roof Plan – Zone A-1 & A-2 within Appendix B, the plant equipment is setback from the primary building façade and louver screening will be provided to provide a visual screen to this area, as desired by PDC 7, Design and Appearance

PDC 7*: Structures located on the roofs of buildings to house plant and equipment should form an integral part of the building design in relation to external finishes, shaping and colours.*

Given the above, the contemporary development represents a high standard of design that will provide a functional and state-of-the art learning space within a bespoke building layout, façade, materials and colours that complements the adjoining educational buildings and wider locality whilst aligning with the Design and Appearance provision of the Development Plan.

As shown in

Figure 7 and Figure 8, angled building facades, the use of horizontal and vertical screening, and varying building heights also assist to break up the solid form and visual bulk of the buildings. Colours have also been chosen to compliment and reflect the local environment of Whyalla and the surrounding landscape. The use of glazing has been maximised to promote natural daylight admission, along with access to views of the precinct and surrounding areas.

7.3 Traffic, Parking and Access

The traffic and parking report prepared by CIRQA traffic engineers (Appendix C) considers the existing walking, cycling, public transport routes and adjacent road network and provides an assessment of the proposed development including parking design, general access and commercial vehicle access, car parking assessment and traffic assessment.

7.3.1 Vehicle parking

As mentioned within the CIRQA report, the Whyalla Council Development Plan does not include guiding car parking rate for secondary schools or similar land uses. In the absence of a desired car parking rate within the Development Plan, CIRQA has considered the Department for Education (DfE) recommended parking requirements for high schools which includes:

- One parking space per FTE staff member;
- Four parking spaces for use by persons with disabilities; and
- An additional 10% (of the requirement resulting from the above rates) for visitor parking

The above rates would result in a requirement for 168 parking spaces to be provided on-site. The proposed development includes 192 off-street car parking spaces and will therefore exceed the DfE recommendations by 24 car parks.

In relation to compliance with relevant standards for parking facilities, the CIRQA report notes that the proposed car parking facilities are consistent with Australian/New Zealand Standard 2890 in that:

- regular (staff) 90 degree angled parking spaces shall be a minimum of 2.4 m wide and 4.8 m long with 600 mm overhang to low lying landscaping (wheel stops should not be utilised for this arrangement);
- disabled parking spaces shall be 2.4 m wide and 5.4 m long (with an adjacent shared space of the same dimension);
- the parking aisles adjacent 90 degree spaces shall be at least 5.8 m wide;
- parallel parking lanes shall be at least 2.5 m wide with an adjacent aisle width of at least 3.5 m, albeit the parallel parking for the inclusive learning facility will be 3.5 m to accommodate access to/from vehicles by persons with disabilities;
- 1.0 m end-of-aisle extension shall be provided beyond the last parking space in dead-end aisles; and
- 0.3 m clearance shall be provided to all objects greater than 0.15 m in height.

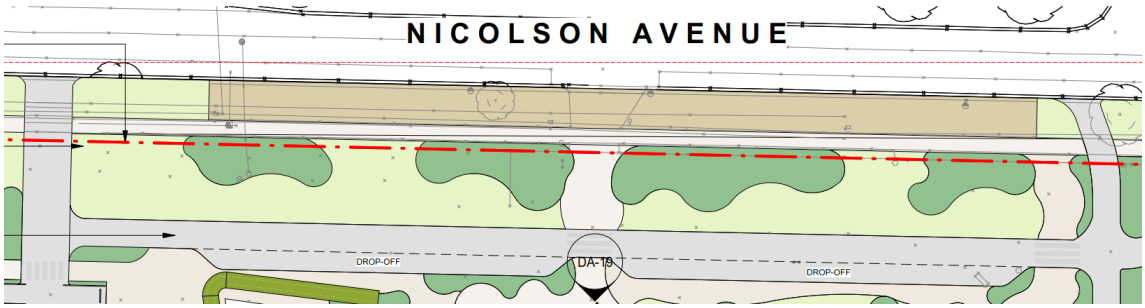
The above is consistent with PDC 32, Transport and Access:

***PDC 32**: Development should be consistent with Australian Standard AS 2890 Parking facilities*

In addition to the 192 off-street car parks, the proposed development also includes a ‘kiss and drop’ zone onsite (see Figure 10) parallel to Nicolson Avenue that will provide an area for student pick-up and drop-off in an efficient manner, as desired by PDC 6, Transport and Access:

***PDC 6**: Development generating high levels of traffic, such as schools, shopping centres and areas, entertainment and sporting facilities, should incorporate passenger pick-up and set down areas. The design of such areas should ensure interference to existing traffic is minimised and give priority to pedestrians, cyclists and public transport users.*

Figure 10 Student pick-up and drop-off zone



Student parking demand (from those students with a Provisional Driver's Licence, likely some year 12 students) will be accommodated in the surrounding street network as per the relevant DfE policy. The parking assessment by CIRQA has considered this matter and indicated that the anticipated demand can be accommodated within the nearby street network.

7.3.2 Active transport modes

The Whyalla Council development plan does not include desired bicycle car parking rates for secondary schools or similar land uses. Notwithstanding, the proposed development is likely result in numerous students riding a bike to and from school and potentially visitors and staff.

The design of the high school has taken into consideration bike parking facilities and proposes 250 bicycle parking spaces dispersed across the site including bike racks to the east and west of the main buildings and near the oval, as well as a bike enclosure near the eastern boundary of the site.

The bike enclosure and associated concrete slab is the largest bike parking facility and is strategically located near the Centenary Trailway which traverse the site. The Centenary Trailway is an existing shared cycling and walking path that links the site with the adjoining educational campuses and wider locality. Moreover, pedestrian paths will be provided throughout the school with connections to the external path network, including connections to Nicolson Avenue and Russell Street, to encourage active travel to and from the school.

A public transport bus service operates in the vicinity of the subject site and the Route 2 service has two stops on Russell Street as well as a stop on Nicolson Avenue, forward of the UniSA campus. Route provides a public transport link near the site and operates between Whyalla, Whyalla Playford, Whyalla Norrie, Whyalla Stuart and Whyalla Jenkins.

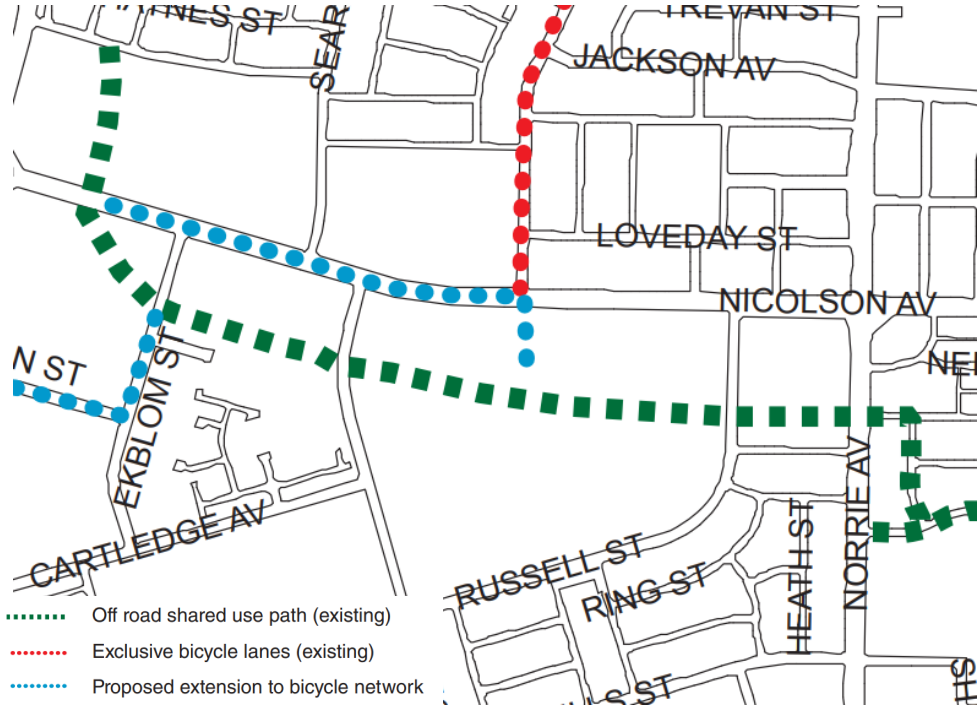
The proposed development can be well services by existing transport networks and strongly encourages active transport modes as desired by PDC 5 and PDC 8, Transport and Access:

***PDC 5**: Land uses that generate large numbers of visitors such as shopping centres and areas, places of employment, schools, hospitals and medium to high density residential uses should be located so that they can be serviced by existing transport networks and encourage active transport modes.*

***PDC 8**: Development should provide safe and convenient access for all anticipated modes of transport including cycling, walking, public transport, and motor vehicles.*

The proposed development not only seeks to retain and widen the Centenary trailway through the site to 6m wide path that can also accommodate emergency access, but also provide a new north-south bike path from Norrie Avenue, intersecting with the centenary path and continuing south to Russell Street. The proposed bicycle path from Norrie Avenue down through the site, aligns with Concept Plan Map Wh/3 Existing and Proposed Bike Path Network (see Figure 11)

Figure 11 Extract from Concept Plan Map Wh/3 Existing and Proposed Bike Path Network, Whyalla Council Development Plan (consolidated 14 June 2017)



7.3.3 Access

As detailed within the CIRQA report,

Access for the site is proposed via both Nicolson Avenue and Russell Street. Two access points are proposed on Nicolson Avenue.

- The access proposed adjacent the north-eastern corner of the site would accommodate left in, left out and right in movements. This access will accommodate movements for the School's 'inclusive learning' area's car park (including set-down and pick up provisions) as we as the entry movements to an on-site set-down/pick-up facility along the site's frontage.
    - CIRQA have suggested that a sheltered right turn lane be provided for the eastern Nicolson Avenue access to ensure queues associated with vehicles entering the site do not impact through bound movements on Nicolson Avenue. This off-site arrangement will be discussed further with Council to ensure safe and efficient access to the site is achieved.
- The access adjacent the north-western corner on Nicolson Avenue will accommodate two-way access to a staff car park as well as accommodating egress movements from the set-down/pick-up facility. Movements at the access point will be restricted to left-in/left-out movements only. This access would also accommodate refuse collection vehicles and buses.
- An access will also be provided on the southern side of the site on Russell Street. This will service additional car parking provided adjacent the proposed sports field (oval).
- A service and delivery area is proposed to be provided within the north-western car park. The area has been designed to accommodate the movements of 12.5 m long Heavy Rigid Vehicles. Service and delivery vehicles will generally be smaller than this size, however this will allow large (charter) coaches to be turned around on-site if utilised by the school (i.e. for school excursions). In addition, 29-seater buses (such as a Toyota Coaster or Mercedes Sprinter) will be utilised for access/to from the inclusive learning area.

- Vehicle movements associated with commercial vehicles (12.5m long HV) and 29-seater bus vehicle turn path are displayed within the CIRQA report and confirm that safe and convenient vehicle movements will be achieved on site.

The proposed vehicle access arrangements facilitate safe and convenient vehicle movements, convenient traffic circulation across the site and promote forward facing egress and access, consistent with the intent of PDC 33, Transportation and Access.

Given the above, the proposed development generally aligns with the traffic, parking and access provisions of the Development Plan.

7.4 Interface

The proposed development is highly complementary to the adjoining educational land use – TAFE SA and UniSA Whyalla campuses.

As mentioned previously, the bulk of the school buildings will be located in the Community Zone and most of the associated outdoor sporting facilities are located in the Residential Zone such as the outdoor oval, cricket nets, soccer pitch and hockey pitch. The outdoor sporting facilities assist in providing a visual buffer between the residential area to the south and the proposed multi-storey school buildings near Nicholson Avenue.

As such, the siting of the multi-storey buildings within the Community Zone, near adjoining educational establishments with multi-storey buildings, including the Middleback Theatre, will result in complementary built form and minimal adverse visual impact between land uses as desired by OBJ 1, Interface Between Land Uses:

OBJ 1*: Development located and designed to minimise adverse impact and conflict between land uses*

In relation to overlooking considerations, we note that the proposed multi-storey buildings facing Nicholson Avenue are setback approximately100m from the rear yard of residential dwellings to the north (within the Residential Zone) and separated by Nicolson Avenue. Given the design and siting of the development and separation from residential areas, there will be no unreasonable overlooking concerns from these buildings to the residential properties to the north, consistent with PDC 3, Interface Between Land Uses:

PDC 3*: Development adjacent to a Residential Zone or Residential Character Zone should be designed to minimise overlooking and overshadowing of adjacent dwellings and private open space*

Further, the hours of operation of secondary schools are complementary to residential land uses, noting secondary schools are active places during the week, generally between 8:30am and 3:30pm Monday- Friday, with minimal activity afterschool hours. In addition, schools are not open on public holidays and usually limited activities occur during the school holidays throughout the year, and the activities that do occur are contained and result in less people using the facilities compared to a typical school day.

In relation to potential noise considerations, the Development Plan, Interface Between Land Uses subsection includes provisions relating to land uses that are likely to emit significant noise, in relation to the following land uses; industry, development proposing music, or outdoor areas such as beer gardens or dining areas associate with licensed premises. The proposed secondary school is not one of these land uses and therefore the Development Plan provisions relating to noise generating activities are not considered to be relevant to this application.

Nonetheless, Resonate acoustic has considered the main acoustic issues associated with the proposed secondary school within their report (Appendix D). Resonate has considered the key acoustic issues including the separation between sensitive spaces, internal acoustic reverberation control, mechanical plant noise and vibration from hydraulic services. The Resonate assessment against the relevant standards and guidelines, including the DfE educational facilities standards, and involved with the design of the school seeks to create a conducive learning environment for students attending the school and their advice has been implemented where practical.

Finally, the secondary school is a desired land use within both the Community Zone and the Residential Zone which suggests that the activities generally associated within this land use is anticipated, reasonable and expected within this locality. The proposed development is not considered to cause any unreasonable impacts to adjoining land uses, by way of noise, hours of operation or otherwise, as desired by PDC 1, Interface Between Land Uses:

PDC 1*: Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:*

(a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants
(b) noise
(c) vibration
(d) electrical interference
(e) light spill
(f) glare
(g) hours of operation
(h) traffic impacts.

Given the above, the proposed development general aligns with the relevant provisions of the Development Plan relating interface considerations.

7.5 Flooding and Stormwater Management

Preliminary investigations have identified that the subject land is prone to flooding during various storm events due to inadequate upstream council infrastructure. Flood modelling was undertaken to determine the impact of the proposed development on existing flow paths. As a result of these investigations, stormwater design strategy has been developed in consultation with Council to ensure downstream flows are not adversely affected.

Key features of this strategy include:

- Establishment of open swale along the western portion of the site;
- Use of soccer/hockey fields as temporary flow path in flooding events.

Further stormwater system design will be prepared at the detailed design stage, however it is anticipated that stormwater is proposed to be managed on-site, and disposed of into the public stormwater drainage system to the satisfaction of Council.

Stormwater from the subject site will directed to vegetated areas where possible. It is noted that council have current and future plans for stormwater collection and re-use, with the school system discharging to the council system.

The proposed site pit and pipe system collects all stormwater water and delivers it to a 450m3 detention basin adjacent the Southern boundary of the site. This basin detains all stormwater back to the 20% AEP pre-development conditions, as specified by Council. The outlet discharges to the Council underground system via a 300mm RCP in all events up to the design event. The standard b1% AEP was not selected for the dentition due to the expected flood mitigation works to be undertake by council in the near future, and the fact that the school project was providing a portion of the overall council flood mitigation strategy.

Overflow in the northern portion of the site is directed to the swale, which will be lined with vegetation to improve the stormwater quality. In the southern portion of the site, the overland flow is directed to the detention basin. The low flows from both systems will be directed to the stormwater quality device at the discharge location for the site, consistent with PDC 10, Natural Resources:

PDC 10*: Development should have adequate provision to control any stormwater over-flow runoff from the site and should be sited and designed to improve the quality of stormwater and minimise pollutant transfer to receiving waters.*

It is also proposed that stormwater pits are installed in garden beds adjacent the car park and paved areas to provide some initial treatment to stormwater runoff. In addition, it is proposed that a single-line treatment system, such as the Enviro G7 or approved equivalent, is installed at the southern portion of

the site. Full specifications of the Enviro G Series are found at: https://enviroaustralis.com.au/stormwater/g-series/.

The proposed stormwater pits and single-line treatment systems including the Enviro G7 seek to promote and improve the quality of water discharged from the site, consistent with PDC 8(a), Natural Resources:

***PDC 8**: Water discharged from a development site should:*

(a) be of a physical, chemical and biological condition equivalent to or better than its pre-developed state

With regard to the pre-development conditions, the 20% AEP pre-development flow was calculated using the parameters outlined in Table 3.

Table 3 Parameters for the 20% AEP pre-development flow

Hydrological Model	Initial Loss/Continuing Loss
Impervious Area Depression Storage	2mm
Pervious Area Depression Storage	25mm
Pervious Area Continuing Loss	2mm/hr
Time of Concentration	15 minutes
Effective Imperious Area (North)	5%
Effective Impervious Area (South)	0%

The northern portion of the site, draining to the East, returned a peak flow of 218L/s. The southern portion of the site, draining to the South, returned a peak flow of 146L/s in 20% AEP event.

For the post-development conditions, it is proposed that the site is drained via a piped system to a detention basin adjacent the southern border of the site; discharging to the Council system via an existing pit on Russell Street. In order to achieve this, the basin and outlet pipe have been sized to detain the post-development 20% AEP storm back to the pre-development conditions.

To achieve the pre-development conditions, a 300mm RCP is proposed, connecting to a detention basin with a 450m^3 storage capacity. In summary, the water discharged from the site will be consistent with pre-development conditions, as desired by PDC 8(b) Natural resources.

***PDC 8**: Water discharged from a development site should:*

(b) not exceed the rate of discharge from the site as it existed in pre-development conditions.

The site grading, including the swale, has been designed to provide a minimum of 300mm freeboard from building FFLs for the 1% AEP (1-in-100 year) storm. The concept design and final design surface will be verified by Council flood engineers to confirm to the wider stormwater strategy requirements through flood modelling. This approach is consistent with PDC 9, Natural Resources:

***PDC 9**: Development should include stormwater management systems to protect it from damage during a minimum of a 1-in-100 year average return interval flood.*

The proposed development is therefore considered to align with the most relevant provisions of the Development Plan in relation to stormwater management. In addition, further stormwater system design will be prepared at the detailed design stage of the project, and the stormwater design will ultimately be prepared to the satisfaction of Council.

7.6 Other Matters

7.6.1 Site contamination

A preliminary environmental and engineering site investigation (PEESI) was undertaken by Golder Associates for DPTI (Appendix E) which included review of the historical use and development of the site and identification of potential sources of site contamination.

Targeted soil sampling across the site at a maximum depth of 0.5m and from these investigations by Golder concluded that:

- No contaminants were identified in shallow soils at concentrations that would pose an unacceptable risk to human health or the environment given the context of the proposed development and land use

As such, the subject site is considered to be fit for its intended purpose and consistent with the intent of PDC 8, Hazards:

PDC 8: *Appropriate assessment and remediation of site contamination to ensure land is suitable for the proposed use and provides a safe and healthy living and working environment*

7.6.2 Native Vegetation Clearance and Landscaping

As mentioned within section 5.5 of this report, the proposed development includes the removal of Native Vegetation and accordingly a Native Vegetation Clearance Application is in the process of being lodged.

The estimated maximum clearance footprint area for this project is 14.84 ha, across two vegetation associations as identified in the BlackOak Environmental Native Vegetation Clearance Proposal, attached to the Golder PEESI report (Appendix E).

Native vegetation on site has been retained were possible (i.e. where not directly impacted by the proposed school footprint). As illustrated within the landscaping documentation (Appendix F), native vegetation will be retained alongside the western boundary and near the south-western and south-eastern corner of the site.

Whilst the Development Plan strongly encourages the retention of native flora (OBJ 1, Natural Resources), this is not always possible and should be considered on balance, as a component of the wider proposal that overall seeks to foster substantial educational benefits to the Whyalla regional community. The BlackOak report considers the possibility of avoiding removal of the native vegetation and reinforces that the proposed removal of the vegetation on site cannot be avoided, noting site selection was considered thoroughly:

The location selected for the Whyalla Super School is between the existing UniSA Whyalla Campus and TAFE SA, incorporating the Whyalla Education Centre. A feasibility study by the proponent considered a number of options for the new school. The preferred option identified the chance to share services with the adjacent educational facilities.

As a condition of the Native Vegetation Clearance application approval it is likely that a Significant Environmental Benefit (SEB) offset in the form of payment into the Native Vegetation Fund will be required and the applicant will address this matter to the satisfaction of the Native Vegetation Council. The SEB seeks to ensure that the Native Vegetation Council is satisfied that the proposed loss of vegetation from the clearance is offset by a SEB that will result in a positive impact on the environment that exceeds the negative impact of the clearance.

We also note that whilst 52 flora species were recorded on the site, 16 of those species are introduced species and three of those species are declared weeds under the Nature Resources Management Act 2007; Buffel Grass, Jumping Cholla And Gazania. In addition, removal of the vegetation, such as low-medium height shrubs will improve visibility across the site and reduce the risk of potential snake bites and the like, resulting from dangerous animals potentially moving through the dense vegetation, in proximity to school students.

Further, to offset the removal of vegetation on site, extensive plantings of a variety of local and native species is proposed as part of this development. The indicative plants (see section 5.4) include a mix of trees, shrubs and ground covers strategically co-located to maintain visibility and clear lines of slight across the school.

The proposed landscaping plan (Appendix G) provides details of the indicative landscaping palette. The retention of native vegetation on site where possible, combined with the extensive landscaping planning across the site is broadly consistent with the intent of PDC 26 and PDC 31, Natural Resources:

PDC 26*: Development should retain existing areas of native vegetation and where possible contribute to revegetation using locally indigenous plant species.*

PDC 31*: Where native vegetation is to be removed, it should be replaced in a suitable location on the site with locally indigenous vegetation to ensure that there is not a net loss of native vegetation and biodiversity*.

8.0 Conclusion

This Development Application seeks to undertake demolition of an existing pre-school and construction of an educational establishment at 109-115 Nicolson Avenue, Whyalla Norrie.

The proposed new Whyalla High School seeks to make excellent use of underutilised land and situated in an established education precinct in the heart of Whyalla, allowing for the consolidation of three existing schools into one state-of-the-art learning and community facility.

Following an inspection of the subject site and locality, a review of the proposed plans and associated documentation accompanying the application and a detailed assessment of the proposed development against the relevant provisions of the Whyalla Council Development Plan, we have formed the opinion that the proposed development represents appropriate and orderly development that deserves favourable consideration for approval given:

- The new secondary school is proposed to be centrally located between the existing UniSA and TAFE SA facilities fronting Nicolson Avenue, Whyalla. The educational hub will benefit from potentially shared use facilities and will provide a continuum of educational opportunities for Whyalla secondary school students;
- The proposed land use strongly aligns with the provisions of the Community Zone and is also appropriate within the Residential Zone;
- The New Whyalla Secondary School has a contemporary appearance and functional design space. Conceived as a multi-storey solution of up to three levels, a compact arrangement of learning communities is achieved with extensive horizontal and vertical physical and visual connectivity between spaces;
- The staggered bulk and scale of the built form results in the taller buildings towards the middle of the site and subsequently lower buildings closer to the edge of the site. In particular, the buildings fronting Nicolson Avenue present a built form that is sympathetic to the design and scale of adjoining buildings within the Community Zone.
- The design of the buildings incorporate extensive windows and window walls to provide a learning environment that incorporates generous natural light and views to the wider locality and natural landscape. The proposed development also avoids uninterrupted blank walls through a mix of vertical and horizontal lines, built form articulation, angled building footprints, focal entry points and a range of materials and colours.
- The proposed development includes 192 off-street car parking spaces and will therefore exceed the DfE recommendations by 24 car parks.
- The design of the high school has taken into consideration bike parking facilities and proposes 250 bicycle parking spaces dispersed across the site including bike racks to the east and west of the main buildings and near the oval, as well as a bike enclosure near the eastern boundary of the site.
- Whilst native vegetation will be removed to accommodate the proposed development, additional plantings of native vegetation on site is proposed as part of the landscaping plan, and a SEB is anticipated.
- The proposed swale will provide flood protection for the new buildings in a 1% AEP storm event
- The proposed stormwater system detains all stormwater back to the 20% AEP pre-development conditions (as specified by Council) via a 450m^3 detention basin adjacent the Southern boundary. The outlet discharges to the Council underground system via a 300mm RCP in all events up to the design event.

The proposed development is therefore aligned with the most relevant provisions of the Whyalla Council Development Plan and warrants Development Approval, subject to reasonable and relevant conditions.

Appendix A

Certificate of Title

This Crown Record Register Search is a true and correct extract of the Register of Crown Records maintained by the Registrar-General. Crown Land is administered pursuant to the Crown Land Management Act 2009 by the Department of Environment, Water and Natural Resources.

Crown Record - Volume 5988 Folio 172

Parent Title(s) CR 5530/21

Creating Dealing(s) RLG 10660651

Title Issued 07/06/2007 **Edition** 1 **Edition Issued** 07/06/2007

Estate Type

CROWN LAND (ALIENATED)

Owner

THE CROWN

Custodian

UNIVERSITY OF SOUTH AUSTRALIA
OF GPO BOX 2471 ADELAIDE SA 5001

Description of Land

ALLOTMENT 1 DEPOSITED PLAN 44349
IN THE AREA NAMED WHYALLA NORRIE
HUNDRED OF RANDELL

TOTAL AREA: 21.30HA (CALCULATED)

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED C ON DP 44349 TO THE COUNCIL FOR THE AREA (RLG 8439484)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED D AND E ON FP 47869 (RLG 10660651)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A AND B ON DP 44349 TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (LAND GRANT VOL.4401 FOLIO 482)

Schedule of Dealings

NIL

Schedule of Interests

LAND DEDICATED FOR UNIVERSITY PURPOSES PURSUANT TO THE CROWN LANDS ACT, 1929 BY GAZETTE 20/11/1997

Notations

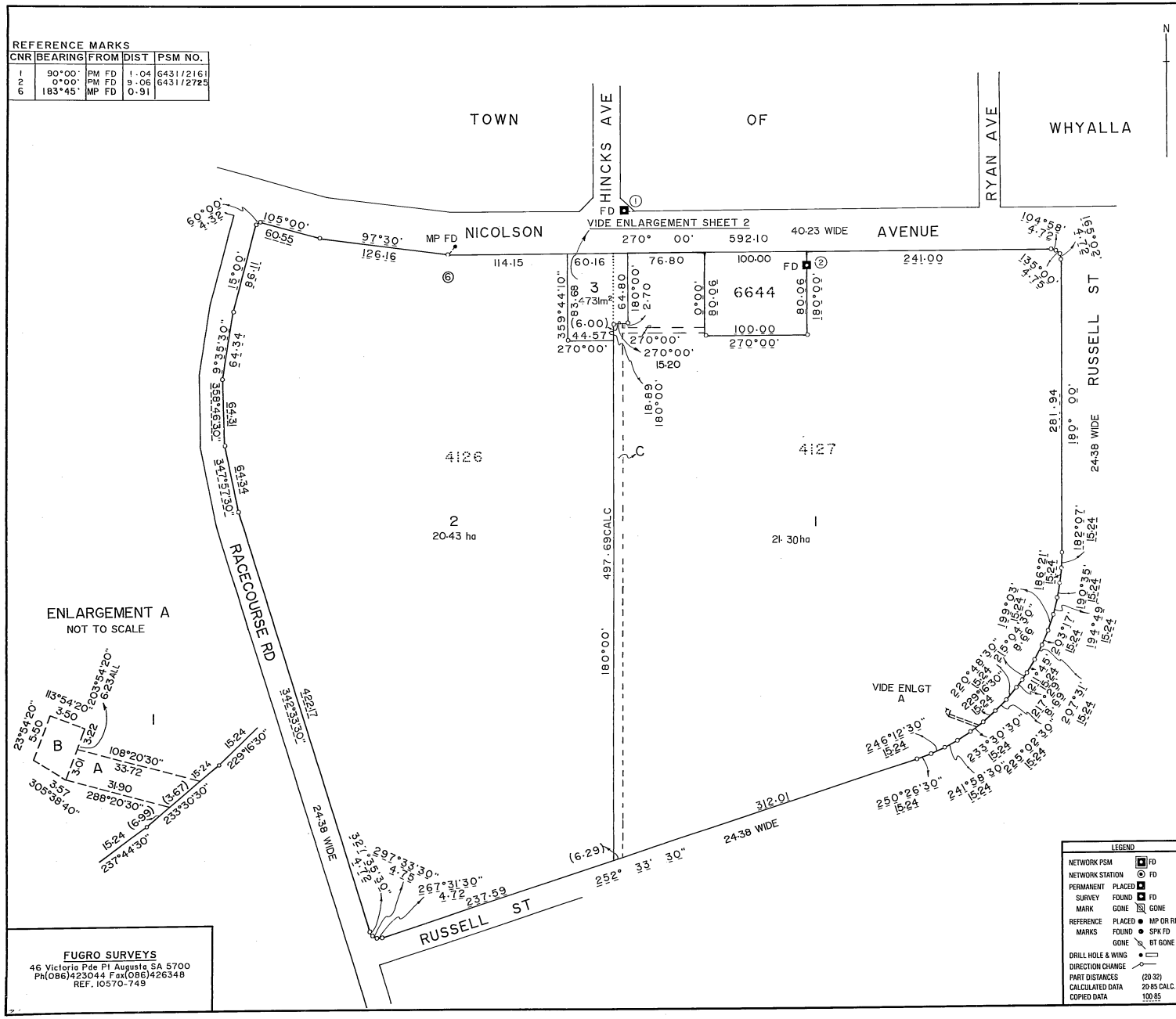
Dealings Affecting Title NIL

Priority Notices NIL

Registrar-General's Notes NIL

Administrative Interests NIL

D44349



PLAN NUMBER
DP 44349
THIS SHEET 1 OF 2 SHEETS

DEPOSITED 22 / 1 / 1938
~~ACCEPTED FOR FILING~~
PRO REGISTRAR GENERAL

MAP REF. 6431-1-k
DEV. No. 850/D093/94
TITLE SYSTEM R. P. A. AND CROWN LAND
TITLE REFERENCE CR 5226/794 CT 3250/76
O.B. / LAST PLAN REF.
TOTAL AREA
DOCKET No.
FIELD BOOK No.

CLOSURE CHECKED	PLAN EXAMINED	PLAN APPROVED	P.M.S. APPROVED
GJW	WJS	15.1.96	6.11.95

~~IRRIGATION AREA~~ ~~DIVISION~~
HUNDRED RANDELL
~~TOWNSHIP~~ / AREA WHYALLA NORRIE
COUNCIL CITY OF WHYALLA

PLAN OF DIVISION
LOTS 4126 AND 4127
TOWN OF WHYALLA

STATEMENTS CONCERNING EASEMENTS ANNOTATIONS AND AMENDMENTS

PORTION OF ALLOTMENT 1 MARKED C IS TO BE SUBJECT TO AN EASEMENT TO THE CITY OF WHYALLA FOR DRAINAGE PURPOSES

PORTIONS OF ALLOTMENT 1 MARKED A AND B HEREON ARE SUBJECT TO A RIGHT OF WAY AND EASEMENT VIDE CT 4401/482

ALL DISTANCES ARE GROUND DISTANCES

COMBINED SCALE FACTOR — ZONE — AMG
BEARING DATUM (2)(6) 270°00' DISTANCE
DERIVED FROM SOD 360

I, Peter Jeffrey WATT
licensed surveyor of South Australia do hereby certify –

(1) That this plan has been made from surveys carried out by me or under my personal supervision and in accordance with the Survey Act 1992

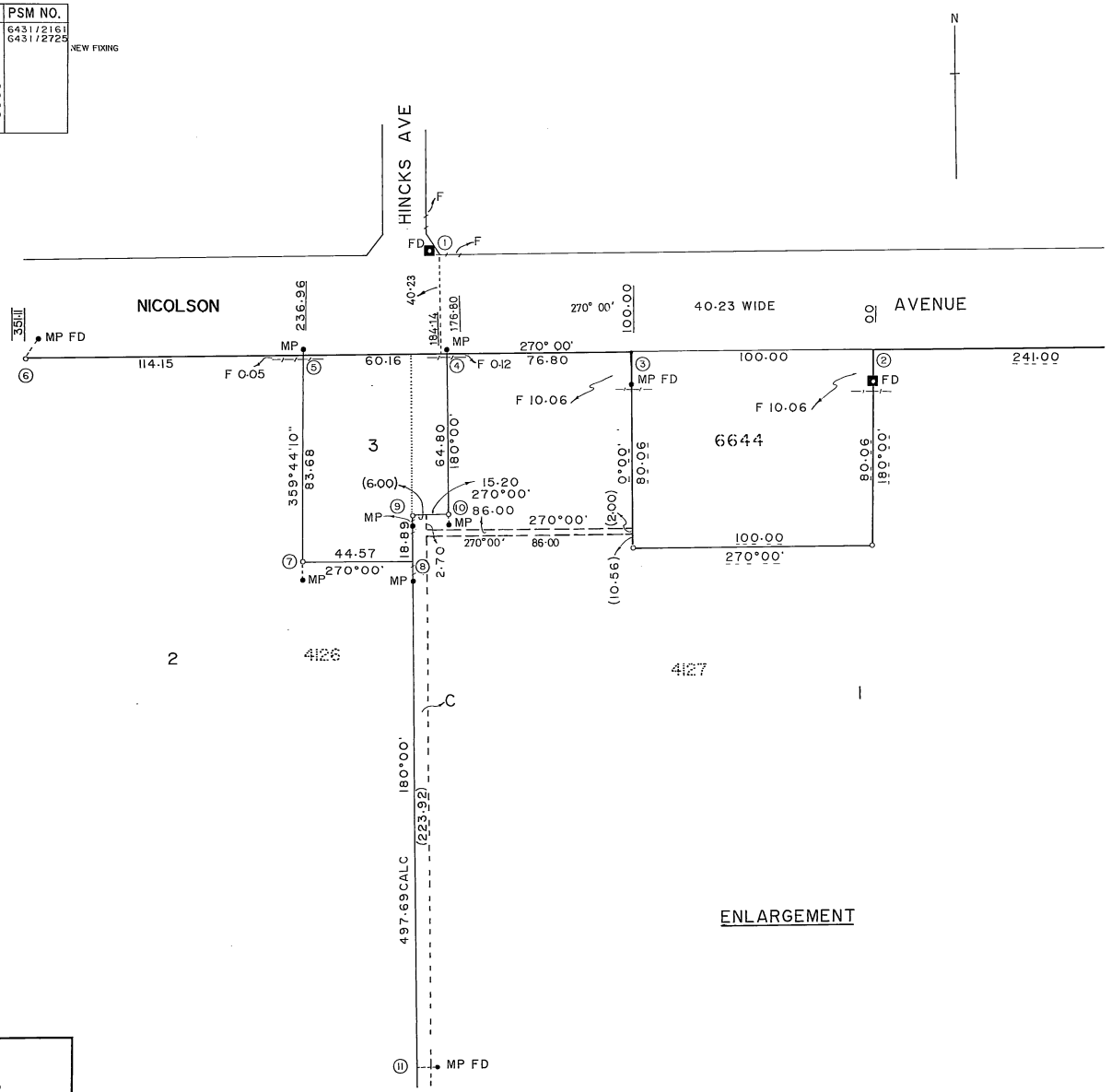
(2) That the field work was completed on the 28TH day of OCTOBER 1994 ~~excepting for the final placement of survey marks~~ (strike out if not applicable)

Date 16.1.95 Licensed Surveyor

DOL – A

REFERENCE MARKS

CNR	BEARING	FROM	DIST	PSM NO.
1	90°00'	PM FD	1·04	6431/2161
2	0°00'	PM FD	9·06	6431/2725
3	0°10'	MP FD	9·09	NEW FIXING
4	180°00'	MP	0·88	
5	180°00'	MP	0·85	
6	183°45'	MP FD	0·91	
7	359°44'	MP	1·50	
8	0°00'	MP	1·50	
9	0°00'	MP	1·50	
10	0°00'	MP	1·50	
11	270°00'	MP FD	0·91	



FUGRO SURVEY
46 Victoria Parade
Pt. Augusta S.A. 5700
Ph.(086)423044
Fax (086) 426348
REF. 10570-749

PLAN NUMBER
DP 44349

DEPOSITED
ACCEPTED FOR FILING 22 / 1 / 1998
PRO REGISTRAR GENERAL

THIS IS SHEET 2 OF MY PLAN IN 2 SHEETS

DATED 16 / 1 / 1995
LICENSED SURVEYOR

SCALE METRES
0 20 40 60 80 100

STATEMENTS CONCERNING EASEMENTS ANNOTATIONS AND AMENDMENTS

PORTION OF ALLOT 1 MARKED C HEREON IS TO BE SUBJECT TO AN EASEMENT TO THE CITY OF WHYALLA FOR DRAINAGE PURPOSES.

NO OCCUPATION UNLESS SHOWN OTHERWISE.

DOL-B

REAL PROPERTY ACT, 1886
South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

Certificate of Title - Volume 5509 Folio 439

Parent Title(s) CT 4127/694

Creating Dealing(s) CONVERTED TITLE

Title Issued 03/03/1998 **Edition** 1 **Edition Issued** 03/03/1998

Estate Type

FEE SIMPLE

Registered Proprietor

MINISTER FOR EDUCATION AND CHILDREN'S SERVICES
OF ADELAIDE SA 5000

Description of Land

ALLOTMENT 6644 TOWN OF WHYALLA
IN THE AREA NAMED WHYALLA NORRIE
HUNDRED OF RANDELL

Conditions

IN TRUST TO PERMIT SUFFER AND TO BE USED AT ALL TIMES AS A RESERVE FOR EDUCATION PURPOSES

Easements

NIL

Schedule of Dealings

NIL

Notations

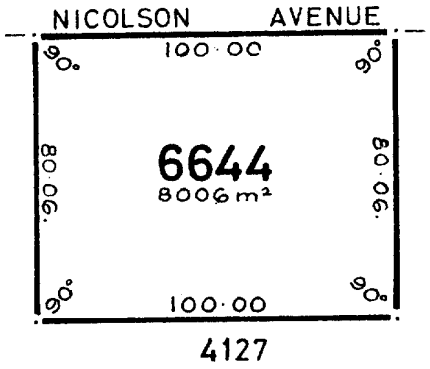
Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes NIL

Administrative Interests NIL



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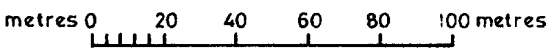
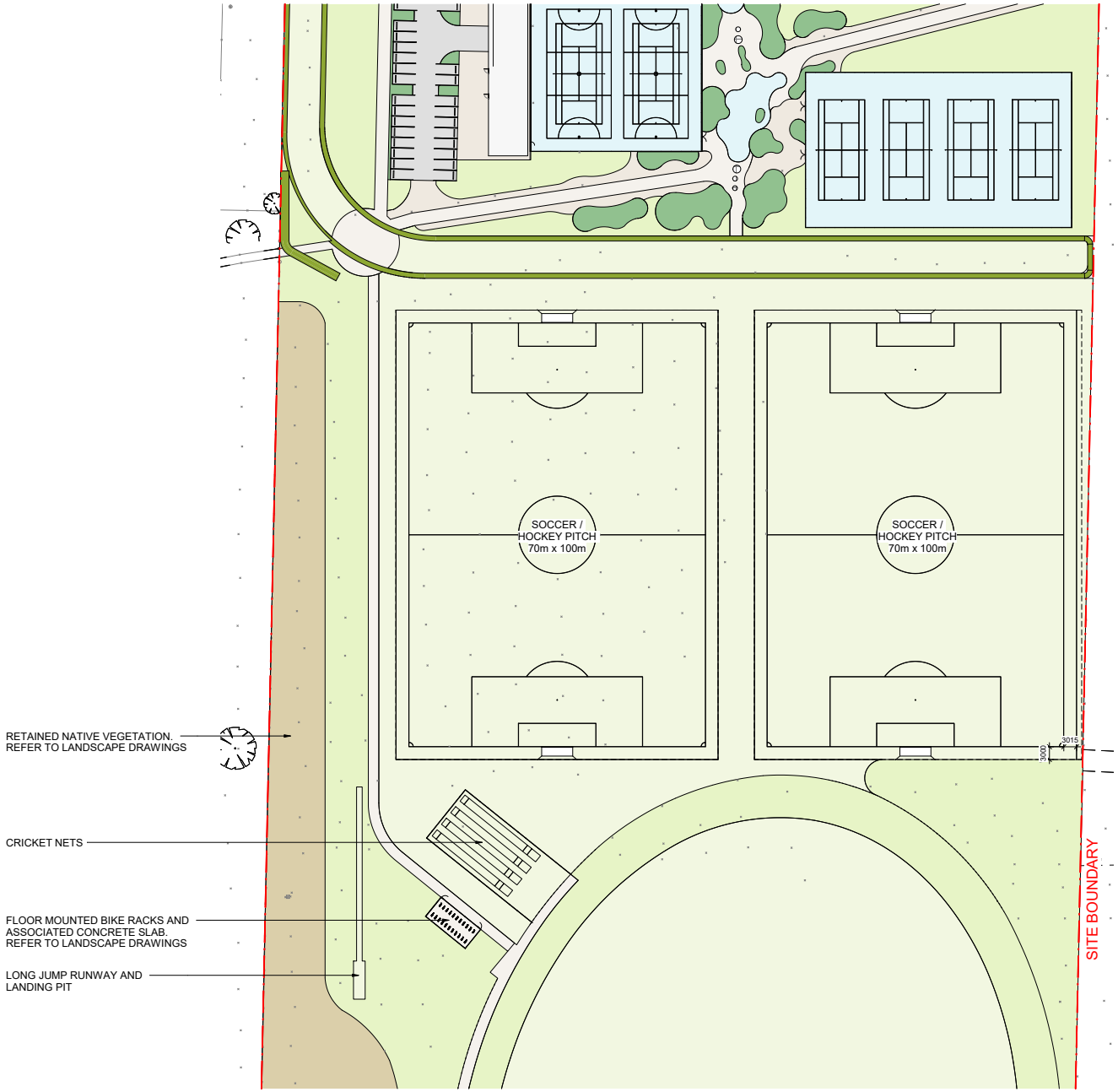


Appendix B

Architectural plans prepared by Cox and Thomson Rossi



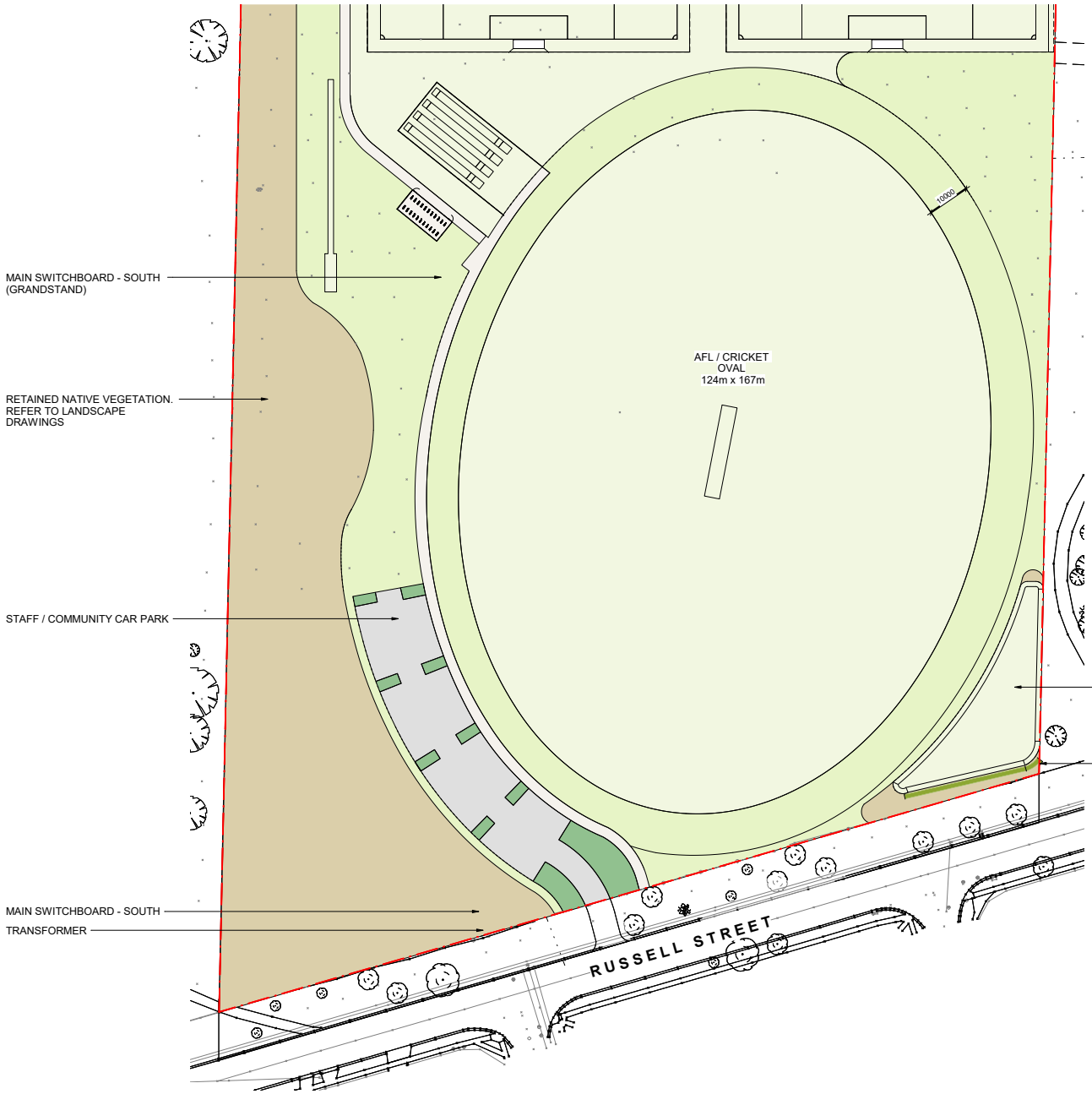
Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
SITE PLAN - ZONE B

Drawing Number:	Revision:	Date:	Scale:
DA-03	A	29/10/19	1 : 500 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au



Project:
NEW WHYALLA SECONDARY SCHOOL

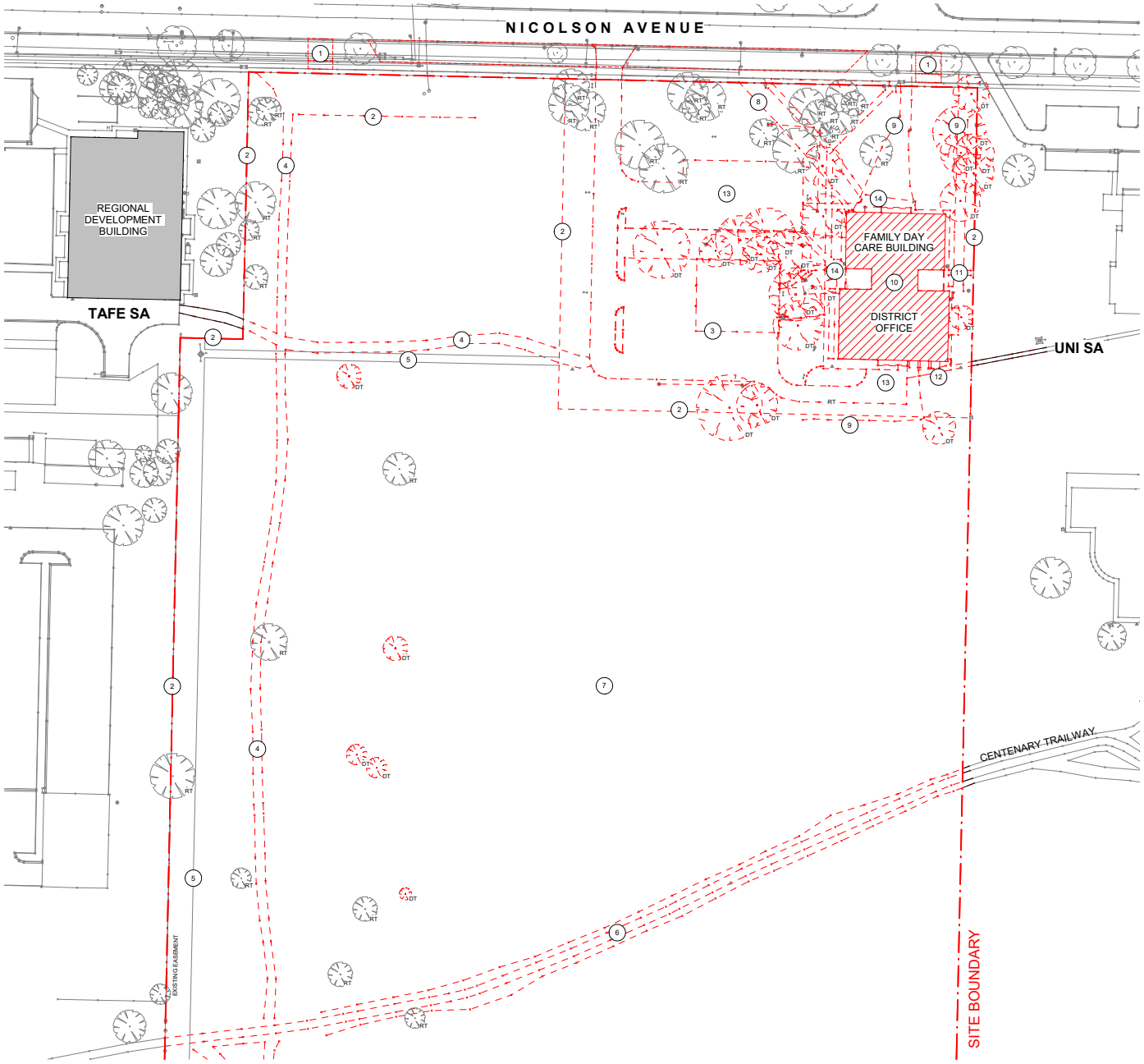
Drawing Title:
SITE PLAN - ZONE C

Drawing Number:	Revision:	Date:	Scale:
DA-04	A	29/10/19	1 : 500 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

COX



1. DEMOLISH EXISTING FOOTPATH, KERB & VERGE FOR NEW CROSS-OVER
2. EXISTING FENCE TO BE REMOVED
3. EXISTING FENCE & GATES TO BE REMOVED
4. EXISTING DIRT TRAIL TO BE REMOVED
5. EXISTING STORMWATER EASEMENT MADE REDUNDANT WITH NEW STORMWATER STRATEGY. REMOVE REDUNDANT SERVICES/PIPEWORK
6. EXISTING CONCRETE PATH TO BE DEMOLISHED
7. EXISTING SALTBUSH AND VEGETATION TO BE REMOVED. REFER TO LANDSCAPE DRAWINGS
8. EXISTING ETSA LINE TO BE REMOVED
9. EXISTING TELSTRA LINE TO BE REMOVED
10. FAMILY DAY CARE BUILDING & DISTRICT OFFICE TO BE DEMOLISHED
11. EXISTING SEWER PIPE TO BE REMOVED
12. EXISTING CONCRETE PATH TO UNISA TO BE DEMOLISHED WITHIN SITE BOUNDARY
13. EXISTING BITUMEN CARPARK TO BE DEMOLISHED
14. EXISTING CONCRETE PATH TO BE DEMOLISHED

EXISTING VEGETATION TO BE RETAINED. REFER TO LANDSCAPE DRAWINGS

DT EXISTING TREES TO BE REMOVED (TYP.)

RT EXISTING TREES TO BE RETAINED (TYP.)

Project:
NEW WHYALLA SECONDARY SCHOOL

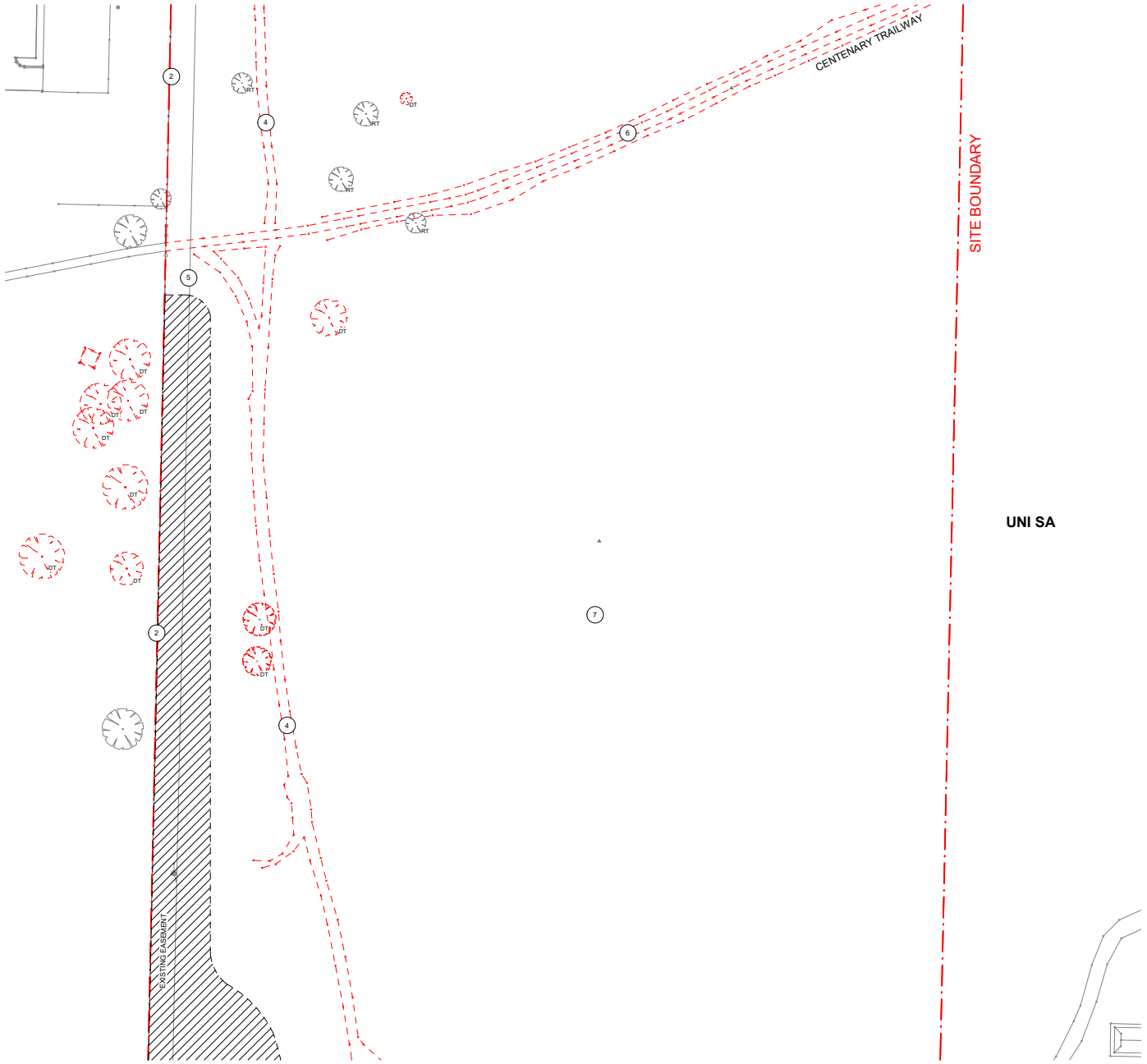
Drawing Title:
DEMOLITION PLAN - ZONE A

Drawing Number:	Revision:	Date:	Scale:
DA-05	A	29/10/19	1 : 500 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

COX



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7. EXISTING SALTBUSH AND VEGETATION TO BE REMOVED. REFER TO LANDSCAPE DRAWINGS
8. EXISTING ETSA LINE TO BE REMOVED
9. EXISTING TELSTRA LINE TO BE REMOVED
10. FAMILY DAY CARE BUILDING & DISTRICT OFFICE TO BE DEMOLISHED
11. EXISTING SEWER PIPE TO BE REMOVED
12. EXISTING CONCRETE PATH TO UNISA TO BE DEMOLISHED WITHIN SITE BOUNDARY
13. EXISTING BITUMEN CARPARK TO BE DEMOLISHED
14. EXISTING CONCRETE PATH TO BE DEMOLISHED

EXISTING VEGETATION TO BE RETAINED. REFER TO LANDSCAPE DRAWINGS

DT EXISTING TREES TO BE REMOVED (TYP.)

RT EXISTING TREES TO BE RETAINED (TYP.)

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
DEMOLITION PLAN - ZONE B

Drawing Number:	Revision:	Date:	Scale:
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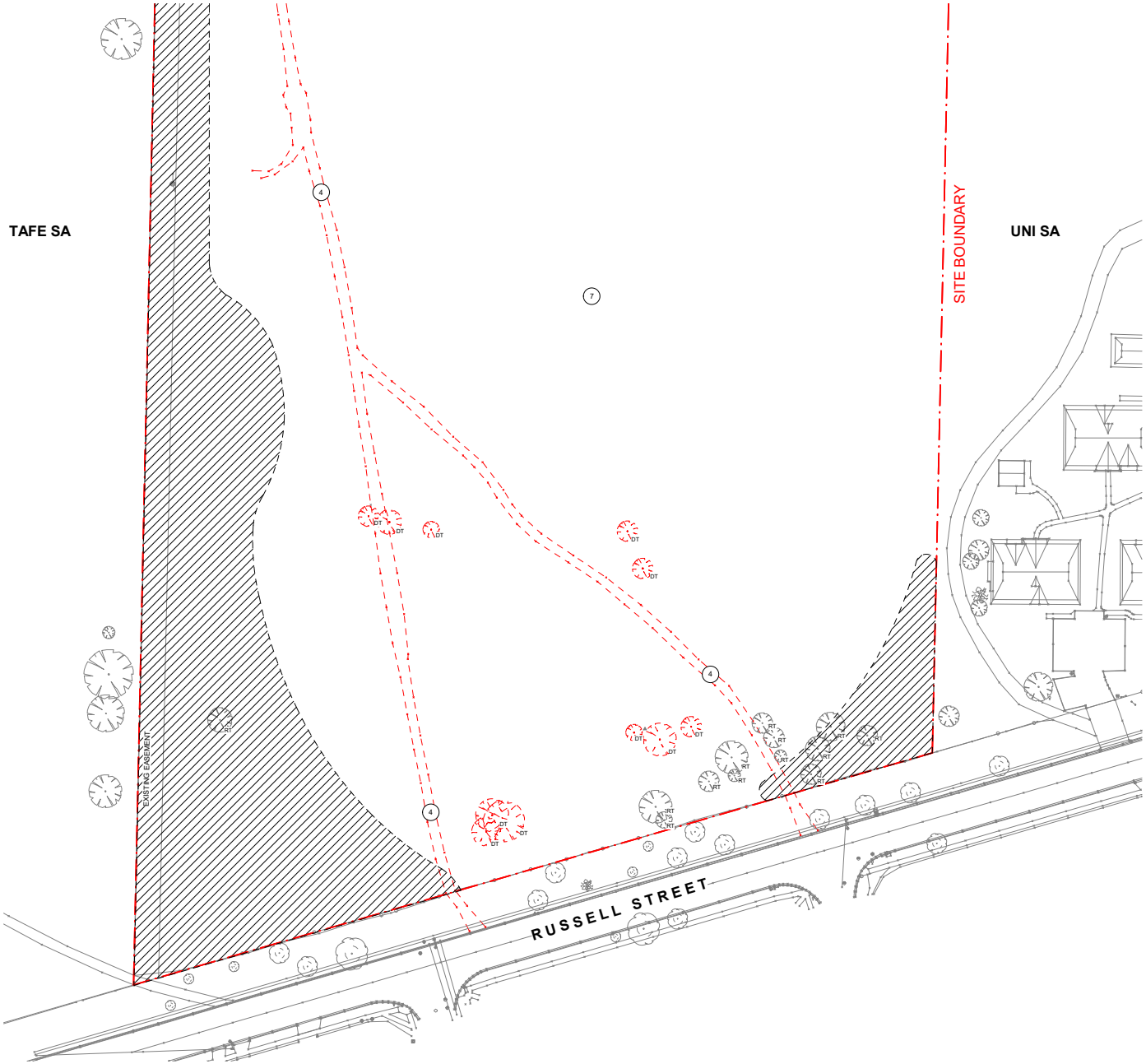
Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

COX



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3. EXISTING FENCE & GATES TO BE REMOVED
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5. EXISTING STORMWATER EASEMENT MADE REDUNDANT WITH NEW STORMWATER STRATEGY. REMOVE REDUNDANT SERVICES/PIPEWORK
6. EXISTING CONCRETE PATH TO BE DEMOLISHED
7. EXISTING SALTBUSH AND VEGETATION TO BE REMOVED. REFER TO LANDSCAPE DRAWINGS
8. EXISTING ETSA LINE TO BE REMOVED
9. EXISTING TELSTRA LINE TO BE REMOVED
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12. EXISTING CONCRETE PATH TO UNISA TO BE DEMOLISHED WITHIN SITE BOUNDARY
13. EXISTING BITUMEN CARPARK TO BE DEMOLISHED
14. EXISTING CONCRETE PATH TO BE DEMOLISHED

EXISTING VEGETATION TO BE RETAINED. REFER TO LANDSCAPE DRAWINGS

DT EXISTING TREES TO BE REMOVED (TYP.)

RT EXISTING TREES TO BE RETAINED (TYP.)

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
DEMOLITION PLAN - ZONE C

Drawing Number:	Revision:	Date:	Scale:
DA-07	A	29/10/19	1 : 500 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

COX

Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
FLOOR PLAN - GROUND - ZONE A-1

Drawing Number:	Revision:	Date:	Scale:
DA-08	A	29/10/19	1 : 200 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

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Project:
NEW WHYALLA SECONDARY SCHOOL

Drawing Title:
FLOOR PLAN - GROUND - ZONE A-2

Drawing Number:	Revision:	Date:	Scale:
DA-09	A	29/10/19	1 : 200 @ A1

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

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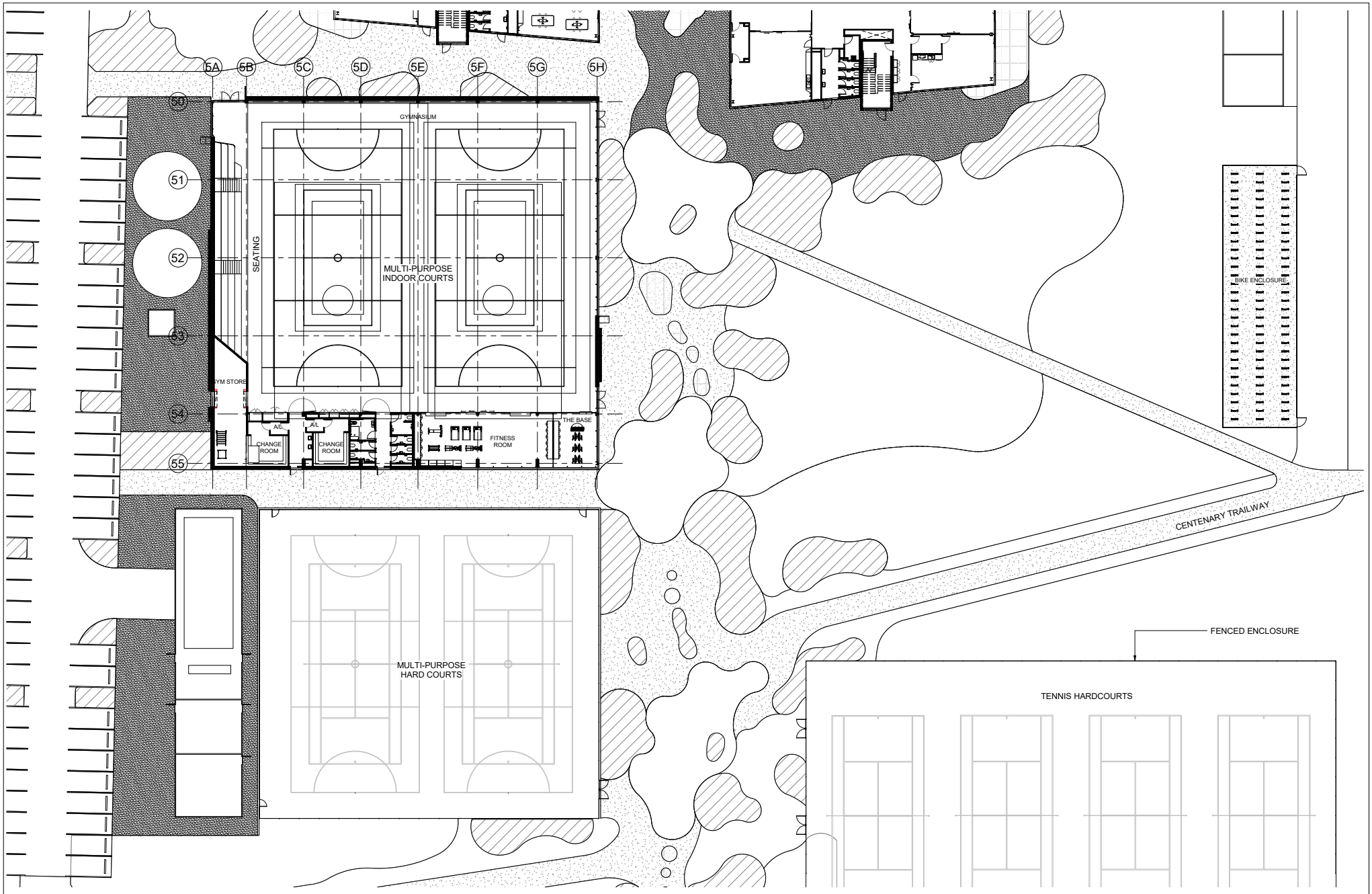


Project:

NEW WHYALLA SECONDARY SCHOOL

Drawing Title:

FLOOR PLAN - GROUND - ZONE A-3

Drawing Number:	Revision:	Date:	Scale:
DA-10	**A**	**29/10/19**	**1 : 200 @ A1**

Cox Architecture
Level 1, 14 Ebenezer Place,
Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Thomson Rossi
99 Carrington Street,
Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

Appendix C

Traffic and parking report prepared by CIRQA

NEW WHYALLA SECONDARY SCHOOL
NICOLSON AVENUE, WHYALLA

TRAFFIC AND PARKING REPORT

CIRQA™

DISCLAIMER

DOCUMENT CONTROL

Report title:	New Whyalla Secondary School, Nicolson Avenue, Whyalla – Traffic and Parking report
Project number:	19143
Client:	Cox Architecture
Client contact:	Gianni Francisco

Version	Date	Details/status	Prepared by	Approved by
Draft	15 Oct 19	For review	BNW	BNW
V1	18 Oct 19	For submission	BNW	BNW

ATTENTION CONTRACTORS AND SUB-CONTRACTORS:

These Drawings, specifications and reports are intended for tender pricing and planning purposes only and not for construction. They are based on information provided by the Client Group and other key stakeholders which may contain conflicting data, omissions and errors.

At the time of issue, these drawings are based on preliminary designs and documentation which is known to be only partially complete. The successful contractor and sub-contractors will be required to work with the consultant team, authorities, stakeholders and client groups to develop these concepts into detailed designs which can be expected to differ in scope, concept and detail from that currently shown on the drawings.

The successful contractor and sub-contractors are advised to make an assessment, based on their own experience with projects of this nature, of the risks involved in changes in requirements, investigation outcomes, scope, concept and design detail and to provide in their tender an adequate contingency to enable them to accommodate any changes or further development.

Refer also to Principal's Project Requirements.

CIRQA Pty Ltd
ABN 12 681 029 983
PO Box 144, Glenside SA 5065
150 Halifax Street, Adelaide SA 5000
(08) 7078 1801
www.cirqa.com.au

1. INTRODUCTION

CIRQA has been engaged to provide design and assessment advice for the new Whyalla Secondary School at Nicolson Avenue, Whyalla. Specifically, CIRQA has been engaged to provide advice in respect to traffic and parking aspects of the proposal.

This report provides a review of the subject site, the proposed development, its access and parking provisions and the associated traffic impact on the adjacent road network. The traffic and parking assessments have been based upon plans prepared by Cox Architecture (refer Appendix A).

2. BACKGROUND

2.1 SUBJECT SITE

The proposed site for the new Whyalla Secondary School is located at 109-115 Nicolson Avenue, Whyalla. The site is bound by Nicolson Avenue to the north, Russell Street to the south, the University of South Australia to the east and TAFE to the west. The Whyalla City Council's Development Plan identifies that the site is located within a Community Zone.

The site is predominantly vacant land with one building being currently used for family day care which has access from Nicolson Street.

2.2 ADJACENT ROAD NETWORK

Nicolson Avenue is a collector road under the care and control of Whyalla City Council. Adjacent the proposed site, Nicolson Avenue comprises two traffic lanes and a marked parking lane in each direction separated by a wide raised median. Sheltered right turn bays are provided at side roads that have full access. There is a shared path on the southern side and a sealed footpath on the northern side of the road. A 60 km/h speed limit applies on Nicolson Avenue adjacent the site. Data available from the nearby signalised intersection of Nicolson Avenue and Norrie Avenue (provided by DPTI) indicates that Nicolson Avenue accommodates in the order of 12,000 vehicles per day in the vicinity of the site.

Russell Street is a local road under the care and control of Whyalla City Council. It is approximately 9 m wide with one traffic lane in each direction separated by a broken centreline. Parking is generally accommodated along its length (on both sides) albeit No Stopping restrictions are in place adjacent the Nicolson Avenue Primary School. The urban default 50km/h speed limit applies on Russell Street, with the exception of the section between Flavel Street and Nicolson Avenue over which a 25 km/h speed zone applies when children are present (associated with the Primary School).

Figure 1 illustrates the location of the subject site and the adjacent road network.

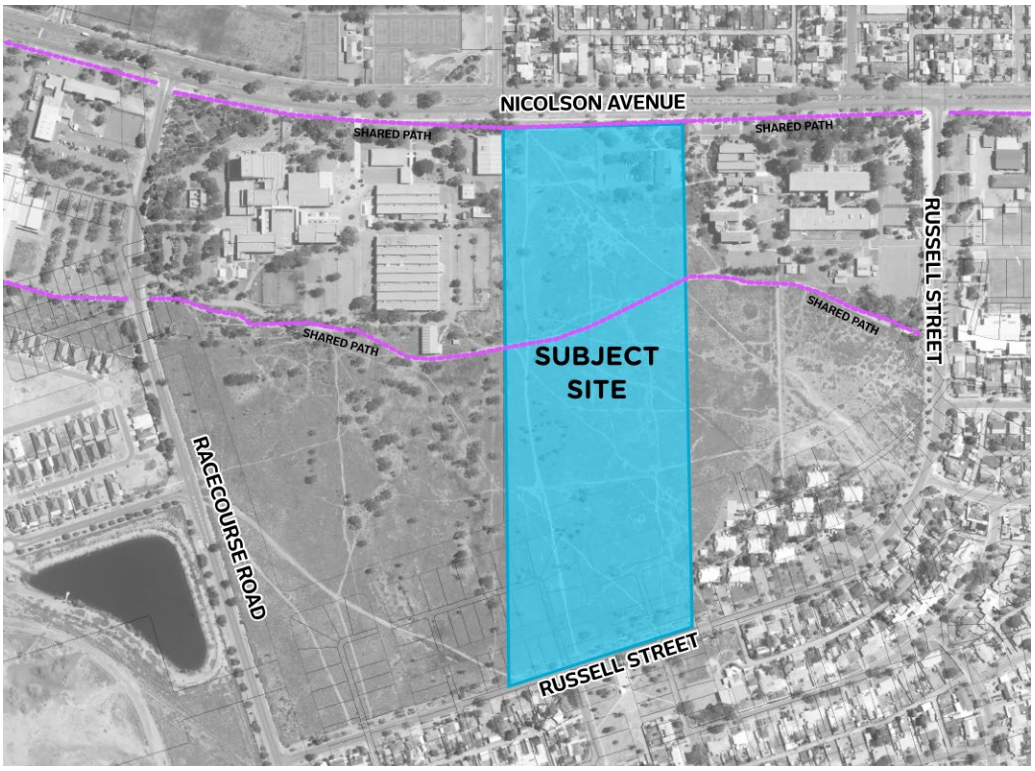


Figure 1 – Location of the subject site and the adjacent road network

2.3 WALKING AND CYCLING

The sealed shared path on Nicolson Avenue provides both pedestrian and cycle access to/from the site. In addition, a major shared path bisects the site that connects to Racecourse Road to the west and Russell Street to the east. Footpaths are also provided on the southern and eastern sides of Russell Street (with a short section also provided on its western side south of Nicolson Avenue) and the northern side of Nicolson Avenue.

There are limited existing crossing points on Nicolson Avenue in the vicinity of the subject site. However, a pedestrian refuge (with associated ramps) is located on Nicolson Avenue approximately 170 m east of the site.

2.4 PUBLIC TRANSPORT

A public transport (bus) service operates in the vicinity of the subject site. In the vicinity of the Route 2 service has two stops on Russell Street as well as stop of Nicolson Avenue (in front of the University of South Australia campus). The route operates between Whyalla, Whyalla Playford, Whyalla Norrie, Whyalla Stuart and Whyalla Jenkins.

3. PROPOSED DEVELOPMENT

3.1 LAND USE AND YIELD

The proposed development comprises the demolition of the existing building and construction of a new school. This will include school buildings, car parks and sporting facilities. The School is proposed to comprise Years 7 to 12 with 1,500 students and 144 full time equivalent (FTE) staff plus 4 allied health service professionals.

The new school will allow the relocation of the existing Edward John Eyre High School (Years 11 to 12) and Whyalla High School (Years 8 to 10) to the subject site (and subsequent closure of those schools) as well as the incorporation of Year 7.

3.2 ACCESS AND PARKING DESIGN

The overall access and movement plan for the school is illustrated in Appendix B and summarised as follows.

Access for the site is proposed via both Nicolson Avenue and Russell Street. Two access points are proposed on Nicolson Avenue.

The access proposed adjacent the north-eastern corner of the site would accommodate left in, left out and right in movements. This access will accommodate movements for the School's 'inclusive learning' area's car park (including set-down and pick up provisions) as we as the entry movements to an on-site set-down/pick-up facility along the site's frontage. A sheltered right turn lane has been recommended to be provided for the eastern Nicolson Avenue access to ensure queues associated with vehicles entering the site do not impact through bound movements on Nicolson Avenue.

The access adjacent the north-western corner on Nicolson Avenue will accommodate two-way access to a staff car park as well as accommodating egress movements from the set-down/pick-up facility. Movements at the access point will be restricted to left-in/left-out movements only. This access would also accommodate refuse collection vehicles and buses.

An access will also be provided on the southern side of the site on Russell Street. This will service additional car parking provided adjacent the proposed sports field (oval).

A total of 192 car parking spaces will be provided within the site. The parking areas shall comply with the requirements of Australian/New Zealand Standard, *Parking Facilities Part 1: Off-street car parking* (AS/NZS 2890.1:2004) and

Australian/New Zealand Standard, *Parking Facilities Part 6: Off-street parking for people with disabilities* (AS/NZS 2890.6:2009) in that:

- regular (staff) 90 degree angled parking spaces shall be a minimum of 2.4 m wide and 4.8 m long with 600 mm overhang to low lying landscaping (wheel stops should not be utilised for this arrangement);
- disabled parking spaces shall be 2.4 m wide and 5.4 m long (with an adjacent shared space of the same dimension);
- the parking aisles adjacent 90 degree spaces shall be at least 5.8 m wide;
- parallel parking lanes shall be at least 2.5 m wide with an adjacent aisle width of at least 3.5 m, albeit the parallel parking for the inclusive learning facility will be 3.5 m to accommodate access to/from vehicles by persons with disabilities;
- 1.0 m end-of-aisle extension shall be provided beyond the last parking space in dead-end aisles; and
- 0.3 m clearance shall be provided to all objects greater than 0.15 m in height.

Bicycle parking facilities will also be provided in various locations within the site for both staff and students. A total of 250 bicycle parking spaces are proposed.

In addition to the on-site car parking, there is a significant level of on-street parking availability within the vicinity of the site along its frontages on Nicolson Avenue (in the order of 60 spaces in close proximity to the school) and Russell Street (south of the site with approximately 60 spaces close to the school). Further on-street parking is also available on Russell Street (west of the site) and Racecourse Road which can be accessed via the shared path which bisects the site. In order to assist with additional accommodation of parking on Russell Street, the potential for nine parking spaces to be indented has been identified (the indenting of the spaces is proposed as this location currently has No Stopping controls, this would ensure the carriageway is kept clear).

In addition to shared path bisecting the site, pedestrian access paths will be provided throughout the school with connections to the external path network. This includes connections to Nicolson Avenue and Russell Street (south). It is proposed to formalise a crossing point on Nicolson Avenue to accommodate movements across the road. This crossing could be formed by way of a refuge with associated pedestrian ramps, albeit consideration should be given to installation of a Pedestrian Actuated Crossing which would provide a higher level of safety for students crossing Nicolson Avenue. A crossing point can also be provided on Russell Street, albeit could comprise kerb protuberances and ramps rather than a formalised school treatment such as a Koala or Emu Crossing (which are generally only utilised for primary schools).

3.3 COMMERCIAL VEHICLE ACCESS

A service and delivery area is proposed to be provided within the north-western car park. The area has been designed to accommodate the movements of 12.5 m long Heavy Rigid Vehicles. Service and delivery vehicles will generally be smaller than this size, however this will allow large (charter) coaches to be turned around on-site if utilised by the school (i.e. for excursions). Figure 2 illustrates the turning movements of such vehicles.

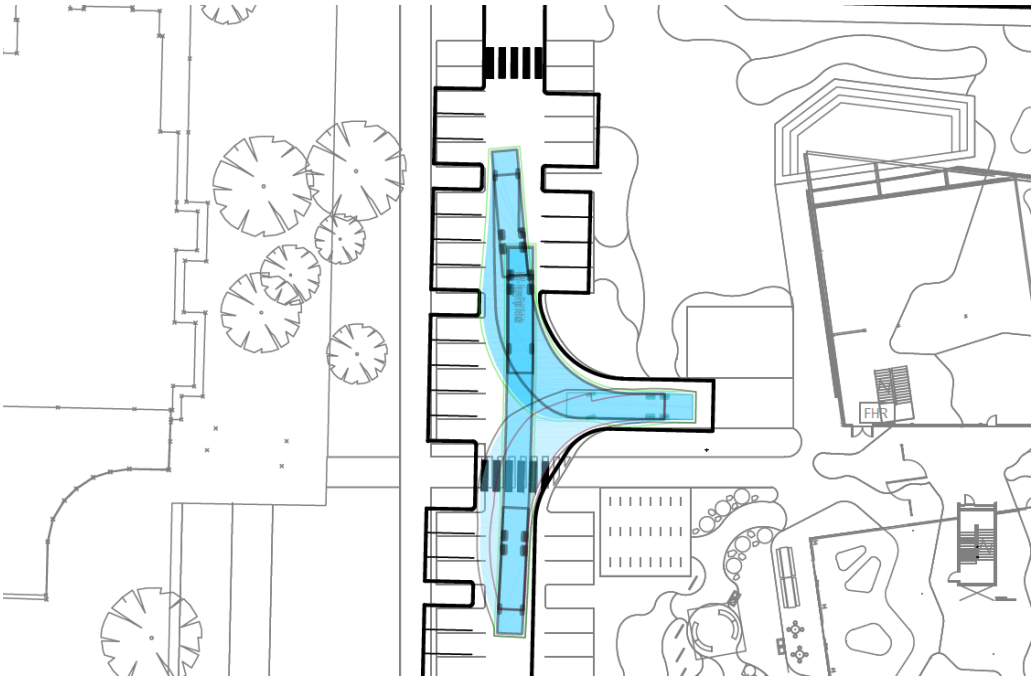


Figure 2 - 12.5 m long Heavy Rigid Vehicle turn path

In addition, 29-seater buses (such as a Toyota Coaster or Mercedes Sprinter) will be utilised for access/to from the inclusive learning area. Figure 3 illustrates the movements associated with such vehicles in this area.

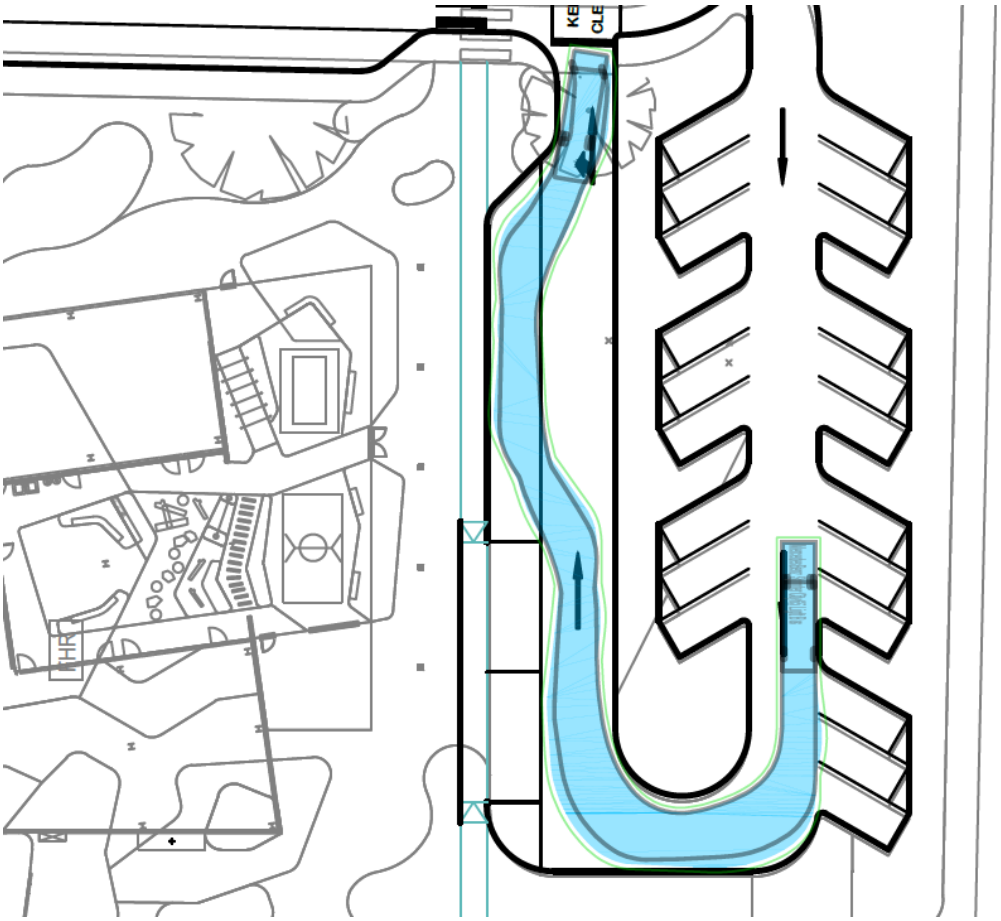


Figure 3 - Coaster/Sprinter bus access for inclusive learning

4. PARKING ASSESSMENT

4.1 CAR PARKING

The Whyalla City Council's Development Plan does not identify a parking provision requirement for schools or educational establishments. The Department for Education (DfE), however, have identified the following parking requirements for the high school:

- one parking space per FTE staff member;
- four parking spaces for use by persons with disabilities; and
- an additional 10% (of the requirement resulting from the above rates) for visitor parking.

The above rates would result in a requirement for 168 parking spaces to be provided on-site. The proposed provision of 192 spaces will therefore exceed the DfE requirement (noting that on-site set-down/pick-up spaces are also proposed).

In addition to the above parking provisions, it is acknowledged that not all of the student/parent related parking will be accommodated on site and proportion would be distributed to on-street locations.

In order to determine likely student/parent parking demands, surveys were undertaken at Whyalla High School and Edward John Eyre School during the morning and afternoon peak periods. The surveys identified that the peak parking demand occurred during the afternoon pick-up period (as typically occurs at schools). Notably, the morning peak hour demands at both schools were much lower (in the order of 25% of the afternoon demands for student/parent parking). The surveys identified the following peak parking demands:

- Whyalla High School – a peak demand rate for 1 set-down/pick-up vehicle per 7.6 students;
- Edward John Eyre High School – a peak demand rate for 1 set-down/pick-up vehicle per 21.7 students PLUS 1 student (Yr 12) vehicle per 16.6 (total school) students; and
- staff parking demands at both Schools were around the 1 space per FTE staff (albeit slightly lower than this rate);

If the demands for the two schools are combined, there would be a total demand rate of approximately 1 space per 8.4 students (parent and student parking combined). However, given the size of the proposed school, there would be additional efficiencies achieved in parking demand rates (for instance, greater potential for siblings who arrive via the same vehicle compared to the existing separate schools). Additionally, there would likely be a proportion of students whose parents work or attend the adjacent University and TAFE campuses (and would likely park within those sites). On this basis, it is considered likely that the parking demands would be in the order of 1 space per 9 to 10 students. With this prorated to the 1,500 students there would be a demand for 150 to 167 spaces (above that associated with staff and general visitors). With 26 spaces available on-site (not utilised for staff parking), there would be a potential distribution of 126 to 143 vehicles to the surrounding street network. Based on the review of parking availability on the frontage roads and other nearby streets, such demands would be able to be accommodated.

It is important to note that the peak demand period associated with set-down/pick-up at the two schools surveyed last for approximately 10 minutes. The impact on parking conditions surrounding the site would be limited to a relatively short period of time. Additionally, as noted above, am period demands are likely to be much lower. The overall impact of the use of on-street parking to accommodate a proportion of the set-down/pick-up demands would therefore be limited.

In addition to the above, there may be opportunities to provide an additional public bus stop in closer proximity to the school or provide altered/additional services. This would support further reduction in the use of private motor vehicles for access to/from the school.

5. TRAFFIC ASSESSMENT

Trip generation associated with public high schools is typically in the order of 0.3 to 0.5 trips per student (this includes allowance for staff and visitor trips). Based on the lower than typical parking demand rates observed at the two existing schools, it is considered that the proposed school would likely generate traffic at the lower end of this range.

It is therefore considered that in the order 450 trips could be generated in the peak hours associated with the school. Based on the distribution of on-site and on-street parking, it is considered that such trips would be distributed to the various roads surrounding the site. It is anticipated that in the order of 60% of these movements would be undertaken via Nicolson Avenue with the remaining movements accommodated on Russell Street, Racecourse road and, to a lesser extent, other side streets in the broader area.

The primary focus of movements would be in the vicinity of the two access points on Nicolson Avenue. Assuming (conservatively) that all movements distributed via Nicolson Avenue enter and exit the site, Figure 4 summarises the forecast movements that could occur at the access points. In reality, a proportion of these movements would remain on-street and not enter the site, however this provides a conservative basis for consideration of the turning movements at the access points.

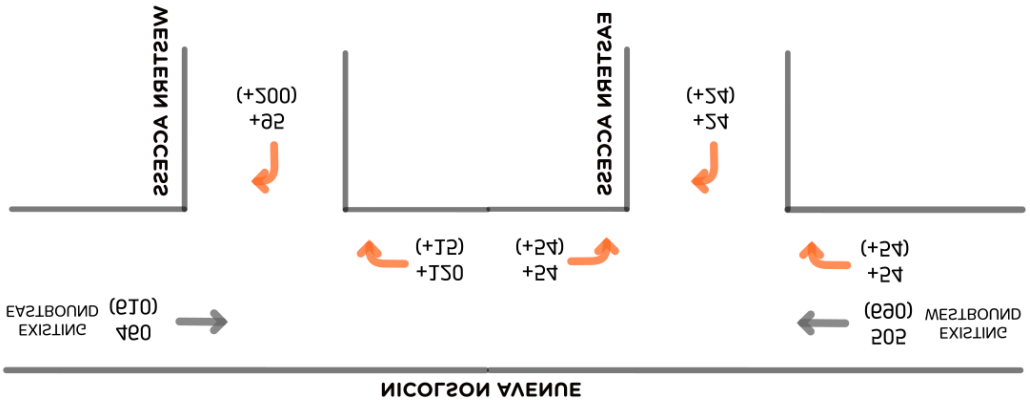


Figure 4 - Forecast am set-down and (pm) pick-up movements at the main access points and existing through bound movements

The above volumes would be within the capacity of access points on a dual carriageway road. In particular, it is noted that the movements will be restricted to left-in, left-out and right-in with no right-out movements (which are more typically associated with higher levels of delay and conflict).

SIDRA intersection analysis software has been utilised to analyse the above forecast traffic volumes at the two main access points. The detailed analysis results are provided in Appendix C. The SIDRA results indicate both access points will operate with acceptable Degrees of Saturation and high Levels of Service. All through movements on Nicolson Avenue will retain a Level of Service of 'A' which indicates the access points and associated additional volumes will have negligible impact on other movements undertaken along Nicolson Avenue.

The analysis also indicates that the recommended right turn lane within the Nicolson Avenue will adequately accommodate the forecast queues. Queuing associated with vehicles exiting the access points will also be relatively low (95th percentile queues of 2.1 vehicles or less).

The analysis indicates that the movements will be able to be adequately accommodated at the two access points. In reality, conditions will be better than reported given the conservative nature of the forecasts adopted for assessment of the access points.

The number of movements distributed to other surrounding roads will be lower than that accommodated on Nicolson Avenue (and there are much lower through traffic volumes on the other surrounding streets). It is considered that there is adequate capacity on the road network to accommodate the forecast movements.

It is also noted that such volumes would only be generated during the peak school periods. Outside of the peak set-down and pick-up hours, the number of additional traffic movements would be minimal.

6. SUMMARY

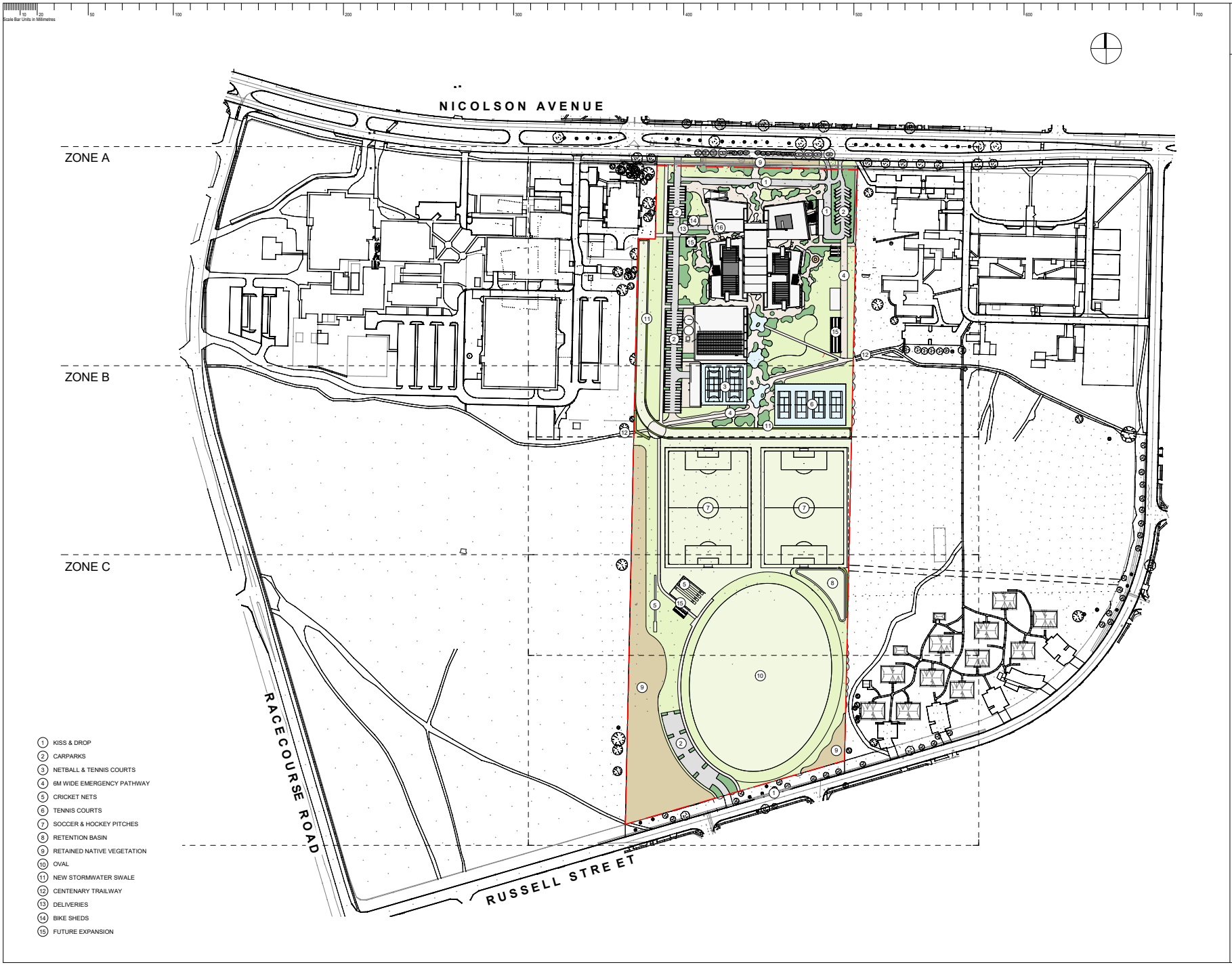
The proposed development of the New Whyalla Secondary School will accommodate 1,500 students and 148 FTE staff (including the allied health professionals). The school will be serviced by access points on Nicolson Avenue and Russell Street. These will provide vehicular access to a total of 192 on-site parking spaces as well as accommodate service and delivery vehicle movements.

The on-site parking provision will exceed the Department for Education's policy requirements. Additional set-down/pick-up and student parking demands will be distributed to the surrounding street network. Based on surveys of existing

schools within Whyalla, the peak afternoon demand is anticipated to occur for short periods (10 or so minutes) in the afternoon pick-up peak period with limited impact at other times of day (parking accumulation during the morning period would be much lower than the afternoon period).

The proposal will also result in an increase in traffic generation associated with the School. It is forecast that approximately 450 additional peak hour trips would be generated during the morning and afternoon peak hours. These movements would be distributed to Nicolson Avenue, Russell Street and other adjacent side streets. It is considered that there is adequate capacity to accommodate the increase in movements and that there will be minimal impact on existing traffic conditions as a result of the proposal. As with parking demands, traffic generation outside of the peak set-down and pick-up periods will be low.

APPENDIX A
SITE LAYOUT PLANS



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ISSUE FOR TENDER

COX ARCHITECTURE
Level 1, Ebenezer Place,
Adelaide SA 5000, Australia
T +61 8 7122 5050
www.coxarchitecture.com.au

THOMSON ROSSI
89 Carrington Street,
Adelaide SA 5000, Australia
T +61 8 7324 9999
www.thomsonrossi.com.au

CONSULTANTS

STRUCTURAL & CIVIL ENGINEER
NAME: AURECON
ADDRESS: LEVEL 10, 55 GRENFELL STREET, ADELAIDE 5000
TEL: 08 8237 9777

BUILDING SERVICES ENGINEER
NAME: LOCID
ADDRESS: 3/155 PIRIE STREET, ADELAIDE 5000
TEL: 08 8407 9700

LANDSCAPE ARCHITECT
NAME: ASPECT STUDIO
ADDRESS: 5/11 BAILEY STREET, ADELAIDE 5000
TEL: 08 8231 9660

FACADE ENGINEER
NAME: ARUP
ADDRESS: LEVEL 7, 182 VICTORIA SQUARE, ADELAIDE 5000
TEL: 08 8413 8530

ACOUSTIC ENGINEER
NAME: RESONATE
ADDRESS: PEEL CHAMBERS, LEVEL 4/23 PEEL ST, ADELAIDE SA 5000
TEL: 08 8155 5886

NOTES

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AT THE TIME OF ISSUE, THESE DRAWINGS ARE BASED ON PRELIMINARY DESIGNS AND DOCUMENTATION WHICH IS KNOWN TO BE ONLY PARTIALLY COMPLETE. THE SUCCESSFUL CONTRACTOR AND SUB-CONTRACTORS WILL BE REQUIRED TO WORK WITH THE CONSULTANT TEAM, AUTHORITIES, STAKEHOLDERS AND CLIENT GROUPS TO DEVELOP THESE CONCEPTS INTO DETAILED DESIGNS WHICH CAN BE EXPECTED TO DIFFER IN SCOPE, QUALITY AND DETAIL FROM THAT CURRENTLY SHOWN ON THE DRAWINGS.

THE SUCCESSFUL CONTRACTOR AND SUB-CONTRACTORS ARE ADVISED TO MAKE AN ASSESSMENT, BASED ON THEIR OWN EXPERIENCE WITH PROJECTS OF THIS NATURE, OF THE RISKS INVOLVED IN CHANGES IN REQUIREMENTS, INVESTIGATION OUTCOMES, SCOPE, CONCEPT AND DETAILED DESIGN AND TO INCLUDE THESE IN THEIR TENDER AN ADEQUATE CONTINGENCY TO ENABLE THEM TO ACCOMMODATE ANY CHANGES OR FURTHER DEVELOPMENT.

REFER ALSO TO PRINCIPAL'S PROJECT REQUIREMENTS.

REV.	DATE	AMENDMENTS	INITIAL

Government of South Australia
Department of Planning, Transport and Infrastructure

CONTRACT EXECUTION

CONTRACTOR _____ DATE _____

WITNESS _____ DATE _____

CONTRACT NAME

NEW WHYALLA SECONDARY SCHOOL

SITE ADDRESS
NICOLSON AVENUE, WHYALLA, SOUTH AUSTRALIA

DRAWING TITLE
MASTERPLAN

CONTRACT NO.	DRAWN BY - CHECKED BY
6791-A-2019	Author Checker
PSC JOB NO.	SCALE - SHEET SIZE
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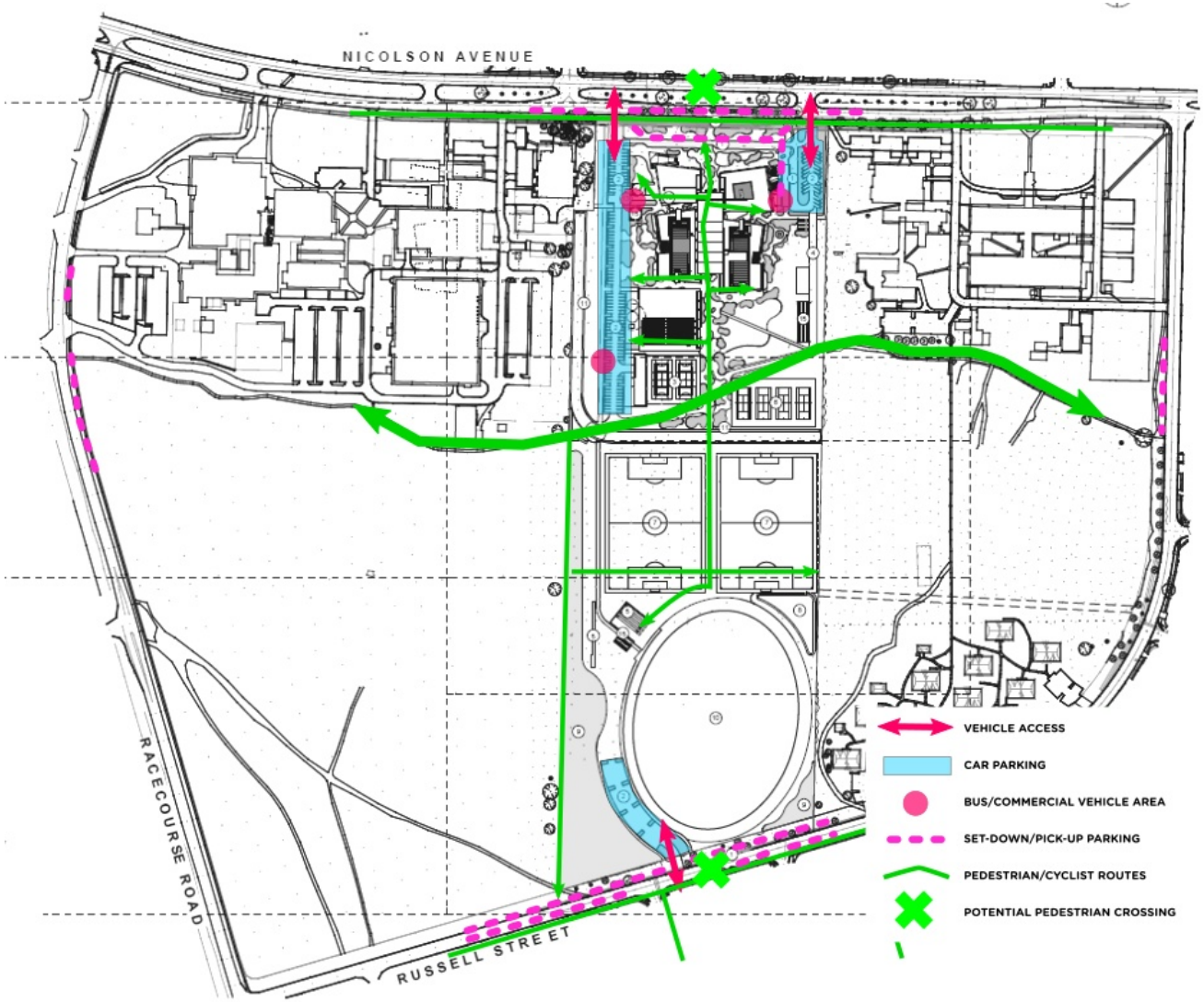
DPTI ASSET NO.	SHEET NO.
	A11.0.01
DPTI DRAWING NO.	REVISION

APPENDIX B

ACCESS AND MOVEMENT PLAN



NEW WHYALLA SECONDARY SCHOOL
TRANSPORT AND MOVEMENT PLAN

APPENDIX C

SIDRA ANALYSIS RESULTS

INTERSECTION SUMMARY

Site: 101v [Eastern Access AM]

New Site
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	58.4	km/h	58.4	km/h
Travel Distance (Total)	2450.0	veh-km/h	2940.1	pers-km/h
Travel Time (Total)	42.0	veh-h/h	50.4	pers-h/h
Demand Flows (Total)	2424	veh/h	2909	pers/h
Percent Heavy Vehicles (Demand)	2.0	%		
Degree of Saturation	0.398			
Practical Spare Capacity	146.2	%		
Effective Intersection Capacity	6091	veh/h		
Control Delay (Total)	0.99	veh-h/h	1.19	pers-h/h
Control Delay (Average)	1.5	sec	1.5	sec
Control Delay (Worst Lane)	22.8	sec		
Control Delay (Worst Movement)	22.8	sec	22.8	sec
Geometric Delay (Average)	0.6	sec		
Stop-Line Delay (Average)	0.9	sec		
Idling Time (Average)	0.6	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	1.5	veh		
95% Back of Queue - Distance (Worst Lane)	10.9	m		
Queue Storage Ratio (Worst Lane)	0.00			
Total Effective Stops	209	veh/h	250	pers/h
Effective Stop Rate	0.09	per veh	0.09	per pers
Proportion Queued	0.05		0.05	
Performance Index	44.4		44.4	
Cost (Total)	913.19	$/h	913.19	$/h
Fuel Consumption (Total)	158.1	L/h		
Carbon Dioxide (Total)	374.0	kg/h		
Hydrocarbons (Total)	0.028	kg/h		
Carbon Monoxide (Total)	0.461	kg/h		
NOx (Total)	0.329	kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,163,520	veh/y	1,396,224	pers/y
Delay	476	veh-h/y	571	pers-h/y
Effective Stops	100,105	veh/y	120,126	pers/y
Travel Distance	1,176,024	veh-km/y	1,411,228	pers-km/y
Travel Time	20,145	veh-h/y	24,174	pers-h/y
Cost	438,333	$/y	438,333	$/y
Fuel Consumption	75,894	L/y		
Carbon Dioxide	179,530	kg/y		
Hydrocarbons	13	kg/y		
Carbon Monoxide	221	kg/y		
NOx	158	kg/y		

MOVEMENT SUMMARY

▽ Site: 101v [Eastern Access AM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eastern Access											
1	L2	48	2.0	0.069	8.9	LOS A	0.2	1.8	0.53	0.74	51.1
Approach		48	2.0	0.069	8.9	LOS A	0.2	1.8	0.53	0.74	51.1
East: Nicolson Avenue [E]											
4	L2	108	2.0	0.337	5.6	LOS A	0.0	0.0	0.00	0.09	57.4
5	T1	1240	2.0	0.337	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		1348	2.0	0.337	0.5	NA	0.0	0.0	0.00	0.05	59.3
West: Nicolson Avenue [W]											
11	T1	920	2.0	0.239	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	108	2.0	0.398	22.8	LOS C	1.5	10.9	0.88	1.01	42.9
Approach		1028	2.0	0.398	2.4	NA	1.5	10.9	0.09	0.11	57.5
All Vehicles		2424	2.0	0.398	1.5	NA	1.5	10.9	0.05	0.09	58.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101v [Eastern Access PM]

New Site
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	58.2	km/h	58.2	km/h
Travel Distance (Total)	2924.7	veh-km/h	3509.7	pers-km/h
Travel Time (Total)	50.2	veh-h/h	60.3	pers-h/h
Demand Flows (Total)	2894	veh/h	3473	pers/h
Percent Heavy Vehicles (Demand)	2.0	%		
Degree of Saturation	0.544			
Practical Spare Capacity	80.2	%		
Effective Intersection Capacity	5321	veh/h		
Control Delay (Total)	1.33	veh-h/h	1.60	pers-h/h
Control Delay (Average)	1.7	sec	1.7	sec
Control Delay (Worst Lane)	33.4	sec		
Control Delay (Worst Movement)	33.4	sec	33.4	sec
Geometric Delay (Average)	0.5	sec		
Stop-Line Delay (Average)	1.2	sec		
Idling Time (Average)	0.9	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	2.1	veh		
95% Back of Queue - Distance (Worst Lane)	15.2	m		
Queue Storage Ratio (Worst Lane)	0.00			
Total Effective Stops	217	veh/h	261	pers/h
Effective Stop Rate	0.08	per veh	0.08	per pers
Proportion Queued	0.04		0.04	
Performance Index	53.2		53.2	
Cost (Total)	1088.59	$/h	1088.59	$/h
Fuel Consumption (Total)	187.6	L/h		
Carbon Dioxide (Total)	443.8	kg/h		
Hydrocarbons (Total)	0.033	kg/h		
Carbon Monoxide (Total)	0.547	kg/h		
NOx (Total)	0.386	kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,389,120	veh/y	1,666,944	pers/y
Delay	640	veh-h/y	768	pers-h/y
Effective Stops	104,213	veh/y	125,055	pers/y
Travel Distance	1,403,880	veh-km/y	1,684,656	pers-km/y
Travel Time	24,112	veh-h/y	28,935	pers-h/y
Cost	522,523	$/y	522,523	$/y
Fuel Consumption	90,042	L/y		
Carbon Dioxide	213,002	kg/y		
Hydrocarbons	16	kg/y		
Carbon Monoxide	263	kg/y		
NOx	185	kg/y		

MOVEMENT SUMMARY

▽ Site: 101v [Eastern Access PM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eastern Access											
1	L2	48	2.0	0.078	9.8	LOS A	0.3	2.0	0.56	0.78	50.4
Approach		48	2.0	0.078	9.8	LOS A	0.3	2.0	0.56	0.78	50.4
East: Nicolson Avenue [E]											
4	L2	108	2.0	0.379	5.6	LOS A	0.0	0.0	0.00	0.08	57.5
5	T1	1410	2.0	0.379	0.0	LOS A	0.0	0.0	0.00	0.04	59.5
Approach		1518	2.0	0.379	0.4	NA	0.0	0.0	0.00	0.04	59.4
West: Nicolson Avenue [W]											
11	T1	1220	2.0	0.317	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	108	2.0	0.544	33.4	LOS D	2.1	15.2	0.93	1.07	38.2
Approach		1328	2.0	0.544	2.8	NA	2.1	15.2	0.08	0.09	57.3
All Vehicles		2894	2.0	0.544	1.7	NA	2.1	15.2	0.04	0.08	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101v [Western Access AM]

New Site
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	58.5	km/h	58.5	km/h
Travel Distance (Total)	2543.6	veh-km/h	3052.3	pers-km/h
Travel Time (Total)	43.4	veh-h/h	52.1	pers-h/h
Demand Flows (Total)	2516	veh/h	3019	pers/h
Percent Heavy Vehicles (Demand)	2.0	%		
Degree of Saturation	0.326			
Practical Spare Capacity	200.7	%		
Effective Intersection Capacity	7719	veh/h		
Control Delay (Total)	0.82	veh-h/h	0.98	pers-h/h
Control Delay (Average)	1.2	sec	1.2	sec
Control Delay (Worst Lane)	8.0	sec		
Control Delay (Worst Movement)	8.0	sec	8.0	sec
Geometric Delay (Average)	1.0	sec		
Stop-Line Delay (Average)	0.2	sec		
Idling Time (Average)	0.0	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	0.9	veh		
95% Back of Queue - Distance (Worst Lane)	6.5	m		
Queue Storage Ratio (Worst Lane)	0.01			
Total Effective Stops	279	veh/h	335	pers/h
Effective Stop Rate	0.11	per veh	0.11	per pers
Proportion Queued	0.04		0.04	
Performance Index	45.5		45.5	
Cost (Total)	959.00	$/h	959.00	$/h
Fuel Consumption (Total)	167.7	L/h		
Carbon Dioxide (Total)	396.6	kg/h		
Hydrocarbons (Total)	0.030	kg/h		
Carbon Monoxide (Total)	0.486	kg/h		
NOx (Total)	0.359	kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,207,680	veh/y	1,449,216	pers/y
Delay	391	veh-h/y	470	pers-h/y
Effective Stops	134,066	veh/y	160,879	pers/y
Travel Distance	1,220,935	veh-km/y	1,465,122	pers-km/y
Travel Time	20,853	veh-h/y	25,024	pers-h/y
Cost	460,319	$/y	460,319	$/y
Fuel Consumption	80,482	L/y		
Carbon Dioxide	190,366	kg/y		
Hydrocarbons	14	kg/y		
Carbon Monoxide	233	kg/y		
NOx	172	kg/y		

MOVEMENT SUMMARY

▽ Site: 101v [Western Access AM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Western Access											
1	L2	190	2.0	0.222	8.0	LOS A	0.9	6.5	0.49	0.72	51.7
Approach		190	2.0	0.222	8.0	LOS A	0.9	6.5	0.49	0.72	51.7
East: Nicolson Avenue [E]											
4	L2	240	2.0	0.326	5.6	LOS A	0.0	0.0	0.00	0.21	56.4
5	T1	1058	2.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.09	59.1
Approach		1298	2.0	0.326	1.1	NA	0.0	0.0	0.00	0.11	58.6
West: Nicolson Avenue [W]											
11	T1	1028	2.0	0.267	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1028	2.0	0.267	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		2516	2.0	0.326	1.2	NA	0.9	6.5	0.04	0.11	58.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

INTERSECTION SUMMARY

Site: 101v [Western Access PM]

New Site
Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	57.6	km/h	57.6	km/h
Travel Distance (Total)	3220.3	veh-km/h	3864.4	pers-km/h
Travel Time (Total)	55.9	veh-h/h	67.1	pers-h/h
Demand Flows (Total)	3186	veh/h	3823	pers/h
Percent Heavy Vehicles (Demand)	2.0	%		
Degree of Saturation	0.702			
Practical Spare Capacity	13.9	%		
Effective Intersection Capacity	4537	veh/h		
Control Delay (Total)	1.99	veh-h/h	2.39	pers-h/h
Control Delay (Average)	2.2	sec	2.2	sec
Control Delay (Worst Lane)	17.2	sec		
Control Delay (Worst Movement)	17.2	sec	17.2	sec
Geometric Delay (Average)	0.8	sec		
Stop-Line Delay (Average)	1.5	sec		
Idling Time (Average)	0.4	sec		
Intersection Level of Service (LOS)	NA			
95% Back of Queue - Vehicles (Worst Lane)	5.5	veh		
95% Back of Queue - Distance (Worst Lane)	39.3	m		
Queue Storage Ratio (Worst Lane)	0.03			
Total Effective Stops	498	veh/h	598	pers/h
Effective Stop Rate	0.16	per veh	0.16	per pers
Proportion Queued	0.10		0.10	
Performance Index	62.9		62.9	
Cost (Total)	1237.40	$/h	1237.40	$/h
Fuel Consumption (Total)	211.7	L/h		
Carbon Dioxide (Total)	500.8	kg/h		
Hydrocarbons (Total)	0.037	kg/h		
Carbon Monoxide (Total)	0.614	kg/h		
NOx (Total)	0.447	kg/h		

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,529,280	veh/y	1,835,136	pers/y
Delay	954	veh-h/y	1,145	pers-h/y
Effective Stops	239,132	veh/y	286,958	pers/y
Travel Distance	1,545,751	veh-km/y	1,854,901	pers-km/y
Travel Time	26,836	veh-h/y	32,203	pers-h/y
Cost	593,950	$/y	593,950	$/y
Fuel Consumption	101,625	L/y		
Carbon Dioxide	240,379	kg/y		
Hydrocarbons	18	kg/y		
Carbon Monoxide	295	kg/y		
NOx	215	kg/y		

MOVEMENT SUMMARY

▽ Site: 101v [Western Access PM]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Western Access											
1	L2	400	2.0	0.702	17.2	LOS C	5.5	39.3	0.82	1.20	45.8
Approach		400	2.0	0.702	17.2	LOS C	5.5	39.3	0.82	1.20	45.8
East: Nicolson Avenue [E]											
4	L2	30	2.0	0.363	5.6	LOS A	0.0	0.0	0.00	0.02	58.0
5	T1	1428	2.0	0.363	0.0	LOS A	0.0	0.0	0.00	0.01	59.8
Approach		1458	2.0	0.363	0.2	NA	0.0	0.0	0.00	0.01	59.8
West: Nicolson Avenue [W]											
11	T1	1328	2.0	0.345	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		1328	2.0	0.345	0.0	NA	0.0	0.0	0.00	0.00	59.9
All Vehicles		3186	2.0	0.702	2.2	NA	5.5	39.3	0.10	0.16	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix D

Acoustic design report prepared by Resonate

New Whyalla Secondary School

Acoustic Design Report

A190707RP1 Revision 0

Thursday, 17 October 2019

Resonate

Document Information

Project	New Whyalla Secondary School
Client	Cox Architecture Pty Ltd
Report title	Acoustic Design Report
Project Number	A190707

Revision Table

Report revision	Date	Description	Author	Reviewer
0	17 October 2019	First issue	Deb James	Darren Jurevicius

ATTENTION CONTRACTORS AND SUB-CONTRACTORS:

This report is intended for tender pricing and planning purposes only and not for construction. It is based on information provided by the Client Group and other key stakeholders which may contain conflicting data, omissions and errors.

At the time of issue, this report is based on preliminary designs and documentation which is known to be only partially complete. The successful contractor and sub-contractors will be required to work with the consultant team, authorities, stakeholders and client groups to develop these concepts into detailed designs which can be expected to differ in scope, concept and detail from that currently noted.

The successful contractor and sub-contractors are advised to make an assessment, based on their own experience with projects of this nature, of the risks involved in changes in requirements, investigation outcomes, scope, concept and design detail and to provide in their tender an adequate contingency to enable them to accommodate any changes or further development.

Refer also to Principal's Project Requirements.

Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Day	Between 7 am and 10 pm as defined in the Noise EPP
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of that sound level.
dB(A)	Units of the A-weighted sound level.
D_W	Weighted Level Difference—the noise level difference or reduction between two enclosed spaces. It quantifies the acoustic separation between two spaces. It relates to the R_W rating of the separating building elements (such as walls and doors) and also includes all noise flanking paths (such as ceiling voids, joins and seals) and the acoustic absorption in the receiving space. The higher the D_W rating the better the acoustic separation.
$D_{nC,W}$ / CAC	Weighted Ceiling Noise Reduction Index / Ceiling Attenuation Class—these values represent the ability of a ceiling to prevent the transmission of sound. The $D_{nC,W}$ / CAC is a measure of sound reduction between rooms with a common ceiling plenum (or space). The higher the values the better the acoustic separation provided by the ceiling.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
Indicative noise level	Indicative noise level determined under clause 5 of the Noise EPP.
L_{90}	Noise level exceeded for 90 % of the measurement time. The L_{90} level is commonly referred to as the background noise level.
L_{eq}	Equivalent Noise Level—Energy averaged noise level over the measurement time.
L_{max}	The maximum instantaneous noise level.
Night	Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise EPP
Noise source	Premises or a place at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise
NR	Noise Rating—a single number evaluation of noise level based on the Noise Rating curve The NR level is normally around 5 dB below the 'A' weighted noise level.
NRC	Noise Reduction Coefficient—A single number that represents the absorption of a material and it is the average of the sound absorption coefficients at 250, 500, 1000 & 2000 Hz for that material. NRC 1.0 represents the highest level of absorption.
Reverberation Time (RT)	Of a room, for a sound of a given frequency or frequency band, the time that would be required for the reverberantly decaying sound pressure level in the room to decrease by 60 decibels.

R_W	Weighted Sound Reduction Index—A laboratory measured value of the acoustic separation provided by a single building element (such as a partition). The higher the R_W the better the noise isolation provided by a building element.
$R_w + C_{tr}$	A measure of the sound insulation performance of a building element with a C_{tr} spectrum adaptation term placing greater emphasis on the low frequency performance.

Table of Contents

1 Introduction

This report outlines the acoustic requirements for the New Whyalla Secondary School. It details the acoustic requirements and indicative recommended acoustic treatments.

The main acoustic issues addressed in this report are:

- acoustic separation between sensitive spaces
- internal acoustics including reverberation control
- mechanical plant noise within the occupied spaces
- noise and vibration from hydraulic services.

Key acoustic issues include:

- noise intrusion from roof top chillers and AHUs
- noise from mechanical plant to outdoor learning areas and gathering points
- control of mechanical services noise generally to internal spaces
- Design of the theatre and music spaces
- Acoustic separation between sensitive spaces
- Internal acoustics including reverberation control.

The concept design has been reviewed against the following standards and guidelines:

- Department for Education (DfE) *Education facilities standards*
- Association of Australasian Acoustical Consultants (AAAC) *Guideline for Educational Facilities* v2.0
- AS/NZS 2107:2016 *Recommended design sound levels and reverberation times for building interiors*
- South Australia *Environment Protection (Noise) Policy 2007*
- Whyalla Council Development Plan.

2 Criteria

2.1 Acoustic separation

The DfE *Education facilities standards* provides recommended levels of acoustic separation between different areas. Table 1 shows the equivalent subjective performance for airborne noise ratings (R_w) recommended for this project, which include the recommendations provided in the *Education facilities standards.*

Table 1 Acoustic separation, subjective performance and typical recommended use

R_w	Subjective performance of the separation of different sources			Recommended areas of use
	Normal voice	Raised voice & AV	Music	
30	Poor	Very Poor		• Standard door (DfE D_w 25)
35	Poor to Average	Poor		• Service risers
40	Average	Poor	Very Poor	• Acoustic separation is not an important consideration • Offices to corridors • Partitions with doors
45	Average to Good	Poor to Average	Very Poor	• Classrooms to corridors • Partition between General Learning Areas (GLA), open learning areas and teacher preparation areas when partition has an operable system (DfE D_w 30 overall)
50	Good	Average	Poor	• Partition between GLAs, open learning areas, teacher preparation areas and office areas (with no operable system) (DfE D_w 40)
55	Very Good	Good	Poor	• Wet areas to occupied spaces • Between workshops • Workshops to open learning areas and teacher preparation areas • DfE recommended minimum for workshops / music (DfE D_w 45)
60	Excellent	Very Good	Average	• Wet areas to occupied spaces with services in the partition cavity • Workshops to GLAs and office areas • Recommended minimum for music / drama areas
65–70		Excellent	Good	• R_w 65 for theatre / music / drama areas

A mark-up of the floor plans showing recommended levels of acoustic separation is shown in Appendix A—Mark-ups.

2.2 Reverberation time

The recommended reverberation times, in accordance with the DfE *Education facilities standards* and Australian/New Zealand Standard (AS/NZS) 2107:2016,[1] is presented in Table 2.

Table 2 Design reverberation times

Type of Occupancy/Activity	Reverberation Time (seconds)
Gymnasium	2.0
Multi-purpose halls	1.2
Workshops	1.0
Laboratories	0.8
Dance studios	0.8
Lobbies or corridors with lockers	0.6
Music / Drama / Dance studios	0.8
Theatre	0.8 – 1.2
Open plan teaching environment with all doors open	0.6
Multimedia spaces	0.6
Staff Prep and offices	0.6
GLA secondary doors closed	0.6
Spaces for students with special learning needs	0.4
Art/craft studios	< 0.8
Conference rooms	0.6 – 0.8
Corridors and lobbies	< 0.8
Interview/counselling rooms	0.3 – 0.6
Libraries—general areas	<0.6
Libraries—reading areas	< 0.6
Manual arts workshops	< 0.8
Medical rooms (first aid)	0.6 – 0.8
Music practice rooms	0.7 – 0.9
Office areas	0.4 – 0.7
Professional and administrative offices	0.6 – 0.8
Staff common rooms	< 0.6
Staff studies/collegiate	0.4 – 0.6

[1] Australian/New Zealand Standard 2107:2016 *Acoustics—Recommended design sound levels and reverberation times for building interiors.*

2.3 Internal noise levels

The recommended internal design levels for the operation of mechanical services, in accordance with the DfE *Education facilities standard* and Australian/New Zealand Standard (AS/NZS) 2107:2016,[2] is presented in Table 3.

Table 3 Internal sound design levels

Type of Occupancy/Activity	Recommended Noise Level, L_{eq} (dB(A))
Gymnasium	50
Workshops	50
Lobbies or corridors with lockers	45
Multi-purpose halls	40
Laboratories	40
Dance studios	40
Assembly spaces	40
Assembly spaces larger than 250 seats	35
Music and drama spaces - performance	35
Open plan teaching environment with all doors open	40
Multimedia spaces	40
Staff Prep and offices	40
GLA secondary doors closed	40
Spaces for students with special learning needs	35
Art/craft studios	40 – 45
Conference rooms	35 – 40
Corridors and lobbies	< 50
Interview/counselling rooms	40 – 45
Libraries—general areas	40 – 50
Libraries—reading areas	40 – 45
Manual arts workshops	<45
Medical rooms (first aid)	40 – 45
Music practice rooms	40 – 45
Office areas	40 – 45
Professional and administrative offices	35 – 40
Staff common rooms	40 – 45
Staff studies/collegiate	40 – 45

[2] Australian/New Zealand Standard 2107:2016 *Acoustics—Recommended design sound levels and reverberation times for building interiors.*

2.3.1 Rainfall noise

Rainfall noise is to be designed to within 5 dB(A) of the recommended internal noise levels as outlined above. Rainfall is to be designed to:

- a rainfall intensity of 10 mm/hour for general areas
- a rainfall intensity of 15 mm/hour for sensitive areas such as the theatre and music/drama spaces in the Performance building.

Note that 10 mm/hour rainfall intensity is the accepted 'general design level in non-tropical Australia' and 15 mm/hour rainfall intensity is the acceptable 'design level for sensitive areas in non-tropical Australia'.

2.4 External noise levels

Environmental noise emissions from the site, and in particular externally located mechanical plant, are to meet the requirements of the South Australian *Environmental Protection (Noise) Policy* 2007 at the adjacent receptors. A summary of the relevant criteria is:

- 57 dB(A) from 7 am to 10 pm and 50 dB(A) from 10 pm to 7 am at receptors within the Community Zone—such as TAFE and UniSA
- 52 dB(A) from 7 am to 10 pm and 45 dB(A) from 10 pm to 7 am at receptors within the Residential Zone—such as residences to the north along Nicolson Avenue, and to the east and south along Russell Street.

External noise levels from externally located mechanical plant, within the school grounds are to be limited to:

- 45 – 50 dB(A) for outdoor learning areas, and
- 50 – 55 dB(A) for outdoor gathering points.

3 Construction requirements

3.1 Partitions

To achieve the desired levels of acoustic separation, the required partition constructions are provided in Table 4.

Table 4 Acoustic partition construction

Partition Rw	Construction	Ceiling detail	
		Mineral fibre tile (CAC 35) or plasterboard ceilings	**Perforated or no ceilings**
Rw 40	• Minimum 64 mm steel studs • 1x13 mm plasterboard to both sides • 50 mm, 14 kg/m3 polyester insulation in the partition cavity	Partition head to meet the ceiling with an air tight seal created by using two strips of closed cell foam.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
Rw 45	• Minimum 92 mm steel studs • 1x13 mm sound rated plasterboard to both sides • 50 mm, 14 kg/m3 polyester insulation in the partition cavity	Partition to penetrate the ceiling line by at least 100 mm	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
Rw 50	• Minimum 92 mm steel studs • 1x13 mm sound rated plasterboard on one side • 2x13 mm sound rated plasterboard to other side • 50 mm, 14 kg/m3 polyester insulation in the partition cavity	Extend one layer of plasterboard on one side of the partition past the ceiling to the underside of the roof or slab above with an airtight seal.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
Rw 55	• Minimum 64 mm steel stud with resilient mount to one side or staggered steel studs in a 92 mm track • 2x13 mm sound rated plasterboard to both sides • 50 mm, 14 kg/m3 polyester insulation in the partition cavity	Extend one layer of plasterboard on both sides of the partition past the ceiling to the underside of the roof or slab above with an airtight seal.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
Rw 60	• Two sets of studs with a minimum 20 mm gap between the studs—ensure no mechanical connection between the sets of studs except at the periphery • 2x13 mm fire rated plasterboard to both sides • 50 mm, 14 kg/m3 polyester insulation in the partition cavity	Extend one layer of plasterboard on both sides of the partition past the ceiling to the underside of the roof or slab above with an airtight seal.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.

Partition Rw	Construction	Ceiling detail	
		Mineral fibre tile (CAC 35) or plasterboard ceilings	**Perforated or no ceilings**
Rw 65	• Two sets of studs with a minimum 20 mm gap between the studs and an overall cavity of at least 200 mm—ensure no mechanical connection between the sets of studs except at the periphery • 2x13 mm sound rated plasterboard to one side • 3x13 mm sound rated plasterboard to the other side • 50 mm, 14 kg/m3 polyester insulation in the partition cavity	Extend one layer of plasterboard on both sides of the partition past the ceiling to the underside of the roof or slab above.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.

(1) 13 mm standard, fire or sound rated plasterboard may be replaced by 9 mm fibre cement sheet for impact or moisture resistance.

(2) All walls are to have 50 mm insulation in the partition cavity—suitable products are Autex 'GreenStuf AAB 20-50', or 50 mm, 14 kg/m3 Fletcher 'Polycoustic Commercial Batts'.

To achieve the nominated Rw ratings, the wall linings are to have the minimum surface densities as listed in Table 5.

Table 5 Wall lining surface densities

Plasterboard nominated	Surface density (kg/m2)
13 mm standard	8.5
13 mm fire rated	10.5
13 mm sound rated	13

3.1.1 Continuous elements

A saw cut must be provided in lightweight linings (e.g. plasterboard) that are continuous across the partition line between spaces. That is, one sheet of plasterboard or similar should not span continuously across two spaces. This note also applies to perimeter cladding, bulkheads and ceiling plasterboard margins.

When a lightweight element, including partition linings, spans continuously across the partition line between two spaces, noise in the one space will cause vibration in the lightweight element which then radiates noise into the other space (because the vibration can travel from one space to the other via the continuous partition lining). The above recommendation will remove the described flanking path.

3.1.2 Sealing

An airtight seal should be provided between partition edges and other building elements by means of a flexible caulking compound.

All acoustically rated walls should be sealed at the head and base with flexible caulking compound and backing rods as required. The flexible caulking compound may be acrylic, polyurethane or silicone. Any other proposed acoustic sealant should be first approved by the acoustic consultant.

3.1.3 Services penetrations and air transfer paths

Refer to Section 3.9.2 for details on treatment of services penetrations in full height walls and Section 3.9.4 for the provision and treatment of air transfer paths.

3.2 Slabs

To provide adequate floor to floor separation and to not degrade high acoustic separation levels the minimum slab thickness requirements are:

- Learning precincts (general)—160 mm thick
- Learning precincts Design Tech / Media Tank areas—200 mm if possible
- Administration over Inclusive GLS—160 mm thick
- Performing Arts—200 mm thick

3.3 Glazing

Glazed partition constructions are presented in Table 6.

Table 6 Recommended glazing constructions paired with ceiling construction

Glazing R_W	Construction	Ceiling details	
		CAC 35 ceiling	No or perforated ceiling
33	• 6.38 mm laminated glass.	• Create an airtight seal at the ceiling using two strips of closed cell foam.	Include a baffle above the partition constructed from: • 64 mm steel studs • 1 x 13 mm thick plasterboard to both sides • 50 mm, 14 kg/m_3 polyester insulation in the partition cavity • Seal to underside of slab or roof deck above with an airtight seal
36	• 10.38 mm thick laminated glass.		
40	• Proprietary acoustic glazing system with an R_W 40 rating, such as 12 mm Viridian 'VLam Hush'.		
44	• Double glazing(2)—6.38 mm laminated glass / 50 mm air gap / 10.38 mm laminated glass. • A suitable proprietary glazing suite is Sapphire Maxline.	• Cut the ceiling material along the line of the glazed partition • Include a baffle above the partition constructed from 1 x 13 mm thick plasterboard or a loaded vinyl curtain ('Wavebar') with a minimum surface density of 4 kg/m_2.	Include a baffle above the partition constructed from: • 64 mm steel studs • 1 x 13 mm thick plasterboard to one side • 2x13 mm plasterboard to the other • 50 mm, 14 kg/m_3 polyester insulation in the partition cavity • Seal to underside of slab or roof deck above with an airtight seal
48	• Double glazing(2)—6.38 mm laminated glass / 100 mm air gap / 10.38 mm laminated glass. • A suitable proprietary glazing suite is Capral 419 Flushing Acoustic or Hunter 100 mm Double Flush Glazed Framing.	• Cut the ceiling material along the line of the glazed partition. • Include a baffle above the partition constructed from 2 x 13 mm thick plasterboard.	Include a baffle above the partition constructed from: • 64 mm steel studs • 2x13 mm sound rated plasterboard to both sides • 50 mm, 14 kg/m_3 polyester insulation in the partition cavity • Seal to underside of slab or roof deck above with an airtight seal
50	• Double glazing(2)—10.38 mm laminated glass / 200 mm air gap / 10.38 mm laminated glass. • The double glazing should be installed on separate frames.		

(1) A moisture absorbing desiccant may be included within the cavity of the double glazed units to minimise condensation between the glass panes.

The acoustic performance of a glazed partition is limited and a reduced performance is typically accepted as:

- To achieve a rating of R_W 50 or greater, double or triple glazing with a minimum 200 mm cavity is required.
- A rating of $R_W \geq 50$ is very difficult to achieve with standard construction.

- Most glazed partitions also have doors in them, which also have a limited acoustic performance (typically to Rw 30 without the use of a proprietary acoustic door or airlock). As such, there can be limited benefit in providing a high rated glazed partition as typically the door will control the separation.
- The behaviour of people using the spaces tends to change when there is a visual link between the two spaces, e.g. between people in an office and those outside. People are less likely to congregate in noisy groups; and confidential discussions can be halted if others are milling outside.

3.4 Doors

The presence of doors will limit the acoustic separation between two spaces. It is often appropriate to use a door with an Rw rating 15 – 20 dB below that of the adjacent partition to provide a reasonable compromise between the smaller door area and the difficulties associated with heavier doors. For any door system the acoustic seals remain a very important consideration.

It is acoustically preferable to used hinged doors rather than sliding doors throughout the development as it is more practical to achieve an airtight seal around the door.

Sliding doors are difficult to treat acoustically without compromising accessibility. It is generally not practical to achieve an Rw 30 sliding door as it is not easy to achieve good quality airtight seals. For sliding doors requiring an Rw 30 rating or higher, we suggest using hinged doors or a proprietary system.

A door schedule is provided in Table 7.

Table 7 Door schedule

Door type	Door Rw	Nominal door construction
Hinged	30	• 40 mm thick solid core OR 43 mm filled core door (9 mm MDF / 25 mm, 32 kg/m3 insulation / 9 mm MDF) OR 10 mm laminated glass door • high quality rubber contact seals for the head and the jambs acoustically equivalent to Kilargo IS7080si or Raven RP10 • dropdown seal at the bottom acoustically equivalent to Kilargo IS8010si or Raven RP8si • double doors to also have meeting stile seals acoustically equivalent to Kilargo 2xIS7060si or IS7071si, or Raven 2xRP16 or 2xRP71Si • No air relief systems, such as grilles or undercuts are allowed.
Sliding	30	Proprietary acoustically rated doors: • AWS Slidemaster with 10.38mm laminated glass to achieve a minimum Rw 30 rating. • Lotus ‘Acoustic Sliders - Glazed’ (Rw 30)—face sliders
Hinged	40	• 2 x Rw 30 doors installed back-to-back • 50 mm cavity between the doors and a 25 – 50 mm acoustic panel installed on the inside face of one door to fill the cavity. OR • Proprietary Rw 40 door, such as Pyropanel ‘AS-40-FRB’
Sliding	40	Proprietary acoustic cavity sliding doors: • CavitySliders ‘SoundStop’ to achieve a minimum Rw 40 rating. • Lotus ‘Acoustic Sliders – Solid’ (Rw 40)—cavity sliders
Hinged	> 40	• 2 x Rw 30 doors installed in an airlock arrangement

Acoustically rated doors are not to be undercut or have air relief door grilles in them as this can severely compromise the acoustic integrity of the system. Provide an attenuated air transfer duct where necessary.

3.5 Rain noise

Rain noise ingress is controlled through the construction of the roof and ceiling structure.

Of note, is control of noise to the Theatre. To control rain noise into the Theatre we recommend the following roof and ceiling construction or acoustically equivalent:

- Metal deck roof
- Bradford Anticon blanket above the purlins
- suspended light grid system
- 1x13 mm fire rated plasterboard ceiling
- 75 mm, 14 kg/m3 insulation over the ceiling.

All other spaces that have a solid ceiling underneath a metal deck roof do not required any additional treatment to control rain noise ingress.

3.6 Roof and ceiling

The Administration and Learning Precincts have roof top mechanical units that require mitigation to control noise ingress.

To control noise to the Learning Precincts, the following roof and ceiling construction or acoustically equivalent is required:

- Within 10 m of the footprint of all chillers:
  - Metal deck roof
  - 50 mm Ortech panel OR 2x19 mm ply
  - 300 mm purlins
  - Resilient mounts on furring channels
  - 150 mm, 22 kg/m3 insulation over the ceiling
  - 2x16 mm fire rated plasterboard ceiling

  OR
  - Metal deck roof
  - Building blanket
  - 300 mm purlins
  - 50 mm Ortech panel OR 2x19 mm ply to underside of purlins
  - Suspended light ceiling grid
  - Minimum 400 mm ceiling cavity
  - 150 mm, 22 kg/m3 insulation over the ceiling
  - 2x16 mm fire rated plasterboard ceiling
- Remainder of western precinct ceiling and all eastern precinct:
  - Metal deck roof
  - 300 mm purlins
  - 150 mm, 22 kg/m3 insulation over the ceiling
  - 2x16 mm fire rated plasterboard ceiling

To control noise to the Administration building, the following roof and ceiling construction or acoustically equivalent is required:

- Metal deck roof
- Building blanket
- Solid ceiling (such as flush plasterboard or CAC 35 ceiling tile) to spaces below.

Any acoustic treatment required to provide absorption to these spaces should be applied underneath these constructions.

3.7 Operable walls

There is to be an operable wall to separate the Music/Drama/Dance Studio.

The DfE *Education facilities standards* recommends that the project team engage with the end user to determine the individual priorities for a space and implement the following principles:

- optimise the performance of any operable system between spaces where it is identified by the school that flexibility in the use of the space is more important than acoustic separation between spaces;
- ensure the end users understand and acknowledge the acoustic limitations of using an operable system between spaces;
- pursue a fixed partition and multiple door separation arrangement where it is identified by the school that acoustic separation is more important than flexibility in the use of that space.

For the Studio operable wall, the following is recommended:

- an operable wall with a minimum R_w 53 – 55 rating.
- operable wall is to have mechanically adjustable ends, and it is also preferable for the doors to have mechanically adjustable top and bottom seals, however, contact seals are acceptable if manufacturer warrants their performance
- baffle above operable wall to be constructed from 1 x 13 mm plasterboard to both sides of the structural member with 50 mm, 14 kg/m_3 insulation between.

Note that operable walls are not generally recommended for music and drama areas as the maximum performance of a single operable wall is not likely to the meet the recommended level of separation for music/drama areas. If acoustic separation is more important than flexibility of use a fixed partition or two operable walls in parallel is recommended. If single operable wall is used the school should be aware that music and raised voices may be audible.

3.8 Reverberation control

3.8.1 Surface treatments

Surface treatment recommendations are presented in Table 8. Note that the predicted reverberation times meet the requirements or intent of AS/NZS 2107.

Table 8 Recommended Reverberation Treatments

Room	Surface Treatments
Performing Arts	
Theatre	• 150 m_2 of NRC 1.0 panels with timber battens to the top the rear and high side walls • Perforated timber paneling to the rear wall and side rear walls with 50 mm, 32 kg/m_3 insulation behind with an area in the order of 40 m_2 that is visible when the seats are extended. • Curtaining at the front of the stage area • Sprung timber floors with linoleum finish • Solid plasterboard ceiling (as nominated to control rain noise ingress)
Vet kitchen	• Acoustic ceiling tiles with minimum CAC 35 and NRC 0.7 rating. • Hard finish floors

Room	Surface Treatments
Music / Drama / Dance studio	• Plasterboard ceiling • Vinyl floors • 25 m_2 of acoustic walls panels with an NRC of 1.0 spread over the two studios, with approximately 12 m_2 in each space
Music practice rooms	• Plasterboard ceilings • Carpet floors • 3 m_2 of NRC 0.8 wall panels in 15 m_2 room • 2 m_2 of NRC 0.8 wall panels in 9 m_2 room
Foyer	• Acoustically absorbent ceiling with minimum NRC 0.7 • Hard finish floors • As much wall area as practicable treated with acoustic wall panels with minimum NRC 0.8
Gymnasium	
Gymnasium	• Ceiling to be perforated metal with an NRC 0.7 rating. • Walls above 3 m to be perforated metal NRC 0.7 rating • Walls below 3 m to be solid for impact resistance. • Hard finish flooring
Fitness room/Base room	• Acoustic ceiling with a minimum CAC 35 and NRC 0.7 rating. • Carpet flooring except for where a hard floor finish is required for functionality
Plant room	• Walls and ceiling to be lined with acoustic wall panels with NRC 0.8 rating • South acoustically louvred wall • Concrete slab
Administration	
Inclusive GLS	• NRC 1.0 panels to underside of slab for ceiling • Carpet floors • Acoustic wall panels with minimum NRC 0.8 should be included to the solid walls of the Inclusive GLS spaces. Wall panels should be installed from 500 mm off ground (to 1700 mm - 1200 mm high).
Forum/Gallery	• NRC 0.8 panels to underside of slab for ceiling • Acoustic wall panels with minimum NRC 0.8 should be included to the solid walls. Wall panels should be installed from 500 mm off ground (to 1700 mm - 1200 mm high).
Conference room	• Plasterboard ceiling with feature acoustic ceiling • Carpet floors • 18 m_2 of NRC 0.8 acoustic wall panels installed from 500 mm off ground (to 1700 mm - 1200 mm high).
E-Hub	• NRC 1.0 panels to underside of plasterboard ceiling • Hard finish floors • Acoustic wall panels with minimum NRC 0.8 should be included to the solid walls. Wall panels should be installed from 500 mm off ground (to 1700 mm - 1200 mm high).
Library	• Mix of absorptive and plasterboard ceilings • Carpet floors

Room	Surface Treatments
Leadership / Staff lounge / Counsel reception / Counsel waiting / Group Counsel	• Plasterboard ceiling with feature acoustic ceiling • Carpet floors
Learning precincts	
GLS / IDW / Science / Art	• NRC 0.8 panels to underside of slab for ceiling • Carpet floors
Design Tech	• NRC 1.0 panels to underside of slab for ceiling • Hard finish floors
Food Tech	• Acoustic ceiling tiles with minimum CAC 35 and NRC 0.7 rating. • Hard finish floors
Media Tank	• NRC 1.0 panels to underside of slab for ceiling • Carpet floors • Acoustic wall panels with minimum NRC 1.0 should be included to the available wall surfaces. • Blinds are to be installed to external glazing to provide additional absorption when closed.
Learning Commons	• Absorptive ceiling with minimum NRC 0.7 (typically perforated plasterboard) • Hard finish floors

3.8.2 Acoustic ceilings

A list of suitable acoustic tiled ceilings is presented in Table 9.

Table 9 Recommended acoustic tiled ceilings

NRC	CAC	Ceiling
0.7	38	AMF Thermatex Acoustic
0.7	35 – 40	Armstrong Ultima
0.7	39	Armstrong Bioguard Acoustic—suitable for kitchen use
0.7	35 – 40	Armstrong Fine Fissured High NRC/High CAC
0.75	39	AMF Thermatex Mecure Complete
0.7 – 0.8	35 – 39	USG Mars ClimaPlus
0.8	35	USG Mars ClimaPlus High NRC

A list of suitable perforated plasterboard ceilings is presented in Table 10.

Table 10 Recommended perforated plasterboard ceilings

NRC	Ceiling
0.70	CSR Gyptone 12 mm Square (16% open area and)
0.7 – 0.8	Knauf Plaza (grid system 16 – 21% open area)
0.75	Knauf Stratopanel (16 – 20% open area)
0.75	Atkar AudiBoard with minimum 20% open area

NRC	Ceiling
0.75 – 0.8	Boral Echostop 12 mm Square Hole (16% open area)

(1) Unless otherwise noted, all perforated ceilings are to be used in conjunction with 50 mm, 32 kg/m$_3$ polyester insulation such as Autex 'GreenStuf AAB 32-50'.

A list of suitable perforated metal ceilings for the gym is presented in Table 11.

Table 11 Recommended perforated metal ceilings

NRC	Ceiling
0.7	Renhurst RippleSound used in conjunction with 50 mm, 32 kg/m3 polyester insulation such as Autex 'GreenStuf AAB 32-50'.
0.8	Renhurtst RippleTone with minimum 250 mm airgap.
0.9	Stramit Acoustic Panel System used in conjunction with 50 mm, 32 kg/m$_3$ polyester insulation Autex 'GreenStuf AAB 32-50'.

3.8.3 Acoustic wall panels

A list of suitable proprietary wall panels or panelling systems is presented in Table 12.

As a minimum, wall panels should be installed over two adjacent walls, and they are most effectively installed approximately 500 mm off the floor in a 1.2 m strip.

Table 12 Recommended acoustic wall panels

NRC	Panel
0.7 – 0.8	Perforated or slotted facing with a minimum open area of 20%, such as Atkar 'Audislot AS26–20/47' with an Integrated Acoustic Backing (IAB). Used in conjunction with 50 mm thick fibreglass insulation with a minimum density of 32 kg/m$_3$, such as Fletcher Pink Partition 32.
0.8	Autex 25mm Quietspace Acoustic panel
	Sontext 25 mm Serenity Decorative Acoustic Panels
	Sorbalight 30 mm Exel Panels
	Pyrotek 25 mm thick Echohush Panel
	Acoustica Echosoft 25 mm
0.85	Instyle 25 mm Ecoustic panel
1.0	Autex 50 mm Quietspace Acoustic panel
	Instyle 50 mm Ecoustic panel
	Megasorber P50 – 50 mm—suitable for plant rooms
	Acoustica Echosoft 50 mm—suitable for plant rooms
	Sontext 50 – 75 mm 'Serenity Decorative Acoustic Panels'

3.9 Mechanical services

3.9.1 Typical treatments

Typical acoustic treatments for standard types of systems are outlined in **Error! Reference source not found.**.

Table 13 Mechanical acoustic treatments

System	Typical treatments
Fan coil units & Air handling units	• Design the air distribution system to minimise flow resistance and turbulence. • Select the appropriate NR for registers to control regenerated noise. • Design fans to run at low speed. • Ensure that there is sufficient rigid lined duct on the supply path, this is typically in the order of 4xduct diameters for general spaces and 8xduct diameters for critical spaces (criteria ≤ 35 dB(A)). • Use acoustic flexible duct where flexible duct is required. • Line rigid duct with acoustic insulation. • Supply and return air should be supplied via lined cushion heads. • Critical spaces or where duct lengths are limited may require in-duct attenuators to control in-duct noise levels. In particular this will have to be considered for the return air paths for the AHUs. • Locate ceiling space units over non-occupied spaces such as corridors and toilets with solid ceilings. For units located over sensitive spaces, upgrade treatments to the ceiling may be required. Treatments may include insulation, thicker or more layers of plasterboard, backing mineral fibre ceiling tiles with plasterboard.
Evaporative units	• All evaporative units servicing the gymnasium will require acoustic attenuators to control supply duct noise.
Extraction fans	• May need to internally line duct. Insulation to be Melinex lined or use Bradford Acoustituff.
Cassette units	• The noise from cassette units cannot be acoustically attenuated. However, usually the noise from units when operated on medium or low fan speeds is typically lower and may be within the recommended criterion. For very low noise spaces, quieter cassettes or a duct system should be considered.

3.9.2 Services penetrations

For mechanical services penetrations through full height walls, the following must be ensured:

- no flexible ductwork penetrations
- ducts or units are not run along the line of full height partitions.
- penetrations for rigid ductwork are to be made as small as practical to accommodate the duct
- the gap around the duct is to be sealed airtight with backing rods and flexible caulking compound
- to maintain the separation provided by the full height wall, the rigid duct penetrating the wall should be at least 1 m length and lined with 50 mm acoustic insulation (details to be provided upon review of mechanical services if required).

For cabling running through full height walls, the following must be ensured:

- penetrations for cable trays and conduits to be made as small as practical
- the gap around the cable tray, within the cable tray and within the conduit is to be filled with tightly packed acoustic insulation with a minimum density of 32 kg/m$_3$
- the penetration around a conduit is to be sealed airtight with backing rods and flexible caulking compound.

3.9.3 Service risers

As a minimum the service risers should have a R_W 35 rating, with the following or acoustically equivalent construction:

- 2x16 mm fire rated plasterboard
- 50 mm, 14 kg/m3 insulation between the studs.

3.9.4 Air transfer paths

Where partitions are full height or ceiling baffles exist to completely enclose the ceiling void above a room, it will be necessary to install an acoustically lined transfer duct above the ceiling to join each room's ceiling void to the main ceiling void.

Typically these ducts are approximately 100 – 200 mm high with 25 – 50 mm thick acoustic lining. The width is sized to suit the required airflow and the length of the duct must be acoustically designed to achieve the required noise reduction.

Air transfer ducts are best installed above the door to the room.

3.9.5 Air distribution systems

Air distribution systems such as ductwork and air registers, should be designed to limit noise to the AS/NZS 2107 design noise criteria. To limit system generated noise, air flow within the supply and return air ducts should be limited as summarised in Table 14. Note that these should be included in the Mechanical Specification.

Table 14 Maximum duct velocities – supply and return air

Noise criteria, dB(A)	Main duct air velocity, m/s	Main branch air velocity (m/s)	Run out duct air velocity, m/s	Flexible ducts, m/s
50	10.2	8.2	3.6	3.1
40	7.4	5.9	2.6	2.2
30	4.8	3.8	1.7	1.4

Noise Rating (NR) should also be taken into account when selecting air registers to prevent excessive regenerated noise. The NR of a register should be 10 below the design noise criteria.

Where there is no sound data available for the grilles or diffusers, the maximum air velocities provided in Table 15.

Table 15 Maximum Recommended Air Velocities at Neck of Supply Diffusers or Return Registers to Achieve Specified Acoustical Design Criteria—extract from 2007 ASHRAE Handbook

Type of opening	Design sound level, dB(A)	'Free' opening airflow velocity, m/s
Supply air outlet	50	3.2
	45	2.8
	40	2.5
	35	2.2
	30	1.8
Return air opening	50	3.8
	45	3.4

Type of opening	Design sound level, dB(A)	'Free' opening airflow velocity, m/s
	40	3.0
	35	2.5
	30	2.2

3.9.6 Cross talk

Cross talk occurs when noise travels along or around ductwork that passes from one space to another space. This causes a reduction in acoustic performance of an otherwise uncompromised wall or floor.

To minimise cross talk, appropriate treatment of all penetrations in acoustically rated floors, ceilings and walls is required. This may include treatments such as acoustically lined boots off cushion head boxes, use of rigid acoustically lined duct in lieu of flexible duct, relocation of duct runs, and the like. Specific treatments will depend on the final design of the mechanical services duct work installation.

3.9.7 External noise levels

Externally located plant

External noise levels from externally located mechanical plant can be controlled with the use of acoustic barriers. The barriers are to be:

- at least 500 mm above the height of the installed units
- made of an airtight material (solid rather than louvred)
- absorbent on the side facing the units.

A suitable proprietary product is Monkeytoe ‘HushMonkey’ acoustic screening.

Extent of acoustic barriers is shown in Appendix A—Mark-up

Gymnasium mezzanine

To control noise emissions from the gymnasium mezzanine the southern facade wall of the gymnasium is to be acoustically lourved, with an acoustic performance equivalent to Fantech SBL1.

Appendix A—Mark-ups

R_W	Subjective performance of the separation of different sources			Recommended areas of use
	Normal voice	Raised voice & AV	Music	
30	Poor	Very Poor		• Standard door (DfE D_W 25)(1)
35	Poor to Average	Poor		• For areas of typical glazing Not typically recommended but limited without the use of double glazing.
40	Average	Poor	Very Poor	• Acoustic separation is not an important consideration • Offices to corridors • Partitions with doors
45	Average to Good	Poor to Average	Very Poor	• Classrooms to corridors • Between General Learning Areas (GLA), open learning areas and teacher preparation areas when partition has an operable system (DfE D_W 30 overall)(1)
50	Good	Average	Poor	• Between GLAs, open learning areas, teacher preparation areas and office areas (with no operable system) (DfE D_W 40)(1)
55	Very Good	Good	Poor	• Wet areas to occupied spaces • Between workshops • Workshops to open learning areas and teacher preparation areas • DfE recommended minimum for workshops / music (DfE D_W 45)(1)
60	Excellent	Very Good	Average	• Wet areas to occupied spaces with services in the partition cavity • Workshops to GLAs and office areas • Recommended minimum for music / drama areas(2)
65–70		Excellent	Good	• R_W 65 for music / drama areas(3) • R_W 70 for theatre / percussion

(1) Requirements set out in the *Educational facilities standards*.

(2) The *Educational facilities standards* recommends an equivalent R_W 55 rating for music areas; however, based on our experience we believe that a minimum R_W 60 rating should be adopted.

(3) A higher acoustic separation may be desirable for high end music performance spaces. This can be determined during detailed design. Note that there may be other building limitations (such as slab thickness) that will limit the achievable acoustic separation and the higher levels may not be practicable. In addition, these higher ratings have a significant construction cost and spatial planning implications. As such, an R_W 60 is considered to be a good compromise.

Glazing R_W	Construction	Ceiling details	
		CAC 35 ceiling	No or perforated ceiling
33	• 6.38 mm laminated glass.	• Create an airtight seal at the ceiling using two strips of closed cell foam.	Include a baffle above the partition constructed from: • 64 mm steel studs • 1 x 13 mm thick plasterboard to both sides • 50 mm, 14 kg/m³ polyester insulation in the partition cavity • Seal to underside of slab or roof deck above with an airtight seal
36	• 10.38 mm thick laminated glass.		
40	• Proprietary acoustic glazing system with an R_W 40 rating, such as 12 mm Viridian 'VLam Hush'.		
44	• Double glazing(2)—6.38 mm laminated glass / 50 mm air gap / 10.38 mm laminated glass. • A suitable proprietary glazing suite is Sapphire Maxline.	• Cut the ceiling material along the line of the glazed partition • Include a baffle above the partition constructed from 1 x 13 mm thick plasterboard or a loaded vinyl curtain ('Wavebar') with a minimum surface density of 4 kg/m².	Include a baffle above the partition constructed from: • 64 mm steel studs • 1 x 13 mm thick plasterboard to one side • 2x13 mm plasterboard to the other • 50 mm, 14 kg/m³ polyester insulation in the partition cavity • Seal to underside of slab or roof deck above with an airtight seal
48	• Double glazing(2)—6.38 mm laminated glass / 100 mm air gap / 10.38 mm laminated glass. • A suitable proprietary glazing suite is Capral 419 Flushing Acoustic or Hunter 100 mm Double Flush Glazed Framing.	• Cut the ceiling material along the line of the glazed partition. • Include a baffle above the partition constructed from 2 x 13 mm thick plasterboard.	Include a baffle above the partition constructed from: • 64 mm steel studs • 2x13 mm sound rated plasterboard to both sides • 50 mm, 14 kg/m³ polyester insulation in the partition cavity • Seal to underside of slab or roof deck above with an airtight seal
50	• Double glazing(2)—10.38 mm laminated glass / 200 mm air gap / 10.38 mm laminated glass. • The double glazing should be installed on separate frames.		

(1) A moisture absorbing desiccant may be included within the cavity of the double glazed units to minimise condensation between the glass panes.

Riser R_W	Construction
R_W 35	• 2x16 mm fire rated plasterboard • 50 mm, 14 kg/m³ polyester insulation in between the studs

Partition R_W	Construction	Ceiling detail	
		Mineral fibre tile (CAC 35) or plasterboard ceilings	Perforated or no ceilings
R_W 40	• Minimum 64 mm steel studs • 1x13 mm plasterboard to both sides • 50 mm, 14 kg/m³ polyester insulation in the partition cavity	Partition head to meet the ceiling with an air tight seal created by using two strips of closed cell foam.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
R_W 45	• Minimum 92 mm steel studs • 1x13 mm sound rated plasterboard to both sides • 50 mm, 14 kg/m³ polyester insulation in the partition cavity	Partition to penetrate the ceiling line by at least 100 mm	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
R_W 50	• Minimum 92 mm steel studs • 1x13 mm sound rated plasterboard on one side • 2x13 mm sound rated plasterboard to other side • 50 mm, 14 kg/m³ polyester insulation in the partition cavity	Extend one layer of plasterboard on one side of the partition past the ceiling to the underside of the roof or slab above with an airtight seal.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
R_W 55	• Minimum 64 mm steel stud with resilient mount to one side or staggered steel studs in a 92 mm track • 2x13 mm sound rated plasterboard to both sides • 50 mm, 14 kg/m³ polyester insulation in the partition cavity	Extend one layer of plasterboard on both sides of the partition past the ceiling to the underside of the roof or slab above with an airtight seal.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
R_W 60	• Two sets of studs with a minimum 20 mm gap between the studs—ensure no mechanical connection between the sets of studs except at the periphery • 2x13 mm fire rated plasterboard to both sides • 50 mm, 14 kg/m³ polyester insulation in the partition cavity	Extend one layer of plasterboard on both sides of the partition past the ceiling to the underside of the roof or slab above with an airtight seal.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.
R_W 65	• Two sets of studs with a minimum 20 mm gap between the studs and an overall cavity of at least 200 mm—ensure no mechanical connection between the sets of studs except at the periphery • 2x13 mm sound rated plasterboard to one side • 3x13 mm sound rated plasterboard to the other side • 50 mm, 14 kg/m³ polyester insulation in the partition cavity	Extend one layer of plasterboard on both sides of the partition past the ceiling to the underside of the roof or slab above.	Entire partition is to extend past the ceiling to the underside of the roof or slab above with an airtight seal.

Plasterboard	Surface density
13 mm standard	8.5 kg/m²
13 mm fire rated	10.5 kg/m²
13 mm sound rated	13 kg/m²

Door type	Door R_W	Nominal door construction
Hinged	30	• 40 mm thick solid core OR 43 mm filled core door (9 mm MDF / 25 mm, 32 kg/m³ insulation / 9 mm MDF) OR 10 mm laminated glass door • high quality rubber contact seals for the head and the jambs acoustically equivalent to Kilargo IS7080si or Raven RP10 • dropdown seal at the bottom acoustically equivalent to Kilargo IS8010si or Raven RP8si • double doors to also have meeting stile seals acoustically equivalent to Kilargo 2xIS7060si or IS7071si, or Raven 2xRP16 or 2xRP71Si • No air relief systems, such as grilles or undercuts are allowed.
Sliding	30	Proprietary acoustically rated doors: • AWS Slidemaster with 10.38mm laminated glass to achieve a minimum R_W 30 rating. • Lotus 'Acoustic Sliders - Glazed' (R_W 30)—face sliders
Hinged	40	• 2 x R_W 30 doors installed back-to-back • 50 mm cavity between the doors and a 25 – 50 mm acoustic panel installed on the inside face of one door to fill the cavity. OR • Proprietary R_W 40 door, such as Pyropanel 'AS-40-FRB'
Sliding	40	Proprietary acoustic cavity sliding doors: • CavitySliders 'SoundStop' to achieve a minimum R_W 40 rating. • Lotus 'Acoustic Sliders – Solid' (R_W 40)—cavity sliders
Hinged	> 40	• 2 x R_W 30 doors installed in an airlock arrangement

Legend

- Rw 35
- Rw 40
- Rw 45
- Rw 50
- Rw 55
- Rw 60
- Rw 65

RESONATE REVIEW
Date: 17.10.2019
Revision: 1
Project: NWSS
Project Number: A190707

Resonate

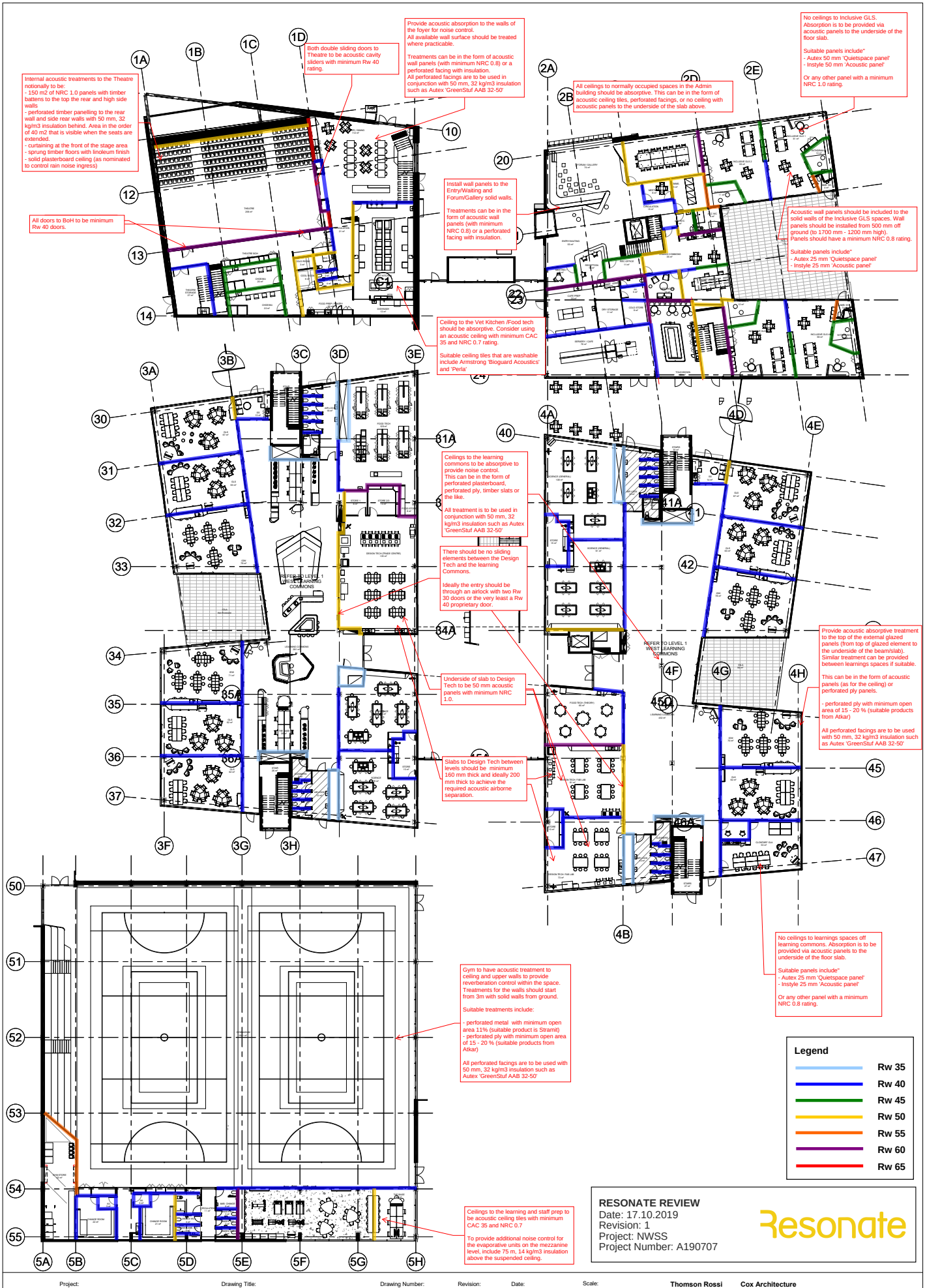
ATTENTION CONTRACTORS AND SUB-CONTRACTORS:

These drawings are intended for tender pricing and planning purposes only and not for construction. They are based on information provided by the Client Group and other key stakeholders which may contain conflicting data, omissions and errors.

At the time of issue, these drawings are based on preliminary designs and documentation which is known to be only partially complete. The successful contractor and sub-contractors will be required to work with the consultant team, authorities, stakeholders and client groups to develop these concepts into detailed designs which can be expected to differ in scope, concept and detail from that currently shown on the drawings.

The successful contractor and sub-contractors are advised to make an assessment, based on their own experience with projects of this nature, of the risks involved in changes in requirements, investigation outcomes, scope, concept and design detail and to provide in their tender an adequate contingency to enable them to accommodate any changes or further development.

Refer also to Principal's Project Requirements.



Project: NEW WHYALLA SECONDARY SCHOOL

Drawing Title: ID-GROUND PLAN

Drawing Number: ASK-0001

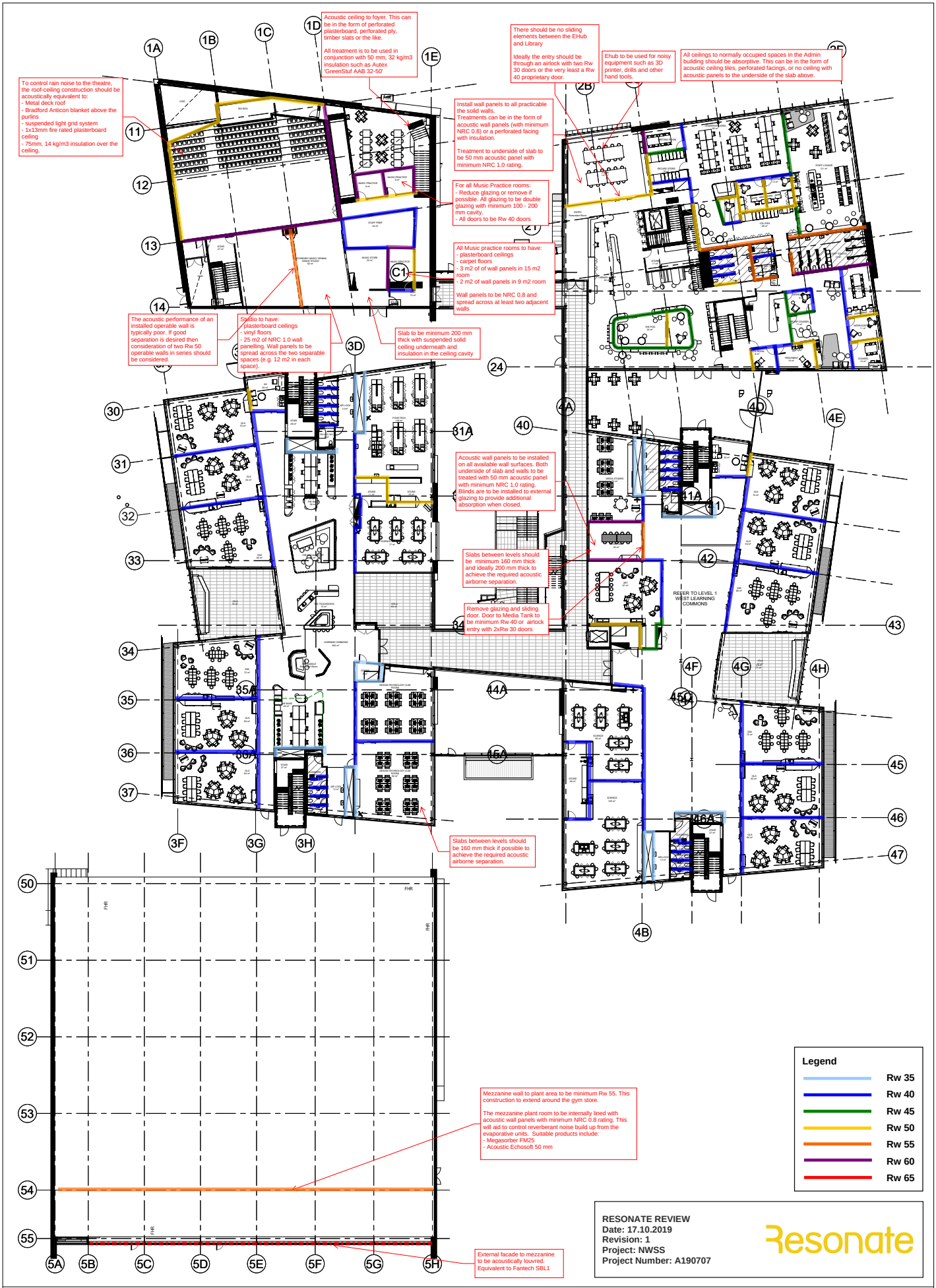
Revision: 3

Date: 27/09/19

Scale: 1 : 200 @ A1

Thomson Rossi
99 Carrington Street, Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

Cox Architecture
Level 1, 14 Ebenezer Place, Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au



Project: NEW WHYALLA SECONDARY SCHOOL

Drawing Title: ID-LEVEL 1 PLAN

Drawing Number: ASK-0002

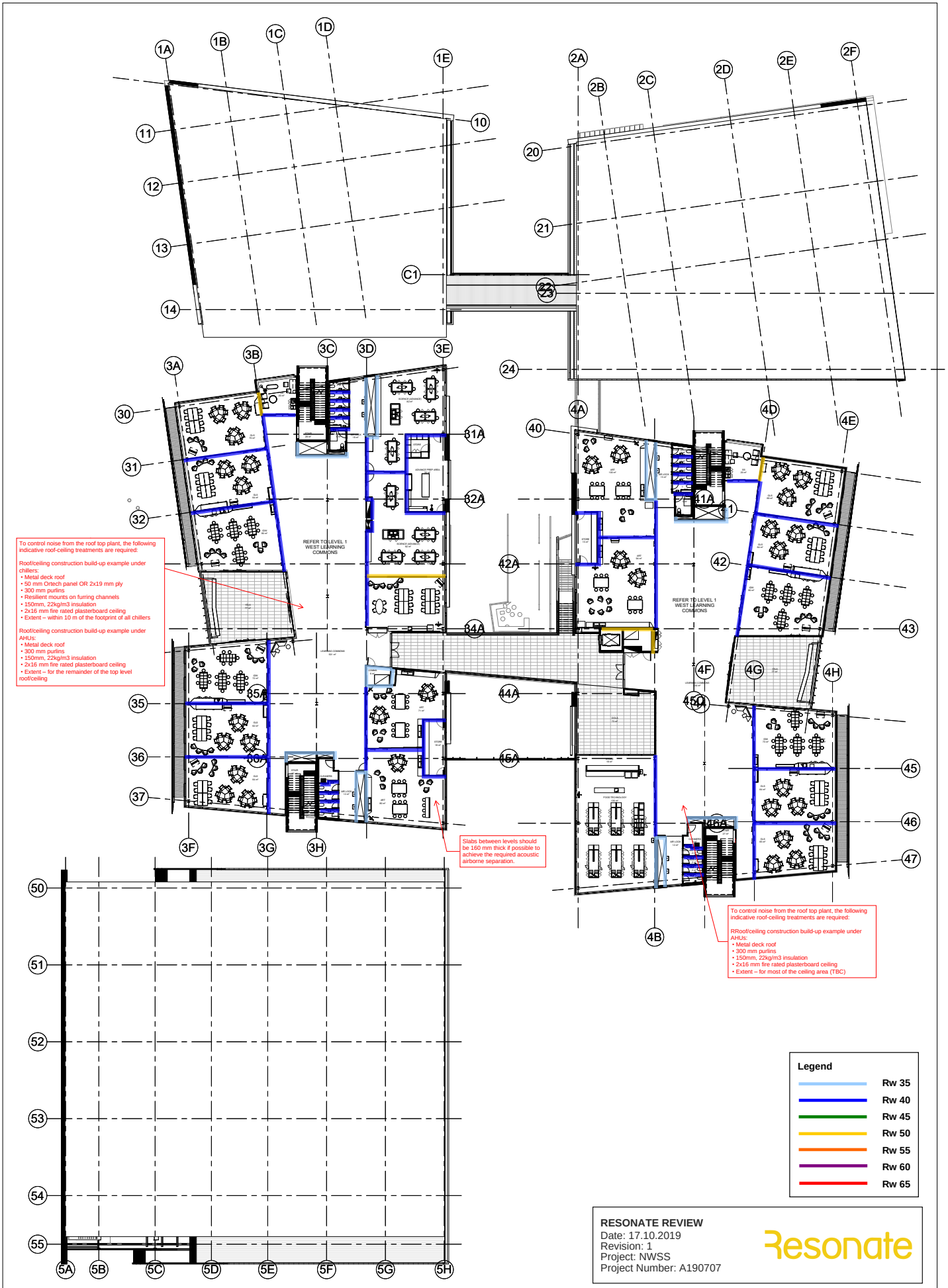
Revision: 3

Date: 04/10/2019

Scale: 1 : 200 @ A1

Thomson Rossi
99 Carrington Street, Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

Cox Architecture
Level 1, 14 Ebenezer Place, Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au



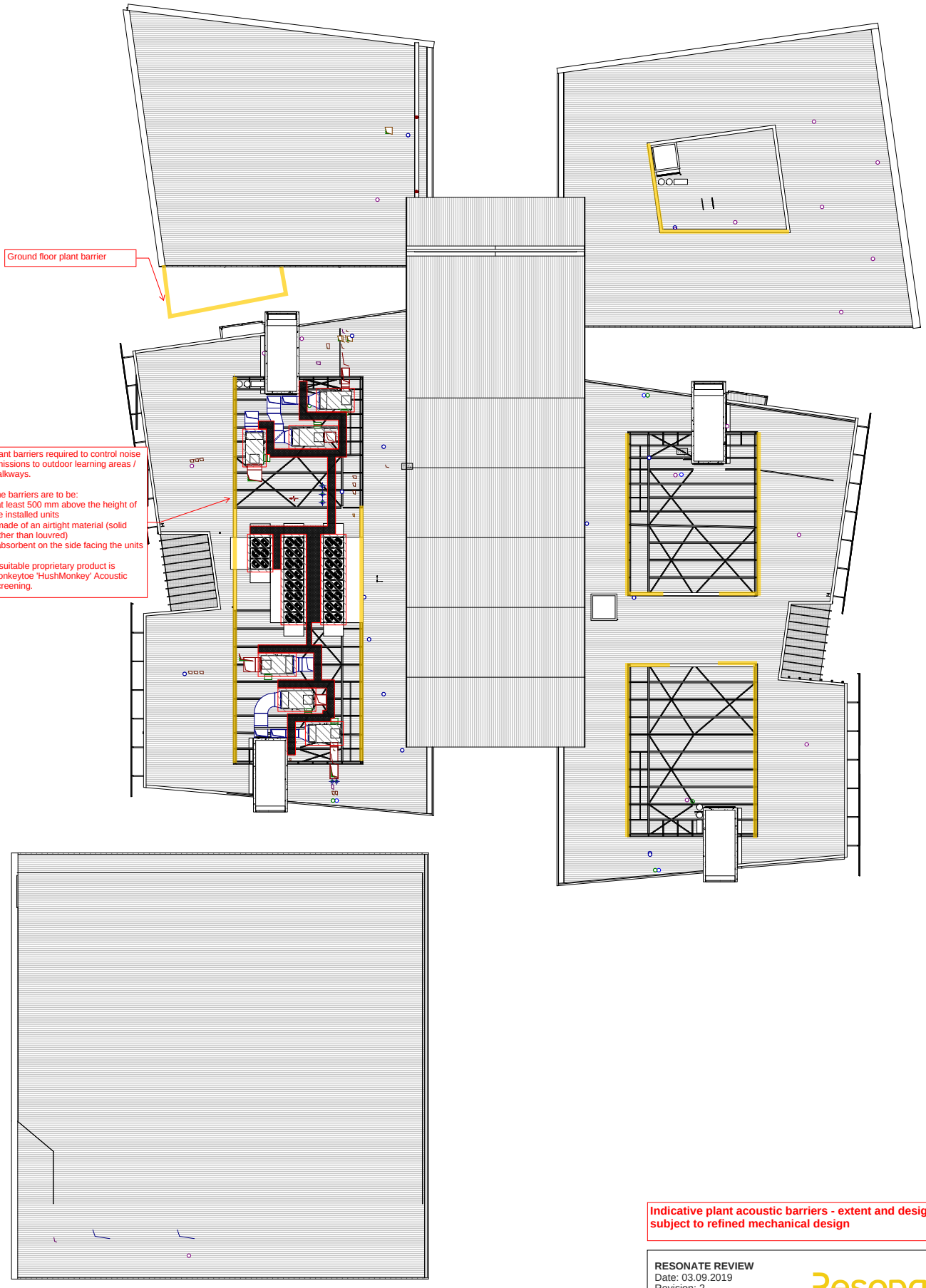
RESONATE REVIEW
Date: 17.10.2019
Revision: 1
Project: NWSS
Project Number: A190707

Resonate

Project:	Drawing Title:	Drawing Number:	Revision:	Date:	Scale:
NEW WHYALLA SECONDARY SCHOOL	**ID-LEVEL 2 PLAN**	**ASK-0003**	3	**27/08/19**	**1 : 200 @ A1**

Thomson Rossi
99 Carrington Street, Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

Cox Architecture
Level 1, 14 Ebenezer Place, Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au



Indicative plant acoustic barriers - extent and design subject to refined mechanical design

RESONATE REVIEW
Date: 03.09.2019
Revision: 2
Project: NWSS
Project Number: A190707

Resonate

Project:	Drawing Title:	Drawing Number:	Revision:	Date:	Scale:
WHYALLA SECONDARY SCHOOL	**ROOF PLAN - LEARNING PRECINCT**	**05**		**10/01/19**	**1 : 200 @ A1**

Thomson Rossi
99 Carrington Street, Adelaide SA 5000, Australia
T + 61 8 7324 9999
www.thomsonrossi.com.au

Cox Architecture
Level 1, 14 Ebenezer Place, Adelaide SA 5000, Australia
T + 61 8 7122 5050
www.coxarchitecture.com.au

Appendix E

PEESI prepared by Golder

REPORT

Proposed New Whyalla High School

Early Environmental and Engineering Site Investigation

Interpretive report

Submitted to:

Department of Planning, Transport and Infrastructure
L14, 77 Grenfell Street
ADELAIDE 5000

Submitted by:

Golder Associates Pty Ltd
118 Franklin Street Adelaide, South Australia 5000 Australia

+61 8 8213 2100

18109032-002-R-Rev0

23 January 2019

Distribution List

1 e-copy: Department of Planning, Transport and Infrastructure

1 e-copy: Golder Associates

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1.0 INTRODUCTION

The South Australian State Government has committed funds for a new secondary school in Whyalla Norrie (Whyalla) that will accommodate 1,500 students between Year 7 and Year 12.

The site is located on Nicholson Avenue between the University of South Australia (Uni SA) Whyalla Campus and TAFE SA, incorporating the Whyalla Education Centre. The Whyalla Secondary Education Feasibility Study undertaken by Russell and Yelland Architects in 2016 (the feasibility study) identified the opportunity to share services with the adjacent educational facilities and presents strong green space connectivity for outdoor spaces to be developed as an extension to learning spaces.

Design and construction of the school will be managed by the Department of Planning, Transport and Infrastructure (DPTI) on behalf of the Department for Education. DPTI is proposing to engage a lead professional services contractor (LPSC) in late 2018 to develop the concept design.

Golder Associates Pty Ltd (Golder) completed a preliminary environmental and engineering site investigation to characterise the site and identify design/construction considerations for the purpose of providing to the LPSC during the tender phase.

The purpose of this report is to build on the preliminary investigations and identify potential risks to the Whyalla Super School Project (the Project) resulting from the existing environmental conditions, and the additional assessment and approvals that may be required.

2.0 SITE SETTING

The site occupies land title CR 5988/172 and CT 5509/439 and is located on Nicolson Avenue, Whyalla Norrie, between the Uni SA and TAFE SA buildings. The site extends from Nicolson Avenue at the northern extent, to Russell Street at the southern extent. The site boundary is shown on Figure 1.

The site is largely vacant with a concrete walkway between the TAFE and Uni SA as well as several informal tracks. The Whyalla Family Day Care (Day Care) building and an associated bitumised car park are in the northern portion of the site, fronting Nicolson Avenue (Figure 2).

The adjacent land uses include educational buildings in the north (along Nicolson Avenue) and student accommodation to the south. Other surrounding land uses include vacant land, residential and commercial.

The site is in the Whyalla City Council (Council) and falls within two Development Zones, with the northern half located in the Community Zone and the southern half within the Residential Zone (Figure 2).

The following property information is applicable to the site.

Table 1: Property Details

Identification	Details
CR 5988/172	
Site Location	109 Nicolson Avenue, Whyalla Norrie
Allotment; Deposited Plan	1; 44349
Area	Whyalla Norrie
Hundred	Randell
Local Government Authority	City of Whyalla
Current Owner	Crown land
Custodian	University of South Australia
Current Land Use	Vacant
CT 5509/439	
Site Location	115 Nicolson Avenue, Whyalla Norrie
Allotment, Township Plan	6644, 560501
Area	Whyalla Norrie
Hundred	Randell
Local Government Authority	City of Whyalla
Current Owner	Minister for Education Children's Services
Current Land Use	Whyalla Family Day Care

3.0 ENVIRONMENTAL RISKS AND MANAGEMENT

3.1 Flora

The site is comprised of approximately 15 hectares of remnant vegetation as well as amenity plantings in the vicinity of buildings and infrastructure.

A field survey undertaken by BlackOak Environmental (Appendix A) identified two vegetation associations at the site, *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees and *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees. The large spread of walking tracks across the site has caused the vegetation to become very fragmented. Despite this fragmentation and moderate weed incursion the remnant vegetation within the study area was in moderate to good condition.

The study area contains 168 planted trees. The trees are distributed sparsely throughout the western, southern and northern sections of the study area. The planted trees consisted of non-local and local species such as *Acacia cyclops* (Western Coastal Wattle), *Acacia pendula* (Weeping Myall), *Acacia papyrocarpa* (Western Myall), *Eucalyptus sp*., *Melaleuca lanceolata* (Dryland Tea-tree) and *Melaleuca pauperiflora ssp. mutica* (Boree).

The vegetation associations identified are mapped in Plate 1.

No flora species or communities with a conservation rating under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *National Parks and Wildlife Act 1974* (NPW Act) were recorded during the field survey.

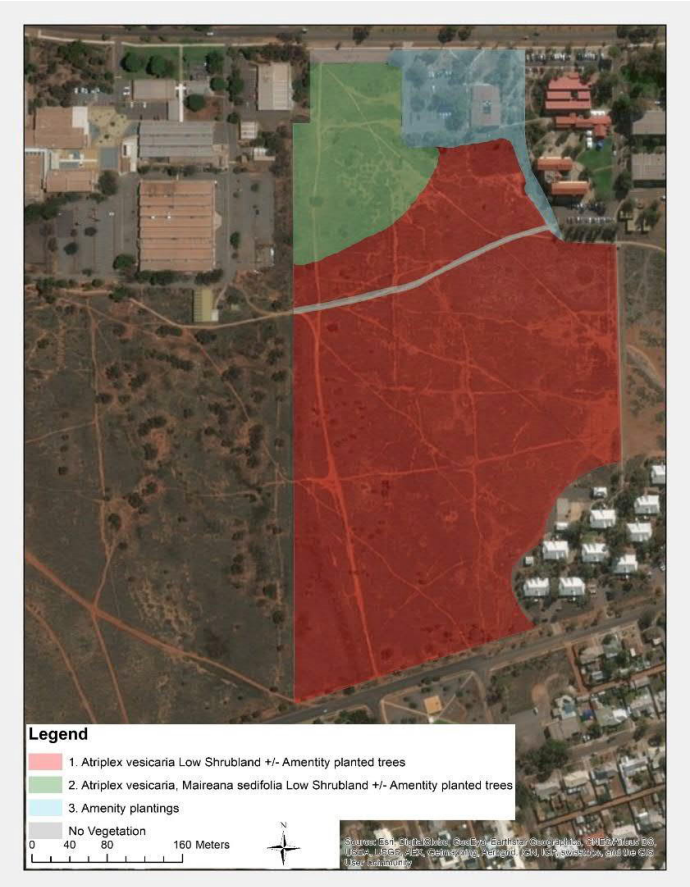

Plate 1: Vegetation associations

3.1.1 Potential impacts

Based on the preliminary proposed layout, the maximum remnant vegetation clearance footprint is estimated to be 14.84 ha, across the two vegetation associations. Some amenity plantings will also require removal to facilitate the development.

There will be no impact on flora species or communities with a conservation rating under the EPBC Act or NPW Act.

As the site is outside of the Metropolitan Adelaide area, there are no significant or regulated trees as defined in the Development Act.

3.1.2 Mitigation and management

The proposed native vegetation clearance will require approval under the *Native Vegetation Act 1991* and a Significant Environmental Benefit (SEB) offset. The clearance of amenity plantings will require approval through the DPTI.

The areas of vegetation clearance will be refined throughout the design stages and the final design will retain native vegetation and amenity plantings wherever possible. Based on BlackOak Environmental's survey and calculations (Appendix A), the maximum Native Vegetation SEB requirement for the clearance of 14.84 ha of native vegetation at this site is 148.87 ha or a payment of $413,119.45 into the Native Vegetation Fund.

A Construction Environmental Management Plan (CEMP) should be implemented to minimise impacts to existing vegetation during construction.

3.2 Fauna

Ten bird species were recorded during the field survey undertaken by BlackOak Environmental (Appendix A), including most commonly the Welcome Swallow (*Hirundo neoxena*) and Red Wattlebird (*Anthochaera carunculata*). No native mammals were observed during the survey.

None of the species recorded during the survey are listed as threatened under the EPBC Act or NPW Act. Furthermore, no suitable habitat was observed within the study area for the threatened species identified from the desktop assessment.

3.2.1 Potential impacts

The development will be result in direct disturbance and habitat removal. The bird species identified during the field survey are widespread and do not rely on the specific habitat of the site. Based on this, the development is not expected to have an adverse impact on these species.

There will be no impact on fauna species or habitat with a conservation rating under the EPBC Act or NPW Act.

3.2.2 Mitigation and management

The areas of habitat removal will be refined throughout the design stages and the final design will retain habitat wherever possible.

A CEMP should be implemented to minimise impacts to bird species during construction.

3.3 Pest plants and animals

Sixteen introduced flora species were identified by BlackOak Environmental during the field survey. The majority of weed species were observed on the permitter of patches of native vegetation within areas which have previously been subject to soil disturbance.

The most common weed species identified were *Bromus diandrus* (Great Brome), *Lactuca serriola* (Prickly Lettuce), *Mesembryanthemum nodiflorum* (Slender Iceplant) and *Sisymbrium erysimiodes* (Smooth Mustard). Three of the introduced species detected are listed as declared weed species under the *Natural Resources Management Act 2007* (NRM Act), including *Cenchrus ciliaris* (Buffel Grass), *Cylindropuntia prolifera* (Jumping Cholla) and *Gazania linearis* (Gazania). Buffel grass and Jumping Cholla are considered category 2 under the NRM Act, and Gazania is category 3.

Evidence of rabbits at the site was noted during the field survey.

Phytophthora

The site is within a Low Potential Threat Area for Phytophthora outbreak. The site is also considered to be a Low Risk Site based on:

- Whyalla Norrie has low rainfall (annual average of 276.1 mm)
- Soils at the site are alkaline and are non-conducive
- The site is not within an area of known infestations of Phytophthora, nor is it within 10 km of a known Phytophthora infestation.

There were no disease symptoms observed during site inspections.

3.3.1 Potential impacts

There is a potential for the spread of weed species during construction due to soil disturbance and increased vehicle and foot traffic. However, following construction, a more intense weed control program is likely to be implemented as part of the use of the site as a high school.

The Project is unlikely to significantly impact on pest animal infestations, however, the unsecured waste associated with a school could attract pest animals.

3.3.2 Mitigation and management

The transport of declared plants on public roads requires approval from Biosecurity SA, or Natural Resources Eyre Peninsula (NREY), depending on its category. Category 2 plants (Buffel grass and Jumping Cholla) will require approval through the Biosecurity SA Chief Officer, and Category 3 plants (Gazania) will require approval from the regional NRM Board (NREY).

The South Australian Strategic Plan for Buffel grass (Government of South Australia, 2014) identified Whyalla in Buffel grass management Zone 3. In accordance with the Strategic Plan, Buffel grass in Zone 3 should be destroyed.

Further to the activities above, weed management measures should be included in the CEMP.

Appropriate waste management measures including secured bins should be implemented to reduce the likelihood of attracting pest animals.

3.4 Surface water

The site is within an area that experiences semi-arid climate, with an average annual rainfall between 250-280 mm per year and average monthly rainfall similar across the year. The low rainfall, high soil infiltration and high evaporative losses result in few surface drainage features.

The site drainage follows the general topography, falling towards the southwest and south east of the site. A small portion near the northern site boundary of the site draining north towards Nicolson Avenue. There is also an area in the southern portion of the site that forms a bowl where the low point is slightly lower than the surrounding area.

Given the Project is in an urban environment, runoff from the site enters the Whyalla stormwater network. Indicative details of the stormwater network in the vicinity of the site were provided by Council and are shown in Appendix B. Based on the site topography and the indicative details, it appears that the majority of stormwater will connect to the spur that extends into the site from the stormwater network on Russell Street. Council currently appear to have no information regarding the size or depth of this spur, although the continuation of this stormwater pipe on Smoker Street is listed as a 900 mm diameter pipe. A small portion of the site may also flow towards the north and join the stormwater network on Nicolson Avenue. Stormwater flowing into the Racecourse Road network currently enters the retention basin on Racecourse Road and is used by Council on various irrigation projects.

Based on the feasibility study, stormwater capture, treatment and reuse for irrigation purposes is also being considered for the Project.

The Gulf St Vincent is over 2.5 km south east of the site.

Based on the Whyalla Council Development Plan (consolidated 14 June 2017), the site is not within an area of high flooding risk.

3.4.1 Potential impacts

Construction

Construction of the Project may cause disturbance of surface water drainage pathways, however, based on the low rainfall in the area and high soil infiltration, this is likely only during infrequent high rainfall events. Disturbance of surface water drainage pathways has the potential to cause soil erosion and sedimentation of surface water entering the stormwater system.

Based on the risk assessment included in DPTI's Protecting Waterways Manual and the preliminary project information, the site has a moderate risk of soil erosion.

There is also the potential for accidental spills to occur during construction and enter the stormwater system.

Completed development

The impermeable surface at the site will increase as a result of the development. The proposed site layout indicates approximately 36,000 m^2 of impermeable surface (either buildings or hardstand). Based on the hydrological assessment undertaken by Golder, the estimated post-development flow generated by a storm with an Annual Recurrence Interval (ARI) of 100 years is approximately 50% greater than the pre-development flow.

The condition of the stormwater pipes on Racecourse Road, Russell Street and Nicolson Avenue and their capacity to receive the additional flow expected to be generated by the development is unknown. Council has advised that their database indicates that the pipes in this network were installed in the mid-1960s. Council has also advised that it is currently in the process of developing a Stormwater Management Plan and it has been identified that there are significant overland flows through the general area where the site is located. If site runoff is proposed to enter this stormwater network, agreement with Council regarding the allowable discharge will be required.

3.4.2 Management and mitigation

Construction

The construction phase will need to protect stormwater in accordance with the *Environment Protection Act 1993* (EP Act).

Soil erosion and drainage management (SEDM) measures should be put in place during construction. Based on the moderate risk of soil erosion, a SEDM Plan (SEDMP) should be implemented, in accordance with DPTI's Protecting Waterways Manual. The soil erosion risk assessment should be revised based on the final details of the development.

The CEMP should include measures to protect water quality including appropriate storage and handling of potential pollutants and emergency response procedures.

In accordance with DPTI's Water Quality Monitoring Manual for Construction Sites, water quality monitoring may be required where there is runoff leaving the site. Based on a low risk and a highly disturbed system, water quality a low level of monitoring is expected to be appropriate at this construction site.

Completed development

The project design will include an internal drainage network suitable for treatment and reuse or capable of conveying surface water to the existing stormwater network. This may require filling in places and the addition of drainage infrastructure.

Council has advised that an initial consideration of the aforementioned Stormwater Management Plan, which is currently in development, is the incorporation of a drainage and catchment basin in the general area where the site is located in order to attenuate stormwater in this area so as to reduce the rate of inflow to the existing stormwater network. This would suggest that the existing stormwater network is not currently suitable for receiving the forecasted runoff from the development, and that some form of attenuation within the site is likely to be required.

Water Sensitive Urban Design (WSUD) features and Sustainable Drainage Systems (SuDS) will be incorporated into the design where possible.

As identified above, there is uncertainty regarding the capacity of the existing stormwater network to receive additional flows and plans are being developed by Council that may involve the incorporation of attenuation of flows within the subject catchment to reduce the rate of stormwater runoff

The Project design should consider how stormwater will be managed on site and how the stormwater may be detained and managed within the site to result in a runoff rate that the Council network can accommodate. Stormwater management design (such as detention pond sizing) would need to consider detailed hydrological assessment.

It is highly recommended that this information be incorporated into a stormwater management plan for the development and submitted to Council for their approval. The Stormwater Management Plan would likely incorporate detailed hydrological assessment / modelling, details of stormwater attenuation (WSUD and SuDS), and details of the management of sediment in the surface water.

3.5 Groundwater

The Department of Environment and Water (DEW) WaterConnect Groundwater database, indicated that the shallow aquifer within the vicinity of the site is expected to be at depths in the range of 6 to 10 m below ground level (bgl). The purposes listed for the registered bores within 1 km of the site included investigation, monitoring, and aquifer storage and recovery.

Total dissolved solids (TDS) was recorded at one well within 1 km of the site. The record indicated that the groundwater in this area is likely to be highly saline (26,000 mg/L). At this salinity, the groundwater is unlikely to have any beneficial uses.

3.5.1 Potential impacts

The construction and ongoing use of the site as a high school is unlikely to interact with groundwater. If footings need to be greater than 6 m in depth, groundwater may be encountered during construction.

Groundwater contamination from accidental spills is highly unlikely.

3.5.2 Management and mitigation

The construction phase will need to protect groundwater in accordance with the *Environment Protection Act 1993* (EP Act).

The CEMP should include measures to protect groundwater including dewatering (if required) and appropriate storage and handling of potential pollutants and emergency response procedures.

3.6 Air quality

The site is near a number of potential sensitive receptors including residents, a childcare centre and educational facilities. The potential sensitive receptors surrounding the site, as defined by the SA Environment Protection Authority (EPA), are presented on Figure 3.

The soil type and low rainfall of the Whyalla region are conducive to high dust levels when disturbed.

3.6.1 Potential impacts

Sensitive receptors are likely to experience an increased level of dust during construction.

Construction may result in an increased level of vehicle emissions; however, the impact is expected to be minor and temporary.

The proposed high school development is not expected to have an ongoing adverse impact on air quality.

3.6.2 Mitigation and management

The Project will need to comply with the *Environment Protection (Air Quality) Policy 1994* throughout construction.

Construction management techniques to minimise the environmental impact from dust during construction should be detailed in the CEMP including wetting down and progressive rehabilitation of disturbed soils.

Consultation with residents and the surrounding educational facilities will be an important process prior to construction.

3.7 Greenhouse gas and climate change

The Project will involve the use of non-renewable materials and energy consumption during construction and will involve vegetation clearance. The high school development will also result in increased energy consumption following construction.

The site is not within an area sensitive to climate change impacts such as sea level rise or flooding risk.

3.7.1 Potential impact

The Project will result in an increase in greenhouse gas emissions during construction including through fuel use, vegetation clearance and manufacture of construction materials.

Based on the Whyalla Super School accepting students from three other schools, the development is not expected to result in a net increase in greenhouse gas emissions.

The development is unlikely to be significantly impacted by the effects of climate change.

3.7.2 Mitigation and management

Construction of the Project will be managed to minimise greenhouse gas emissions including minimising waste, use of local materials and recycled materials and the use of energy efficient and well-maintained plant and machinery. These measures, and others should be detailed in the CEMP.

The Project will be designed in accordance with the Energy Efficiency provisions of the Whyalla Development Plan and in consideration of Ecologically Sustainable Design, with the objective of designing development to conserve energy and minimise waste.

3.8 Site contamination

A desktop assessment and preliminary soil assessment was undertaken by Golder. Based on the results, Golder did not identify existing contaminants in shallow soils at concentrations that would pose an unacceptable risk to human health or the environment given the context of the proposed development and land use. Preliminary soil testing indicated that the soil is likely to meet the criteria for off-site disposal as Waste Fill should surplus soils be generated.

Golder did not undertake sampling of groundwater. Activities on surrounding land (i.e. storage of listed substances at TAFE SA) have the potential to have caused contamination of groundwater in the event improper storage or disposal occurred.

Based on the Whyalla Council Development Plan (consolidated 14 June 2017) and information on the Australian Soil Resource Information System, the site is within an area of extremely low probability of ASS.

3.8.1 Potential impacts

Based on the preliminary assessment, impacts from existing soil contamination are unlikely.

It is unlikely that there will be surplus soil requiring offsite disposal. However, if required, further sampling and testing of soil may be required to confirm the waste classification for offsite disposal. The sampling and testing required will depend on the location and volume requiring offsite disposal.

While the quantities of listed substances stored at TAFE SA were likely to have been relatively small, sampling and testing of groundwater would be required if groundwater is proposed for extraction.

There is a potential for contamination to soil and groundwater as a result of construction (i.e. accidental spills, stockpiling of contaminated materials etc.).

Ongoing use of the site as a high school is unlikely to result in soil contamination.

3.8.2 Mitigation and management

The Project will need to comply with the EP Act in relation to soil contamination.

Contamination management measures, including an unexpected finds and emergency response procedure, should be detailed in the CEMP.

3.9 Resource use and waste

The Project construction will require the use of non-renewable resources and will generate waste during construction.

The ongoing use of the site as a high school will also result in the use of non-renewable resources and generate waste. The high school will be connected to the existing electricity infrastructure, SA Water main and Australian Pipeline Authority (APA) Group natural gas main. There is also a possibility of connecting to the existing recycled water main.

3.9.1 Potential impacts

Construction will result in the following waste products requiring management and/or disposal:

- Solid inert waste from raw construction materials
- Packaging materials
- Organic matter and green waste such as mulched grass, vegetation etc.
- Putrescible waste
- Liquid waste such as wash down water
- Hazardous substances.

Water will also be used during construction, particularly for wetting down of soils to reduce air blown dust. The source of this water has not yet been nominated.

Based on the Whyalla Super School accepting the students from three other schools, there is not expected to be a net increase in resource use and waste as a result of the development.

3.9.2 Mitigation and management

The CEMP will include waste management measures to ensure that the waste hierarchy outlined in the *Environment Protection (Waste to Resources) Policy 2010* is implemented during construction.

Opportunities for the use of recycled water should be further investigated prior to construction.

3.10 Geophysical

A preliminary geotechnical assessment was undertaken by Golder and showed that that Whyalla is situated on the boundary of two geological provinces: the Carriewerloo basin and the Pirie Basin, and that the site is located close to two geological units.

A review of the stratigraphic drill holes located within 500 m of the site indicated the site soils are likely to comprise sandy clay with sandy lenses to a depth of between 10 and 15 m.

Based on Golder's experience, the near surface soils at the site are expected to comprise a thin sandy topsoil layer overlying hard clays with dense to very dense sand lenses. The clays are typically low to medium reactivity and the presence of calcareous soils in the upper profile is a possibility.

3.10.1 Potential impacts

Based on a typical high school development (one to two storey structures founded on shallow footings, minor earthworks and lightly load pavements), the following have the potential to impact on the design and construction, and will need to be addressed by intrusive investigation, testing and geotechnical assessment during subsequent design phases:

- **Potential presence of uncontrolled fill –** Based on historical aerial photographs obtained for the site, there has been several periods of development since the mid-1950s. Some of the developments appear to have included land disturbance, such as the construction of an unsealed runway in the 1950s. As part of the land disturbance activities, it is likely that fill materials have been placed across the site. There is a risk that uncontrolled fill materials could be encountered during development of the site, which could mean that these will require some form of treatment (such as reworking).
- **Earthworks using site won fill materials -** We expect that the majority of the site materials will be suitable for re-use as general or select fill with the exception of organic topsoil and deleterious materials. Based on our experience of the materials around the Whyalla area, they are typically dry of their optimum moisture content and will likely require moisture conditioning during earthworks.

3.10.2 Mitigation and management

Further geotechnical investigation will inform the project design and construction methodology.

A reliable water source will be secured prior to construction for improving moisture content in site soils.

3.11 Noise and vibration

The site is near a number of potential noise sensitive receptors including residents, a childcare centre and educational facilities. The potential sensitive receptors surrounding the site, as defined by the SA EPA, are presented on Figure 3.

The closest built heritage is greater than 800 m west of the site.

3.11.1 Potential impacts

A minor and temporary increase in noise is expected during construction. Construction works are expected to be during general construction hours.

The proposed high school development is not expected to have an ongoing adverse impact on noise and vibration.

Based on the distance to the nearest built heritage feature, it is highly unlikely to be impacted by construction vibration impacts.

3.11.2 Mitigation and management

Construction management techniques to minimise the environmental impact of construction noise and vibration should be detailed in the CEMP.

Consultation with residents and the surrounding educational facilities will be an important process prior to construction.

Dilapidation surveys of the buildings surrounding the site may be considered if high levels of vibration are expected based on the construction machinery and methodology used.

3.12 Community and land use

The feasibility study identified the site as the preferred location for the Whyalla Super School based on a number of aspects including the considerations of community and surrounding land uses.

The northern portion of the site is zoned for community, and the southern portion is residential. The site is ideally situated within an existing educational hub between the TAFE SA, Uni SA and Uni SA residential units, with access from two main roads. The site is a vacant Crown Record with Uni SA the current custodian.

3.12.1 Potential impact

The proposed site is covered by one Certificate of Title and will not require land acquisition to facilitate the development. The proposed land use is unlikely to have an adverse impact on the surrounding land uses, including the residential areas.

Depending on the final design, a small amount of demolition may be required in the area of the childcare centre (car parking and associated infrastructure).

3.12.2 Mitigation and management

The development of a secondary school within the Residential Zone should be further assessed and discussed with Council.

Community and land use considerations will be built into the design and construction methodology to minimise the impact on the community.

3.13 Access

The feasibility study proposed the main access to be in from Russell Street (ingress) and out onto Nicolson Avenue (egress). Access to the staff car park was also been proposed off Nicolson Avenue, utilising shared access arrangements with the Uni SA car park.

Nicolson Avenue forms part of one bus route service, with two bus stops adjacent the site. Accessing the site from a significant portion of Whyalla would require a bus route transfer.

Pedestrian and cyclist access are available to the site via the existing network of shared paths, providing connectivity from Racecourse Road and Russell Street.

The site is bound by TAFE SA, Uni SA and the Uni SA student accommodation. Portions of the eastern, western and southern boundaries are unfenced and open to Russel Street and Racecourse Road.

3.13.1 Potential impact

Construction traffic may temporarily impact Nicolson Avenue and Russel Street.

Based on the feasibility study, the estimated peak traffic is not expected to have a significant adverse impact on Nicolson Avenue and Russell Street. Further, the proposed access points have been selected to have the least impact on traffic and surrounding residences. The staff car park shared access with UniSA also minimises impact to the road network.

The public transport system may be impacted by the development, based on the requirement to transfer buses from a significant portion of Whyalla.

Pedestrian and cyclist access routes are expected to be maintained throughout and following development to encourage the use of these transportation methods.

There will be no impact to the access of the surrounding properties.

The UniSA student accommodation may experience security and privacy impacts resulting from the use of the site during construction and ongoing use of the school.

Traffic along these streets is also likely to experience a long-term impact from the additional traffic accessing the school.

3.13.2 Mitigation and management

Further assessment of the traffic impact, including Council and community engagement will be required throughout the detailed design phase.

Emergency service vehicle access to the site should be maintained throughout construction and ongoing high school use.

Community and land use considerations will be built into the design and construction methodology to minimise the impact on the community. This could include considerations regarding privacy/security fencing where required, specifically along the southern boundary near the Uni SA student accommodation.

A traffic management plan should be implemented during construction, including advance warning to the community of any traffic delays.

3.14 Amenity

The proposed high school siting is between the TAFE SA and Uni SA, making this portion of Nicolson Avenue into an educational hub. Based on the feasibility study, it is envisioned that the site will incorporate the existing landscape character. The buildings are proposed for construction within the northern portion of the site between the TAFE SA and Uni SA, with playing fields and open space in the southern portion of the site.

The approximate locations of underground services were mapped (presented on Figure 1) using Dial Before You Dig (DBYD) records and identification of infrastructure onsite (i.e. service pits).

3.14.1 Potential impacts

There may be a minor, temporary impact on visual amenity during construction. Lighting in the southern portion during construction may cause light spill to the UniSA student accommodation, if required for security at night.

The development is expected to have a positive impact on amenity in the area. The buildings have been sited within the area of existing educational buildings, and the open space in the south of the site will be generally maintained as playing fields.

There is not expected to be any permanent lighting in the southern portion of the site that would cause light spill issues for the Uni SA student accommodation.

The development is not expected to adversely impact on the existing service networks.

3.14.2 Mitigation and management

The existing landscape and surrounding land uses should be considered in the design.

The construction should be managed to minimise the impact on visual amenity, including potentially screened security fencing if required. Light spill to Uni SA student accommodation should be avoided.

Community consultation regarding the design and construction should be undertaken prior to construction.

The existing services to the site should be considered in the design. Underground services should be positively identified and marked on site prior to construction works.

3.15 European heritage

The Desktop Heritage Assessment (Appendix C) undertaken by IHC Consultants (IHC) indicated that there are no registered European Heritage sites within 50 m of the site, nor is there any evidence of the site having been used historically for buildings/structures that may result in archaeological remnants/deposits.

There are no DPTI Roadside Significant Sites in proximity to the site.

3.15.1 Potential impacts

IHC indicated that the Project posed a low risk of encountering European heritage during site works.

The closest heritage site was 800 m west of the site and will not be impacted by vibration during construction.

3.15.2 Mitigation and management

If European heritage sites and/or archaeological deposits are found within the project area, they are protected by the *South Australian Heritage Places Act 1993* (Heritage Places Act). These should be recorded prior to removal by a qualified archaeologist and will require approval under Section 27 of the Heritage Places Act.

Considerations of European heritage should be detailed in the CEMP including a site discovery procedure and inductions for site personnel.

3.16 Aboriginal heritage

Based on the advice received by IHC (Appendix C), there are no registered Aboriginal heritage sites within the project site. There is a low potential for sub-surface archaeological deposits to be present with in undisturbed soil profile. The site is flat, featureless and lacks the environmental landforms typically associated with ethnographic sites.

3.16.1 Potential impacts

IHC indicated that the Project posed a medium risk of disturbance to unidentified Aboriginal heritage sites or objects of significance during construction.

The Project is unlikely to impact on any ethnographic sites.

3.16.2 Mitigation and management

If Aboriginal sites are found at the site, they are protected by the *Aboriginal Heritage Act 1988* (AHA). Where not possible to avoid these sites, Ministerial approval under Section 23 of the AHA will be required.

A review of the construction methodology and site inspection should be considered to minimise the risk of encountering unidentified Aboriginal heritage sites.

Discussions with the Barngarla Determination Aboriginal Corporation (BDAC) may be required to confirm that the Project will not impact any ethnographic sites.

Considerations of Aboriginal heritage should be detailed in the CEMP including a site discovery procedure and inductions for site personnel.

3.17 Native title

The site is within the Barngarla People's Native Title claim which was determined in June 2018 in the Federal Court.

The site is not within an area covered by an Indigenous Land Use Agreement (ILUA).

3.17.1 Potential impacts

The Project has the potential to impact on a Native Title claim.

3.17.2 Mitigation and management

Advice from the Crown Solicitors Office regarding whether Native Title exists over the site should be obtained.

If Native Title is not extinguished, further consultation and negotiation with the BDAC may be required.

4.0 SUMMARY OF ACTIONS

The Project will require Development Approval under Section 49 of the *Development Act 1993*. The approval process will involve referral to certain State and local Government Agencies including potentially EPA, DPTI, DEW and the Whyalla City Council. Table 2 presents a summary of the environmental considerations that may apply to the Development Approval and other necessary approvals. Table 2 also provides a summary of the additional information that may be required, and design and construction considerations.

Table 2: Approval, design and construction considerations

Aspect	Approval consideration	Approval body	Estimated timeframe	Further information required	Design and construction considerations
Flora	Native vegetation clearance approval	Native Vegetation Management Unit	2 months	Refined clearance footprints	Retain native vegetation where possible.
	Approval for removal of amenity plantings	DPTI	2 weeks	Refined clearance footprints	Retain amenity plantings where possible.
Fauna	NA	NA	NA	NA	NA
Pest plants and animals	Approval to transport declared plants on public roads	Biosecurity SA (Category 2) Natural Resources Eyre Peninsula (Category 3)	2 weeks	NA	Buffel grass should be destroyed.
Surface water	Development Approval	Whyalla City Council	3 - 6 months	Stormwater management strategy and confirmation of suitability of Council stormwater system for increased flow, if required.	Stormwater management plan will be required for treatment and reuse. Upgrades to Council stormwater network may be required.

Aspect	Approval consideration	Approval body	Estimated timeframe	Further information required	Design and construction considerations
Groundwater	Development Approval	Referral to EPA	3 - 6 months	NA	Deep footings (>6 m) may interact with groundwater. Groundwater quality will need to be assessed if it is to be extracted.
Air quality	Development Approval	Referral to EPA	3 - 6 months	NA	Dust mitigation measures during construction and progressive rehabilitation of disturbed areas to reduce dust.
Greenhouse gas and climate change	NA	NA	NA	NA	Ecologically Sustainable Design principles.
Site contamination	Waste classification for surplus soils	Waste acceptor/EPA	3-6 weeks	Additional soil assessment to confirm waste classification for surplus soils	
Resource use and waste	NA	NA	NA	NA	Waste hierarchy to be considered in design and construction methodology. Opportunities to use recycled water to be considered.
Geophysical	NA	NA	NA	Geotechnical investigation to inform project design and construction methodology.	A reliable water source is likely to be required to achieve the appropriate soil moisture content.

Aspect	Approval consideration	Approval body	Estimated timeframe	Further information required	Design and construction considerations
Noise and vibration	Development Approval	Referral to EPA	3 - 6 months	NA	Noise during construction to be minimised, and only within normal construction hours. Dilapidation surveys of surrounding buildings should be considered.
Community and land use	Development Approval (high school development within Residential Zone)	Whyalla City Council	3 - 6 months	Refined design and consultation with Council	Consideration of surrounding land use requirements, specifically Uni SA student accommodation.
Access	Development Approval	Referral to DPTI and/or Council	3 - 6 months	Traffic access design and consultation with DPTI/Council	A Traffic Management Plan will be required during construction, and advanced warning to motorists.
European heritage	NA	NA	NA	NA	Site discovery procedure during construction.
Aboriginal heritage	NA	NA	NA	Potential for site survey, review of construction methodology and engagement with BDAC to minimise risk of encountering unexpected sites/objects	Site discovery procedure during construction.
Native Title	Engagement and/or negotiation with BDAC	NA	NA	Confirmation of the Barngarla People's Native Title claim	NA

Signature Page

Golder Associates Pty Ltd

Hannah Keynes
Environmental Scientist

Lissa van Camp
Principal Environmental Consultant

HK/LvC/gp

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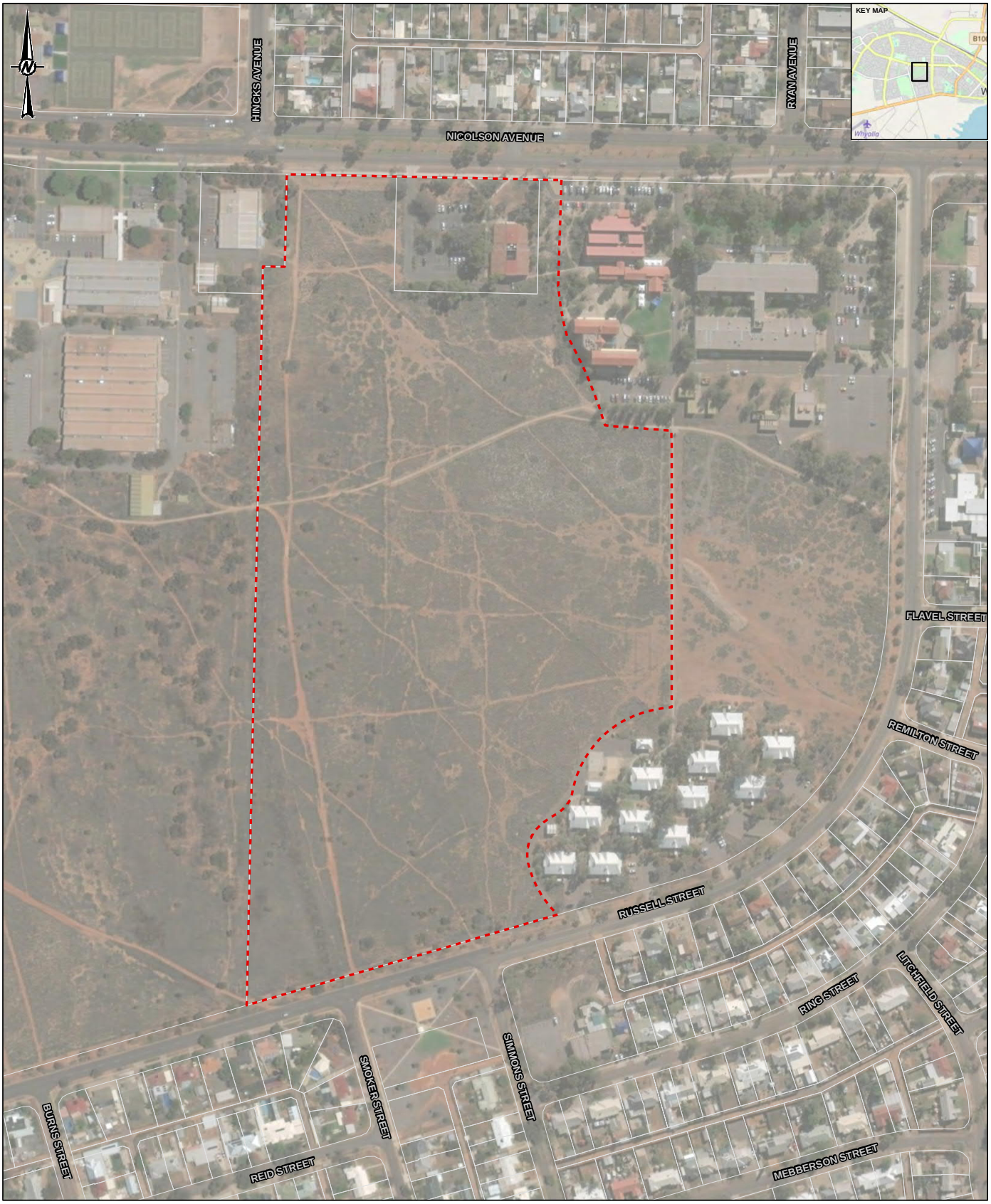


Approximate Site Boundary

0 180
1:2,500 METRES

NOTE(S)
1. AERIAL PHOTOGRAPH SOURCED FROM ARCGIS ONLINE.
2. SERVICES LOCATIONS DIGITISED FROM DIG BEFORE YOU DIG RESPONDENTS.

REFERENCE(S)

CLIENT
DPTI

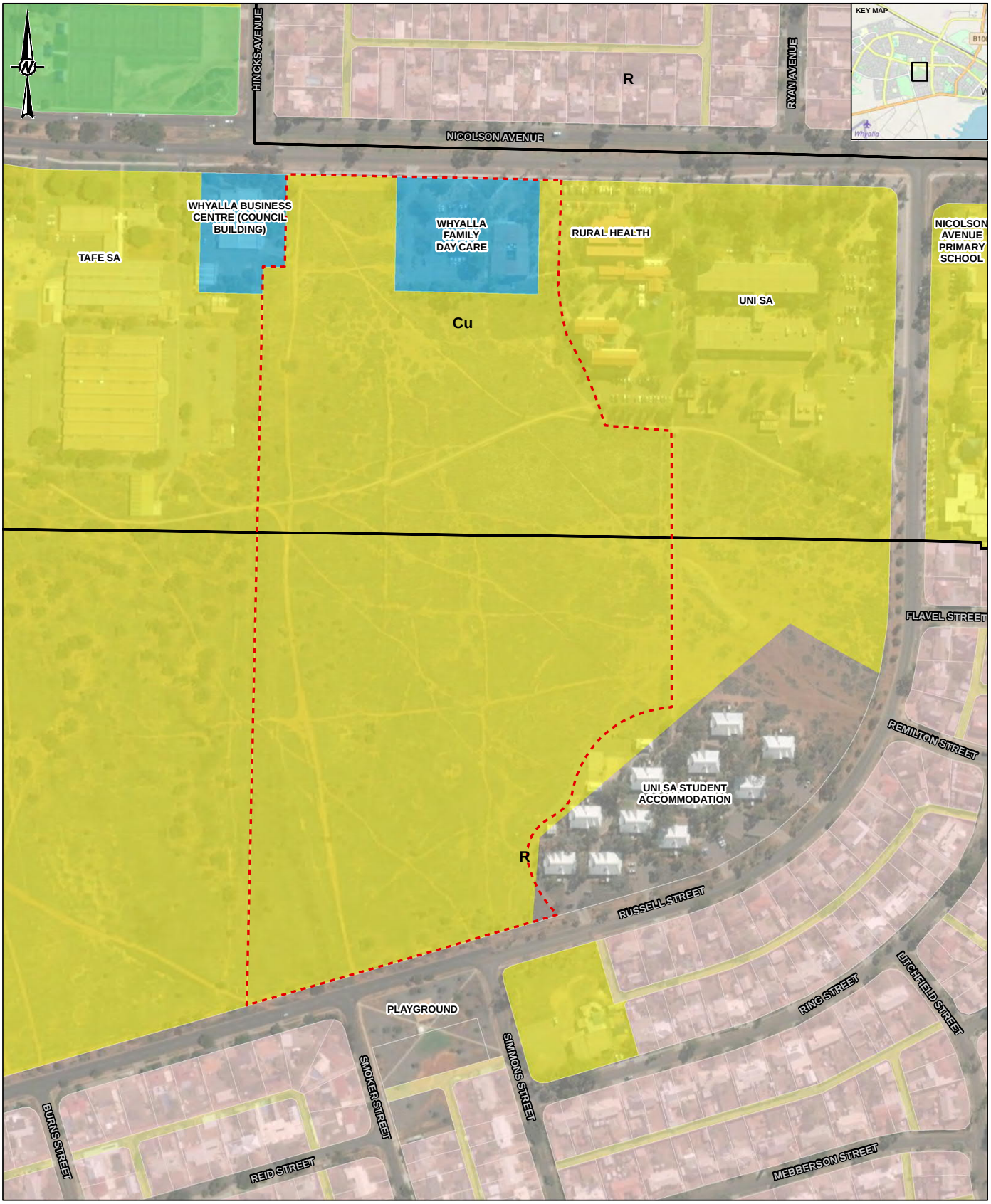
PROJECT
WHYALLA SUPER SCHOOL

TITLE
SITE LOCATION AND SOIL SAMPLING LOCATIONS

CONSULTANT
GOLDER

DD-MM-YYYY	29-11-2018
DESIGNED	GB
PREPARED	GB
REVIEWED	HK
APPROVED	LVC

PROJECT NO.	CONTROL	REV.	FIGURE
18109032	001-R	0	1



- Approximate Site Boundary
- Zone Boundary

Valuation Derived Landuse

- Residential
- Commercial
- Education
- Recreation
- Vacant

0 180
1:2,500 METRES

NOTE(S)
1. AERIAL PHOTOGRAPH SOURCED FROM ARCGIS ONLINE.

REFERENCE(S)

CLIENT
DPTI

PROJECT
WHYALLA SUPER SCHOOL

TITLE
ZONING AND LAND USE

CONSULTANT
GOLDER

DD-MM-YYYY	09-11-2018
DESIGNED	GB
PREPARED	GB
REVIEWED	HK
APPROVED	LVC

PROJECT NO.	CONTROL	REV.	FIGURE
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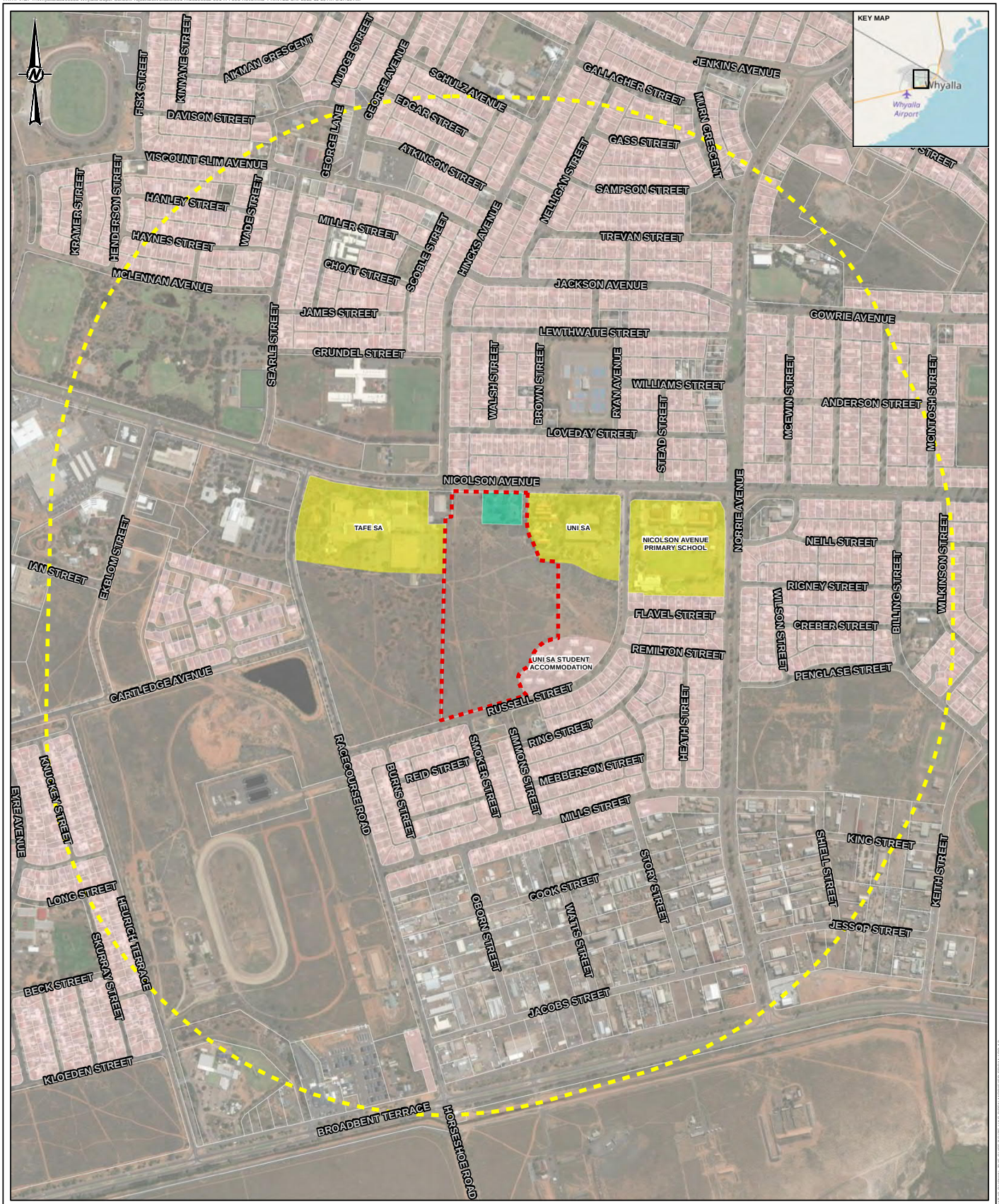

Approximate Site Boundary

1km radius from site boundary

Land Use

- Residential
- Educational Facility
- Childcare Centre

0 660

1:9,000 METRES

NOTE(S)

1. AERIAL PHOTOGRAPH SOURCED FROM ARCGIS ONLINE.

REFERENCE(S)

CLIENT
DPTI

PROJECT
WHYALLA SUPER SCHOOL

TITLE
POTENTIAL SENSITIVE RECEPTORS

CONSULTANT
GOLDER

DD-MM-YYYY	29-11-2018
DESIGNED	GB
PREPARED	GB
REVIEWED	HK
APPROVED	LVC

PROJECT NO.	CONTROL	REV.	FIGURE
18109032	001-R	0	3

APPENDIX A

Flora and Fauna Assessment

Native Vegetation Clearance Proposal - Whyalla Super School

Data Report

Clearance under the *Native Vegetation Regulations 2017*

November 2018

Prepared by: BlackOak Environmental NVC accredited consultant (Matt Launer) for Golder Associates Pty Ltd

Document information and distribution

Document information	
Item	**Detail**
Project name	Whyalla Super School
Project number	PR-GO-171018
Document title	Native Vegetation Clearance Proposal – Whyalla Super School
Client	Golder Associates Pty Ltd (for the Department of Planning Transport and Infrastructure)
Prepared by	Matt Launer
Reviewed by	Sally O'Neill
Review date	07/11/18
Document status	Final
Version number	2

Document distribution				
Author	**Document status**	**Version number**	**Date of issue**	**Issued to**
Matt Launer	Draft	1	08/11/18	Hannah Keynes (Golder Associates Pty Ltd)
Matt Launer	Final	2	15/11/18	Hannah Keynes (Golder Associates Pty Ltd)

Cover photograph: *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees vegetation association.

Acronyms and definitions

Abbreviation	Description
BAM	Bushland Assessment Method
BCM	Bushland Condition Monitoring
BDBSA	Biological Databases of South Australia
DEW	Department for Environment and Water
DEWNR	Department of Environment, Water and Natural Resources
DPTI	Department of Planning, Transport and Infrastructure
DotEE	Department of the Environment and Energy
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NPW Act	*National Parks and Wildlife Act 1972*
NRM	Natural Resource Management
NVC	Native Vegetation Council
PMST	Protected Matters Search Tool
SEB	Significant Environmental Benefit
TEC	Threatened Ecological Community

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1 Application information

Applicant:	Department of Planning, Transport and Infrastructure (DPTI)		
Key contact:	Adrian Swiatnik		
Landowner:	The Crown		
Site Address:			
Local Government Area:	The City of Whyalla	Hundred:	Randell
Certificate of Title:	CR 5988/172	Section/Allotment:	Allotment 1, 44349
Summary of Application			
Proposed clearance area:	The location selected for the Whyalla Super School is on Nicholson Avenue, between the UniSA Whyalla Campus and TAFE SA, incorporating the Whyalla Education Centre. The study area includes approximately 14.84 ha of remnant vegetation. The maximum proposed clearance area consists of 13.22 ha of *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees and 1.62 ha of *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees. The project is in the early stages of planning and it is likely that the clearance footprint will be reduced from that initially assessed.		
Applicable regulation and purpose of the clearance	Clearance is required to facilitate the construction of the Whyalla Super School. The Project has been determined to fall under Regulation 12 of the *Native Vegetation Regulations 2017*, under the New dwelling or building provisions of Schedule 1, Part 6 (clause 33) and the Infrastructure provisions of Schedule 1, Part 6 (clause 34).		
Level of risk	The level of risk has been assessed as 4 on the basis that the Total Biodiversity Score is greater than 250. The project is in the early stages of planning and it is likely that the clearance footprint will be reduced from that initially assessed.		
Proposed SEB offset:	The proponent will consider the SEB offset when the clearance footprint for the project is finalised. It is likely that the SEB offset would be in the form of payment into the Native Vegetation Fund or the establishment of a new SEB area on land owned by the proponent.		

2 Background

2.1 Purpose of the proposal

The South Australian State Government has committed funds for a new secondary school (Whyalla Super School) in Whyalla that will accommodate 1,500 students between Year 7 and Year 12. The location selected for the Whyalla Super School is on Nicholson Avenue, between the UniSA Whyalla Campus and TAFE SA, incorporating the Whyalla Education Centre. A feasibility study considered a number of options for the new school. The preferred option identified the chance to share services with the adjacent educational facilities and presents strong green space connectivity with opportunities for outdoor spaces to be developed as an extension to learning spaces.

Design and construction of the school will be managed by the Department of Planning, Transport and Infrastructure (DPTI) on behalf of the Department for Education.

The purpose of the proposed vegetation clearance is to allow for the construction of the Whyalla Super School and associated infrastructure.

2.2 Background and location

The study area is located within the City of Whyalla Local Government Association (LGA) and the Eyre Peninsula Natural Resource Management (NRM) region. The study area is located within the city of Whyalla and contains approximately 14.84 ha of remnant vegetation and 1.25 ha of buildings, infrastructure and amenity plantings.

Interim Biogeographical Regionalisation of Australia (IBRA)

IBRA was developed in 1993-94 and is endorsed by all levels of government as a key tool for identifying land for conservation under Australia's Strategy for the National Reserve System 2009-2030. IBRA identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations.

The study area is located within the Gawler IBRA Bioregion, the Myall Plains IBRA Subregion and Whyalla IBRA Environmental Association. A summary of the IBRA Bioregion, Subregion and Environmental Association is provided in Table 1.

Table 1. IBRA bioregion, subregion, and environmental association summary.

Gawler IBRA Bioregion (GAW)	
Semi arid to arid, flat topped to broadly rounded hills of the Gawler Range Volcanics and Proterozoic sediments, low plateaux on sandstone and quartzite with an undulating surface of aeolian sand or gibbers and rocky quartzite hills with colluvial footslopes, erosional and depositional plains and salt encrusted lake beds, with black oak (belah) and myall low open woodlands, open mallee scrub, bluebush/saltbush open chenopod shrublands and tall mulga shrublands on shallow loams, calcareous earths and hard red duplex soils.	
Myall Plains IBRA Subregion (GAW01)	
Gently undulating calcrete plains and occasional quartzite or granite hills. Includes a zone of salt lakes and gypsum dunes at Lake Gillies and steep strike ranges at the Middleback Ranges. To the east out cropping conglomerate occurs with mangrove flats along the coastal margin. *Acacia papyrocarpa/Casuarina pauper* low woodland is found on grey brown calcareous earths, red calcareous earths and dense brown loams on the plains. Rocky outcrops support *Eucalyptus incrassata/Melaleuca uncinata* open scrub and *Allocasuarina verticillata* low woodland on dense brown loams. The lowest areas support chenopod shrubland of *Halosarcia halocnemoides* on grey calcareous loams. Light grazing occurs in most areas.	
Land type:	Erosional, Depositional or Volcanic.
Landscape:	Erosional plain.
Landform:	Gently undulating calcrete plains and occasional hills. Includes a zone of salt lakes and gypsum dunes at Lake Gillies and steep strike ranges at the Middleback Ranges.
Geology:	Calcrete development; gypsum dunes; play lakes with silt & clay deposits & evaporites.
Soil:	Red calcareous earths, Sandy soils with mottled yellow clayey subsoils.
Vegetation:	Assumed native vegetation cover.
Whyalla IBRA Environmental Association	
Land type:	Erosional, Depositional or Volcanic.
Landscape:	Erosional plain.
Landform:	Easterly sloping calcreted plain with occasional hills on outcropping conglomerate, and with mangrove flats along the coastal margin.
Geology:	Calcrete, conglomerate, silts, metasediments and sands.
Soil:	Red calcareous earths, dense brown loams, grey calcareous loams and whitish calcareous sands.
Vegetation:	Low open woodland of black oak and myall sometimes with false sandalwood, low woodland of mangrove and chenopod shrubland of samphire.

Figure 1. Location of the study area within the city of Whyalla.

2.3 Approvals required *or* obtained under other legislation (including past clearance approvals)

Native Vegetation Act 1991

Clearance under the *Native Vegetation Act 1991* is the subject of this proposal. There has been a previous clearance application lodged under the *Native Vegetation Act 1991* which includes a large portion of the land within the current proposal. The application number is 2016-2030 (9.06 ha).

Development Act 1993

The *Development Act 1993* provides for planning and regulates development in the State. The Act (and regulations) regulates the use and management of land and buildings, and the design and construction of buildings. In addition, the Act makes provision for the maintenance and conservation of land and buildings where appropriate. It is understood that the proponent is currently preparing a development application for the project.

Fire and Emergency Services Act 2005

The *Fire and Emergency Services Act 2005* was established to enable the creation of the South Australian Fire and Emergency Services Commission and to provide for the Commission's role in the governance, strategic and policy aspects of the emergency services sector. The Act also provides for the continuation of a metropolitan fire and emergency service, a country fire and emergency service, and a State emergency service, and provides for the prevention, control and suppression of fires and for the handling of certain emergency situations. It is understood that all details relevant to the *Fire and Emergency Services Act 2005* will be included a development application for the project.

Water Resources Act 1997

The *Water Resources Act 1997* provides for the management of the State's water resources. It is understood that all details relevant to the *Water Resources Act 1997* will be included a development application for the project.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* applies to any action which is likely to have a significant impact on a Matter of National Environmental Significance (MNES). There are nine MNES that act as "triggers" for the Commonwealth assessment and approval process. A Protected Matters Search Tool (PMST) report was generated on 25 October 2018 to identify MNES under the EPBC Act.

One threatened ecological community and 22 fauna species (excluding fish, and marine mammals and reptiles) listed as threatened under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the study area. The threatened ecological community was not recorded within the study area during the field survey. None of the 22 nationally threatened bird species identified in the PMST search results were recorded during the survey. Furthermore, none of these species are likely to occur within the study area due to a lack of preferred habitat.

It is understood that the proponent will undertake a 'self-assessment' to determine whether the project is likely to have a significant impact on any matter of national environmental significance.

Coast Protection Act 1972

The *Coast Protection Act 1972* is not applicable as the study area is located approximately 3 km from the coast of Spencer Gulf.

Pastoral Land Management and Conservation Act 1989

The *Pastoral Land Management and Conservation Act 1989* is not applicable as the study area is located within the agricultural zone and Eyre Peninsula NRM region of South Australia.

Environment Protection Act 1993

The *Environment Protection Act 1993* provides the regulatory framework to protect South Australia's environment, including land, air and water. This legislation was the result of the streamlined integration of six Acts of Parliament and the abolition of the associated statutory authorities. It is understood that all details relevant to the *Environment Protection Act 1993* will be included a development application for the project.

River Murray Act 2003

The *River Murray Act 2003* is not applicable as the study area is located approximately 220 km from the River Murray.

National Parks and Wildlife Act 1972

An Act to provide for the establishment and management of reserves for public benefit and enjoyment; to provide for the conservation of wildlife in a natural environment; and for other purposes. The study area is located approximately 6.6 km from the Whyalla Conservation Park. Impacts to flora and fauna species listed under National Parks Schedules have been considered in this proposal.

Natural Resources Management Act 2004

The *Natural Resources Management Act 2004* is designed to promote sustainable and integrated management of the State's natural resources and to ensure adequate provision is made for their protection; to repeal the *Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986,* the *Soil Conservation and Land Care Act 1989* and the *Water Resources Act 1997*; and for other purposes. It is understood that all details relevant to the *Natural Resources Management Act 2004* will be included a development application for the project.

Aboriginal Heritage Act 1988

An Act to provide for the protection and preservation of the Aboriginal heritage; to repeal the Aboriginal and *Historic Relics Preservation Act 1965* and the *Aboriginal Heritage Act 1979*; and for other purposes. It is understood that all details relevant to the *Aboriginal Heritage Act 1988* will be included a development application for the project.

3 Method

3.1 Desktop assessment

A desktop assessment was conducted to assess the potential for any threatened species (both Commonwealth and State listed) to occur within the study area. This was achieved by undertaking database searches of 5 km buffer of the study area, as specified in the Bushland Assessment Method (BAM) manual (NVC 2017a).

A Protected Matters Search Tool (PMST) report was generated on 25 October 2018 to identify matters of national environmental significance under the EPBC Act (DotEE 2018). The PMST is maintained by the Department of the Environment and Energy (DotEE) and was used to identify flora and fauna species or ecological communities of national environmental significance that may occur or have suitable habitat within the study area.

Species listed under South Australia's NPW Act were assessed using the Biological Databases of South Australia (BDBSA). The dataset was obtained on 18 October 2018 and used to identify threatened species that have been recorded in the 5 km buffer of the study area (DEW 2018).

3.2 Field survey

The field survey was conducted from 29-30 October 2018 and included a flora and fauna assessment.

Flora assessment

The vegetation survey was performed in accordance with the BAM (NVC 2017a). The NVC BAM is suitable for assessing vegetation that is located within the agricultural region of South Australia which includes the following NRM Regions:

- Adelaide and Mount Lofty Ranges
- Eyre Peninsula
- Kangaroo Island
- Northern and Yorke
- South Australian Murray-Darling Basin
- South East.

The BAM uses biodiversity 'surrogates' or 'indicators' to measure biodiversity value against benchmark communities. Each area to be assessed is termed an application area ('Block'), within which different vegetation

associations ('sites') are identified and compared to the Nature Conservation Society of South Australia's 'benchmark' vegetation communities. A representative 1 hectare quadrat is surveyed for each site (NVC 2017a). Three components of the biodiversity value of the site are measured and scored. These are: vegetation condition, conservation value and landscape context. The three component scores are combined to provide Unit Biodiversity Score (per ha) and then multiplied by the size (hectares) of the site to provide a Total Biodiversity score for the site. This is used to calculate a SEB area and value for payment in to the Native Vegetation Fund derived from the clearance of native vegetation (NVC 2017a).

The entire study area was traversed on foot and a complete flora species list recorded. The locations of weed species declared under the *Natural Resources Management Act 2004* were recorded. This was carried out in addition to the BAM quadrats.

Locations and photographs were also recorded for all Amenity planted trees within the study area.

Fauna assessment

The study area was traversed on foot. All fauna species, signs of species (scats, tracks etc.) and potential habitat for fauna was recorded. The value of habitat for the threatened fauna species identified in the desktop assessment was also determined when surveying the study area.

4 Assessment outcomes

4.1 Desktop assessment

Threatened ecological communities

One threatened Ecological Community (TEC), the Subtropical and Temperate Coastal Saltmarsh was identified in the PMST as potentially occurring within 5 km of the study area. This TEC was not recorded within the study area during the field survey.

Nationally threatened flora

No nationally threatened flora species were identified in the PMST as potentially occurring within 5 km of the study area.

State threatened flora

One threatened flora species under the NPW Act was identified in the BDBSA search as being previously recorded within 5 km of the study area. The *Orobanche cernua var. Australiana* (Australian Broomrape) was not recorded during the field survey and is considered unlikely to occur due to a lack of suitable habitat. The complete list of flora species identified in the 5 km BDBSA search is provided in Appendix 1.

Nationally threatened fauna

Twenty-two fauna species (excluding fish and marine mammals and reptiles) listed as threatened under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the study area (Table 2). The nationally threatened Malleefowl (*Leipoa ocellata*), Far Eastern Curlew (*Numenius madagascariensis*) and Fairy Tern (*Sternula nereis*) were also identified in the 5 km BDBSA search results. One nationally threatened species, the Hooded Plover (Hooded Dotterel) (*Thincornis cucullatus*) was identified from the BDBSA search results and was not identified in the PMST.

None of the 23 nationally threatened bird species identified in the PMST or BDBSA search results were recorded during the survey. Furthermore, none of these species are likely to occur within the study area due to a lack of preferred habitat.

State threatened fauna

Twenty-three fauna species (excluding fish and marine mammals and reptiles) listed as threatened under the NPW Act were identified in the BDBSA search as being previously recorded within 5 km of the study area (Table 2). All 23 species are bird species, four of which are also listed as threatened species under the EPBC Act. None of the 23 threatened bird species identified in the BDBSA search results were recorded during the survey. Furthermore, none of these species are likely to occur within the study area due to a lack of preferred habitat.

The complete list of fauna species identified in the 5 km BDBSA search is provided in Appendix 2.

Table 2. Threatened fauna species listed under the EPBC Act and NPW Act identified in the PMST (Source 1) and BDBSA (Source 2) database searches within 5 km of the study area. Only BDBSA records from the past 20 years are shown.

Species name	Common name	Conservation status		Source	Most recent record (BDBSA)
		Aus	SA		
Actitis hypoleucos	Common Sandpiper		R	2	13/11/2016
Amytornis textilis myall	Western Grasswren (Gawler Ranges)	VU		1	
Anas rhynchotis rhynchotis	Australasian Shoveler		R	2	1/02/2015
Ardea intermedia	Intermediate Egret		R	2	25/11/2001
Ardeotis australis	Australian Bustard		V	2	26/03/2005
Biziura lobata	Musk Duck		R	2	23/07/2007
Calidris canutus	Red Knot, Knot	EN		1	
Calidris ferruginea	Curlew Sandpiper	CE		1	
Cladorhynchus leucocephalus	Banded Stilt		V	2	13/11/2016
Corcorax melanorhamphos	White-winged Chough		R	2	28/02/2016
Diomedea antipodensis	Antipodean Albatross	VU		1	
Diomedea epomophora	Southern Royal Albatross	VU	V	1	
Diomedea exulans	Wandering Albatross	VU	V	1	
Diomedea sanfordi	Northern Royal Albatross	EN	E	1	
Egretta garzetta	Little Egret		R	2	27/12/2000
Egretta sacra	Pacific Reef Heron		R	2	8/01/2017
Haematopus fuliginosus	Sooty Oystercatcher		R	2	9/10/2016
Haematopus longirostris	(Australian) Pied Oystercatcher		R	2	23/04/2017
Haliaeetus leucogaster	White-bellied Sea Eagle		E	2	19/03/2017
Leipoa ocellata	Malleefowl	VU	V	1, 2	19/03/2017
Limosa lapponica	Bar-tailed Godwit		R	2	4/06/2004
Limosa lapponica baueri	Bar-tailed Godwit (baueri)	VU		1	
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	CE		1	
Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel	EN	V	1	
Macronectes halli	Northern Giant Petrel	VU		1	
Numenius madagascariensis	Far Eastern Curlew	CE	V	1, 2	25/12/2000
Pachycephala inornata	Gilbert's Whistler		R	2	29/01/2017
Pachyptila turtur subantarctica	Fairy Prion (southern)	VU		1	
Petroica boodang boodang	Scarlet Robin (SE, MLR, FR, EP)		R	2	13/11/2016
Plegadis falcinellus	Glossy Ibis		R	2	26/12/2000
Porzana tabuensis	Spotless Crake		R	2	29/08/1999
Pezoporus occidentalis	Night Parrot	EN	E	1	
Phoebetria fusca	Sooty Albatross	VU		1	
Rostratula australis	Australian Painted-snipe	EN	V	1	
Stagonopleura guttata	Diamond Firetail		V	2	13/04/2017
Sternula nereis	Fairy Tern	VU	E	1, 2	29/01/2017
Stictonetta naevosa	Freckled Duck		V	2	25/03/2003
Thalassarche cauta cauta	Shy Albatross, Tasmanian Shy Albatross	VU	V	1	

Species name	Common name	Conservation status		Source	Most recent record (BDBSA)
		Aus	SA		
Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross	VU	V	1	
Thalassarche melanophris	Black-browed Albatross	VU		1	
Thincornis cucullatus	Hooded Plover (Hooded Dotterel)	VU	V	2	4/07/2014

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

4.2 Vegetation survey

The study area contains two vegetation associations, *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees and *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees. These covered an area of 13.22 ha and 1.62 ha respectively (Figure 4). The landform consisted of a large plain with small sections of low drainage depressions. Fine sandy soils dominated the plain with very fine clay soils located in the low drainage depressions. The study area contains a designated concrete walking path and multiple undesignated walking tracks located throughout the vegetation. The large spread of walking tracks has caused the vegetation patch to become very fragmented. The remnant vegetation within the study area is considered to be in moderate to good condition despite the fragmentation and moderate weed incursion at the site.

A total of 52 flora species (not including amenity plantings) were recorded within the study area, this included 36 native species and 16 introduced species (Appendix 3). No flora species with a conservation rating under the EPBC Act or NPW Act were recorded. The majority of the weeds occur on the perimeter of the patches of native vegetation in areas which have previously been subject to soil disturbance. The most common weed species within the study area were: *Bromus diandrus* (Great Brome), *Lactuca serriola* (Prickly Lettuce), *Mesembryanthemum nodiflorum* (Slender Iceplant) and *Sisymbrium erysimoides* (Smooth Mustard).

Three of the introduced species detected are listed as declared weed species under the *Natural Resources Management Act 2007*, these were: *Cenchrus ciliaris* (Buffel Grass), *Cylindropuntia prolifera* (Jumping Cholla) and *Gazania linearis* (Gazania). The locations of the declared weeds are shown in Figure 5 and location data is provided in Appendix 4. The *Cenchrus ciliaris* and *Gazania linearis* were in very poor condition, suggesting recent control with herbicide.

The study area contains 168 planted trees. The trees are distributed sparsely throughout the western, southern and northern sections of the study area (Figure 6). Amenity planted trees are not subject to the *Native Vegetation Act 1991*. The locations of all amenity planted trees have been provided as they may assist with the final design layout for the project. The planted trees consisted of non-local and local species such as *Acacia*

cyclops (Western Coastal Wattle), *Acacia pendula* (Weeping Myall), *Acacia papyrocarpa* (Western Myall), *Eucalyptus sp.*, *Melaleuca lanceolata* (Dryland Tea-tree) and *Melaleuca pauperiflora ssp. mutica* (Boree). The locations and photographs of amenity planted trees are provided in Appendix 5.

Atriplex vesicaria Low Shrubland +/- Amenity planted trees

The *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees vegetation association covers the majority (89.08%) of the remnant vegetation within the study area (Figure 4). The vegetation structure and diversity of species was similar and quite uniform for the extent of the area covered by the vegetation association. A total of 50 flora species (not including planted trees) were recorded within the vegetation association (Appendix 3). This included 35 native species and 15 introduced species. Three of the introduced species detected are listed as declared weed species under the *Natural Resources Management Act 2007*, these were: *Cenchrus ciliaris* (Buffel Grass), *Cylindropuntia prolifera* (Jumping Cholla) and *Gazania linearis* (Gazania).

Common native species recorded included *Atriplex vesicaria* (Bladder Saltbush), *Disphyma crassifolium ssp. clavellatum* (Round-leaf Pigface), *Sarcozona praecox* (Sarcozona), *Maireana pyramidata* (Black Bluebush) *Maireana turbinata* (Top-fruit Bluebush) and *Nitraria billardierei* (Nitre-bush).

One BAM Quadrat (A1) was established within the *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees vegetation association (Figure 2). A summary of the BAM scoresheet is provided in Table 3.

Table 3. Summary of *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees vegetation association (BAM Quadrat A1).

Area (ha):	13.22
BCM benchmark community:	EP 9.2 Chenopod Open Shrublands
Landscape context score:	1.09
Vegetation condition score:	70.34
Conservation significance score:	1.00
Unit biodiversity score:	76.67
Total biodiversity score:	1013.59

Figure 2. Location of Bushland Assessment Quadrat 1A. *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees.

Atriplex vesicaria, Maireana sedifolia Low Shrubland +/- Amenity planted trees

The *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees vegetation association covers an area of 1.62 ha and is located in the north-western section of the study area (Figure 4). A total of 36 flora species (not including planted trees) were recorded within the vegetation association (Appendix 3). This included 26 native species and 10 introduced species. One of the introduced species detected, *Gazania linearis* (Gazania) is listed as a declared weed species under the *Natural Resources Management Act 2007*.

Common native species included *Atriplex vesicaria* (Bladder Saltbush), *Maireana sedifolia* (Bluebush), *Sclerolaena uniflora* (Small-spine Bindyi), *Eremophila scoparia* (Broom Emubush), *Sclerolaena obliquicuspis* (Oblique-spined Bindyi) and *Austrostipa elegantissima* (Feather Spear-grass).

One BAM Quadrat (A2) was established within the *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees Vegetation Association (Figure 3). A summary of the BAM scoresheet is provided in Table 4.

Table 4. Summary of *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees vegetation association (BAM Quadrat A2).

Area (ha):	1.62
BCM benchmark community:	EP 9.2 Chenopod Open Shrublands
Landscape context score:	1.09
Vegetation condition score:	66.60
Conservation significance score:	1.00
Unit biodiversity score:	72.60
Total biodiversity score:	117.61

Figure 3. Location of Bushland Assessment Quadrat 1B. *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees.

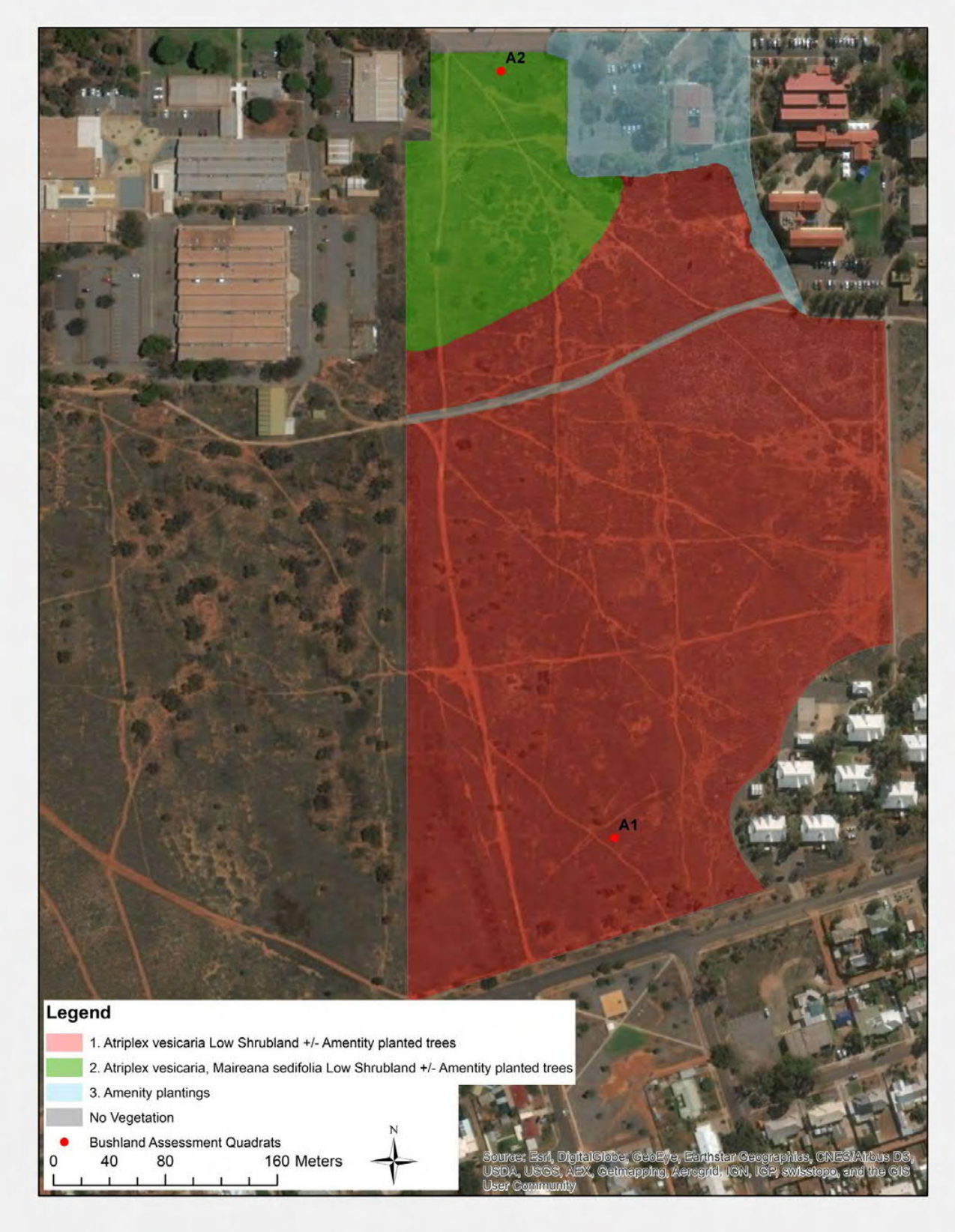

Figure 4. Vegetation associations and locations of the Bushland Assessment quadrats within the study area.

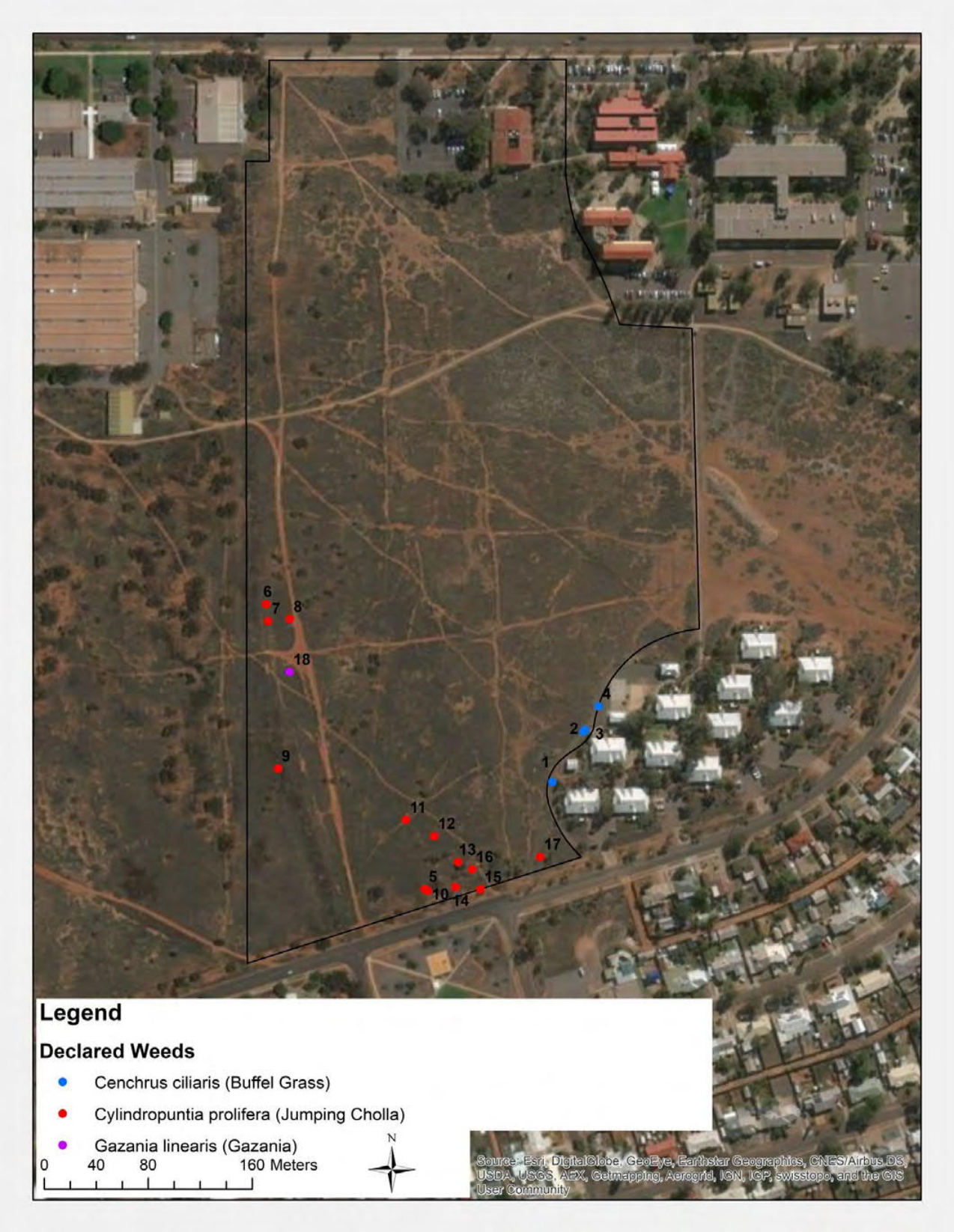

Figure 5. Location of declared weeds within the study area.

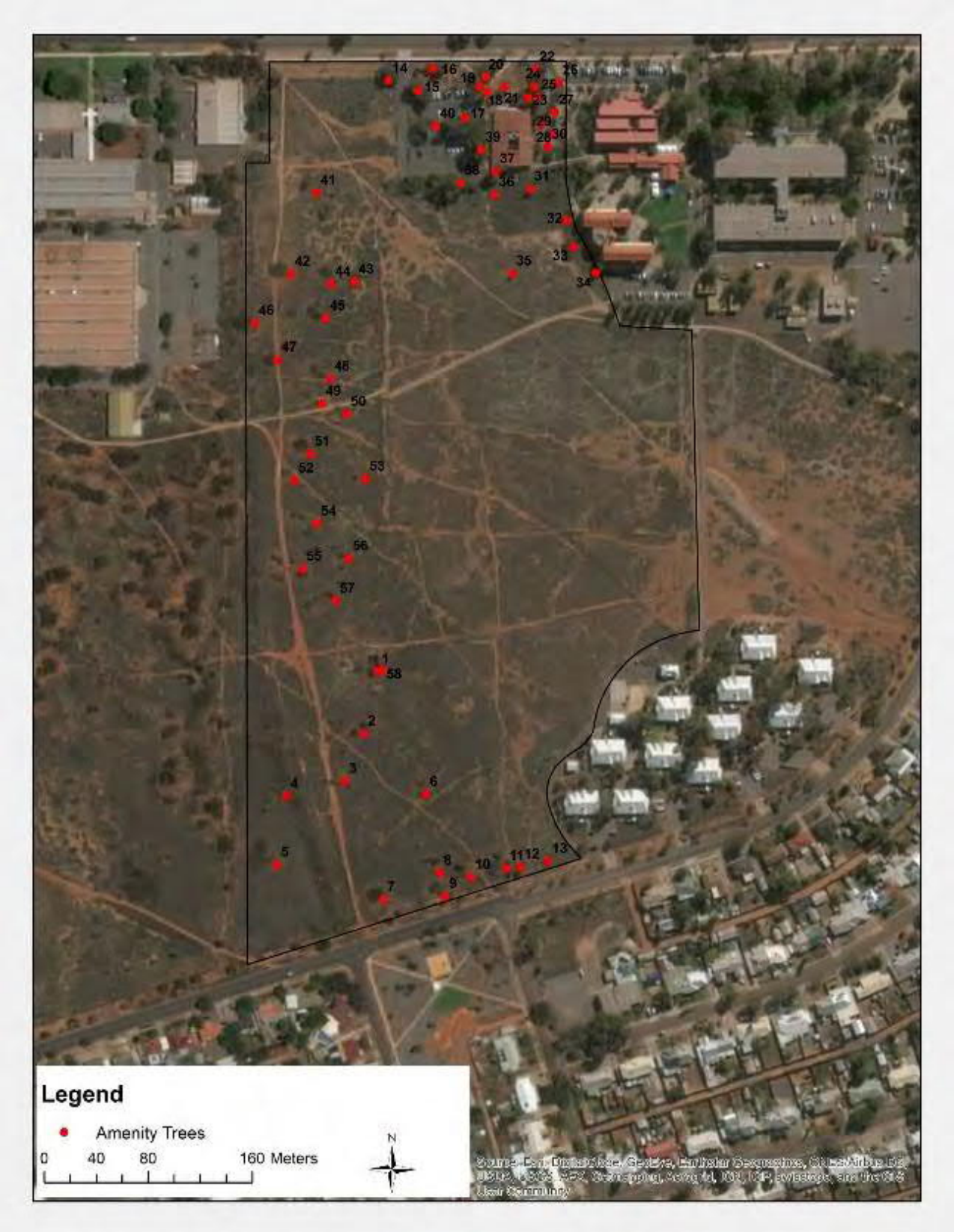

Figure 6. Location of amenity planted trees within the study area.

4.3 Fauna survey

Ten bird species were recorded within the study area (Table 5). The Welcome Swallow (*Hirundo neoxena*) and Red Wattlebird (*Anthochaera carunculata*) were most common. Disused warrens and old scats from the introduced Rabbit (European Rabbit) (*Oryctolagus cuniculus*) were recorded. None of the fauna species recorded are listed as threatened under the EPBC Act or NPW Act. Furthermore, no suitable habitat occurs within the study area for the threatened species identified from the desktop assessment.

Additional surveys within the study area would likely result in additional species of regionally common birds and reptiles being recorded.

Table 5. Fauna observations within the study area.

Family name	Species name	Common name	Quantity	Additional signs
Birds				
ARTAMIDAE	*Gymnorhina tibicen*	Australian Magpie	2	
CACATUIDAE	*Eolophus roseicapilla*	Galah	7	
COLUMBIDAE	*Ocyphaps lophotes*	Crested Pigeon	6	
CORVIDAE	*Corvus coronoides*	Australian Raven		
FALCONIDAE	*Falco cenchroides*	Nankeen Kestrel	1	
HIRUNDINIDAE	*Hirundo neoxena*	Welcome Swallow	Common	
LARIDAE	*Chroicocephalus novaehollandiae*	Silver Gull	4	
MALURIDAE	*Malurus leucopterus*	White-winged Fairywren	5	
MELIPHAGIDAE	*Anthochaera carunculata*	Red Wattlebird	Common	
MONARCHIDAE	*Grallina cyanoleuca*	Magpielark	1	
Mammals				
LEPORIDAE	**Oryctolagus cuniculus*	Rabbit (European Rabbit)		Disused warrens and scats

* = Introduced species.

4.4 Requirements of the Native Vegetation Regulations

The following section provides information on how the proposed clearance meets the requirements of the Native Vegetation Regulations.

Regulatory requirements

The provisions of the *Native Vegetation Act 1991* provide for the clearance of native vegetation either by application to the NVC for consent to clear or under exemptions contained in the *Native Vegetation Regulations 2017*. The Whyalla Super School Project is in the feasibility stage and is likely to be submitted for approval under of the *Development Act 1993*. It is considered that native vegetation clearance required for this project

falls under the provisions of Division 5 of the NV Act which provide for the clearance of native vegetation under Part 6 (other Activities) Regulation 12 (clause 33 and 34).

33—New dwelling or building

(1) Clearance of vegetation required in order to erect a building or structure or other facility that is ancillary to a building, provided that any development authorisation required by or under the *Development Act 1993* has been obtained.

(2) Subclause (1) does not apply to—

(a) clearance of vegetation established in accordance with a condition of a consent for clearance of vegetation; or

(b) clearance of vegetation undertaken in connection with subdivision of the land on which the vegetation is growing or is situated; or

(c) clearance that would be contrary to—

(i) a condition of a consent for clearance of vegetation; or

(ii) a condition imposed in connection with clearance of vegetation permitted under these regulations; or

(iii) a condition in respect of clearance permitted under the revoked regulations.

34—Infrastructure

(1) Clearance of vegetation—

(a) incidental to the construction or expansion of a building or infrastructure where the Minister has, by instrument in writing, declared that the Minister is satisfied that the clearance is in the public interest; or

(b) required in connection with the provision of infrastructure or services to a building or proposed building, or to any place,

provided that any development authorisation required by or under the *Development Act 1993* has been obtained.

(2) In this clause—

infrastructure includes—

(a) flood mitigation works; and

(b) an airstrip; and

(c) a shipping channel; and

(d) a public reservoir.

infrastructure means—

(a) the infrastructure, equipment, structures, works and other facilities used in or in connection with the supply of water or electricity, gas or other forms of energy, the provision of telecommunications, or the drainage, removal or treatment of waste water or sewage; or

(b) roads and their supporting structures or works; or

(c) ports, wharfs, jetties, railways, trams and busways.

Risk Assessment

The level of risk was determined in accordance with Table 1 of the Guide for applications to Clear Native Vegetation (NVC 2017b). The level of risk has been assessed as 4 on the basis that the Total Biodiversity Score is greater than 250. The project is in the early stages of planning and it is likely that the clearance footprint will be reduced from that initially assessed. The total patch size initially surveyed is 14.84 ha and the Total Biodiversity Score equates to 1131.20 but is likely to be reduced depending on the final design.

4.5 Mitigation hierarchy

When exercising a power or making a decision under Division 5 of the *Native Vegetation Regulations 2017*, the NVC must have regard to the mitigation hierarchy. The NVC will assess the measures taken to avoid and minimize impacts on biodiversity and rare or threatened species or ecological communities within the property or immediate vicinity of the development.

As previously mentioned, the Whyalla Super School project is in the early stages of planning. The design and vegetation clearance footprint are not yet finalised.

Avoidance

The location selected for the Whyalla Super School is between the existing UniSA Whyalla Campus and TAFE SA, incorporating the Whyalla Education Centre. A feasibility study by the proponent considered a number of options for the new school. The preferred option identified the chance to share services with the adjacent educational facilities.

Minimisation

Once the project design is finalised the proponent will work towards minimising the clearance of native vegetation. As a minimum the method of clearance will be chosen so as to have minimum impact on the project site and adjoining native vegetation. Weed and pathogen hygiene measures will be employed as part of the removal process to ensure that no new weeds or other pathogens are introduced to existing native vegetation.

Rehabilitation or restoration

Rehabilitation or restoration is not suitable within the area selected for the Whyalla Super School since the proposed project will be permanent. There is the opportunity for restoration or enhancement of native vegetation in the areas surrounding the vegetation clearance footprint.

Offset

The proponent will consider the SEB offset when the project design and vegetation clearance footprint for the project is finalised. It is likely that the SEB offset would be in the form of payment into the Native Vegetation Fund or the establishment of a new SEB Area on land owned by the proponent.

5 Significant Environmental Benefit

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the *Native Vegetation Regulations 2017*. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that an SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

5.1 Clearance area

As previously mentioned, the estimated maximum clearance footprint area for this project is 14.84 ha, across two vegetation associations. The Native Vegetation SEB Requirement for clearance of 14.84 ha of native vegetation under this proposal is 148.47 ha or a payment of $413,119.45 (including administrative fees) into the Native Vegetation Fund (Table 6).

Table 6. Summary of the SEB requirements for clearance of remnant vegetation within study area.

	Vegetation association and BAM Quadrat		**Total**
	***Atriplex vesicaria* Low Shrubland +/- Amenity planted trees (BAM Quadrat 1A)**	***Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees (BAM Quadrat 1B)**	
Area (ha) of proposed impact	13.22	1.62	
Loss factor	1	1	
Mean rainfall for the site (mm)	265	265	
Unit Biodiversity Score	76.67	72.60	
Total Biodiversity Score	1013.59	117.61	1131.20
SEB points required	1064.27	123.49	1187.76
Hectares required	133.03	15.44	148.47
Payment into the Native Vegetation Fund	$352,540.78	$40,906.31	$393,447.09
Administration fee	$17,627.04	$2,045.32	$19,672.36
Total	$370,167.82	$42,951.63	$413,119.45

6 References

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Native Vegetation Council (NVC) (2017b) Guide for applications to clear native vegetation Under the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*. Native Vegetation Management Unit. Available from https://www.environment.sa.gov.au/topics/native-vegetation/clearing/clearance-applications.

7 Appendices

Appendix 1. Flora species recorded in the BDBSA within 5km of the study area (all years shown) (DEW 2018).

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
AIZOACEAE	*Carpobrotus rossii*	Native Pigface				15/07/2005
	Galenia pubescens var. pubescens	Coastal Galenia			Y	25/07/2014
	Galenia secunda	Galenia			Y	28/03/2004
	Galenia sp.	Galenia			Y	10/05/2004
	Malephora crocea				Y	20/08/2014
	Mesembryanthemum aitonis	Angled Iceplant			Y	28/03/2004
	Psilocaulon granulicaule	Match-head Plant			Y	10/08/1998
	Sarcozona praecox	Sarcozona				25/07/2014
	Tetragonia implexicoma	Bower Spinach				12/10/1993
AMARANTHACEAE	*Alternanthera pungens*	Khaki Weed			Y	28/02/1985
	Ptilotus obovatus	Silver Mulla Mulla				25/07/2014
ARESCHOUGIACEAE	*Solieria robusta*					21/04/2004
ASCLEPIADACEAE	*Cynanchum viminale ssp. australe*	Caustic Bush				29/09/2016
	Orbea variegata	Carrion-flower			Y	25/07/2014
	Stapelia gigantea				Y	
AVICENNIACEAE	*Avicennia marina ssp. marina*	Grey Mangrove				7/05/1936
BONNEMAISONIACEAE	*Asparagopsis armata*					15/05/1984
	Bonnemaisonia australis					15/05/1984
BORAGINACEAE	*Echium plantagineum*	Salvation Jane			Y	25/11/2002
	Halgania andromedifolia	Scented Blue-flower				16/05/1958
	Halgania cyanea	Rough Blue-flower				9/12/1997
CACTACEAE	*Cylindropuntia prolifera*				Y	1/03/2007
	Opuntia stricta	Erect Prickly Pear			Y	28/05/2005

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
CAMPANULACEAE	*Isotoma petraea*	Rock Isotome				12/04/1981
	Wahlenbergia communis	Tufted Bluebell				14/04/1995
	Wahlenbergia luteola	Yellow-wash Bluebell				25/04/1981
CASUARINACEAE	*Casuarina pauper*	Black Oak				18/08/1932
CERAMIACEAE	*Antithamnion cruciatum*				Y	30/05/1994
	Ceramium macilentum					17/04/1999
CHAMPIACEAE	*Champia zostericola*					15/05/1984
CHENOPODIACEAE	*Atriplex cinerea*	Coast Saltbush				7/05/1936
	Atriplex holocarpa	Pop Saltbush				16/09/1959
	Atriplex stipitata	Bitter Saltbush				10/05/2004
	Atriplex vesicaria	Bladder Saltbush				5/10/1983
	Atriplex vesicaria ssp. (NC)	Bladder Saltbush				10/05/2004
	Chenopodium curvispicatum	Cottony Goosefoot				2/07/1979
	Dissocarpus paradoxus	Ball Bindyi				11/02/1967
	Dysphania cristata	Crested Crumbweed				13/04/1995
	Enchylaena tomentosa var. tomentosa	Ruby Saltbush				16/07/1968
	Maireana brevifolia	Short-leaf Bluebush				25/11/2002
	Maireana erioclada	Rosy Bluebush				12/06/1967
	Maireana pyramidata	Black Bluebush				10/05/2004
	Maireana sedifolia	Bluebush				10/05/2004
	Maireana trichoptera	Hairy-fruit Bluebush				26/07/1973
	Maireana turbinata	Top-fruit Bluebush				5/10/1983
	Rhagodia parabolica	Mealy Saltbush				3/11/1936
	Rhagodia preissii ssp. preissii	Mallee Saltbush				2/07/1979
	Rhagodia spinescens	Spiny Saltbush				26/11/1977
	Rhagodia ulicina	Intricate Saltbush				16/07/1968
	Sclerolaena brachyptera	Short-wing Bindyi				9/04/1974
	Sclerolaena obliquicuspis	Oblique-spined Bindyi				11/04/1995
	Sclerolaena patenticuspis	Spear-fruit Bindyi				8/11/1928

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Sclerolaena uniflora	Small-spine Bindyi				12/04/1995
	Suaeda aegyptiaca				Y	28/05/2005
	Tecticornia disarticulata					10/01/2018
CLADOPHORACEAE	*Rhizoclonium riparium*					25/07/1996
COMPOSITAE	*Bidens pilosa var. pilosa*	Cobbler's Pegs			Y	21/07/1943
	Brachyscome lineariloba	Hard-head Daisy				16/07/1968
	Calotis erinacea	Tangled Burr-daisy				25/07/2014
	Carthamus lanatus	Saffron Thistle			Y	10/05/2004
	Centaurea melitensis	Malta Thistle			Y	6/01/1998
	Chrysocephalum semipapposum	Clustered Everlasting				10/09/1964
	Cotula australis	Common Cotula				1/11/1954
	Dittrichia graveolens	Stinkweed			Y	12/04/1981
	Erodiophyllum elderi	Koonamore Daisy				8/12/1997
	Gazania linearis	Gazania			Y	
	Gnephosis tenuissima	Dwarf Golden-tip				7/11/1979
	Lactuca serriola f. serriola	Prickly Lettuce			Y	4/04/1981
	Minuria cunninghamii	Bush Minuria				29/09/2016
	Minuria leptophylla	Minnie Daisy				1/09/1944
	Olearia floribunda	Heath Daisy-bush				27/05/1958
	Olearia pimeleoides	Pimelea Daisy-bush				3/10/1980
	Olearia ramulosa	Twiggy Daisy-bush				5/07/1980
	Reichardia tingitana	False Sowthistle			Y	25/07/2014
	Rhodanthe polygalifolia	Milkwort Everlasting				16/07/1968
	Rhodanthe stuartiana	Clay Everlasting				5/10/1983
	Rhodanthe troedelii	Small Paper-everlasting				2/10/1996
	Senecio glossanthus	Annual Groundsel				16/07/1968
	Senecio spanomerus					17/09/2006
	Sonchus oleraceus	Common Sow-thistle			Y	27/09/1995
	Tanacetum parthenium	Feverfew			Y	12/07/1993

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Vittadinia gracilis	Woolly New Holland Daisy				3/10/1980
CONVOLVULACEAE	*Cressa australis*	Rosinweed				26/05/1958
CORALLINACEAE	*Jania parva*					17/04/1999
CRASSULACEAE	*Bryophyllum delagoense*				Y	8/09/2011
	Crassula tetragona ssp. robusta	Crassula			Y	15/07/2005
	Crassula tetramera	Australian Stonecrop				2/10/1996
CRUCIFERAE	*Arabidella trisecta*	Shrubby Cress				
	Brassica sp.				Y	10/05/2004
	Brassica tournefortii	Wild Turnip			Y	19/09/1965
	Carrichtera annua	Ward's Weed			Y	10/05/2004
	Diplotaxis tenuifolia	Lincoln Weed			Y	28/03/2004
	Sisymbrium erysimoides	Smooth Mustard			Y	25/07/2014
	Sisymbrium irio	London Mustard			Y	1/10/1942
CYSTOSEIRACEAE	*Myriodesma integrifolium*					15/05/1984
DICTYOTACEAE	*Dictyopteris muelleri*					21/04/2004
	Dictyota dichotoma					17/04/1999
DILLENIACEAE	*Hibbertia virgata*	Twiggy Guinea-flower				21/09/1966
DIPSACACEAE	*Scabiosa atropurpurea*	Pincushion			Y	25/11/2002
ECTOCARPACEAE	*Hincksia mitchelliae*					17/04/1999
EUPHORBIACEAE	*Beyeria lechenaultii*	Pale Turpentine Bush				5/07/1980
	Euphorbia maculata	Eyebane			Y	15/02/2008
	Euphorbia tannensis ssp. eremophila	Desert Spurge				7/01/1974
	Euphorbia terracina	False Caper			Y	25/11/2002
	Ricinus communis	Castor Oil Plant			Y	4/12/1995
GERANIACEAE	*Erodium cicutarium*	Cut-leaf Heron's-bill			Y	16/07/1968
	Erodium crinitum	Blue Heron's-bill				25/07/2014
GOODENIACEAE	*Dampiera lanceolata var. lanceolata*	Grooved Dampiera				1/01/1958
	Goodenia calcarata	Streaked Goodenia				10/08/1983

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Goodenia varia	Sticky Goodenia				7/11/1979
	Scaevola spinescens	Spiny Fanflower				8/12/1997
	Velleia arguta	Toothed Velleia				16/07/1968
GRAMINEAE	*Amphipogon caricinus var. caricinus*	Long Grey-beard Grass				7/11/1979
	Aristida contorta	Curly Wire-grass				7/11/1979
	Austrostipa elegantissima	Feather Spear-grass				1/09/1944
	Austrostipa flavescens	Coast Spear-grass				6/09/1952
	Austrostipa nitida	Balcarra Spear-grass				10/09/1952
	Austrostipa platychaeta	Flat-awn Spear-grass				21/09/1952
	Austrostipa plumigera			R		6/09/1952
	Austrostipa scabra ssp. scabra	Rough Spear-grass				6/09/1952
	Austrostipa sp.	Spear-grass				10/05/2004
	Avena barbata	Bearded Oat			Y	10/05/2004
	Bromus arenarius	Sand Brome				1/09/1944
	Bromus diandrus (NC)	Great Brome			Y	10/05/2004
	Bromus sp.	Brome				10/05/2004
	Cenchrus ciliaris	Buffel Grass			Y	12/01/2012
	Cenchrus ciliaris/pennisetiformis	Buffel Grass			Y	1/01/2010
	Cenchrus setaceus	Fountain Grass			Y	25/07/2014
	Chloris virgata	Feather-top Rhodes Grass			Y	4/04/1981
	Cynodon dactylon (NC)	Couch			Y	25/11/2002
	Digitaria ciliaris	Summer Grass			Y	4/04/1981
	Eleusine indica	Crowsfoot Grass			Y	1/04/1953
	Enneapogon avenaceus	Common Bottle-washers				1/08/1980
	Enteropogon acicularis	Umbrella Grass				5/01/1959
	Eragrostis barrelieri	Pitted Love-grass			Y	4/03/2011
	Eragrostis dielsii	Mulka				7/01/1974
	Eragrostis trichophora	Hairyflower Lovegrass			Y	4/03/2011
	Eriochloa pseudoacrotricha	Perennial Cupgrass				1/04/1953

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Parapholis incurva	Curly Ryegrass			Y	23/10/2012
	Paspalum distichum	Water Couch			Y	4/04/1981
	Piptatherum miliaceum	Rice Millet			Y	25/11/2002
	Rostraria pumila	Tiny Bristle-grass			Y	1/09/1944
	Schismus barbatus	Arabian Grass			Y	1/10/2004
	Setaria constricta	Knotty-butt Paspalidium				1/09/1944
	Setaria verticillata	Whorled Pigeon-grass			Y	1/03/2010
	Triodia compacta	Spinifex				8/12/1997
	Triodia scariosa	Spinifex				1/09/1944
GYROSTEMONACEAE	*Gyrostemon ramulosus*	Bushy Wheel-fruit				1/10/1969
HALORAGACEAE	*Glischrocaryon behrii*	Golden Pennants				9/12/1997
	Glischrocaryon flavescens	Yellow Pennants				25/07/2014
HALYMENIACEAE	*Gelinaria ulvoidea*					11/04/2006
HYDROCHARITACEAE	*Halophila australis*	Paddle Weed				17/04/1999
HYPNEACEAE	*Hypnea charoides*					17/04/1999
LABIATAE	*Marrubium vulgare*	Horehound			Y	10/05/2004
	Prostanthera aspalathoides	Scarlet Mintbush				7/11/1979
	Prostanthera striatiflora	Striated Mintbush				17/09/1951
	Salvia verbenaca var.	Wild Sage			Y	10/05/2004
	Westringia rigida	Stiff Westringia				11/11/1953
LEGUMINOSAE	*Acacia ancistrophylla var. lissophylla*	Hook-leaf Wattle				16/05/1958
	Acacia continua	Thorn Wattle				9/12/1997
	Acacia cyclops	Western Coastal Wattle				9/12/1997
	Acacia halliana	Hall's Wattle				16/05/1958
	Acacia ligulata	Umbrella Bush				10/05/2004
	Acacia notabilis	Notable Wattle				9/12/1997
	Acacia nyssophylla	Spine Bush				1/09/1983
	Acacia oswaldii	Umbrella Wattle				28/08/1968
	Acacia papyrocarpa	Western Myall				10/05/2004

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Acacia rhigiophylla	Dagger-leaf Wattle		R		1/09/1983
	Acacia rigens	Nealie				1/09/1983
	Acacia sclerophylla var. sclerophylla	Hard-leaf Wattle				1/09/1983
	Acacia sibirica	Bastard Mulga				2/09/1979
	Acacia spinescens	Spiny Wattle				26/08/1964
	Acacia wilhelmiana	Dwarf Nealie				1/09/1983
	Dillwynia uncinata	Silky Parrot-pea				26/08/1964
	Eutaxia microphylla	Common Eutaxia				18/09/1986
	Glycine rubiginosa	Twining Glycine				5/07/1980
	Paraserianthes lophantha	Cape Leeuwin Wattle				20/03/2018
	Parkinsonia aculeata	Jerusalem Thorn			Y	18/03/2010
	Senna artemisioides ssp. petiolaris					25/11/2002
	Senna artemisioides ssp. X coriacea	Broad-leaf Desert Senna				10/05/2004
LILIACEAE	*Asphodelus fistulosus*	Onion Weed			Y	10/05/2004
	Lomandra effusa	Scented Mat-rush				26/04/1981
	Thysanotus baueri	Mallee Fringe-lily				3/11/1936
LIMONIACEAE	*Limonium lobatum*	Winged Sea-lavender			Y	28/03/2004
	Limonium sinuatum	Notch-leaf Sea-lavender			Y	25/07/2014
LORANTHACEAE	*Amyema miraculosa ssp. boormanii*	Fleshy Mistletoe				10/01/1975
	Amyema quandang var. quandang	Grey Mistletoe				18/08/1975
MALVACEAE	*Alyogyne hakeifolia*	Hakea-leaf Hibiscus				3/11/1936
	Alyogyne huegelii	Native Hibiscus				10/09/1964
	Hibiscus krichauffianus	Velvet-leaf Hibiscus				14/04/1983
	Lawrencia squamata	Thorny Lawrencia				17/09/1960
	Sida corrugata var. angustifolia	Grassland Sida				14/04/1995

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Sida intricata	Twiggy Sida				11/02/1967
	Sida petrophila	Rock Sida				10/05/2004
MYOPORACEAE	*Eremophila alternifolia*	Narrow-leaf Emubush				10/05/2004
	Eremophila crassifolia	Thick-leaf Emubush				7/11/1979
	Eremophila deserti	Turkey-bush				5/07/1980
	Eremophila glabra ssp. glabra	Tar Bush				3/10/1975
	Eremophila latrobei ssp. glabra	Crimson Emubush				1/01/1950
	Eremophila longifolia	Weeping Emubush				10/05/2004
	Eremophila oppositifolia ssp. oppositifolia	Opposite-leaved Emubush				5/07/1980
	Eremophila scoparia	Broom Emubush				3/10/1975
	Eremophila subfloccosa ssp. lanata	Woolly Emubush				12/06/1975
	Myoporum montanum	Native Myrtle				8/12/1997
	Myoporum platycarpum ssp.	False Sandalwood				10/05/2004
	Myoporum platycarpum ssp. platycarpum	False Sandalwood				1/10/1964
MYRTACEAE	*Eucalyptus rugosa*	Coastal White Mallee				
	Eucalyptus sp.					25/11/2002
	Homoranthus wilhelmii	Wilhelm's Homoranthus				8/11/1960
	Melaleuca pauperiflora ssp. mutica	Boree				9/10/1966
	Thryptomene micrantha	Ribbed Thryptomene				1/09/1944
NYCTAGINACEAE	*Boerhavia coccinea*	Tar-vine				15/02/2008
OROBANCHACEAE	*Orobanche cernua var. australiana*	Australian Broomrape		R		29/09/2016
PITTOSPORACEAE	*Billardiera cymosa ssp. pseudocymosa*	Sweet Apple-berry				7/11/1979
	Pittosporum angustifolium	Native Apricot				28/08/1968
POSIDONIACEAE	*Posidonia australis*	Southern Tapeweed				17/04/1999

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
PROTEACEAE	*Grevillea huegelii*	Comb Grevillea				2/07/1979
	Hakea francisiana	Bottlebrush Hakea				1/09/1955
RALFSIACEAE	*Ralfsia verrucosa*					17/04/1999
RHAMNACEAE	*Cryptandra sp. Floriferous (W.R.Barker 4131)*	Pretty Cryptandra				11/06/2006
	Pomaderris paniculosa ssp. paniculosa	Mallee Pomaderris				5/07/1980
	Spyridium phylicoides	Narrow-leaf Spyridium				7/11/1979
	Trymalium wayi	Grey Trymalium				10/09/1964
RHODOMELACEAE	*Coeloclonium tasmanicum*					21/04/2004
	Diplocladia patersonis					25/07/1996
	Laurencia filiformis f. filiformis					17/04/1999
	Laurencia majuscula					21/04/2004
	Pollexfenia pedicellata					21/04/2004
	Polysiphonia isogona					25/03/1998
	Polysiphonia scopulorum					30/05/1994
RHODYMENIACEAE	*Botryocladia sonderi*					21/04/2004
RUTACEAE	*Boronia coerulescens ssp. coerulescens*	Blue Boronia				26/08/1964
	Geijera linearifolia	Sheep Bush				17/07/1968
	Phebalium bullatum	Silvery Phebalium				7/11/1979
	Philotheca linearis	Narrow-leaf Wax-flower				5/07/1980
SALVINIACEAE	*Salvinia molesta*				Y	24/10/1992
SANTALACEAE	*Exocarpos aphyllus*	Leafless Cherry				10/05/2004
SAPINDACEAE	*Alectryon oleifolius ssp. canescens*	Bullock Bush				8/12/1997
	Dodonaea baueri	Crinkled Hop-bush				5/07/1980
	Dodonaea lobulata	Lobed-leaf Hop-bush				10/05/2004
	Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush				25/11/2002

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
SOLANACEAE	*Nicotiana goodspeedii*	Small-flower Tobacco				8/01/1974
	Solanum elaeagnifolium	Silver-leaf Nightshade			Y	26/11/1990
	Solanum esuriale	Quena				8/09/1978
	Solanum petrophilum	Rock Nightshade				5/06/1984
STERCULIACEAE	*Lasiopetalum behrii*	Pink Velvet-bush				5/07/1980
ULVACEAE	*Ulva lactuca*					17/04/1999
UMBELLIFERAE	*Foeniculum vulgare*	Fennel			Y	25/11/2002
VERBENACEAE	*Glandularia aristigera*	Mayne's Pest			Y	15/02/2008
ZYGOPHYLLACEAE	*Roepera confluens*	Forked Twinleaf				29/09/2016
	Tribulus terrestris	Caltrop			Y	4/04/1981

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Appendix 2. Fauna species recorded in the BDBSA within 5km of the study area (all years shown) (DEW 2018).

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
AMPHIBIA	*Crinia signifera*	Common Froglet				4/10/2003
	Limnodynastes tasmaniensis	Spotted Marsh Frog				9/09/2005
AVES	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater				19/03/2017
	Acanthiza apicalis	Inland Thornbill				1/06/2004
	Acanthiza chrysorrhoa	Yellow-rumped Thornbill				13/08/2016
	Acanthiza uropygialis	Chestnut-rumped Thornbill				28/02/2016
	Accipiter cirrocephalus cirrocephalus	Collared Sparrowhawk				4/10/1998
	Acrocephalus australis	Australian Reed Warbler				5/10/2015
	Actitis hypoleucos	Common Sandpiper		R		13/11/2016
	Amytornis textilis (NC)	Western Grasswren				2/08/2006
	Anas castanea	Chestnut Teal				29/01/2017
	Anas gracilis	Grey Teal				19/03/2017
	Anas platyrhynchos	Mallard (Northern Mallard)			Y	26/04/2006
	Anas rhynchotis rhynchotis	Australasian Shoveler		R		1/02/2015
	Anas superciliosa	Pacific Black Duck				19/03/2017
	Anthochaera carunculata	Red Wattlebird				19/03/2017
	Anthochaera carunculata woodwardi	Red Wattlebird (MLR, AP, YP, EP, far west, Yellabinna)				2/08/2006
	Anthus australis	Australian Pipit				2/08/2006
	Aphelocephala leucopsis	Southern Whiteface				19/03/2017
	Aquila audax	Wedge-tailed Eagle				21/01/2016
	Ardea alba modesta	Great Egret				23/07/2007
	Ardea intermedia	Intermediate Egret		R		25/11/2001
	Ardeotis australis	Australian Bustard		V		26/03/2005
	Artamus cinereus	Black-faced Woodswallow				26/07/2015
	Artamus cyanopterus	Dusky Woodswallow				8/01/2017
	Artamus personatus	Masked Woodswallow				20/11/1992

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Aythya australis	Hardhead				23/07/2007
	Barnardius zonarius	Australian Ringneck				19/03/2017
	Biziura lobata	Musk Duck		R		23/07/2007
	Bubulcus ibis coromandus	Eastern Cattle Egret		R		18/05/1990
	Cacomantis pallidus	Pallid Cuckoo				2/08/2006
	Calidris acuminata	Sharp-tailed Sandpiper				11/01/2001
	Calidris ruficollis	Red-necked Stint				27/01/2017
	Chalcites basalis	Horsfield's Bronze Cuckoo				2/08/2006
	Chalcites osculans	Black-eared Cuckoo				26/07/2011
	Charadrius ruficapillus	Red-capped Plover				11/03/2002
	Chenonetta jubata	Maned Duck				26/07/2015
	Cheramoeca leucosterna	White-backed Swallow				5/10/2015
	Chlidonias hybrida	Whiskered Tern				11/01/2001
	Chroicocephalus novaehollandiae	Silver Gull				19/03/2017
	Circus approximans	Swamp Harrier				16/01/2016
	Circus assimilis	Spotted Harrier				2/09/2016
	Cladorhynchus leucocephalus	Banded Stilt		V		13/11/2016
	Colluricincla harmonica	Grey Shrikethrush				19/03/2017
	Columba livia	Feral Pigeon			Y	10/01/2003
	Coracina novaehollandiae	Black-faced Cuckooshrike				4/07/2014
	Corcorax melanorhamphos	White-winged Chough		R		28/02/2016
	Corvus coronoides	Australian Raven				19/03/2017
	Corvus mellori	Little Raven				1/04/2014
	Corvus sp.	crows				27/03/2000
	Coturnix pectoralis	Stubble Quail				26/07/2011
	Cracticus torquatus	Grey Butcherbird				13/08/2016
	Cygnus atratus	Black Swan				8/01/2017
	Daphoenositta chrysoptera	Varied Sittella				1/04/2014
	Dicaeum hirundinaceum	Mistletoebird				1/02/2015

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Dromaius novaehollandiae	Emu				8/01/2017
	Egretta garzetta	Little Egret		R		27/12/2000
	Egretta novaehollandiae	White-faced Heron				19/03/2017
	Egretta sacra	Pacific Reef Heron (Eastern Reef Egret)		R		8/01/2017
	Elanus axillaris	Black-shouldered Kite				19/03/2017
	Elseyornis melanops	Black-fronted Dotterel				10/01/2003
	Eolophus roseicapilla	Galah				26/04/2006
	Epthianura albifrons	White-fronted Chat				10/01/2003
	Epthianura tricolor	Crimson Chat				19/03/2017
	Erythrogonys cinctus	Red-kneed Dotterel				16/04/2004
	Eurostopodus argus	Spotted Nightjar				27/08/1978
	Falco berigora	Brown Falcon				8/01/2017
	Falco cenchroides	Nankeen Kestrel				19/03/2017
	Falco longipennis	Australian Hobby				11/01/2001
	Fulica atra	Eurasian Coot				23/07/2007
	Gallinula tenebrosa	Dusky Moorhen				10/01/2003
	Gallirallus philippensis mellori	Buff-banded Rail				17/10/2002
	Gavicalis virescens	Singing Honeyeater				19/03/2017
	Grallina cyanoleuca	Magpielark				26/06/2016
	Gymnorhina tibicen	Australian Magpie				26/04/2006
	Haematopus fuliginosus	Sooty Oystercatcher		R		9/10/2016
	Haematopus longirostris	(Australian) Pied Oystercatcher		R		23/04/2017
	Haliaeetus leucogaster	White-bellied Sea Eagle		E		19/03/2017
	Himantopus leucocephalus	White-headed Stilt				23/07/2007
	Hirundo neoxena	Welcome Swallow				21/01/2016
	Hydroprogne caspia	Caspian Tern				29/01/2017
	Lalage tricolor	White-winged Triller				14/10/1999
	Larus pacificus	Pacific Gull				19/03/2017

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Leipoa ocellata	Malleefowl	VU	V		19/03/2017
	Limosa lapponica	Bar-tailed Godwit		R		4/06/2004
	Malacorhynchus membranaceus	Pink-eared Duck				1/06/2004
	Malurus lamberti	Variegated Fairywren				19/03/2017
	Malurus leucopterus	White-winged Fairywren				29/11/2014
	Malurus pulcherrimus	Blue-breasted Fairywren				5/10/2015
	Malurus splendens	Splendid Fairywren				16/01/2016
	Malurus splendens callainus	Turquoise Fairywren				2/08/2006
	Manorina flavigula	Yellow-throated Miner				19/03/2017
	Megalurus cruralis	Brown Songlark				12/07/2014
	Megalurus gramineus	Little Grassbird				23/07/2007
	Megalurus mathewsi	Rufous Songlark				1/02/2015
	Microcarbo melanoleucos melanoleucos	Little Pied Cormorant				24/01/2003
	Milvus migrans	Black Kite				25/06/1960
	Morus serrator	Australasian Gannet				26/08/2000
	Nesoptilotis leucotis	White-eared Honeyeater				12/07/2014
	Northiella haematogaster	Bluebonnet				27/01/1981
	Numenius madagascariensis	Far Eastern Curlew	CR	V		25/12/2000
	Ocyphaps lophotes	Crested Pigeon				2/08/2006
	Oreoica gutturalis	Crested Bellbird				28/02/2016
	Pachycephala inornata	Gilbert's Whistler		R		29/01/2017
	Pachycephala pectoralis	Golden Whistler				29/01/2017
	Pachycephala rufiventris	Rufous Whistler				29/01/2017
	Pardalotus punctatus	Spotted Pardalote				16/01/2016
	Pardalotus striatus	Striated Pardalote				19/03/2017
	Parvipsitta porphyrocephala	Purple-crowned Lorikeet				27/03/2000
	Passer domesticus	House Sparrow			Y	26/04/2006
	Pelecanus conspicillatus	Australian Pelican				21/01/2016

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Peltohyas australis	Inland Dotterel				1/01/1900
	Petrochelidon ariel	Fairy Martin				19/03/2017
	Petrochelidon nigricans	Tree Martin				28/02/2016
	Petroica boodang boodang	Scarlet Robin (SE, MLR, FR, EP)		R		13/11/2016
	Petroica goodenovii	Red-capped Robin				19/03/2017
	Phalacrocorax carbo	Great Cormorant				7/10/2001
	Phalacrocorax sulcirostris	Little Black Cormorant				23/07/2007
	Phalacrocorax varius	Great Pied Cormorant				11/03/2002
	Phaps chalcoptera	Common Bronzewing				13/11/2016
	Phaps elegans	Brush Bronzewing				15/05/2016
	Phylidonyris novaehollandiae	New Holland Honeyeater				26/04/2006
	Platalea regia	Royal Spoonbill				24/01/2003
	Plegadis falcinellus	Glossy Ibis		R		26/12/2000
	Poliocephalus poliocephalus	Hoary-headed Grebe				23/07/2007
	Pomatostomus superciliosus	White-browed Babbler				19/03/2017
	Porphyrio porphyrio	Purple Swamphen				9/11/2000
	Porzana fluminea	Australian Crake (Australian Spotted Crake)				23/07/2007
	Porzana pusilla	Baillon's Crake				17/10/2002
	Porzana tabuensis	Spotless Crake		R		29/08/1999
	Psephotellus varius	Mulga Parrot				29/11/2014
	Psephotus haematonotus haematonotus	Red-rumped Parrot (eastern SA except NE)				13/04/1996
	Psophodes nigrogularis	Western Whipbird				16/01/2016
	Purnella albifrons	White-fronted Honeyeater				19/03/2017
	Recurvirostra novaehollandiae	Red-necked Avocet				1/06/2004
	Rhipidura albiscapa	Grey Fantail				23/07/2007
	Rhipidura leucophrys	Willie Wagtail				19/03/2017
	Sericornis frontalis	White-browed Scrubwren				19/03/2017

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Smicrornis brevirostris	Weebill				19/03/2017
	Spilopelia chinensis	Spotted Dove			Y	23/09/1999
	Stagonopleura guttata	Diamond Firetail		V		13/04/2017
	Sternula nereis	Fairy Tern	VU	E		29/01/2017
	Stictonetta naevosa	Freckled Duck		V		25/03/2003
	Strepera versicolor	Grey Currawong				13/11/2016
	Sturnus vulgaris	Common Starling			Y	19/03/2017
	Tachybaptus novaehollandiae	Australasian Grebe				19/03/2017
	Taeniopygia guttata	Zebra Finch				15/10/1984
	Thalasseus bergii	Greater Crested Tern				19/03/2017
	Thincornis cucullatus	Hooded Plover (Hooded Dotterel)	VU	V		4/07/2014
	Threskiornis moluccus	Australian White Ibis				19/03/2017
	Threskiornis spinicollis	Straw-necked Ibis				19/03/2017
	Todiramphus sanctus	Sacred Kingfisher				2/07/2015
	Tribonyx ventralis	Black-tailed Nativehen				19/03/2017
	Trichoglossus haematodus	Rainbow Lorikeet				19/03/2017
	Tringa nebularia	Common Greenshank				19/03/2017
	Turdus merula	Common Blackbird			Y	25/12/2000
	Turnix velox	Little Buttonquail				15/10/1979
	Vanellus miles	Masked Lapwing				19/03/2017
	Zosterops lateralis	Silvereye				19/03/2017
MAMMALIA	*Austronomus australis*	White-striped Free-tailed Bat				29/07/1975
	Chalinolobus gouldii	Gould's Wattled Bat				16/08/1974
	Macropus robustus	Euro				12/12/1945
	Nyctophilus geoffroyi	Lesser Long-eared Bat				8/04/1987
	Pseudomys bolami	Bolam's Mouse				1/10/1995
	Rattus rattus	Black Rat (Ship Rat, Roof Rat)			Y	1/07/1979
	Sminthopsis dolichura	Little Long-tailed Dunnart				2/10/1995
REPTILIA	*Anilios bituberculatus*	Rough-nosed Blind Snake				30/09/1995

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Ctenophorus cristatus	Crested Dragon				2/04/1979
	Ctenophorus pictus	Painted Dragon				28/09/1990
	Ctenotus orientalis	Spotted Ctenotus				14/04/1995
	Ctenotus regius	Eastern Desert Ctenotus				26/06/1987
	Ctenotus schomburgkii	Sandplain Ctenotus				7/06/1987
	Demansia psammophis	Yellow-faced Whipsnake				1/02/2010
	Demansia reticulata	Desert Whipsnake				20/07/1991
	Diplodactylus furcosus	Ranges Stone Gecko				28/09/1995
	Diplodactylus vittatus complex (NC)	Stone Geckos				7/06/1987
	Gehyra variegata (NC)	Tree Dtella				7/06/1987
	Heteronotia binoei	Bynoe's Gecko				13/04/1995
	Lerista dorsalis	Southern Four-toed Slider				28/09/1995
	Lerista edwardsae	Myall Slider				12/04/1995
	Lerista terdigitata	Southern Three-toed Slider				13/04/1995
	Lerista timida	Dwarf Three-toed Slider				12/04/1995
	Moloch horridus	Thorny Devil				22/10/2001
	Morethia boulengeri	Common Snake-eye				2/04/1979
	Parasuta spectabilis	Mallee Black-headed Snake				3/11/1980
	Pogona vitticeps	Central Bearded Dragon				1/01/1950
	Pseudechis australis	Mulga Snake				18/03/1972
	Pseudonaja affinis	Dugite				1/01/1950
	Pseudonaja aspidorhyncha	Patch-nosed Brown Snake				1/03/1981
	Pseudonaja mengdeni	Gwardar				1/11/1983
	Pseudonaja nuchalis (NC)	Western Brown Snake				5/01/1994
	Simoselaps bertholdi	Desert Banded Snake				1/01/1950
	Strophurus intermedius	Southern Spiny-tailed Gecko				7/06/1987
	Suta suta	Curl Snake				1/01/1950
	Tympanocryptis lineata	Lined Earless Dragon				31/03/1979
	Varanus gouldii	Sand Goanna				1/01/1950

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Appendix 3. Flora species recorded within the study area.

Family name	Species name	Common name	Vegetation association	
			1	2
AIZOACEAE	*Disphyma crassifolium ssp. clavellatum*	Round-leaf Pigface	✓	✓
AIZOACEAE	**Galenia pubescens var. pubescens*	Coastal Galenia	✓	✓
AIZOACEAE	**Mesembryanthemum nodiflorum*	Slender Iceplant	✓	✓
AIZOACEAE	*Sarcozona praecox*	Sarcozona	✓	✓
AIZOACEAE	*Tetragonia eremaea*	Desert Spinach	✓	✓
CACTACEAE	**Cylindropuntia prolifera*	Jumping Cholla	✓	
CHENOPODIACEAE	*Atriplex vesicaria*	Bladder Saltbush	✓	✓
CHENOPODIACEAE	*Dissocarpus biflorus var. biflorus*	Two-horn Saltbush	✓	
CHENOPODIACEAE	*Dissocarpus paradoxus*	Ball Bindyi	✓	✓
CHENOPODIACEAE	*Einadia nutans ssp.*	Climbing Saltbush	✓	✓
CHENOPODIACEAE	*Enchylaena tomentosa var.*	Ruby Saltbush	✓	✓
CHENOPODIACEAE	*Maireana appressa*	Pale-fruit Bluebush	✓	
CHENOPODIACEAE	*Maireana brevifolia*	Short-leaf Bluebush	✓	✓
CHENOPODIACEAE	*Maireana pyramidata*	Black Bluebush	✓	✓
CHENOPODIACEAE	*Maireana sedifolia*	Bluebush	✓	✓
CHENOPODIACEAE	*Maireana trichoptera*	Hairy-fruit Bluebush	✓	
CHENOPODIACEAE	*Maireana turbinata*	Top-fruit Bluebush	✓	✓
CHENOPODIACEAE	*Osteocarpum dipterocarpum*	Two-wing Bonefruit	✓	✓
CHENOPODIACEAE	*Rhagodia spinescens*	Spiny Saltbush	✓	✓
CHENOPODIACEAE	*Salsola australis*	Buckbush	✓	
CHENOPODIACEAE	*Sclerolaena obliquicuspis*	Oblique-spined Bindyi	✓	✓
CHENOPODIACEAE	*Sclerolaena uniflora*	Small-spine Bindyi	✓	✓
CHENOPODIACEAE	*Tecticornia disarticulata*		✓	
COMPOSITAE	**Gazania linearis*	Gazania		✓
COMPOSITAE	**Lactuca serriola f.*	Prickly Lettuce	✓	✓
COMPOSITAE	*Senecio glossanthus*	Annual Groundsel	✓	✓
COMPOSITAE	**Sonchus oleraceus*	Common Sow-thistle	✓	✓
CRUCIFERAE	**Carrichtera annua*	Ward's Weed	✓	✓
CRUCIFERAE	**Lepidium africanum*	Common Peppercress	✓	
CRUCIFERAE	**Sisymbrium erysimoides*	Smooth Mustard	✓	✓
GRAMINEAE	*Austrostipa drummondii*	Cottony Spear-grass	✓	
GRAMINEAE	*Austrostipa elegantissima*	Feather Spear-grass	✓	✓
GRAMINEAE	*Austrostipa nitida*	Balcarra Spear-grass	✓	✓
GRAMINEAE	**Avena barbata*	Bearded Oat	✓	✓
GRAMINEAE	**Bromus diandrus*	Great Brome	✓	✓
GRAMINEAE	**Cenchrus ciliaris*	Buffel Grass	✓	
GRAMINEAE	*Chloris truncata*	Windmill Grass	✓	
GRAMINEAE	*Rytidosperma caespitosum*	Common Wallaby-grass	✓	✓
LEGUMINOSAE	**Acacia cyclops*	Western Coastal Wattle	✓	
LEGUMINOSAE	*Acacia oswaldii*	Umbrella Wattle	✓	✓
LEGUMINOSAE	*#Acacia papyrocarpa*	Western Myall	✓	
LEGUMINOSAE	**Medicago truncatula*	Barrel Medic	✓	✓
LEGUMINOSAE	*Senna artemisioides ssp. X artemisioides*	Silver Senna	✓	
LEGUMINOSAE	*Senna artemisioides ssp. X coriacea*	Broad-leaf Desert Senna	✓	✓

Family name	Species name	Common name	Vegetation association	
			1	2
LILIACEAE	**Asphodelus fistulosus*	Onion Weed	✓	✓
LIMONIACEAE	**Limonium sinuatum*	Notch-leaf Sea-lavender	✓	
MYOPORACEAE	*Eremophila scoparia*	Broom Emubush		✓
MYOPORACEAE	*Myoporum montanum*	Native Myrtle	✓	
MYOPORACEAE	*Myoporum platycarpum ssp.*	False Sandalwood		✓
MYRTACEAE	*#Melaleuca lanceolata*	Dryland Tea-tree	✓	✓
MYRTACEAE	*#Melaleuca pauperiflora ssp. mutica*	Boree	✓	✓
RUTACEAE	*Geijera linearifolia*	Sheep Bush	✓	
SANTALACEAE	*Exocarpos aphyllus*	Leafless Cherry	✓	✓
SAPINDACEAE	*Dodonaea viscosa ssp. angustissima*	Narrow-leaf Hop-bush	✓	✓
ZYGOPHYLLACEAE	*Nitraria billardierei*	Nitre-bush	✓	

Vegetation associations

1. *Atriplex vesicaria* Low Shrubland +/- Amenity planted trees.
2. *Atriplex vesicaria*, *Maireana sedifolia* Low Shrubland +/- Amenity planted trees.

* = Introduced species.

= High likelihood of being planted.

Appendix 4. Location data for declared weed species (Datum WGS 84, Zone 53H).

Species name	Common name	Easting	Northing	Quantity	Map reference number
Cenchrus ciliaris	Buffel Grass	737739	6342226	10	1
Cenchrus ciliaris	Buffel Grass	737760	6342258	9	2
Cenchrus ciliaris	Buffel Grass	737761	6342259	10	3
Cenchrus ciliaris	Buffel Grass	737770	6342274	2	4
Cylindropuntia prolifera	Jumping Cholla	737655	6342159	1	5
Cylindropuntia prolifera	Jumping Cholla	737557	6342345	1	6
Cylindropuntia prolifera	Jumping Cholla	737558	6342334	1	7
Cylindropuntia prolifera	Jumping Cholla	737572	6342335	1	8
Cylindropuntia prolifera	Jumping Cholla	737562	6342239	1	9
Cylindropuntia prolifera	Jumping Cholla	737657	6342158	1	10
Cylindropuntia prolifera	Jumping Cholla	737644	6342204	1	11
Cylindropuntia prolifera	Jumping Cholla	737662	6342193	2	12
Cylindropuntia prolifera	Jumping Cholla	737677	6342176	6	13
Cylindropuntia prolifera	Jumping Cholla	737675	6342160	3	14
Cylindropuntia prolifera	Jumping Cholla	737691	6342158	7	15
Cylindropuntia prolifera	Jumping Cholla	737686	6342171	1	16
Cylindropuntia prolifera	Jumping Cholla	737730	6342178	1	17
Gazania linearis	Gazania	737571	6342301	15	18

Appendix 5. Amenity planted trees recorded within the study area (Datum WGS 84, Zone 53H).

Map reference number: 1
Easting: 737628 **Northing:** 6342301
Number of trees: 4
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 2
Easting: 737618 **Northing:** 6342261
Number of trees: 6
Photo description (L to R): *Eucalyptus sp*., *Eucalyptus sp*., *Eucalyptus sp*., *Eucalyptus sp*., *Acacia papyrocarpa*, *Acacia papyrocarpa*.

Map reference number: 3
Easting: 737605 **Northing:** 6342231
Number of trees: 5
Photo description (L to R): *Acacia papyrocarpa*, *Eucalyptus sp.*, *Acacia papyrocarpa*, *Eucalyptus sp.*, *Eucalyptus sp.*

Map reference number: 4
Easting: 737567 **Northing:** 6342222
Number of trees: 6
Photo description (L to R): All trees *Melaleuca pauperiflora ssp. mutica*.

Map reference number: 5
Easting: 737560 **Northing:** 6342178
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 6
Easting: 737560 **Northing:** 6342221
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp.*

Map reference number: 7
Easting: 737560 **Northing:** 6342154
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 8
Easting: 737665 **Northing:** 6342170
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 9
Easting: 737668 **Northing:** 6342155
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 10
Easting: 737685 **Northing:** 6342167
Number of trees: 7
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 11
Easting: 737708 **Northing:** 6342172
Number of trees: 4
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 12
Easting: 737717 **Northing:** 6342173
Number of trees: 1
Photo description (L to R): *Eucalyptus sp*.

Map reference number: 13
Easting: 737735 **Northing:** 6342176
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 14
Easting: 737644 **Northing:** 6342681
Number of trees: 4
Photo description (L to R): All trees *Eucalyptus sp.*

Map reference number: 15
Easting: 737663 **Northing:** 6342674
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 16
Easting: 737673 **Northing:** 6342688
Number of trees: 5
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 17
Easting: 737693 **Northing:** 6342656
Number of trees: 7
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 18
Easting: 737707 **Northing:** 6342682
Number of trees: 6
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 19
Easting: 737703 **Northing:** 6342676
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 20
Easting: 737708 **Northing:** 6342672
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 21
Easting: 737719 **Northing:** 6342675
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 22
Easting: 737740 **Northing:** 6342686
Number of trees: 1
Photo description (L to R): *Eucalyptus sp*.

Map reference number: 23
Easting: 737734 **Northing:** 6342668
Number of trees: 5
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 24
Easting: 737738 **Northing:** 6342675
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 25
Easting: 737740 **Northing:** 6342668
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 26
Easting: 737754 **Northing:** 6342677
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 27
Easting: 737751 **Northing:** 6342658
Number of trees: 6
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 28
Easting: 737742 **Northing:** 6342650
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 29
Easting: 737750 **Northing:** 6342644
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 30
Easting: 737746 **Northing:** 6342636
Number of trees: 2
Photo description (L to R): All trees *Acacia cyclops*

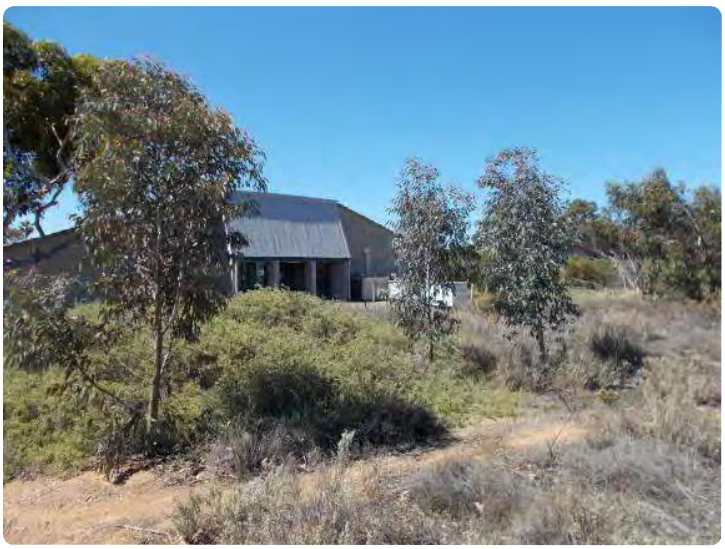
Map reference number: 31
Easting: 737734 **Northing:** 6342609
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 32
Easting: 737757 **Northing:** 6342588
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp.*

Map reference number: 33
Easting: 737761 **Northing:** 6342571
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 34
Easting: 737775 **Northing:** 6342554
Number of trees: 1
Photo description (L to R): *Acacia pendula*

Map reference number: 35
Easting: 737721 **Northing:** 6342555
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.



Map reference number: 36
Easting: 737711 **Northing:** 6342606
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 37
Easting: 737712 **Northing:** 6342621
Number of trees: 1
Photo description (L to R): *Eucalyptus cladocalyx*

Map reference number: 38
Easting: 737689 **Northing:** 6342614
Number of trees: 6
Photo description (L to R): *Melaleuca lanceolata*, *Eucalyptus sp.*, *Eucalyptus sp.*, *Eucalyptus cladocalyx*, *Eucalyptus cladocalyx*, *Eucalyptus sp.*

Map reference number: 39
Easting: 737703 **Northing:** 6342635
Number of trees: 4
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 40
Easting: 737674 **Northing:** 6342651
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 41
Easting: 737596 **Northing:** 6342610
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 42
Easting: 737578 **Northing:** 6342558
Number of trees: 1
Photo description (L to R): *Eucalyptus sp*.

Map reference number: 43
Easting: 737619 **Northing:** 6342552
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 44
Easting: 737604 **Northing:** 6342551
Number of trees: 1
Photo description (L to R): *Eucalyptus sp*.

Map reference number: 45
Easting: 737600 **Northing:** 6342529
Number of trees: 3
Photo description (L to R): *Acacia papyrocarpa*, *Eucalyptus sp.*, *Eucalyptus sp.*

Map reference number: 46
Easting: 737554 **Northing:** 6342527
Number of trees: 1
Photo description (L to R): *Acacia sp.*

Map reference number: 47
Easting: 737568 **Northing:** 6342503
Number of trees: 1
Photo description (L to R): *Acacia oswaldii*

Map reference number: 48
Easting: 737602 **Northing:** 6342490
Number of trees: 4
Photo description (L to R): All trees *Eucalyptus sp.*

Map reference number: 49
Easting: 737596 **Northing:** 6342474
Number of trees: 2
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 50
Easting: 737612 **Northing:** 6342467
Number of trees: 1
Photo description (L to R): *Eucalyptus sp*.

Map reference number: 51
Easting: 737588 **Northing:** 6342467
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 52
Easting: 737577 **Northing:** 6342425
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 53
Easting: 737623 **Northing:** 6342425
Number of trees: 1
Photo description (L to R): *Eucalyptus sp.*

Map reference number: 54
Easting: 737591 **Northing:** 6342397
Number of trees: 5
Photo description (L to R): All trees *Eucalyptus sp.*

Map reference number: 55
Easting: 737581 **Northing:** 6342368
Number of trees: 6
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 56
Easting: 737611 **Northing:** 6342374
Number of trees: 3
Photo description (L to R): All trees *Eucalyptus sp*.

Map reference number: 57
Easting: 737602 **Northing:** 6342347
Number of trees: 5
Photo description (L to R): *Acacia papyrocarpa*, *Acacia papyrocarpa*, *Eucalyptus sp.*, *Eucalyptus sp.*, *Eucalyptus sp*.

Map reference number: 58
Easting: 737631 **Northing:** 6342302
Number of trees: 4
Photo description (L to R): All trees *Eucalyptus sp*.

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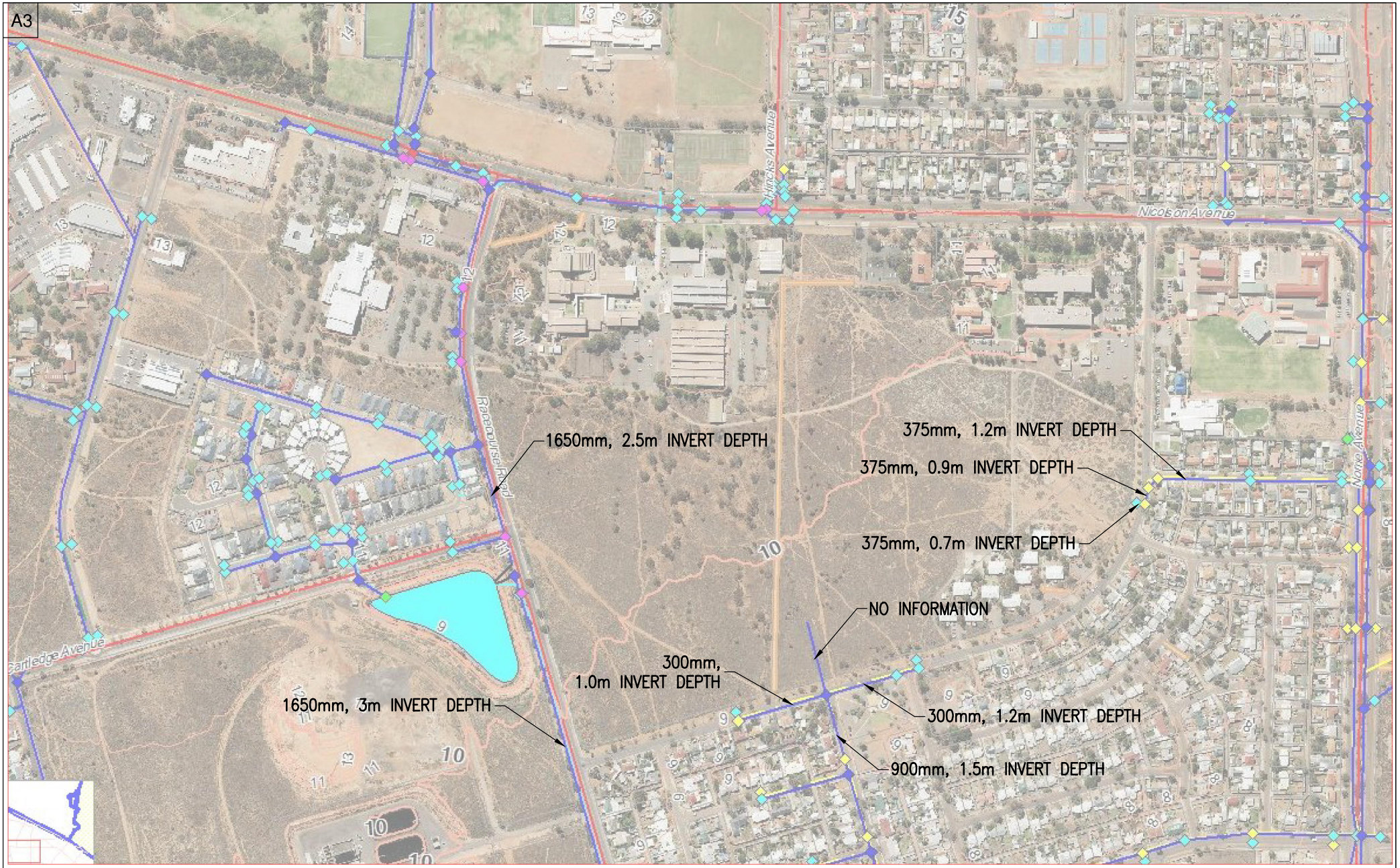
E: info@blackoakenvironmental.com

APPENDIX B

Council stormwater network

A3



ALL DEPTHS ARE APPROXIMATE OR ASSUMED ONLY

THE CORPORATION OF
THE CITY OF WHYALLA

INDICATIVE STORMWATER DETAILS
RUSSLE ST, RACECOURSE ROAD

REV	DESCRIPTION	BY	DATE

SURVEYED:	N/A	SCALE:	NTS
DESIGNED:	N/A	BASE PLAN:	
DRAWN:	T. BAYLY	SHEET:	1 of 1
DATE:	08/11/2018	DRAWING NUMBER:	SK0007

APPENDIX C

Desktop Heritage Assessment

APPENDIX D

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Appendix F

Flooding assessment report prepared by Tonkin

Whyalla Combined Secondary School Flood Mapping

City of Whyalla

17 October 2019
Ref: 20191314R001Rev0

tonkin

Building exceptional
outcomes together

Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	For Client comment	JDN			16 Oct 2019
0	For Client use	JDN	TAK	JDN	17 Oct 2019

Contents

Project: Whyalla Combined Secondary School Flood Mapping
Client: City of Whyalla
Ref: 20191314R001Rev0

Tables

Appendices

1 Introduction

1.1 Background

On behalf of Council, Tonkin has been requested to undertake 2D flood modelling of the new Whyalla High School, situated adjacent Nicolson Avenue.

The purpose of the flood modelling is to compare the proposed design (being developed by Aurecon) to the existing flood conditions.

Flood maps of the 10 year and 100 year Average Recurrence Interval (ARI) flood events incorporating the proposed design have been requested.

1.2 Design philosophy

The Council has requested that the design of the school result in no worsening of existing flooding. To achieve this the school has been designed to deflect floodwater around the western boundary of the school via an open channel. Floodwater is then dispersed across the school sports fields in order to return it to the original direction of flow. The intention is that this arrangement should divert floodwater away from the school buildings but not alter the wider distribution of flooding external to the school site.

2 Modelling methodology

2.1 Introduction

The modelling relies upon the 2D flood model developed for the Whyalla Stormwater Management Plan (SMP). The flood model is a 1D-2D linked model which incorporates the Council's underground drainage network and receives inflows from an external hydrologic model. A summary of the important modelling parameters is given in the following sections.

2.2 Runoff estimation

Hydrographs for each sub catchment of the urban area were created using the Time–Area method and the ILSAX hydrological model. The ILSAX hydrological model splits each sub catchment into three sub areas: directly connected impervious area, indirectly connected impervious area, and pervious area.

2.2.1 Catchment imperviousness

Impervious coverage of Whyalla urban areas is predominantly characterised by residential development. The Whyalla SMP considered four categories of land use: urban high density, urban medium density, urban low density, and rural. The impervious proportions adopted by the Whyalla SMP for these categories are shown in Table 2.1.

Table 2.1 Proportion of impervious area for land-use types

Catchment type	Directly connected impervious proportion	Pervious proportion	Indirectly connected impervious proportion
Urban high density	50%	35%	15%
Urban medium density	30%	55%	15%
Urban low density	15%	75%	10%
Rural/Non-urban	0%	100%	0%

2.2.2 Rainfall losses

The hydrologic model represents rainfall losses using an Initial Loss – Continuing Loss model. The rainfall loss parameter values presented in Table 2.2 were chosen by the Whyalla SMP to mirror those of previous studies.

Table 2.2 Loss parameters used for frequent events

Parameter	Unit	Value
Impervious area depression storage	mm	1
Pervious area depression storage (equivalent to an initial loss)	mm	25
Pervious area continuing loss	mm/hr	2

2.3 Hydraulic modelling

2.3.1 Model software

The hydraulic modelling was carried out using the TUFLOW modelling software. The software simulates depth averaged, two-dimensional free surface flows such as those that occur during floods. TUFLOW has the ability to dynamically link to a one-dimensional (1D) model if needed, which enables the creation of models containing both 1D and 2D domains.

2.3.2 Digital elevation model

The Whyalla SMP TUFLOW model relies on a digital elevation model (DEM) of the catchment developed from LiDAR data captured in 2010.

The school developers have provided more recent (2019) terrestrial survey of the school site and surround areas. This survey was incorporated into the TUFLOW model. Comparison of the DEM and site survey elevations revealed the survey to be generally 120 mm higher than the DEM. Therefore, the site survey elevations were lowered by 120 mm before integration with the flood model DEM. This ensured minimal interface issues between the two datasets. If this vertical difference was not addressed spurious flow behaviour could occur at the interface between the two datasets.

For the post-development modelling, the developers provided a 3D model of the proposed site levels. The 3D model was also lowered by 120 mm to ensure minimal interface issues before integration with the flood model DEM. Due to triangulation issues in the provided design surface, some features of the design surface (such as tops of embankments) were manually specified to ensure proper representation of the intended design.

2.3.3 Computational grid cell size

Determining an appropriate cell size for the computation grid used by TUFLOW requires a compromise between the resolution of flood mapping and the simulation time required to run the models. Smaller 2D cell sizes more easily reproduce detailed topography and the hydraulic behaviour of the flooding, but significantly increase the amount of memory and computational power required to run the model.

The Whyalla SMP model adopted a cell size of 4 m as a reasonable compromise between grid resolution and computational power for urban areas. A 4 m cell size has also been adopted for this study and achieves acceptable representation of the flood behaviour.

2.3.4 Computational time step

The selection of an appropriate time step for the 2D domain of TUFLOW is important to the accuracy of the model output. Time steps that are too large may result in models that are unstable. Time steps that are too small may unnecessarily increase simulation times. An appropriate time step will balance simulation time with the model's stability and numerical accuracy. The time step adopted for the 2D domain was 1 second.

2.3.5 Bed resistance

The TUFLOW model requires bed resistance be specified by the modeller. Bed resistance governs how difficult it is for flow to pass over a surface. The bed resistance is a primary determinant of water depth within the 2D model domain. In this model, the Manning’s n roughness coefficient is used to define the bed resistance.

Areas that have few obstructions to flow, such as the road reserve, have relatively low Manning’s n values. Conversely, areas with many obstructions, such as buildings, fences, and dense vegetation, have high Manning’s n coefficients.

The Manning's n roughness coefficients used in this model are listed in Table 2.3. These values were selected based on current literature and the prior experience of Tonkin.

Table 2.3 Adopted bed resistance parameters

Land Use	Manning's n
Houses/Residential areas, obstructions to flow	0.200
Medium and high density residential and commercial areas	0.300
Parklands with scattered trees	0.045
Grassed areas and bare ground	0.035
Roads (including verges)	0.020
Unlined creek channels	0.040-0.065
Plastic conduits	0.011
Concrete conduits	0.014

2.4 Modelling uncertainty

While every care has been taken in preparation of the TUFLOW model and the choice of the adopted parameters, all hydrological and hydraulic modelling has an inherent level of uncertainty. This inherent uncertainty is due to a number of factors which may include any of the following:

- The accuracy and resolution of the DEM and the interpretation of this information by the hydraulic model.
- Dynamic changes to topography due to erosion or deposition of soil during a flood event; which can lead to changes in the distribution of flow. Such processes have not been included in this model.
- Uncertainty in the rainfall patterns and catchment conditions prior to a flood. Actual flood events are dependent on the antecedent moisture conditions prior to rainfall, initial detention storage levels at the onset of rainfall runoff, and the intensity and uniformity of the rainfall event itself. The floods modelled by this study are based on design storm bursts which attempt to reproduce the expected average temporal pattern of a storm burst within specified rainfall zones. As such, individual rainfall events may exhibit different behaviour than those modelled.
- Estimation of input parameters to the model (such as runoff coefficients, time of concentration, Manning's roughness, and entry and exit losses).
- Blockage or failure of drainage infrastructure during a flood event.

2.5 Model simulations

Two average recurrence intervals (ARI) were considered: 10 year ARI and 100 year ARI.

Four rainfall event durations were simulated: 60, 90, 180 and 360 minutes. The results from each duration were combined to create an envelope of the worst case flood conditions. Predominantly, the worst case flood condition occurred during the 90 minute duration.

3 Model results

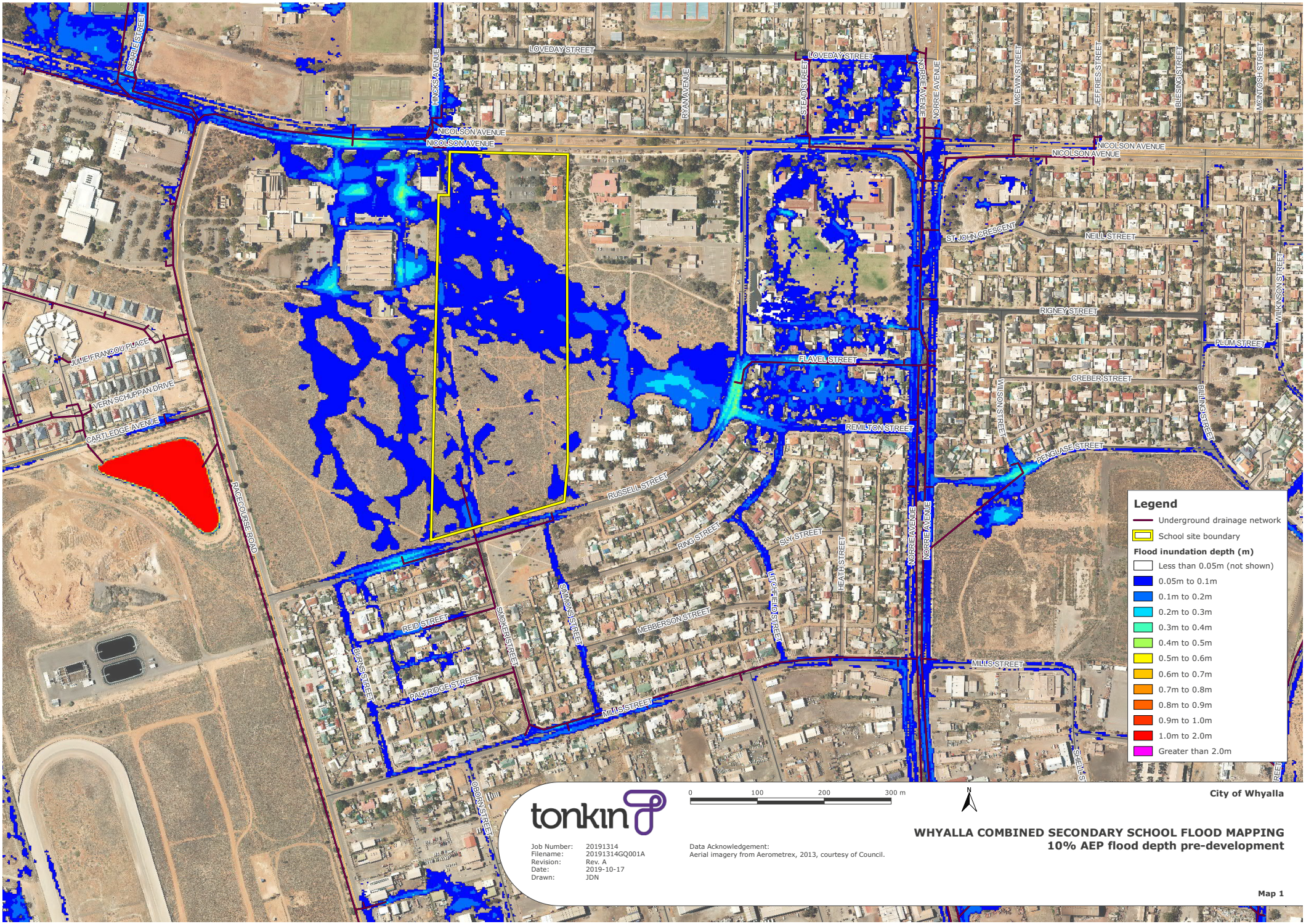
The modelling shows generally good outcomes for the post-development conditions in both the 10 year and 100 year ARI events. Flood mapping results are contained within Appendix A. The overall direction of flow is from the northwest (Nicolson Avenue) to southeast (Russell Street).

In the 10 year ARI event, changes in downstream flood depths are shown to be generally ±10 mm. Overall, downstream flooding is unchanged. There are negligible changes in flood depths, however, these are contained within existing road reserves.

In the 100 year ARI event, changes in downstream flood depths are shown to be generally ±20 mm. Overall, the downstream flood behaviour is similar. There is a slight change towards more floodwater flowing in a southerly direction. This results in a slight reduction of flood depths (-10 to -20 mm) to the southeast around Remilton Street and Flavel Street whilst the area to the south around Ring Street and Mebberson Street experiences slight increases in flood depth (+10 to +20 mm).

Within the school site flooding is mostly excluded from building areas during the 100 year ARI event. However, floodwater arriving from Nicolson Avenue is shown entering the north-western corner of the school buildings area. This floodwater could be excluded from the school buildings area with some bunding around the perimeter of the proposed carparking areas.

Appendix A — Flood maps



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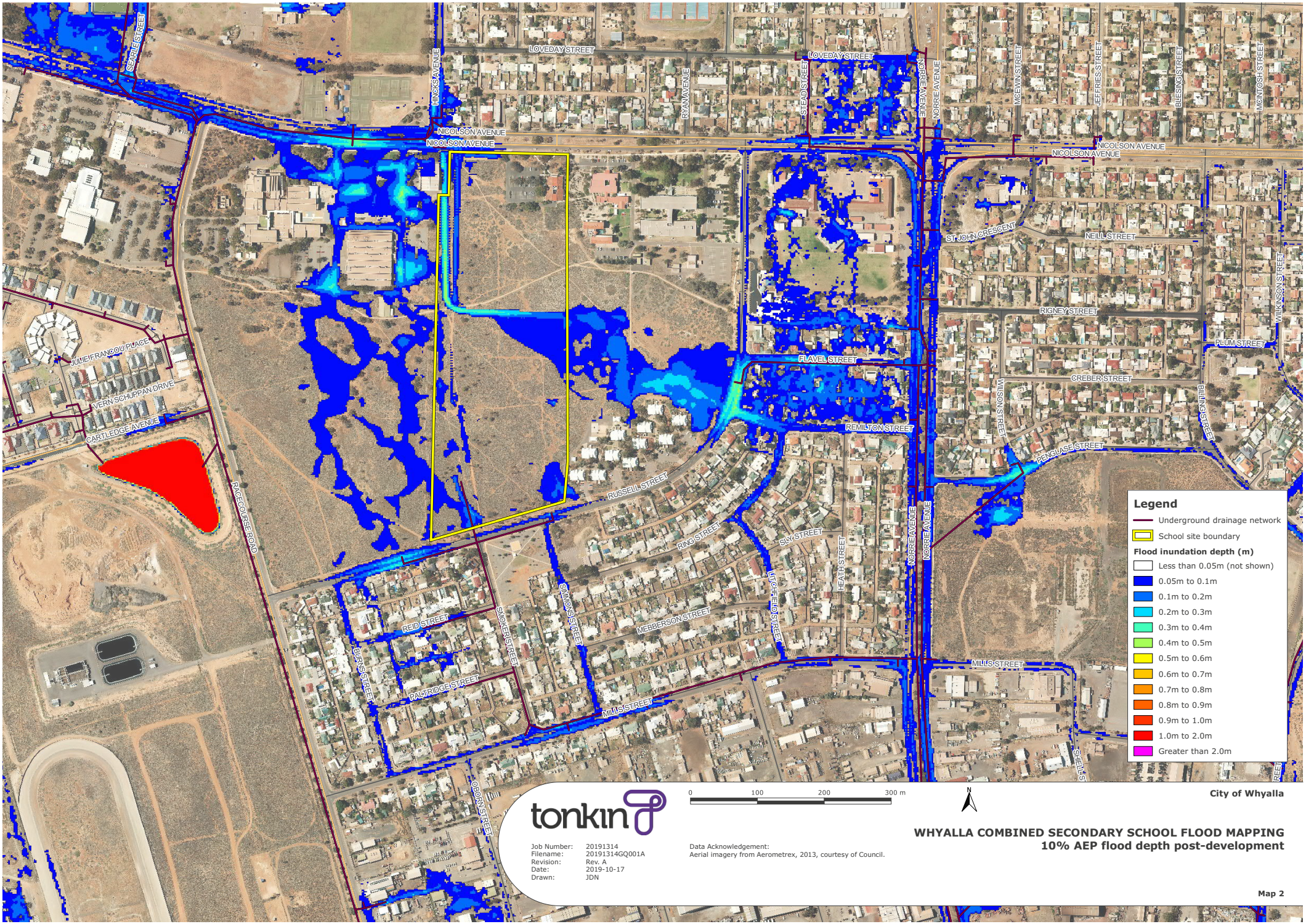
Job Number: 20191314
Filename: 20191314GQ001A
Revision: Rev. A
Date: 2019-10-17
Drawn: JDN

Data Acknowledgement:
Aerial imagery from Aerometrex, 2013, courtesy of Council.

City of Whyalla

WHYALLA COMBINED SECONDARY SCHOOL FLOOD MAPPING
10% AEP flood depth pre-development

Map 1



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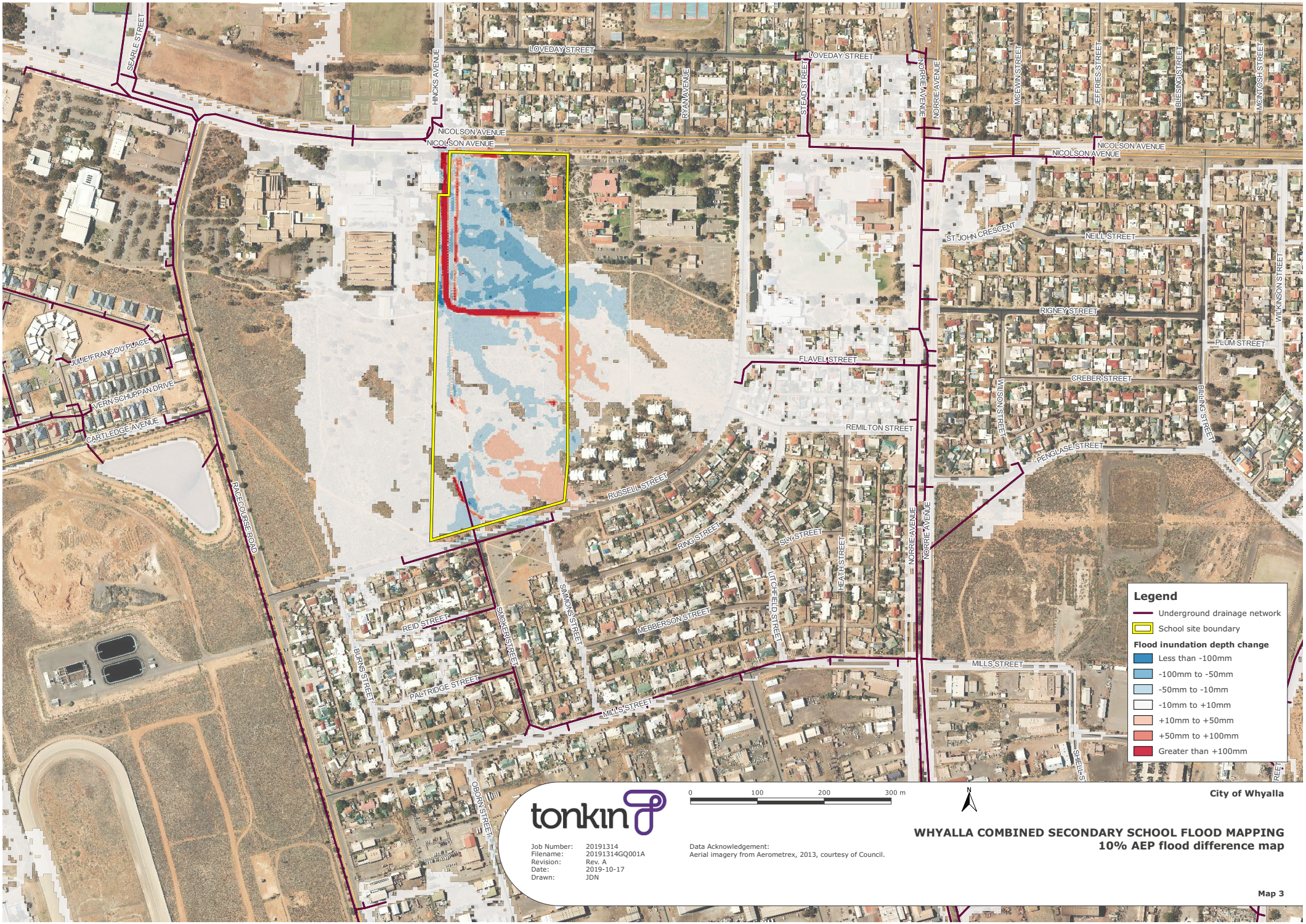
WHYALLA COMBINED SECONDARY SCHOOL FLOOD MAPPING
10% AEP flood depth post-development

Map 2



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Revision: Rev. A
Date: 2019-10-17
Drawn: JDN

Data Acknowledgement:
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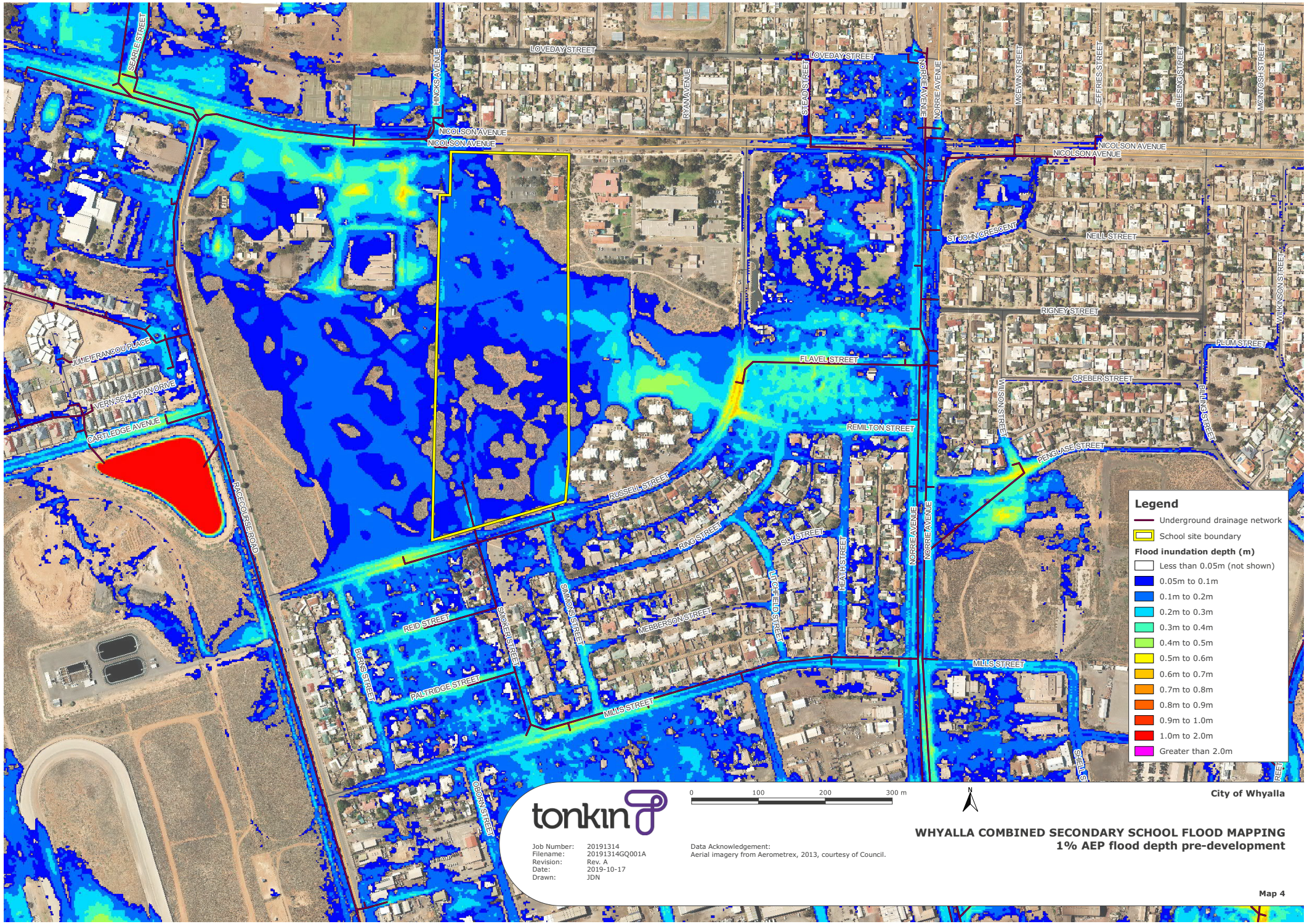
WHYALLA COMBINED SECONDARY SCHOOL FLOOD MAPPING
10% AEP flood difference map

Map 3



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Date: 2019-10-17
Drawn: JDN

Data Acknowledgement:
Aerial imagery from Aerometrex, 2013, courtesy of Council.

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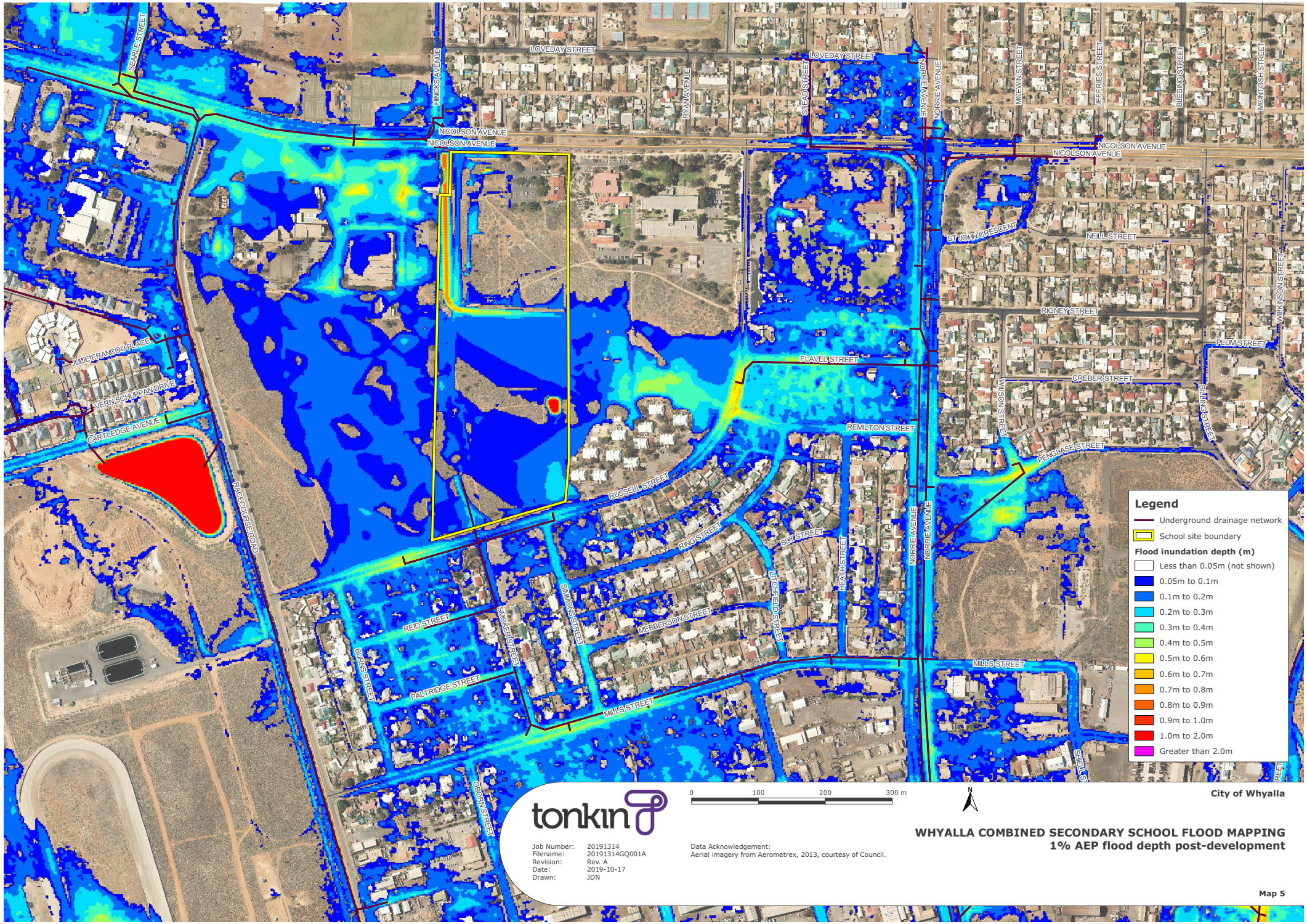
WHYALLA COMBINED SECONDARY SCHOOL FLOOD MAPPING
1% AEP flood depth pre-development

Map 4



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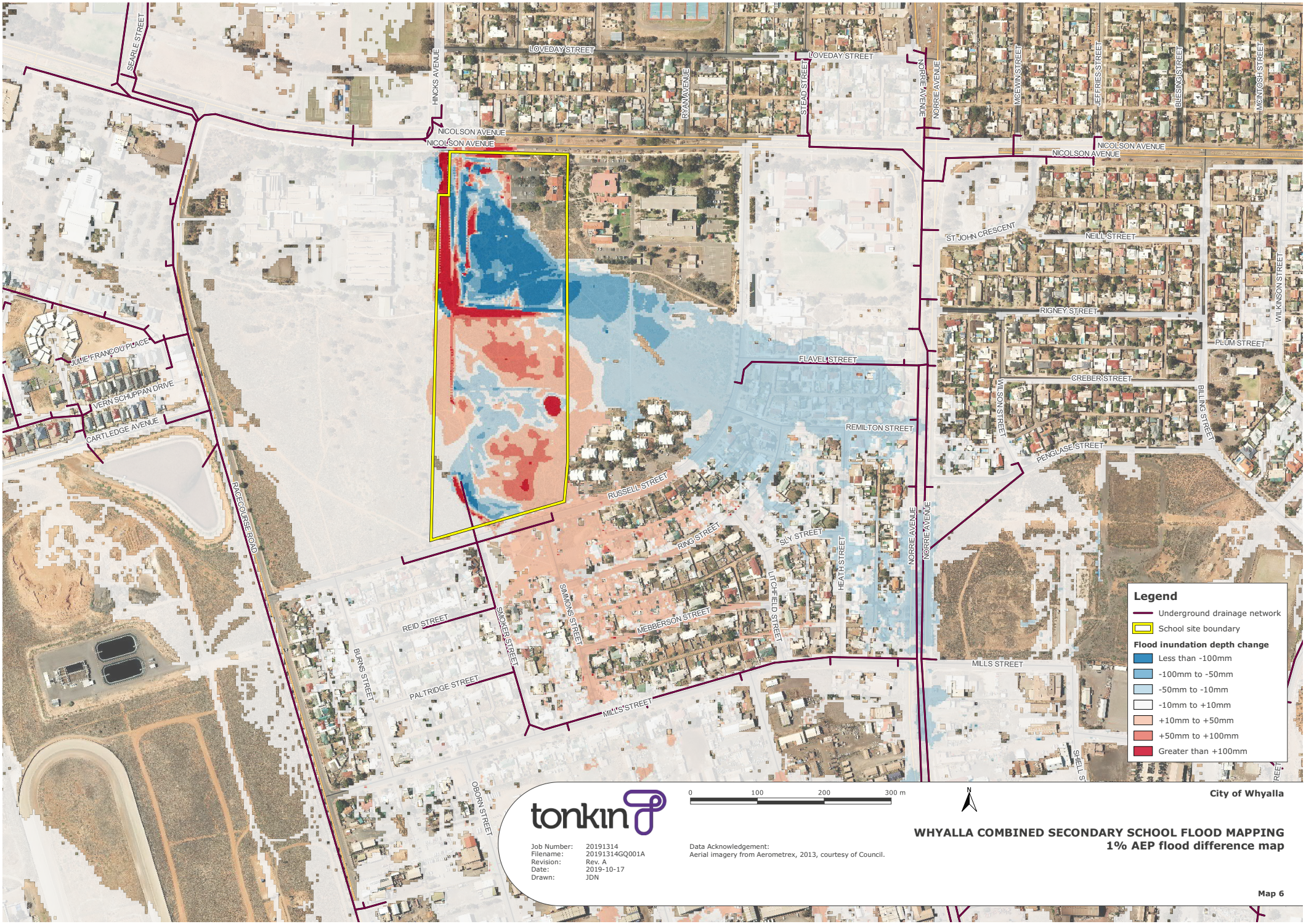
WHYALLA COMBINED SECONDARY SCHOOL FLOOD MAPPING
1% AEP flood depth post-development

Map 5



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WHYALLA COMBINED SECONDARY SCHOOL FLOOD MAPPING
1% AEP flood difference map

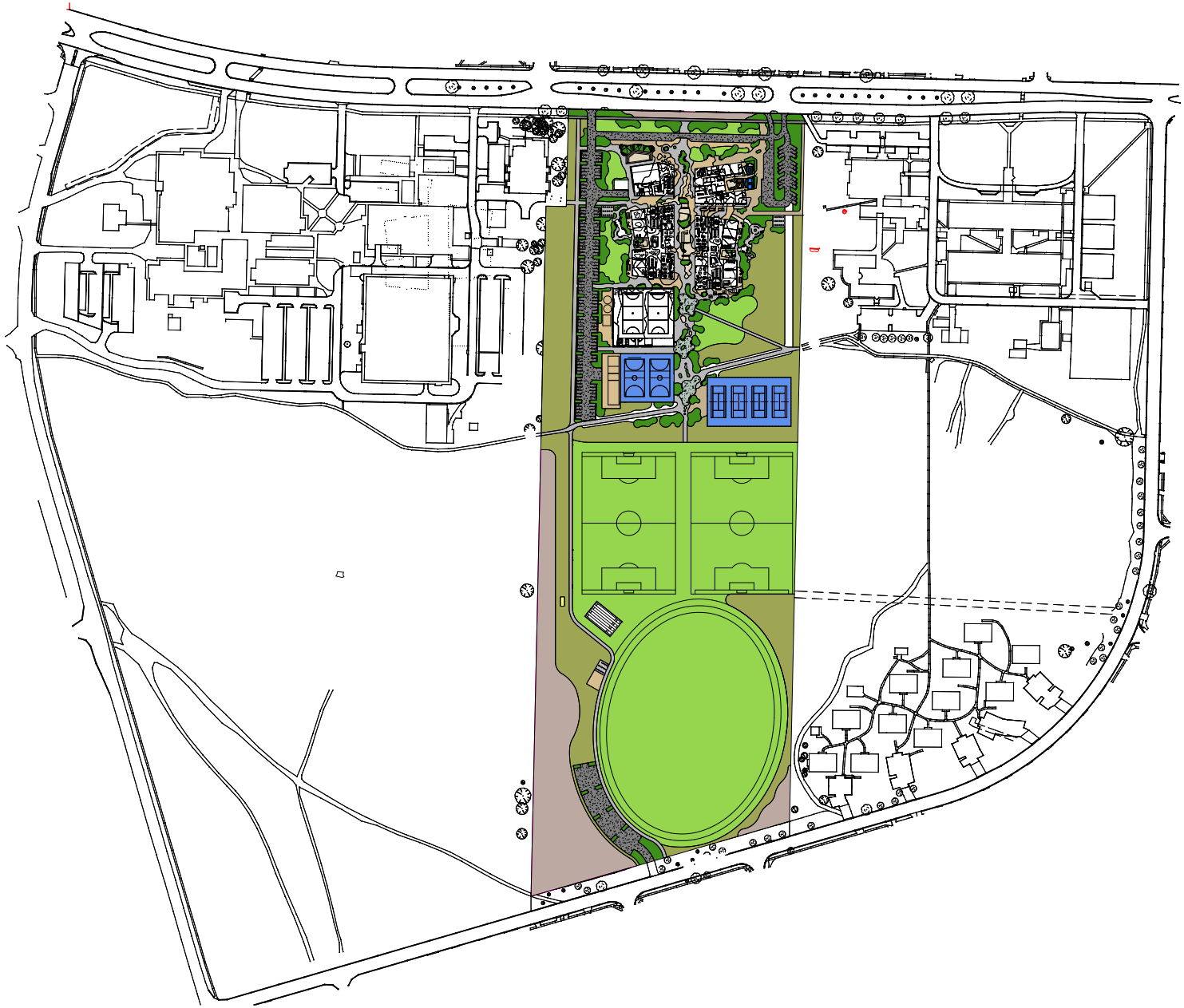
Map 6

Appendix G

Landscaping documentation prepared by Aspect

LEGEND

- IRRIGATED TURF
- HYDROSEED DRYLAND GRASS
- GARDEN BED / ORGANIC MULCH
- NATIVE VEGETATION
- PAVEMENT TYPE 1- STONE PAVING
- PAVEMENT TYPE 1- STONE PAVING
- PAVEMENT TYPE 2 - INSITU CONCRETE PAVING
- PAVEMENT TYPE 3 - INSITU CONCRETE PAVING
- PAVEMENT TYPE 4 - INSITU CONCRETE PAVING
- PAVEMENT TYPE 5- STONE PAVING
- PAVEMENT TYPE 6 - COMPACTED RUBBLE
- PAVEMENT TYPE 7 - RUBBER SOFTFALL
- PAVEMENT TYPE 8 - ORGANIC SOFTFALL
- PAVEMENT TYPE 9 - SAND (SANDPIT AND LONG JUMP)
- PAVEMENT TYPE 10 - SPORTS COURT
- PAVEMENT TYPE 11 - ASPHALT (CARPARK) AND LINEMARKING
- ARTIFICIAL TURF - ILC PLAY SPACE
- ASTRO TURF - CRICKET PITCHES
- FIRE EGRESS TRACK - ROAD BASE
- PAVEMENT TYPE 15 - SHARED USE PATH ASPHALT
- PAVEMENT TYPE 16 - ACID ETCHED INSITU CONCRETE PAVING
- SPORTS COURT LINEMARKING



1 SITE PLAN
1 : 1500

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WHYALLA

Whyalla City Council
Civic Building, Darling Terrace
Whyalla SA 5600

PO Box 126, Whyalla SA 5600

t. 08 8640 3444
f. 08 8645 0155

e. council@whyalla.sa.gov.au
w. whyalla.sa.gov.au

21 January 2020

Ms Sarah Elding
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

sarah.elding@sa.gov.au
scapadmin@sa.gov.au

SCAP Referral 850/V004/19 – New Whyalla Secondary School

Dear Ms Elding,

I refer to the referral received by Council for the above Development Application for which you are the responsible officer.

Firstly, Council applauds the Education Department and Cox Architects for their vision and outstanding design of the proposed new school building.

Council Engineering Department have advised that they are satisfied with the design works so far in relation to the stormwater management plan for the site. However they are still awaiting the final design. It is considered appropriate that Councils engineering department are able to sign off of the final design given the impacts to our community.

Council staff have concerns in relation to the design of the entrance and exits from Nicolson Avenue and whether they are appropriate considering their proximity to Hincks Avenue intersection and the break within the median at the eastern end of the subject site. We believe there is potential for significant banking at the right turn in from Nicolson Avenue, especially in the morning (peak traffic), along with line of site and traffic movement issues at or close to the intersection of Hincks Avenue and Nicolson Avenue with the proposed exit at the western end of the subject site.

Council planning staff are seeking that parking for students be provided within the school grounds. The parking area to the south of the site (marked staff/community car park) may be able to accommodate students with minimal amendments required (parking spaces added and signage included).

Landscaping to the southern boundary of the site could include greater area of introduced landscaping to improve the appearance from the street.

Given the harsh climate in Whyalla during summer, consideration should be given to covered spaces to the south of the school building to provide shade to outdoor playing areas such as the tennis courts, soccer fields and football oval.

The student/pedestrian crossing should be considered to provide safe and convenient access for students to cross Nicolson Avenue given the number of vehicle movements expected during drop off and pick up times.
Consideration of conditions of consent for the following is sought:

All access and egress works required to be constructed outside of the school site shall be undertaken by the applicant at the applicants expense. All existing access points no longer required shall be made good to the satisfaction of the Council and at the applicants expense.

A construction management plan and traffic management plan shall be provided to Council for consideration prior to the commencement of construction.

Should you require further information regarding this letter, please do not hesitate to contact the undersigned on 8640 3444 or email jodie.perone@whyalla.sa.gov.au

Yours faithfully,

Jodie Perone
Acting Manager Environmental Health & Regulatory Services/Planning Officer (MPIA)

OFFICE FOR DESIGN + ARCHITECTURE SA

File No:
2019/11777/02

Ref No:
14848597

10 December 2019

Sarah Elding
Principal Planner – Crown and Major Developments
Planning and Land Use Services
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
Adelaide SA 5000

sarah.elding@sa.gov.au

For the attention of the State Commission Assessment Panel

Whyalla Secondary School Redevelopment

Further to the referral 850/V004/19 received 28 November 2019 pertaining to the above development application and in my capacity as a non-mandatory referral in the State Commission Assessment Panel, I am pleased to provide the following comments informed by the Design Review process for your consideration.

The proposal was presented to the Design Review panel three times, over which period the design progressed. A pre-lodgement agreement was not reached in advance of lodgement.

I support the overall project intent to deliver a new Contemporary Learning Environment and create a new international benchmark for regional schools. I also support the proposed design and internal planning in general. However in my view, opportunities exist to strengthen the school's integration with the Centenary Trailway, and enhance the spatial quality of the Central Courtyard.

The project scope for the new Whyalla Secondary School seeks to consolidate all three existing public high schools in Whyalla and accommodate up to 1500 students from year 7 to 12 with allowance for future expansion. The spatial brief includes a Performing Arts facility, gymnasium, library and cafe, Learning Communities including an Inclusive Learning Community, oval, two soccer/hockey fields, two multi-purpose courts and six tennis courts. The brief seeks to provide strong connections between indoor and outdoor learning areas, and a combination of interdisciplinary and disciplinary outdoor learning environments are to be provided with the associated internal learning spaces.

The subject site is located centrally in the Whyalla Township, on the southern side of Nicolson Avenue, across the street from the existing campus of Edward John Eyre High School. The site is currently open land with low scale vegetation, and located between the TAFE SA campus adjacent to the west and the UniSA campus adjacent to the east. The existing built forms in the context include civic and education buildings up to three storeys on these adjoining tertiary education sites. The existing Whyalla Education Office building and associated carpark at the north east corner of the site is proposed to be demolished to locate the new building centrally

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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between the TAFE and the university campuses. The site extends to the south and has a second street frontage to Russell Street. The Whyalla Centenary Trailway runs east-west through the centre of the subject site, creating a separation between the northern and southern land parcels. This path also extends west beyond the subject allotment, providing connectivity to the TAFE site and other land uses located on Racecourse Road.

Nicolson Avenue is a multi-lane road with a wide central median strip. On the northern side of Nicolson Avenue, single storey detached residential buildings exist to the east of Hincks Avenue. On the existing Edward John Eyre High School site, the main school building is located with a significant setback from the Nicolson Avenue frontage. Once the school is vacated, the Whyalla City Council intends to develop the site as a new sports hub for the community. Russell Street is a wide dual lane road with a pedestrian footpath to the southern side. Single storey detached dwellings exist to the south of the street. Directly across the street from the subject site, Shambrook Park includes public open space and children's play equipment. A kindergarten is located to the east of the public park. On the northern side of Russell Street, a cluster of single storey University student accommodation buildings are located directly adjacent east of the subject site. A formalised north-south pedestrian link intersects with the Whyalla Centenary Trailway and connects the university buildings to the north and the student accommodation facility to the south.

I strongly support the development of the new secondary school as part of a new education precinct, and strengthening of the spatial relationships and educational opportunities with the adjoining TAFE and university campuses. I also support the project intent to include publicly accessible facilities that maintain the school's relevance to the entire community of Whyalla. To that end, I strongly support the central location of the new school building between two tertiary education campuses, and the retention of the public link through the school campus. I also support the development of an integrated landscape concept for the entire site, which incorporates the project ambition to maintain the school campus unfenced. In addition, I support the project intent to retain and integrate a portion of the existing native vegetation along the west boundary for the southern half of the site to maximise opportunities for seamless transition to the adjoining sites.

The proposal locates the three storey main built form on the northern side of the central Centenary Trailway with the view to maintaining the existing linkage through the site. The Centenary Trailway is reconfigured to accommodate the fenced multi-purpose courts and the fenced tennis courts on either side. I am concerned by the proposed reconfiguration of the Centenary Trailway and the resultant change in character of the trailway within the new school campus. I acknowledge the widening of the path and the provision of the 'outdoor gathering space' in between the fenced courts. However I am of the view that maintaining the existing sense of an open and public thoroughfare is critical for the wider Whyalla community. To that end, I recommend review of the link path arrangement and the location of the fenced sports courts to demonstrate a sense of openness and public accessibility, and provide an intuitive travel sequence, informed by the principles of Crime Prevention through Environmental Design (CPTED). In my opinion, it is also important to carefully consider the ground surface treatment for the trailway, with the view to reinforcing the section of the path within the school campus as a part of the established Centenary Trailway system. I request confirmation of the surface treatment for the realigned trailway. The stormwater swale is proposed along the

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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northern half of the western boundary with a 90 degree turn eastward at the midpoint of the site, redirecting it to travel through the centre of the site. The swale is proposed to be an unfenced grassed shallow undulation. While I recognise the requirement for stormwater management, I note the challenges of incorporating an extensive surface channel into the proposal while ensuring safety and connectivity. To that end, I recommend further details of the swale design be provided, including the culverts and foot bridges, to demonstrate successful integration with the overall site strategy and creation of a safe area that does not hinder the envisaged physical and visual connection through the school site, as well as between the school and the TAFE campuses.

The main entrance to the school is located off Nicolson Avenue. The 'kiss and drop' zones are proposed along the Nicolson Avenue frontage within the school site and on-street on both sides of Nicolson Avenue. The secondary drop off zone is proposed on Russell Street. I recognise the unique condition for the regional location and the increased demand for vehicular access, and as such support the provision of the 'kiss and drop' facility within the school ground. However in my opinion, a vehicular loading area should not dominate the main school frontage, and a successful threshold treatment along Nicolson Avenue is critical to create an engaging interface to the public realm. I recommend additional information be provided regarding the landscaping design to the northern forecourt to ensure pedestrian safety while providing a visual buffer to the on-site vehicular areas and optimising presentation to the main public frontage.

The proposed built form comprises a cluster of two and three storey building elements organised along a north-south open central spine (Central Courtyard). The proposal also includes a number of integrated open spaces with soft and hard landscaping within the building recesses and the Central Courtyard space. I support the non-single storey approach to built form, given the scale of existing buildings in the context and the envisaged role of the proposed facility in forming a significant and central part of the wider education precinct. I support the provision of landscaped areas along the east and west building frontages that are integrated with the internal learning spaces. In particular, I support the well-integrated and layered approach to landscaping around the Inclusive Learning Area. I strongly support the provision of the sunken amphitheatre outside the Performing Arts area, as in my opinion, in-ground outdoor spaces provide opportunities to strengthen the building's strong connection with the surrounding landscape.

The design intent of the proposal is to convey resilience through a contemporary architectural expression, informed by the Whyalla landscape, including the rock formations of the area. In general, the two storey sections of the building are finished with a combination of sandy gold coloured metal cladding (primary elements) and a grey coloured metal cladding (secondary elements). To the east and west facades of the three storey elements, veil-like aluminium extruded mesh screens with horizontally configured openings are fixed to projecting frame structures. Over the side entrance recesses, vertical aluminium louvres are proposed. I support the general design direction of the architectural expression, including the provision of integrated shading elements on the east and west facades.

The canopy over the Central Courtyard comprises a series of metal clad angled solid roof planes. I understand thermal and wind modelling has been undertaken to inform the size of roof overhangs and openings. I support the inclusion of solid

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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2019/11777/02

Ref No:
14848597

roofing due to the climatic conditions of Whyalla. In my opinion, an opportunity exists to enhance the large volume and semi-outdoor nature of the Central Courtyard, by increasing the overhang of the solid roof planes and visually floating them above the three storey built forms.

The internal programming of the proposal is informed by the educational framework set out by the Department for Education (DfE). Generally, public functions such as the Performing Arts Theatre, reception foyer, library and gymnasium are located at the northern and southern ends, while private functions including Learning Precincts (each Learning Precinct includes general and specialist classrooms facing onto a central learning common) are proposed at the inner section of the building. I strongly support the conceptual approach for the internal planning, particularly the learning commons. In my opinion, the proposed layout is a well-considered response to a complex mix of uses and requirements and optimises connections between indoor and outdoor learning spaces.

At the centre of the building, a multi-level open spine (Central Courtyard) is proposed to function as a weather protected central hub and shared outdoor space with access to natural light and ventilation. Two Learning Precincts are proposed on each floor on the east and west sides of the Central Courtyard over three levels, with the discipline learning areas located along the Central Courtyard. I support the inclusion of the Central Courtyard and acknowledge the vertical and interconnecting opportunities it offers. I also strongly support the design team's continuing commitment to pursue genuine and seamless integration of the building envelope, internal spaces and landscaping elements, which in my opinion is critical to the success of the overall project. I support the provision of operable glazed doors between the learning areas and the Central Courtyard to provide visual and physical connectivity. However in my view, the rationalised orthogonal volume and a resultant formal spatial quality appears to be inconsistent with the proposed organic patterned treatment on the ground plane. In my opinion, an opportunity exists to vary the alignment of the glazed walls and doors on the ground floor to create more organic and layered spaces.

I support the provision of the community entry point to the northwest corner of the gymnasium building. I also support the location of the toilet and changing facility to service sporting field uses to the south, as it improves the usability of the community use facilities and ensures a sense of ownership for all users.

I support the inclusion of proprietary outdoor structures and furniture, as I acknowledge the need to balance the extensive project scope with a set budget. In my opinion, the functional and industrial aesthetics of the off-the-shelf items can be appropriate for the project setting and the design concept. I recommend consideration of minor but innovative interventions to the proprietary items with the view to ensuring a coherent outcome for the school campus overall.

I support the intent to deliver integrated sustainability measures including the provision of solar photovoltaic panels that greatly exceed the DfE's minimum requirement for a new school. I also acknowledge the site poses unique environmental challenges, including severe temperature difference and stormwater management. I request further information be provided regarding the integrated Ecologically Sustainable Development (ESD) initiatives, to demonstrate successful delivery of the project's Design Principle to 'develop exemplary practice Environmentally Sustainable Design'.

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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To ensure the most successful design outcome is achieved the State Commission Assessment Panel may like to consider particular aspects of the project, which would benefit from protection as part of the planning permission, such as:

- Review of the reconfigured Centenary Trailway arrangement and the location of the fenced sports courts to demonstrate a sense of openness and public accessibility of the public link.
- Confirmation of the surface treatment for the Trailway link within the subject site.
- Provision of further details of the swale design, including the culverts and foot bridges.
- Provision of additional information regarding the landscaping design to the northern forecourt.
- Review of the alignment of the glazed walls and doors on the ground floor facing the Central Courtyard.
- Provision of further information regarding the integrated ESD initiatives.
- A high quality of external materials for building and outdoor spaces, supported by the provision of a materials and finishes samples board.

Yours sincerely

Kirsteen Mackay
South Australian Government Architect

cc Aya Shirai-Doull ODASA aya.shirai-doull@sa.gov.au

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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AECOM Imagine it. Delivered.

AECOM Australia Pty Ltd
Level 28
91 King William Street
Adelaide SA 5000
Australia
www.aecom.com

+61 8 7223 5400 tel
+61 8 7223 5499 fax
ABN 20 093 846 925

7 February 2020

Sarah Elding
State Commission Assessment Panel
50 Flinders Street
Adelaide SA 5000

Dear Sarah

Whyalla High School Development Application - SCAP Referral 850/V004/19

Following the public notification period for the Whyalla High School Development Application (850/V004/19), one representation was received by Mr Andrew Scott. In addition, Whyalla Council and the Office for Design and Architecture South Australia (ODASA) provided separate submissions related to the proposal. This letter provides a consolidate response to those submissions.

The three submissions have been reviewed in detail and we thank Whyalla Council, ODASA and Mr Andrew Scott for their input. Overall, the submissions were generally supportive of the proposal, with some of the submissions including strong support for certain elements of the project.

A response to specific points raised within each submission is provided below.

Submission	Comment	Response
Whyalla City Council **Jodie Perone, Acting Manager Environmental Health & Regulatory Services/Planning Officer**	*Council applauds the Education Department and Cox Architecture for their vision and outstanding design of the proposed new school building. (pg. 1)*	Noted and appreciated
	Council Engineering Department have advised that they are satisfied with the design works so far in relation to the stormwater management for the site. However, they are still awaiting the final design. (pg. 1)	Final detailed design will be prepared in collaboration with Council.
	Concerns in relation to the design of the entrance and exits from Nicolson Avenue and whether they are appropriate considering their proximity to Hincks Avenue intersection and the break within the median at the eastern end of the subject site. (pg. 1)	The western access point will have over 40 metres separation from Hincks Avenue which well exceeds the requirements of the relevant Australian Standard (as well as road design guidelines). The eastern access has been located to align with the median break to accommodate right-in movements (rather than require U-turns). The Traffic and Parking report prepared by CIRQA included SIDRA intersection analysis of the two Nicolson Avenue access points. The analysis confirmed that there would be high levels of service at the access point and on Nicolson Avenue with negligible queuing or impact on through movements.
	Potential for significant banking at the right turn in from Nicolson Avenue, especially in the morning (peak traffic), along with line of site and traffic movement issues at or close	As above, the access points will not result in banking of traffic for the

Submission	Comment	Response
	to the intersection of Hincks Avenue and Nicolson Avenue with the proposed exit at the western end of the subject site. (pg. 1)	right turn movement in from Nicolson Avenue. There will also be clear sight distances between the western access point and Hincks Avenue.
	Parking for students should be provided within the school grounds. The parking area to the south of the site (marked staff/community car park) may be able to accommodate students with minimal amendments required (parking spaces added and signage included). (pg. 1)	Council's preference for on-site student parking is noted. Whyalla Council Development Plan does not include a ca parking rate for an educational facility. Notwithstanding this, the proposed development includes an additional 24 car parks more than the required amount outlined by the Department for Education guidelines. Further, it should be noted that the Department of Education's policy is that no student off-street car parking is provided for students.
	Landscaping to the southern boundary of the site could include greater area of introduced landscaping to improve the appearance from the street. (pg. 1)	Noted. A detailed landscape plan has been prepared by Aspect Studios. The landscape plan notes, for the southern portion of the site, retention of existing vegetation and a new southern landscape area
	Given the harsh climate in Whyalla during summer, consideration should be given to covered spaces to the south of the school building to provide shade to outdoor playing areas such as the tennis courts, soccer fields and football oval. (pg. 1)	Noted. The proposed development has been designed to recognise the climatic conditions of Whyalla. Should additional shade structures be considered necessary in the future, these will be installed later.
	The student/pedestrian crossing should be considered to provide safe and convenient access for students to cross Nicolson Avenue given the number of vehicle movements expected during drop off and pick up times. (pg. 2)	A student/pedestrian crossing is the subject of ongoing discussions with Council.
	All access and egress works required to be constructed outside of the school site shall be undertaken by the applicant at the applicant's expense. All existing access points no longer required shall be made good to the satisfaction of the Council and at the applicants' expense. (pg. 2)	Noted and agreed. We suggest this matter is addressed via a condition.

Submission	Comment	Response
	A construction management plan and traffic management plan shall be provided to Council for consideration prior to the commencement of construction. (pg. 2)	Noted and agreed. We suggest this matter is addressed via a condition.
ODASA Kirsteen Mackay, South Australian Government Architect (Non-mandatory referral)	*I support the overall project intent to deliver a new Contemporary Learning Environment and create a new international benchmark for regional schools. (pg. 1)*	Noted
	I strongly support the development of the new secondary school as part of a new education precinct, and strengthening of the spatial relationships and educational opportunities with the adjoining TAFE and university campuses. (pg. 2)	Noted
	I also support the project intent to include publicly accessible facilities that maintain the school's relevance to the entire community of Whyalla. (pg. 2)	Noted
	I strongly support the central location of the new school building between two tertiary education campuses, and the retention of the public link through the school campus. (pg. 2)	Noted
	I also support the development of an integrated landscape concept for the entire site. (pg.2)	Noted
	I support the project intent to retain and integrate a portion of the existing native vegetation along the west boundary for the southern half of the site to maximise opportunities for seamless transition to the adjoining sites. (pg. 2)	Noted
	I am concerned by the proposed reconfiguration of the Centenary Trailway and the resultant change in character of the trailway within the new school campus. I acknowledge the widening of the path and the provision of the 'outdoor gathering space' in between the fenced courts. However, I am on the view that maintaining the existing sense of an open and public thoroughfare is critical for the wider Whyalla community. To that end I recommend review of the link path arrangement and the location of the fenced sport courts to demonstrate a sense of openness and public accessibility, and provide an intuitive travel sequence informed by the principles of Crime Prevention Through Environmental Design (CPTED) (pg. 2)	The Centenary Trailway will be retained and enhanced through this development. The fencing around the sport courts is intended to consist of a transparent (likely chain mesh) material that will facilitate passive surveillance, in accordance with CPTED) principles.

Submission	Comment	Response
	I request confirmation of the surface treatment for the realigned trailway. *I recommend further details of the swale design be provided, including the culverts and foot bridges, to demonstrate successful integration with the overall site strategy and creation of a safe area that does not hinder the envisaged physical and visual connection through the school site, as well as between the school and the TAFE campuses.* *I recommend additional information be provided regarding the landscaping design to the northern forecourt to ensure pedestrian safety while providing a visual buffer to the on—site vehicular areas and optimising presentation to the main public frontage.*	Noted. To be addressed as part of the detailed design phase of the project.
	I support the non-single storey approach to built form, given the scale of existing buildings in the context and the envisaged role of the proposed facility in forming a significant and central part of the wider education precinct. (pg. 3)	Noted
	I support the provision of landscaped areas along the east and west building frontages that are integrated with the internal learning spaces. (pg. 3)	Noted
	I support the well-integrated and layered approach to landscaping around the Inclusive Learning Area (pg. 3)	Noted
	I strongly support the provision of the sunken amphitheatre outside the Performing Arts area, (pg. 3)	Noted
	I support the general design direction of the architectural expression (pg. 3)	Noted
	I support the inclusion of solid roofing due to the climatic conditions of Whyalla (pg. 3/4)	Noted
	I strongly support the conceptual approach for the internal planning (pg. 4)	Noted
	I also strongly support the design team's continuing commitment to pursue genuine and seamless integration of the building envelope, internal spaces and landscaping elements (pg. 4)	Noted

Submission	Comment	Response
	I support the provision of operable glazed doors between the learning areas and the Central Courtyard (pg. 4)	Noted
	I support the provision of the community entry point to the northwest corner of the gymnasium building. (pg. 4)	Noted
	I also support the location of the toilet and changing facility to service sporting field uses to the south	Noted
	I support the inclusion of proprietary outdoor structures and furniture (pg. 4)	Noted
	I support the intent to deliver integrated sustainability measures including the provision of solar photovoltaic panels that greatly exceed the DfE's minimum requirement for a new school. (pg. 4)	Noted
	The following aspects of the project should be considered by SCAP: • *Review of the reconfigured Centenary Trailway arrangement and the location of the fenced sports courts to demonstrate a sense of openness and public accessibility of the public link.* • *Confirmation of the surface treatment for the Trailway link within the subject site.* • *Provision of further details of the swale design, including the culverts and foot bridges* • *Provision of additional information regarding the landscaping design to the northern forecourt.* • *Review of the alignment of the glazed walls and doors on the ground floor facing the Central Courtyard.* • *Provision of further information regarding the integrated ESD initiatives.* • *A high quality of external materials for building and outdoor spaces, supported by the provision of a materials and finishes samples board.*	To be addressed as part of the detailed design phase of the project

Submission	Comment	Response
Andrew John Allerton Scott **65 Russell Street, Whyalla Norrie, SA 5608**	*If this proposal is approved it will result in alienation of almost 50 percent of the area currently dedicated for use by the University of South Australia. (pg. 2)*	The new Whyalla High School is a complimentary land use to the existing University and TAFE sites, creating a more holistic Education Precinct. The University of South Australia will remain as a critical component of the Education Precinct.
	The Whyalla General Public has not been engaged by the applicant and its agents in an open and effective interactive process in the leadup to this application to SCAP. *There has been no public meeting for discussion of the applicant's assertion that there is a need to close school sites.* *There has been no workshop with the general public (pg. 2)*	This application was subject to the statutory consultation processes required under the *Development Act 1993* and *Development Regulation 2008.* The project team undertook extensive stakeholder consultation with Council, key government agencies, schools, as well as community and Aboriginal groups. In addition, Mr Scott participated in the Whyalla Education Review which was an early stage of community consultation that helped to inform this project. It is also noted that Mr Scott has not requested to be heard by SCAP in support of his submission.
	The necessary holistic urban and strategic planning for Whyalla has not occurred in relation to this proposal. (pg. 3)	The suggested need for future strategic urban planning for Whyalla is beyond the planning merits of this Development Application.
	The proposal based on the University site has been laid out with heavy emphasis on access for Motor vehicles and parking. There is an inadequate understanding of pedestrian and cycling desire lines through the precinct and the importance of linkages to the east, west, north and south. There is inadequate provision for such linkages. (pg. 3)	Significant consideration has been given to pedestrian and cycle accessibility to the proposed school. Bike storage and parking spaces will accommodate up to 250 bikes on site, supported by End of Trip facilities. Existing east-west cycling infrastructure through the campus (centenary trailway) will be retained and enhanced. Further, additional north-south cycling links will be created as part of the project.

Submission	Comment	Response
	This application to SCAP acknowledges that the proposal will bring about closure of three secondary school site in Whyalla. However, the proposal does not address these closures. No coherent plan has been developed and presented for re-use of the three secondary school sites. (pg. 3)	Consideration of the future of the proposed schools to be closed as a result of the consolidation of each school into the new facility is beyond the scope of this application.
	The period provided for members of the public to consider and respond comprehensively to this 325 page application to SCAP is of inadequate duration and it is compromised by occurring through the festive season. (pg. 4)	The consultation process and period available to comment is prescribed in the Development Act and Regulations. This is in addition to previous consultation by the education department, resulting in the decision to consolidate the existing three schools into one new centrally located facility
	I will attach my submission to the Whyalla Secondary Education Review in November 2018, for your reference and to provide further background perspectives. (pg. 4)	Submission by Andrew Scott on the Whyalla Education Review 2018 is noted. This is however not relevant to the planning merits of this application.

We wish to thank SCAP for its consideration or our response to the three submissions and we look forward to the SCAP meeting scheduled for 27 February 2020.

We would be pleased to provide an overview of the project to SCAP and to respond to any matters raised by representors or SCAP members.

Should you have any further queries, please do not hesitate to contact the undersigned on the details provided below.

Yours faithfully

Brenton Burman
Technical Director, Transport Planning & Urban Development
brenton.burman@aecom.com

Mobile: +61 404 033 705

A J A Scott Representation to SCAP re Whyalla Secondary School proposal

DEVELOPMENT ACT, 1993 S49 – CROWN DEVELOPMENT REPRESENTATION ON APPLICATION

Applicant: Department for Education

Development Number: 850/V004/19 App 4730

Nature of Development:

Construction of a new Whyalla Secondary School, comprising a multi-storey educational establishment and sporting facilities, with associated landscaping, carparking, infrastructure and civil works

Zone / Policy Area: Residential Zone and Community Zone

Subject Land: 109-115 Nicholson Avenue, Whyalla Norrie, SA (Allotment 1, DP 44349; CR 5988/172; and Allotment 6644, TP560501: CT 5509/439)

Contact Officer: Sarah Elding Phone Number: 08 7109 7006

Close Date: 10 January 2020

My name: Andrew John Allerton Scott

My phone number: 0409 406 880

PRIMARY METHOD(s) OF CONTACT:

Email address: kjbrasco@gmail.com.au

Postal address: 65 Russell Street Whyalla Norrie

Postcode: 5608

You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard by the State Commission Assessment Panel in support of your submission.

My interests are:

[*] owner of local property

[*] occupier of local property

[ ] a representative of a company/other organisation affected by the proposal

[*] a private citizen

The address of the property affected is 65 Russell Street, Whyalla Norrie, South Australia, Postcode 5608

The specific aspects of the application to which I make comment on are:

A J A Scott Representation to SCAP re Whyalla Secondary School proposal

If this proposal is approved it will result in alienation of almost 50 percent of the area currently dedicated for use by the University of South Australia. This will be a planning mistake and a serious strategic error for the long term future development of Whyalla.

A short history of tertiary education facilities in this area of the city may explain this strategic planning perspective:

In the 1960's planning authorities envisaged that the area bounded by Russell Street, Racecourse Road and Nicolson Avenue should be retained for use for tertiary education. Accordingly TAFE was established on the western half of this area and the South Australian Institute of Technology (SAIT) on the eastern half.

Adoption of the Whyalla Planning Area Development Plan in 1970 confirmed the above planning intent.

In addition to the construction of workshops, theatrettes and classrooms a nine hole par three golf course was established on the southern half of the TAFE campus. At the SAIT campus extensive tree planting supported by irrigation was undertaken around the perimeter of the site and an irrigated sports ground established. Many years later the South Australian Institute of Technology was morphed into the University of South Australia. Additional buildings have been established, including residential accommodation for students and visiting staff.

If the growth of Renewable Energy Systems and Steel Industry Transformation occurs at Whyalla, even if only partially as envisaged by Mr Sanjeev Gupta, options should be retained to support it and the associated population by an expanding tertiary education sector in this city.

The Whyalla General Public has not been engaged by the applicant and its agents in an open and effective interactive process in the leadup to this application to SCAP. The process of engagement has been selective and targeted within some elements of the community and appears to have been characterized by unidirectional presentations of the applicants intentions.

There has been no public meeting for discussion of the applicants assertion that there is a need to close school sites.

There has been no workshop with the general public regarding the adverse implications of such closures on adjoining neighbourhoods.

There have been no workshops for members of the general public to critique proposals including options for major upgrades on existing school sites.

There has not been serious discussion in the public domain about options for enhanced utilisation of Edward John Eyre Highschool precinct which is larger in area than the University site, is not subject to equivalent stormwater management issues and is less likely to suffer from traffic congestion.

There has been inadequate public discourse about the existing working relationships between the senior secondary school and TAFE and opportunities to cultivate further relationships between it and the University, Middleback arts hub, Recreation Centre and Mount Laura Homestead museum.

A J A Scott Representation to SCAP re Whyalla Secondary School proposal

The Whyalla Council has received a couple of brief presentations from representatives of the Education Department and Council staff have discussed carparking and stormwater management. However Council has convened only two meetings of its Strategic Planning Committee since June 2016 and the strategic and urban planning implications of the proposal by the Education Dept have not been addressed by this committee.

In summary, the necessary holistic urban and strategic planning for Whyalla has not occurred in relation to this proposal.

The proposal based on the University site has been laid out with heavy emphasis on access for Motor vehicles and parking. There is an inadequate understanding of pedestrian and cycling desire lines through the precinct and the importance of linkages to the east, west, north and south. There is inadequate provision for such linkages.

Here again a little bit of history of the area may be helpful:

Plans in 1978 to bring a Cultural Precinct to Whyalla resulted in construction of the Middleback Theatre at the west end of the TAFE complex in 1985. This was considered to be a complementary addition in the tertiary education precinct and had the advantage of central location in the city.

The urban planners for Whyalla were very conscious of the need to cultivate linkages that would encourage and facilitate public access to the cultural hub and other public facilities.

They promoted the concept of a wide off road boulevard for pedestrians and cyclists from Norrie Avenue past Nicolson Avenue school, through the Tertiary education precinct, past the Recreation and Leisure Centre and along the boundary between the Mount Laura Homestead Museum and the Westland Shopping Centre to Ian street.

Whyalla Council established a concrete shared use corridor along most of this route in 1992. Minor upgrades to it were made in 2001 when it became designated as the Centenary Trail.

In recent times the concept seems to have been forgotten in some quarters – eg the Education Department built a Special School over the route where it passed alongside Nicolson Avenue School. This precedent should not excuse any future compromising of the route through the tertiary education precinct.

This application to SCAP acknowledges that the proposal will bring about closure of three secondary school site in Whyalla. However the proposal does not address these closures. No coherent plan has been developed and presented for re-use of the three secondary school sites.

The impacts of school closures on communities can be very significant and adverse. The Education Department and other State authorities have a long record of failure to manage decommissioning of Whyalla school sites and appropriately repurpose them.

A J A Scott Representation to SCAP re Whyalla Secondary School proposal

This application to SCAP should comprehensively address and seek approval for what will be done to upgrade and repurpose the sites of Whyalla Highschool, Edward John Eyre Highschool and John McDouall Stuart Highschool.

The period provided for members of the public to consider and respond comprehensively to this 325 page application to SCAP is of inadequate duration and it is compromised by occurring through the festive season.

I have been unable to review all of the application documentation at this time.

I will attach my submission to the Whyalla Secondary Education Review in November 2018, for your reference and to provide further background perspectives.

I [ ] wish to be heard in support of my submission

[*] do not wish to be heard in support of my submission (Please tick one)

by [ ] appearing personally

[ ] being represented by the following person : .....
(Cross out whichever does not apply)

Date: 10th January 2020

Signature: A J A Scott

Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide, SA 5001 or scapadmin@sa.gov.au

Scott submission re Whyalla Education Review 2018

This submission is comprised of a two-page listing of brief recommendations followed by several pages of discussion that elaborate on some aspects of these recommendations.

Twenty key recommendations to the Whyalla Education Review Committee.

1. Develop a holistic view of the 'educational' services at secondary level that can and should be provided in the Whyalla region.
2. Identify all 'educational' sites that have potential to complement education at the secondary level, and engage with them to explore opportunities and the means to realise them.

3. Retain the current model of Secondary education provision through the Public Secondary College that operates two Junior Highschools and one Senior Highschool, as the basis on which there is transformation to 'the new government secondary school'.
4. Retain and upgrade all three existing Highschool sites.
5. Utilise notionally one third of the SA Capital budget allocation of $100 millions on upgrading the facilities on these three spacious highschool sites.
6. Seek Commonwealth matching funding where possible to make the funds go further.

7. Diversify and Grow the educational offerings of the Secondary College beyond the boundaries of its three school sites. (This will be the key element and essence of its evolution into a new government secondary school)
8. Take advantage of opportunities for educational service sharing that can be realised due to the 5 to 10 minutes access times that are possible in this compact and uncongested city, in addition to using the capability of the latest communications systems available.

9. Recognise latent opportunities for a range of diverse educational contributions to be gained from cultural facilities including our three museums and the Public Library.
10. Recognise latent opportunities for a range of diverse educational contributions to be gained from the Middleback Arts Centre and other Arts facilities.
11. Acknowledge the inadequacies of current infrastructure for provision of cultural services and arts that compromise or prevent educational contributions from these sectors to secondary students and the broader community.
12. Utilise notionally two thirds of the SA Capital budget allocation of $100 millions on providing and upgrading infrastructure for cultural services and arts.
13. Seek Commonwealth matching funding where possible to make the funds go further.

14. Identify potential relationships that could be developed with Whyalla Recreation Centre to complement secondary education in Whyalla.
15. Identify relationships that could be further developed with TAFE to complement secondary education in Whyalla.
16. Identify relationships that could be further developed with University SA and Adelaide University to complement secondary education in Whyalla.
17. Consider whether small allocations of seed capital are needed and are appropriate for providing infrastructure to aid educational relationships between the Secondary College and TAFE, Uni SA, Adelaide University, Whyalla Recreation Centre.

18. Be cognisant of the past gross failures of civic authorities to address important Urban Planning Issues related to Whyalla primary school closures and the consequent permanent neighbourhood costs of loss of character and amenity and urban vitality that have ensued.
19. Put a high weighting on Urban Planning matters when considering the future development of the three high-school sites.
20. Be wary of and resist proposals for unnecessary convergence of facilities, rationalisation of the education workforce and reduction of the education economy in Whyalla. 'Putting all the eggs in one basket' will have attendant risks and will come at the price of forgoing other greater opportunities.

Some discussion is included on the following six pages to elaborate on some aspects of the above summary point recommendations for the Review.

Scott submission re Whyalla Education Review 2018

Discussion re use of $100m Budget for Whyalla Infrastructure to enhance Education

INTRODUCTION

A budget allocation of $100m to provide work in the near future on public infrastructure related to Education at Whyalla, is necessary for a range of reasons. The Government is to be commended for making such a significant commitment.

Another related Government initiative which has merit is the foreshadowed closer alignment of administration of Arts, Culture and Education.

There certainly are opportunities to gain much benefit for the Whyalla community by spending money on new infrastructure in accordance with a well-planned approach to provision of Artistic, Cultural and secondary level Educational services.

EDUCATION AT ONE or SEVERAL SITES

When we consider the above two government initiatives together, they alert us to an urgent need to pause, review and not race ahead with the idea that has been mooted – ie to close three Whyalla secondary school sites and spend all of the $100 millions budget on construction of a new secondary school on a new site.

We should value, not lightly dismiss, what we have got. There are benefits for students being able to transition from primary school to either of two junior secondary schools and there are benefits in having smaller school cohorts at these schools. There are also benefits in having mid-teen students transition from Junior secondary sites to the Senior secondary site. We should not disrupt this model. We should better resource the management arrangements and infrastructure for it.

We should be very wary of unnecessary convergence – we should reject 'putting all the eggs in one basket'. We should seek greater exposure to educational stimuli at a wider spectrum of Whyalla resources and facilities, not just at one, two or three school sites.

We should work out how we can best build upon our current assets across the city and better manage their use to achieve more diverse and superior educational outcomes. We should resist reductions of the local education workforce and associated local education economy.

The three secondary school sites have undergone many improvements over the years and as they are spacious there is scope for many more improvements; as such they should be retained and enhanced.

Options for onsite enhancements through investment in the range of $25 - $40 millions of the SA $100m capital budget should be explored and rigorously tested to ensure that the best educational value is achieved for the money that is spent specifically for on-schoolsite

secondary education. Opportunities for receiving matching Commonwealth funds should be canvassed.

AVOIDANCE OF NEIGHBOURHOOD COSTS

Whyalla continues to suffer significant loss of character and amenity in three neighbourhoods as a result of unsatisfactory management over many years of closed primary school sites. Loss of trees and shrubs and grassed play spaces, degradation of vacant school buildings, broken windows and vandalism and graffiti have all taken their toll.

Neighbourhood vitality has diminished with the loss of the sounds of children and the loss of the community focal points that were previously provided for parents, friends and neighbours by the public open spaces and school facilities.

The options now to be considered for the future of the three secondary school sites must not include adding the burdensome legacy of more redundant school sites within the city.

HOLISTIC VIEW OF EDUCATIONAL SERVICES

Our Secondary education can and should be complemented by a range of diverse educational services, including from well-developed facilities for Arts and Cultural experiences. It is appropriate and necessary for the Education Review to explore and develop a holistic view of this matter.

Options to improve infrastructure for provision of Artistic and Cultural services should be developed, utilising in the range of $60 to $75millions of the $100m SA capital budget for infrastructure. Opportunities for receiving matching Commonwealth funds should be canvassed.

OPTIONS FOR COMPLEMENTARY EDUCATIONAL INFRASTRUCTURE

I recommend that the committee explore educational opportunities that could be derived from upgraded complementary facilities, including but not limited to the eight following facilities :

1. Public Library.

The Whyalla Public Library that was established in 2012 at a cost around $6m provides some educational services.

What else could be provided from this Library?

Scott submission re Whyalla Education Review 2018

Could some educational synergy between the Library, the adjoining Mount Laura Homestead Museum and the Secondary College be cultivated to promote numerous beneficial student interactions throughout the academic year?

Could a capital expenditure of one million dollars be justified to assist this to happen?

2. Mount Laura Homestead Museum.

The Mount Laura Homestead Museum has much potential for providing educational history and heritage services relating to the Whyalla district and its civic affairs. It has good Reception facilities for up to 80 students. It is a short walking distance from Eyre Senior Highschool and several other schools.

What could capital expenditure of three million dollars on the Museum display areas, facilities, archives and programme developments achieve in improved educational offerings to students and the general public and visitors?

What value should we place on learning the lessons of past experience in our region, the successes and failures and the reasons for them?

3. Middleback Arts-Cultural Centre

Facilities and opportunities for education in and cultivation of the arts are few in Whyalla and they are severely compromised.

The Middleback Arts Centre is a modest facility that falls far short of the multifaceted Cultural Centre that was envisaged thirty years ago for development at that site. Studios for dancers, musicians, artists, a technical theatre, ethnic centre and Public Art Gallery have not eventuated.

Whyalla Council holds in storage a large collection of works that have been judged to be the winning entries for the Whyalla art prize over 40 plus years – there is nowhere to display them.

What could twenty five million dollars of capital investment do to redress some of these infrastructure voids and thereby improve educational experiences for secondary students and the broader community? Opportunities for receiving matching Commonwealth funds should be canvassed.

4. TANDERRA HERITAGE PRECINCT

There is much to be learned by examining past Industrial endeavours in the Whyalla region to try to understand the reasons for many successes and failures. This understanding could guide secondary and tertiary students and civic leaders, indeed all of us, towards more

constructive pursuits and positive behaviour and avoidance of misdirected/wasted effort and repetition of mistakes.

The Tanderra Heritage Precinct has high potential in its Maritime Museum and the Steelcap Gallery to support educational history services related to the Maritime history and the Industrial history of this area of SA. However the Maritime Museum has been compromised by being 'shoehorned' into buildings of the 1940's era that are too small and are of a form not well suited to providing such services. A similar situation exists at the embryonic Steelcap Gallery in relation to its coverage of our Iron and steel Industry.

The Visitor Centre is also inadequate in size and form and is poorly located and the carpark, being located alongside the highway, is unattractive and unwelcoming. In short, the whole precinct requires major redevelopment.

What could capital expenditure of the order of twenty five million dollars do to provide appropriate infrastructure and realise the high educational and other potential values of this precinct? Opportunities for receiving matching Commonwealth funds should be canvassed.

5. TAFE Campus
6. University Campus
7. Recreation Centre

The Senior Secondary Campus, Eyre Highschool, is a very short and easy walking distance from the above three public facilities that can and should complement the secondary education experience.

What improvements of a Capital nature do the managers of these facilities believe could enhance their offerings to secondary students and improve their utilisation for the betterment of our secondary education?

Could capital expenditure of the order of six to ten million dollars be justifiably spread over these three sites? Opportunities for receiving matching Commonwealth funds should be canvassed.

URBAN PLANNING CONSIDERATIONS

The record of planning for closures of school sites in Whyalla has been a record of repeated gross failure over decades and we must not allow a repeat of past mistakes of this nature.

The adverse consequences of three primary school site closures on three neighbourhoods has been noted earlier in this submission. The options for the future of the three public secondary school sites must not include adding the burdensome legacy of more redundant school sites within the city.

Scott submission re Whyalla Education Review 2018

The recent planning for establishment of a new school – the Special School - on a new site in Whyalla has also been unsatisfactory.

When it was built several years ago insufficient attention was given to the impact of the location and layout of the school on Whyalla's central off-road combined use pedestrian-cycle corridor from Norrie Avenue through the Education-Cultural precinct to the District Shopping complex at the centre of the city. As a consequence of this planning failure this corridor has now been completely closed off adjacent the Nicolson Avenue Primary school. A simple adjustment to the layout of the Special School could have retained this off-road access corridor.

Whilst details of concepts for establishing a new Secondary school on the south side of Nicolson Avenue have not been published it seems highly likely that the urban plan prepared for this area in the 1970's by the Whyalla Planning Group within the SAHT is now being ignored or overwritten without public debate and due process. That plan envisaged that the area between Russell Street and Racecourse Road would be retained for tertiary education facilities and they would be linked by an off-road pedestrian and cycle corridor running east - west.

Establishment of a secondary school site in this area is un necessary, will significantly diminish the scope for future expansion of the University and TAFE and will further compromise or block off the central east west corridor for pedestrian paths and cycle ways. It may also block the north-south corridor for pedestrian and cycle paths between Nicolson Avenue and Russell Street.

Let us now turn our attention to Urban Planning considerations for the Whyalla Foreshore and the adjoining Whyalla High School site.

In recent years the idea has been proposed and promoted by some Whyalla identities that public open spaces including the portion of the Whyalla foreshore that abuts the Whyalla High school ovals, and much or all of these two ovals, should be privatised for subdivision and occupation by residential buildings.

This privatisation drive is directly contrary to the public interest that was identified in the early 1980's when professional planning consultants were engaged by Whyalla Council to investigate and determine appropriate development options for the foreshore.

It was highlighted at that time that Whyalla is uniquely placed in having 'on its doorstep' a kilometre of safe beach frontage that can be readily accessed by the public. Furthermore this community is uniquely advantaged in that this foreshore and adjoining hinterland has not been privatised and built over by commercial operators or residential occupants.

Scott submission re Whyalla Education Review 2018

Scope exists for some enhancement of this public space by clever landscaping and selection of appropriate species of trees and shrubs for planting to create shade and wind sheltered zones without closing off the public access.

We should not be persuaded by the proponents of privatisation that they have a strong and valid educational argument for closure of this high school site, or that proceeds of selling the site can justify closure of the school and construction of a new one elsewhere.

OPPORTUNITY CHOICES in BUDGET ALLOCATIONS

We can choose to commit all of the $100m budget to a quest for a 'Taj Mahal' school on a new site.

Alternatively we can do much better by striving to improve our infrastructure for education the arts and cultural services across the city, not only for our secondary students, but for the whole community.

This is a once in a lifetime opportunity – we must put in the time and effort to reach the best decision.

A.J.A. Scott

Whyalla Norrie

8th November 2018

Development Plan Provisions

Extracted from

Whyalla (City) Development Plan

Consolidated 14 June 2017

GENERAL SECTION

Community Facilities

Objectives

1 Location of community facilities including social, health, welfare, education and recreation facilities where they are conveniently accessible to the population they serve.

2 The proper provision of public and community facilities including the reservation of suitable land in advance of need.

Principles of Development Control

1 Community facilities should be sited and developed to be accessible by pedestrians, cyclists and public transport.

2 Community facilities should be integrated in their design to promote efficient land use.

3 Design of community facilities should encourage flexible and adaptable use of open space and facilities to meet the needs of a range of users over time.

Crime Prevention

Objective

1 A safe, secure, crime resistant environment where land uses are integrated and designed to facilitate community surveillance.

Principles of Development Control

1 Development should be designed to maximise surveillance of public spaces through the incorporation of clear lines of sight, appropriate lighting and the use of visible permeable barriers wherever practicable.

2 Buildings should be designed to overlook public and communal streets and public open space to allow casual surveillance

3 Development should provide lighting in frequently used public spaces including those:

(a) along dedicated cyclist and pedestrian pathways, laneways and access routes

(b) around public facilities such as toilets, telephones, bus stops, seating, litter bins, automatic teller machines, taxi ranks and car parks.

4 Landscaping should be used to assist in discouraging crime by:

(a) screen planting areas susceptible to vandalism

(b) planting trees or ground covers, rather than shrubs, alongside footpaths

(c) planting vegetation other than ground covers a minimum distance of two metres from footpaths to reduce concealment opportunities.

5 Site planning, buildings, fences, landscaping and other features should clearly differentiate public, communal and private areas

6 Public toilets should be located, sited and designed:

(a) to promote the visibility of people entering and exiting the facility (eg by avoiding recessed entrances and dense shrubbery that obstructs passive surveillance)

(b) near public transport links and pedestrian and cyclist networks to maximise visibility.

7 Development should avoid pedestrian entrapment spots and movement predictors (eg routes or paths that are predictable or unchangeable and offer no choice to pedestrians).

Design and Appearance

Objectives

1 Development of a high architectural standard that responds to and reinforces positive aspects of the local environment and built form.

2 Roads, open spaces, buildings and land uses laid out and linked so that they are easy to understand and navigate.

Principles of Development Control

1 The design of a building may be of a contemporary nature and exhibit an innovative style provided the overall form is sympathetic to the scale of development in the locality and with the context of its setting with regard to shape, size, materials and colour.

2 Buildings should be designed to reduce their visual bulk and provide visual interest through design elements such as:

(a) articulation

(b) colour and detailing

(c) small vertical and horizontal components

(d) design and placing of windows

(e) variations to facades.

3 The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare.

4 Structures located on the roofs of buildings to house plant and equipment should form an integral part of the building design in relation to external finishes, shaping and colours.

5 Building design should emphasise pedestrian entry points to provide perceptible and direct access from public street frontages and vehicle parking areas.

6 Development should provide clearly recognisable links to adjoining areas and facilities.

7 Buildings, landscaping, paving and signage should have a coordinated appearance that maintains and enhances the visual attractiveness of the locality.

8 Development should be designed and sited so that outdoor storage and service areas are screened from public view by an appropriate combination of built form, solid fencing or landscaping.

9 Outdoor lighting should not result in light spillage on adjacent land.

Building Setbacks from Road Boundaries

10 The setback of buildings from public roads should:

(a) be similar to, or compatible with, setbacks of buildings on adjoining land and other buildings in the locality

(b) contribute positively to the streetscape character of the locality

(c) not result in or contribute to a detrimental impact upon the function, appearance or character of the locality.

Infrastructure

1 Infrastructure provided in an economical and environmentally sensitive manner.

2 Infrastructure, including social infrastructure, provided in advance of need.

3 The visual impact of infrastructure facilities minimised.

Principles of Development Control

1 Development should not occur without the provision of adequate utilities and services, including:

(a) electricity supply
(b) water supply
(c) drainage and stormwater systems
(d) waste disposal
(e) effluent disposal systems
(f) formed all-weather public roads
(g) telecommunications services
(h) social infrastructure, community services and facilities
(i) gas services

2 Development should not take place until adequate and coordinated drainage of the land is assured.

Interface between Land Uses

Objectives

1 Development located and designed to minimise adverse impact and conflict between land uses.

2 Protect community health and amenity from adverse impacts of development.

Principles of Development Control

1 Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:

(a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants
(b) noise
(c) vibration
(d) electrical interference
(e) light spill
(f) glare
(g) hours of operation
(h) traffic impacts.

2 Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.

3 Non-residential development on land abutting a residential zone should be designed to minimise noise impacts to achieve adequate levels of compatibility between existing and proposed uses.

Landscaping, Fences and Walls

Objectives

1 The amenity of land and development enhanced with appropriate planting and other landscaping works, using locally indigenous plant species where possible.

2 Functional fences and walls that enhance the attractiveness of development.

Principles of Development Control

1 Development should incorporate open space and landscaping in order to:

(a) complement built form and reduce the visual impact of larger buildings (eg taller and broader plantings against taller and bulkier building components)

(b) enhance the appearance of road frontages

(c) screen service yards, loading areas and outdoor storage areas

(d) minimise maintenance and watering requirements

(e) enhance and define outdoor spaces, including car parking areas

(f) provide shade and shelter

(g) assist in climate control within buildings

(h) maintain privacy

(i) maximise stormwater re-use

(j) complement existing native vegetation

(k) contribute to the viability of ecosystems and species

(l) promote water and biodiversity conservation.

2 Landscaping should:

(a) include the planting of locally indigenous species where appropriate

(b) be oriented towards the street frontage

(c) result in the appropriate clearance from powerlines and other infrastructure being maintained.

3 Landscaping should not:

(a) unreasonably restrict solar access to adjoining development

(b) cause damage to buildings, paths and other landscaping from root invasion, soil disturbance or plant overcrowding

(c) introduce pest plants

(d) increase the risk of bushfire

(e) remove opportunities for passive surveillance

(f) increase autumnal leave fall in waterways

(g) increase the risk of weed invasion.

Natural Resources

Principles of Development Control

4 Development should be sited and designed to:

(a) capture and re-use stormwater, where practical

(b) minimise surface water runoff

(c) prevent soil erosion and water pollution

(d) protect and enhance natural water flows

(e) protect water quality by providing adequate separation distances from watercourses and other water bodies

(f) not contribute to an increase in salinity levels

(g) avoid the water logging of soil or the release of toxic elements

(h) maintain natural hydrological systems and not adversely affect:

(i) the quantity and quality of groundwater

(ii) the depth and directional flow of groundwater

(iii) the quality and function of natural springs

5 Water discharged from a development site should:

(a) be of a physical, chemical and biological condition equivalent to or better than its pre-developed state

(b) not exceed the rate of discharge from the site as it existed in pre-development conditions.

6 Development should include stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure the carrying capacities of downstream systems are not overloaded.

Transportation and Access

Objectives

7 Development that:

(a) provides safe and efficient movement for all motorised and non-motorised transport modes

(b) ensures access for vehicles including emergency services, public infrastructure maintenance and commercial vehicles

(c) provides off street parking

(d) is appropriately located so that it supports and makes best use of existing transport facilities and networks.

Principles of Development Control

8 Land uses that generate large numbers of visitors such as shopping centres and areas, places of employment, schools, hospitals and medium to high density residential uses should be located so that they can be serviced by existing transport networks and encourage active transport modes.

9 Development generating high levels of traffic, such as schools, shopping centres and areas, entertainment and sporting facilities, should incorporate passenger pick-up and set down areas. The design of such areas should ensure interference to existing traffic is minimised and give priority to pedestrians, cyclists and public transport users.

10 The location and design of public transport set-down and pick-up points should maximise safety and minimise the isolation and vulnerability of users.

11 Development should provide safe and convenient access for all anticipated modes of transport including cycling, walking, public transport, and motor vehicles.

12 Development should make sufficient provision on site for the loading, unloading and turning of all traffic likely to be generated.

Cycling and Walking

13 Development should provide access, and accommodate multiple route options, for cyclists by enhancing and integrating with:

(a) open space networks, recreational trails, parks, reserves and recreation areas

(b) Whyalla's principal cycling routes as shown on *Concept Plan Map Wh/3.*

14 Pedestrian facilities and networks should be designed and provided in accordance with relevant provisions of the Australian Standards and Austroads Guide to Traffic Engineering Practice Part 13.

15 Cycling facilities and networks should be designed and provided in accordance with the relevant provisions of the Australian Standards and Austroads Guide to Traffic Engineering Practice Part 14.

16 Development should have direct access from an all weather public road.

17 Development should be provided with safe and convenient access which:

(a) avoids unreasonable interference with the flow of traffic on adjoining roads

(b) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision

(c) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.

18 The number of access points for cyclists and pedestrians onto all adjoining roads should be maximised.

19 Development with access from roads with existing or projected traffic volumes exceeding 6000 vehicles per day should be sited to avoid the need for vehicles to reverse on to the road.

20 Development with access from arterial roads or roads as shown on Overlay Maps - Transport should be sited to avoid the need for vehicles to reverse on to the road.

21 Driveways, access tracks and parking areas should be designed and constructed to:

(a) follow the natural contours of the land

(b) minimise excavation and/or fill

(c) minimise the potential for erosion from run-off

(d) avoid the removal of existing vegetation

(e) be consistent with Australian Standard AS 2890 Parking facilities.

Access for People with Disabilities

22 Development should be sited and designed to provide convenient access for people with a disability.

Vehicle Parking

23 Development should provide off-street vehicle parking and specifically marked disabled car parking places to meet anticipated demand in accordance with *Table Wh/1 – Off Street Vehicle Parking Requirements.*

24 Development should be consistent with Australian Standard AS 2890 Parking facilities.

Waste

Principles of Development Control

25 Development that involves the production and/or collection of waste and/or recyclable material should include designated collection and storage area(s) that are:

(a) screened and separated from adjoining areas

(b) located to avoid impacting on adjoining sensitive environments or land uses

ZONE PROVISIONS

Community Zone

Objectives

1 A zone accommodating community, educational, recreational and health care facilities for the general public's benefit.

2 Development that is integrated in function and provides a coordinated base to promote efficient service delivery.

Principles of Development Control

Land Use

1 The following forms of development are envisaged in the zone:

- cemetery
- community centre
- consulting room
- educational establishment
- emergency services facility
- hall
- health facility
- hospital
- library
- office associated with community services
- place of worship
- public administration office
- recreation centre
- theatre
- welfare institution.

Residential Zone

Objectives

2 Development that contributes to the desired character of the zone.

Principles of Development Control

Land Use

1 The following forms of development are envisaged in the zone:

- domestic outbuilding in association with a dwelling
- domestic structure
- dwelling
- dwelling addition
- small scale non-residential uses that serve the local community, for example:
- child care facility
- health and welfare service
- open space
- primary and secondary school
- recreation area
- shops, offices or consulting room
- supported accommodation.

2 Non-residential development such as shops, schools and consulting rooms should be of a nature and scale that:

(a) serves the needs of the local community

(b) is consistent with the character of the locality

(c) does not detrimentally impact on the amenity of nearby residents.