APPLICATION ON NOTIFICATION – CROWN DEVELOPMENT

Applicant:	Department for Education
Development Number:	145/V040/19
Nature of Development:	Establishment of a new birth to year 12 School at Aldinga. The development will comprise a change in land use and the construction of an educational establishment, community and sporting facilities with associated landscaping, carparking, infrastructure and civil works.
Type of development:	State Agency Development
Zone / Policy Area:	Deferred Urban Zone, Township Zone, Port Willunga/Aldinga Policy Area 62 and Aldinga Village Precinct 29.
Subject Land:	Lot 20 Quinliven Road, Aldinga
Contact Officer:	Sarah Elding
Phone Number:	08 7109 7006
Start Date:	8 January 2020
Close Date:	7 February 2020

During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders Street, Adelaide during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered or emailed to the State Commission Assessment Panel (SCAP). A representation form is provided as part of this pdf document.

Any representations received after the close date will not be considered.

Postal Address:
The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:
Planning and Land Use Services
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
ADELAIDE SA 5000

Email Address: scapreps@sa.gov.au

Government of South Australia

Department of Planning, Transport and Infrastructure

DEVELOPMENT ACT 1993

SECTION 49 – STATE AGENCY DEVELOPMENT

NOTICE OF APPLICATION FOR CONSENT TO DEVELOPMENT

Notice is hereby given that an application has been made by the **Department for Education** [South Australian Schools Public Private Partnership (PPP)] for the establishment of a new birth to year 12 school at Aldinga. The development will comprise a change in land use and the construction of an educational establishment, community and sporting facilities with associated landscaping, carparking, infrastructure and civil works. **Development Number 145/V040/19.**

The subject land is situated at Lot 20, Quinliven Road, Aldinga (Allotment 20 DP 122448, CT 6231 Folio 546). Associated works will also be undertaken on Allotment 12 DP 94045, CT 6147 Folio 415 and Allotment 21 DP 122448, CT6231 Folio 547 (in the form of a new roundabout and public road).

The development site is located within the Deferred Urban Zone and Township Zone, Port Willunga/Aldinga Policy Area and Aldinga Village Precinct of the Onkaparinga Council Development Plan (Consolidated 20 December 2018).

The application may be examined during normal office hours at the office of the State Commission Assessment Panel (SCAP), Level 5, 50 Flinders Street, Adelaide and at the City of Onkaparinga Civic Centre, Ramsay Place, Noarlunga Centre, the Aldinga Library, 11 Central Way, Aldinga Beach and the Onkaparinga Willunga Office, St Peters Terrace, Willunga. Application documentation may also be viewed on the SCAP website: https://www.saplanningportal.sa.gov.au/public_notices

Any person or body who desires to do so may make representations concerning the application by notice in writing delivered to the Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide 5001 by **NO LATER THAN FRIDAY 7 FEBRUARY 2020.** Submissions can also be emailed to: scapreps@sa.gov.au

Each person or body making a representation should state the reason for the representation and whether that person or body wishes to be given the opportunity to appear before the SCAP to further explain the representation.

Submissions may be made available for public inspection.

Should you wish to discuss the application and the public notification procedure please contact Sarah Elding - Principal Planner on (08) 7109 7006 or sarah.elding@sa.gov.au

Jessie Surace
ACTING SECRETARY
STATE COMMISSION ASSESSMENT PANEL
scapadmin@sa.gov.au

PN4113

www.sa.gov.au

PN4113
25x2 (63mm)
Adelaide Advertiser, Messenger South
8 January 2020

DEVELOPMENT ACT, 1993
S49 – CROWN DEVELOPMENT
REPRESENTATION ON APPLICATION

Applicant:	Department for Education
Development Number:	145/V040/19
Nature of Development:	Establishment of a new birth to year 12 School at Aldinga, comprising of a change in land use and the construction of an educational establishment, community and sporting facilities with associated landscaping, carparking, infrastructure and civil works.
Zone / Policy Area:	Deferred Urban Zone and Township Zone, Port Willunga/Aldinga Policy Area 32
Subject Land:	Lot 20, Quinliven Road, Aldinga
Contact Officer:	Sarah Elding
Phone Number:	08 7109 7006
Close Date:	7 February 2020

My name:_____

My phone number: _____

PRIMARY METHOD(s) OF CONTACT: Email address: _____

Postal address:_____

_____Postcode_____

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 .....Postcode.....

The specific aspects of the application to which I make comment on are: .....

.....

.....

.....

.....

.....

.....

.....

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: ..... Signature: .....

Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide, SA 5001 or scapadmin@sa.gov.au

SECTION 49 & 49A – CROWN DEVELOPMENT
DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

COUNCIL: City of Onkaparinga

APPLICANT: Department of Education / TESA

ADDRESS: C/- MasterPlan SA Pty Ltd

33 Carrington Street, Adelaide SA 5000

CROWN AGENCY: Department of Education

FOR OFFICE USE

DEVELOPMENT No: _____

PREVIOUS DEVELOPMENT No: _____

DATE RECEIVED: / /

CONTACT PERSON FOR FURTHER INFORMATION

Name: Greg Vincent

Telephone: 0413 832 603 [mobile]

(08) 8193 5600 [work]

Email: gregv@masterplan.com.au

☐ Complying ☐ Merit ☐ Public Notification ☐ Referrals	Decision: _____ Type: _____ Finalised: / /

	Decision required	Fees	Receipt No	Date
Planning:				
Land Division:				
Additional:				
Minister's Approval				

EXISTING USE: Land used for Primary Production

DESCRIPTION OF PROPOSED DEVELOPMENT: Construction of an Integrated Educational Establishment

LOCATION OF PROPOSED DEVELOPMENT:

House No: _____ Lot No: 12, 20 & 21 Street: Quinliven Road Town/Suburb: Aldinga

Section No [full/part] _____ Hundred: _____ Volume: 6147 Folio: 415

Section No [full/part] _____ Hundred: _____ Volume: 6231 Folio: 547

Section No [full/part] _____ Hundred: _____ Volume: 6231 Folio: 546

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** ☒

DEVELOPMENT COST [do not include any fit-out costs]: $ 105,949,653

POWERLINE SETBACKS: Pursuant to Schedule 5 (2a)(1) of the *Development Regulations 2008,* if this application is for a building it will be forwarded to the Office of the Technical Regulator for comment unless the applicant provides a declaration to confirm that the building meets the required setback distances from existing powerlines. The declaration form and further information on electricity infrastructure and clearance distances can be downloaded from the DPLG website (www.dac.sa.gov.au).

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the *Development Act 1993.*

SIGNATURE: _____ Dated: 6 December 2019

Government of South Australia

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

To:

From:

Date of Application: 6 / 12 / 19

Location of Proposed Development: Aldinga, South Australia

House No: _____ Lot No: _____ Street: _____

Town/Suburb: _____

Section No (full/part): _____ Hundred: _____

Volume: _____ Folio: _____

Nature of Proposed Development:

New birth to year 12 Schools - each accommodating 1,500 students, 100 Special School students and a 75 place Children's Centre (total 1,675 places).

I Ben Layley **being the ~~applicant~~/ a person acting on behalf of the applicant (delete the inapplicable statement) for the development described above declare that the proposed development will involve 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:** 6/12/19

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

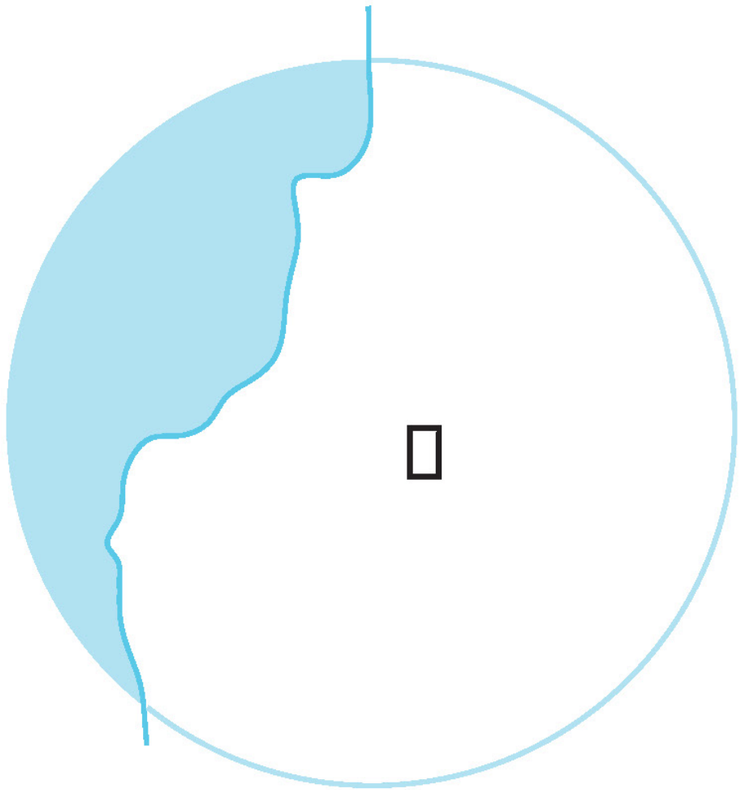
An information brochure: 'Building Safely Near Powerlines' has been prepared by the Technical Regulator to assist applicants and other interested persons.

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.

SECTION 49
CROWN DEVELOPMENT & PUBLIC INFRASTRUCTURE APPLICATION



BIRTH TO YEAR 12 SCHOOL

SOUTHERN REGION
ALDINGA

SA SCHOOLS PUBLIC PRIVATE PARTNERSHIP PROJECT

TESA Education

Government of South Australia
Department for Education

EXECUTIVE SUMMARY

MasterPlan SA have been engaged by TESA (‘our client’) to review and prepare supporting documentation the construction of a new Public Birth to Twelve School located at Riverbanks Road, Angle Vale (‘the subject site’).

TESA is a consortium between TETRIS Capital, ISS and Sarah Constructions.

TESA is the preferred proponent for the delivery of the South Australian Schools Public Private Partnership (PPP) comprising the Northern School at Angle Vale and the Southern School at Aldinga.

The Department of Education as a State Agency is proposing to undertake the development of public infrastructure (school) in partnership with the TESA consortium.

This report accompanies the lodgement of an application under Section 49 of the *Development Act 1993* – Crown Development and Public Infrastructure for the construction of the Southern School (Coast Site) at Aldinga.

The proposed development involves the construction of an integrated educational establishment, to accommodate an initial capacity of 1,675 students across birth to year 12 learning communities with future expansion capacity to accommodate up to 2,084 students.

The integrated educational establishment will also provide for community use of shared facilities across the facility.

The need for the proposed school has been identified by the Department of Education to meet the growing population and demand for education facilities in the Southern Region.

We have concluded from our detailed and balanced assessment of the proposed development that it sufficiently accords with all relevant considerations including the relevant provisions of the Onkaparinga Council Development Plan for the reasons set out herein.

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1.0 PURPOSE & BACKGROUND

1.1 PURPOSE

The purpose of this report is to seek the approval of the Minister for Planning under Section 49 of the *Development Act 1993* (The Act) - Crown Development and Public Infrastructure, to construct a school, within the meaning of "*Public Infrastructure*" as defined under Section 49(1) of the Act.

The applicant for this project is the Department of Education (Education).

1.2 BACKGROUND

The Department for Education provides education and care services to approximately 215,000 children in 1,500 locations throughout South Australia.

Education identified the need for the provision of two new schools to address public school availability for predicted population growth in the outer northern and outer southern suburbs of Adelaide. These schools will be birth to year 12 schools and will provide the community with the best available contemporary education.

It is intended that the Schools will comprise 'community hubs' that, in addition to the provision of core school functions, will be used for Community Use to support social engagement, and health and wellbeing generally.

The locations for the Schools are:

(a) Northern School – Angle Vale region; and

(b) Southern School – Aldinga region (The subject of this application)

The outcomes of the Project will have a major impact on the quality of learning outcomes for students in these locations. The schools will achieve excellence in design based on the functional and environmental requirements of students, teachers and the community.

The two new Schools are part of a major program to establish best practice school infrastructure across South Australia, and to enhance South Australia's reputation as a destination for capital investment. This major project will create jobs and contribute to state economic growth.

Each School has been designed around the design principles that will reflect:

- contemporary pedagogy;
- operational requirements;
- stakeholder expectations;
- community aspirations; and
- environmental responsibility.

Each School has been master-planned to accommodate the planned future capacity expectations for the respective northern and southern regions that the schools will serve.

The South Australian Schools (PPP) Project was first proposed publicly on 22 June 2017.

On the 4 September 2018 the Department of Education and Department of Treasury and Finance released an expression of interest for the SA Schools PPP Project. The SA Schools Project is one project covering both the Northern and Southern Schools.

The South Australian Schools Public Private Partnership (PPP) Project aims to:

- deliver improved access to quality school services in two regions: the Aldinga region (City of Onkaparinga) and the Angle Vale region (City of Playford);
- deliver learning environments, facility management and community services regimes for the schools as outlined in more detail with Section 5 of this report; and
- facilitate the achievement of educational outcomes and key areas of focus.

1.3 PROJECT STATUS

A concept design has been developed, and approval under Section 49 of the *Development Act 1993* – Crown Development and Public Infrastructure for the South Australian Schools PPP Project is being sought.

The South Australian Schools (PPP) Project has been progressing through a planning and design phase.

It is proposed that construction works for the South Australian Schools PPP Project be undertaken by a private contractor (or contractors). Construction of the School is expected to commence in early 2020 and is estimated to be completed ready for the first intake of students in January 2022.

1.4 DEFINING DEVELOPMENT

The South Australian Schools PPP Project is Crown Development as defined by Section 49 of the *Development Act 1993*.

Under the Regulations to the Development Act, there are schedules that set out those elements of rail infrastructure and related acts and activities that are not development.

An assessment has been made of the works and the application of the schedules to those works.

In summary, the following works require Development Approval:

- change of use to an integrated "*Educational Establishment*";
- construction of buildings to accommodate the proposed use; and
- construction of lighting and fencing to the sports fields.

The following works do not require Development Approval:

- construction of the western access road; and
- upgrade of Quinliven Road.

For completeness, the whole of the South Australian Schools Public Private Partnership (PPP) Project has been incorporated into this report to provide a comprehensive overview and context for those aspects requiring Development Approval.

1.5 PLANNING APPLICATION OVERVIEW

The South Australian Schools Public Private Partnership (PPP) Project is Crown Development as defined by Section 49 of the *Development Act 1993*.

The application report comprises two volumes:

- Volume 1 – This Planning Report and relevant attachments; and
- Volume 2 – Attachments including technical reports.

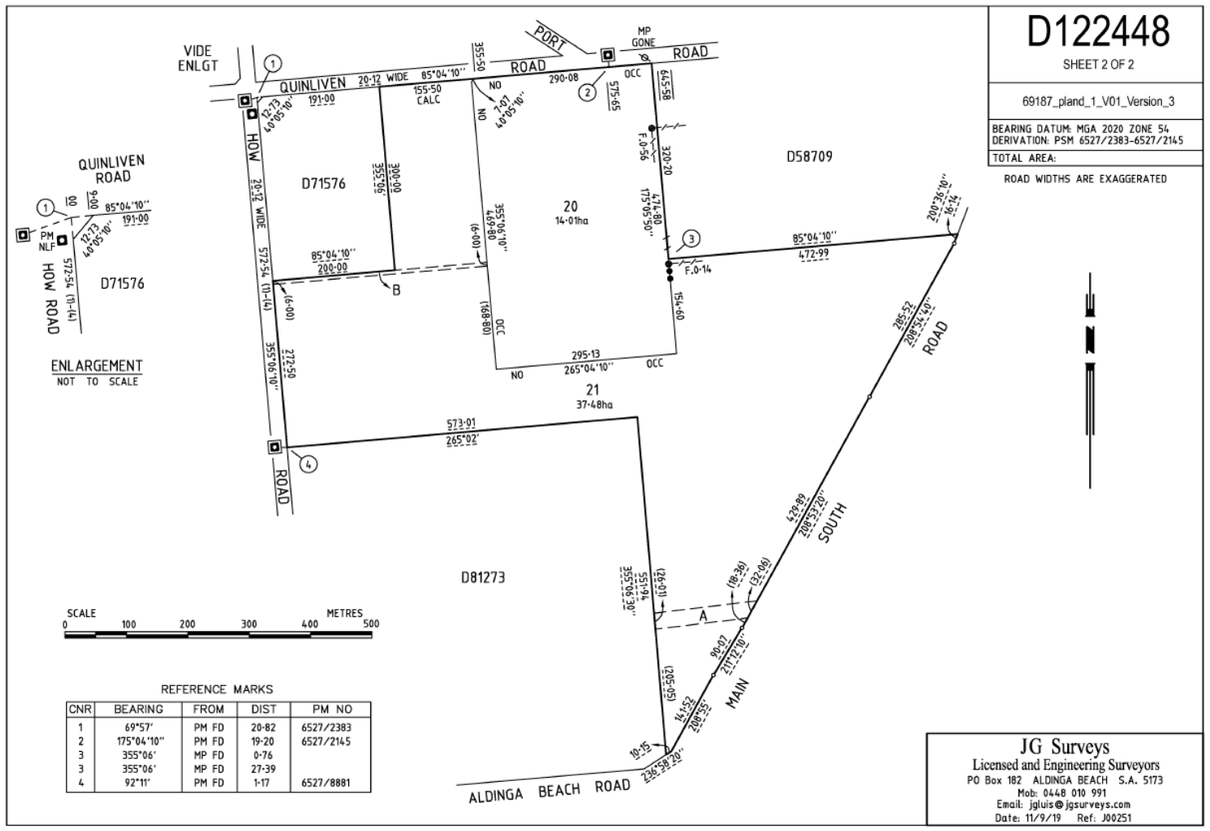
2.0 SUBJECT LAND & LOCALITY

2.1 SUBJECT LAND

The location of the Southern School – Aldinga Region being established as part of the South Australian Schools Public Private Partnership (PPP) Project is wholly located within the Onkaparinga Council area.

The subject site (the site) is located at Allotment 20 Quinliven Road and partly at Allotment 21 Quinliven Road and partly at Allotment 12 Port Road in Aldinga.

Allotment 20 is flat and rectangular in shape with a single road frontage of 290.08 metres to Quinliven Road, rear boundary length of 295.13 metres, eastern boundary of 476.80 metres and western boundary of 469.80 metres. Allotment 20 has an overall area of 14.01 hectares.



Allotment 21 is irregular in shape and surrounds Allotment 20 to the south and west. Only a portion of Allotment 21 and Allotment 12 form part of the site.

The portion of Allotment 2 will be utilised as an access road and the portion of Allotment 12 Port Road will be utilised to widen Quinliven Road to accommodate a roundabout.

Quinliven Road is identified as a distributor road and Port Road is identified as a collector road in the Onkaparinga Council Development Plan.

The site comprises no built form and is used primarily for cropping. One crossover is located on Quinliven Road providing vehicle access to the site.

Quinliven Road is a sealed two-way road curbing and is serviced with power, sewer and water infrastructure. A formalised shared cycling and pedestrian path extends along the south of the road reserve and a footpath along the north. The northern footpath however comprises compacted gravel and associated small street trees. The north-east section of the site fronting Quinliven Road provides approximately 50 metres of on street public parking.

The subject land is formally identified in the table below:

TABLE 1 – CERTIFICATES OF TITLE

CT VOLUME/FOLIO	PARCEL	PLAN
Volume 6231, Folio 546	Lot 20	Deposited Plan 122448
Volume 6231, Folio 547	Lot 21	Deposited Plan 122448
Volume 6147, Folio 415	Lot 12	Deposited Plan 94045

Copies of the Certificate of Title Register Searches for the subject land are included as part of this application in Volume 2 **Attachment 1**.

2.2 LAND USE AND LOCALITY

The site is located within the Deferred Urban and Township Zone of the Onkaparinga Council Development Plan. Land directly adjacent the site to the site is located within the:

- Township Zone to the east;
- Primary Production Zone to the south and south-east;
- Residential and Urban Employment Zone to the west; and
- Deferred Urban and Township Zone to the north.

Land to the south and east of the site comprises largely of agricultural, farming and horticultural activities with associated dwellings and structures. Recreational facilities are located adjacent the site to the east and include the Aldinga Bowling Club, Southern Vales Dressage Club and the Aldinga Football Club.

Further to the east is the main Aldinga shopping precinct incorporating a mix of retail and commercial activities including the Aldinga Hotel, PTR Aldinga, Aldi and a mix of smaller commercial tenancies.

Land north east of the site is largely residential in nature. Directly north of the site is a vacant allotment with frontage to Quinliven, Bowering Hill and Port Road. At the corner of Port and Quinliven Roads is the Kingdom Hall of Jehovah's Witnesses.

The Galilee Catholic School is located directly west of the site. Further west is generally residential in nature with associated open space and small number of educational, religious and retail activities.

The south-west comprises a mix of open space and industrial related activities, including (but not limited to) Aldinga Recycling Centre, landscape supplies, storage facilities, bulky goods and Mitre 10.

The site is located:

- approximately 700 metres west of Main South Road; and
- approximately 2.0 kilometres east of Aldinga beach.

A Locality Plan is included as **Attachment 2**, Volumes 1 depicting the location and detail of surrounding land uses, buildings, roads and landscapes.

3.0 PROJECT OBJECTIVES & STRATEGIC CONTEXT

This section discusses the importance of delivering the Southern School at Aldinga in this location, and the key issues affecting this location.

3.1 PROJECT OBJECTIVES

The SA Schools PPP Project is expected to contribute toward the following overarching objectives in Education delivering a quality education services in all public schools.

Strategic/Planning Objectives and Benefits:

- to deliver a new educational facility in the southern region of metropolitan Adelaide to accommodate the identified sustained population growth;
- to deliver a school, designed to accommodate standards expected by the State to meet the areas of focus in education;
- to provide a quality education and care model which will seamlessly link the early years to formal schooling. Create high quality environments to enable the effective delivery of connected, continuous programs and services into the early years of school;
- to create quality learning environments designed to empower educators to allow young people to engage in rich disciplinary and interdisciplinary learning;
- to facilitate students achieving the highest standards of learning and achievement including in literacy, numeracy, and science;
- to facilitate and increase in South Australian Certificate of Education completion rates for students;
- to facilitate a reduction in the educational achievement gap between all students;
- to achieve sustained improvements in educational outcomes for priority groups, including Aboriginal students, students with disabilities, children and young people in the care of the Minister for Education, and students using flexible pathways; and
- to provide students a clearly articulated pathway to further education, training and or employment and to have the skills and capabilities required for that pathway.

The Southern Region School will deliver a capacity to accommodate the student and teacher numbers as detailed in the following table:

TABLE 2 – SCHOOL CAPACITY

Part of School	Initial Capacity	Future Capacity
Long Day Care	36	44
Preschool	33	44
Inclusive Preschool	6	6
R – 6	420	540
7 - 12	1080	1350
Inclusive 7 - 12	100	100
Total	**1675**	**2084**
Teaching & Support Staff	*211*	*228*

3.2 NEED FOR THE SOUTHERN SCHOOL – ALDINGA REGION

The Department of Education has identified a need to address public school availability for predicted population growth in the outer southern area of the greater metropolitan area. Existing state schools in Aldinga and surrounding areas are experiencing increased and sustained enrolment pressure due to an increase of housing and children living in the local area.

Accordingly, a new integrated education establishment is proposed to be built on the land identified in Section 2 of this report at Aldinga to accommodate the identified demand.

As part of the process for the development of the new school, the 'Schools as Community Hubs' guidelines was an important part of the PPP brief. The Onkaparinga Council has been consulted during the process of designing the new school with the intent of the school facilities providing significant social infrastructure to the communities. This includes a two court gym, outdoor sporting facilities, performing arts theatre, Entrepreneur Hub and hospitality centre.

Arrangements are being implemented to allow the schools to enhance the school assets to increase the extent and range of community use, when the schools are not using them.

3.3 TIMING OF WORKS

TESA were confirmed as the Provisional Preferred Proponent of the SA Schools PPP Project on 11 November 2019 following the submission of a Request for Proposal Issued by the State on 17 April 2019.

The project outlines the following timing:

TABLE 3 – DEVELOPMENT TIMING

Development Phase	Indicative Date
Commencement	January 2020
Technical Acceptance	October 2021
Commercial Acceptance	21 January 2022
Final Acceptance	24 January 2022

Operational Phase	Indicative Date
Commencement Date	24 January 2022
School Opens	24 January 2022

4.0 PROPOSED DEVELOPMENT

This section of the report describes the elements of the South Australian Schools Public Private Partnership (PPP) Project – Southern School Aldinga Region which are subject to approval pursuant to Section 49 of the *Development Act 1993*.

The proposed development is for the construction of an integrated educational establishment for birth to year twelve students comprising the following activities:

- child care (long day care);
- pre-school;
- primary school;
- secondary school;
- indoor recreational facilities (gymnasium);
- recreational areas (sporting facilities); and
- central administrative functions and common user facilities that are ancillary and subordinate to the educational zones identified above including a performing arts theatre, library and administrative offices for staff.

The education facilities will also be made available for the use by the Community and Council outside of school hours for the provision of social, recreational and educational purposes in accordance with the definition of "*Community Centre*".

The key elements of the development include the construction of:

- the built form to accommodate the afore mentioned uses and activities establishing a series of learning communities appropriately zoned to support the desired educational framework;
- car parking appropriately located for staff and visitors;
- landscaping to the perimeter of the site for amenity purposes and sense of arrival, to the internal spaces between buildings to support outdoor learning areas and the sports fields;
- sports fields and recreational facilities in the form of cricket / football ovals, soccer pitches, tennis courts, netball / basketball courts and multipurpose gymnasium; and
- public road infrastructure including the upgrade of the Quinliven Road profile and a new north-south road intersecting with Quinliven Road.

The proposed development will also involve the division of land to create a road reserve to be vested with Council accommodating the new public road infrastructure.

A detailed description of the proposed development is outlined in the following sections and more fully illustrated in the compendium of architectural drawings accompany the application prepared by Swanbury Penglase Architects and Perumal Pedavoli Architects identified in **Table 4** – Drawing Schedule.

4.1 LAND USE

The primary purpose of the development is to provide a preschool, primary and secondary school education establishment on the subject site. The facilities of which will also be utilised for other purposes by the community outside of school hours by agreement with the Council and Community groups / organisations. The community use of the grounds as a public open space area will be encouraged. Community Use Agreements to utilise the sporting fields, gyms and cultural buildings will also be undertaken with Playford Council and community and sporting groups.

We note that proposed development appropriately falls within the definition of an educational establishment as defined under Schedule 1 of the *Development Regulations, 2008* (The Regulations) as follows:

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

The proposed development includes the development of an associated pre-school within the grounds of and fully integrated with the educational establishment as defined under Schedule 1 of The Regulations as follows:

***'pre-school'** means a place primarily for the care or instruction of children of less than primary school age not resident on the site, and includes a nursery, kindergarten or child-care centre;*

The educational establishment also includes a series of learning communities to accommodate a primary school (reception to grade 6) and secondary school (grade 7 to grade 12). While both a primary school and Secondary School are not defined in Schedule 1 of The Regulations, they are defined under the *Education Regulations 2012* as follows:

***'primary school'** means any school providing courses in primary education, and includes the primary grades of area schools;*

***'secondary school'** means any school providing courses in secondary education, and includes the secondary grades of area and special rural schools;*

The educational establishment includes facilities and activities that are ancillary and subordinate to the aforementioned land use, that including indoor recreational facilities and sports fields which could otherwise be defined as land uses in their own right as defined under Schedule 1 of the Regulations if they were not directly associated with and integral to the use of students attending the educational establishment.

***indoor recreation centre** means a building designed or adapted primarily for recreation, but does not include a stadium or amusement machine centre;*

***recreation area** means any park, garden, children's playground or sports ground that is under the care, control and management of the Crown, or a council, and is open to the public without payment of a charge, but does not include a stadium;*

The proposed educational establishment will also act in part as a 'Community centre' as defined under Schedule 1 of The Regulations where under community use agreements particular facilities will be made available for the provision of social, recreational and educational purposes for the local community.

***'community centre'** means land used for the provision of social, recreational or educational facilities for the local community, but does not include a pre-school, primary school, educational establishment or indoor recreation centre;*

The use by the local community, by agreement represents an additional use of the land, which can also be considered to be ancillary and subordinate to the principal use of the land as an integrated educational establishment.

DRAWING NUMBER	DESCRIPTION	REV
MASTER PLAN		
SOU-ARC-DA-DWG-00_05	SHADOW DIAGRAMS	2
SOU-ARC-DA-DWG-01_01	SITE PLAN AND MASTER PLAN	3
SOU-ARC-DA-DWG-01_03	STREET ELEVATIONS	2
FLOOR PLANS		
PRO-ARC-DA-DWG-02_01A	COMMUNITY BUILDINGS - GROUND LEVEL	3
PRO-ARC-DA-DWG-02_01B	COMMUNITY BUILDINGS- GROUND LEVEL	4
PRO-ARC-DA-DWG-02_02A	COMMUNITY BUILDINGS - LEVEL 1	3
PRO-ARC-DA-DWG-02_02B	COMMUNITY BUILDINGS - LEVEL 1	4
SOU-ARC-DA-DWG-02_04A	PRIMARY & SECONDARY GYMNASIUM - EXPANSION	3
PRO-ARC-DA-DWG-02_05	CHILDREN'S CENTRE	3
SOU-ARC-DA-DWG-02_07	R-2 - COMMUNITY 1	3
SOU-ARC-DA-DWG-02_08	R-2 - COMMUNITY 2	3
SOU-ARC-DA-DWG-02_09	3-6 - COMMUNITY 2	3
SOU-ARC-DA-DWG-02_10	3-6 - COMMUNITY 1	3
PRO-ARC-DA-DWG-02_11A	INCLUSIVE LEARNING - R-2	2
PRO-ARC-DA-DWG-02_11B	INCLUSIVE LEARNING - 3-6	2
PRO-ARC-DA-DWG-02_12	7-12 COMMUNITY 1	3
PRO-ARC-DA-DWG-02_13	7-12 COMMUNITY 2	3
PRO-ARC-DA-DWG-02_14	7-12 COMMUNITY 3	3
PRO-ARC-DA-DWG-02_15	7-12 COMMUNITY 4	3
PRO-ARC-DA-DWG-02_16	7-12 COMMUNITY 5	3
PRO-ARC-DA-DWG-02_17	7-12 COMMUNITY 6	3
PRO-ARC-DA-DWG-02_18	INCLUSIVE LEARNING - 7-9	3
PRO-ARC-DA-DWG-02_19	INCLUSIVE LEARNING - 10-12	3
SOU-ARC-DA-DWG-02_20	COMMUNITY HUB	3
SOU-ARC-DA-DWG-02_21	PRIMARY HUB	3
SOU-ARC-DA-DWG-02_22	SECONDARY HUB	3

DRAWING NUMBER	DESCRIPTION	REV
ELEVATIONS		
PRO-ARC-DA-DWG-03_01	COMMUNITY BUILDING	2
PRO-ARC-DA-DWG-03_03	PRIMARY & SECONDARY GYMNASIUM	3
PRO-ARC-DA-DWG-03_04	PRIMARY & SECONDARY GYMNASIUM	3
PRO-ARC-DA-DWG-03_05	CHILDREN'S CENTRE	3
PRO-ARC-DA-DWG-03_06	COMMUNITY 1 & 2	3
PRO-ARC-DA-DWG-03_07	COMMUNITY 1 & 2	3
PRO-ARC-DA-DWG-03_09	INCLUSIVE LEARNING - R-2 & 3-6	3
PRO-ARC-DA-DWG-03_10	7-12 COMMUNITY 2 & 5	3
PRO-ARC-DA-DWG-03_11	7-12 COMMUNITY 3 & 1	3
PRO-ARC-DA-DWG-03_12	7-12 COMMUNITY 6 & 4	3
PRO-ARC-DA-DWG-03_13	INCLUSIVE LEARNING -7-9 & 10-12	3
CROSS SECTIONS		
PRO-ARC-DA-DWG-03_20	COMMUNITY BUILDING & GYM - CROSS SECTIONS	1
PRO-ARC-DA-DWG-03_21	CHILDREN'S CENTRE, R-2 & 3-6 & INCLUSIVE LEARNING	2
PRO-ARC-DA-DWG-03_22	7-12 SECONDARY COMMUNITIES	2
PERSPECTIVES		
SOU-ARC-DA-DWG-08_01	EXTERNAL PERSPECTIVES	3
SOU-ARC-DA-DWG-08_02	EXTERNAL PERSEPCTIVES	1
LANDSCAPE PLANS		
SOU-ARC-DA-DWG-09_16	LANDSCAPE KEY PLAN & PLANTING ZONES	3
SOU-ARC-DA-DWG-09_17	LANDSCAPE PLAN 01	3
SOU-ARC-DA-DWG-09_18	LANDSCAPE PLAN 02	3
SOU-ARC-DA-DWG-09_19	SHADE AND SHEDS DIAGRAM	3

4.2 DESIGN PHILOSPHY

The vision for the new school is to provide a strong sense of community within a village-like environment, focused on learners and learning. The school facilities will be integrated with the local context to foster community connections and maximise utilisation of this significant asset. Vibrant, busy and active places, the schools will support wellbeing of the school and their respective local community.

The school design for the Coastal School Campus is consistent with the Education Framework. The intention is to ensure equity of provisions for all learners, irrespective of where they may live.

Landscape and urban design principles have guided the master plan approach the campus, informed by site specific opportunities and constraints. Key factors influencing the landscape and urban design include the local context, connections and dimensions of the sites.

The TESA Education team has developed four key high-level project principles:

- World Class Education
  - Creation of a world class learning village that fosters a sense of engagement and inclusion.
  - Delivery of adaptable spaces and resources that enable learning that develops the knowledge workers of the future.
  - Recognition of the transformation of learning needed for students' active participation in the fourth industrial revolution.
  - Pedagogy and education will be the focus and priority that underpin all design principles and strategies.
- Village Ecosystem
  - Developing a holistic approach that connects the internal site network with the urban context.
  - Establishing a whole site strategy connecting the central hub to learning spaces through navigable movement corridors.
  - Embracing and exploring the full opportunities, extents and urban and environmental contexts of each site.
  - Connecting to the wider local community through the development of a vibrant learning community.
- Agile and Inclusive Learning Communities
  - Delivering learning environments to facilitate the inclusion of all.
  - Providing flexible spaces that adapt and foster social interactions between individuals and groups.
  - Enhancing learning throughout diverse learning communities.
  - Optimising the learning opportunities and challenges provided by emerging and ubiquitous technologies.
  - Supporting and enhancing the meaningful engagement and relationships with traditionally disadvantaged groups.
  - Process not a Product.
  - Establishing a strategy for each site to support a dynamically evolving campus and pedagogy.
  - Recognising the need to accommodate changing enrolment demand, age profile patterns, curriculum needs and community expectations.

These principles underpin the master plan and school designs.

4.2.1 Key Design and Operational Benefits

The key design features for the proposed Southern School are:

- master plan design solution which integrates buildings and outdoor spaces to provide seamless indoor – outdoor connections, enabling every space to a learning space;
- a design which supports "*School as Community Hub*", providing excellent connectivity and locating community use spaces centrally at the school heart;
- learning spaces which have flexibility to support a broad and diverse range of learning settings, both indoors and outdoors;
- fully integrated Inclusive Learning Communities;
- thoroughly considered design response for traffic and access, ensuring separation of pedestrians, cyclists and vehicles on arrival to and within the school site;
- single storey design, ensuring universal access throughout and providing ease of connection between indoor and outdoor spaces;
- welcoming, village-like environment, with small scale buildings connected by open spaces;
- excellent orientation, learning communities designed with primary north and south facing façades to take advantage of natural light while minimising direct solar exposure; and
- inviting, comfortable and functional outdoor spaces, protected from the elements to enable year-round use.

The Operational benefits include:

- a consistent model of learning spaces across the school;
- learning spaces are designed with fully glazed walls and sliding door connections to the adjoining multiuse circulation and outdoor learning spaces. This design feature provides seamless, direct visual and physical connection between internal and external areas generally and learning spaces and play areas in particular;
- transparency and connectivity of open spaces and circulation to provide a safe and welcoming environment;
- energy efficiency through orientation and high-performing building fabric, complemented by on-site renewable energy solution;
- robust and durable building fabric, minimising maintenance requirements; and
- capacity for ease of future expansion, providing equivalent functionality to the original school and with minimal impact on the day-to-day operation.

4.2.2 Education Framework

The State's requirements for the new school is to deliver the overarching goal of birth to year 12 schools as the seamless provision of outstanding education and services to all students and their families. The Education Framework represents Education's brief for the design and operation of the new school to achieve this goal.

The design of the school has been developed in a logical, sequential manner based on the adjacencies and functional requirements to meet the educational requirements for the Educational Establishment. This process commenced with the master plan layout and proceeded through the design of Functional Areas and Functional Units.

The spatial, technical and equipment requirements have been fully integrated in the TESA design proposal, to deliver the particular requirements for each Functional Area and Functional Unit.

'Learning settings' describes the diverse range of activities, group sizes and spatial arrangements which will be accommodated within the school, both indoors and outdoors. Each space in the school is designed with flexibility to accommodate and adapt to a variety of learning settings.

The TESA design proposal is a functional, efficient solution, integrating the Educational Establishments performance requirements and aligned with the areas quantified in the Schedule of Accommodation required by Education.

4.2.3 ODASA School Design Statement

Local Setting and Community Context

The new school will be focal point for the community. The design approach acknowledges the importance of the school to the community by providing convenient access into the school and enabling community use of school facilities.

The design addresses current and future street frontages, incorporating multiple access points. The principal entry is from the new northern access road providing the principal address for the school. The Community Hub will be accessed through the principal entry.

Active travel options are embedded in the master plan design. There are connections to planned shared paths for pedestrians and bicycles which adjoin the site. Bicycle storage is distributed throughout the school for convenience and to encourage cycle use.

Car parking is distributed in two key locations. Landscape zones are provided between the car parking and the adjacent street boundary. The northern carpark is convenient for community use of the performing arts facilities, gymnasiums, library and piazza. The southern parking area is convenient to the sports fields.

An east-west pathway across the site provides connection to and from adjoining facilities without passing through the school.

The building scale is compatible with the planned future residential developments in the vicinity, being low-rise, principally single storey buildings.

Views are enjoyed from outdoor spaces at the south of the site. The school buildings will not adversely impact existing view corridors.

Inclusivity

Inclusivity is embedded throughout the design solution. Key design features supporting inclusivity include:

- entry points to the school are clear and generous for an inviting arrival experience;
- the campus is designed for ease of movement, connection, wayfinding and accessibility throughout. There is covered access to all parts of the school;
- designed for universal access throughout;
- community engagement is embraced through design for community access and use of school facilities outside school hours;
- Inclusive Learning Communities (ILCs) for all ages and stages are incorporated and cater to the special needs of users;
- recognition of cultural diversity, for example through Indigenous input to the design, in particular artwork and integrated wayfinding strategies;
- focus on safety and wellbeing; and
- connectivity, transparency and ease of movement all support safety and wellbeing.

The school address is welcoming and approachable. Designed to provide ease of access, the school layout is physically and visually permeable. Transparency of the building facades, in particular at the principal entry, provides unobtrusive wayfinding and enables school users and visitors to confidently identify their destination.

Universal access throughout the school has been achieved through a predominantly single storey approach. A lift provides access to the first-floor music and dance facilities. The existing gentle gradient across the site enables ease of circulation. Outdoor learning areas are all located at ground level, providing equity of access for all users.

The signage strategy will include symbol signs for enhanced communication.

Inclusive Learning Communities (ILCs) for all ages and stages are incorporated and cater to the special needs of users. The single storey design strategy ensures ease of access is achieved throughout the school. ILCs are embedded within each of the primary and secondary zones and offer familiar, 'safe' places that are also connected to the wider school community.

An objective of the school design is to encourage parents to feel welcome and comfortable in the school environment. Access to the school through community uses will enable parents to become familiar with the school, leading to further engagement.

Community engagement is embraced through design for community access and use of school facilities outside school hours.

Cultural diversity is recognised through Indigenous input to the design, in particular artwork and integrated wayfinding strategies.

Connectivity, transparency and ease of movement all support safety and wellbeing.

These measures will create a welcoming and accessible place where people feel safe and secure.

Durability

Form and Structure

The form of the buildings is articulated to reduce perceived bulk and scale, complemented by variety in materials and colours.

Learning communities are designed as simple building forms with a rational, repetitive structure. The design and structure are suited to internal reconfiguration in the future.

Materials

The proposed palette of external materials is robust and durable, with low maintenance requirements. They will be self-finished or prefinished requiring minimal maintenance.

The building structure is concrete floor slabs with steel frame walls and roofing. Internal walls are non-load bearing.

Masonry at low level provides robustness and durability in areas of intense student activity. The civic buildings, in particular the performing arts and gymnasium buildings, will have precast concrete walls. The learning communities will have blockwork.

Above a datum level, there is a variety of profiled metal wall cladding and prefinished sheet cladding.

Value

The overarching purpose of the new school is to provide a place for children and young people to learn, as identified in the Education Planning Framework.

Contemporary schools also seek to form strong connections to their local community, creating community hubs. The built expression of this goal is manifest in designs which encourage community access to the school, providing opportunities for community use of the school facilities. This may be during or outside school hours.

The vision for the new school is to provide a strong sense of community within a village-like environment, focused on learners and learning. The school facilities will be integrated with the local context to foster community connections and maximise utilisation of this significant asset.

The school design embodies the principle of 'school as community hub', providing for community use of school facilities. The design provides for community access to the areas designated "*Community Use*".

The master plan layout provides ease of access into the school and to the particular spaces designated for community use. The principal entry connects directly to the Community Hub, the actual and symbolic heart of the school design.

Performance

The design proposal includes diversity of forms, spaces, materials and colours strongly associated with particular functional areas. This diversity will enable students, staff and visitors to experience variety and enjoyment as they move around the school.

The form of the buildings is articulated to reduce perceived bulk and scale, complemented by variety in material and colour. The relative size and proportion of buildings and open spaces are designed to ensure a sense of openness and provide sunlight penetration to the outdoor areas. These spaces will be comfortable and inviting, encouraging students and staff to enjoy time outdoors.

The internal school façades surrounding the central open spaces are designed with a generous, visually open façade connecting with outdoor learning spaces. These attributes will support the creation of a cohesive school community.

Places for passive and active outdoor activities will encourage socialisation and enable all school users to enjoy healthy habits and good wellbeing. External pedestrian spaces around the school are designed to suit a variety of functions and have different qualities.

The functionality and character of the outdoor spaces are described in more detail within Table 5 below:

TABLE 5 – FUNCTIONALITY AND CHARACTER PERFORMANCE

Outdoor space	Functionality and character
Plaza	Urban scale space, defined by buildings at the east, south and west. Open to the north with views beyond. Focussed on main school entry. Paved, with civic scale planting.
Piazza	"*Community Spine*" inspired by European examples including Promenade Du Paillon in Nice, Italian village piazzas and contemporary urban gathering spaces. Circulation, meeting and gathering, school heart. Paved and planted, sheltered and open, passive and active learning. Scaled for sunlight access at all times of year.
Outdoor learning areas	Physical and symbolic extension of indoor learning areas. Paved, covered and serviced to accommodate formal and informal learning. Accessible outside of class times for optimal utilisation, blurring informal / formal learning activities.
Play areas	Nature play and R – 2, 3 – 6 play equipment. Smaller scale, with variety of ground surfaces. Intimate feel.
Sports fields	Designed to meet technical specifications for sports activities. Open space, with sense of freedom and release. Visual connection with the broader landscape.

Sustainability

Design

The overall school layout is based on a grid, with the principal building façades aligned north-south and broadly parallel with the site contours. This strategy has generated a design response with optimal orientation of buildings for good environmental outcomes. Daylighting, sun-shading and energy consumption are optimised.

The school buildings are located on the northern part of the site, close to the principal address point. Outdoor sporting facilities are at the southern end. The master plan consolidates the building footprint in order to maximise open outdoor space, minimise impermeable area and reduce potential urban heat island effects.

Consumption of energy will be minimised by the optimal orientation, using roof overhangs for sun shading and providing thermal insulation to the building envelope. Roof-mounted photovoltaic (PV) cells will contribute renewable energy for school operation.

Energy efficient systems and fittings will be incorporated throughout the school.

The proposed building materials are robust and durable, with low maintenance requirements. Structural systems include reinforced concrete framing for the two storey parts of the school and lightweight steel framing for the single storey parts. Internal walls are non-load bearing. This will enable future reconfiguration as and when user requirements change over time

The waste collection area includes space to separate waste streams, i.e. landfill and recyclables. The vegetable garden will include a composting area.

Travel Options

It is envisaged that staff will mostly travel by car and many students will be dropped off by car. The design includes appropriate car parking and drop-off zones for this purpose.

Green / active travel options are embedded in the design, offering convenient alternatives:

- bus zones are proximate to the site, enabling public transport options;
- shared pedestrian and cycle paths are designed around the perimeter of the site, adjacent to the boundaries which adjoin existing and proposed roads, providing safe, attractive routes to and from the school; and
- multiple entry points to the school site are available from the shared paths/greenway. Designed as 'nodal' points at the junction of the greenway and internal site pathways, the access points will include seating and shade plantings configured to provide a safe transitional zone.

The locations of site entry points and community use facilities are coordinated to ensure community users have convenient options for accessing the site via a range of travel options.

Connectivity

The school design incorporates pedestrian and cycle routes around the perimeter of the school site, and an east-west cross-site link between the school buildings and the outdoor sports facilities. These links connect the school buildings to the community and provide community access to the sports fields and across the site.

Interface with Adjoining Land Uses

While the adjoining land to the west and the south of the school is currently rural or semi-rural, in the longer term the intended rezoning envisages residential subdivisions that will be developed providing greater integration of the educational establishment with the emerging residential areas and enabling the educational facilities to be established to support the growing community in this region.

The master plan design provides many options for connectivity to and from the surrounding areas, both current arrangements and in the future.

Impact of the school activities on adjoining land-uses is anticipated to be principally the movement of people to and from the site. There may be some noise impacts during break times.

School outdoor spaces are contained by buildings, minimising noise impacts on the local area. The secondary design and technology functional area is likely to be the greatest noise generator. This is located on east side of the school. The North – River site east boundary is to Riverbanks Road and consequently noise will not affect local amenity.

Lighting

The site-wide lighting design provides for safe circulation through the outdoor spaces. Illuminance levels required for this purpose are suitably low to avoid creating a light spill nuisance. Councils have requested lighting to allow the sports fields to be used by the community outside of school hours. This lighting will be switched on only when sports fields are in use.

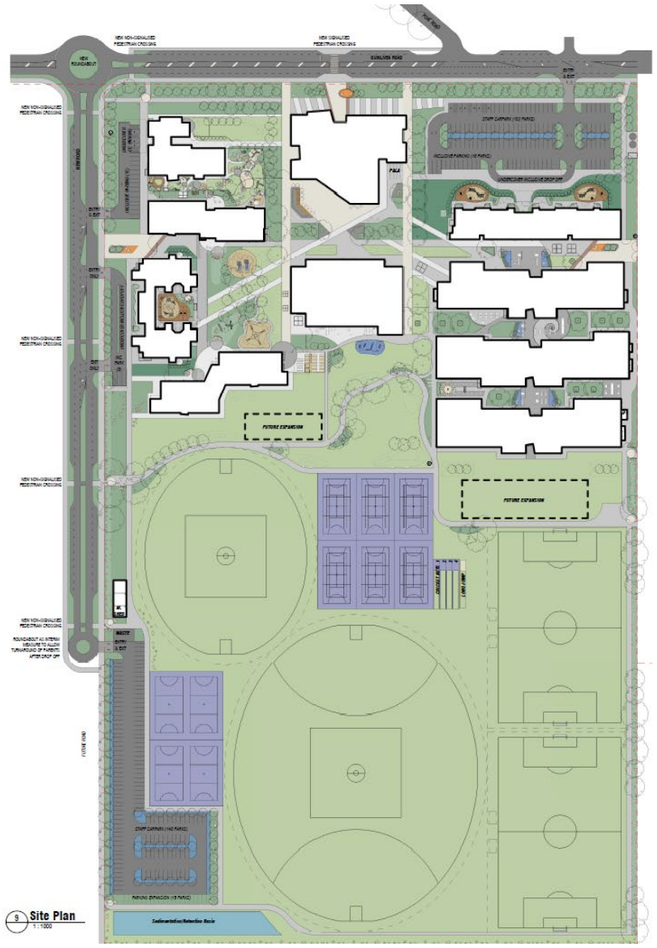
4.3 BUILDING CONFIGURATION

4.3.1 Master plan

The school buildings are located in the northern part of the site, close to the principal address point. Outdoor sporting facilities are in the south. The master plan consolidates the building footprint in order to maximise open outdoor space and reduce impermeable area. A key benefit of this strategy is excellent proximity of the diverse functional areas within the school and ease of access between.

The topography of the school site has a very gentle gradient, effectively flat. The school building layout is based on a grid pattern, aligned north-south and broadly parallel with the site contours. This has produced a design response with optimal northern orientation of buildings for good environmental outcomes.

1 Site Masterplan
1 : 2000



9 Site Plan
1 : 1000

Buildings are laid out to form a series of outdoor spaces, with variety of scale, size and functionality. In the primary and secondary school zones, the building forms are designed to enclose the interstitial courtyards, providing shelter from wind and adverse weather in particular from the south-west. This will enable use of these spaces throughout the year.

Building set out, in particular the spaces between buildings, is designed to optimise daylighting and sun-shading, providing a high level of amenity for all building users. This strategy will also contribute to energy efficient building systems.

The plaza entry is at the north, addressing the principal school access point. There are designated entries for primary and secondary school zones in the west and east. Informal access points are provided around the campus to enable mainstream students and community access to the school and to the outdoor sports facilities. There are cross-site pedestrian and cycle paths.

The principal school address point is the group of ‘civic’ scale community buildings laid out to create a north facing entry plaza. This space will be an important gathering area, a place of convergence of various pedestrian and cycle access routes, and the key public face of the school. The community buildings are sited close to the northern site boundary, adjacent the road frontage, to create a prominent frontage and unambiguous point of entry to the school.

The master plan is designed for permeability, with numerous access points around the perimeter. These will support connectivity and ease-of-access, helping to establish strong community links with the school.

TESA Educations public art strategy proposes site specific artworks be embedded at key points within the school, namely the entry plaza, Primary Hub outdoor area and Secondary Hub interface with the piazza. The wayfinding strategy connects these elements physically and symbolically, creating a strong sense of place and identity.

The community buildings are two storeys in volume, and include the performing arts facilities, library, administration and gymnasiums. The primary school and secondary school buildings are single storey volumes on the west and east sides of the campus respectively. This creates a subtle transition from the larger scale buildings at the centre of the school to smaller scale buildings at the site edges. This will be an appropriate scale aligned with the planned residential developments in the neighbourhood. Building size and scale across the campus is commensurate with group size and age for each of the respective educational learning areas.

The component parts of the school are linked by the piazza. The piazza is the external expression of the Community Hub, linking all school zones. Envisaged as a linear space providing connections between the various functional areas arranged along the edges, the piazza is designed to support a variety of activities along the length. Outdoor seating for the café, planted areas, informal gathering spaces and outdoor learning area for performing arts, library and vocational education training are provided for. Moving through this central open space is a ‘journey’ designed to build community through connections between different functional areas and encouraging physical movement.

The school design embodies the principle of ‘school as community hub’, providing for community use of school facilities. The piazza at the heart of the school will be a gathering and meeting place, providing safe place for students before, during and after school.

4.3.2 School Zones

The school design provides for students from birth to year 12. The master plan embodies the principle of 'schools within schools', with four distinct zones:

- early years (long day care, pre-school and junior primary);
- 3 – 6 (primary school);
- 7 – 12 (secondary school); and
- community (common user facilities, including performing arts, sports and recreation facilities).

The master plan design creates a distinct character or identity for each zone through building size and scale and the form of complementary outdoor spaces.

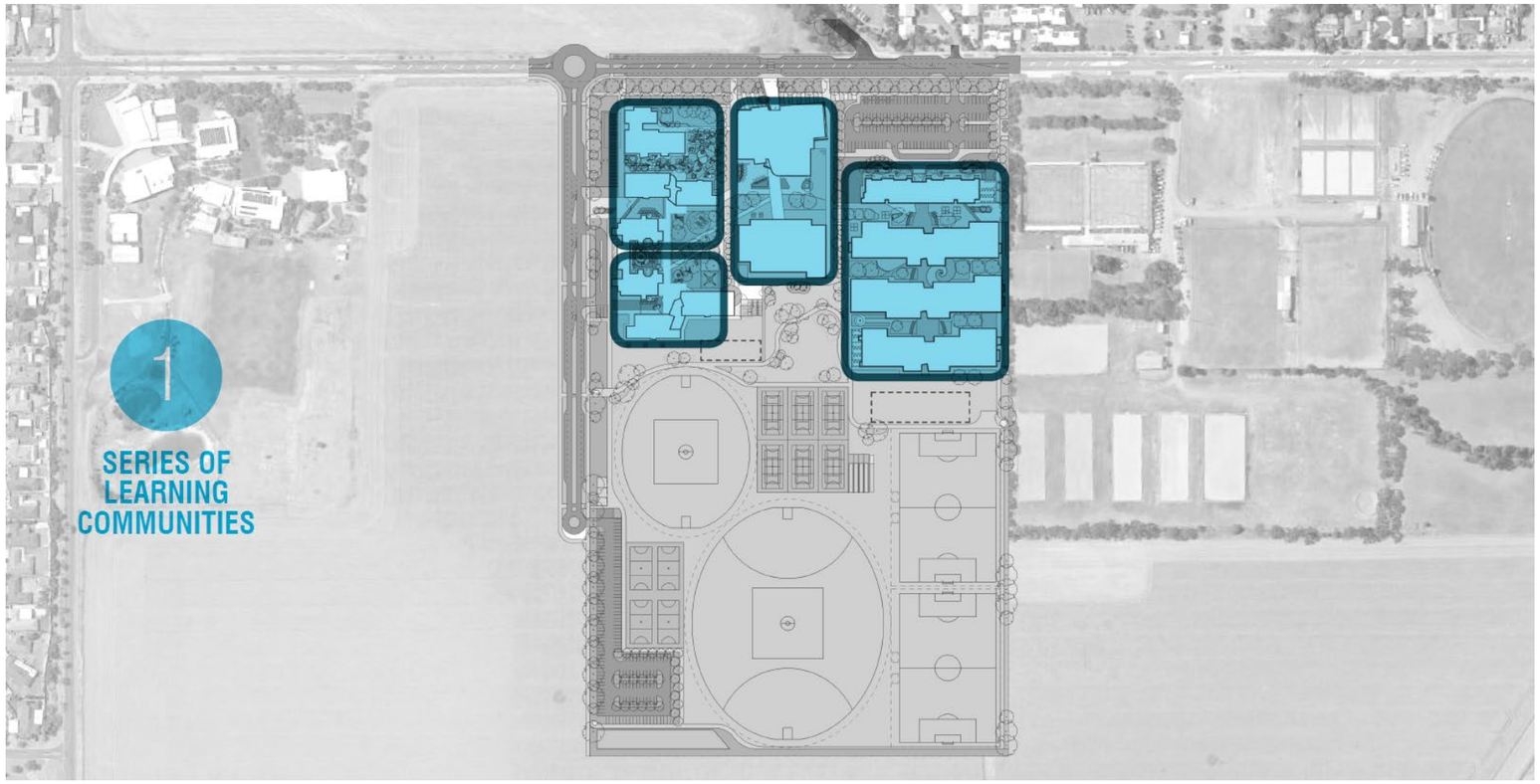
The layout of learning zones and learning communities is arranged to reflect students' progression through the school. The pathway from children's centre to early years, primary and then secondary schools is visible to students. At each point on their education journey students have a visual connection to their next destination.

The early years R – 2 and 3 – 6 buildings are arranged around a central open space connected by the Primary Hub. Within the open space are a range of nature play, playground and outdoor learning settings.

The 7 – 12 buildings are laid out as a series of parallel 'fingers', linked by a central linear 'spine' which creates the Secondary Hub. The interstitial spaces are 'discipline' outdoor learning spaces with direct connection to the discipline indoor learning spaces. The outdoor areas are designed with flexibility for both discipline specific use and informal uses.

ILC Locations

ILCs are embedded within each of the primary and secondary zones. The strategy for ILC balances the need of this cohort for familiar, 'safe' places with opportunity for connection to and participation in the wider school community. ILC siting achieves good connections to the hubs and to the piazza at the heart of the school.



4.3.3 School Access and Connectivity

The master plan layout provides ease of access into the school, and to the particular spaces designated for community use. The principal entry connects directly to the Community Hub, the actual and symbolic heart of the school design. There are multiple points of entry to the school, providing great connectivity with the community – both physically and symbolically.

The master plan enables excellent internal connectivity throughout the school through the shared open spaces and hubs. This will support collaboration between cohorts, both formal and informal, leading to the creation of an active, vibrant place.

Universal access throughout the school has been achieved through a predominantly single storey approach. A lift provides access to the first floor performing arts facilities. The existing gentle gradient across the site enables ease of circulation. Outdoor learning areas are all located at ground level, providing equity of access for all users. The wayfinding and signage strategy will include symbol signs for enhanced communication.

The library, gymnasium and performing arts facilities are located adjacent to the piazza to create a fully integrated and functional facility for community use. The façades which adjoin the piazza have generous openings, enabling the whole area to be physically connected to create a large gathering space suitable for a variety of school and community events.

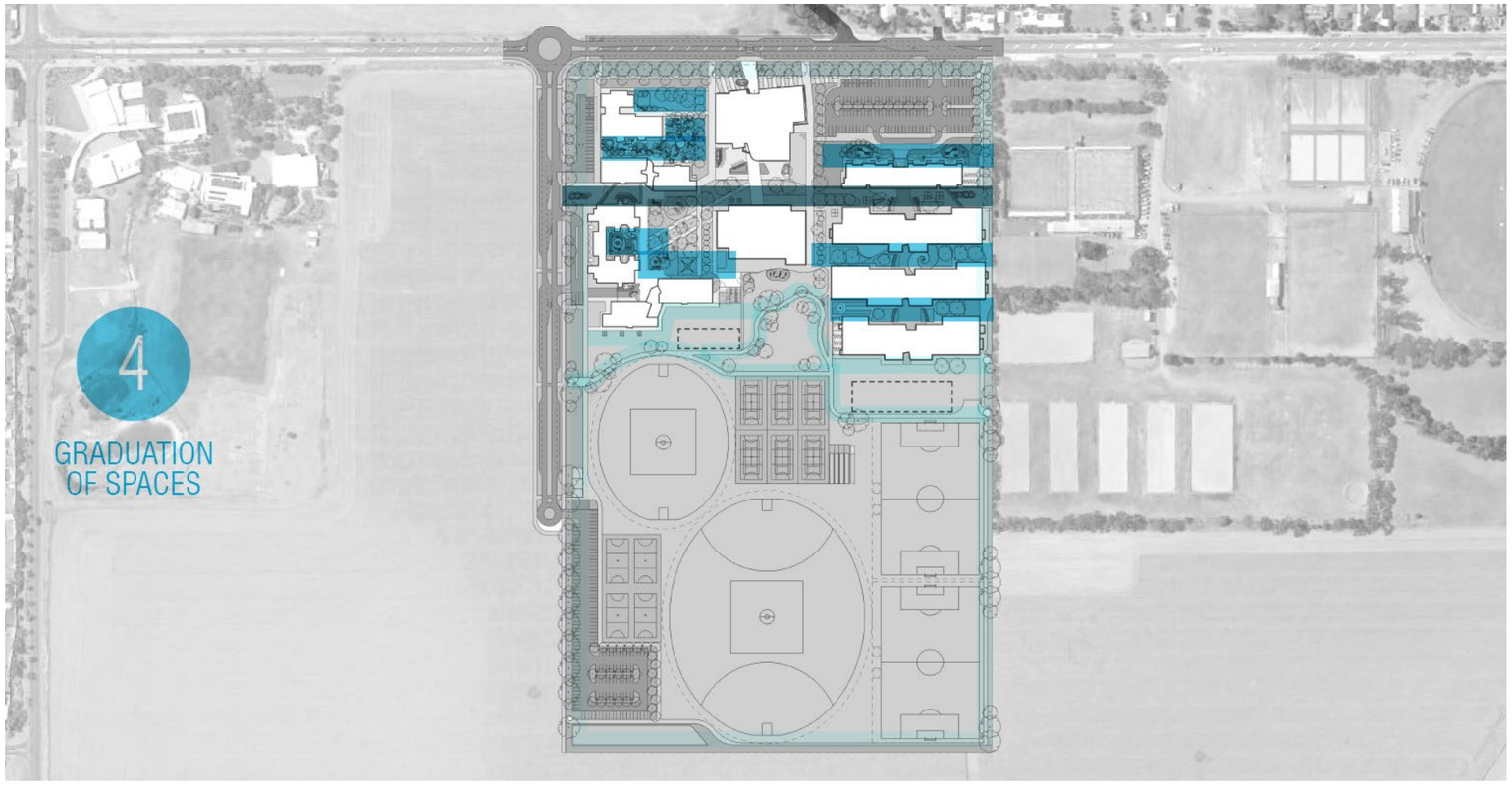
The gymnasium with the ability to be divided into separate spaces for primary and secondary school use is accommodated in a single building centrally located for enhanced functionality. The two playing courts are divided by a retractable net. The combined space will accommodate large gatherings of school groups and community groups. The gymnasium building and sports fields are close to the outdoor sports facilities. PE outdoor learning areas at the southern edge of the gymnasium connect the indoor and outdoor sporting facilities. This arrangement meets the school's adjacency requirements and offers convenience for integrated community use of all the sporting facilities.

4.3.4 Landscape

Hard landscape elements are strategically designed to meet functional and operational requirements and to provide convenient connections throughout the site. Paved areas accommodate circulation and functional and informal/recreation activities. The extent of hard surfaces has been carefully considered to optimise stormwater drainage and mitigate heat island effects.

Soft landscape elements are designed to symbolically connect the school to the broader landscape through plant selection and planting design. Soft landscape elements complement the built form, providing shade and visual amenity, scaled to create a transition between the school buildings and the immediate environs.

Further detail of the landscape approach is provided in Section 5.7 – Landscape and Recreation Facilities.



4.3.5 Future Expansion

The master plan includes a designated space for future expansion of learning communities, directly connecting to each of the Primary and Secondary Hubs to ensure equivalent access and connectivity will be achieved.

Future expansion capacity is required for:

- long day care;
- pre-school;
- R – 6 Learning Community; and
- 7 – 12 Learning Community.

The long day care and pre-school building is designed to accommodate future expansion of places within the initial building envelope.

The master plan design facilitates learning community expansion for the R – 6 zone, equivalent to one complete learning community. The 7 – 12 expansion is equivalent to one and a half learning communities. The site master plan includes a designated space for the future expansion, directly connecting to each of the primary and secondary hubs to ensure equivalent access and connectivity will be achieved.

The proposed locations have clear access for construction, whether by conventional building methodologies or using modular buildings. This will minimise the impact of construction activities on day-to-day operation of the school.

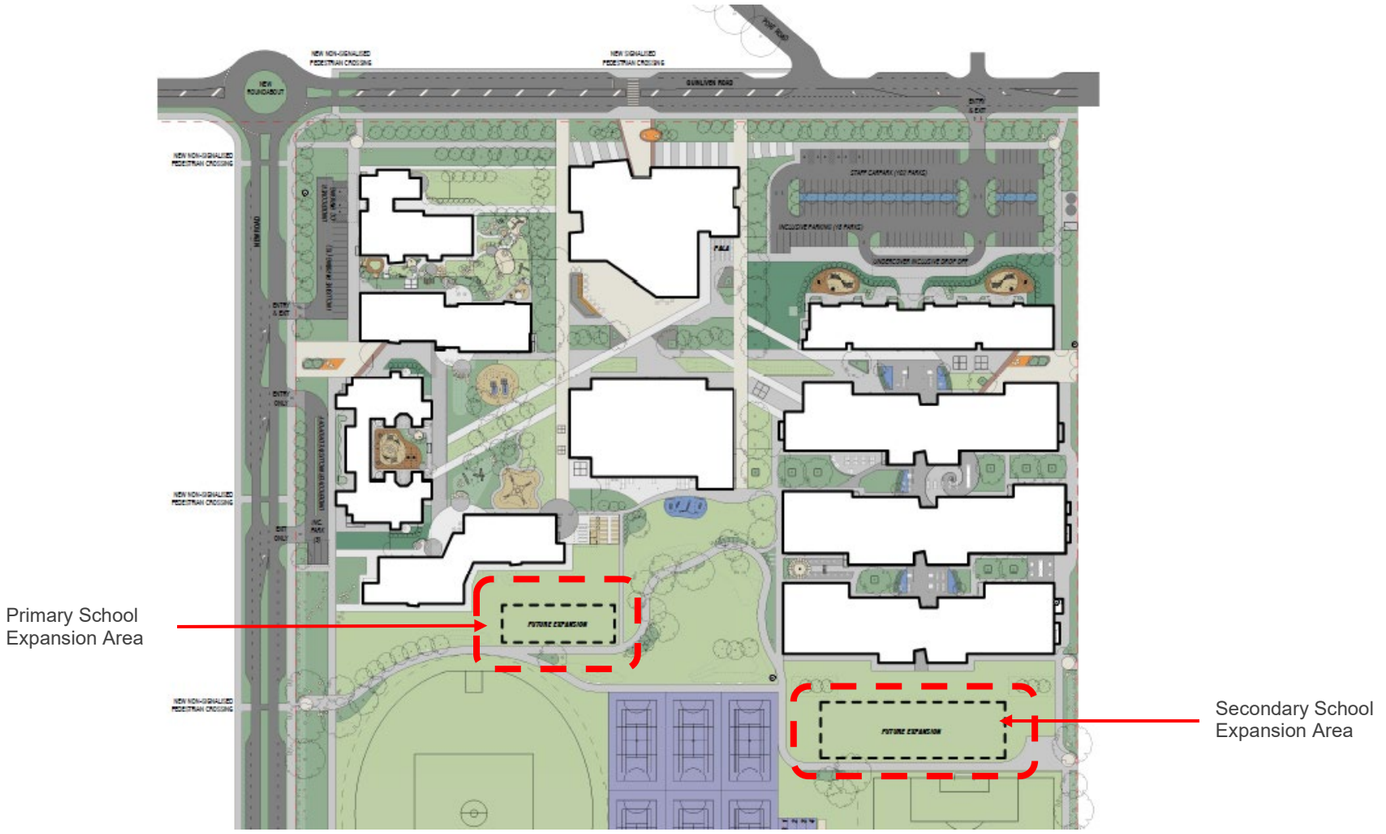
Learning spaces throughout the school embed the principle of multiuse, having the capability to be occupied and used in a variety of configurations. Internal walls are non-load bearing. This will allow internal reconfiguration in the case of pedagogy changes in the future, minimising cost, time and disruption of such changes to the school.

The combination of functionality, flexibility and capability to adapt to diverse learning settings will also serve changing educational pedagogy. The design has flexibility to evolve in the future to suit changing user requirements through temporary movement of internal dividers and/or more permanent internal reconfiguration.

For example, changes to the curriculum or school operational philosophy may require reconfiguration of the internal layout of the school buildings. There may be a need for dedicated spaces for explicit instruction in a more contained, formal arrangement. Alternatively, the school may choose to dedicate a particular building to a specialist discipline, rather than the current multi-disciplinary approach. Each of these scenarios can be accommodated within the current design through the consistent model of building fabric and base building services, by adjustment of the movable partitions and / or furniture and equipment layouts.

Should a permanent internal reconfiguration be required, the building design can be adapted. Fixed elements are limited, being the highly serviced toilet areas and structural columns. Internal walls are non-load bearing. This design strategy will accommodate internal reconfiguration in the case of pedagogy changes in the future, minimising cost, time and disruption of such changes to the school.

Parking provisions for both campuses have been calculated on the basis of ultimate enrolment figures, therefore expansion capacity is built into the original configuration.



4.4 COMMUNITY ACCESS

Under the project Deed between the State Government and TESA, a number of spaces have been designated as available for community use. This has informed the design and maintenance strategies of the school, through considerations of elements such as security, access, parking, wayfinding, lighting and pedestrian access to the areas designated for community use. This is particularly the case in the deliberate design response to not incorporate boundary fencing and the extensive use of public walkways that address prominent street frontages.

4.4.1 Expectations for community use

Community use will include the Council Shared Use agreements, as well as ad-hoc community use with various not for profits, community groups, businesses and other organisations. TESA will play a key role in promoting and coordinating community use, including managing partnerships with each group.

In accordance with the Education Department's policy for "Schools as Community Hubs", it is expected the schools will be:

- heavily utilised for community use on weekend for the sport facilities (gym, sport fields and supporting amenities such as toilets);
- sport facilities will be used for sport team training at night, and occasionally during school hours subject to coordinating with the school;
- educational spaces open for community use are expected to be used by groups such as TAFEs, not for profits and other community programs. For instance, the TAFE may utilise the 3D printers in the design and technology spaces to support existing courses in after school hours;
- the Entrepreneurial Hub in the community building will allow the school to connect with businesses and initiatives in the community;
- the performing arts theatre is a high-quality space, that will serve community groups and the public for plays, musicals etc., mostly outside school hours;
- the children's centre is very much a community asset, with long-day care and out of school hours care available to the public and operated by a third-party commercial operator; and
- the schools will also be used for typical community and civic functions, such as government election voting.

The spaces designed for community use include the following:

- Sport facilities
  - Sports play fields, gyms, outdoor hard courts and cricket nets.
  - Carparks, toilets, pathways, lighting and gym change rooms.
- Supporting facilities
- Community use buildings
  - Performing arts theatre.
  - Music, dance and drama spaces.
  - Entrepreneurial Hub.
  - Library.
  - Design and technology spaces.
  - Science labs.
  - VET kitchen and dining.
- Children's centre
  - Long day care (commercial operation).
  - Out of school hours care (commercial operation).

TESA will manage and coordinate community use on behalf of Education and the Operator. A booking system will be utilised to coordinate and manage use. Community Use Agreements will be in place to ensure community use is sustainable and the responsibilities of both parties are clear. Public use of school facilities will be coordinated between these parties each term of the school, under an agreed governance framework that seeks to enhance the role the schools play in the community.

Community use will be coordinated with the Operator both within and outside school hours.

4.4.2 Expectations for Council Shared Use

TESA is in the process of finalising arrangements with the Onkaparinga Council to utilise the school grounds. This agreement will formalise arrangements that document:

- Onkaparinga Council's contribution to funding additional assets on the school site, including an outdoor sport facility lighting and increased gym size (should this come to fruition, a subsequent Development Application will be lodged);
- TESA design, construct and maintain the above assets to the high quality consistent with the broader school;
- Governance and oversight by Onkaparinga Council of the community use, noting TESA will remain the party responsible for coordinating and entering agreements with community users (such as sport teams); and
- The agreement with the Onkaparinga Council includes the following shared facilities:
  - Soccer/hockey fields (x2 with future lighting).
  - Full size oval (x1 with future lighting).
  - Gym (x2 full size indoor courts).

4.5 BUILDING FORM

The vision for the school is to provide a strong sense of community within a village-like environment focused on learners and learning. The school design has been developed in a logical manner based on the adjacencies and functional requirements described in the OSR and supporting documents. This includes the integration of the Architectural Design Principles woven throughout the school layout and embedded in the architectural form.

The school has been designed with a general grid pattern to provide intuitive pedestrian way finding focused around a central group of community buildings and the central plaza, with the primary and secondary schools located to either side. This strategic approach ensures universal access across the site, enabling direct, functional and effective connectivity between indoor and outdoor spaces throughout the school.

The component parts of the school are linked by the piazza. The piazza is the external expression of the Community Hub, linking all school zones. Envisaged as a linear space, connecting the various functional areas arranged along the edges, the piazza is designed to support a variety of activities along the length. Outdoor seating for the café, planted areas, informal gathering spaces, and outdoor learning area for performing arts, library and vocational education and training are woven into the fabric of the piazza. Moving through this central open space is a 'journey', designed to build community through connections between different functional areas and encouraging physical movement.

At the heart of the school, the piazza will be a gathering and meeting place, providing a safe place for students before, during and after school. The library, gymnasiums and performing arts facilities are located adjacent to the piazza to create a fully integrated and functional facility for community use. The façades which adjoin the piazza have generous openings, enabling the whole area to be physically connected to create a large gathering space suitable for a variety of school and community events.

4.5.1 Building Heights

The community buildings are two storeys in volume, and include the performing arts facilities, library, administration and gymnasiums.

The primary school and secondary school buildings are single storey volumes at the west and east sides of the campus respectively. This strategy creates a subtle transition from the larger scale buildings at the centre of the school to smaller scale buildings at the site edges. Building size and scale across the campus is commensurate with the respective user group size and age, as per the OSR.

A strong, cohesive visual language unites the building designs. This is characterised by simple, rectilinear footprints, skillion roof forms and a restrained materials palette appropriate to the semi-rural context. The collection of small-scale buildings is linked by a variety of open spaces together forming a village-like environment in which people will feel welcome and safe.

4.5.2 Setbacks

Building setbacks are generous, with landscaped garden beds and car parking generally able to be accommodated between buildings and road frontages. Educational buildings are located in close proximity to the eastern boundary adjacent to the Aldinga sports facility. The buildings are setback a sufficient distance to enable the shared pedestrian and bike path.

The Community Hub building is located close to Quinliven Road to present a focal point clearly defining the principal community entrance point to the integrated educational establishment.

4.5.3 Architectural Design

The design intention is to provide simple buildings that are well articulated and offer reduced bulk through material and roof variation to reduce perceived bulk with a rational and repetitive structure. The simple building intention extends to the use of skillion, scissor and clerestory style roof forms that incorporate alternate and staggered roof pitches in addition to deep eaves to provide articulation.

The design response results in a grouping of low scale intuitively located functional buildings that provide a coordinated expression, as is depicted through the 3D imaging of external components, material description, elevation perspectives and floor plans.

Key features of the TESA design proposal respond to The Department of Education's Outline Scope and Requirements are identified in **Table 6**.

The conceptual design intentions are evident in the following:

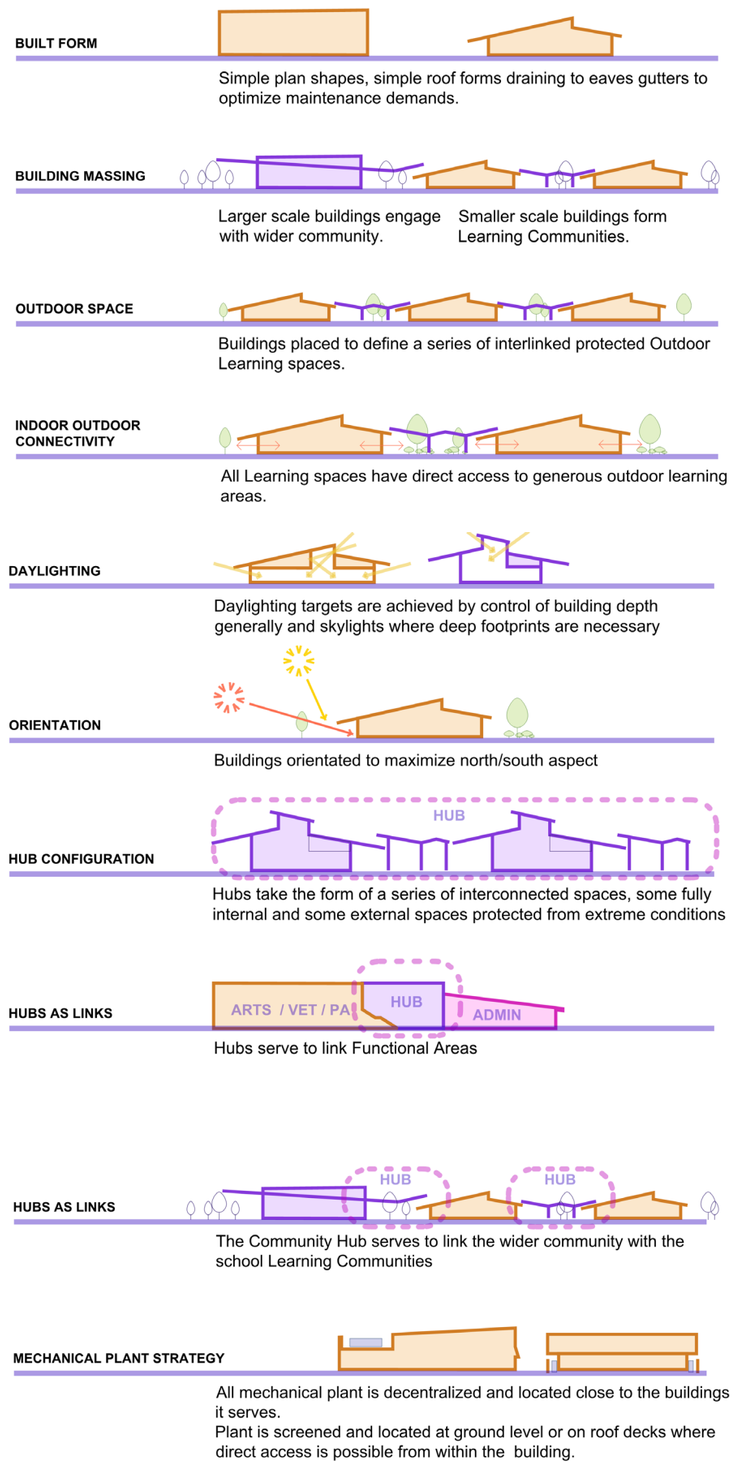


TABLE 6 – ARCHITECTURAL DESIGN PRINCIPLES

Principle	Design Response
Holistic urban design	– Connectivity – school facilities are integrated with the local context to foster community connections. Of particular importance for both schools, is the ease of community access to sports facilities. – Access – the design provides for multiple modes of access and arrival points, enhancing connectivity to the local community. East-west links through both school sites provide community benefit beyond school users. – Integration of outdoor and indoor spaces throughout the design achieves Education's goal of merging indoor and outdoor learning and provides a compelling engaging network of open spaces.
Site maximisation	– Design maximises use of the site, with all parts having a functional role in day to day school activities. – TESA's single storey design solution will encourage and support utilisation of outdoor spaces, supporting site maximisation. – The Architectural design leverages the gentle gradient of the site to achieve ease of universal access throughout the campus. – The design solution responds to the shape, orientation and topography of the site through a regular grid setout for buildings and open spaces, creating a high level of amenity for indoor and outdoor spaces. – Views to the southeast will be enjoyed from the southern part of the school site. Amenity of the sports fields at the south will be enhanced by the visual connection to the broader landscape. – Edges of the site have been designed to optimise connectivity with the local area, both in current conditions and providing for the future.
A clear master plan vision	– Grid – orientation, ordering principles, wayfinding strategy. – Orientation – amenity, energy efficiency, daylighting. – Transparency – connectivity, safety, daylighting. – Connectivity – social context, community access, learning opportunities. – Safety – access, observation, connectivity.
Successful whole	– A strong, cohesive visual language unites the building designs. – Characterised by simple, rectilinear footprints, skillion roof forms and a restrained materials palette, appropriate to the semi-rural context. – The collection of small-scale buildings is linked by a variety of open spaces together forming a village-like environment.
Hierarchy of built form	– The community buildings are two storeys in volume and are at the centre of the campus. – The primary school and secondary school buildings are single storey volumes at the west and east sides of the campus respectively. – A subtle transition is created from the larger scale buildings at the centre to smaller scale buildings at the edges. – Building size and scale across the campus is commensurate with group size and age.
Sense of identity	– Consistent language of building forms and materials palette creates a strong, unified identity for the school. – The colour palette is customised for each school site to ensure a unique identity for the River and Coast schools.
Demonstrator facility	– Transparency both within the buildings and between indoors and outdoors will enable showcasing of learning throughout the school. – Prominent location of key functions will enhance visibility and encourage learner engagement.
Spaces that inspire	– Variety and diversity of form and materials. – Excellent daylighting. – Strong Indoor/outdoor connection. – Comfort, through scale and form, materials and finishes, lighting and furnishings. – All spaces are learning spaces.
Support pedagogical requirements	– Supporting contemporary learning and teaching with flexible, transparent, connected spaces suited to use with diverse learning settings. – All spaces are learning spaces. – Indoor/outdoor connection.
Landscape as learning	– Outdoor spaces are fully integrated through the whole school. – Landscape and outdoor spaces are given equal importance to indoor learning spaces. – Outdoor learning spaces are physically and visually connected with indoor learning spaces. – Outdoor spaces are considered as both learning spaces and informal gathering and play spaces. – United by the materials palette and design principles, outdoor spaces in each part of the school have a distinct identity responding to the OSR and location. This contributes variety and interest.
Create hub(s)	– Designed to foster a local 'community' or 'village', connecting and facilitating collaboration, both planned and spontaneous. – The different user requirements are reflected in the variety of built form and physical expression.

Principle	Design Response
	– The design principle of ‘graduation of spaces’ is embedded. – Three principal hubs each have distinct character and spatial experiences: ◊ Community – indoor and outdoor functional spaces grouped around the piazza. Larger ‘civic’ scale, variety of function, activated. ◊ Primary – connects R–2, ILC and 3–6 learning communities via a colonnade of indoor and outdoor spaces. ◊ Secondary – a central circulation spine linking the learning communities and adjacent outdoor learning spaces. Variety and celebration of the space through treatment of the ground and ceiling planes with high level daylighting.
Universal design	– The school and its parts are designed to be usable by all people. – Visual expression is welcoming and inclusive. – Size and shape of spaces accommodate diverse range of users. – Accessibility throughout. – Signage and wayfinding complement the design.
Ecological sustainability	– Responsible use of resources. – Energy efficiency. – Incorporates photovoltaic (PV) system supporting carbon neutral operation.
Adaptable and agile	– Learning spaces are designed for a diverse range of teaching and learning settings and are flexible to adapt to a variety of configurations through furniture layouts and movable partitions. – The design has flexibility to evolve in the future to suit changing user requirements through temporary movement of internal dividers and/or more permanent internal reconfiguration. – Community use has been embedded at all levels of the design, from site-wide access and master planning through to the design of internal planning layouts. Spaces which are designated for community use are co-located around the Community Hub, accessible and observable from the piazza.
Reggio Emilia approach	– The school design supports positive social interactions and learning opportunities through connectivity between the school and the community, between functional spaces within the school, and through shared outdoor circulation spaces. – Transparency within learning communities, between indoors and outdoors, and between outdoor spaces creates a sense of flow and interconnection throughout the school. – Excellent daylighting, a sense of spaciousness and physical comfort will combine to create an environment which supports the Reggio Emilia approach.

4.5.4 Materials and Finishes

The buildings are to be concrete floor slabs with steel frame walls and roofing. Internal walls are to be non-load bearing.

Masonry walls at low levels will be utilised to provide a robust and durable material in areas of intense student activity. The civic buildings, in particular the performing arts and gymnasium buildings, will have precast concrete walls. The learning communities will have blockwork.

Above a datum level, there is a variety of profiled metal wall cladding and prefinished sheet cladding.

The proposed building materials are robust and durable, with low maintenance requirements. Cladding materials are either self-finishing or prefinished, requiring minimal maintenance.

Detailed colours and materials schedules are provided within the Architectural Design Report, which reference the following building palettes:

4.6 TRAFFIC AND PARKING

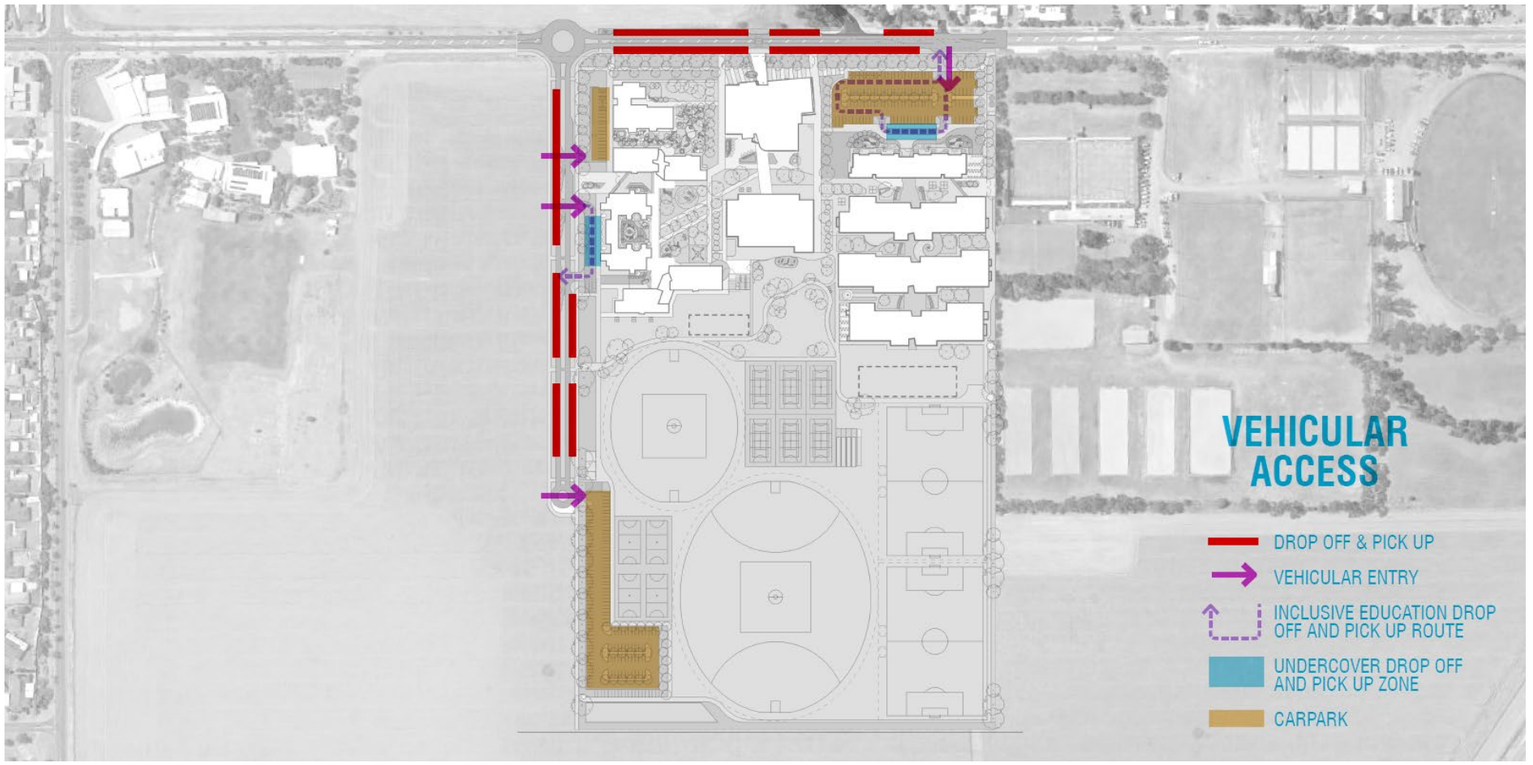
A traffic impact assessment has been undertaken by GHD Consulting and is **included** in the application documents, which informs the following.

4.6.1 Accessibility

Vehicle access to the site is to be obtained via a two way entrance towards the east of the Quinliven Road frontage and four evenly disbursed access points obtained from the proposed western road (including one example of single entrance and exit only), with access available to car parks and kiss and drop facilities.

The new public road is located within the subject land however is exempt from Development in that it is a road being constructed by the Crown.

Pedestrian and cycling access to the Educational Facility has been considered by GHD, who acknowledge the need and intention for the upgrade of road and pedestrian infrastructure to enable safe and convenient access to the site, including intersection upgrades within the local road network.



4.6.2 Road and Pedestrian Network Upgrade

Given the schools impact on the number and direction of traffic movements within the locality, the following road upgrades are acknowledged by GHD as being required. The delivery of the additional road network upgrades is the responsibility of DPTI and includes (but is not limited to):

- How Road/ Quinliven Road / Bowering Road intersection;
- Aldinga Beach Road / How Road intersection;
- Main South Road / Port Road intersection; and
- Quinliven Road signalised pedestrian crossing.

4.6.3 Car Parking

Staff car parking is split across the site, with one car park located in the north-east corner with access obtained from Quinliven Road and the second in the south-western corner with access gained from the new road.

A total of 281 Car Parking spaces have been provided across the four separate car parking areas in addition to the available on-street car parking established through the new indented parking bays adjacent the site as part of the new road profiles.

The 281 on-site car parking spaces are distributed in the following configuration:

- 102 staff spaces in the north eastern car park;
- 18 visitor spaces for inclusive student attending the secondary school in the north eastern car park;
- 21 visitor spaces adjacent the Long Day Care and ELC; and
- 140 staff spaces in the south western car park with future expansion capacity.

4.7 SIGNAGE AND WAYFINDING

No formal signage is proposed for the development, this is to be incorporated within a separate Development Application.

A wayfinding, building identification and internal signage strategy is outlined within the master plan in the application documents. While a schedule of signs has not been provided, the strategy directs the intended outcome with the placement of signage determined through an understanding of how pedestrians and vehicles move around the site and identification of arrival points and circulation nodes. Further, each building will be identified adjacent to the main entry point, with internal identification signage also displaying room names and numbers.

4.8 LANDSCAPING & RECREATIONAL FACILITIES

4.8.1 Key Landscape Principles

The key landscape principles are defined by our Landscape and Urban Design Strategies, which are complementary to the High-Level Project Principles. These were established very early in our design process and have been used to benchmark and guide our design process.

The Landscape and Urban Design Strategies are:

- series of learning communities;
- community spine;
- environment as the third teacher;
- graduation of spaces;
- green spine;
- planting; and
- financially sustainable and environmentally responsible.

Series of Learning Communities

A series of learning communities takes full advantage of resources by collaborating in a village format. Primary, secondary and community ‘villages’ within the campus allow a homely and naturalistic style of learning on a domestic scale. Their adjacency allows for passive learning through observation.

Learning communities have been arranged to ensure future expansion will be a cohesive part of the junior and senior villages.

Community Spine

The main street for the school village co-locates facilities and promotes joint use arrangements.

This community spine will facilitate campus-wide student access and community integration to defined spaces. It acts as a complementary space to the surrounding buildings, in the spirit of the traditional piazza.

It is an equitable area, with extended hours of activation at the centre of the school to facilitate easy supervision and encourage social interactions.

It presents opportunities for flexible programming to support events and school gatherings.

Environment as the Third Teacher

The design is committed to the Reggio Emilia approach – involving students’ peers as the second teacher and the environment as the third.

Interior and exterior spaces are integrated as interconnected forms. Adjacent green spaces are layered to ensure visual connections to green spaces from inside.

The design creates opportunities for learning in all landscapes and spaces.

A strategic arrangement of planting and landscape forms create a series of hybrid outdoor learning and recreation spaces, as shown in **Diagram 3**. Sense of ownership of outdoor learning spaces and sports fields is established through adjacency ease of flow between spaces.

Graduation of Spaces

The structuring of spaces and placement of site components will form a series of environments that facilitate different levels of autonomy and learning opportunities. This operates at both a macro and micro level.

At a micro level, the graduating spaces are defined by the students’ level of comfort and distance from their home community. Close spaces are nearby to buildings and permit safe, familiar and structured learning. Middle spaces allow for testing and observation. Far spaces promote open discovery and higher risk.

At a macro site-wide level, the graduation of spaces will define the degree of public access and community integration. The community spine will be the most publicly accessible area featuring the more highly curated learning spaces.

The campus will move from the sense of curated spaces at the heart of the campus to free form learning at the ‘wild’ edges.

Green Spine

A green east–west connection through the campus will create a spine that mirrors the community spine. This takes the form of a shared pathway framed with pockets of native planting and seating nodes.

The green spine will facilitate efficient movement into and across the school.

The parallel between the community and green spines is a visual manifestation of the learning journey (birth to year 12) and reinforces the macro expression of graduating spaces – moving from structured learning in the heart of the campus to free form, self-driven learning at the wild edges.

Planting

Plant species have been selected that are appropriate to site and soil conditions.

Site-specific, historically native plantings that pre-date European settlement have been identified. The importance of this is highlighted in our Kaurna Artwork Strategy within this criterion.

Planting is integrated throughout learning spaces to provide learning opportunities and increased biodiversity.

Tree planting will be arranged throughout site to facilitate wayfinding and enhance outdoor learning areas. This includes locating larger tree species at entry nodes to highlight access points, between built forms to provide seasonal shade and passive cooling, and along north–south site connections to provide recreation and retreat spaces.

Passive recreational and retreat spaces will be provided with natural shade, strategic garden beds to create passive buffers, and reclining opportunities on turf mounds.

The integration of landscaped mounds will assist with the planting of larger trees in the reactive clay soils onsite. Large trees are valuable for providing natural and seasonal shade, amenity and passive recreation opportunities.

Crime Prevention Through Environmental Design (CTPED) strategies have been implemented to deter crime in and around the school. Planting species have been selected to ensure that sightlines are unbroken and natural surveillance occurs from school buildings and neighbouring streets and spaces. No plants selected grow over 700 millimetres in height and tree canopies sit above eye-line where not in a secure play space.

The hierarchy of landscape spaces has been driven by integration of the required adjacencies outlined in the OSR with the Landscape and Urban Design Strategies.

Facilitating flow between the outdoor learning areas and their internal counterparts has created a clear graduation of spaces from structured learning spaces within the piazza, green ‘fingers’ and courtyards, out towards the less structured spaces along the green spine and sports fields.

4.8.2 Shade and Movement

The landscape design maximises opportunities for shade by integrating both fixed and natural shade in a complementary approach.

There is a continuous fixed undercover path of travel between all buildings and communities. This is formed through a combination of generous building overhangs and standalone canopies.

Canopies and building overhangs also form fixed shade over disciplinary outdoor learning areas and other outdoor learning spaces as outlined in **Table B.2.2** – Minimum Total Built Shade in the OSR.

Where an outdoor learning area and a main circulation route intersect, emphasis has been placed on ensuring that they do not clash, and that circulation is defined outside of learning spaces.

All pedestrian paths throughout the site have been designed to maximise DDA access. Pedestrian paths are a minimum of 1,800 millimetres wide to accommodate two wheelchairs side by side. Where possible this has been increased to create a more generous passage.

Both sites have a relatively flat topography and therefore there has been no need to integrate any stairs, ramps or dramatic level changes that may have impacted equitable access. This has created an uninterrupted freedom of movement throughout the site. Single storey construction of all learning communities has reinforced this flow between internal and external spaces at ground level.

The design complies with the intent of the DDA as well as applicable codes and standards.

Links and learning spaces between buildings have been lined with deciduous trees to provide seasonal shade and passive cooling to learning spaces, pathways and buildings in summer.

The green spine is defined by a 3,000-millimetre-wide path for shared use between pedestrians and cyclists. This is framed by pockets of native trees which will provide evergreen shade year-round. These shaded nodes also form passive recreation opportunities adjacent and separate to the link to remove stationary pedestrians from the trafficked pathway.

The curving form of the green spine reinforces the Coast identity of the site. The winding path will also reduce the speed at which cyclists can move and therefore increase line of sight and safety for all users.

4.8.3 Planting Philosophy

The planting palette has been developed in accordance with the following philosophies:

- Manifestation of the coast identities.
- A focus on pre-European settlement species and their educational benefits in accordance with the Kaurna Artwork Strategy within this criterion.
- Layering of adjacent green spaces to ensure visual connections to green spaces from inside for the amenity, health and wellbeing of staff and students.
- Plant selections will offer potential for direct interaction and contact for students' sensory experience of the varied colour, texture and form.
- Plant selection will highlight and provide learning opportunities, including an understanding of seasons and biodiversity.
- Plant stock will be sourced locally where possible, to ensure plants are acclimated to the climate ensuring best rate of survival and performance.

The plant species identified for the River campus are outlined in the Landscape Schedule provided as an **attachment** 4 to this Volume of the report.

4.8.4 Ecologically Sustainable Landscape Design Philosophies

The landscape design has been developed in accordance with the following ESD philosophies:

- Selection of robust materials to minimise maintenance.
- Selection of long-lived species with low maintenance requirements.
- Selection of climate appropriate species that are hardy and drought tolerant with low water requirements where possible.
- Increasing tree canopy to contribute to the Onkaparinga Council's tree canopy initiative.
- Placement of trees and planting to reduce glare to buildings.
- Placement of deciduous trees to create passive heating and cooling benefits to buildings and outdoor spaces.
- Planting to contribute to improved air quality and amenity, reducing dust and buffering cross winds.
- Integration of vegetation buffers to boundaries reduce the impact of adjacent transit corridors, and primary production uses.
- Rainwater harvesting and reuse for irrigation where practical.
- Water catchment/runoff and treatment onsite through integrated water-sensitive urban design.
- Utilising infrastructure as an educational tool.

4.8.5 Kaurna Artwork Strategy

A site-specific art strategy has been developed in consultation with Paul Herzich, an Aboriginal Landscape Architect and Visual Artist.

The following sections describe the high-level strategy. Final details of these elements will be further developed in consultation with Paul and other members of the Kaurna Community.

Art Typology 01 – Integrated Welcome

Artwork will be integrated into the hard surface pavement of the plaza and piazza to highlight entry points and main circulation routes.

It will consist of sand-blasted artwork exposing a mixture of coloured gravels and oxides which incorporates the Kaurna and English languages.

Art Typology 02 – Kaurna Sites of Significance

Installations will be at three important points – principal entry, primary entry and secondary entry. These will highlight Kaurna sites of significance that are nearby to each site, acknowledging context and ownership of land.

- Installation 01 Aldinga Scrub
  - Kaurna men's place for tanning animal skins.
- Installation 02 Blue Lagoon
  - Mud located here was especially good for tanning skins.
- Installation 03 Washpool
  - Also associated with tanning of skins.
  - Many essential possessions were made here, such as cloaks and bags.

Art Typology 03 – Discoverable Artworks

Small artistic elements will be integrated into nature play and the 'wild' edges providing a high level of play and investigation value.

These elements will highlight native fauna and will be integrated into the boulders and timber play elements.

Art Typology 04 – Significant Plant Species

Significant Indigenous pre-European plant species have been identified. This palette of significant species will be developed during design development in consultation with Paul Herzich.

The significant species will be identified with plaques or integrated interpretive signage.

There is potential for planting resources that are significant to the local Aboriginal community.

4.8.6 Recreational & Sporting Facilities

The proposed recreational and sporting facilities include provision for the following:

- full size oval (1x AFL, cricket);
- primary oval (1x junior AFL);
- soccer/hockey fields (2x);
- gym (2x indoor courts);
- outdoor hard courts (10x, multiple purpose line marking tennis, netball);
- cricket nets;
- long jump pit; and
- fitness room (gym).

4.9 FENCING AND SECURITY

The school layout has been designed to suit security and duty of care responsibilities throughout the course of the day, before, during and after school hours. The master plan layout forms four zones aligned with the OSR. To manage access at different times of day or year, these zones may be independently opened or secured to suit the various modes of operation anticipated.

The fencing strategy uses the building as containment line, supplemented by infill fencing and gates. These will be complemented by CCTV coverage and security patrols by ISS.

The following diagrams show the proposed fence and gate locations, and the zones contained within the secured areas.

The main securable area will be opened during school hours and closed out of school hours.

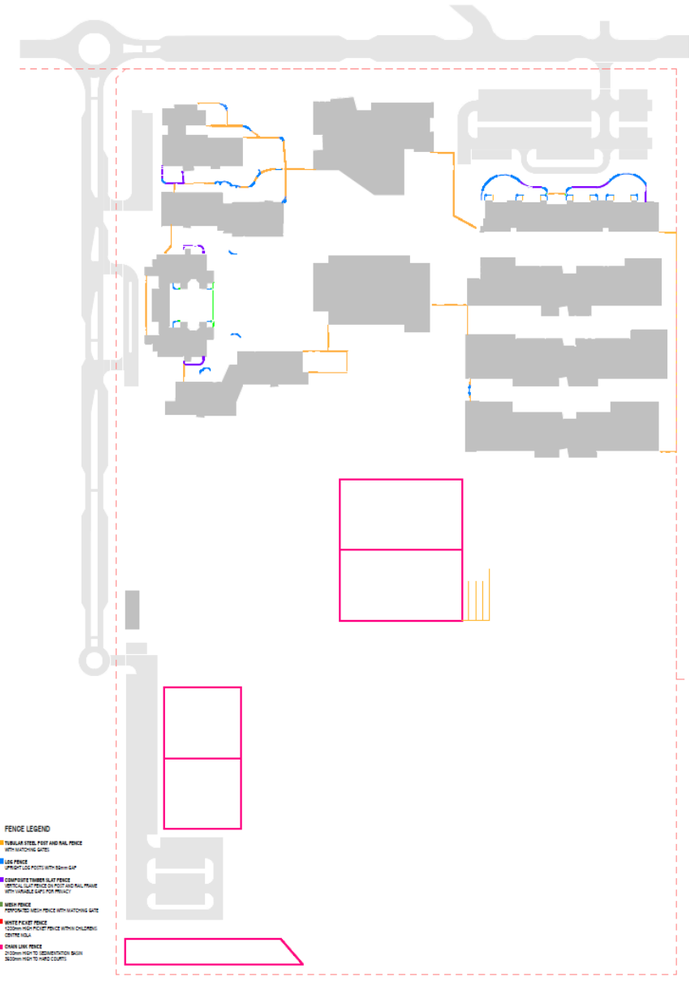
Access to drop off zones, carparking, and community spaces including the sports fields and gymnasium is maintained during and also out of school hours, whether the securable area is open or closed.

Fences will be located to create a secure zone at the heart of the school. When secured, this zone will still allow access to the community facilities in the gymnasium and performing arts facilities.

A variety of fencing styles are proposed across the site as identified below and illustrated on the fencing plan NOR-ARC-DA-DWG-09_20.

- tubular steel post and rail fence with matching gates;
- log fence comprising upright log posts with 85mm gap;
- composite timber slat fence comprising 0vertical slat fence on post and rail frame with variable gaps for privacy;
- mesh fence comprising perforated mesh fence with matching gate;
- white picket fence comprising 1,200 millimetre high picket fence within Children Centre Nola; and
- chain link fence:
    - 2,100-millimetre-high to sedimentation basin; and
    - 3,600-millimetre-high to hard courts.

The balance of the site will not be fenced.



4.10 SERVICES

4.10.1 Storm Water

In accordance with the project requirements, all minor system drainage is to be discharged to Quinliven Road where it can connect into City of Onkaparinga's drainage network. To limit stormwater discharge rates to that of the pre-development condition (for the various Annual Exceedance Probability [AEP] design storm events), a series of underground detention tanks are to be employed along the Quinliven Road frontage. These detention tanks will discharge via a series of pumps to the Quinliven Road underground stormwater system.

Existing site levels consist of a localised high point in the centre of the site with catchments contributing towards the north and south respectively. Due to level restrictions, stormwater intercepted at the south of the site will be pumped north where it can connect into the site's main gravity drainage system. Stormwater runoff from the southern catchment will be intercepted via a swale/bund along the southern boundary and be directed into a detention/sedimentation basin.

To achieve stormwater quality requirements, a series of oil/water separators, gross pollutant traps (GPTs), fine filtration units and bio-retention swales will be arranged in a 'treatment train' to remove site pollutants.

4.10.2 Waste Management

Full details of the waste management solutions to be implemented throughout the proposed development are contained within the Waste Management Plan prepared by ISS Facility Services in accompanying the application documentation.

It is relevant for SCAP to note that the waste associated with the proposed development is to be managed as follows:

- weekday cleaning teams will be rostered in three shifts to ensure coverage during the morning from 4:00 am to 8:00 am and in the evening from 6:00 pm to 11:30 pm and weekend on site support is to be provided for all additional community use of the facilities;
- waste segregation will be encouraged with the provision of visually appealing co-located bins for each waste stream;
- two 240 litre composing waste bins accommodating food waste will be used alternately, with one filled to capacity and then sealed to compost while the other is filled. The compost is to be used on the school oval and garden beds;
- regular cleaning of the bins will be a responsibility of the Contract Manager and Cleaning Supervisor;
- a waste storage area is to be located adjacent to the southern car park and sports fields to enable convenient collection with minimal aesthetic impact and disruption to school operation. The waste storage area measures 10 metres x 5.0 metres; and
- an indicative schedule and frequency for waste collection is provided in the waste management report.

4.10.3 Public Utilities

Electrical

The approach to the provisions of electrical services infrastructure is to include adequate capacity and redundancy to cost-effectively provide power supply reliability and flexibility for future needs at each level of the network, including:

- at the high voltage network connection point – the maximum demand and future capacity requirements result in a 1,500kVA transformer being required;
- at the site main switchboard (SMSB) – allowing for spare capacity of 25 percent (including physically within the SMSB room);
- at each building distribution board – allowing for spare capacity of 25 percent (including physically within the distribution board);
- site cable reticulation – allowing at least one spare conduit in all common services trench runs for future cable installation; and
- facility to connect a mobile generator – through a mobile generator link box at the SMSB, should there be a prolonged power outage.

As a key plank of our sustainability strategy, each school will have 430kW of solar panels installed on the secondary school building roofs. The secondary school buildings have been selected due to their higher power demand and the availability of north facing roofs.

A retail meter for each site will be provided at the SMSB. This will be an import/export style meter allowing excess solar power to be exported into the grid. Local metering will be provided in compliance with National Construction Code (NCC) and Green Star requirements including separate metering of general power loads, lighting loads, mechanical/hydraulics loads and any large loads. Where PV systems necessitate, the metering will allow for import/export of power. All metering will be connected to the building management systems (BMS) to allow for easy monitoring of electrical energy.

All electrical systems are designed in compliance with the brief, SA Power Networks requirements, NCC and AS/NZS standards.

Potable Water

Generally, potable water mains serve the school site through dedicated service corridors, where possible utilising common trenches.

The potable supply is designed to meet school demand with 20 percent spare capacity allowance in the mains supply runs for future flexibility.

Potable water demand is based on the diversified approach (as per SA/NZS 3500.1) as a probable demand value. However, sizing of pipework will take into consideration 100 percent of demand for the index run (most remote hydraulic network).

The main tap off from street main will be supplied by a water meter in accordance with SA Water requirements. Each building will be provided with a main supply branch including a meter and an isolation valve. This will enable monitoring and management of water consumption at a building level, while also creating educational opportunities. To aid management of water usage, smart water meters (with pulsed output) will be used and interfaced with the building BMS for local and remote monitoring. Isolation valves will enable maintenance to occur within anyone building without impacting on other buildings across the site.

Recycled Water

Recycled water will be used to meet the irrigation demand for all sports fields and landscape areas of the school.

For each site the recycled water will be derived from a local council/SA Water main.

The main tap off from street main will be supplied by a water meter in accordance with SA Water requirements.

Isolation valves will support maintenance of irrigation networks within specific zones across the campus.

Sanitary Drainage

The sanitary plumbing and drainage system is designed to meet the requirements of AS/NZS 3500.2 and the Plumbing Code of Australia.

The sanitary drainage has been designed to meet 120 percent of demand. Both sites include a system that drains by gravity to a pump station that then pumps the waste to the designated connection point. Each pumping station includes duty and standby by pumps for redundancy and certainty of performance. In addition, the pumping station and the drainage pipework has been designed to sustain a complete 24-hour waste load from the whole site. This will provide a 24-hour window to get the sewer pump system reactivated in the unlikely event that both the primary and backup pumps fail. Each pump is alarmed and monitored through the automated BMS system onsite.

The underground network has been designed to suit the reactive soil profiles and potential soil movement on each site. This includes flexible connections, the selection of durable, ductile materials and careful selection of gravity pipe grades.

All 100-millimetre branches at the head of each main drain will be laid at a gradient of 1 in 60. Elsewhere all pipe gradients for drainage within the buildings will comply with the minimum requirements of AS/NZS 3500.2. Where low volume sanitary drainage is anticipated, minimum grades may be increased in consideration of fixture discharge and diversity of adjacent fixture flows to ensure adequate carriage of solids through the pipe and achieving a self-cleansing velocity of 0.7m/s.

Trade Waste

Multiple hydraulic systems are proposed at each site which will require pre-treatment and are therefore classified as trade waste. These include:

- kitchen waste;
- art rooms (paint and clay sinks); and
- science labs.

Typically, trade waste will be plumbed independent to the sanitary drainage system from each relevant fixture, with gravity discharge from a single main to the dedicated pre-treatment device for the local group of fixtures.

Neutralising tanks will be installed to receive trade waste discharge from all science labs. The sizing of the tanks has been based on similar projects and confirmed by the SA Water Trade Waste team.

In line with the DR21 site technical assessment and SA Water response for infrastructure availability, a sewer pumping station will be provided by the State to the southeast of the site. Due to the nature of the site and planned location of buildings, a further sewer pumping station will be provided within the site to minimise the depth of trenching.

Gas

The approach for gas supply to the sites differs due to differing access to existing gas infrastructure.

No main connection is economically available for this site. Two 7.5kL, aboveground gas ‘bullet’ LPG tanks will be provided in the southeast corner of the site to meet the site gas demand including 20 percent additional capacity in the system. They are located well away from all buildings to provide safe and clear access for refilling and to meet statutory clearance zones. The use of two smaller bullets gives greater certainty of supply over a single larger bullet.

Gas will be supplied to the buildings through a primary regulator maintaining supply pressure to each building branch-off. Each building will be provided with a secondary stage regulator (set to 3.5kPa) and sub-gas meter which will be smart and capable of BMS connection for consumption monitoring. The gym will be provided with a connection each for the primary and secondary gyms.

Fire Water

Our approach to the fire protection systems and fire water at a site master plan level is to develop fire protection systems that fully comply with the Deemed to Satisfy provisions of the Building Code of Australian.

This is done by:

- undertaking SA Water flow tests and network analysis for the two sites;
- using these values to determine the fire water storage requirements for each site;
- developing a hydrant layout arrangement so that all buildings are provided with hydrant coverage;
- meeting with the local fire authority to gain agreement and acceptance of the firefighting measures; and
- reviewing the South Australian bushfire zone maps to determine if either site falls within a bushfire zone (neither site is in a bushfire zone and this has not been considered further).

4.11 OPERATIONAL

TESA will manage and coordinate community use on behalf of Education and the Operator. A booking system will be utilised to coordinate and manage those uses. Community use agreements will be in place to ensure the utilising of school facilities is sustainable and the responsibilities of both parties are clear. Public use of school facilities will be coordinated between these parties each school term, under an agreed governance framework that seeks to enhance the role the schools play in the community.

Community use will be coordinated with the Operator both within and outside school hours.

4.12 ESD PRINCIPLES

The consideration and integration of sustainable design to reduce environmental impact has been a collaborative and integrated process which has sought to obtain a balanced environmental response that reflects and carefully considers the following design considerations:

- local climate and site constraints;
- function and usage;
- indoor environment quality;
- comfort control;
- energy efficiency;
- waste and water management;
- flexibility and reliability;
- construction materials;
- educational and social benefit;
- capital and recurrent costs; and
- innovation.

The form and layout of buildings on each site have been carefully designed to ensure passive opportunities are utilised without compromising functionality and energy and water efficiency. Learning communities are designed with primary north and south facing façades to take advantage of natural light while minimising direct solar exposure. Strategically positioned shading and high-performance building fabric will ensure that energy efficiency is achieved in tandem with occupant comfort and a high-quality indoor environment.

The school will achieve a minimum 5 Star Green Star rating through application of the Design & As Built v1.2 rating tool, with the capacity to achieve a 6 Star rating. A minimum 150kW solar PV system will be provided for each school with the option to increase this to 430kW to enable a 6 Star Green Star rating outcome. The 430kW solar PV system will also enable the schools to operate as carbon neutral.

Real time operational information will be displayed to enable and encourage students to engage with their buildings. These ESD displays, which will be supported by the BMS, will serve as a learning tool and also encourage reducing energy and water use by demonstrating sustainable behaviours and operational practices.

4.13 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

CPTED is guided by the four core principles of territorial reinforcement, surveillance, access control and activity management. Given the developments multiple functional roles as a school, community facility and public open space, CPTED has been a fundamental element in site orientation, building layout, space management, sight lines, site management and landscaping.
In addition to these physical design features, the school will incorporate soft security lighting throughout the grounds and car parks, in addition to CCTV. Periodical security controls and inspections will also supplement the natural surveillance of the site.

A CPTED report is provided as part of the application documents. The proposals extensive CPTED strategies are discussed further in detail within the body of this report.

4.14 LAND DIVISION

The proposal incorporates the subdivision of the subject site creating a road reserve to accommodate the western road and the widening of Quinliven Road to facilitate construction of the roundabout.

While there is an argument that the Land Division is exempt from development pursuant to Schedule 14, (1) (g) of the *Development Regulations 2008*, the plan of division has been provided with an abundance of caution.

The plan of division is illustrated on the land division plan prepared by JG Surveyors. Please refer to **Attachment** 6 in Volume 1 of this report.

5.0 COMMUNITY ENGAGEMENT

5.1 CONSULTATION

Key stakeholders have been involved in the development of the SA Schools PPP Project.

Key Stakeholders that were consulted through a series of workshops during the Interactive Tender Process:

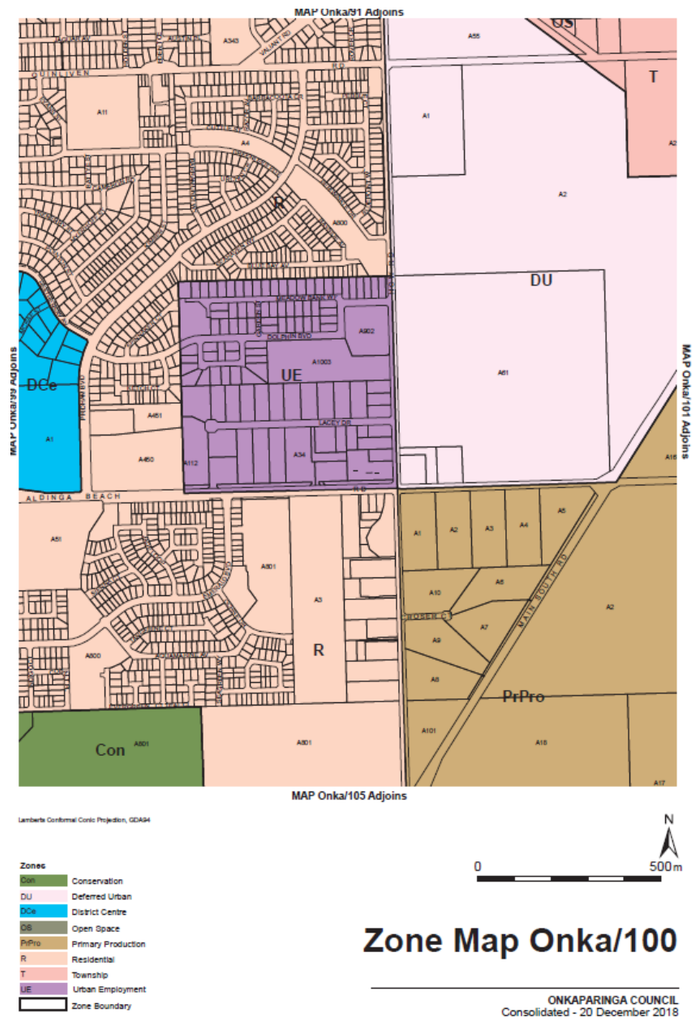
- Department of Education;
- DPTI;
- ODASA; and
- Onkaparinga Council.

The Department of Education has conducted some limited consultation with the community regarding the establishment of the new Education Establishment.

6.0 DEVELOPMENT PLAN ASSESSMENT

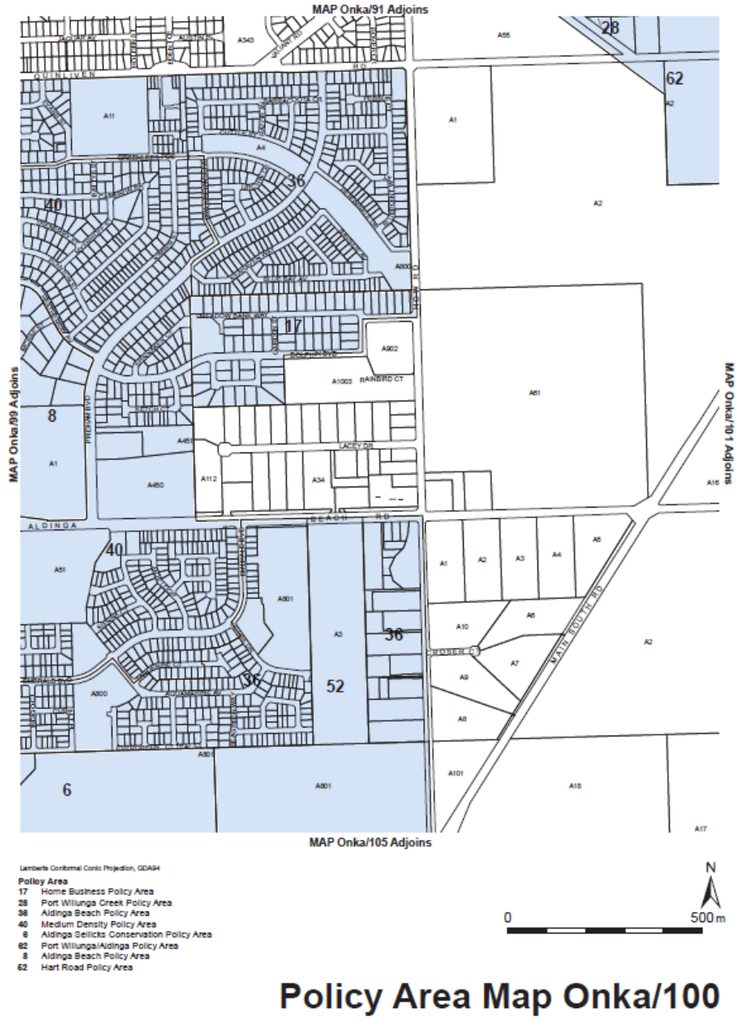
The relevant version of the Onkaparinga (City) Development Plan for procedural and assessment purposes was consolidated on 20 December 2018.

The subject land, under this version of the Onkaparinga (City) Development Plan, is situated within the Deferred Urban Zone and the adjacent Township Zone as shown on Zone Map Onka/100 and more specifically within a portion of the Port Willunga / Aldinga Policy Area 62 of the Township Zone of that zone as Shown on Policy Area Map Onka/100.



Zone Map Onka/100

ONKAPARINGA COUNCIL
Consolidated - 20 December 2018



Policy Area Map Onka/100

6.1 LAND USE / ORDERLY AND SUSTAINABLE DEVELOPMENT

Orderly planning attempts to ensure the rational separation of incompatible land uses generally by establishing zones in which certain activities are contemplated. Zones are established with the endeavour of envisaged land uses being developed sustainably to provide a social, economic and environmental benefit for the area.

The general intent of the Deferred Urban Zone is to retain land as a holding measure for future urban expansion, with development not to 'prejudice the orderly conversion of the land for residential purposes'.

It is envisaged that the intended development within the zone is to generally occur following rezoning and the completion of a detailed structure plan. Notably, the areas of 'Aldinga, Aldinga Beach and Sellicks Beach' represent an exception to this where essential infrastructure and community services are proposed, as outlined in the following:

> **Desired Character Statement**
>
> **Development for the purposes of <u>providing essential infrastructure and community services</u> is envisaged within this part of the zone, providing it can be demonstrated that the development is accessible to the community it serves, enables the orderly and economic connection to residential areas as required, is of a scale that does not compromise the centres hierarchy and does not adversely impact on the Aldinga Scrub Conservation Park.**

The proposed integrated educational establishment is considered to represent both 'essential infrastructure' and 'community services' given its primary intention to provide education and the associated opportunities for the general public to utilise the sites infrastructure. The provision of education represents essential social infrastructure for the local community while the general public's utilisation of the site's facilities such as the gym, oval, arts and library align with community services. These two elements directly accord with the land use intentions of the Desired Character Statement.

The circumstances in which such services are to be provided is considered further Objective 7:

> **Objective 7:** **The provision of essential infrastructure and community services in Aldinga, Aldinga Beach and Sellicks Beach that:**
>
> **(a) is located and designed to enable integration with existing and/or future residential development**
> **(b) is accessible to existing and proposed residential areas**
> **(c) is in accordance with the centres hierarchy as described in the General Section provisions**
> **(d) facilitates the economic connection to infrastructure and services as required**
> **(e) does not detrimentally impact on the environmental water requirements of the Aldinga Scrub Conservation Park.**

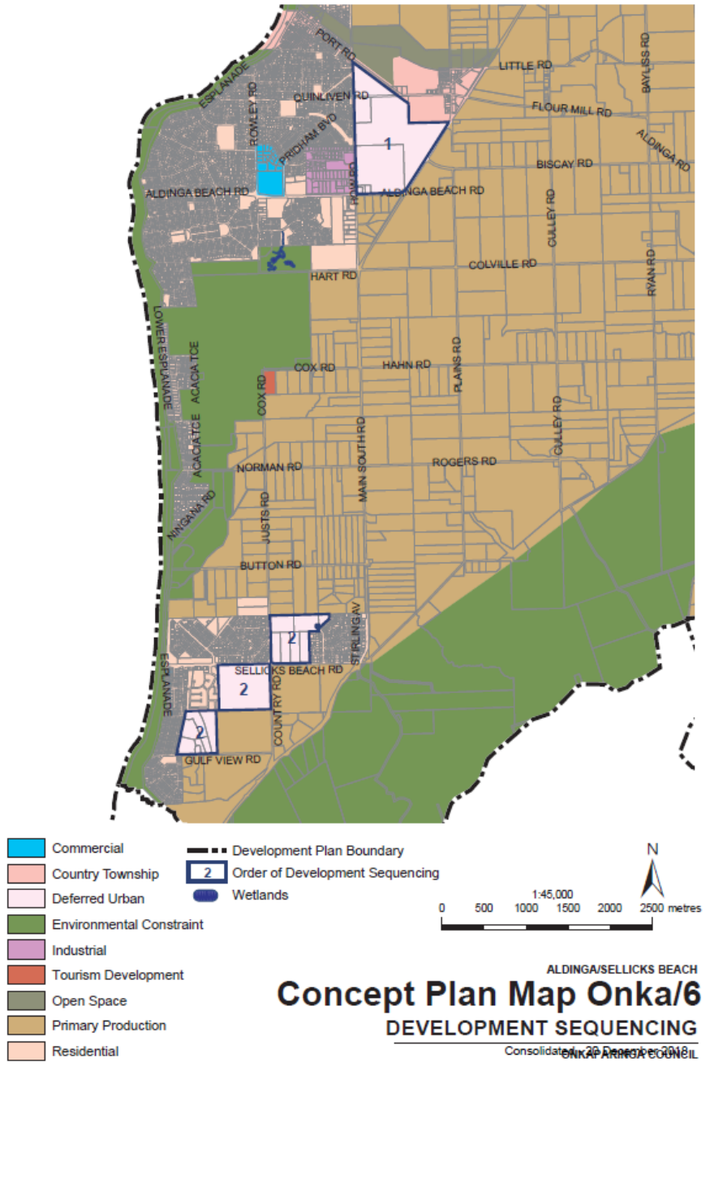
The Desired Character Statement and Objective 7 each provide the opportunity to support essential infrastructure and community services where it is able to be determined that it does not prejudice the intent of the zone and is considered to represent an orderly form of development. Accessibility and integration are each considered important elements in this regard.

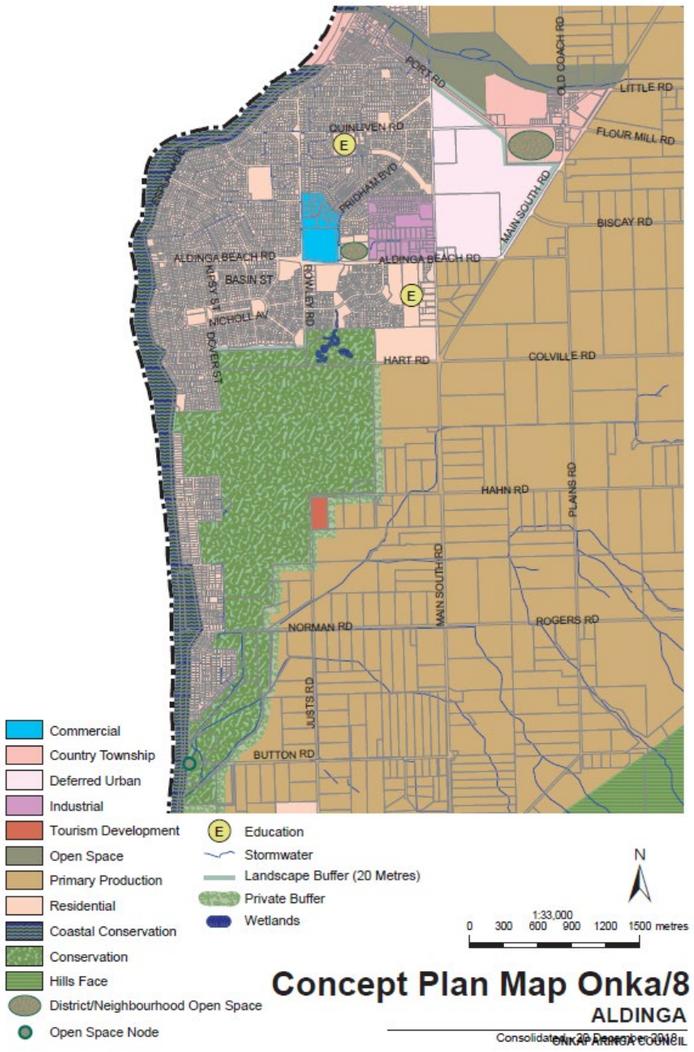
The accessibility and integration tests referenced are discussed further within the body of this report. With consideration of these discussions, we are of the view the proposal is an appropriately located essential infrastructure and public services development that is in keeping with the intent of the zone.

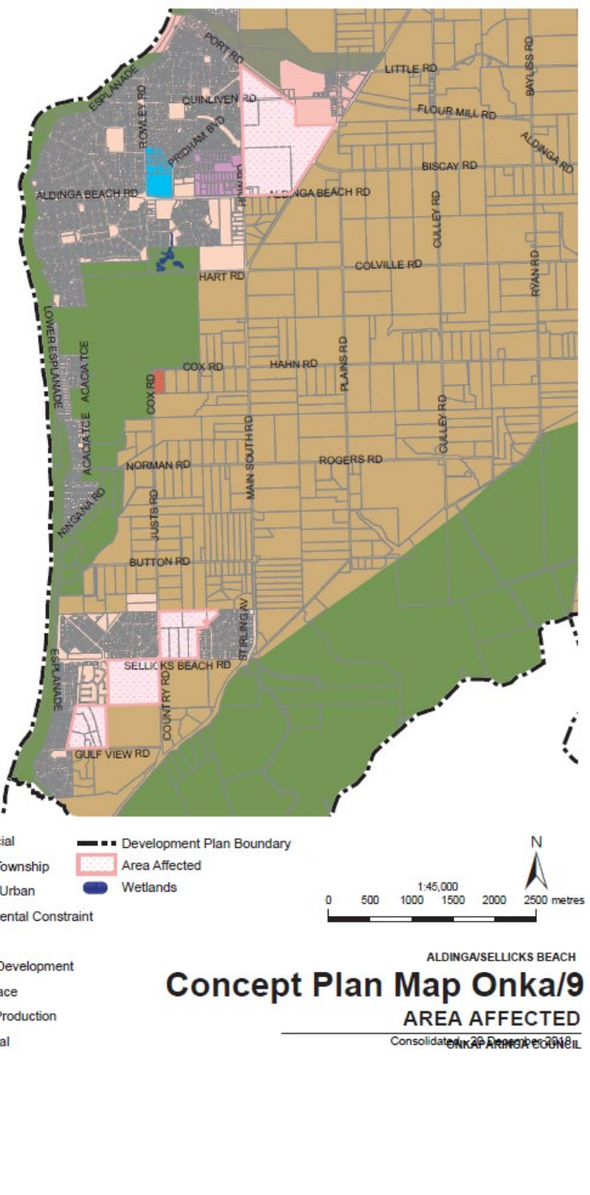
6.1.1 Concept Plans

We also note that the subject site is influenced by three Concept Plans, namely:

- Concept Plan Map Onka/6 – Development Sequencing (Aldinga/Sellicks Beach);
- Concept Plan Map Onka/8 – Aldinga; and
- Concept Plan Map Onka/9 – Affected Area (Aldinga/Sellicks Beach).







Concept Plan Map Onka/6 is referenced in the Deferred Urban Desired Character Statement and nominates the development sequencing intended for the numerous areas within the zone. Notably, the subject site is listed as the first site to be developed within that sequencing, providing confidence that its development represents an orderly form of development.

Concept Plan Map Onka/8 is reference in PDC 8 of the zone and considers the development intentions for the Aldinga Area.

PDC 8: Development at Aldinga should be undertaken in accordance with Concept Plan Map Onka/8 - Aldinga.

The Concept Plan references two Educational locations within Aldinga that at 240 Aldinga Beach Road and 58 Quinliven Road, Aldinga Beach. Each of these sites currently support existing schools, including Aldinga Beach primary school on Quinliven Road and Southern Vales Christian College (foundation to year 12) on Aldinga Beach Road. The subject site is nominated as a section of the Deferred Urban Zone within the Concept Plan.

While educational land uses are nominated on two sites within Aldinga within Concept Plan Map Onka/8, this allocation does not preclude the orderly development of a third educational establishment within the area. Given the only information provided in the Concept Plan relevant to the subject site is that it is nominated within the Deferred Urban Zone, it does not provide any further clarification beyond the development intentions outlined within the Desired Character Statement and provisions of that zone. The Concept Plan is silent on the appropriateness of a school within the subject site.

We note that Concept Plan Map Onka/9 is referenced within the Deferred Urban Zone non-complying list as nominating affected areas that are to be exceptions for a land division where 'one additional allotment is created for the purposes of an educational establishment. The subject site is nominated as an 'affected area'.

While the non-complying list is not of relevance within a Section 49 Development Application, it can provide guidance on the development intentions for the subject site. We note that educational establishment is listed as non-complying within the Deferred Urban Zone, however the listing of that use as an exemption for non-complying land divisions indicates a policy recognition that future development of such a use is anticipated.

Land division is generally the foundation of future development. It is our interpretation that this exemption has been included to enable the appropriate allotment configuration for a future educational establishment on the site, further acknowledging its orderly form of development in this location.

Concept Plan Map Onka/8 is silent on the appropriateness of an educational establishment on the subject site. Concept Plan Map Onka/6 and Onka/9 each indicate that the subject site is recognised as the next area of the Deferred Urban Zone to be developed. As such, the proposal does not offend the relevant Concept Plans in terms of its orderly nature or premature development.

6.2 Land Division

Land division is contemplated within the Deferred Urban Zone, as outlined in PDC 14:

Deferred Urban Zone

PDC 14 The alteration of allotment boundaries should only occur in order to achieve one or more of the following:

- **(a) correct an anomaly in the placement of allotment boundaries with respect to the location of existing buildings or structures**
- **(b) improve the management of the land for the purpose of primary production**
- **(c) enable the provision of public infrastructure.**

The land division proposes the provision of a road reserve to accommodate the western road and the widening of Quinliven Road to enable to construction of a roundabout. The intent of the land division aligns with PDC 14(c) in providing public infrastructure.

Road reserves are also required to be of appropriate dimensions to ensure they are fit for purpose and able to accommodate that appropriate infrastructure, as outlined in PDC 14:

Council Wide Land Division

PDC 14: Road reserves should be of a width and alignment that can:

- **(a) provide for safe and convenient movement and parking of projected volumes of vehicles and other users**
- **(b) provide for footpaths, cycle lanes and shared-use paths for the safety and convenience of residents and visitors**
- **(c) allow vehicles to enter or reverse from an allotment or site in a single movement allowing for a car parked on the opposite side of the street**
- **(d) accommodate street tree planting, landscaping and street furniture**
- **(e) accommodate the location, construction and maintenance of stormwater drainage and public utilities**
- **(f) provide unobstructed, safe and efficient vehicular access to individual allotments and sites**
- **(g) allow for the efficient movement of service and emergency vehicles.**

The road reserve dimensions reflect the dimensions of the western road, which has been designed in consultation with the Onkaparinga Council. The road provides safe and convenient access to the integrated educational facility and will enable the further development of the adjacent vacant land to the west and south of the subject site.

6.3 CHARACTER

The character of the locality is mixed, with residential development to the west, the Aldinga township to the east incorporating commercial and residential development and a centrally located section of undeveloped greenfield land running north/south. The Aldinga township in particular is recognised as providing important characteristics worthy of retention, as stipulated in the following:

Deferred Urban Zone

PDC 9: Development adjacent the Port Willunga/Aldinga Policy Area 62 of the Township Zone, should protect the historic and landscape character of the adjoining Aldinga township by incorporating sensitive design elements including the use of separation distances, building setbacks and landscaping.

The Aldinga sports facility represents a vast open space separating the subject site from the centre of the Aldinga township.

The proposed development clusters the majority of built form elements in a northern portion of the allotment, with adequate spacing between buildings so as to accommodate landscaped plazas and circulation corridors. The southern portion of the land will largely be dedicated to expansive sport and recreation facilities. Site boundaries will be landscaped and will avoid the use of fencing and other obstructions in order to maintain public accessibility and permeability through the site. In this respect, the proposed integrated educational establishment will maintain an open landscaped character consistent with that of the Aldinga sports facility and that will not detract from the historic and landscape character of the Aldinga township.

6.3.1 Design and Appearance

The following Built Form and Townscape Council-wide Objectives and PDC's outline the intent to be attained by development within Onkaparinga Council, and directly reflect the importance of the built form and architectural expression contemplated for a development of this nature.

Design and Appearance

Objective 1: Development of a high design standard and appearance that responds to and reinforces positive aspects of the local environment and built form.

PDC 1: Buildings should reflect the desired character of the locality while incorporating contemporary designs that have regard to the following:

- **(a) building height, mass and proportion**
- **(b) external materials, patterns, colours and decorative elements**
- **(c) roof form and pitch**
- **(d) façade articulation and detailing**
- **(e) verandas, eaves, parapets and window screens.**

PDC 3 Windows and doors, awnings, eaves, verandas or other similar elements should be used to provide variation of light and shadow and contribute to a sense of depth in the building façade.

PDC 16 Buildings should be designed and sited to avoid extensive areas of uninterrupted walling facing areas exposed to public view or from adjoining dwellings in residential areas.

PDC 17 Building design should emphasise pedestrian entry points to provide perceptible and direct access from public street frontages and vehicle parking areas.

The building forms incorporate simple designs generally with skillion, scissor and clerestory style roof forms that incorporate alternate and staggered roof pitches to address visual bulk. Mechanical plants are generally located on roof tops and screened and centralised on buildings where achievable.

The roof variations provide an important design element resulting in articulation and variety, which is enhanced with the use of deep eaves to provide depth perception through shading.

Cladding materials vary within the elevations, with the use of masonry along the lower section of external walls representing a clear design feature. The low-lying masonry element combines with the deep eaves to provide a horizontal impression that assists with the visual integration of buildings across the site.

Glass is used extensively across the majority of the buildings, providing an open and transparent outcome. Glazing is generally oriented to the expansive northern elevation of the buildings and is effectively shaded from the northern sun through deep eaves.

The buildings proposed present with a well-articulated simple form with generous colour and material variation. The horizontal impression is consistent across the site, providing a coordinated built form outcome that of a high design standard for its intended use. The proposal is consistent with the architectural design intention of the Development Plan for a development of this nature.

6.4 LANDSCAPING

Landscaping has been a key principle in defining the design process of the school, which has been informed by site specific opportunities and constraints. The landscape design has been driven by the identity and context of the site.

PDC 1: Development should incorporate open space and landscaping and minimise hard paved surfaces 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) maximise shade and shelter**
- **(g) assist in climate control within and around buildings**
- **(h) minimise heat absorption and reflection**
- **(i) maintain privacy**
- **(j) maximise stormwater re-use**
- **(k) complement existing vegetation, including native vegetation**
- **(l) contribute to the viability of ecosystems and species**
- **(m) promote water and biodiversity conservation.**

PDC 2: Landscaping should:

- **(a) include the planting of locally indigenous species where appropriate**
- **(b) be of a sufficient mature height and oriented towards the street frontage where it should screen buildings (except for entry doors and foyer areas) and enhance the appearance of development**
- **(c) result in the appropriate clearance from powerlines and other infrastructure being maintained**
- **(d) provide summer shade to reduce urban heat loading and where appropriate allow winter sun penetration and improve micro-climate conditions.**

Open Space and Recreation

PDC 13: Landscaping associated with open space and recreation areas should:

- **(a) not compromise the drainage function of any drainage channel**
- **(b) provide shade and windbreaks along cyclist and pedestrian routes, around picnic and barbecue areas and seating, and in car parking areas**
- **(c) maximise opportunities for informal surveillance throughout the park**
- **(d) enhance the visual amenity of the area and complement existing buildings**
- **(e) be designed and selected to minimise maintenance costs**
- **(f) provide habitat for local fauna.**

Extensive landscaping is proposed throughout the site. Spaces between buildings will be strategically landscaped to create a series of hybrid outdoor learning and recreation spaces and to ensure visual connections to green spaces from inside the proposed buildings.

Movement corridors (including a green east–west connection through the campus), parking areas, boundaries, and gathering places has been suitably landscaped with appropriate species to provide seasonal shade and passive cooling in key locations. Additionally, species have been strategically selected to highlight key features such as entry points to encourage wayfinding.

Plant species have been selected that are appropriate to site and soil conditions and easily maintained to a high-quality across the life of the development. Site-specific, historically native have been identified and selected to reinforce and restore the natural environment native to this locality.

6.5 PEDESTRIAN AND CYCLING ACCESS

The proposal represents an important cultural, recreational and open space asset for the community beyond that of its key operational use as an integrated educational facility. To ensure the extracurricular opportunities for the site are maximised, safe and convenient pedestrian and cycling access is a key element for both within and outside of school hours, as outlined in the following:

Transportation and Access

PDC 15: Development should ensure that a permeable street and path network is established that encourages walking and cycling through the provision of safe, convenient and attractive routes with connections to adjoining streets, paths, open spaces, schools, pedestrian crossing points on arterial roads, public and community transport stops and activity centres.

PDC 16: Development should provide access, and accommodate multiple route options, for pedestrians and cyclists by enhancing and integrating with:

- **(a) open space networks, recreational trails, parks, reserves, and sport and recreation areas**
- **(b) Adelaide's principal cycling network (Bikedirect), which includes arterial roads, local roads and off-road paths as depicted in Overlay Maps - Transport.**

Open Space and Recreation

Objective 1: The creation of a network of linked parks, reserves, recreational trails and recreation areas at regional and local levels.

Objective 2: Pleasant, functional and accessible open spaces providing a range of physical environments.

PDC 2: Public open space and recreation areas should be of a size, dimension and location that:

- **(c) facilitate a range of formal and informal recreation activities**
- **(d) provide for the movement of pedestrians and cyclists**
- **(e) incorporate existing vegetation and natural features, watercourses, wildlife habitat and other sites of natural or cultural value**
- **(f) link habitats, wildlife corridors, public open spaces and existing recreation facilities**
- **(g) enable effective stormwater management**
- **(h) provides for the planting and retention of large trees and vegetation.**

PDC 3: Open space should be designed to incorporate:

- **(a) pedestrian, cycle linkages to other open spaces, centres, schools and public transport nodes**
- **(b) park furniture, shaded areas and resting places to enhance pedestrian comfort**
- **(c) safe crossing points where pedestrian routes intersect the road network**
- **(d) easily identified access points**
- **(e) frontage to abutting public roads to optimise pedestrian access and visibility**
- **(f) re-use of stormwater for irrigation purposes**
- **(g) recreational trails where appropriate.**

The site is provided with direct access to a designated shared footpath and bike pathway that extends along the southern side of Quinliven Road, from Main South Road in the east to Rowley Road to the west. An example of the path is depicted below:

A footpath is also located on the northern side of Quinliven Road. Two protected pedestrian crossing points are located directly adjacent to the subject site.

The subject site is also located directly adjacent to the Aldinga sporting facility to the east which incorporates numerous sporting fields, hard courts and club rooms supporting lawn bowls, football, tennis, netball, basketball, croquet and dressage. The Aldinga main shopping precinct is located further to the east. The subject site is well position to integrate with the areas existing east/west orientated cycle and pedestrian network.

The development proposes the construction of additional cycle ways and footpaths that are to integrate within the existing network, enabling connectivity with the Quinliven Road infrastructure. The opportunity for future entrance nodes around the site has been incorporated within the design to enhance connectivity with the surrounding land uses as the locality further develops, as indicated in the following Walking and Cycling Connectivity image.

A shared cycle and pedestrian path is proposed to be constructed around the periphery of the site to facilitate connectivity with existing and future networks. A shared path is also proposed to dissect the site in an east/west direction to provide a convenient out of hours thoroughfare. The piazza site link provides an additional east/west thoroughfare during school hours.

There are numerous proposed and future entry nodes located along each boundary providing flexibility for the future development of adjacent sites, particularly with the residential opportunities to the west and south. The flexibility in connecting with the sporting facility site to the east is also particularly important to enable access to the adjacent sporting infrastructure and Aldinga's main shopping precinct further to the east.

The proposal is successful in connecting with the existing network and providing flexible connection opportunities for the future development of the green field sites to the west and south, and the existing sports facility to the east.

The sites flexible accessibility is largely due to the absence of boundary fences, with the site boundary primarily defined by a vegetation buffer consisting of trees and low vegetation. Adjacent to the ovals and sports fields will be a continuous garden mound/planted berm (approximately 600 millimetres high) integrated into the vegetation buffer. This element, along with strategically placed boulders, will create a physical ingress and egress barrier for both students and vehicles.

Access through this vegetated barrier is facilitated by entry nodes that incorporate an entrance statement or small paving feature ensuring cyclists will need to reduce their speed upon entering and exiting the site.

6.6 CRIME PREVENTION THROUGH URBAN DESIGN (CPTED)

Inherent in design is the need to ensure that development provides for a safe, secure and crime resistant environment as envisaged in the following Council-wide CPTED Objectives and Principles:

Crime Prevention

Objective 1: **A safe, secure, crime resistant environment where land uses are integrated and designed to facilitate community surveillance.**

PDC 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.**

PDC 4: **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.**

PDC 9: **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 and community transport links and pedestrian and cyclist networks to maximise visibility.**

PDC 10: **Development should avoid pedestrian entrapment spots and movement predictors (eg routes or paths that are predictable or unchangeable and offer no choice to pedestrians).**

CPTED is guided by the four core principles of territorial reinforcement, surveillance, access control and activity management. Given the developments multiple functional roles as a school, community facility and public open space, CPTED has been a fundamental element in site orientation, building layout, space management, sight lines, site management and landscaping. A CPTED report is found at **attachment** 5 of Volume 2.

The grid pattern building layout philosophy has been strategically employed to provide intuitive and legible wayfinding within the site. The design is to provide ease of access and a physically and visually permeable pedestrian environment.

The grid pattern ensures the outdoor areas, thoroughfares and plazas are each provided with multiple access points, avoiding the possibilities of entrapment. The generous width of each space also enhances sight lines and addresses concerns of confinement. Natural surveillance of the outdoor areas is provided from within learning spaces and from adjoining outdoor spaces. Student toilets are conveniently accessed from the circulation zones and the entrances are highly visible. Site-wide lighting is provided for out of school hours safe circulation through outdoor spaces.

The school has been designed with minimal fencing and an open layout to encourage out of hours access. A fencing strategy is in place creating four zones (learning communities) that are able to be independently secured, utilising the buildings as containment lines. The secured areas will be closed outside of school hours and individually opened or secured to meet the various modes of operation anticipated. The security of these areas will also be managed through patrols and CCTV.

Access to the remainder of the school grounds is open to the public outside of school hours, with the spaces encouraged to be utilised through CPTED attributes to enhance natural surveillance. This includes access to the drop off zones, carparking and community spaces, including the sports field and gymnasium.

Clear sightlines between the southern car park and the sports fields and hard courts are retained for the open spaces that incorporate a flat topography. Passive surveillance of the northern car park is attained out of hours given clear sightlines from the regular traffic utilising Quinliven Road.

The landscaping within and surrounding these spaces has been strategically designed to ensure visual permeability is not impaired. The site boundary in particular will be primarily defined by a vegetation buffer consisting of trees and low-level vegetation ensuring the amenity and shade benefits of the landscaping does not screen sight lines.

The school design is considered to provide a clearly defined, safe and permeable pedestrian experience which avoids area of entrapment and maximises passive surveillance and activity within and outside school hours. This is achieved through physical design, effective landscaping and site security management practises, consistent with CPTED principles.

6.7 VEHICLE ACCESS, PARKING AND TRAFFIC

The proposed development will provide for a substantial increase in activity and visitation to the subject site and as such vehicle accessibility, safety, and parking have been key considerations in the design. The provisions of the Transportation and Access module of the Council-Wide section provides policy guidance on transport and parking related matters, as follows:

Transportation and Access

Objective 2: Development that:

- **(a) provides safe and efficient movement for all 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**
- **(e) provides convenient and safe access to public transport stops.**

PDC 5: Land uses that generate large numbers of visitors such as shopping centres, 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 6: Development generating high levels of traffic, such as schools, shopping centres and other retail areas, and entertainment and sporting facilities should incorporate passenger pick-up and set down areas. The design of such areas should minimise interference to existing traffic and give priority to pedestrians, cyclists and public and community transport users.

PDC 8: Development should provide safe and convenient access for all anticipated modes of transport.

PDC 22: Development should have direct access from an all-weather public road.

PDC 32: Development should provide off-street vehicle parking and specifically marked accessible car parking places to meet anticipated demand in accordance with Table Play/3 - Off Street Vehicle Parking Requirements.

PDC 33: Development should be consistent with Australian Standard AS 2890 Parking facilities.

PDC 40: Vehicle parking areas should be sited and designed to:

- **(a) facilitate safe and convenient pedestrian linkages to the development and areas of significant activity or interest in the vicinity of the development**
- **(b) include safe pedestrian and bicycle linkages that complement the overall pedestrian and cycling network**
- **(c) not inhibit safe and convenient traffic circulation**
- **(d) result in minimal conflict between customer and service vehicles**
- **(e) avoid the necessity to use public roads when moving from one part of a parking area to another**
- **(f) minimise the number of vehicle access points to public roads**
- **(g) avoid the need for vehicles to reverse onto public roads**
- **(h) where practical, provide the opportunity for shared use of car parking and integration of car parking areas with adjoining development to reduce the total extent of vehicle parking areas and the requirement for access points**
- **(i) not dominate the character and appearance of a site when viewed from public roads and spaces**
- **(j) provide landscaping that will shade and enhance the appearance of the vehicle parking areas**
- **(k) include infrastructure such as underground cabling and connections to power infrastructure that will enable the recharging of electric vehicles.**

The daily traffic generation rate (vehicles) for the school is estimated to be in the order of 1358 trips daily, as indicated in the Traffic Impact Assessment prepared by GHD. In order to accommodate this increased demand substantial upgrades to the existing surrounding road network are proposed.

Indented parking bays are to be established along the upgraded Quinliven Road for the kiss and drop / pick-up of students. Drop-off will be limited to 5 minutes but longer term parking would be available outside of these times. A raised median strip will be provided to prevent U-turns after drop offs.

A roundabout with the new Western Collector Road will help facilitate safe U-turn movements if required. The roundabout will also facilitate access further north along Quinliven Road.

A new Western Collector road will be constructed as part of the school development to facilitate access to the early learning centre, and southern staff car park and sporting facilities. This road will be vested with Council on completion of the project. Indented parking bays will also be provided for drop off and pick up purposes along this road. A roundabout will be provided at the western end of the new road to facilitate movement back out to Quinliven Road.

281 off-street parking spaces are proposed. 242 car parks are provided on site for staff and ancillary personnel. Staff parking will be split across the site with the one car park in the north-east corner off Quinliven Road and the second in the south-west corner off the Western Collector Road. The car parks will also be accessible after hours for community use. These will be designed in accordance with AS 2890 - 2004: Parking facilities - Off-street car parking.

Table Onka/3 – Off Street Vehicle Parking Requirements requires one space per full-time employee, one space for wheelchair users, plus an additional ten percent of this number for visitors. This equates to a total requirement of 244 parking spaces. The minor shortfall of two parking spaces is considered inconsequential in this case.

6.8 SITE HISTORY (CONTAMINATION)

Based on desk top research, site inspection, and a limited soil investigation, the report 'PPP Schools – Aldinga Services - Environmental Site History and Assessment (December 2019) prepared by GHD (refer **Attachment** 4 in Volume 2) details the potential for contamination of the site.

The report confirms that:

- the site has been used for broad acre agriculture from sometime before 1949 through to present day;
- no evidence of contamination or potentially contaminating activities (PCA) was observed on the site;
- a number of PCAs were identified within or adjacent to the certificate of title boundary associated with a stockpile of uncontrolled fill material and burn piles;
- a possible fire training area was identified to the south west of the site associated with the Aldinga Country Fire Service; and
- the limited soil sampling and analysis assessed for the presence of most of the CoPCs with the exception of phenoxy herbicides and glyphosate.

The GHD report recommends that limited soil sampling is undertaken in conjunction with geotechnical investigations to assess whether phenoxy herbicides and glyphosate are present in the soil at the site.

Based on the preliminary assessment and site history it is reasonable to assume that the site is or can readily be made suitable for the intended use of the land.

6.9 ENVIRONMENTALLY SUSTAINABLE DESIGN

6.9.1 Waste Management

Council-wide Waste PDC's 1, 5 and 6 provide particular guidance with respect to the management of waste. Together they recommend that:

Council Wide Waste

PDC 1: Development should be sited and designed to prevent or minimise the generation of waste (including wastewater) by applying the following waste management hierarchy in the order of priority as shown below:

(a) avoiding the production of waste
(b) minimising waste production
(c) reusing waste
(d) recycling waste
(e) recovering part of the waste for re-use
(f) treating waste to reduce the potentially degrading impacts
(g) disposing of waste in an environmentally sound manner.

PDC 5: Development should include appropriately sized area to facilitate the storage of receptacles that will enable the efficient recycling of waste.

PDC 6: 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
(c) designed to ensure that wastes do not contaminate stormwater or enter the stormwater collection system
(d) located on an impervious sealed area graded to a collection point in order to minimise the movement of any solids or contamination of water
(e) protected from wind and stormwater and sealed to prevent leakage and minimise the emission of odours
(f) stored in such a manner that ensures that all waste is contained within the boundaries of the site until disposed of in an appropriate manner.

Council Wide Design and Appearance

PDC 21: Outdoor storage, loading and service areas should be:

(a) screened from public view by a combination of built form, solid fencing and/or landscaping
(b) conveniently located and designed to enable the manoeuvring of service and delivery vehicles
(c) sited away from sensitive land uses.

Full details of the waste management solutions to be implemented throughout the proposed development are contained within the Waste Management Plan prepared by ISS Facility Services in accompanying the application documentation. Sufficient on-site cleaning, waste segregation and collection regimes are in place, together with the provision of appropriately located waste storage areas.

It is relevant for SCAP to note that the waste associated with the proposed development is to be managed as follows:

- weekday cleaning teams will be rostered in three shifts to ensure coverage during the morning from 4:00 am to 8:00 am and in the evening from 6:00 pm to 11:30 pm and weekend on site support is to be provided for all additional community use of the facilities;
- waste segregation will be encouraged with the provision of visually appealing co-located bins for each waste stream;
- two 240 litre composing waste bins accommodating food waste will be used alternately, with one filled to capacity and then sealed to compost while the other is filled. The compost is to be used on the school oval and garden beds;
- regular cleaning of the bins will be a responsibility of the Contract Manager and Cleaning Supervisor;
- a waste storage area is to be located adjacent to the southern car park and sports fields to enable convenient collection with minimal aesthetic impact and disruption to school operation. The waste storage area measures 10 metres x 5.0 metres; and
- an indicative schedule and frequency for waste collection is provided in the waste management report.

7.0 CONCLUSION

The proposed construction of an integrated educational establishment, to accommodate an initial capacity of 1,675 students across birth to year 12 learning communities with future expansion capacity to accommodate up to 2,084 students.

The current proposal is for development under Section 49 of the *Development Act 1993*. This report identifies this application as public infrastructure in the form of an integrated educational establishment (School).

The development of the new school (educational establishment) has been based on an identified demand by the Department of Education for facilities in the southern region to meet the growing and projected student populations numbers.

The Aldinga site has been identified, based on a range of parameters, including:

- proximity to catchments for both Primary and Secondary School students;
- availability of land to accommodate the land requirements for the educational establishment facilities; and
- suitability of the land to accommodate the educational establishment and design based on the preferred educational framework.

In summary, the proposed development meets the overall vision and policies of the Onkaparinga Council Development Plan and is not seriously at variance with Development Plan provisions.

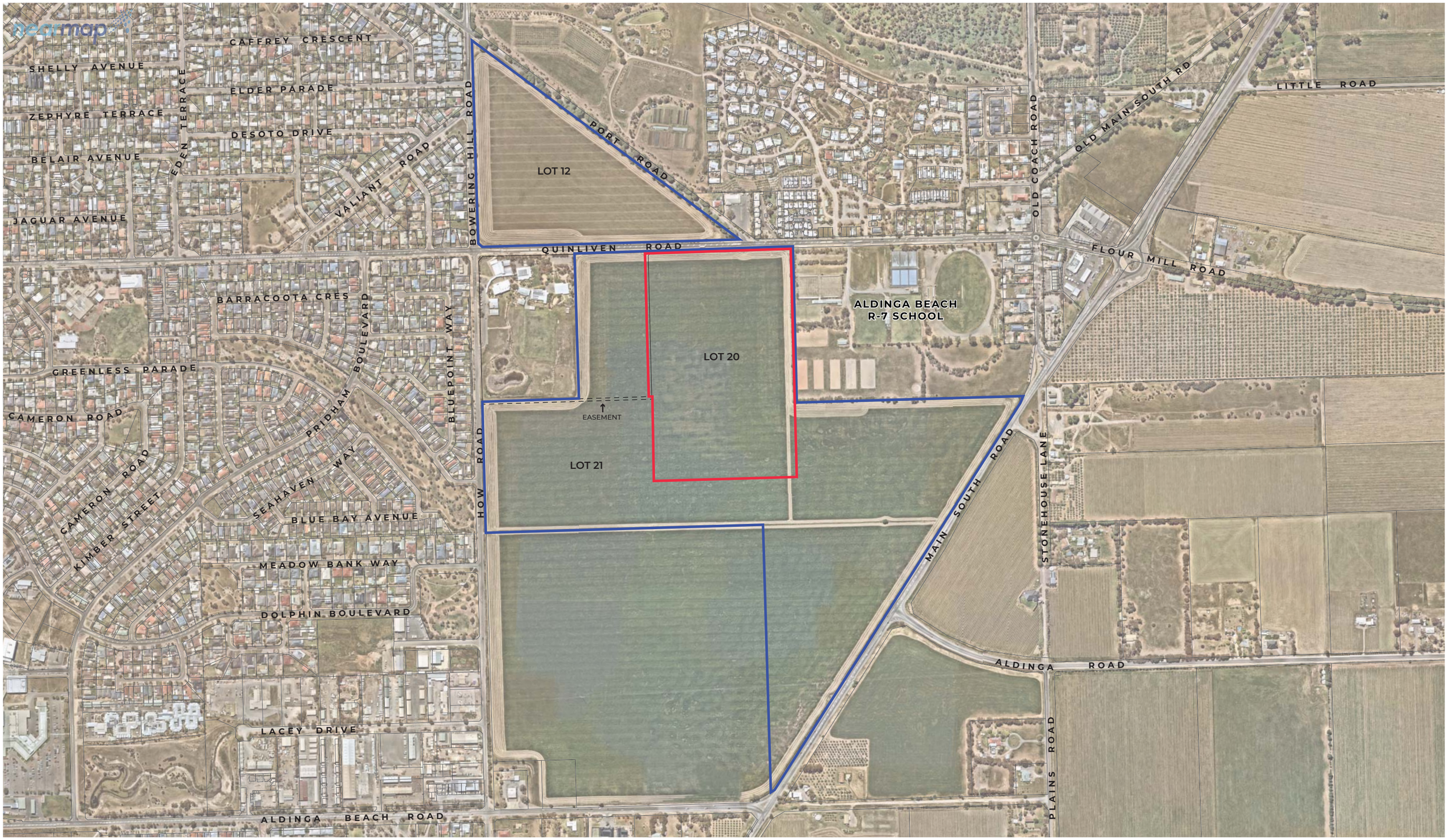
The Deferred Urban Zone anticipates essential infrastructure and community services where they meet the relevant assessment tests of accessibility and integration. As discussed within the body of this report, the proposal is considered to align with the community need in relation to these tests, consistent with the Desired Character intentions of the zone.

The proposal meets the strategic, design and functional parameters set out in the Development Plan and is consistent with the expectations of the Deferred Urban Zone.

For these reasons as detailed in the report and supporting documents, the proposed development warrants Development Approval.

PROPOSAL PLANS

Attachment 1
Site Plan



Subject Site

Subject Land

Site Plan

QUINLIVEN ROAD
ALDINGA

FOR SARAH CONSTRUCTIONS

1:7500 @ A3

0 200m

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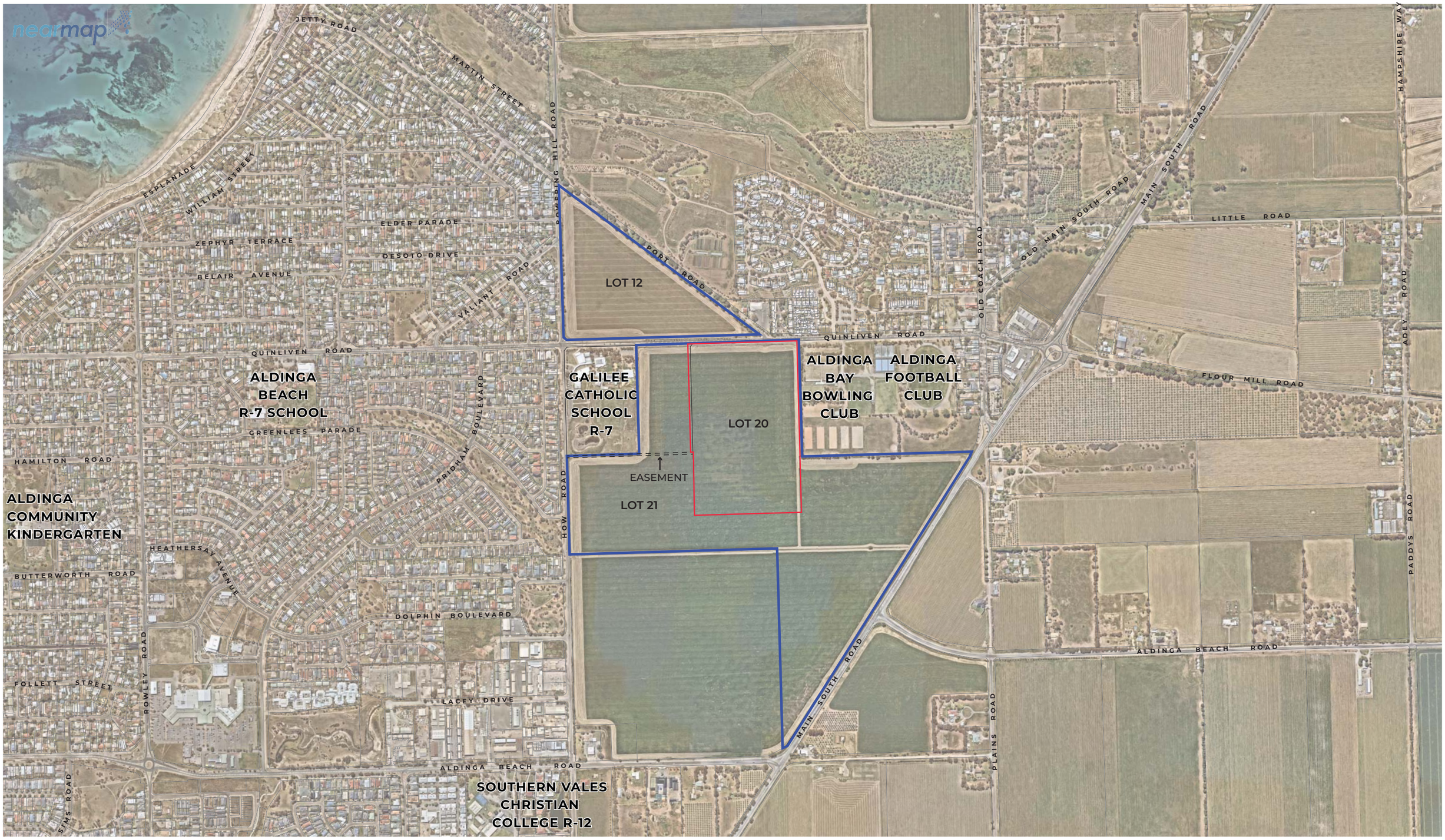
Attachment 2
Locality Plan



Subject Site

Subject Land

Locality Plan

QUINLIVEN ROAD
ALDINGA

FOR SARAH CONSTRUCTIONS

1:10000 @ A3

0 200m

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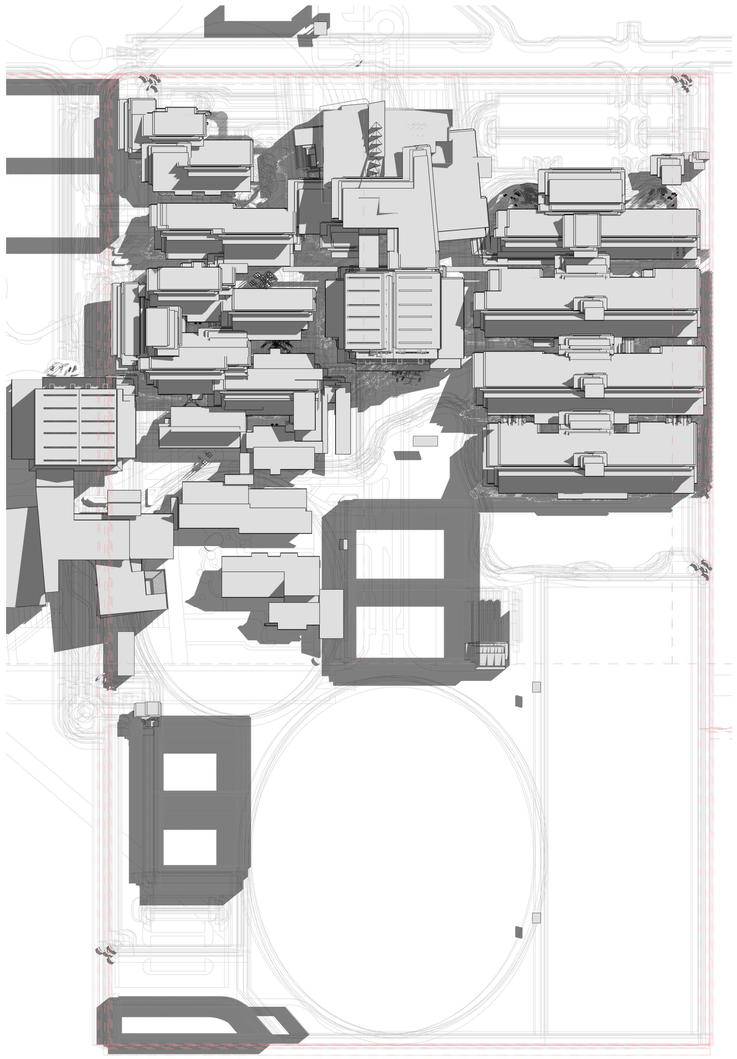
MASTERPLAN
TOWN + COUNTRY PLANNERS

Attachment 3

Architectural Plans and Elevations



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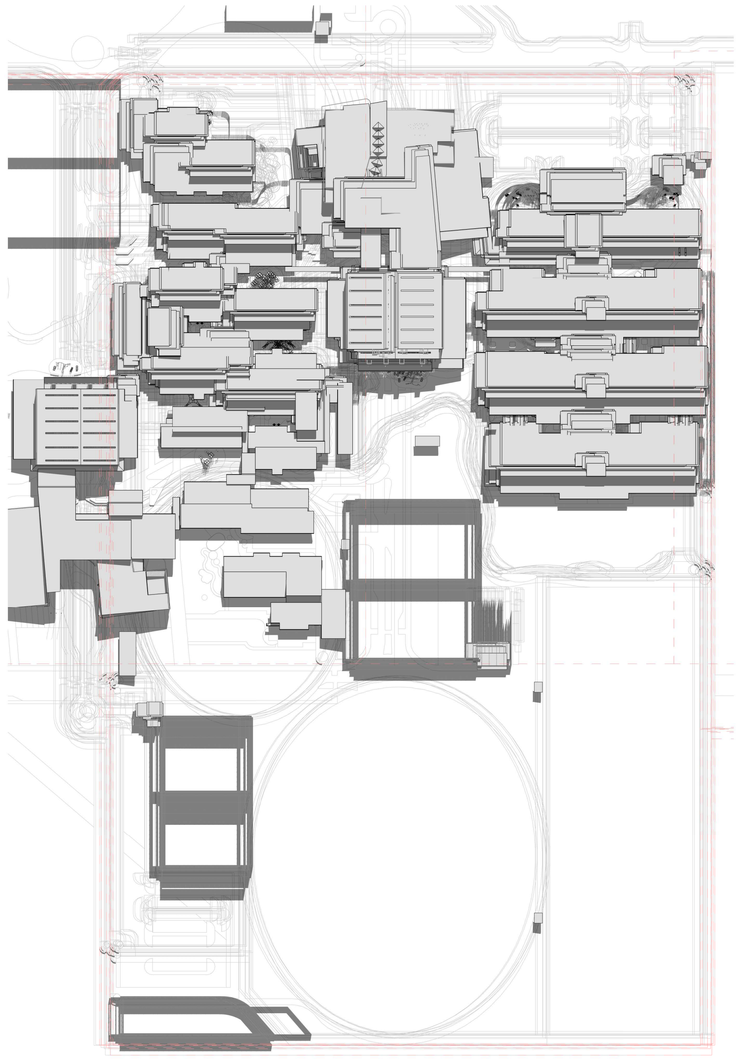

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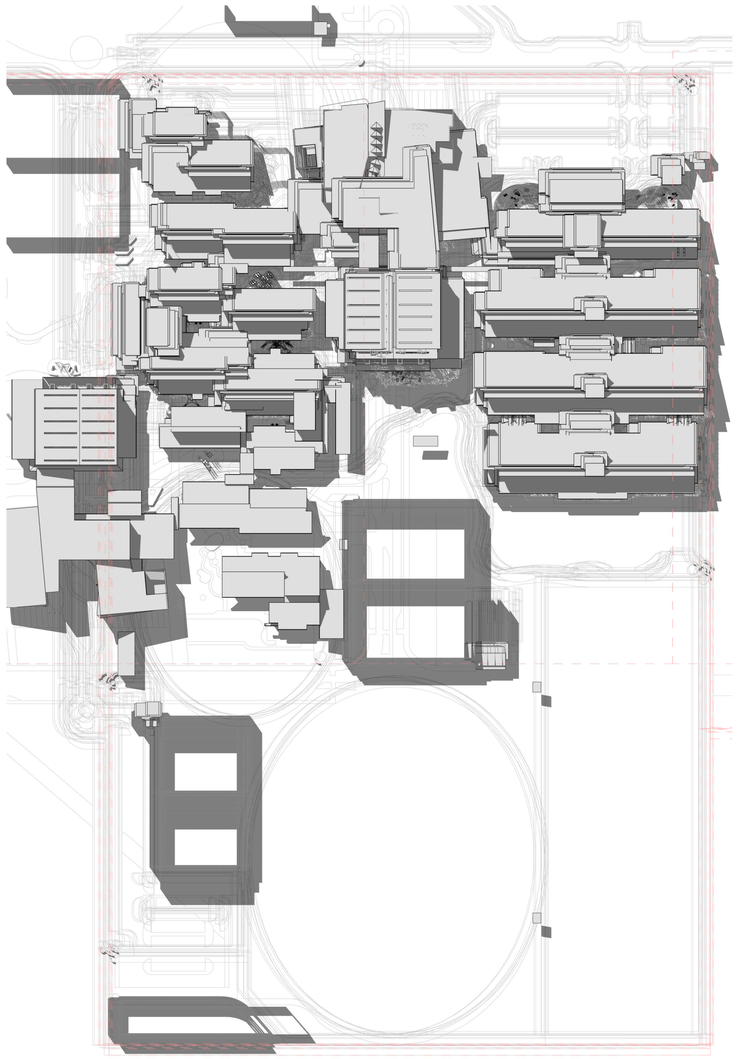

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1 : 1500 @ A1

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PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

SHADOW DIAGRAMS

Drawn	Approved	Date	Scale
Author	Approver	2019.12.06	1 : 1500 @ A1

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DRAWING NUMBER	REVISION
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER	
SOU-ARC-DA-DWG-00_05	2

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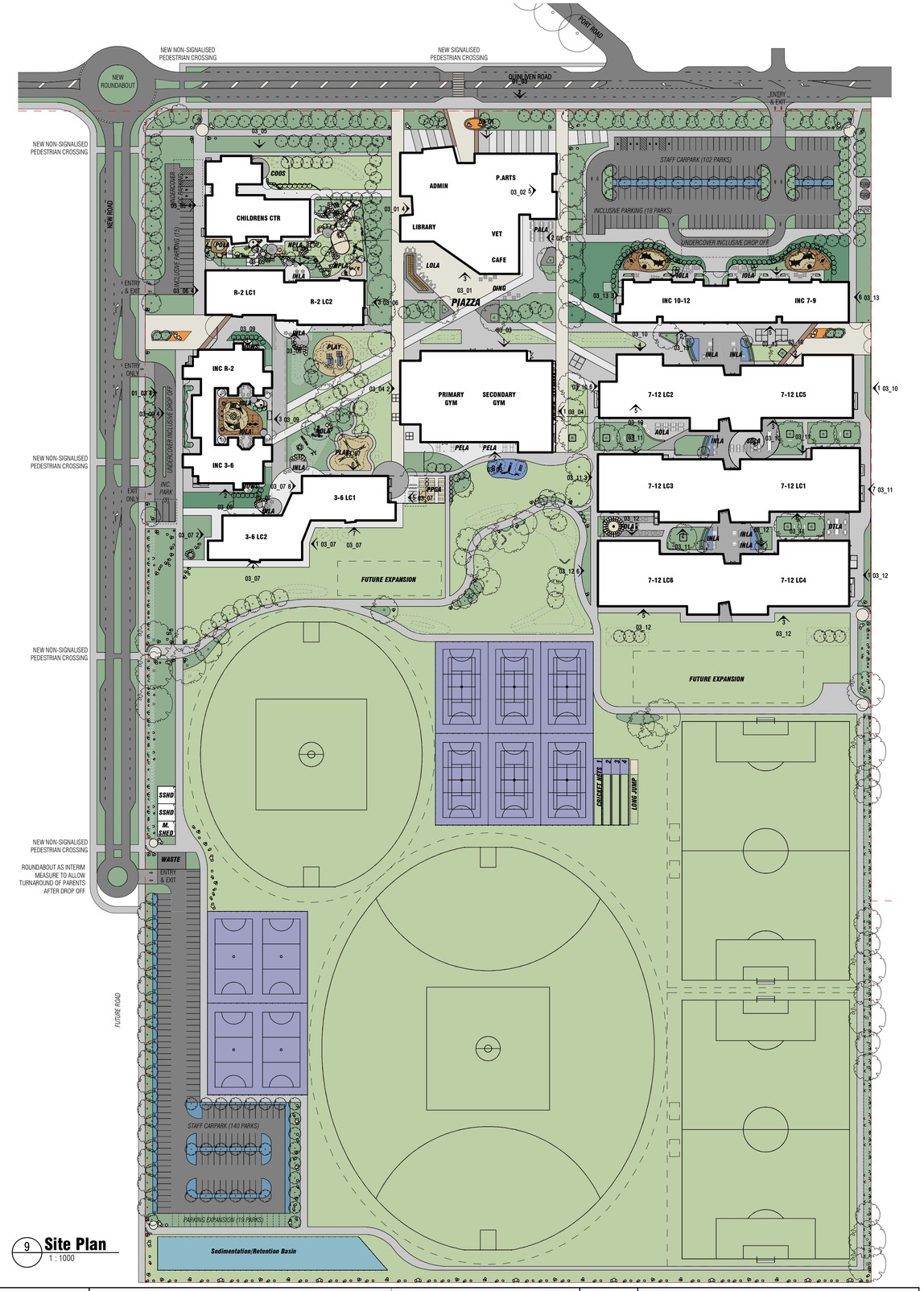

9 **Site Plan**
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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

MASTERPLAN & SITE PLAN

Drawn	Approved	Date	Scale(s)
LG	JB	2019.12.11	AS NOTED

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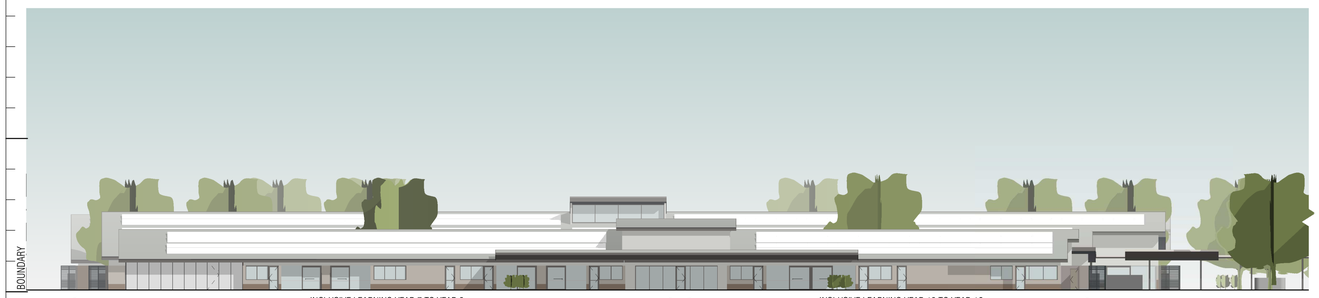

Street Elevation - North Part 1

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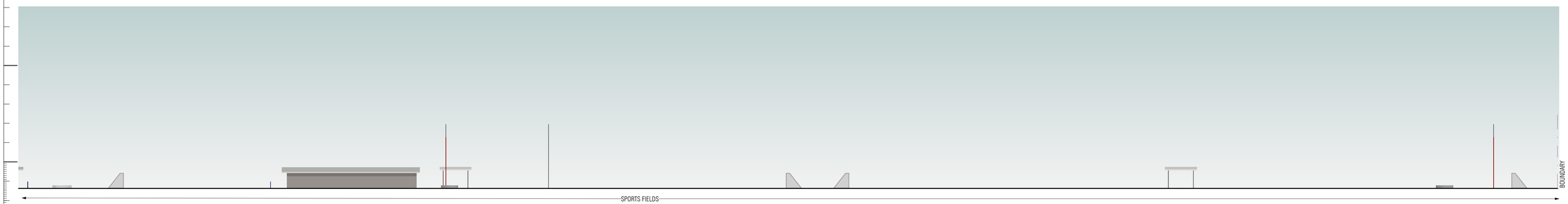
Street Elevation - North Part 2

1 : 300 @ A1

Street Elevation - West Part 1

1 : 300 @ A1



Street Elevation - West Part 2

1 : 300 @ A1

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

STREET ELEVATIONS - SOUTHERN SITE

Drawn	Approved	Date	Scale
JB	Approver	2019.12.11	1 : 300 @ A1

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DRAWING NUMBER

SECTOR	DISCIPLINE	PHASE	TYPE	SERIES	NUMBER
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REVISION **3**

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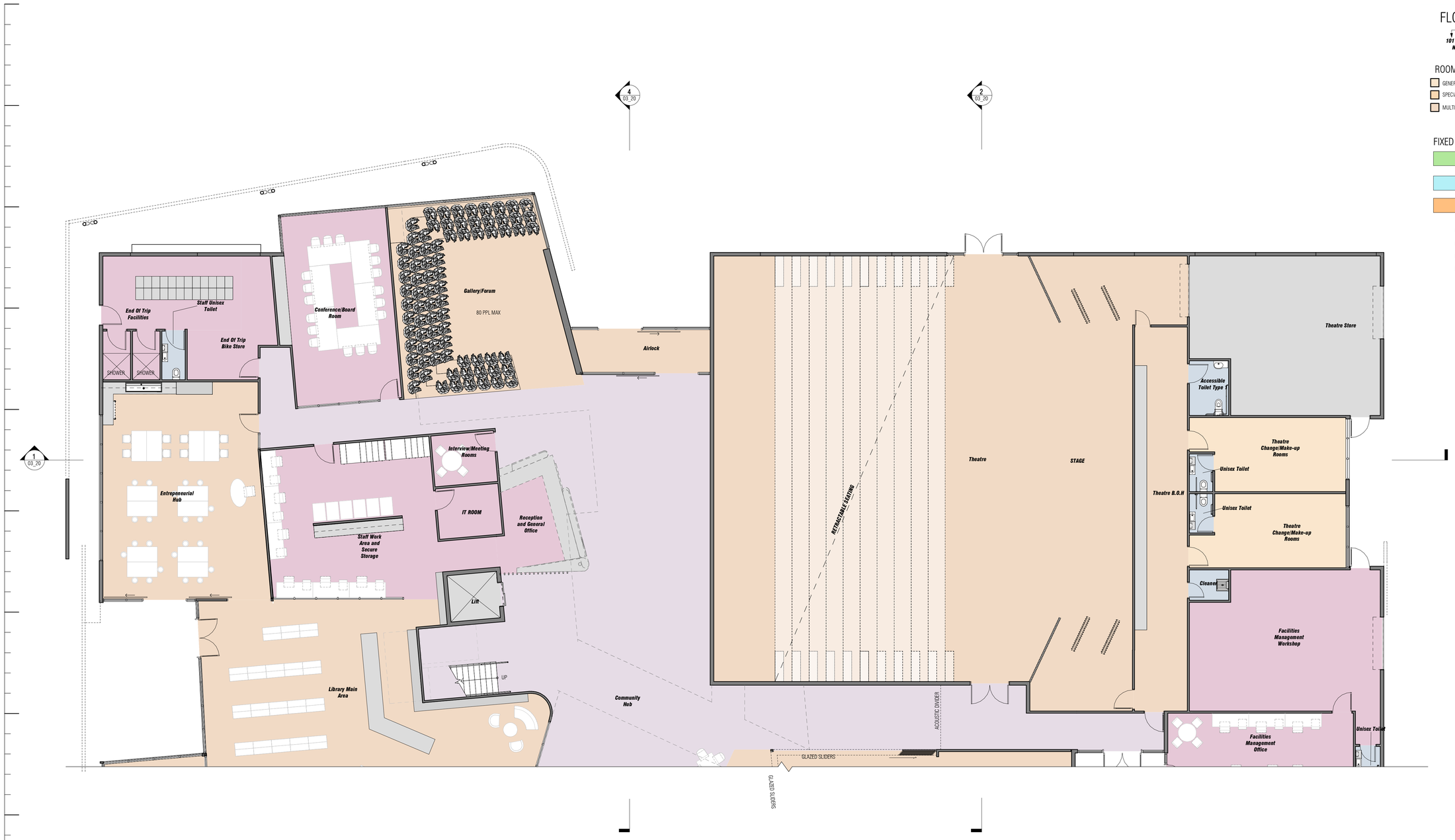

FLOOR PLAN LEGEND

9 — PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN -COMMUNITY BUILDING - GROUND LEVEL (NORTH END)

Drawn	Approved	Date	Scale
CK	AP	2019.12.11	1:100 @ A1

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DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
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REVISION
3

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
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TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.09
4	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN -COMMUNITY BUILDING - GROUND LEVEL (SOUTH END)

Drawn	Approved	Date	Scale
Author	Approver	2019.12.11	1:100 @ A1

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DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_01B

REVISION
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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
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- PLANT

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TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
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3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - COMMUNITY BUILDING - LEVEL 1 (NORTH END)

Drawn	Approved	Date	Scale
CK	AP	2019.12.11	1:100 @ A1

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CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_02A

REVISION
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FLOOR PLAN LEGEND

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101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

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TESA Education

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4	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - COMMUNITY BUILDING - LEVEL 1 (SOUTH END)

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.11	AS NOTED

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CONTRACT

DRAWING NUMBER: SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER — PRO-ARC-DA-DWG-02_02B
REVISION: 4

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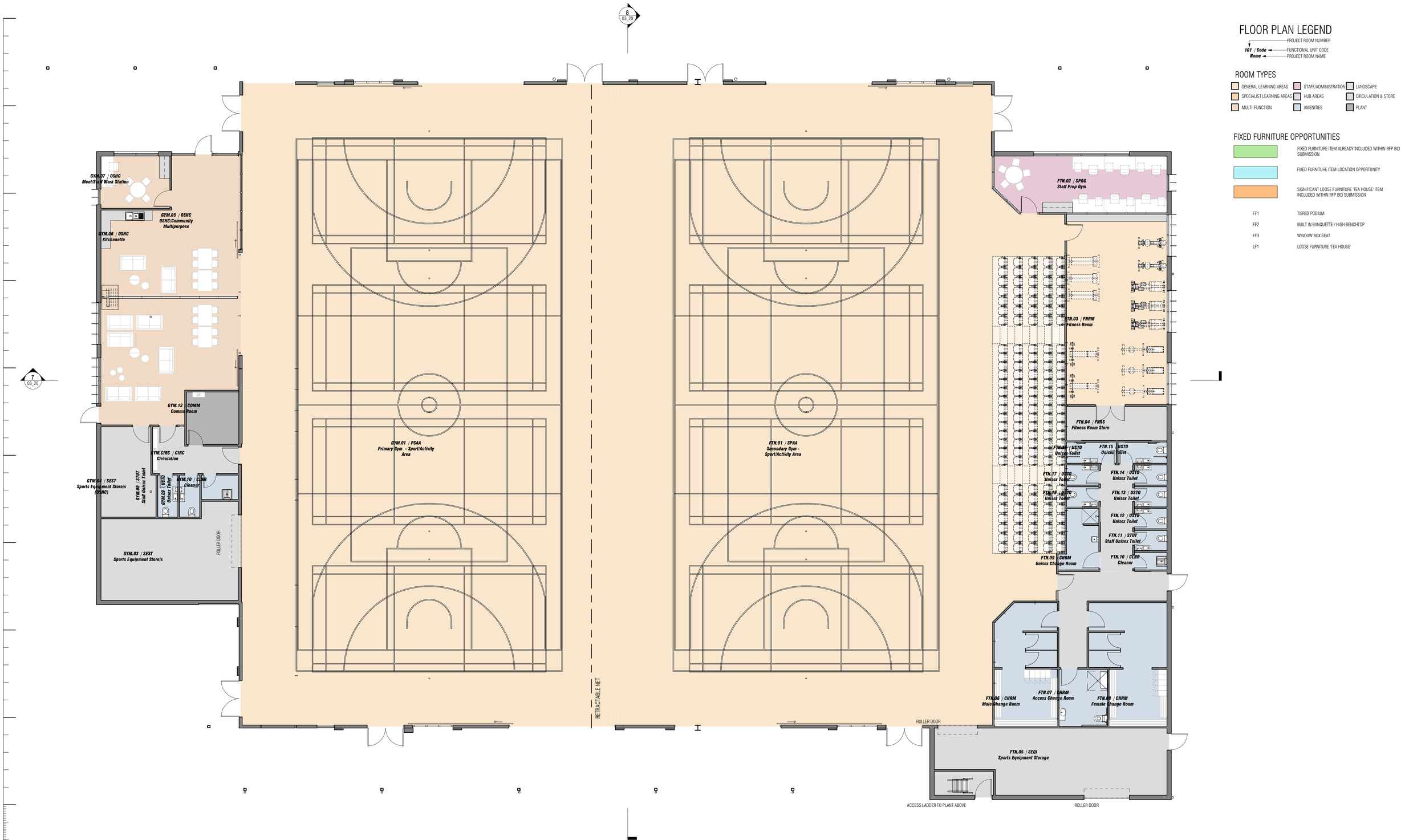

FLOOR PLAN LEGEND

9 — PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - PRIMARY & SECONDARY GYMNASIUM - EXPANSION

Drawn	Approved	Date	Scale
Author	AP	2019.12.11	1 : 100 @ A1

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CONTRACT

DRAWING NUMBER	REVISION
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER	
SOU-ARC-DA-DWG-02_04A	3

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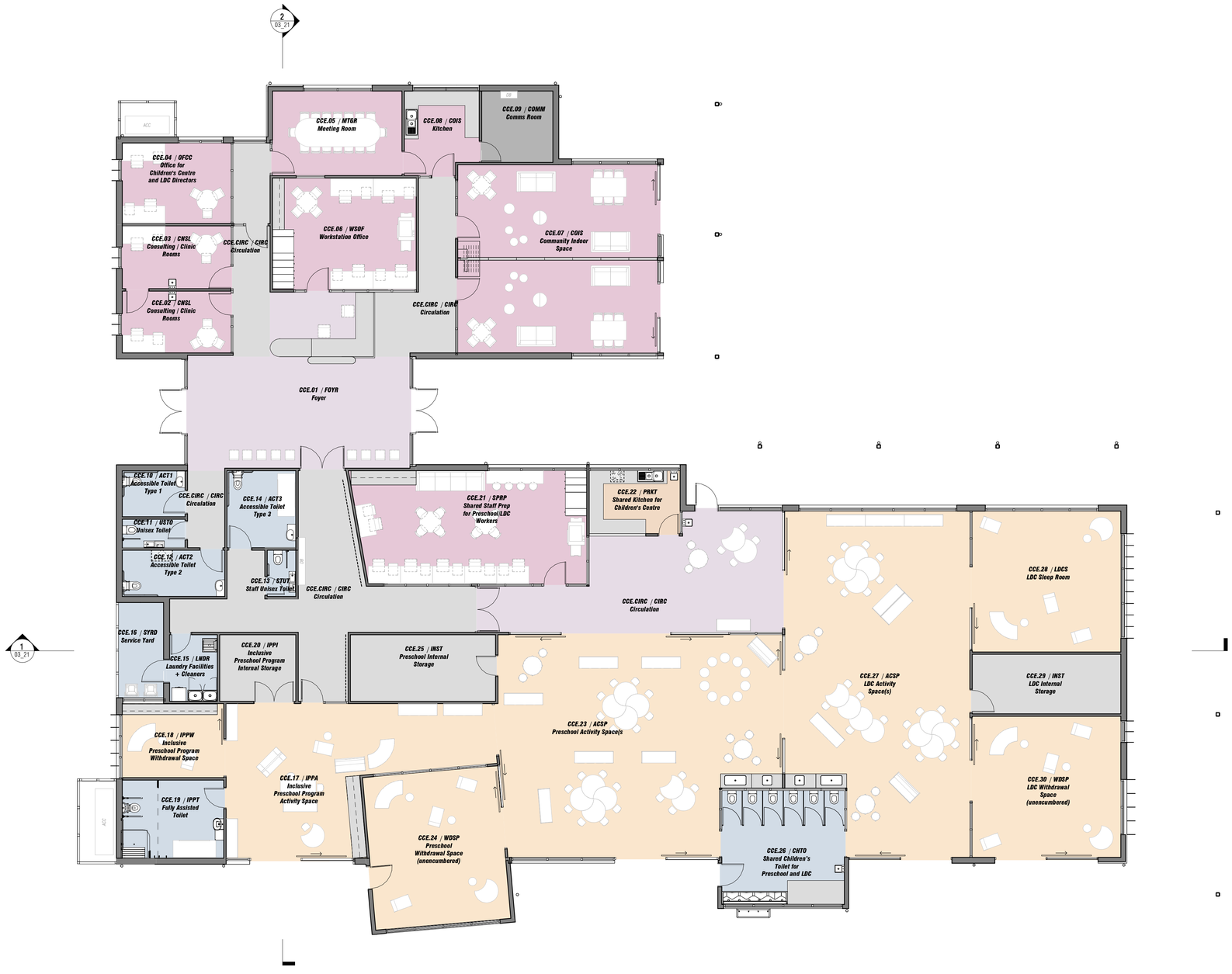

FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - CHILDREN'S CENTRE

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1:100 @ A1

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CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_05

REVISION
3

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - R-2 - COMMUNITY 1

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1:100 @ A1

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CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
SOU-ARC-DA-DWG-02_07

REVISION
3

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - R-2 - COMMUNITY 2

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1:100 @ A1

N

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
SOU-ARC-DA-DWG-02_08

REVISION
3

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1:1 WHEN PRINTED @A1

FLOOR PLAN LEGEND

101 / Code — PROJECT ROOM NUMBER
Name — FUNCTIONAL UNIT CODE
PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 3-6 - COMMUNITY 1

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1:100 @ A1

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FLOOR PLAN LEGEND

101 / Code
Name

- PROJECT ROOM NUMBER
- FUNCTIONAL UNIT CODE
- PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

FLOOR PLAN - 3-6 - COMMUNITY 2

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1:100 @ A1

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DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

SOU-ARC-DA-DWG-02_10

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - INCLUSIVE LEARNING - R-2

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

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DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_11A

REVISION
3

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

1:1 WHEN PRINTED @A1

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - INCLUSIVE LEARNING - 3-6

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

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DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_11B

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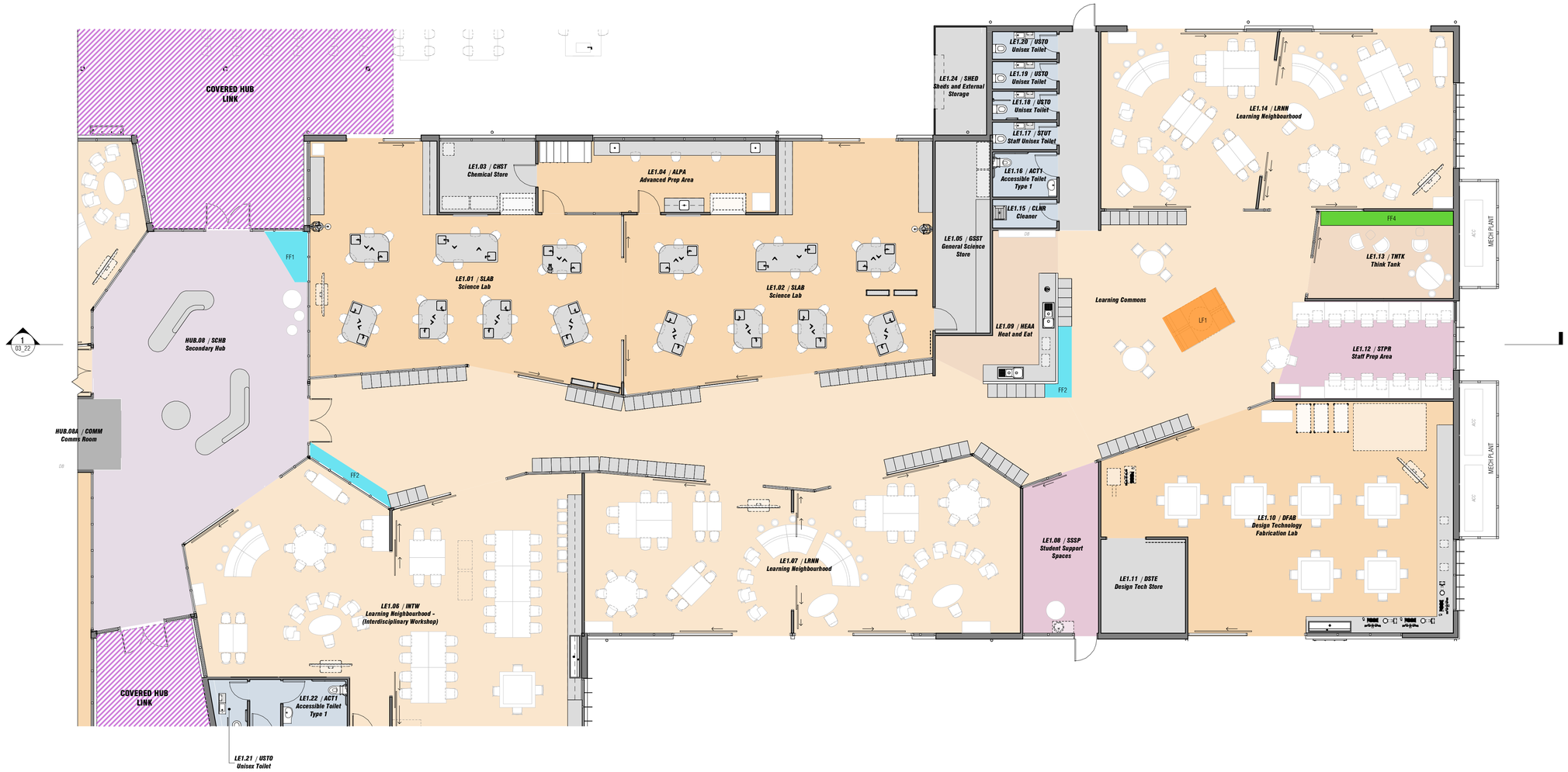

FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

1 / 03_22

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 7-12 COMMUNITY 1

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1 : 100 @ A1

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DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_12

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 7-12 COMMUNITY 2

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1:100 @ A1

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DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_13

REVISION
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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 7-12 COMMUNITY 3

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1:100 @ A1

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CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_14

REVISION
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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 7-12 COMMUNITY 4

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1:100 @ A1

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DRAWING NUMBER: SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER — PRO-ARC-DA-DWG-02_15
REVISION: 3

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1:1 WHEN PRINTED @A1

FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 7-12 COMMUNITY 5

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1:100 @ A1

CONTRACT

DRAWING NUMBER: PRO-ARC-DA-DWG-02_16
REVISION: 3

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1:1 WHEN PRINTED @A1

6
03_22

FLOOR PLAN LEGEND

101 / Code
Name

- PROJECT ROOM NUMBER
- FUNCTIONAL UNIT CODE
- PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - 7-12 COMMUNITY 6

Drawn	Approved	Date	Scale
JB	WG	2019.12.11	1:100 @ A1

N

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_17

REVISION
3

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - INCLUSIVE LEARNING - 7-9

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1:100 @ A1

N

CONTRACT

DRAWING NUMBER: PRO-ARC-DA-DWG-02_18 (SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER)
REVISION: 3

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FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

FIXED FURNITURE OPPORTUNITIES

- FIXED FURNITURE ITEM ALREADY INCLUDED WITHIN RFP BID SUBMISSION
- FIXED FURNITURE ITEM LOCATION OPPORTUNITY
- SIGNIFICANT LOOSE FURNITURE 'TEA HOUSE' ITEM INCLUDED WITHIN RFP BID SUBMISSION

FF1	TIERED PODIUM
FF2	BUILT IN BANQUETTE / HIGH BENCHTOP
FF3	WINDOW BOX SEAT
LF1	LOOSE FURNITURE 'TEA HOUSE'

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - INCLUSIVE LEARNING - 10-12

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1:100 @ A1

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-02_19

REVISION
3

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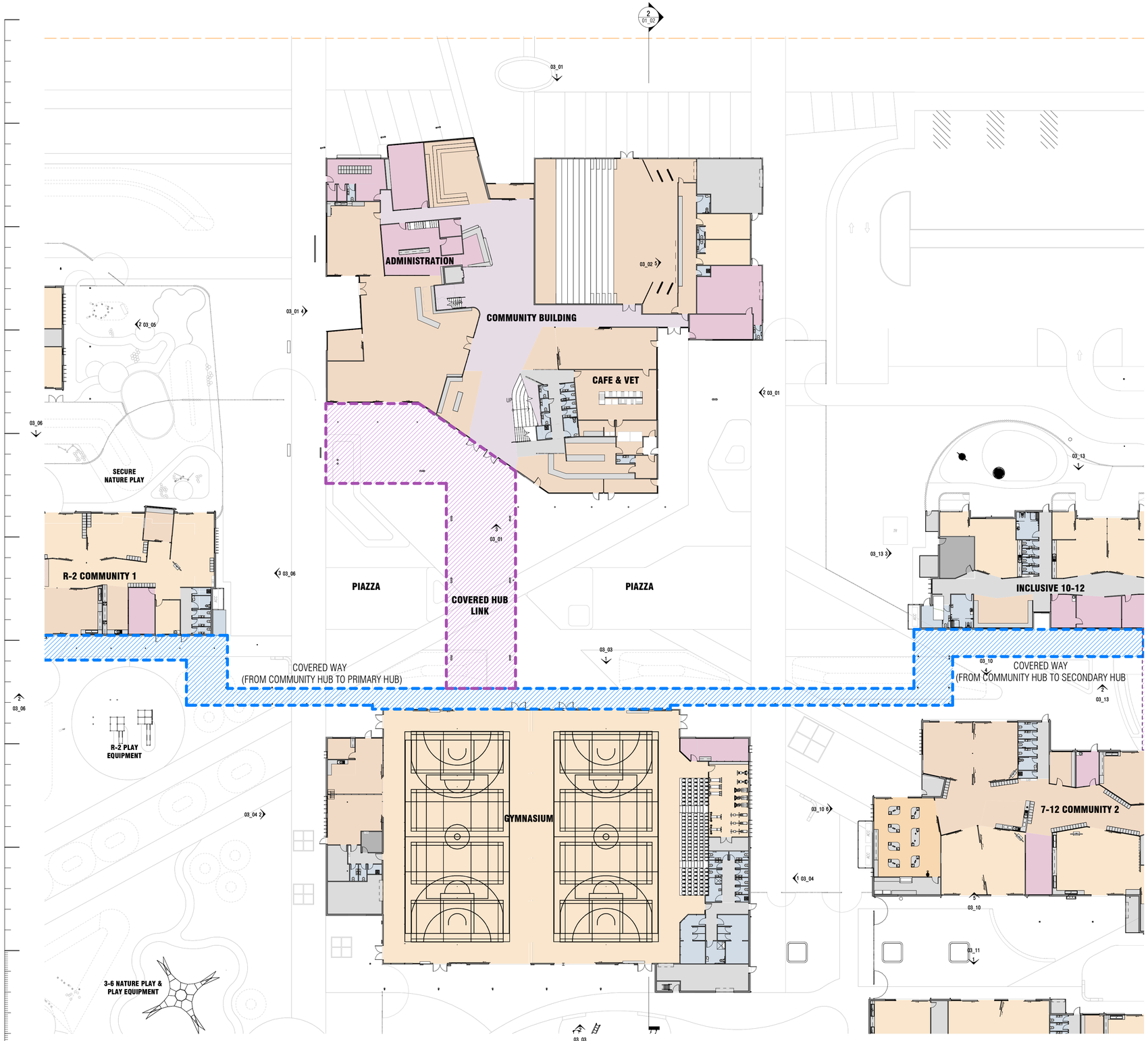

FLOOR PLAN LEGEND

101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME
PROJECT ROOM NUMBER

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

COVERED LINKS LEGEND

- COVERED HUB LINK
- COVERED WALKWAY

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - COMMUNITY HUB

Drawn	Approved	Date	Scale(s)
JB	AP	2019.12.11	AS NOTED

N

CONTRACT

DRAWING NUMBER — SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
SOU-ARC-DA-DWG-02_20

REVISION
3

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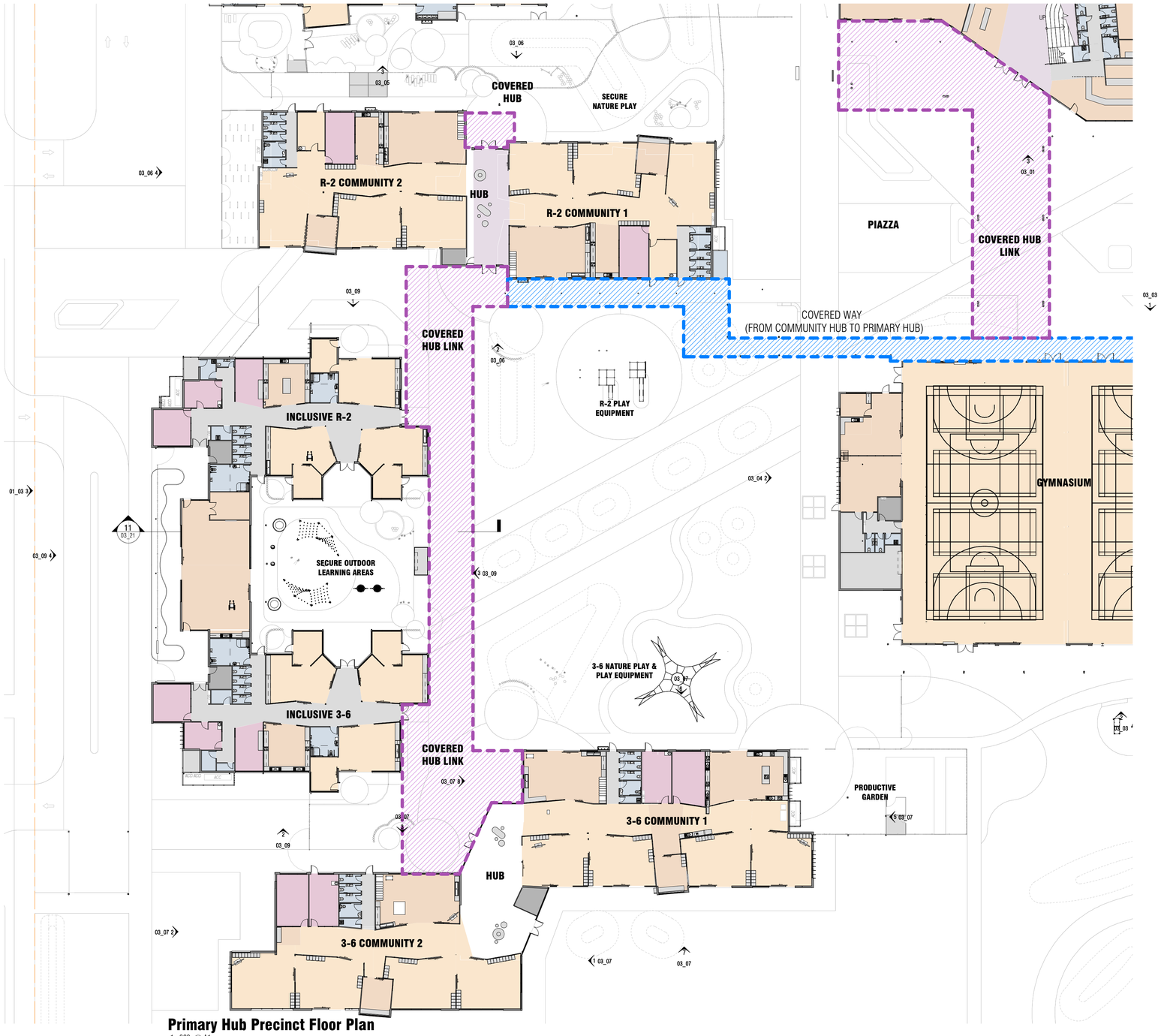

Primary Hub Precinct Floor Plan
1 : 300 @ A1

FLOOR PLAN LEGEND

PROJECT ROOM NUMBER
101 / Code — FUNCTIONAL UNIT CODE
Name — PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

COVERED LINKS LEGEND

- COVERED HUB LINK
- COVERED WALKWAY

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - PRIMARY HUB

Drawn	Approved	Date	Scale
JB	AP	2019.12.11	1:200 @ A1

CONTRACT

DRAWING NUMBER: SOU-ARC-DA-DWG-02_21
REVISION: 3

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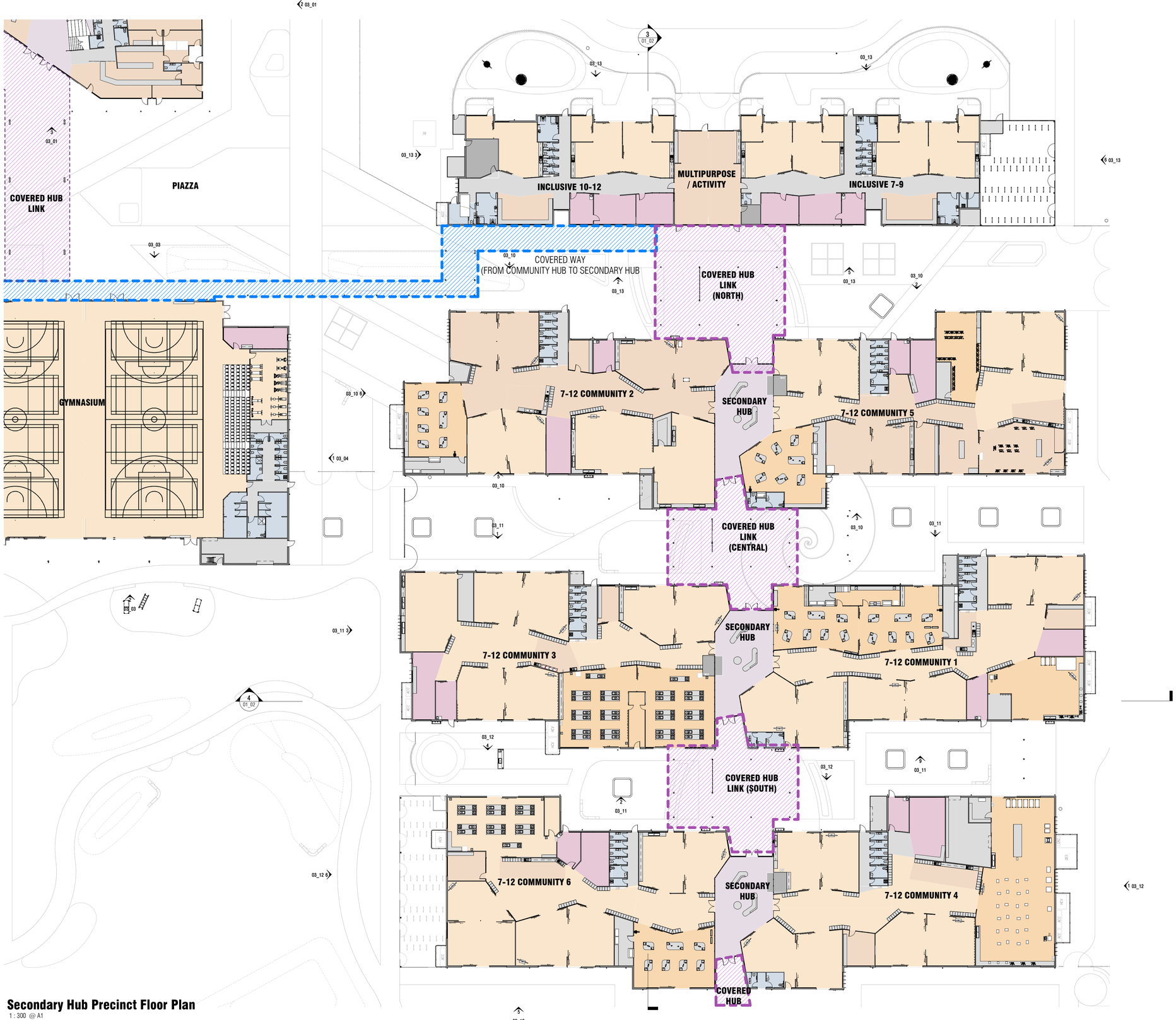

FLOOR PLAN LEGEND

101 / Code / Name
- PROJECT ROOM NUMBER
- FUNCTIONAL UNIT CODE
- PROJECT ROOM NAME

ROOM TYPES

- GENERAL LEARNING AREAS
- SPECIALIST LEARNING AREAS
- MULTI-FUNCTION
- STAFF/ADMINISTRATION
- HUB AREAS
- AMENITIES
- LANDSCAPE
- CIRCULATION & STORE
- PLANT

COVERED LINKS LEGEND

- COVERED HUB LINK
- COVERED WALKWAY

Secondary Hub Precinct Floor Plan
1 : 300 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

FLOOR PLAN - SECONDARY HUB

Drawn	Approved	Date	Scale(s)
JB	AP	2019.12.11	AS NOTED

CONTRACT

DRAWING NUMBER: SOU-ARC-DA-DWG-02_22
REVISION: 3

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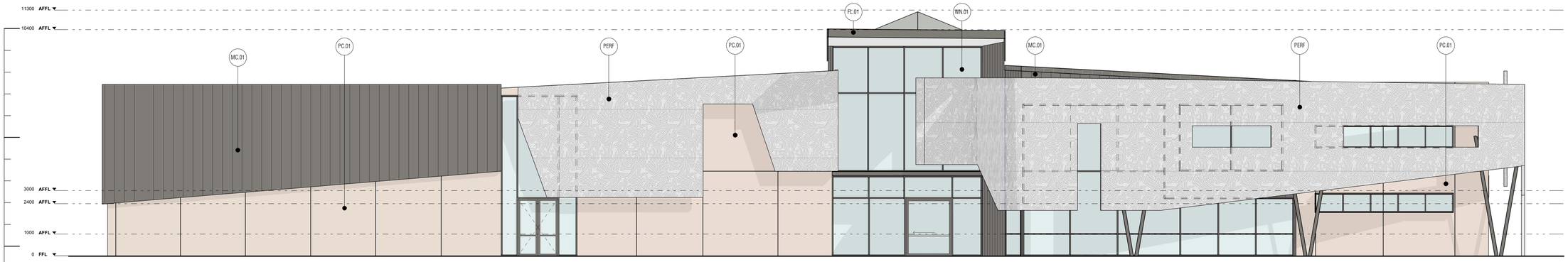
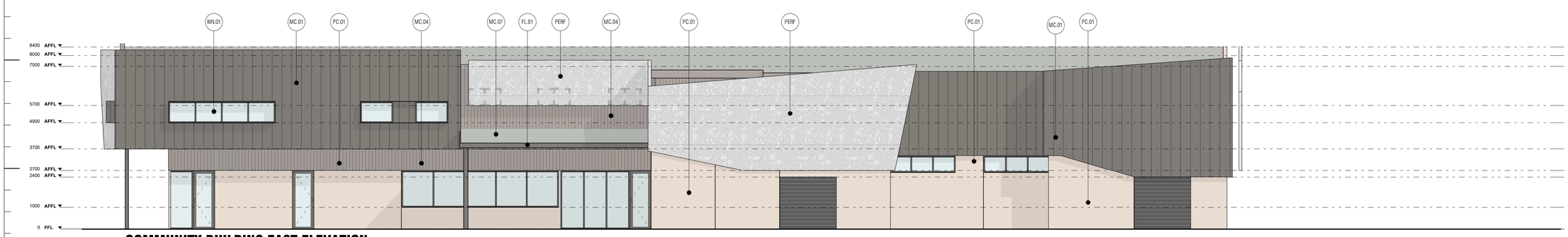


COMMUNITY BUILDING NORTH ELEVATION

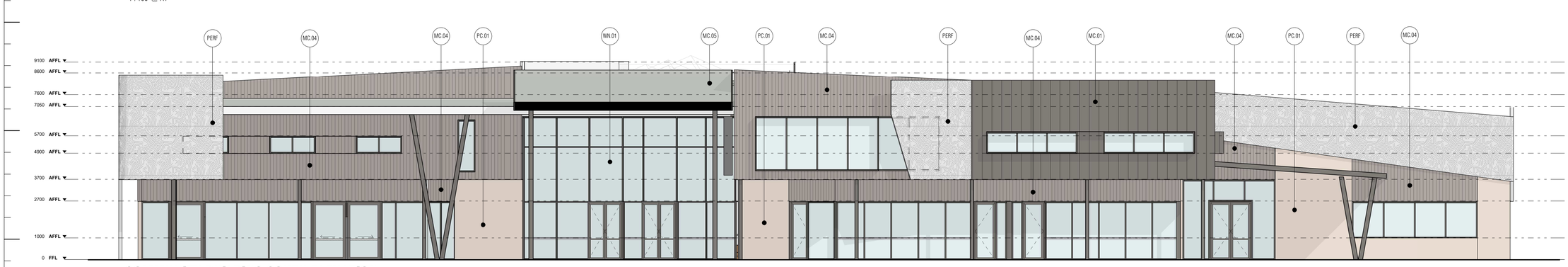
1 : 100 @ A1

LEGEND	
REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.01	METAL DECK WALL CLADDING - MAXLINE PROFILE
MC.04	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.05	METAL DECK ROOF CLADDING - KLIPLOK PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PC.01	PRECAST CONCRETE
PERF	PERFORATED METAL SCREEN - PIC PERF - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH



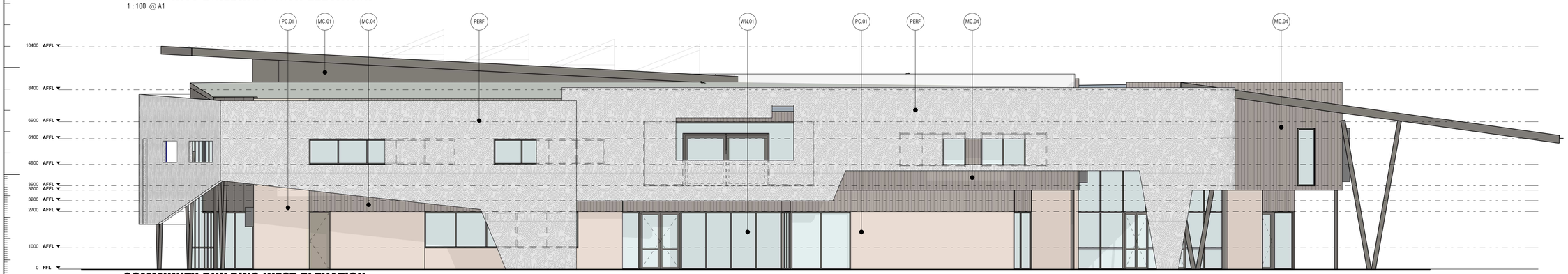
COMMUNITY BUILDING EAST ELEVATION

1 : 100 @ A1



COMMUNITY BUILDING SOUTH ELEVATION

1 : 100 @ A1



COMMUNITY BUILDING WEST ELEVATION

1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.06
2	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - COMMUNITY BUILDING

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER: PRO-ARC-DA-DWG-03_01

REVISION: 2

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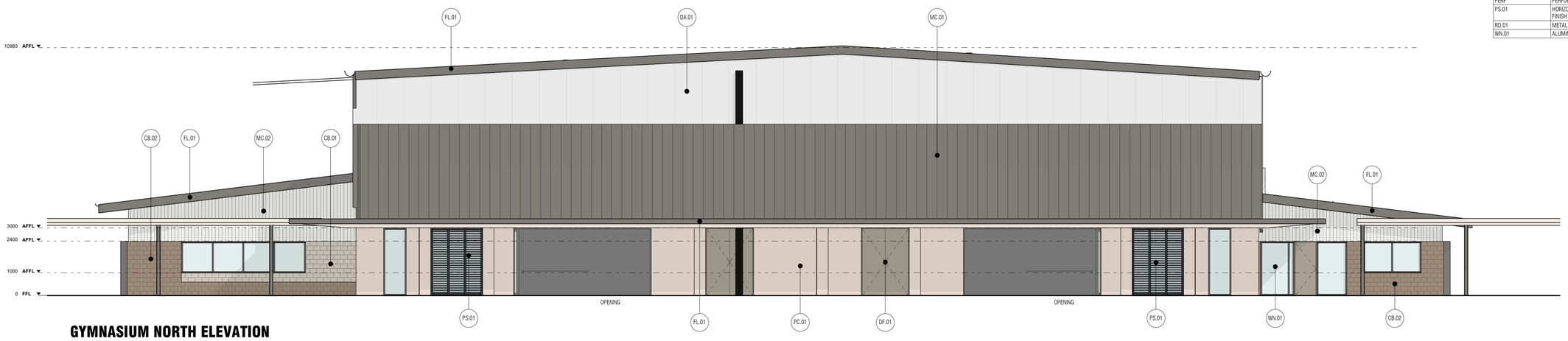
1:1 WHEN PRINTED @A1

LEGEND	
REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DA.01	POLYCARBONATE SHEETING - DANPAL FACADE DOUBLE SKIN - COLOUR: OPAL
DF.01	SOLID CORE DOOR - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.01	METAL DECK WALL CLADDING - MAXLINE PROFILE
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
PC.01	PRECAST CONCRETE
PERF	PERFORATED METAL SCREEN - PIC PERF - POWDERCOAT FINISH
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
RD.01	METAL ROLLER DOOR - COLORBOND FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH



GYMNASIUM NORTH ELEVATION

1 : 100 @ A1

GYMNASIUM SOUTH ELEVATION

1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - PRIMARY & SECONDARY GYMNASIUM

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

PRO-ARC-DA-DWG-03_03

REVISION **3**

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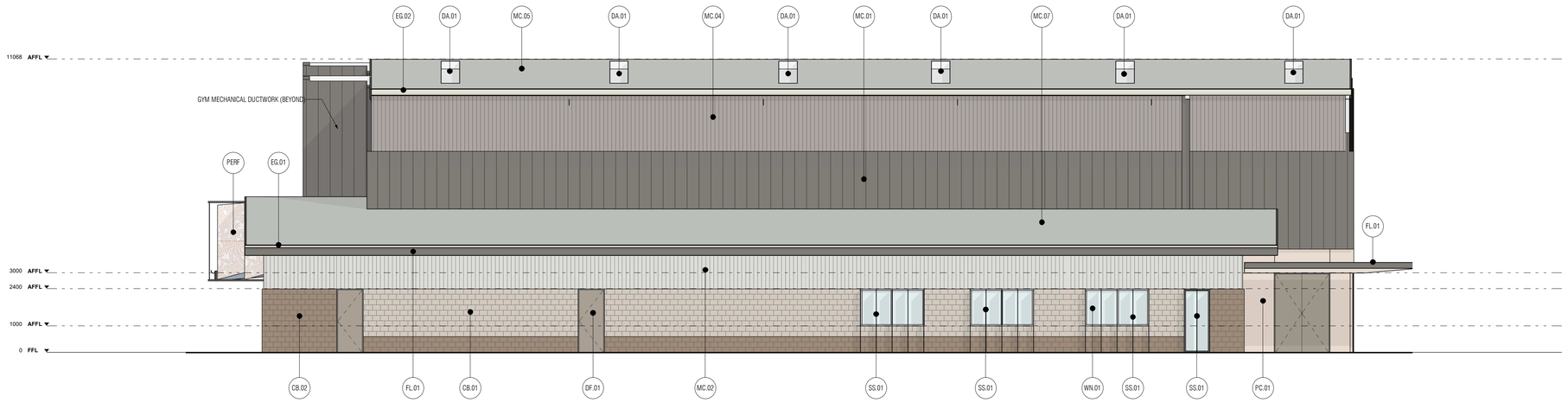
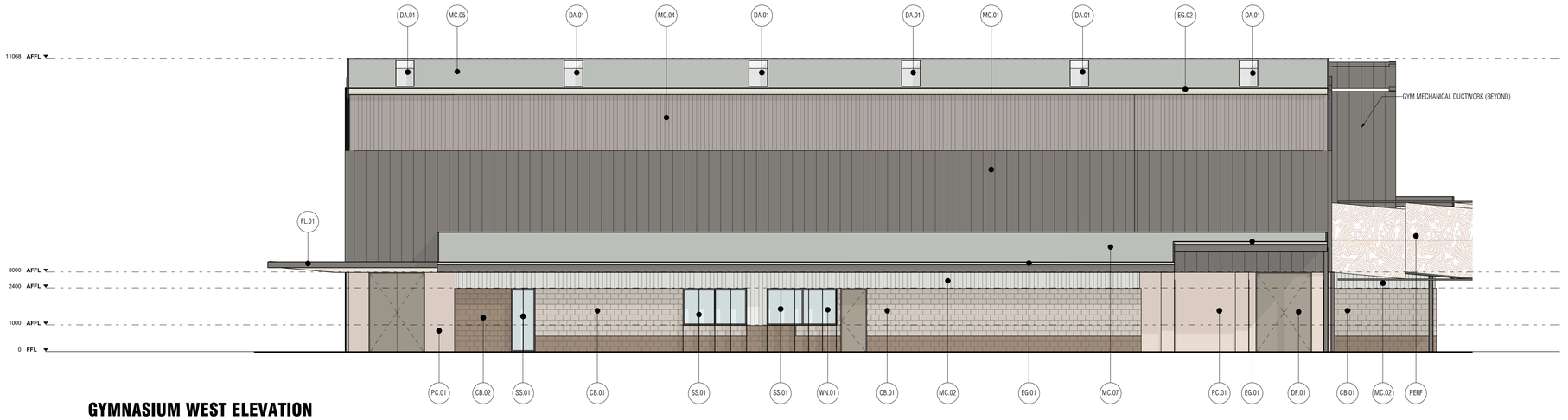
1:1 WHEN PRINTED @A1

LEGEND	
REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DA.01	POLYCARBONATE SHEETING - DANPAL FACADE DOUBLE SKIN - COLOUR: OPAL
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
EG.02	OVERSIZED EAVES GUTTER - COLORBOND FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.01	METAL DECK WALL CLADDING - MAXLINE PROFILE
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.04	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.05	METAL DECK ROOF CLADDING - KLIPLOK PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PC.01	PRECAST CONCRETE
PERF	PERFORATED METAL SCREEN - PIC PERF - POWDERCOAT FINISH
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH



GYMNASIUM EAST ELEVATION

1 : 100 @ A1



GYMNASIUM WEST ELEVATION

1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
	NOT IN USE	XX/XX/XX
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - PRIMARY & SECONDARY GYMNASIUM

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

PRO-ARC-DA-DWG-03_04

REVISION 3

1:1 WHEN PRINTED @A1

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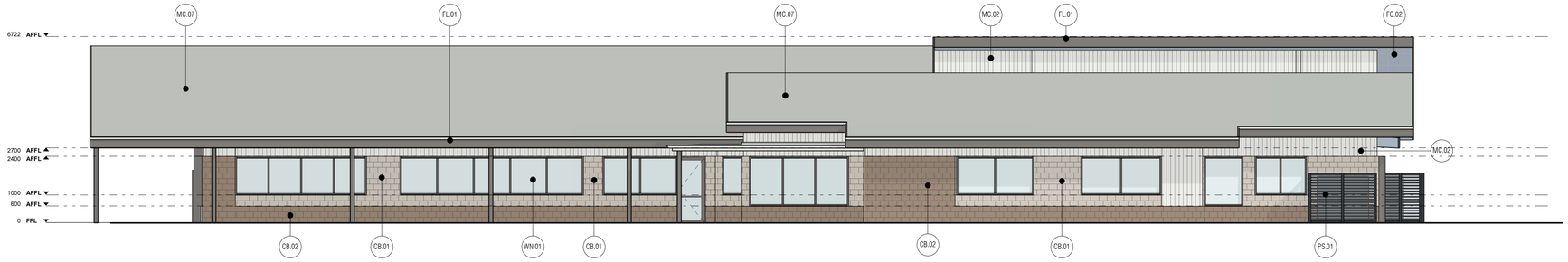
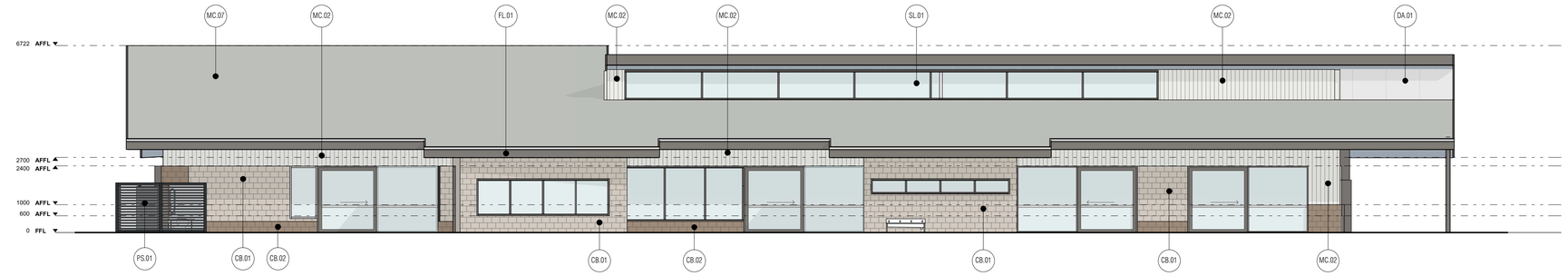


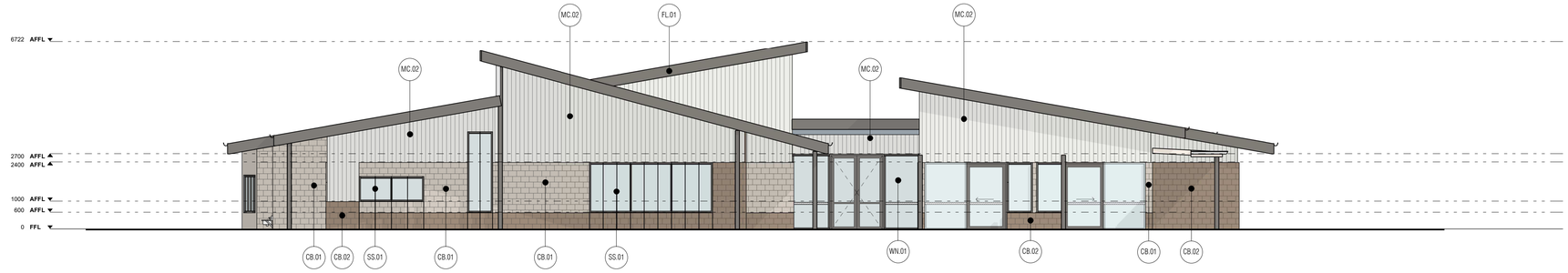
CHILDREN'S CENTRE NORTH ELEVATION

1 : 100 @ A1



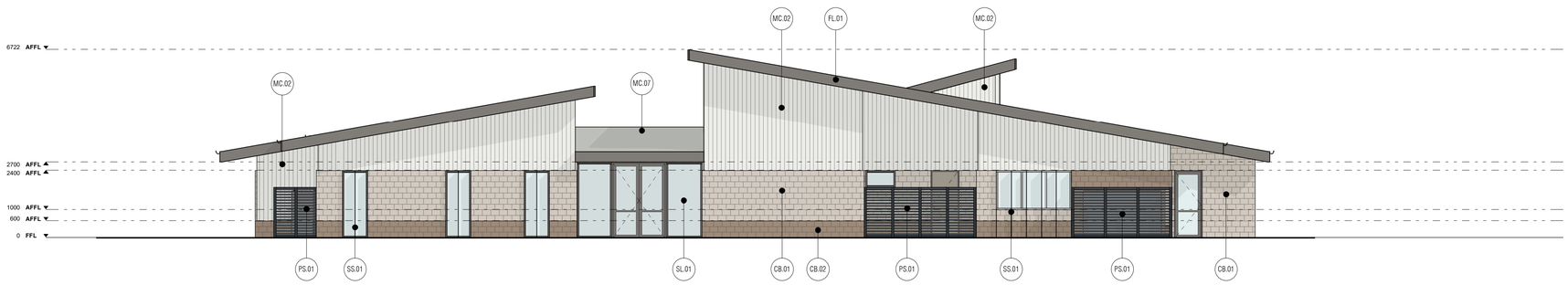
CHILDREN'S CENTRE SOUTH ELEVATION

1 : 100 @ A1



CHILDREN'S CENTRE EAST ELEVATION

1 : 100 @ A1



CHILDREN'S CENTRE WEST ELEVATION

1 : 100 @ A1

LEGEND

REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DA.01	POLYCARBONATE SHEETING - DANPAL FACADE DOUBLE SKIN - COLOUR: OPAL
FC.02	FC CLADDING TO SOFFIT 'VERSILUX' - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
SL.01	GLAZED SOUTHLIGHT
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - CHILDREN'S CENTRE

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

PRO-ARC-DA-DWG-03_05

REVISION 3

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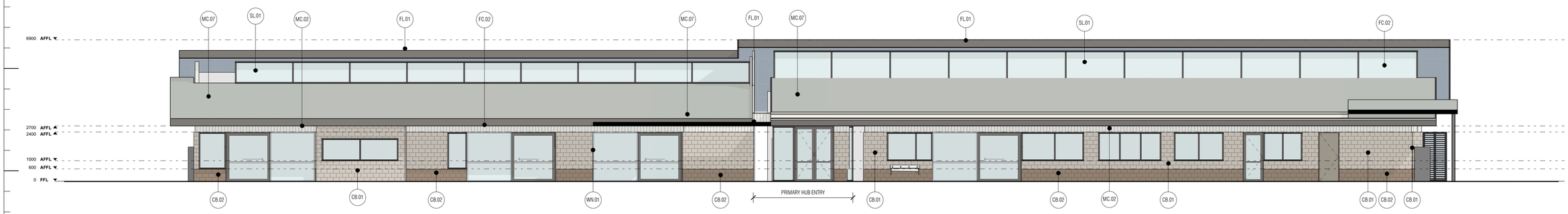
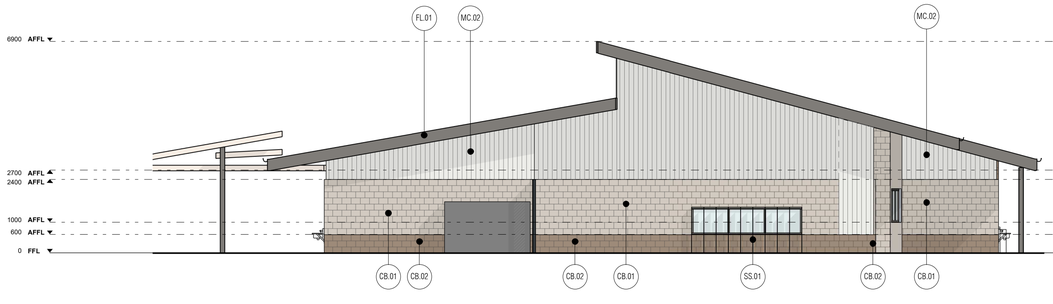
1:1 WHEN PRINTED @A1

LEGEND	
REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
FC.02	FC CLADDING TO SOFFIT 'VERSILUX' - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
SL.01	GLAZED SOUTHLIGHT
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH

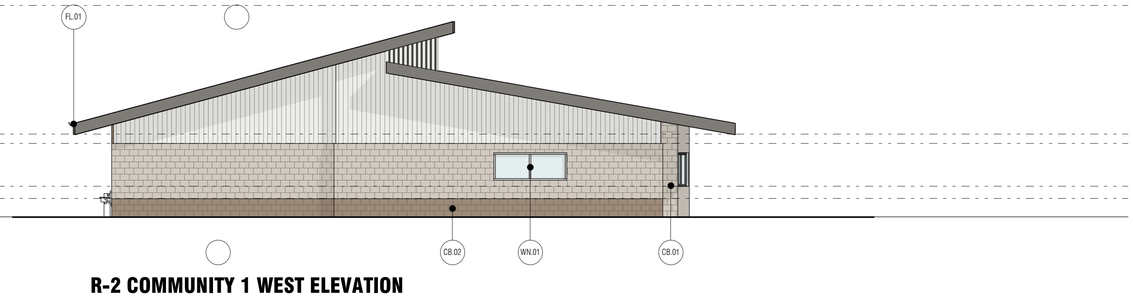
R-2 COMMUNITY 1 NORTH ELEVATION
1 : 100 @ A1



R-2 COMMUNITY 1 SOUTH ELEVATION
1 : 100 @ A1



R-2 COMMUNITY EAST ELEVATION
1 : 100 @ A1



R-2 COMMUNITY 1 WEST ELEVATION
1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - R-2 - COMMUNITY 1 & 2

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

PRO-ARC-DA-DWG-03_06

REVISION 3

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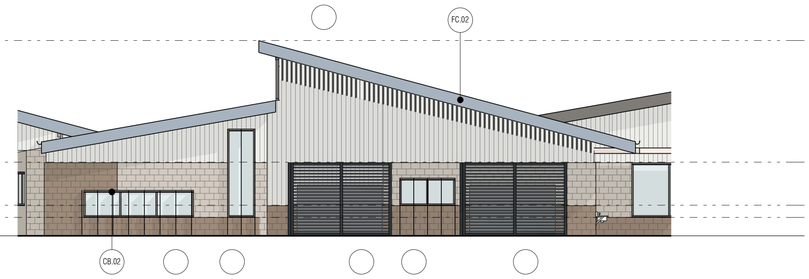
ORIGINAL SHEET SIZE A1 PRINTED ON : 12/12/2019 4:19:42 PM

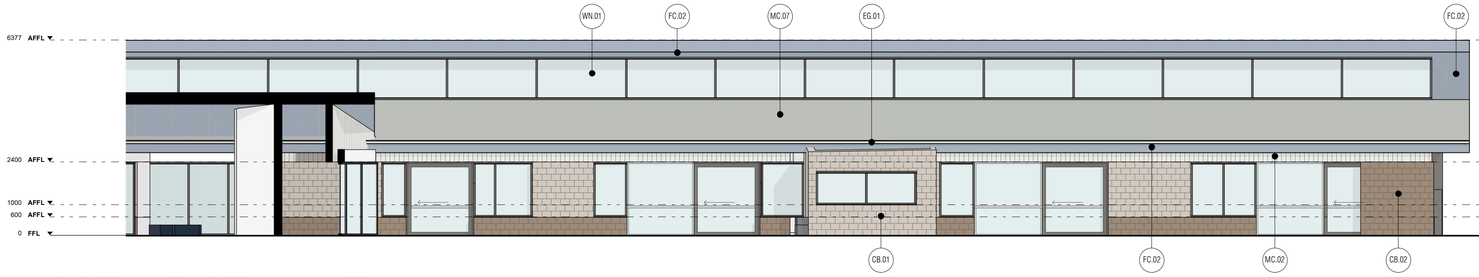
1:1 WHEN PRINTED @A1

LEGEND	
REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
FC.02	FC CLADDING TO SOFFIT VERSILUX - PAINT FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.04	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH

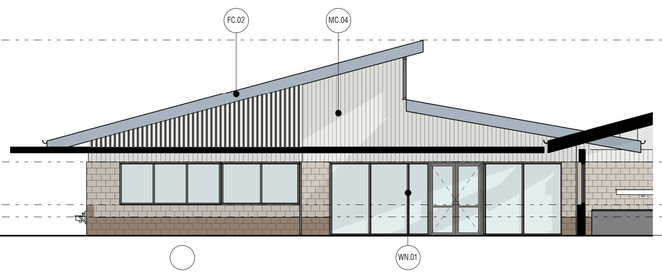
3-6 COMMUNITY 1 NORTH ELEVATION
1 : 100 @ A1



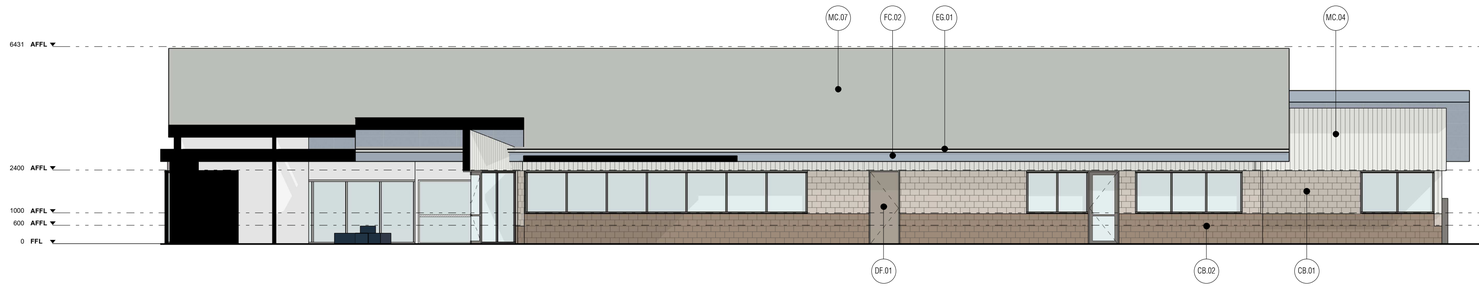
3-6 COMMUNITY 1 EAST ELEVATION
1 : 100 @ A1



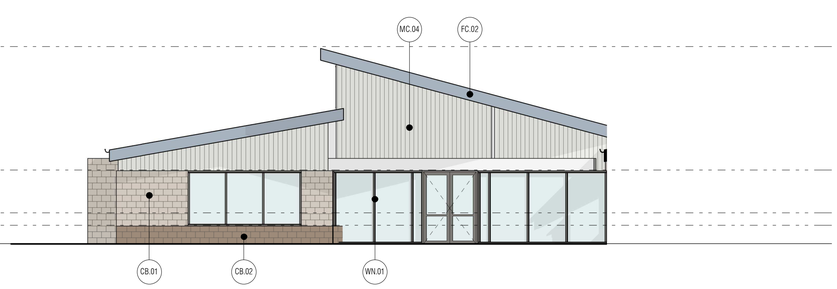
3-6 COMMUNITY 1 SOUTH ELEVATION
1 : 100 @ A1



3-6 COMMUNITY 1 WEST ELEVATION
1 : 100 @ A1

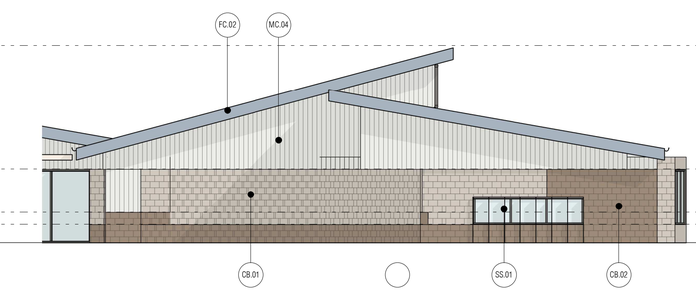


3-6 Community 2 - North
1 : 100 @ A1



3-6 COMMUNITY 2 EAST ELEVATION
1 : 100 @ A1

3-6 Community 2 - South
1 : 100 @ A1



3-6 COMMUNITY 2 WEST ELEVATION
1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

ELEVATIONS - 3-6 - COMMUNITY 1 & 2

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER: PRO-ARC-DA-DWG-03_07
REVISION: 3

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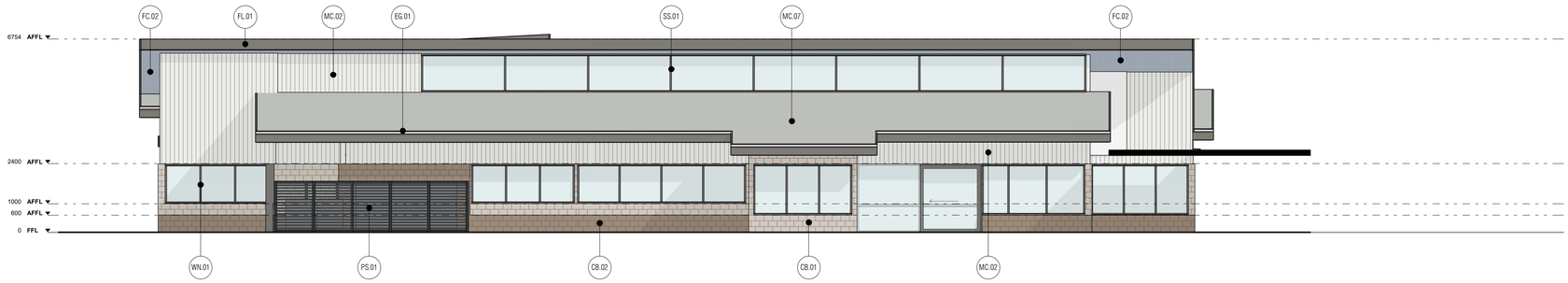
ORIGINAL SHEET SIZE A1 PRINTED ON : 12/12/2019 4:20:52 PM

1:1 WHEN PRINTED @A1

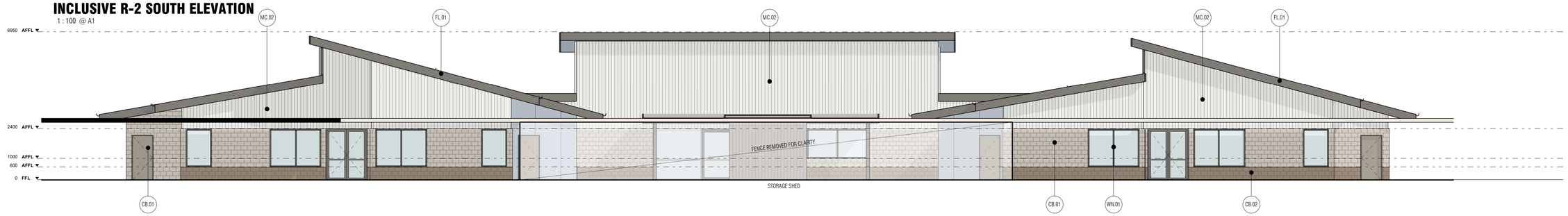
LEGEND

REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
FC.02	FC CLADDING TO SOFFIT VERSILUX - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH

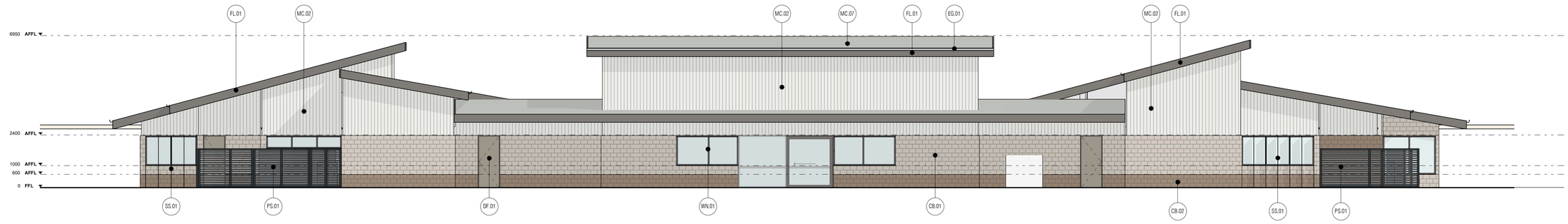
INCLUSIVE R-2 NORTH ELEVATION
1 : 100 @ A1



INCLUSIVE R-2 SOUTH ELEVATION
1 : 100 @ A1



INCLUSIVE R-2 EAST ELEVATION
1 : 100 @ A1



INCLUSIVE R-2 WEST ELEVATION
1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

ELEVATIONS - INCLUSIVE LEARNING - R-2 & 3-6

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-03_09

REVISION
3

1:1 WHEN PRINTED @A1

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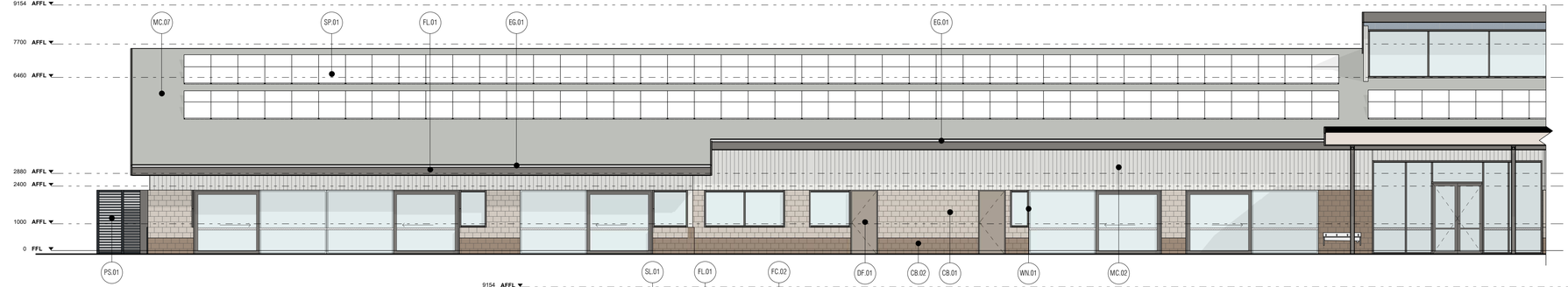
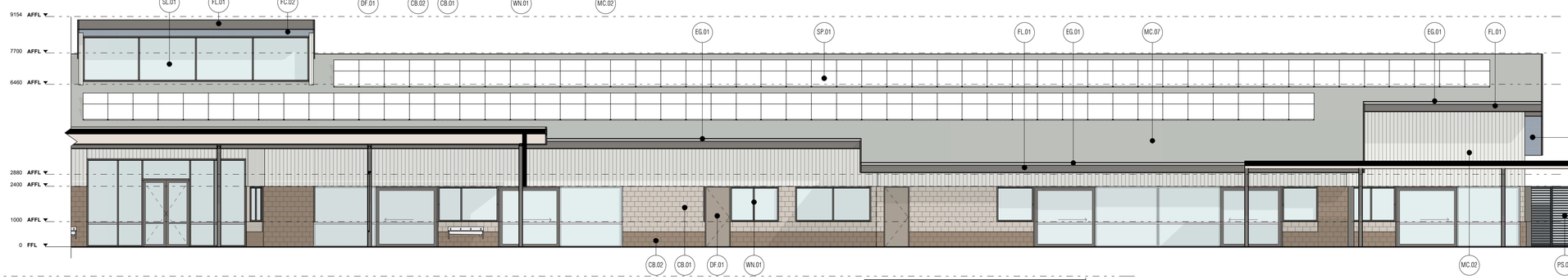
ORIGINAL SHEET SIZE A1 PRINTED ON : 12/12/2019 4:21:46 PM

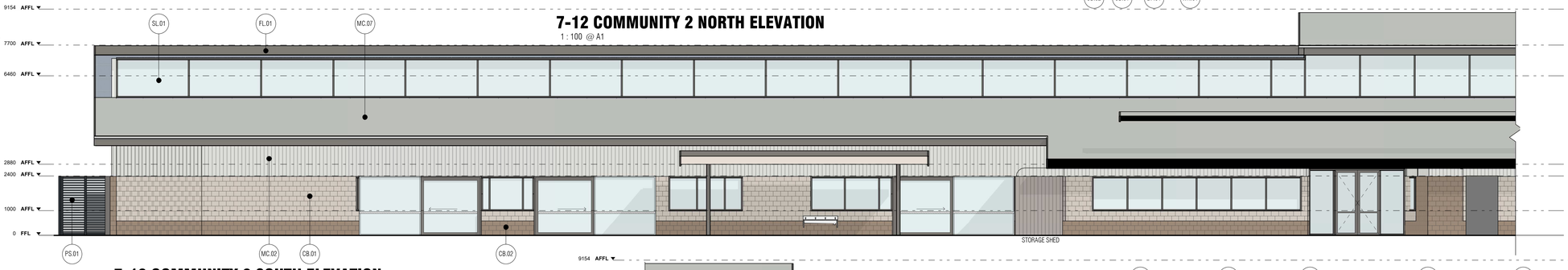
LEGEND

REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DA.01	POLYCARBONATE SHEETING - DANPAL FACADE DOUBLE SKIN - COLOUR: OPAL
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
FC.02	FC CLADDING TO SOFFIT 'VERSILUX' - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.04	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
RD.01	METAL ROLLER DOOR - COLORBOND FINISH
SL.01	GLAZED SOUTHLIGHT
SP.01	SOLAR PANELS - MOUNTED TO ROOF
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH



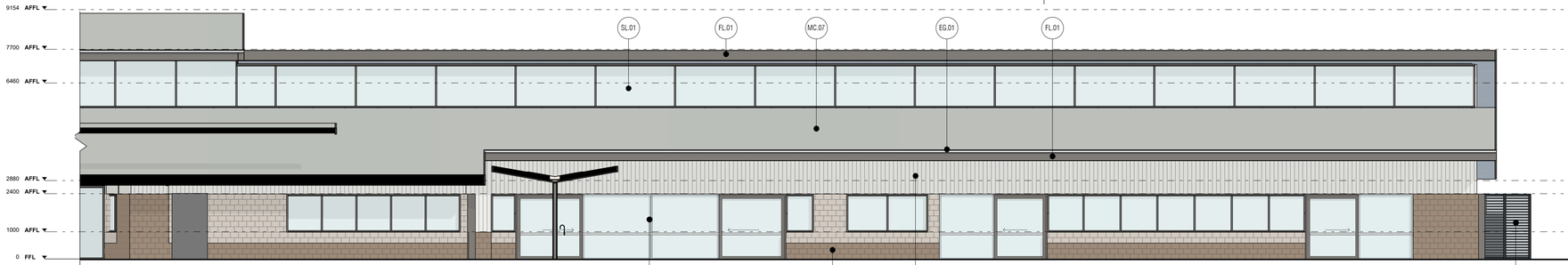
7-12 COMMUNITY 5 NORTH ELEVATION
1 : 100 @ A1

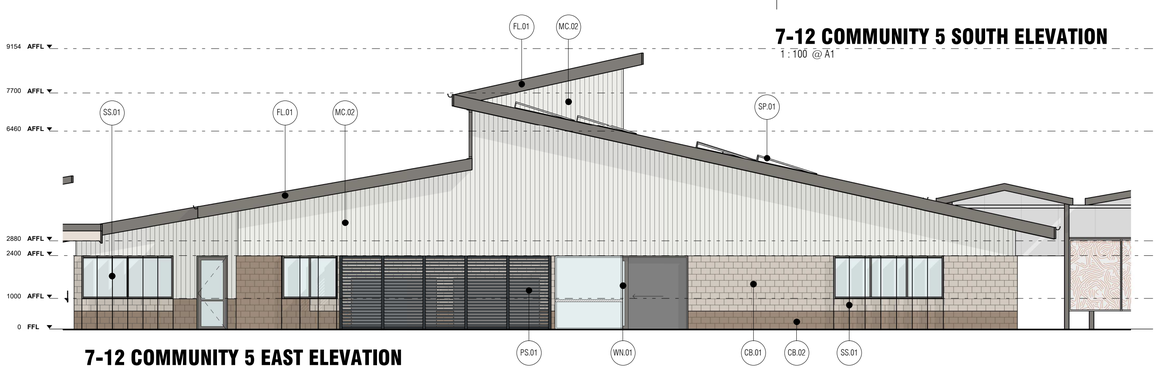




7-12 COMMUNITY 2 NORTH ELEVATION
1 : 100 @ A1

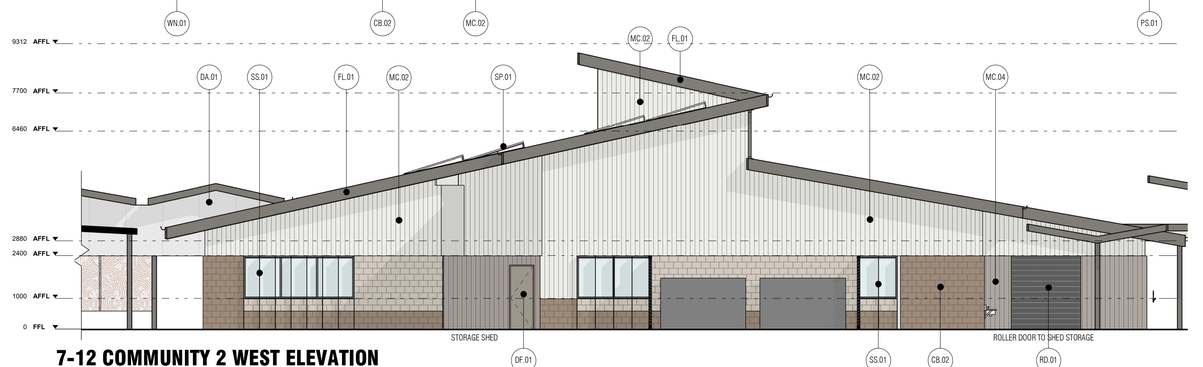
7-12 COMMUNITY 2 SOUTH ELEVATION
1 : 100 @ A1





7-12 COMMUNITY 5 SOUTH ELEVATION
1 : 100 @ A1

7-12 COMMUNITY 5 EAST ELEVATION
1 : 100 @ A1



7-12 COMMUNITY 2 WEST ELEVATION
1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

ELEVATIONS - 7-12 COMMUNITY 2 & 5

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-03_10

REVISION
3

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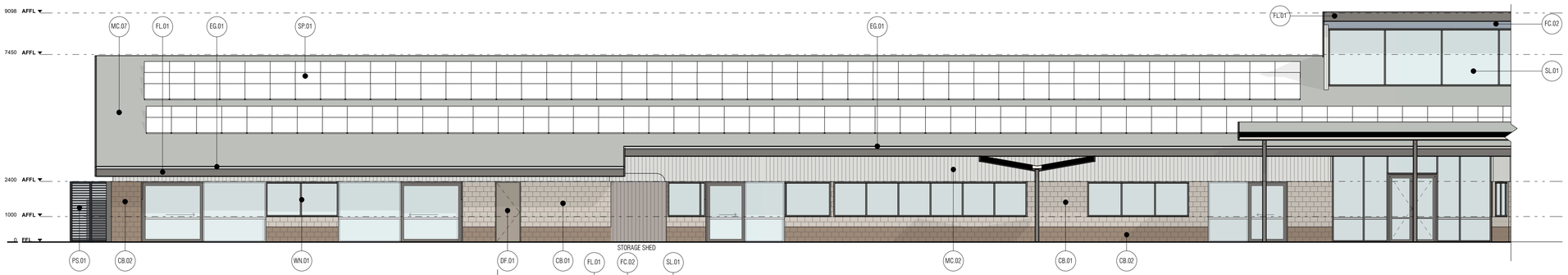
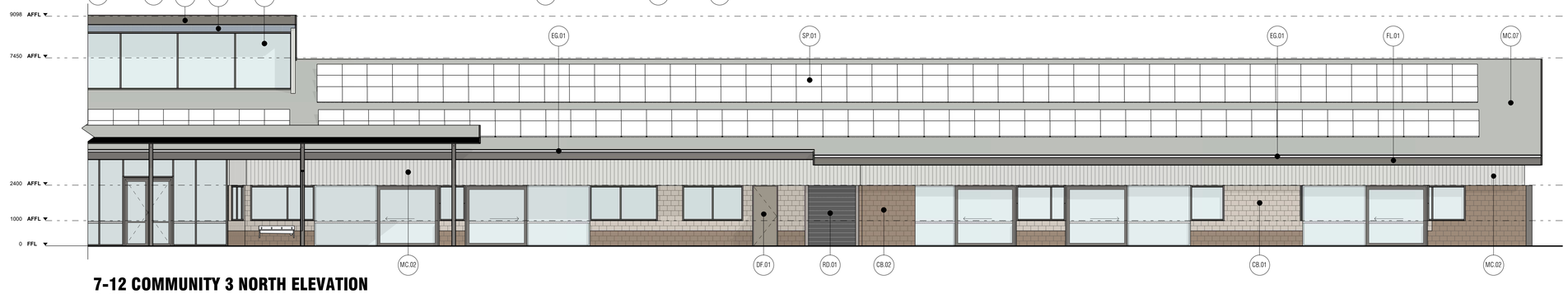
1:1 WHEN PRINTED @A1



NORTH ELEVATION - COMMUNITY 1

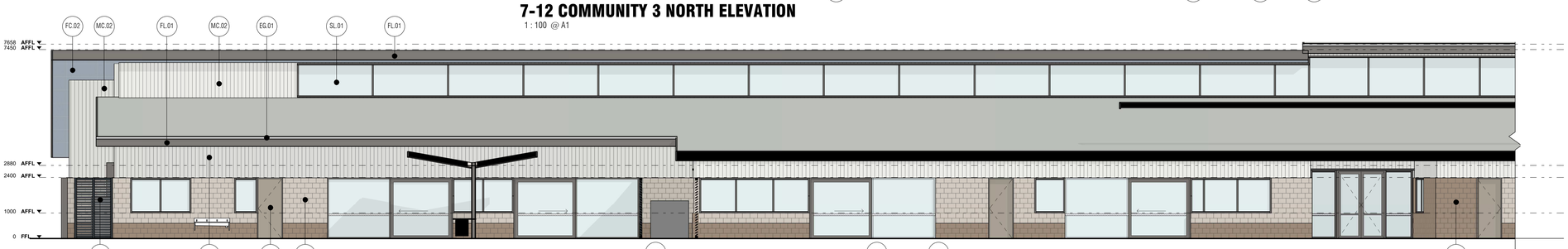
1 : 100 @ A1

LEGEND	
REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
FC.02	FC CLADDING TO SOFFIT VERSILUX® - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PERF	PERFORATED METAL SCREEN - PIC PERF - POWDERCOAT FINISH
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
RD.01	METAL ROLLER DOOR - COLORBOND FINISH
SL.01	GLAZED SOUTHLIGHT
SP.01	SOLAR PANELS - MOUNTED TO ROOF
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH



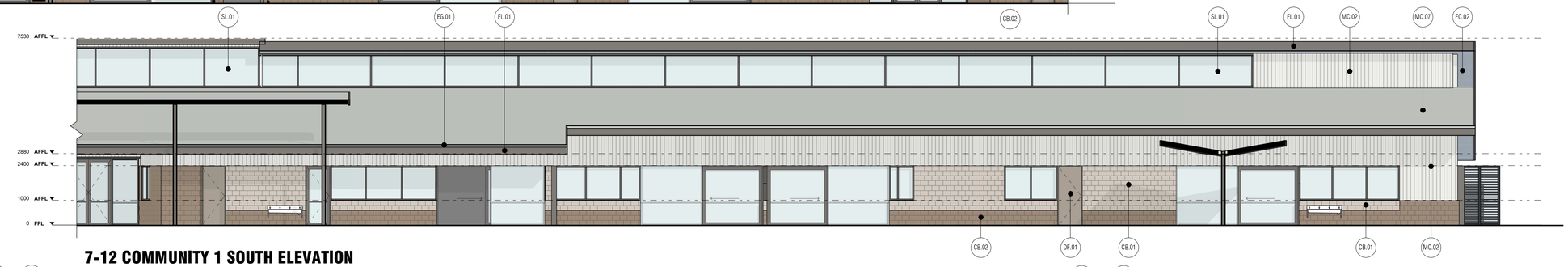
7-12 COMMUNITY 3 NORTH ELEVATION

1 : 100 @ A1



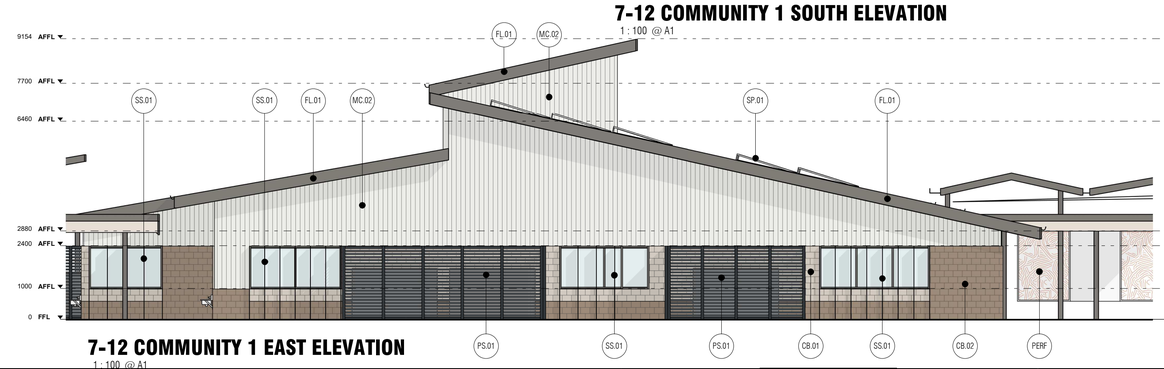
7-12 COMMUNITY 3 SOUTH ELEVATION

1 : 100 @ A1



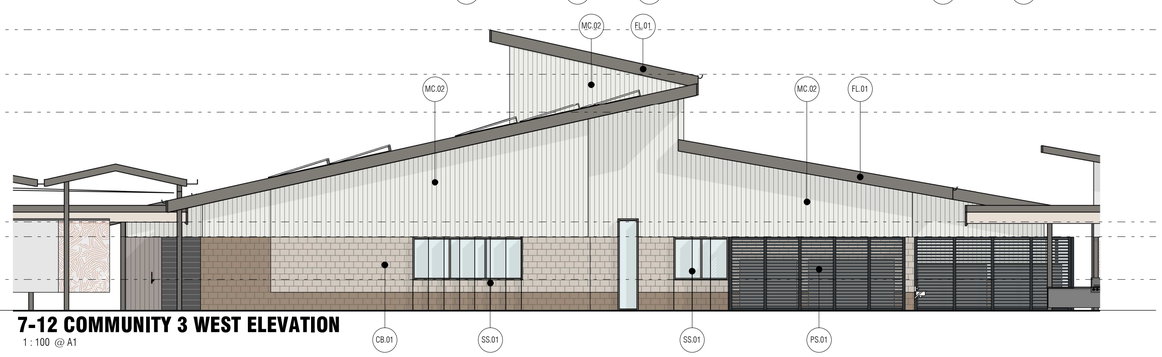
7-12 COMMUNITY 1 SOUTH ELEVATION

1 : 100 @ A1



7-12 COMMUNITY 1 EAST ELEVATION

1 : 100 @ A1



7-12 COMMUNITY 3 WEST ELEVATION

1 : 100 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - 7-12 COMMUNITY 3 & 1

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

PRO-ARC-DA-DWG-03_11

REVISION 3

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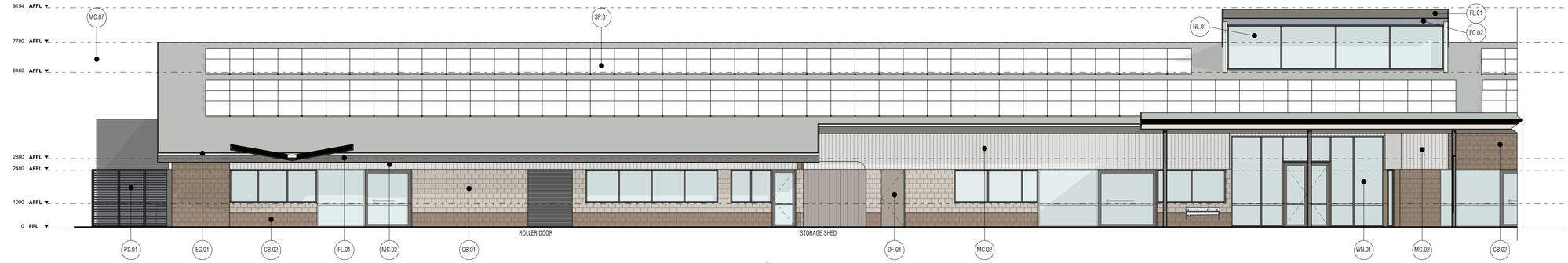
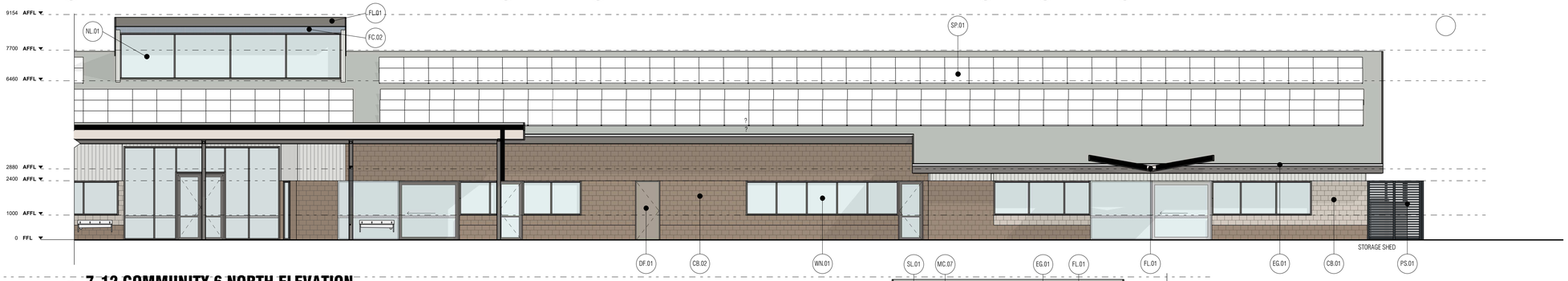
1:1 WHEN PRINTED @A1



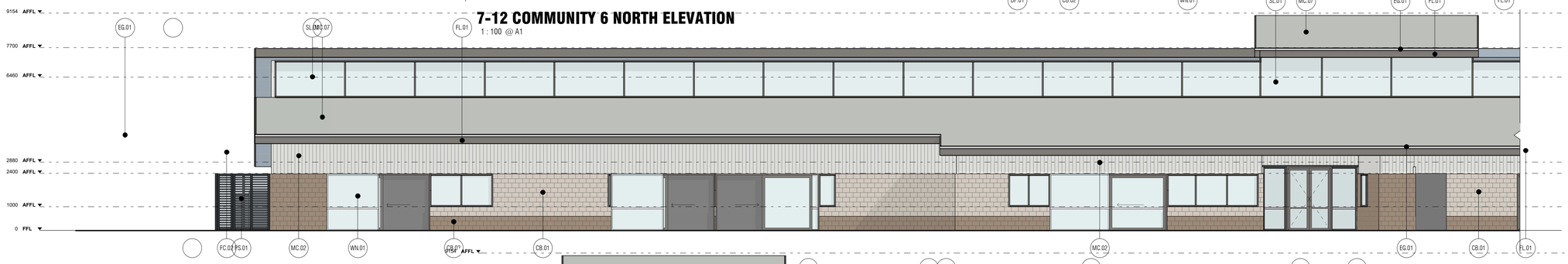
7-12 COMMUNITY 4 NORTH ELEVATION

1 : 100 @ A1



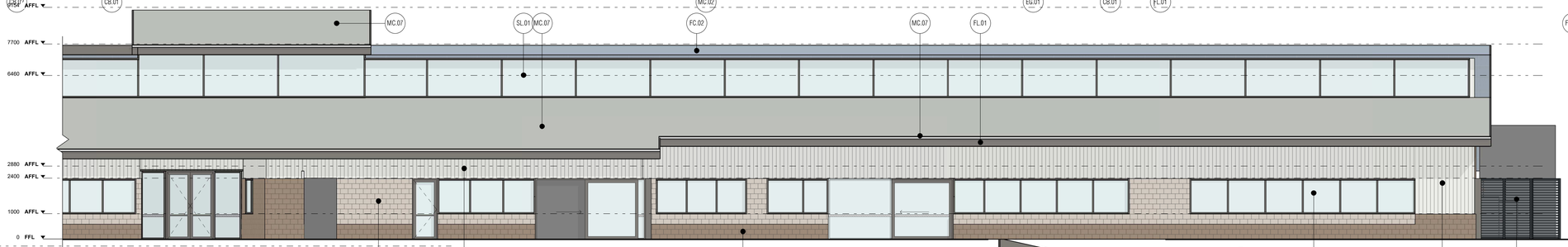
7-12 COMMUNITY 6 NORTH ELEVATION

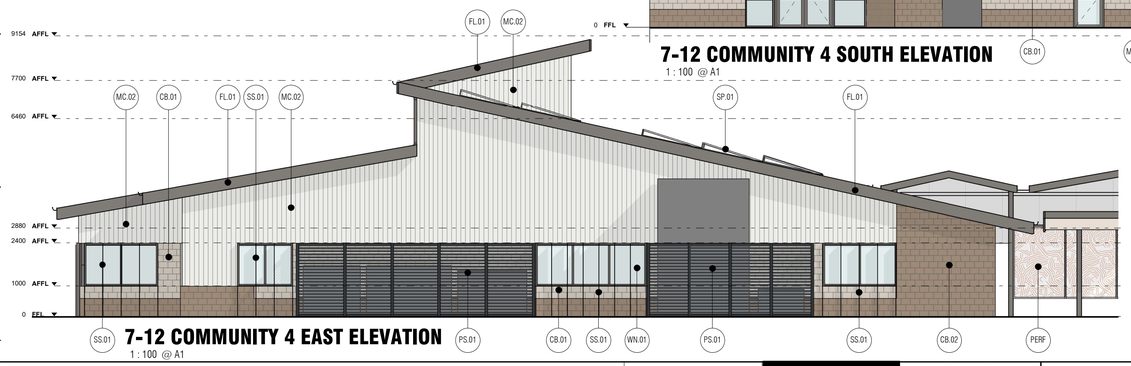
1 : 100 @ A1



7-12 COMMUNITY 6 SOUTH ELEVATION

1 : 100 @ A1



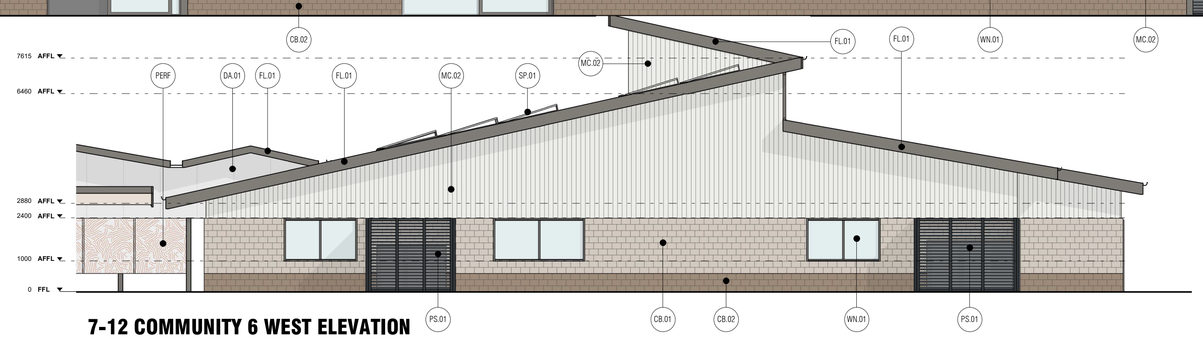


7-12 COMMUNITY 4 EAST ELEVATION

1 : 100 @ A1

7-12 COMMUNITY 4 SOUTH ELEVATION

1 : 100 @ A1



7-12 COMMUNITY 6 WEST ELEVATION

1 : 100 @ A1

LEGEND

REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DA.01	POLYCARBONATE SHEETING - DANPAL FACADE DOUBLE SKIN - COLOUR: OPAL
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
FC.02	FC CLADDING TO SOFFIT 'VERSILUX' - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
NL.01	GLAZED NORTHLIGHT
PERF	PERFORATED METAL SCREEN - PIC PERF - POWDERCOAT FINISH
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
SL.01	GLAZED SOUTHLIGHT
SP.01	SOLAR PANELS - MOUNTED TO ROOF
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - 7-12 COMMUNITY 6 & 4

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

PRO-ARC-DA-DWG-03_12

REVISION 3

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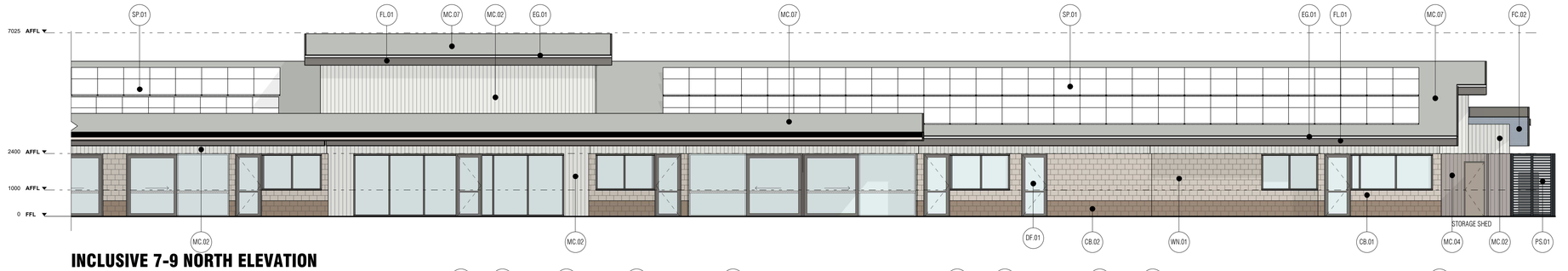

INCLUSIVE 7-9 NORTH ELEVATION

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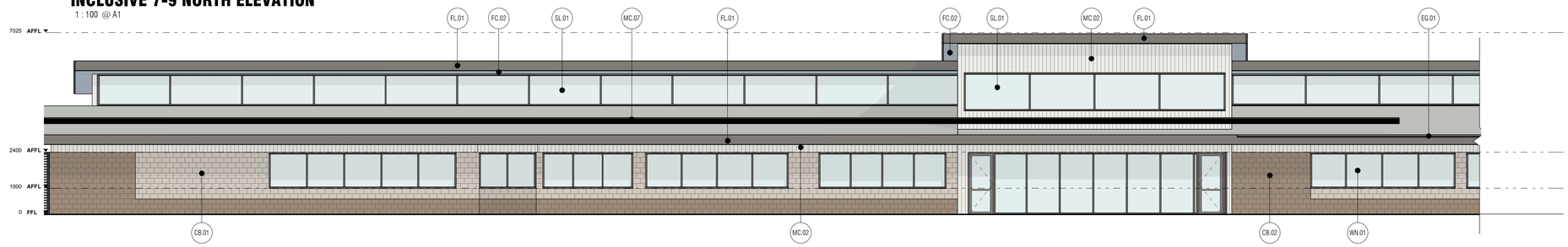

INCLUSIVE 7- SOUTH ELEVATION

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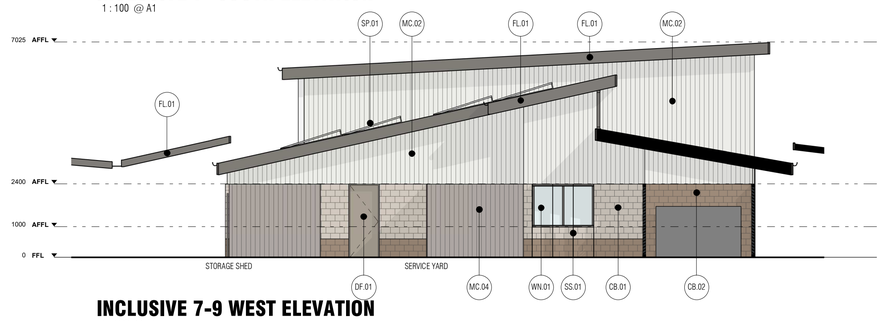

INCLUSIVE 7-9 EAST ELEVATION

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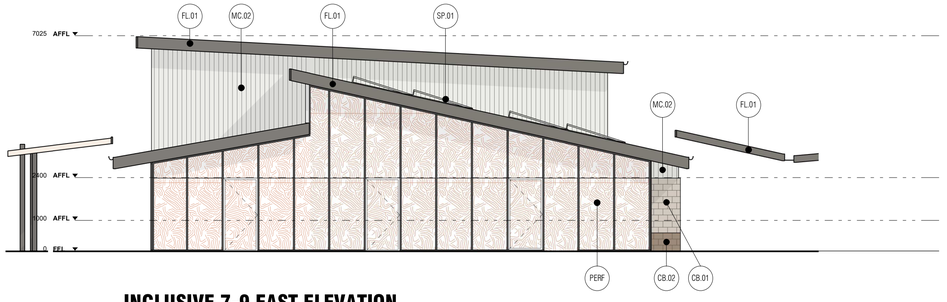

INCLUSIVE 7-9 WEST ELEVATION

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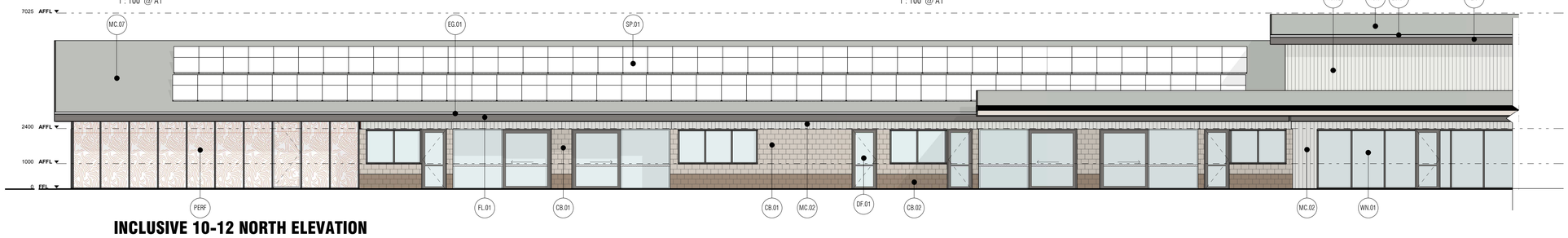
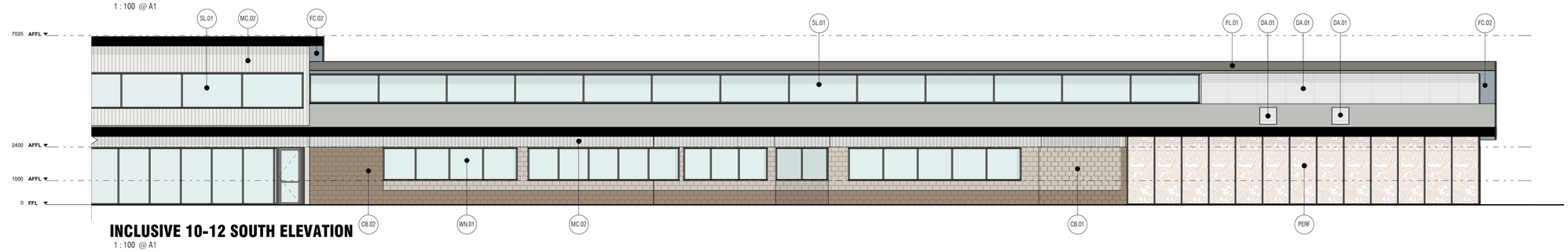


INCLUSIVE 10-12 NORTH ELEVATION

1 : 100 @ A1



INCLUSIVE 10-12 SOUTH ELEVATION

1 : 100 @ A1

LEGEND

REFER TO SITE SPECIFIC EXTERNAL FINISHES SCHEDULES.	
CODE	DESCRIPTION
CB.01	CONCRETE BLOCK - SMOOTH FACE
CB.02	CONCRETE BLOCK - SPLIT FACE
DA.01	POLYCARBONATE SHEETING - DANPAL FACADE DOUBLE SKIN - COLOUR: OPAL
DF.01	SOLID CORE DOOR - PAINT FINISH
EG.01	HALF-ROUND EAVES GUTTER - COLORBOND FINISH
FC.02	FC CLADDING TO SOFFIT VERSILUX - PAINT FINISH
FL.01	FASCIAS, BARGES & GUTTERS - COLORBOND FINISH
MC.02	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.04	METAL DECK WALL CLADDING - REVSPAN PROFILE
MC.07	METAL DECK ROOF CLADDING - CORRUGATED PROFILE
PERF	PERFORATED METAL SCREEN - PIC PERF - POWDERCOAT FINISH
PS.01	HORIZONTAL STEEL LOUVRE BLADE SCREEN - POWDERCOAT FINISH
SL.01	GLAZED SOUTHLIGHT
SP.01	SOLAR PANELS - MOUNTED TO ROOF
SS.01	ALUMINIUM VERTICAL SUNSHADING BLADES - POWDERCOAT FINISH
WN.01	ALUMINIUM FRAMED WINDOW - POWDERCOAT FINISH

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

ELEVATIONS - INCLUSIVE LEARNING -7-9 & 10-12

Drawn	Approved	Date	Scale
NB	AP	2019.12.11	1 : 100 @ A1

CONTRACT

DRAWING NUMBER: PRO-ARC-DA-DWG-03_13

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

REVISION: 3

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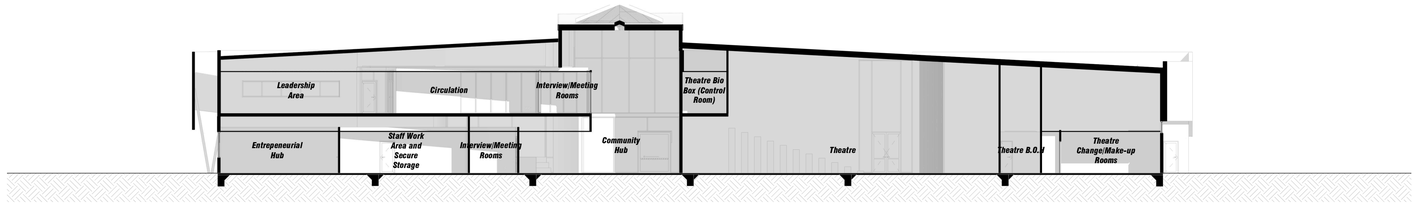
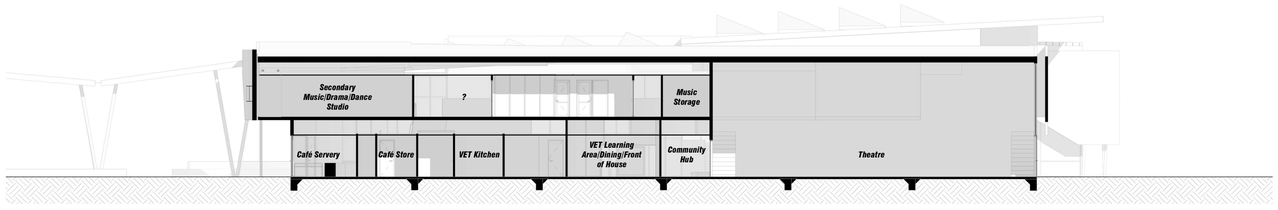


1 / 02_01A **COMMUNITY BUILDING**
SECTION A
1 : 200 @ A1



2 / 02_01A **COMMUNITY BUILDING**
SECTION B
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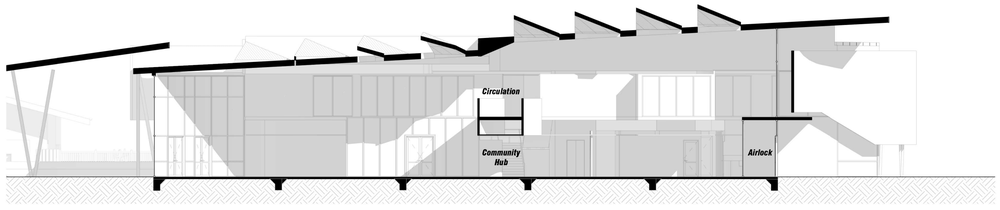

4 / 02_01A **COMMUNITY BUILDING**
SECTION C
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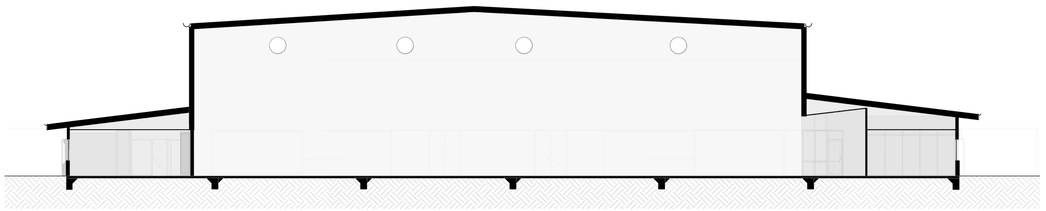

7 / 02_04 **GYMNASIUM**
SECTION A
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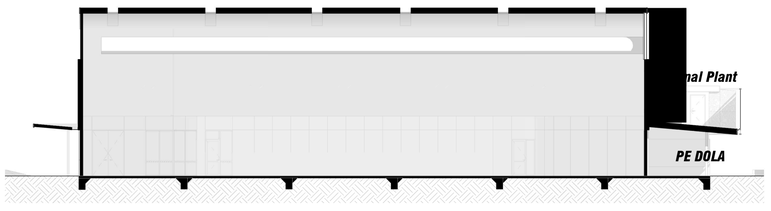

8 / 02_04 **GYMNASIUM**
SECTION B
1 : 200 @ A1

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PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.06

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

SECTIONS - COMMUNITY BUILDING & GYM

Drawn	Approved	Date	Scale(s)
CK	AP	2019.12.06	AS NOTED

N

CONTRACT

DRAWING NUMBER

SECTOR	DISCIPLINE	PHASE	TYPE	SERIES	NUMBER
PRO	ARC	DA	DWG	03	20

REVISION **1**

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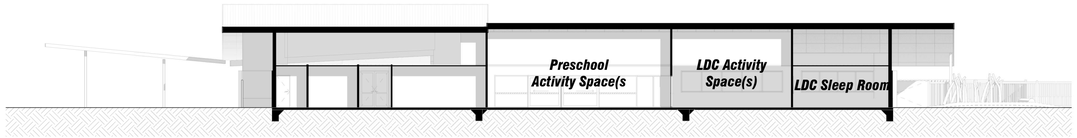
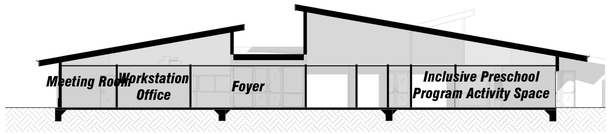
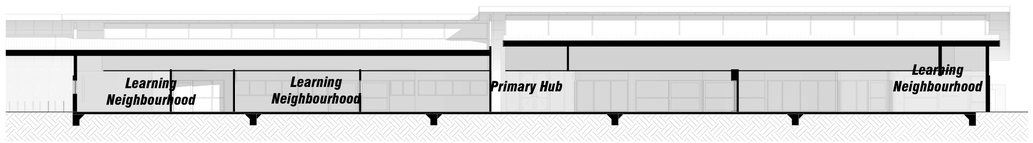


1 02_05 **CHILDREN'S CENTRE**
SECTION A
1 : 200 @ A1



2 02_05 **CHILDREN'S CENTRE**
SECTION B
1 : 200 @ A1

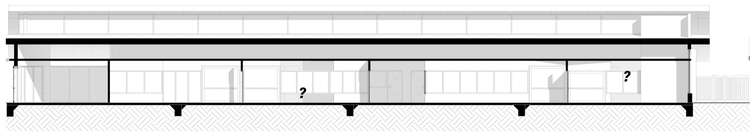


3 02_07 **R-2 COMMUNITY 1**
SECTION A
1 : 200 @ A1

4 02_08 **R-2 COMMUNITY 1**
SECTION B
1 : 200 @ A1

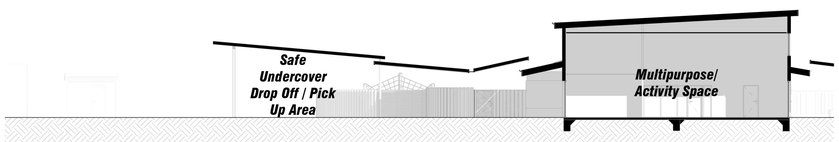
5 02_10 **3-6 COMMUNITY 2**
SECTION A
1 : 200 @ A1

6 02_10 **3-6 COMMUNITY 2**
SECTION B
1 : 200 @ A1



7 02_09 **3-6 COMMUNITY 1**
SECTION A
1 : 200 @ A1

9 02_18 **INCLUSIVE 7-9 & 10-12**
SECTION A
1 : 200 @ A1



10 02_18 **INCLUSIVE 7-9 & 10-12**
SECTION B
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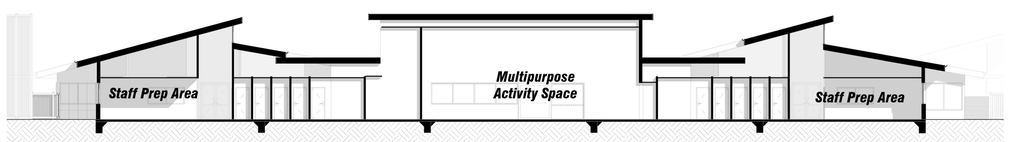
Covered
Link



11 02_11 **INCLUSIVE R-2 & 3-6**
SECTION A
1 : 200 @ A1

12 02_11 **INCLUSIVE R-2 & 3-6**
SECTION B
1 : 200 @ A1

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

SECTIONS - CHILDREN'S CENTRE, R-2 & 3-6 & INCLUSIVE LEARNING

Drawn	Approved	Date	Scale(s)
CK	AP	2019.12.06	AS NOTED

N

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-03_21

REVISION
2

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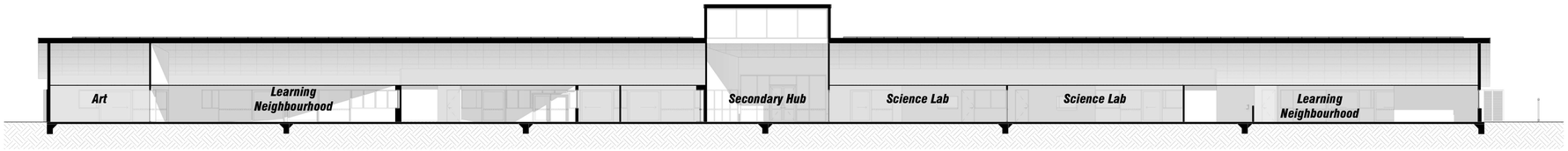

1 / 02_12 **7-12 COMMUNITY 1&3**
SECTION A
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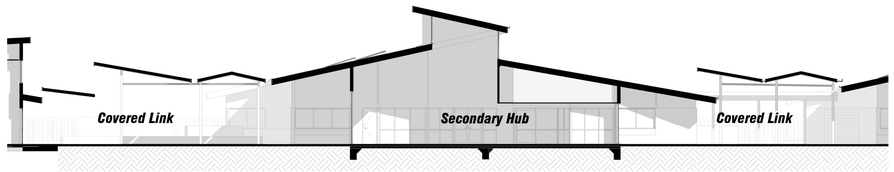

2 / 02_13 **7-12 COMMUNITY 2**
SECTION B
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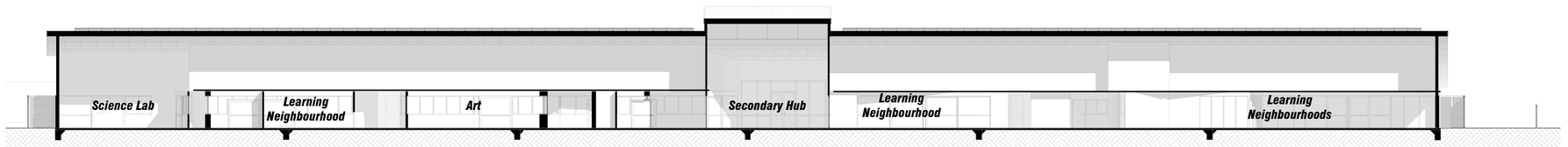

3 / 02_13 **7-12 COMMUNITY 2&5**
SECTION A
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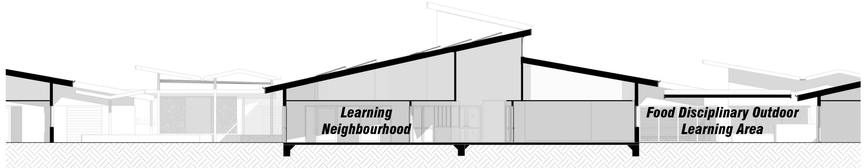

4 / 02_14 **7-12 COMMUNITY 3**
SECTION B
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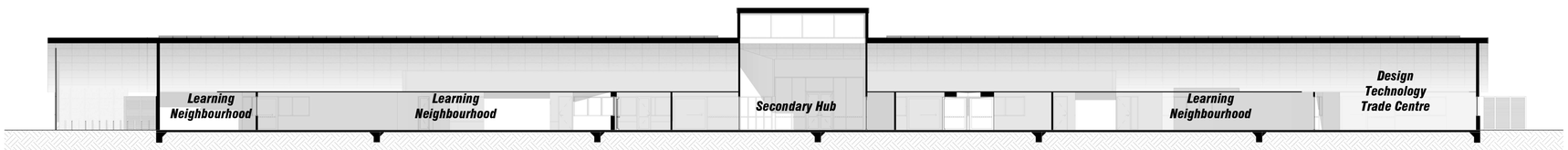

6 / 02_15 **7-12 COMMUNITY 4&6**
SECTION A
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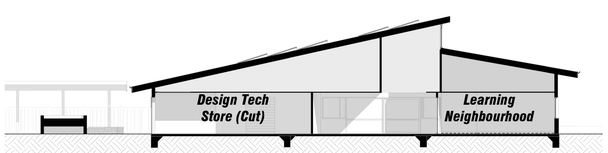

5 / 02_15 **7-12 COMMUNITY 4&6**
SECTION B
1 : 200 @ A1

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

SECTIONS - 7-12 SECONDARY COMMUNITIES

Drawn	Approved	Date	Scale(s)
CK	AP	2019.12.06	AS NOTED

CONTRACT

DRAWING NUMBER
SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER
PRO-ARC-DA-DWG-03_22

REVISION
2

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PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.13

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

EXTERNAL PERSPECTIVES

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.13	AS NOTED

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

SOU-ARC-DA-DWG-08_01

REVISION

3

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1:1 WHEN PRINTED @A1

PRIMARY INTERDISCIPLINARY LEARNING AREA & NATURE PLAY OUTDOOR LEARNING AREA
(view from 3-6 Learning Community 1)

AERIAL PERSPECTIVE
(view from north-west)

AERIAL PERSPECTIVE
(view from south)

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Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.13

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

EXTERNAL PERSPECTIVES

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.13	AS NOTED

CONTRACT

DRAWING NUMBER						REVISION
SECTOR	DISCIPLINE	PHASE	TYPE	SERIES	NUMBER	
SOU	ARC	DA	DWG	08	02	1

1:1 WHEN PRINTED @A1

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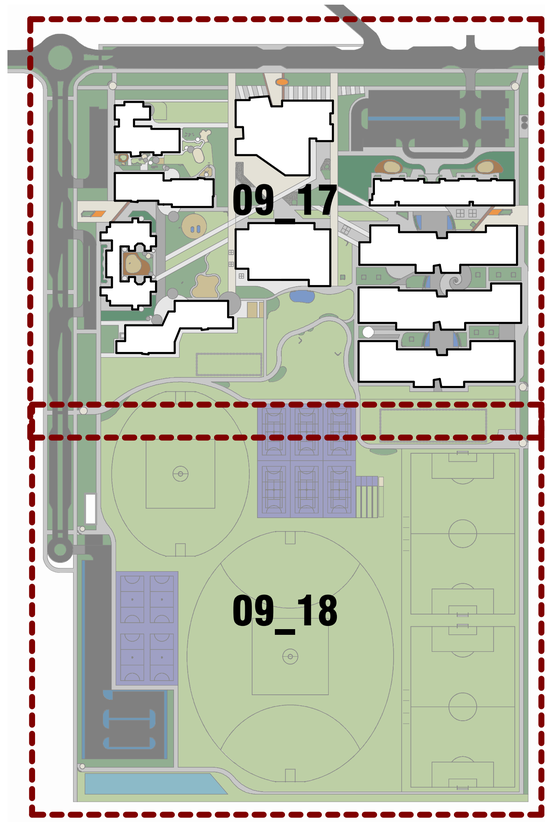
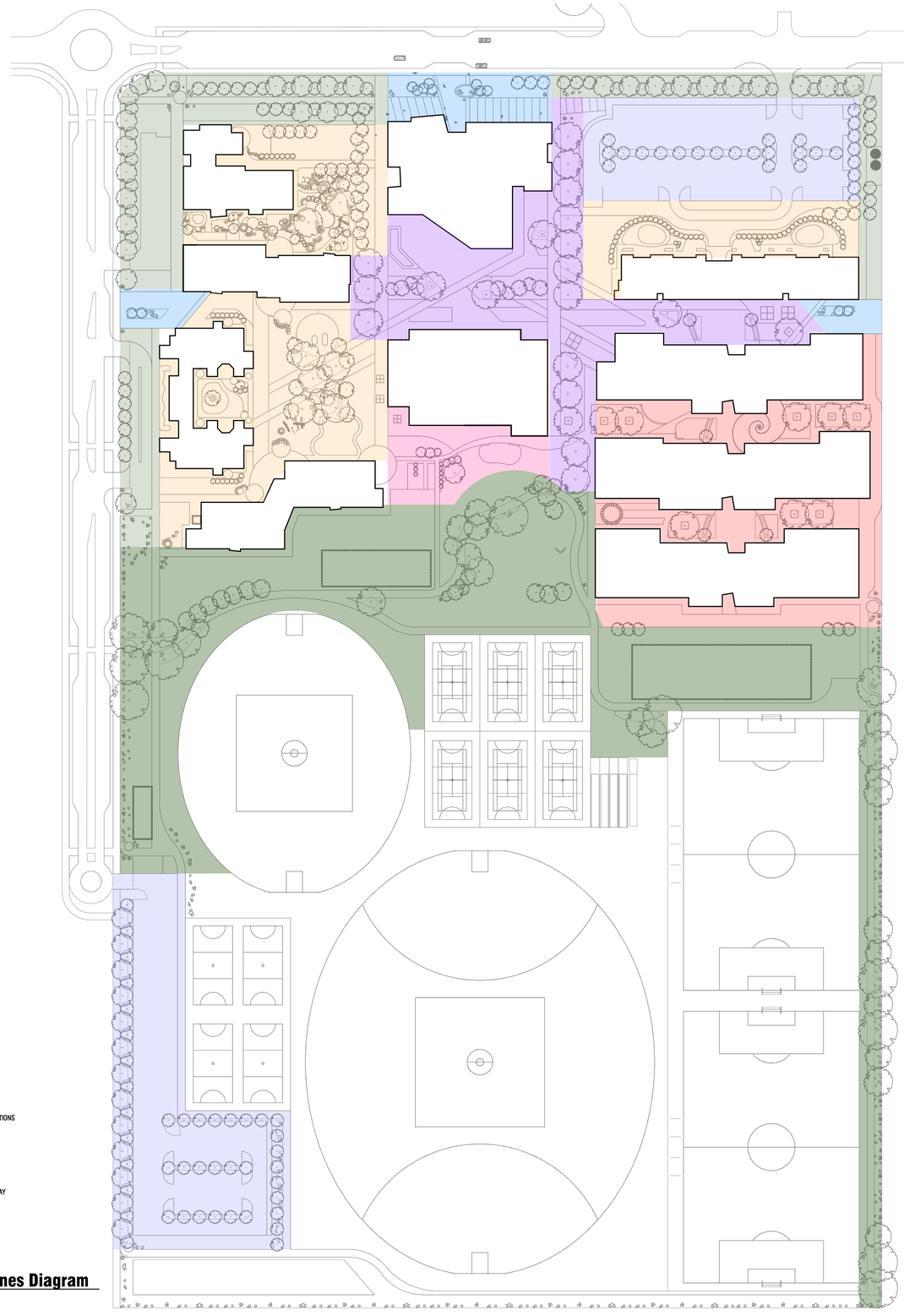
Attachment 4
Landscape Schedule



1 **Landscape Key Plan**
1 : 2000



PLANTING ZONES LEGEND

- STREET FRONTAGE — REFER PLANTING SCHEDULE
- CARPARKS — REFER PLANTING SCHEDULE
- ENTRY + ARTWORK INSTALLATIONS — REFER PLANTING SCHEDULE
- PIAZZA / MAIN AXES — REFER PLANTING SCHEDULE
- 7-12 FINGERS — REFER PLANTING SCHEDULE
- CC, PRIMARY & INCLUSIVE PLAY — REFER PLANTING SCHEDULE
- EDIBLE / FOOD ZONE — REFER PLANTING SCHEDULE
- GREEN SPINE & WILD EDGES — REFER PLANTING SCHEDULE

2 **Planting Zones Diagram**
1 : 1000

1:1 WHEN PRINTED @A1

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PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
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3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

LANDSCAPE KEY PLAN AND PLANTING ZONES

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.11	AS NOTED

CONTRACT

DRAWING NUMBER

SECTOR	DISCIPLINE	PHASE	TYPE	SERIES	NUMBER
SOU	ARC	DA	DWG	09	16

REVISION **3**

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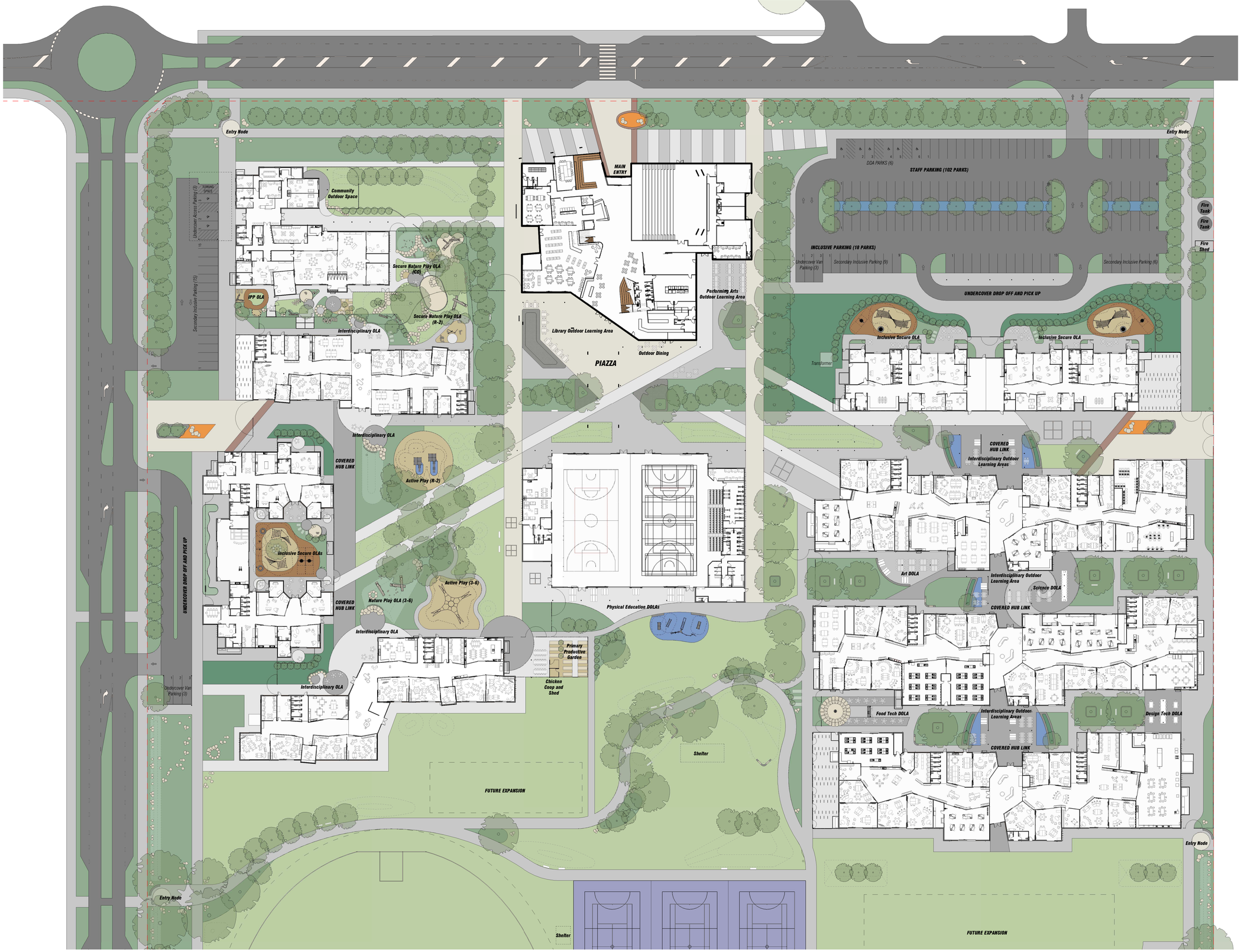

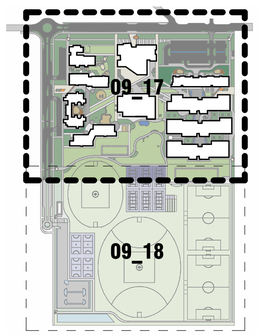

1:1 WHEN PRINTED @A1

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PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

LANDSCAPE PLAN 01

Entry Node

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.11	AS NOTED

CONTRACT

DRAWING NUMBER						REVISION
SECTOR	DISCIPLINE	PHASE	TYPE	SERIES	NUMBER	
SOU-	ARC-	DA-	DWG-	09_	17	3

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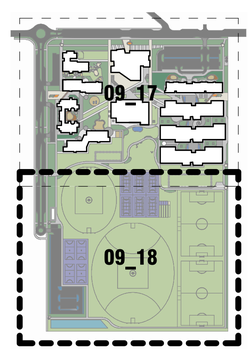

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TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership

Government of South Australia

North Site - 23 Riverbanks Road, Anglevale

South Site - 143 Port Road, Aldinga

LANDSCAPE PLAN 02

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.11	AS NOTED

CONTRACT

DRAWING NUMBER

SECTOR DISCIPLINE PHASE TYPE SERIES NUMBER

SOU-ARC-DA-DWG-09_18

REVISION 3

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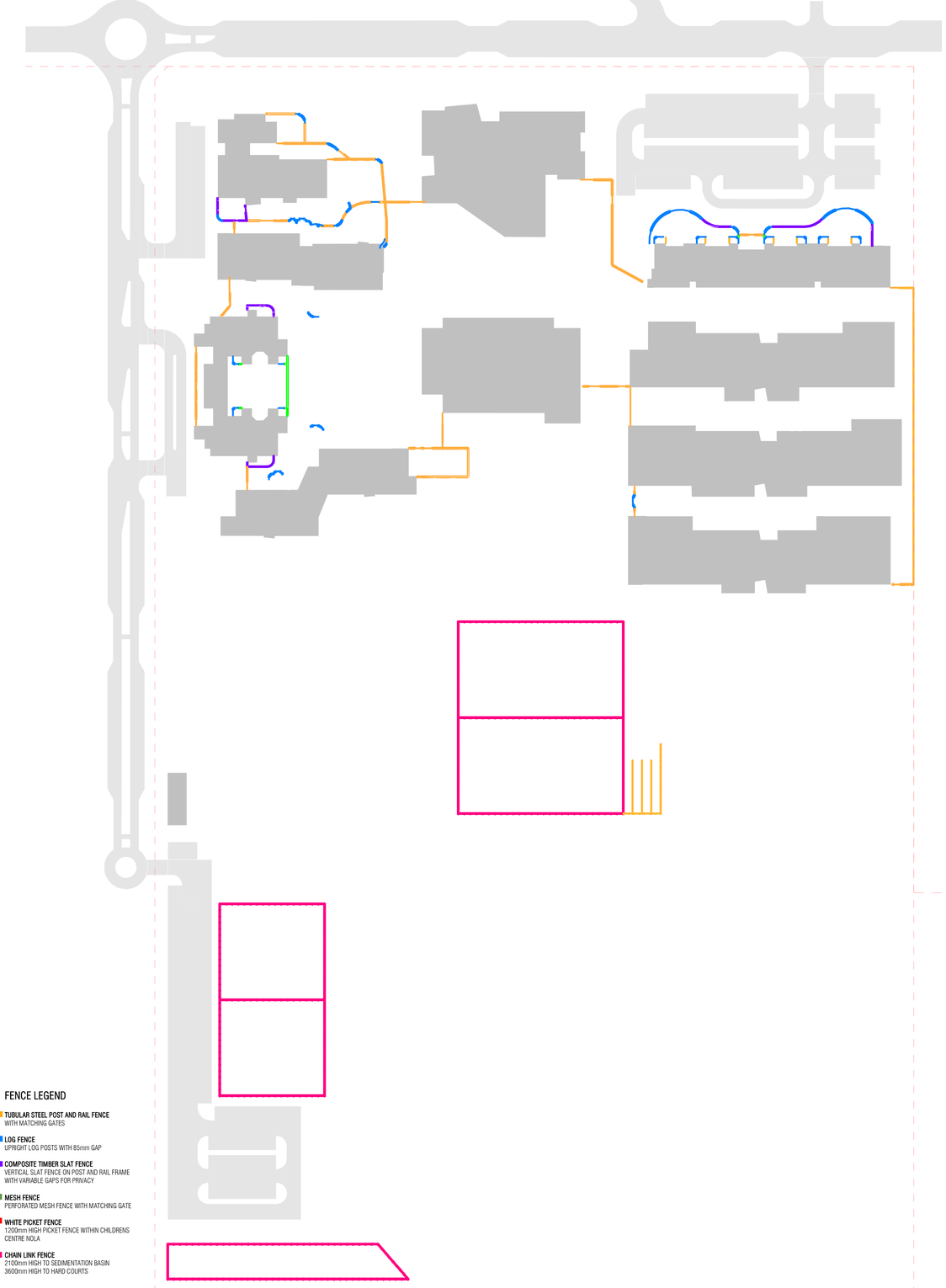

SHADE & SHED LEGEND

FIXED SHADE
Includes stand-alone canopies, integrated cover and verandah overhangs

FENCE LEGEND

TUBULAR STEEL POST AND RAIL FENCE
WITH MATCHING GATES

LOG FENCE
UPRIGHT LOG POSTS WITH 85mm GAP

COMPOSITE TIMBER SLAT FENCE
VERTICAL SLAT FENCE ON POST AND RAIL FRAME WITH VARIABLE GAPS FOR PRIVACY

MESH FENCE
PERFORATED MESH FENCE WITH MATCHING GATE

WHITE PICKET FENCE
1200mm HIGH PICKET FENCE WITHIN CHILDRENS CENTRE NOLA

CHAIN LINK FENCE
2100mm HIGH TO SEDIMENTATION BASIN
3600mm HIGH TO HARD COURTS

TESA Education

Government of South Australia

PERUMAL PEDAVOLI ARCHITECTS

Swanbury Penglase

Issue	Description	Date
1	CONTRACT	2019.12.04
2	CONTRACT	2019.12.06
3	CONTRACT	2019.12.11

South Australian Schools Public Private Partnership
Government of South Australia
North Site - 23 Riverbanks Road, Anglevale
South Site - 143 Port Road, Aldinga

LANDSCAPE DIAGRAMS

Drawn	Approved	Date	Scale(s)
Author	Approver	2019.12.11	AS NOTED

CONTRACT

DRAWING NUMBER: SOU-ARC-DA-DWG-09_19
REVISION: 3

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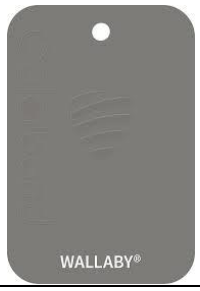
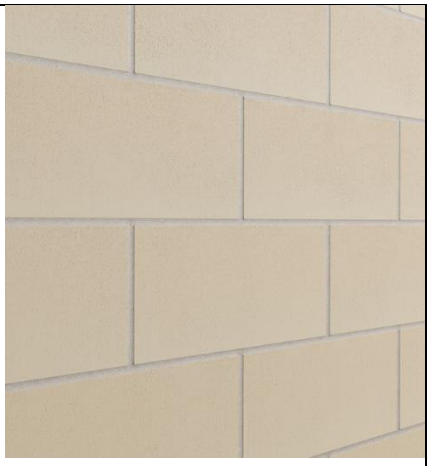
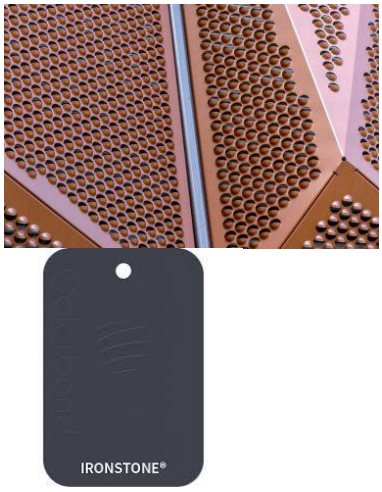
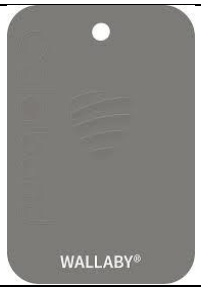
Code	Application	Material	Colour/Finish	Supplier	Image
Wall Cladding					
MC.01	Walls	Metal Deck Cladding – Maxline Profile	Colorbond – Ironstone	Supplier: Revolution Roofing	
MC.02	Walls	Metal Deck Cladding – Revspan Profile	Colorbond - Zincalume	Supplier: Revolution Roofing	
MC.03	Walls	Metal Deck Cladding – Revspan Profile	Colorbond - Surfmist	Supplier: Revolution Roofing	

MC.04	Walls	Metal Deck Cladding – Revspan Profile	**Colorbond - Wallaby**	**Supplier**: Revolution Roofing	
FC.01	Walls	Compressed Fibre Cement Sheet Cladding – ExoTec Express Jointed System	Paint Finish	**Supplier**: James Hardie	

CB.01	Walls	Smooth Face Concrete Block	Alabaster/ Limestone Finish	**Supplier**: Boral or Austral	
PC.01	Walls	Precast Concrete	Sandstone Oxide	**Supplier**: - Bianco Precast	
R.01	Performance Theatre	Metal Deck Cladding – Kliplok	**Colorbond - Wallaby**	**Supplier**: Fielders	
R.02	Gymnasium	Metal Deck Cladding – Kliplok	**Colorbond - Surfmist**	**Supplier**: Fielders	
R.03	All other roofs inc canopies- typical	Metal Deck Cladding – Corrugated	**Colorbond – To be confirmed**	**Supplier**: Fielders	
R.04	Gymnasium Skylights	Polycarbonate Cladding – Kliplok	**Opaque Polycarbonate**		
R.05	Canopy Skylights	Polycarbonate Cladding – Corrugated	**Opaque Polycarbonate**		

-	Flashings & Cappings	-	Color & Finish to match adjacent roofing		
-	Fascia's to all Learning Communities	-	Colorbond - Wallaby		

PERF	Community building, Bike enclosures & Covered Link External Display Screens	Perforated Metal Screen – Pic Perf type Note: Picture image for I site to be coral	Powder coated – Ironstone	Supplier: Locker Group	
DA.01	Gymnasium & Covered Link Canopy Walls	Double Skin Polycarbonate Cladding – Danpal Facade	Opal	Supplier: Danpalon	
SS.01	West Elevations Vertical Shading fins to glazed windows	Powdercoated Aluminum Extruded Blade – Alspec Soliare Type or similar	Colorbond Wallaby	Supplier: Alspec	

-	Typical throughout	Dulux Duralloy Powdercoated	Colorbond Wallaby			
Ground Surfaces – Unit Paver						
PAVE01	Outdoor paving - Piazza	Dry pressed brick paver	**Earth65** Sunburst Red **Bowral London** Chestnut	**Supplier**: Austral bricks **Contact**: Natasha Ugrinic 08 8443 2222 Ground Floor, 70 Hindmarsh Square Adelaide SA 5000		River/ Coast
Ground Surfaces – Concrete						
PAVE02a	Outdoor paving	Exposed Aggregate Concrete	**Stylecrete** Storm	**Supplier**: Premix		River
PAVE02b	Outdoor paving	Exposed Aggregate Concrete	**Stylecrete** Gold	**Supplier**: Premix		River
PAVE02c	Outdoor paving	Exposed Aggregate Concrete	**Stylecrete** Vanilla	**Supplier**: Premix		River
PAVE03a	Outdoor paving	Exposed Aggregate Concrete	**Stylecrete** Thunder	**Supplier**: Premix		Coast

PAVE03b	Outdoor paving	Exposed Aggregate Concrete	**Stylecrete** Diamond	**Supplier**: Premix		Coast
PAVE03c	Outdoor paving	Exposed Aggregate Concrete	**Stylecrete** Vanilla Spice	**Supplier**: Premix		Coast
PAVE04	Outdoor paving – Art Typology 01 Feature Paving	Sand Blasted Concrete	Sanstone			River/ Coast
Ground Surfaces – Compacted gravel						
STONE01	Nature play	Stone boulders	Random Wallers Sawn Wallers	**Supplier**: Basket range stone **Contact**: Victoria Standen (08) 8390 3420 262 Basket Range Rd Basket Range SA, 5141		Coast
STONE02	Nature Play	Stone boulders		**Supplier**: Seelander quarries **Contact**: (08) 8564 2297 563 Kalimna Road, Penrice SA 5353		River
Ground Surfaces – Compacted gravel						
SAND01	Play space	Washed sand	Type: Sand: Washed white non-clumping playground sand.	**Supplier**: Garden Grove. (08) 8251 1111		River/ Coast

				1150 Golden Grove Rd, Golden Grove SA 5125		
SFALL01	Play space	Organic Softfall	Type: Organic playground Softfall	**Supplier**: Jefferies (08) 8368 3555 412 Hanson Rd N, Wingfield SA 5013		River/ Coast
SFALL02	Play space	Sand Softfall	Type: Sand playground Softfall	**Supplier**: Garden Grove. (08) 8251 1111 1150 Golden Grove Rd, Golden Grove SA 5125		River/ Coast
SFALL03	Play space	Rubber Softfall	Type: Play Kote EPDM rubber Softfall	**Supplier**: Surfacing Contractors Australia (SCA) 1300 682 772 1 River Street, Hindmarsh, SA 5007		River/ Coast
Edging						
TERR	Terracing	In Insitu Concrete terracing edge	In Insitu terracing edge Colour: Light Grey Finish: Trowelled to achieve P5 Slip rating Edges: 10mm rounded		 *Example image only*	River/ Coast
Furniture – Fixed						

SEAT01	Outdoor learning areas and Sports areas	Aluminium power coated	**Type**: Mall Slim Bench Legs: Splay legs, in natural galvanised colour Battens: TBC powdercoated	**Supplier**: Street Furniture Australia **Contact**: Paul Johnson 84700501 PO Box 300 Findon SA 5023		River/ Coast
SEAT02	Outdoor learning areas and Sports areas	Aluminium power coated	**Type**: Mall Slim Bench Legs: Splay legs, in natural galvanised colour Battens: TBC powdercoated	**Supplier**: Street Furniture Australia **Contact**: Paul Johnson 84700501 PO Box 300 Findon SA 5023		River/ Coast
PT02	Outdoor learning areas	Aluminium slats	**Type**: Esplanade Bar Furniture	**Supplier**: Landmark **Contact**: 1300 768 230 4/27 Lear Jet Drive Caboolture QLD 4510, Australia		River/ Coast
Furniture – loose						
SEAT09	ELC, Primary school / Outdoor learning areas	100% recyclable LDPE	**Derlot Editions**: Tingle Stool	**Supplier**: Estilo Contact: Allysha Morrison (08) 8118 6222 Level 1, 192 Waymouth Street Adelaide Sa 5000		River/ Coast
Furniture – Utility						

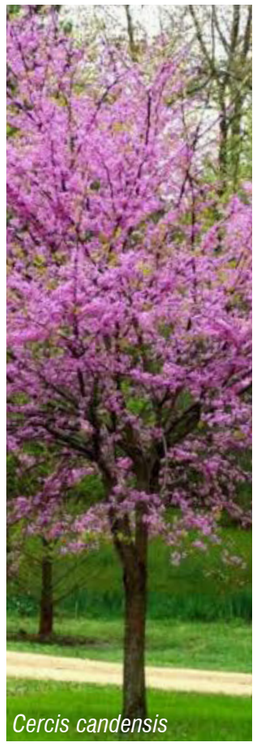
BIN01	Throughout campus	Stainless steel	**Type**: Frame Dual **Hood**: Curved Roof in Precious Silver Recycling **bottle slot**: Yellow	**Supplier**: Street Furniture Australia **Contact**: Paul Johnson 84700501 PO Box 300 Findon SA 5023		River/ Coast
FG	Plaza	Anodised finish	**Type**: 7m high x 80mm dia **Flags**: Aboriginal Australian State	**Supplier**: Federation Flags & Flagpoles **Contact**: 08 8346 5655 2/154 Frederick St Welland SA 5007		River/ Coast

Santalum acuminatum

Eucalyptus odorata

Eucalyptus porosa

Pistacia chinensis


Cercis candensis

Cupaniopsis anacardioides

Eutaxia microphylla

Carpobrotus rossii

Rhagodia candolleana

Myoporum parvifolium

Arthropodium strictum

Cymbopogon ambiguus

Threlkeldia diffusa

Chrysocephalum apiculatum

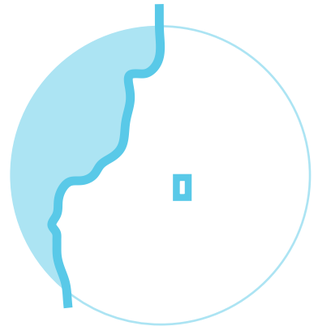
Chrysocephalum apiculatum

Leucophyta brownii

Hibbertia riparia

Tetragonia implexicoma

*Green text indicates species are native to the site (**bold** names listed are pictured)*
Blue text indicates species that are not native to the site, but may be native to Australia or exotic



COAST

SOUTH SITE • ALDINGA

PLANTING PALETTE

native understorey

Arthropodium strictum	Chocolate Lily
Billardiera cymosa	Sweet apple-berry
Bulbine bulbosa	Bulbine Lily
Carpobrotus rossii	Native Pig Face
Chrysocephalum apiculatum	Common Everlasting
Cymbopogon ambiguus	Lemon Scented Grass
Cyperus gymnocaulos	Spiny Flat Sedge
Dianella revoluta var. revoluta	Black Anther Flax-Lily
Enchylaena tomentosa	Ruby Saltbush
Eutaxia microphylla	Mallee Peas
Hardenbergia violacea	Native Lilac
Hibbertia riparia	Erect Guinea Flower
Juncus pallidus	Pale Rush
Kennedia prostrata	Scarlet Runner
Kunzea pomifera	Muntries
Leucophyta brownii	Cushion Bush
Myoporum insulare	Common boobialla
Myoporum parvifolium	Creeping boobialla
Olearea ramulosa	Twiggy Daisy Bush
Pimelea glauca	Smooth Riceflower
Rhagodia candolleana	Sea-berry Salt Bush
Scaevola albida	Small Fruit Fanflower
Tetragonia implexicoma	Bower Spinach
Threlkeldia diffusa	Coastal Bonefruit

native trees

Acacia pycnantha	Golden Wattle
Allocasuarina verticillata	Drooping Sheoak
Eucalyptus odorata	Peppermint Box
Eucalyptus porosa	Mallee Box
Santalum acuminatum	Quandong (Native Peach)

understorey

Anigozanthos Big Red	Red Kangaroo Paw
Calocephalus citreus	Lemon Beauty-heads
Craspedia glauca	Billy Buttons
Eremophila glabra prostrate	Prostrate Emu Bush
Kniphofia	Red Hot Pokers

trees

Acer palmatum	Japanese maple
Cercis candensis	Eastern Redbud
Corymbia maculata	Spotted Gum
Cupaniopsis anacardioides	Tuckeroo
Eucalyptus campaspe	Silver Gimlet
Gleditsia tricanthos 'Shademaster'	Honey Locust
Lagerstroemia indica	Pink Crepe Myrtle
Malus ioensis 'Purpurea'	Crab Apple
Malus pumila cultivar	Ballerina Apple varieties
Morus alba 'Pendula'	White Weeping Mulberry
Pistacia chinensis	Chinese Pistacio
Prunus cerasifera 'Nigra'	Purple-leaved Cherry Plum
Ulmus parvifolia	Chinese Elm

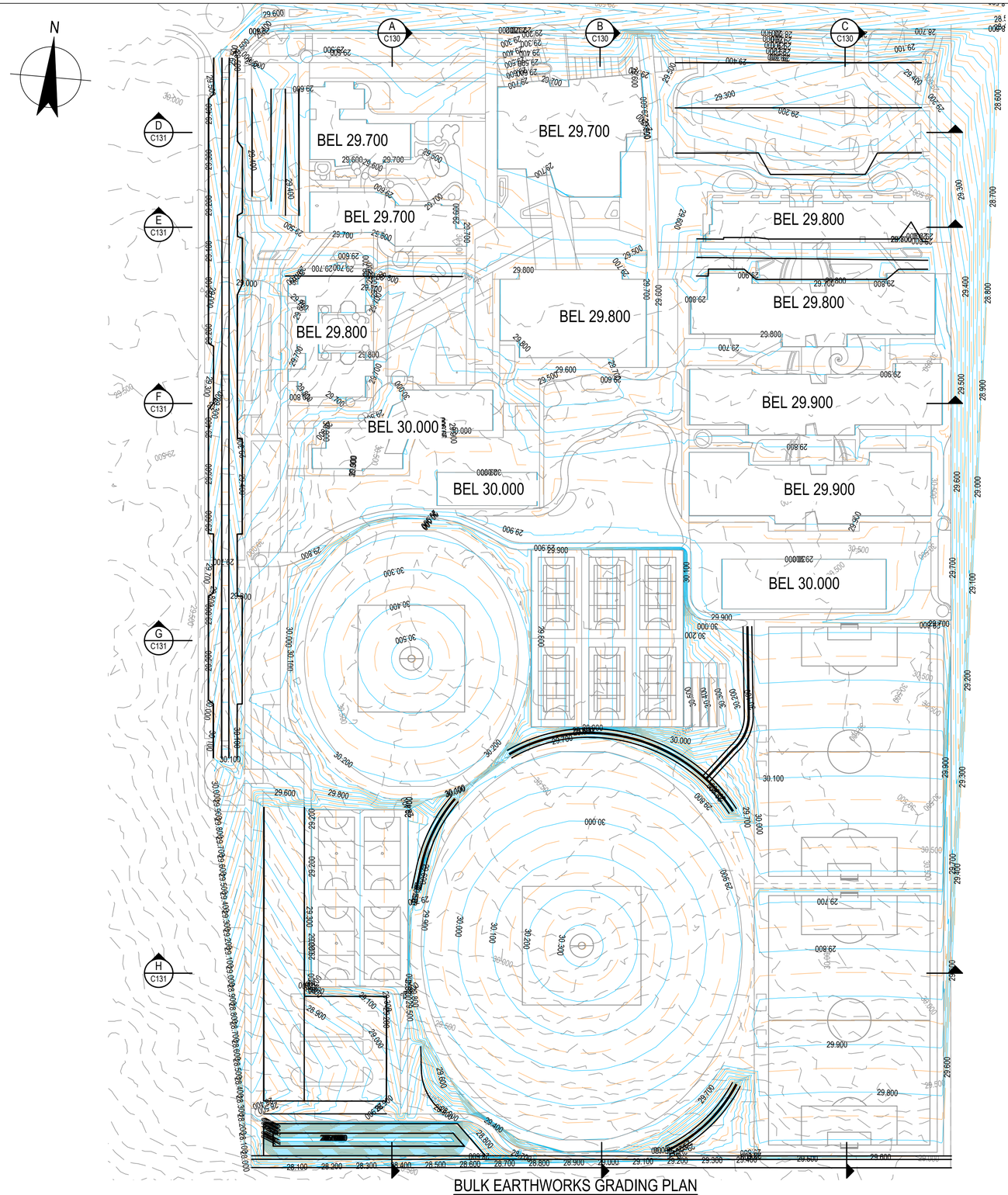
SOUTH AUSTRALIAN SCHOOLS PUBLIC PRIVATE PARTNERSHIP
PLANT SCHEDULE AND USES

Plant Species		**Form**	**Origin**	**Cycle**	**Spread**	**Height**	**Aspect**			**Identity Plant**	**Placement** Refer to Landscape Planting Zones Plan for Location Key						**Notes**					
Botanical Name	Common Name			Evergreen Deciduous Perennial	Max. Metres	Max. Metres	Full Sun	Part Shade	Heavy Shade	River | Coast							Special Attributes	Historical Native Vegetation RIVER SCHOOL *Mallee Box Woodland*	Historical Native Vegetation COAST SCHOOL *Coastal Scrubland*	Indigenous Cultural Use* *to be expanded upon during Design Development and consulation process*	Design	Possible Concerns
TREES																						
Acacia pycnantha	Golden Wattle	Tree	Australia	Ev	2-6	4-6	I			River & Coast						Green Spine & Wild Edges	Native (1836)	yes	yes	Food, fibre, medicine, hunting implements and adhesive	Australia's national flower, profuse flowering, bird, butterfly and insect attracting, caterpillar food	High pollen count
Acer palmatum	Japanese maple	Tree	Japan	Dec	3-5	2.5 - 3	I	I						CC, Primary & Inclusive Play							Ornamental, Good form, seasonal colouring	Susceptible to sunburn due to thin skin (not bark)
Allocasuarina verticillata	Drooping Sheoak	Tree	Australia	Ev	4-6	5-8	I			River & Coast	Entry + Artwork Installations					Green Spine & Wild Edges	Native (1836)	yes	yes		Striking form, identifiable, good play value	
Cercis candensis 'Covey'	Eastern Redbud	Tree	North America	Dec	2	2	I	I						CC, Primary & Inclusive Play							Seasonal colour	
Cercis candensis 'Forest Pansy'	Eastern Redbud	Tree	North America	Dec	5	5	I	I						CC, Primary & Inclusive Play							Seasonal colour	
Cercis chinensis	Chinese Redbud	Tree	China	Dec	3-4	4-5	I	I						CC, Primary & Inclusive Play								
Cercis chinensis 'Avondale'	Chinese Redbud	Tree	China	Dec	2	3	I	I						CC, Primary & Inclusive Play								
Citrus latifolia	Tahitian Lime	Tree	Asia	Ev	2	3	I							Edible / Food Zone								
Citrus limon 'Eureka'	Lemon	Tree	China	Ev	2	2	I							Edible / Food Zone								
Citrus sinensis 'Valencia Orange'	Valencia Orange	Tree	China	Ev	3	4	I							Edible / Food Zone			Edible					
Corymbia ficifolia	Flowering Gum	Tree	Australia	Ev	3-5	6-10	I				Piazza / Main Axes					Green Spine & Wild Edges					Attracts nectar eating birds and insects and makes an excellent habitat tree.	
Corymbia maculata	Spotted Gum	Tree	Australia	Ev	8-10	15-20	I									Green Spine & Wild Edges	Native					
Cupaniopsis anacardioides	Tuckeroo	Tree	Australia	Ev	4-5	7-8	I					Street frontage	Carparks				Native					
Eucalyptus campaspe	Silver Gimlet	Tree	Australia	Ev	4-7	5-8	I									Green Spine & Wild Edges	Bank stabilisation, Screen, native				Ornamental, nectar eating birds and insect attracting	Small gumnuts not suitable for ELC
Eucalyptus leucoxylon 'Euky Dwarf'	Dwarf SA Blue Gum	Tree	Australia	Ev	3-7	5-6	I							CC, Primary & Inclusive Play		Green Spine & Wild Edges						Small gumnuts not suitable for ELC Bee attracting flowers
Eucalyptus odorata	Peppermint Box	Tree	Australia	Ev	6-15	7-20	I			Coast						Green Spine & Wild Edges			yes		"Identity" Tree for Coast Site	
Eucalyptus porosa	Mallee Box	Tree	Australia	Ev	5-12	2-14	I			River & Coast						Green Spine & Wild Edges	Native (1836)	yes	yes			Shouldn't be planted closer than 2m from sewer.
Eucalyptus socialis	Beaked Red Mallee	Tree	Australia	Ev	5-12	2.5-12	I			River						Green Spine & Wild Edges	Native (1836)	yes			"Identity" Tree for River Site	Shouldn't be planted closer than 3.5m from sewer.
Fortunella margarita	Kumquat	Tree	Asia	Ev	2	2	I							Edible / Food Zone								
Gleditsia tricanthos 'Shademaster'	Honey Locust	Tree	North America	Dec	8	11	I					Street frontage										
Lagerstroemia indica	Pink Crepe Myrtle	Tree	Asia	Dec	3	6	I							CC, Primary & Inclusive Play							Ornamental, smooth bark, deciduous	
Malus domestica 'Granny Smith'	Granny Smith Apple	Tree	Asia	Dec	4	4	I							Edible / Food Zone			Edible					
Malus ioensis 'Purpurea'	Crab Apple	Tree	America	Dec	2-3	4-5	I	I						Edible / Food Zone			Climbing				Ornamental, deciduous, food form, good colouring	
Malus pumila cultivar	Ballerina Apple varieties	Tree	Asia	Dec	.6	3	I							Edible / Food Zone			Edible					
Morus alba 'Pendula'	White Weeping Mulberry	Tree	China	Dec	4	4	I	I						CC, Primary & Inclusive Play			Edible, Good Climbing				Silkworm food, pulp from bark is used to make paper, deciduous, ornamental	Fast speed pollen release
Olea europaea 'Kalamata'	Kalamata Olive Tree	Tree	Mediterranean	Ev	5	8	I	I						Edible / Food Zone			Edible					
Pistacia chinensis	Chinese Pistacio	Tree	China	Dec	6	8	I	I			Piazza / Main Axes				7-12 Fingers						Seasonal colour	
Prunus cerasifera 'Nigra'	Purple-leaved Cherry Plum	Tree	Europe & Asia	Dec	5	6	I				Piazza / Main Axes			CC, Primary & Inclusive Play							Colour is excellent for contrasting, tolerates a variety of soil types	
Santalum acuminatum	Quandong or Native Peach	Tree	Australia	Ev	4	5	I			Coast				Edible / Food Zone			Edible, Native		yes	Food source	Native bird and butterfly attracting, butterfly larvae food, ornamental	Survives off of the roots of other plants
Ulmus parvifolia 'Todd'	Chinese Elm	Tree	China	Dec	11	10	I				Piazza / Main Axes				7-12 Fingers		Good Climbing				Deciduous, ornamental, good from	

SHRUBS AND GROUNDCOVERS																						
Aloe 'Mighty Sunset'	Aloe Hybrid 'AL03'	Strap-leaved	Asia, Europe	Ev	.5	.5	I				Piazza / Main Axes				7-12 Fingers							
Anigozanthos 'Big Red'	Red Kangaroo Paw	Strap-leaved	Australia	Ev	1	1-2	I	|			Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Native	no	no		Bird and insect attracting, ornamental, fire retardant	
Anigozanthos 'Gold Fever'	Yellow Kangaroo Paw	Strap-leaved	Australia	Ev	1	1-2	I	|			Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Native	no	no		Bird and insect attracting, ornamental, fire retardant	
Aristida holathera var. holathera	Tall Kerosene Grass	Grass	Australia	Perennial	.3	0.2 - 1.2	|			River						Green Spine & Wild Edges	Native (1836)	yes	no			
Arthropodium strictum	Chocolate Lily	Grass	Australia	Ev	0.2	0.3	I			River & Coast				CC, Primary & Inclusive Play			Native, Edible	yes	yes	Used the tubers for food	Good colour, ornamental	Perfumed
Aspidistra elatior	Cast Iron Plant	Strap-leaved	Japan Taiwan	Ev	0.8	1			I		Piazza / Main Axes (Heavy Shade)							no	no		Very hardy	
Baumea arthrophylla	Swamp Twig-Rush	Grass	Australia	Ev	.3	1	I			River			Carparks WSUD				Native (1836)	yes	no			
Billardiera cymosa	Sweet apple-berry	Shrub/Climber	Australia	Ev	1-4	1-2	I	I		Coast				CC, Primary & Inclusive Play			Native, Edible	no	yes	Ate as raw fruits or sun-dried like sultanas	Ornamental, good form, good colour	
Bulbine bulbosa	Bulbine Lily	Groundcover	Australia	Ev	0.3	0.2 - 0.6	I	I		Coast				CC, Primary & Inclusive Play			Native, Edible	no	yes	Used the tuberous bulb shaped roots for food	Ornamental, good form, good colour	
Calocephalus citreus	Lemon Beauty-heads	Groundcover	Australia	Dec	0.3 - 1	0.2 - 0.5	I	I						CC, Primary & Inclusive Play			Bank stabilisation, Native	no	no		Native butterfly attracting	
Calostemma purpureum	Pink Garland-Lily	Groundcover	Australia	Perennial	0.1	0.3-0.6	I	I		River				CC, Primary & Inclusive Play			Native (1836)	yes	no	Root bulbs cooked and eaten		Dormant in long dry periods
Carpobrotus rossii	Native Pig Face	Groundcover	Australia	Ev	1 - 2	0.1	I	I		Coast	Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Bank stabilisation, Native, Edible	no	yes	Fruit and leaves eaten raw or cooked	Very hardy, good bright colours, ornamental, fire retardant	
Chrysocephalum apiculatum	Common Everlasting	Groundcover	Australia	Ev	0.2	0.4	I			Coast	Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Bank stabilisation, native	no	yes		Insect and butterfly attracting, caterpillar food, weed suppression, flowers can be dried and remain intact	
Cladium mariscus / procerum	Leafy twig-rush	Grass	Australia	Perennial	.3	1 - 2	|			River			Carparks WSUD			Green Spine & Wild Edges	Native (1836)	yes	no			Sharp edges
Clivia miniata	Natal Lily	Strap-leaved	South Africa	Ev	0.4	0.5		I	I		Piazza / Main Axes (Heavy Shade)							no	no		Ornamental, bright colouring	
Correa alba	White Correa	Shrub	Australia	Ev	1.5	1.5	I	I								Green Spine & Wild Edges	Native	no	no		Good ground cover, bird attracting	
Craspedia glauca	Billy Buttons	Groundcover	Australia	Perennial	0.5 - 1	0.3	I	I						CC, Primary & Inclusive Play	7-12 Fingers		Native	no	no		Native butterfly attracting	Slow Growing
Cymbopogon ambiguus	Lemon Scented Grass	Grass	Australia	Ev	0.1 - 0.5	0.3 - 0.8	I			Coast				CC, Primary & Inclusive Play	7-12 Fingers		Native	no	yes		Ornamental	Perfumed
Cyperus gunnii ssp. gunnii	Flecked Flat-Sedge	Grass	Australia	Ev	0.8 - 1	0.4 - 0.6	I	I		River			Carparks WSUD			Green Spine & Wild Edges	Native (1836), Bank Stabilisation.	yes	no			
Cyperus gymnocaulos	Spiny Flat Sedge	Grass	Australia	Ev	1	1.5	I			Coast			Carparks WSUD			Green Spine & Wild Edges		no	yes		As a ornamental sedge for ponds, wetlands and watercourses. Bank stabilizer, can only be grown in wet soils or shallow water.	
Dianella longifolia var. grandis	Pale Flax Lily	Grass	Australia	Ev	0.4 - 1	1.2	I			River	Piazza / Main Axes		Carparks WSUD		7-12 Fingers	Green Spine & Wild Edges	Native (1836)	yes	no	Indigenous peoples used for making plaited baskets and roots boiled & drunk as medicine.		Harmful if eaten
Dianella revoluta var. revoluta	Black Anther Flax-Lily	Grass	Australia	Ev	0.4	0.4	I	I		Coast	Piazza / Main Axes		Carparks WSUD		7-12 Fingers	Green Spine & Wild Edges	Bank stabilisation, Stormwater Remediation, Native, Edible	no	yes	Leaves for fibre	Native birds and insect attracting	Harmful if eaten
Dietes grandiflora	Wild Iris	Strap-leaved	South Africa	Ev	1	1	I	I			Piazza / Main Axes	Street frontage	Carparks WSUD		7-12 Fingers	Green Spine & Wild Edges		no	no		Good distinctive form, good colouring	Attract bees and other pollinators
Enchylaena tomentosa	Ruby Saltbush	Shrub	Australia	Ev	1.5	1	I	I		River & Coast						Green Spine & Wild Edges	Native (1836), Edible	yes	yes	Berries eaten raw, and used as a body paint by children	Ornamental	
Eremophila glabra prostrate	Prostrate Emu Bush	Groundcover	Australia	Ev	1.5	0.3	I	I				Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Native	no	no	The flowers were sucked for nectar	Attracts native nectar eating birds and insects, fire retardant	
Eutaxia microphylla	Mallee Peas	Groundcover	Australia	Ev	0.3	0.5-1.5	I			Coast	Entry + Artwork Installations			CC, Primary & Inclusive Play			Native	no	yes		Butterfly attracting, caterpillar food, good colour	
Gaura lindheimeri 'Siskiyou Pink'	Bee Blossom	Shrub	North America	Perennial	0.3-0.6	0.3-0.6	I							CC, Primary & Inclusive Play								
Goodenia ovata 'Prostrate'	Prostrate Goodendia	Groundcover	Australia	Perennial	0.75-1	0.3	|							CC, Primary & Inclusive Play								
Hardenbergia violacea	Native Lilac	Shrub/Climber	Australia	Ev	2	2	I	I		Coast	Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Native, screening	no	yes		Ornamental, butterfly attracting	
Hibbertia riparia	Erect Guinea Flower	Groundcover	Australia	Ev	0.5	0.5	I			Coast				CC, Primary & Inclusive Play			Semi-aquatic, native	no	yes		Bird and insect attracting, ornamental, good form, good colouring	
Hibbertia scandens	Golden Guinea Vine	Shrub/Climber	Australia	Ev	4-5	1-2	I	I							7-12 Fingers							
Juncus pallidus	Pale Rush	Grass	Australia	Ev	1	2.3	I			I	River & Coast					Green Spine & Wild Edges	Stormwater Remediation, Native	yes	yes	Used the stems and leaves for fibre to make string, fishing line, woven rugs, and baskets	bird and wildlife habitat, ornamental	
Kennedia prostrata	Scarlet Runner	Groundcover	Australia	Ev	1-4	0.1	|				River & Coast				CC, Primary & Inclusive Play			Native	yes	yes			
Kniphofia 'Poco Orange'	Red Hot Pokers	Grass	South Africa	Ev	0.8	1.2	I				Piazza / Main Axes	Street frontage			7-12 Fingers			no	no		Bird and insect attracting, ornamental	
Kunzea pomifera	Muntries	Groundcover	Australia	Ev	5	0.3	I			River & Coast				CC, Primary & Inclusive Play			Native, Edible, sand and bank stabilisation	yes	yes	Food source, now produced as a bush food known as 'Muntries'	Ornamental, nectar eating birds and insect attracting	Perfumed
Leucophyta brownii	Cushion Bush	Shrub	Australia	Ev	1.5	1	I	I		Coast	Entry + Artwork Installations	Street frontage				Green Spine & Wild Edges	Native	no	yes		Ornamental, Silver foliage increases visibility if planted on road side	

Liriope muscari 'Just Right'	Lily Turf	Strap-leaved	Asia	Ev	0.5	0.5					Piazza / Main Axes (Heavy Shade)	Street frontage						no	no			
Lomandra longifolia 'Tanika'	Lomandra Hybrid 'LM300'	Grass	Australia	Ev	0.6	0.6					Piazza / Main Axes (Heavy Shade)	Street frontage	Carparks	CC, Primary & Inclusive Play	7-12 Fingers	Green Spine & Wild Edges					Good for mass planting. Soft feel, playgorund friendly.	
Lotus australis	Austral Trefoil	Shrub	Australia	Ev	0.5-1.5	0.3-0.6				River				CC, Primary & Inclusive Play			Native	yes	no			
Maireana brevifolia	Short Leaf Bluebush	Shrub	Australia	Ev	0.5-0.5	0.5-1				River						Green Spine & Wild Edges	Native (1836)	yes	no			
Myoporum insulare	Common boobialla	Shrub	Australia	Ev	4	3				Coast						Green Spine & Wild Edges	Bank stabilisation, Edible, Native, screening	no	yes	Used leaves to treat diarrhoea	fire retardant, ornamental, good form	
Myoporum parvifolium	Creeping boobialla	Groundcover	Australia	Ev	3	0.3				Coast		Street frontage		CC, Primary & Inclusive Play			Bank stabilisation, native	no	yes		Fire retardant, bird and butterfly attracting	
Myoporum viscosum	Sticky Boobiala	Shrub	Australia	Ev	1-3	1-2.5				River						Green Spine & Wild Edges	Native (1836)	yes	no			Shouldn't be planted closer than 2m from sewer.
Olearea ramulosa	Twiggy Daisy Bush	Shrub	Australia	Ev	1	1.5				River & Coast						Green Spine & Wild Edges	Native (1836)	yes	yes		butterfly and native insect attracting, ornamental, good colour	
Pandorea pandorana	Wonga Vine	Shrub/Climber	Australia	Ev	3-8	3-6									7-12 Fingers							
Pimelea glauca	Smooth Riceflower	Shrub	Australia	Ev	0.3-1.5	0.2-1				River & Coast				CC, Primary & Inclusive Play			Native (1836)	yes	yes			
Rhagodia candolleana	Sea-berry Salt Bush	Shrub	Australia	Ev	2	1				Coast						Green Spine & Wild Edges	Edible, Native, screening	no	yes		Fire redardant, refuge for birds, lizards and small mammals	
Scaevola aemula 'Aussie Crawl'	Fanflower	Groundcover	Australia	Ev	1	.5				Coast	Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Native	no	yes		Attracts native butterflies and insects, caterpillar food plant.	
Scaevola albida	Small Fruit Fanflower	Groundcover	Australia	Ev	0.3-1	0.1				Coast	Piazza / Main Axes	Street frontage		CC, Primary & Inclusive Play	7-12 Fingers		Native	no	yes		Attracts native butterflies and insects, caterpillar food plant.	
Scaevola linearis ssp. confertifolia	Rough Fan Flower	Groundcover	Australia	Ev	0.3-0.8	0.2-0.6				River				CC, Primary & Inclusive Play	7-12 Fingers		Native (1836)	yes	no			
Strelitzia reginae	Bird of Paradise	Shrub	South Africa	Ev	1.5-2	1.5-2					Piazza / Main Axes											
Tetragonia implexicoma	Bower Spinach	Groundcover	Australia	Ev	3	0.3				Coast				CC, Primary & Inclusive Play	7-12 Fingers		Edible, Native	no	yes			
Threlkeldia diffusa	Coastal Bonefruit	Groundcover	Australia	Ev	2	0.3				Coast				CC, Primary & Inclusive Play	7-12 Fingers		Edible, Native, weed suppressor	no	yes		Good colour	
Tulbaghia violacea	Society Garlic	Grass	South America	Ev	0.3-0.5	0.3-0.5					Piazza / Main Axes			CC, Primary & Inclusive Play	7-12 Fingers							
Vittadinia blackii	New Holland Daisy	Shrub	Australia	Ev	0.5	0.3				River				CC, Primary & Inclusive Play	7-12 Fingers		Native (1836)	yes	no			
Wahlenbergia stricta ssp. stricta	Common Bluebell	Groundcover	Australia	Perennial	0.4	0.4-0.9				River				CC, Primary & Inclusive Play	7-12 Fingers		Native	yes	no	Flowers eaten	Butterfly attracting, good mass planting	
Westringia fruiticosa 'Grey Box'	Westringia Hybrid 'WES04'	Shrub	Australia	Ev	0.45	0.45						Street frontage		CC, Primary & Inclusive Play	7-12 Fingers							

Attachment 5
Bulk Earthworks Plans



BULK EARTHWORKS GRADING PLAN

SCALE 1:1000

LEGEND:

	MAJOR CONTOUR (0.1m INTERVALS)
	MINOR CONTOUR (0.05m INTERVALS)
BEL XX.XXX	BULK EARTHWORKS LEVEL
	EXISTING MAJOR CONTOUR (0.1m INTERVALS)
	EXISTING MINOR CONTOUR (0.1m INTERVALS)

NOTES:

1. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.

PRELIMINARY

No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
C	FOR DA SUBMISSION	KWS	AJ*	AJ*	06.12.19
B	FOR DA SUBMISSION	KWS	AJ*	AJ*	05.12.19
A	FOR DA SUBMISSION	KWS	AJ*	AJ*	04.12.19

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Drawn	K-W.STOCK	Designer	K-W.STOCK
Drafting Check		Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

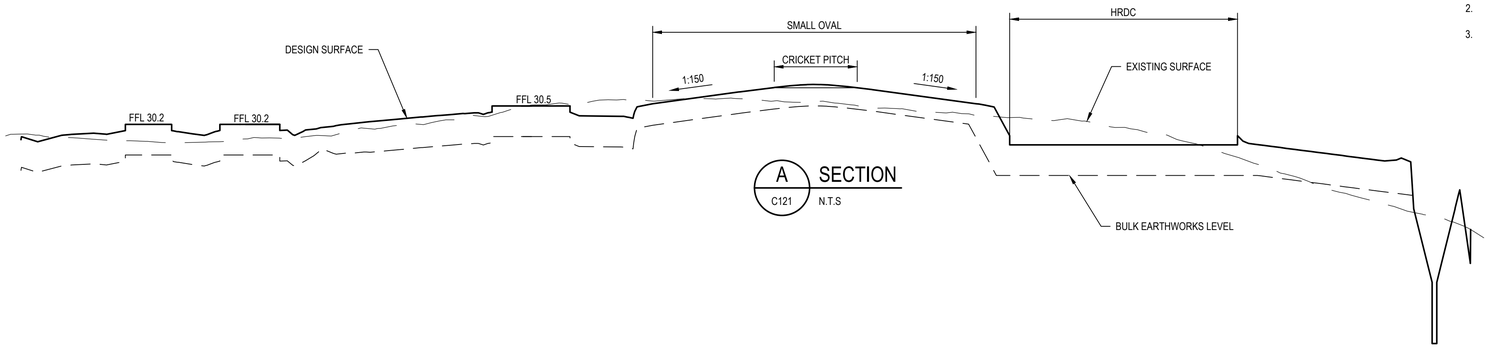
Client SARAH CONSTRUCTIONS
Project S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP
Title SOUTH SITE
BULK EARTHWORKS GRADING PLAN

Original Size A1
Drawing No: 12521992-DRG-C121
Rev: C

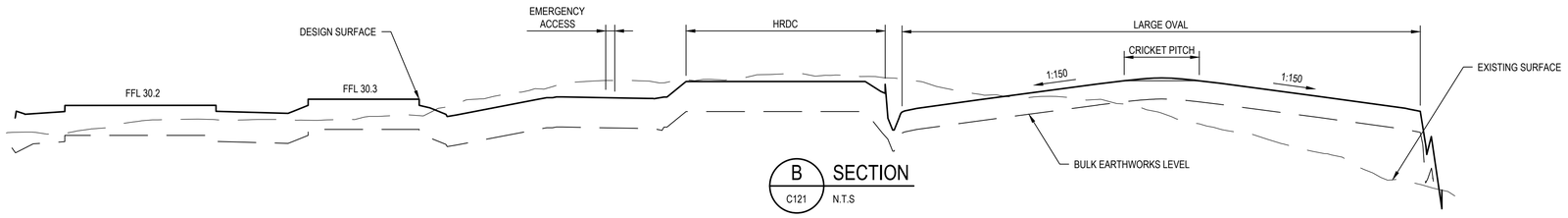
Plot Date:
Cad File No:

NOTES:

1. BULK EARTHWORKS IS FINISHED SURFACE LEVEL -500mm FOR FOOTINGS AND PAVEMENTS EXCEPT UNDER SPORTING FACILITIES WHICH IS FINISHED SURFACE LEVEL -350mm.
2. THESE ARE PRELIMINARY LEVELS AND ARE SUBJECT TO CHANGE DURING DESIGN DEVELOPMENT.
3. BULK EARTHWORKS WILL BE CREATED FROM CUT/ FILL SUBJECT TO MATERIAL SUITABILITY, IMPORTED FILL MAY BE REQUIRED.



A SECTION
C121 N.T.S



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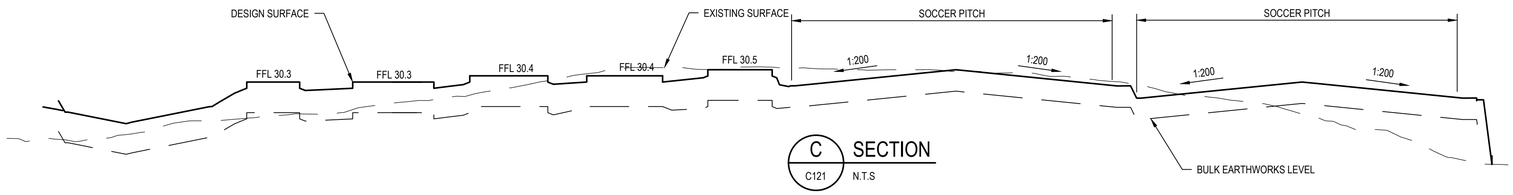

C SECTION
C121 N.T.S

PRELIMINARY

No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	FOR DA SUBMISSION	KWS	AJ*	AJ*	04.12.19

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Drafting Check		Design Check	
Approved (Project Director)			
Date			
Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved		

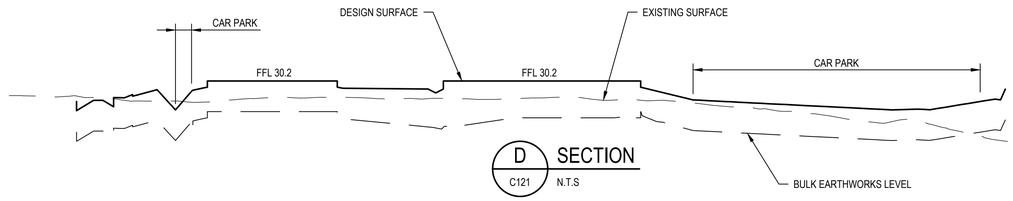
Client **SARAH CONSTRUCTIONS**
Project **S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP**
Title **SOUTH SITE**
BULK EARTHWORKS TYPICAL SECTIONS

Original Size **A1**
Drawing No: 12521992-DRG-C130 **Rev: A**

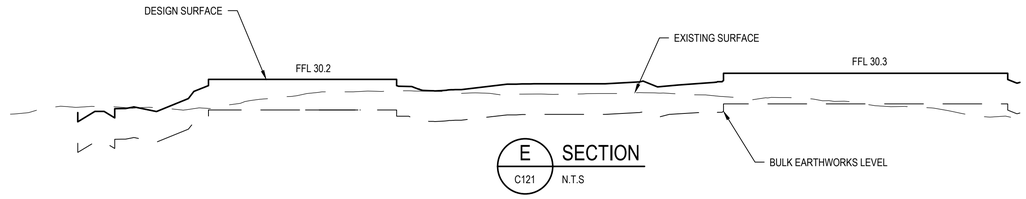
Plot Date: Cad File No:

NOTES:

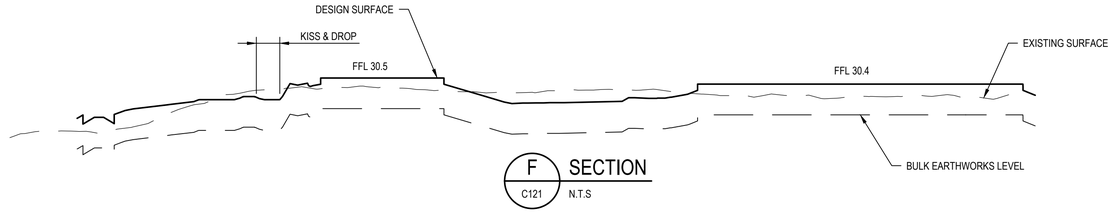
1. BULK EARTHWORKS IS FINISHED SURFACE LEVEL -500mm FOR FOOTINGS AND PAVEMENTS EXCEPT UNDER SPORTING FACILITIES WHICH IS FINISHED SURFACE LEVEL -350mm.
2. THESE ARE PRELIMINARY LEVELS AND ARE SUBJECT TO CHANGE DURING DESIGN DEVELOPMENT.
3. BULK EARTHWORKS WILL BE CREATED FROM CUT/ FILL SUBJECT TO MATERIAL SUITABILITY, IMPORTED FILL MAY BE REQUIRED.



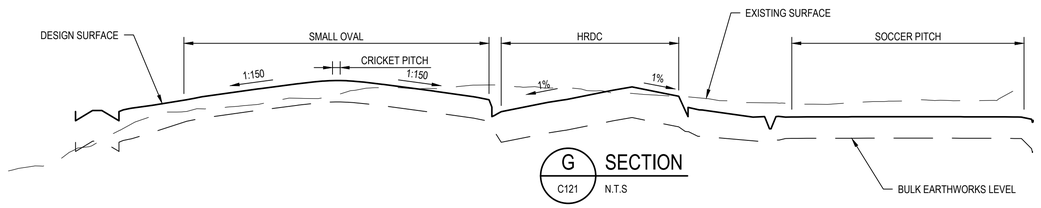
D SECTION
C121 N.T.S



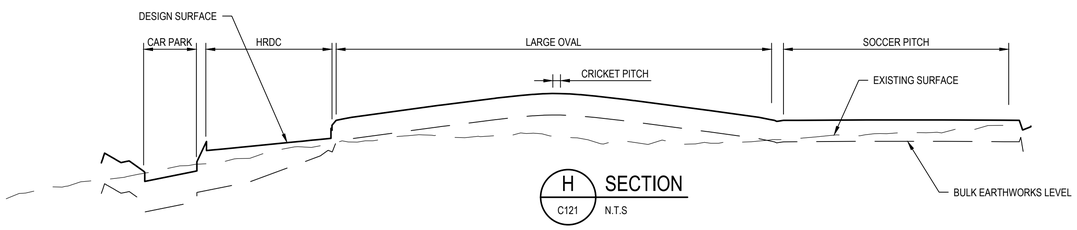
E SECTION
C121 N.T.S



F SECTION
C121 N.T.S



G SECTION
C121 N.T.S



H SECTION
C121 N.T.S

PRELIMINARY

No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
A	FOR DA SUBMISSION	KWS	AJ*	AJ*	04.12.19

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Drafting Check		Design Check	
Approved (Project Director)			
Date			
Scale	AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	

Client SARAH CONSTRUCTIONS
Project S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP
Title SOUTH SITE
BULK EARTHWORKS TYPICAL SECTIONS

Original Size A1
Drawing No: 12521992-DRG-C131
Rev: A

Plot Date:
Cad File No:

Attachment 6
Land Division Plan

City of Onkaparinga

PROPOSED PLAN OF DIVISION FOR ROAD PURPOSES

HUNDRED OF WILLUNGA
ALLOTMENT 21 IN DP 122448
& ALLOTMENT 12 IN DP 94045

in the area named

ALDINGA

SCALE 0 100 200 300 400 500 METRES

CT 6231/547 & CT 6147/415

PORTION OF ALLOTMENTS 25 & 26 MARKED A ARE SUBJECT TO AN EASEMENT TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (TG 6115349) & (TG 6507873) RESPECTIVELY

PORTION OF ALLOTMENTS 28 (PUBLIC ROAD) & 25 MARKED B ARE SUBJECT TO EASEMENTS FOR SEWERAGE PURPOSES AND DRAINAGE PURPOSES (RTC 13209893)

PORT ROAD
(97·43)
(115·26)
136·65
A
(17·67)
BOWERING HILL ROAD
(20·91)
284·01
690·39
26
11·52ha
27
PUBLIC ROAD
297m²
16·00
19·24
19·24
174·90
10·65
307·50
QUINLIVEN ROAD
20·12 WIDE
50·00
7·07
7·07
30·00
125·50
191·00
12·73
HOWARD ROAD
20·00 WIDE
28
PUBLIC ROAD
9521m²
D71576
300·00
469·80
469·80
(6·00)
(6·00)
D122448
200·00
B
B
(6·00)
(168·80)
(168·80)
272·50
20·00
295·13
315·13
154·60
D58709
472·99
16·14
285·52
ROAD
25
36·53ha
573·01
D81273
551·94
(26·01)
A
(18·36)
(32·06)
429·89
SOUTH MAIN ROAD
90·07
(205·05)
141·52
10·15
ALDINGA BEACH ROAD

Subject to Survey Approval

J.G. Surveys
Licensed and Engineering Surveyors
PO Box 182 ALDINGA BEACH S.A. 5173
Mob: 0448 010 991
Email: jgluis@jgsurveys.com
Date: 10/12/19 Ref: J00335

Product	Register Search (CT 6231/546)
Date/Time	26/11/2019 10:16PM
Customer Reference	51354
Order ID	20191126013111

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 6231 Folio 546

Parent Title(s) CT 5969/161

Creating Dealing(s) RTC 13209893

Title Issued 26/11/2019 **Edition** 1 **Edition Issued** 26/11/2019

Estate Type

FEE SIMPLE

Registered Proprietor

URBAN RENEWAL AUTHORITY
OF LEVEL 9 (WEST) RIVERSIDE CENTRE NORTH TERRACE ADELAIDE SA 5000

Description of Land

ALLOTMENT 20 DEPOSITED PLAN 122448
IN THE AREA NAMED ALDINGA
HUNDRED OF WILLUNGA

Easements

TOGETHER WITH EASEMENT(S) OVER THE LAND MARKED B ON D122448 FOR SEWERAGE PURPOSES (RTC 13209893)

TOGETHER WITH EASEMENT(S) OVER THE LAND MARKED B ON D122448 FOR DRAINAGE PURPOSES (RTC 13209893)

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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Product	Register Search (CT 6231/547)
Date/Time	26/11/2019 10:16PM
Customer Reference	51354
Order ID	20191126013112

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 6231 Folio 547

Parent Title(s) CT 5969/161

Creating Dealing(s) RTC 13209893

Title Issued 26/11/2019 **Edition** 1 **Edition Issued** 26/11/2019

Estate Type

FEE SIMPLE

Registered Proprietor

URBAN RENEWAL AUTHORITY
OF LEVEL 9 (WEST) RIVERSIDE CENTRE NORTH TERRACE ADELAIDE SA 5000

Description of Land

ALLOTMENT 21 DEPOSITED PLAN 122448
IN THE AREA NAMED ALDINGA
HUNDRED OF WILLUNGA

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A ON D122448 TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (TG 6115349)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED B ON D122448 FOR SEWERAGE PURPOSES (RTC 13209893)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED B ON D122448 FOR DRAINAGE PURPOSES (RTC 13209893)

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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PURPOSE: DIVISION

MAP REF: 6527/26/L, 6527/26/E, 6527/26/M, 6527/26/F

LAST PLAN:

AREA NAME: ALDINGA

COUNCIL: CITY OF ONKAPARINGA

DEVELOPMENT NO:

APPROVED:
STELLA VAGENAS
23/10/2019

DEPOSITED:
SANDY BEAGLEHOLE
26/11/2019

D122448

SHEET 1 OF 2

69187_text_01_v03_Version_3

AGENT DETAILS: JG SURVEYS
PO BOX 182
ALDINGA BEACH SA 5173
PH: 0448 010 991
FAX:

AGENT CODE: JGSV

REFERENCE: J00251

SURVEYORS CERTIFICATION: I Joel Mark Gluis , a licensed surveyor 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 30th day of August 2019
8th day of October 2019 Joel Mark Gluis Licensed Surveyor

SUBJECT TITLE DETAILS:

PREFIX	VOLUME	FOLIO	OTHER	PARCEL	NUMBER	PLAN	NUMBER	HUNDRED / IA / DIVISION	TOWN	REFERENCE NUMBER
CT	5969	161		ALLOTMENT(S)	2	D	71576	WILLUNGA		

OTHER TITLES AFFECTED:

EASEMENT DETAILS:

STATUS	LAND BURDENED	FORM	CATEGORY	IDENTIFIER	PURPOSE	IN FAVOUR OF	CREATION
EXISTING	21	LONG	EASEMENT(S)	A		DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000)	TG 6115349
NEW	21	SHORT	EASEMENT(S)	B	FOR DRAINAGE PURPOSES	20	
NEW	21	SHORT	EASEMENT(S)	B	FOR SEWERAGE PURPOSES	20	

ANNOTATIONS: NO OCCUPATION ON SURVEYED SUBJECT LAND BOUNDARIES UNLESS SHOWN OTHERWISE

D122448

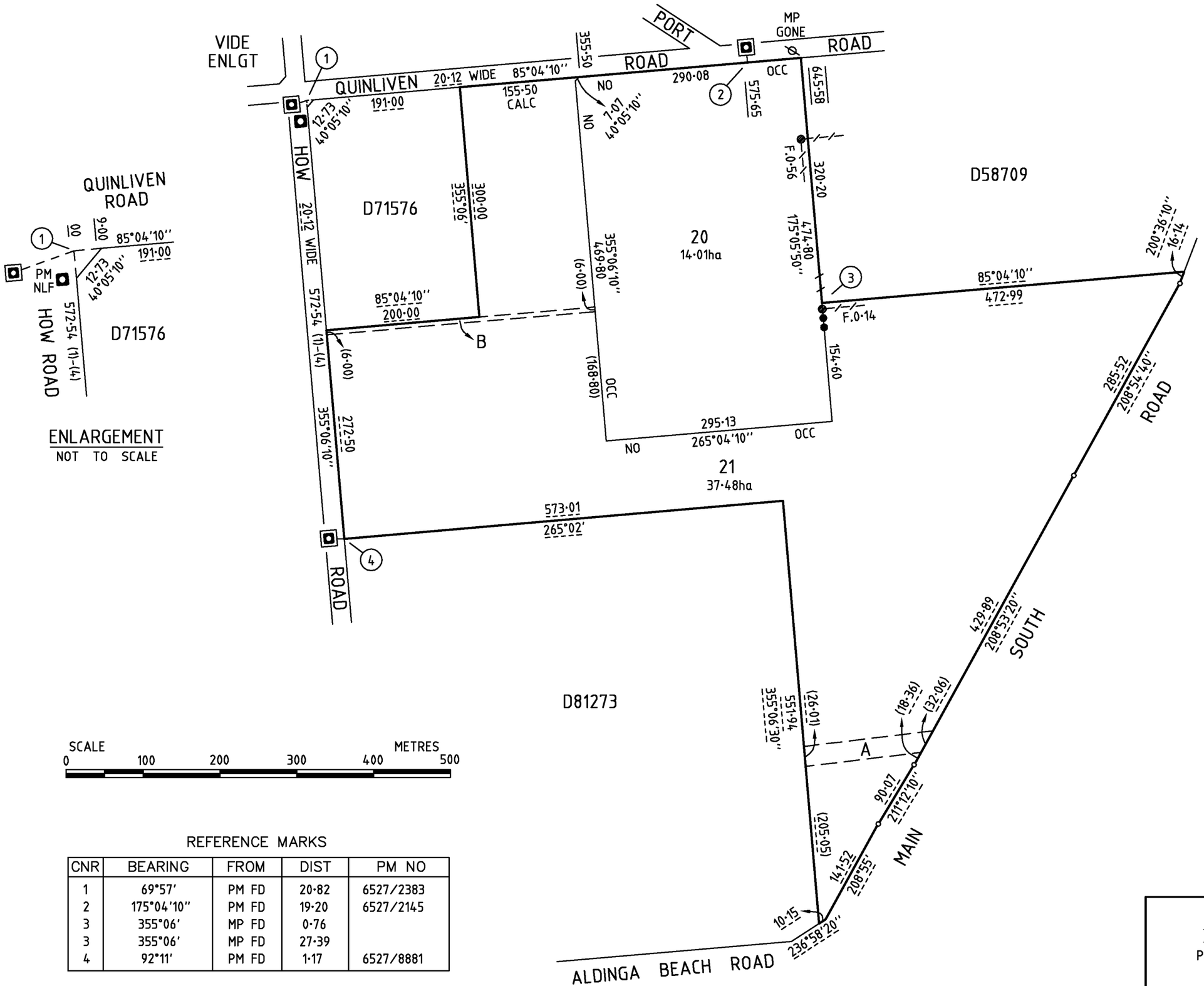
SHEET 2 OF 2

69187_pland_1_V01_Version_3

BEARING DATUM: MGA 2020 ZONE 54
DERIVATION: PSM 6527/2383-6527/2145

TOTAL AREA:

ROAD WIDTHS ARE EXAGGERATED



REFERENCE MARKS

CNR	BEARING	FROM	DIST	PM NO
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2	175°04'10"	PM FD	19·20	6527/2145
3	355°06'	MP FD	0·76	
3	355°06'	MP FD	27·39	
4	92°11'	PM FD	1·17	6527/8881

JG Surveys
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Date: 11/9/19 Ref: J00251

Product	Register Search (CT 6147/415)
Date/Time	27/11/2019 07:29AM
Customer Reference	51354
Order ID	20191127000236

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 6147 Folio 415

Parent Title(s) CT 5787/745

Creating Dealing(s) RTU 12213726

Title Issued 04/11/2014 **Edition** 1 **Edition Issued** 04/11/2014

Estate Type

FEE SIMPLE

Registered Proprietor

URBAN RENEWAL AUTHORITY
OF LEVEL 9 (WEST) RIVERSIDE CENTRE NORTH TERRACE ADELAIDE SA 5000

Description of Land

ALLOTMENT 12 DEPOSITED PLAN 94045
IN THE AREA NAMED ALDINGA
HUNDRED OF WILLUNGA

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A ON DP 94045 TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (TG 6507873)

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL

Copyright Privacy Terms of Use: Copyright / Privacy / Terms of Use

PURPOSE: DIVISION

MAP REF: 6527/26/E, 6527/26/F

LAST PLAN:

AREA NAME: ALDINGA

COUNCIL: CITY OF ONKAPARINGA

DEVELOPMENT NO:

APPROVED:
JOHN BOJCZUK
20/06/2014

DEPOSITED:
ORAZIO DEANGELIS
23/10/2014

D94045

SHEET 1 OF 2

42398_text_01_v04_Version_4

AGENT DETAILS: WEBER FRANKIW & ASSOCIATES
178 MAIN ROAD
MCLAREN VALE SA 5171
PH: 83238991
FAX: 83239686

AGENT CODE: WEBLP

REFERENCE: 6744

SURVEYORS CERTIFICATION: I Thomas Bernard Hawkins , a licensed surveyor 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 30th day of April 2014
20th day of June 2014 Thomas Bernard Hawkins Licensed Surveyor

SUBJECT TITLE DETAILS:

PREFIX	VOLUME	FOLIO	OTHER	PARCEL	NUMBER	PLAN	NUMBER	HUNDRED / IA / DIVISION	TOWN	REFERENCE NUMBER
CT	5787	745		ALLOTMENT(S)	55	D	54498	WILLUNGA		

OTHER TITLES AFFECTED:

EASEMENT DETAILS:

STATUS	LAND BURDENED	FORM	CATEGORY	IDENTIFIER	PURPOSE	IN FAVOUR OF	CREATION
EXISTING	12	LONG	EASEMENT(S)	A		DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000)	TG 6507873

ANNOTATIONS:

D94045

SHEET 2 OF 2

42398_pland_1_V02_Version_4

BEARING DATUM: MGA 94 ZONE 54
DERIVATION: PSM'S 6527/2348 TO 6527/2145

TOTAL AREA:

REFERENCE MARKS

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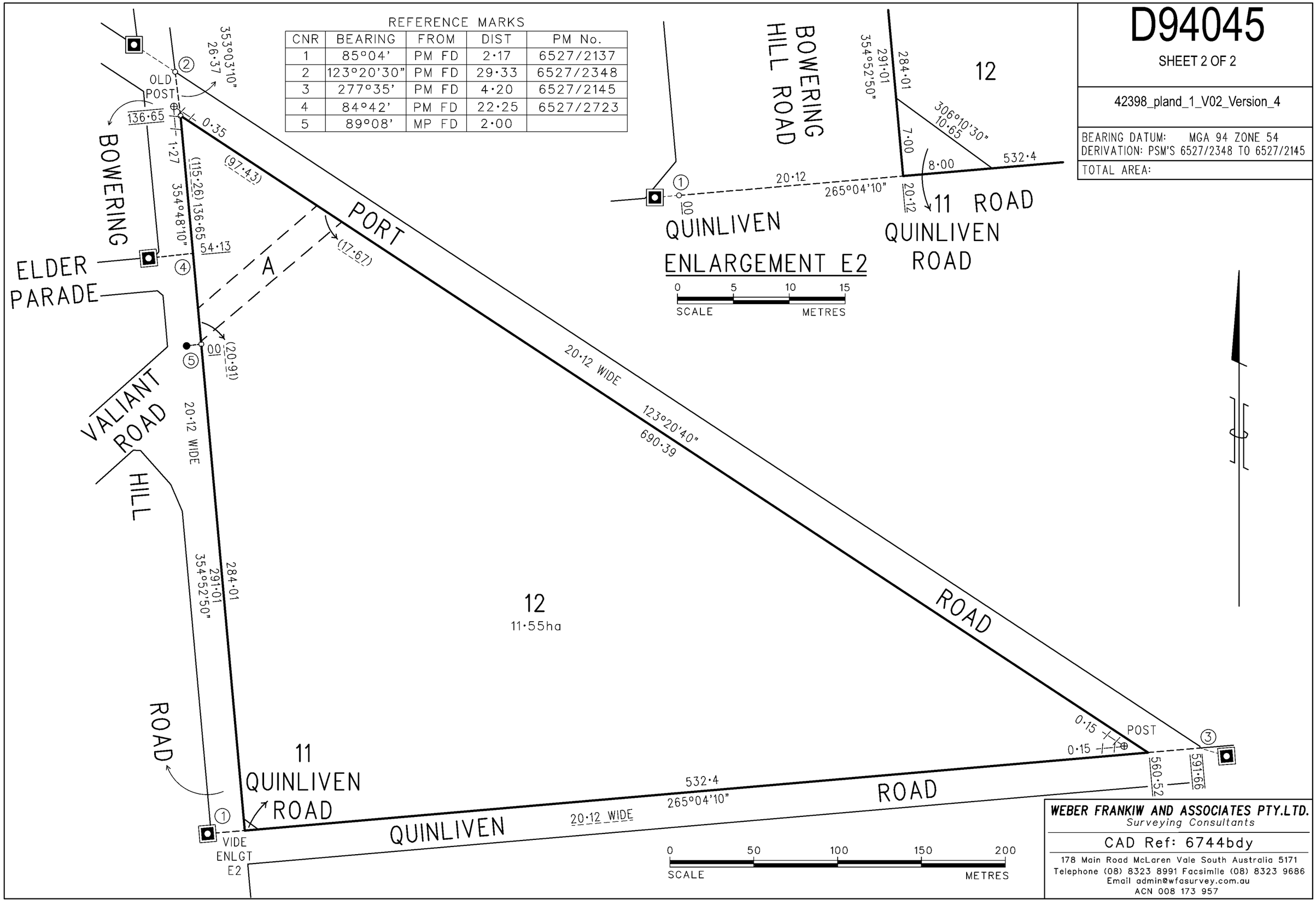
2	123°20'30"	PM FD	29·33	6527/2348
3	277°35'	PM FD	4·20	6527/2145
4	84°42'	PM FD	22·25	6527/2723
5	89°08'	MP FD	2·00	



WEBER FRANKIW AND ASSOCIATES PTY.LTD.
Surveying Consultants

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Sarah Constructions Pty Ltd

PPP Schools - Aldinga

Traffic Impact Assessment

December 2019

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Appendix A – Aurecon TIA

1. Introduction

1.1 Background

GHD forms part of the TESA consortium which has been commissioned by the State Government to construct a new B-12 educational facility located in the southern suburb of Aldinga adjacent Quinliven Road. A similar facility will also be constructed at Angle Vale adjacent Riverbanks Road.

The school is proposed to open in 2022. The Education Department is currently working through the planned enrolment for the school and therefore full operation may not be reached for several years after opening. The school will comprise of 1,675 students and 211 teaching/ support staff totalling 1,886 people.

1.2 Purpose of this report

A Traffic Impact Assessment (TIA) is one of several key technical studies undertaken in preparation of a Development Application (DA) or change of use of a particular property, building or an area in which traffic is either affected and/or impacted.

The principal impacts of the traffic, and transport related activities in this case, are those activities associated with the new B-12 educational facility located in the southern suburb of Aldinga.

This Traffic Impact Assessment (TIA) incorporates the following elements relating to the establishment of the new school in terms of the following:

- Traffic generation and modelling
- Impacts on the broader surrounding road network in addition to specific changes to the adjacent roads
- New access points to the school
- Parking provisions
- Other road treatment matters to inform infrastructure requirements for the Southern School development.

A Traffic Impact Assessment (TIA) details the principle impacts of the traffic and transport related activities, it covers technical comprehensiveness as identified in *Austroads Guide to Traffic Management – Part 12*, which includes the following checklist where relevant:

1.2.1 Document Proposed Development

- Obtained plans showing layout of all traffic and pedestrian areas on site, locations of vehicle and pedestrian accesses, position and layout of nearby driveways and intersections.
- Each type of internal access (e.g. cars, pedestrians and trucks) is direct, connected, and continuous and makes sense.
- Approach roads and paths are clearly understood and practical.
- The correct design vehicle and checking vehicle have been used in various sections of the development.
- Basic design requirements have been applied.
- Land use planning zonings in the vicinity are documented.

- Traffic-related features of the development have been summarised.
- Timing and staged phasing (if any) has been described, including any connections with external timings.

1.2.2 Resolve any initial problems with designers

- Any initial problems or issues needing resolution by designers have been identified.
- Designers notified.
- Issues have been checked and re-worked by designers.
- Amended proposal has been re-documented.

1.2.3 Identify area and stakeholders affected

- Agreed functional road hierarchy in area has been documented.
- Relevant or affected non-car transport networks or services have been documented.
- Initial assessment of area affected by changed traffic conditions has been made.
- Sites potentially impacted have been listed.
- All affected stakeholders have been identified and a note made about when each needs to be consulted.

1.2.4 Describe existing and design year conditions

- Existing on-site conditions, including traffic and parking, have been documented.
- Existing traffic conditions for external sites, road lengths and/or areas identified as potentially impacted have been documented for critical periods.
- Design year has been selected, and traffic conditions, excluding traffic generated by the development, have been documented. Volumes shown on plan.
- Parking conditions, as relevant, have been described.
- Traffic crashes at potentially impacted locations have been documented.
- Other known traffic safety or operational problems, and any proposals to address them, have been documented.
- Any traffic, transport or parking policies which affect the proposed development have been documented.

1.2.5 Determine generated traffic and modal split

- Number of trips which will be generated by the development (e.g. daily or peak-period) has been determined for the design year or years.
- The split of general traffic, commercial vehicles, public transport vehicles (including taxis), bicycles, pedestrians and other relevant modes has been determined.

1.2.6 Determine approach and departure directions

- Approach and departure directions for the traffic have been determined.
- Nature of attracted traffic (e.g. the same origin and return destination or linked trips) has been considered and described.

1.2.7 Assign traffic to roads

- Traffic generated by the development has been assigned to the road network in the potentially affected area for the design year or years.
- Development-generated traffic has been shown on plans.
- Background traffic (existing volumes factored to the design year) and development-generated traffic have been added together.
- Total traffic has been shown on plans for critical times of day or week, etc.

1.2.8 Determine where non-car traffic will go

- Paths, lanes, etc. required for pedestrians, cyclists, buses, delivery vehicles, etc. have been determined.

1.2.9 Review limits of area affected

- Limits of area impacted by the development have been checked, and necessary alterations noted.
- If assessment over a greater area is needed, further analysis has been done.

1.2.10 Assess traffic operation on roads

- Traffic operations (e.g. traffic volumes, capacity, level of service and delays) for access points, mid-blocks and intersections have been assessed; consequences noted.
- Circulation of traffic near the site has been considered.
- Need for on-street parking, and potential impact on arterial roads/traffic routes, has been determined.
- Impact on public transport services, from development generated use and from increased traffic on public transport routes (buses and trams) has been assessed.

1.2.11 Assess traffic operation on-site

- Traffic operation of roads, aisles, access ways on-site, including traffic circulation within the site, has been analysed.
- Expected traffic volumes and vehicle types can be safely and efficiently accommodated within the traffic and parking areas on-site.
- On-site parking provision is adequate and is suitably located.

1.2.12 Determine required impact-mitigating treatments

- Required changes, improvements, upgrades and/or modifications to roads, intersections, traffic lanes, controls, access driveways, have been determined.
- Required changes on-site and on nearby roads/streets to manage parking have been determined.
- Required works and traffic management to accommodate pedestrians, cyclists, public transport, delivery vehicles, on-site and in the nearby area, have been determined.
- Required treatments relating to pavements, safety and environmental issues have been determined.
- Coordination of all required treatments has been considered.

1.2.13 Obtain road safety engineering assessment

- Need for an independent assessment of the road safety aspects of the development has been considered.
- If necessary, independent road safety engineering assessment has been arranged.

1.2.14 Document findings and recommendations

- The above steps and their outcomes have been documented in a suitable report.

It should be noted that the above is only a guide and not all aspects of the checklist are used in all TIA's, as not all conditions are applicable to each situation.

1.3 Scope and limitations

This report: has been prepared by GHD for Sarah Constructions Pty Ltd and *may only be used and relied on by Sarah Constructions Pty Ltd for the purpose agreed between GHD and the Sarah Constructions Pty Ltd as set out in section 1.2 of this report.*

GHD otherwise disclaims responsibility to any person other than Sarah Constructions Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1.4. of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Sarah Constructions Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

We have utilised the traffic generation volumes from the Aurecon Southern School Traffic Impact Assessment Reference 504550 dated 14 June 2019. This Traffic Impact Assessment (TIA) also identified the proposed upgrades to the surrounding road network. While the adjacent upgrades will be discussed as part of this TIA, the design and construction of the upgrades will be separately commissioned by the State Government through Department of Planning, Transport and Infrastructure (DPTI) as "Works by Others".

2. Existing Transport Network

2.1 Site Location

Figure 2-1 demonstrates the new school site in the context of the broader surrounding road network. Main South Road to the east is a rural arterial road connecting Adelaide to the southern suburbs and Cape Jervis. Main South Road between Seaford and Sellicks Beach is the subject of a planning study to duplicate the existing one lane two-way road and the duplication is funded between Seaford and Aldinga Beach Road. Main South Road is a key link between the school and surrounding suburbs such as Maslin Beach and Sellicks Beach.

Figure 2-1: Site location for new school (source: LocationSA)

The school catchment is expected to be concentrated in the areas to the west of the site and discussed in the following sections however, catchment could extend to the east to Willunga.

East-west distributors linking the school to its western catchment are Quinliven Road, How Road and Aldinga Beach Road. Old Coach Road and Aldinga Road form key distributor routes to the east.

The existing land use adjacent the school site is outlined in Figure 2-2. The large parcels of land to the south of the school site through to Aldinga Beach Road are proposed for residential development by Renewal SA.

Figure 2-2: Existing land use adjacent school site (source: LocationSA)

A future extension to the Seaford passenger rail line is also proposed by DPTI with the provision of a rail corridor to the west of the school site and terminating at Aldinga Beach Road with a rail station in close proximity to Aldinga Beach Road. There is also proposed to be a Council local collector between the school site and the rail corridor that will access the future residential development and may continue through to Aldinga Beach Road.

2.2 Adjacent Road Network

The following traffic data was provided by the State and is used to support the traffic analysis in this report. The data included AM/PM peak turn counts, 11-hours total flows and AADT in case.

- Intersection of Main South Road/ Little Road (10/02/2016)
- Intersection of Main South Road/ Port Road (12/04/2016)
- Intersection of Main South Road/ Aldinga Beach Road (12/04/2016)
- Intersection of Main South Road/ Aldinga Road (12/04/2016)
- Intersection of Main South Road/ Malpas Road (09/08/2017)
- Intersection of Main South Road/ Old Coach Road/ Stonehouse Lane (12/04/2016)
- Intersection of Aldinga Beach Road/ How Road (15/05/2019)
- Intersection of Quinliven Road/ How Road/ Bowering Hill Road (15/05/2019)

Details of the adjacent road network are summarised in Table 2-1, which should be read in conjunction with Figure 3.

Table 2-1: Adjacent Road Network

Road	Classification	Mid-Block Cross Section	Posted Speed	AADT
Main South Road (Malpas Road to Aldinga Beach Road)	Arterial	Two-lane undivided, channelised intersections, no parking, narrow shoulders	70-90 km/h	17,000
Port Road (Main South Road to Port Road)	Distributor	Two-lane divided, no shoulders, partial parking	60 km/h	1,042
Quinliven Road (Port Road and How Road	Distributor	Two-lane divided, no shoulders, partial parking	60 km/h	1,042
Aldinga Beach Road (Main South Road to How Road)	Distributor	Two-lane undivided, partial parking	60 km/h	10,200
Old Coach Road (Port Road to Bourke Road)	Distributor	Two-lane undivided	70 km/h	8,115
Aldinga Road (Main South Road to Ryan Road)	Distributor	Two-lane undivided, wide shoulders, no parking	80 km/h	5,000
How Road (Quinliven Road to Aldinga Beach Road)	Collector	Two-lane undivided, partial kerb and channel	50 km/h	1,875
Bowering Hill Road (Quinliven Road to Bourke Road)	Collector	Two-lane undivided, no shoulders, partial parking	50 km/h	2,522

Source: DPTI Traffic Maps and Traffic Counts from Local Government and/or nominal estimates for AADT values

Main South Road and Aldinga Road are gazetted B-Double routes but the remaining roads surrounding the school site are only suitable for 19 m semi-trailers – refer Figure 2-3.

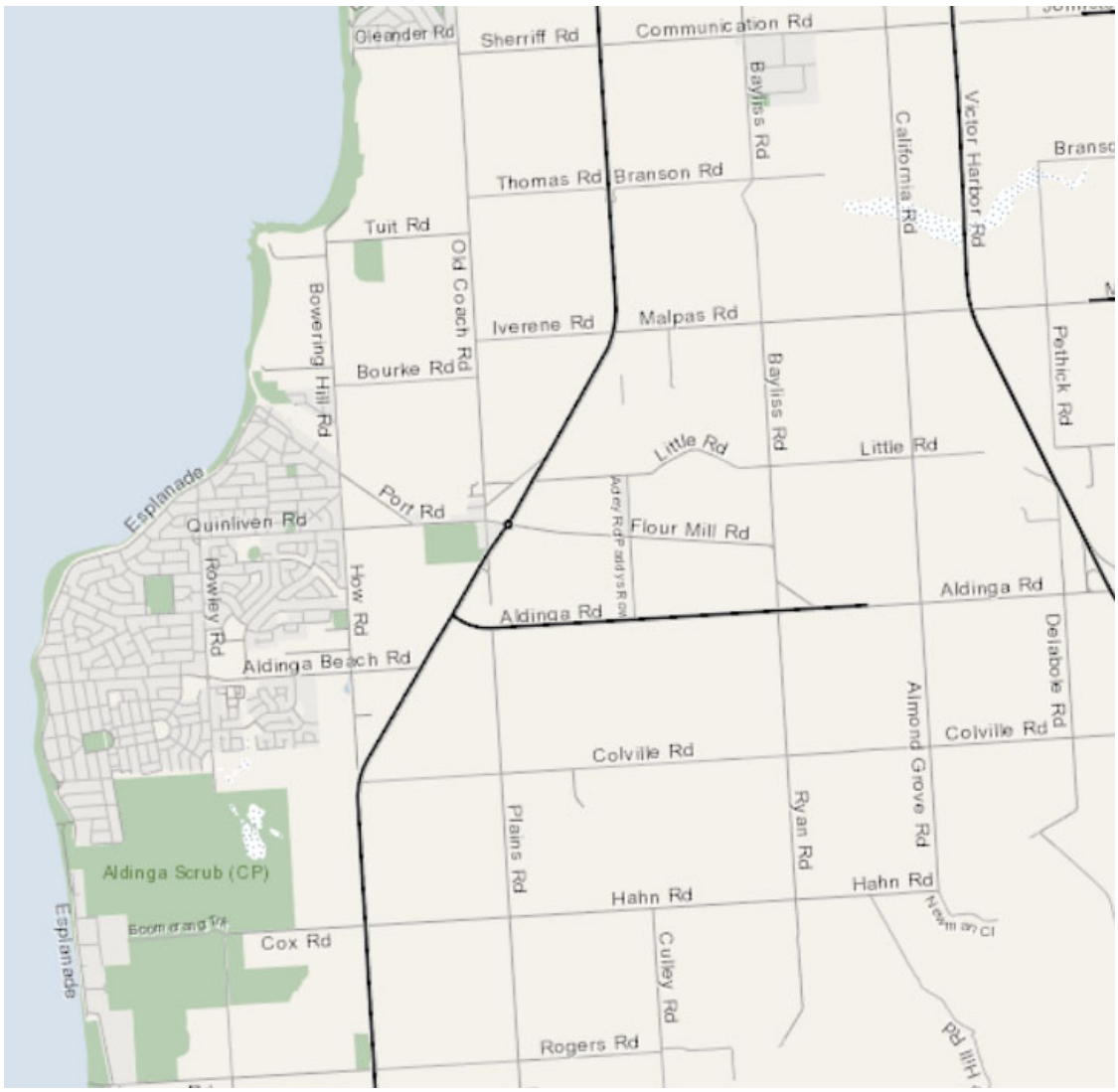

Figure 2-3: Existing heavy vehicle network (Source: RAVnet)

2.2.1 Quinliven Road

Quinliven Road is an east-west one lane two-way road that connects Main South Road through to the Esplanade. The road is under care and control of the City of Onkaparinga. It was recently upgrade to be a kerbed road with a central raised median / painted median, indented parking bays where needed and a 3 m wide shared path on the southern side of the road – refer Figure 2-4.

Quinliven Road has a posted speed limit of 50 km/h to the east of the school site and 60 km/h in front of the school site where there is no current development. It is likely that the once the school is completed that the speed limit will be reduced to 50 km/h to match the speed limit on either side.

Figure 2-4: Existing cross-section of Quinliven Road

2.2.2 How Road

How Road is a north-south Council road that connects Quinliven Road to Aldinga Beach Road. Some sections of How Road are kerbed whilst other section are unkerbed with unsealed shoulders. It is a two-way one lane approximately 8 metres wide. How Road has a posted speed limit of 50 km/h. Residential properties are on the western side whilst Galilee School is on the eastern side of How Road adjacent the Quinliven road intersection.

2.3 Public Transport

Aldinga is serviced by a number of bus routes as detailed in Figure 2-5 with the 751, 755 and 756 bus routes connecting through to Willunga and then north to McLaren Vale. The 750 bus route connects Sellicks Beach Road to Aldinga and continuing north to Seaford. Only the 750 bus route currently utilises Quinliven Road. The other three bus routes utilise the Quinliven Road although the existing bus stops are around 600 m west of the school site.

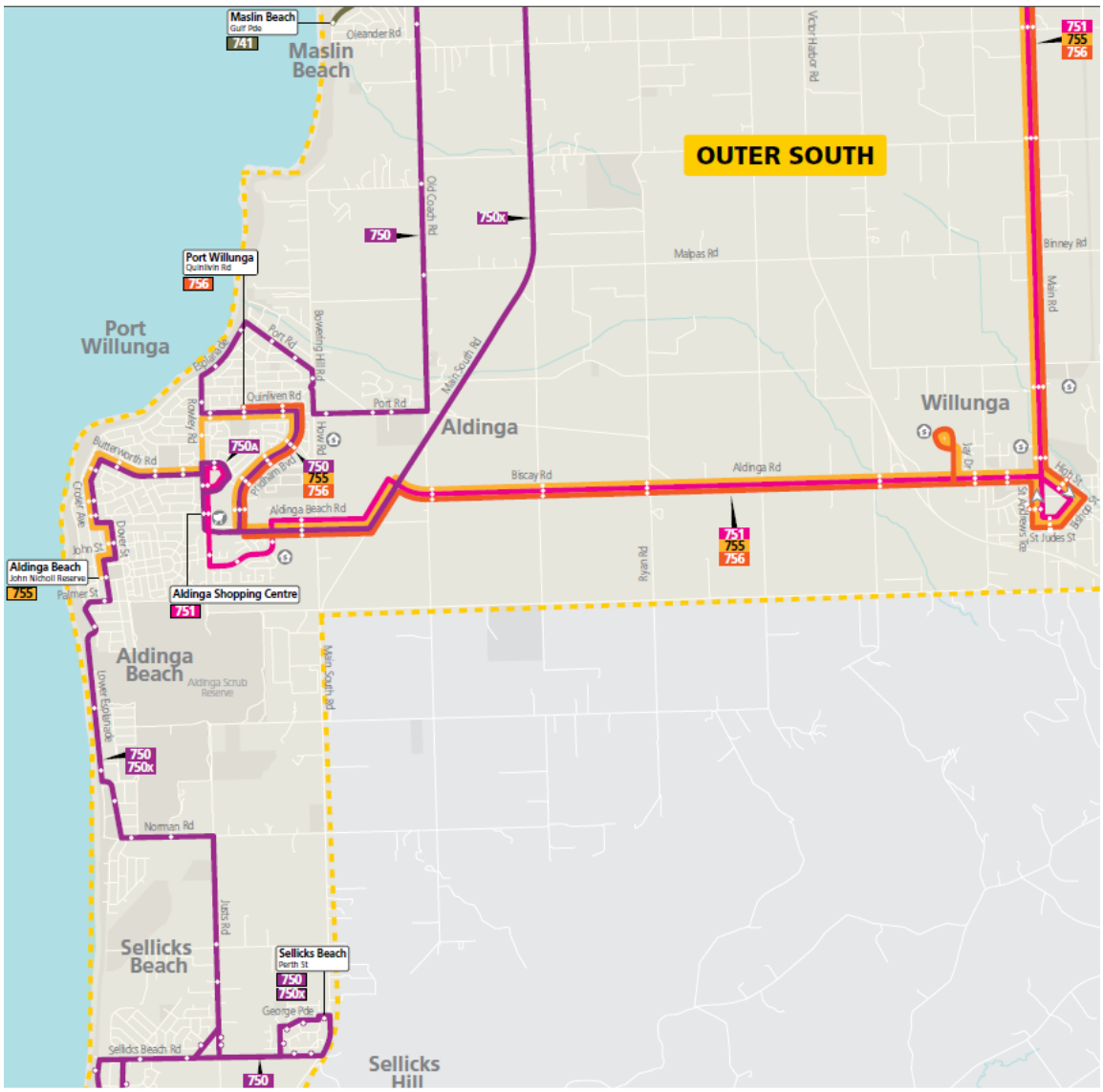

Figure 2-5: Existing bus network for Aldinga and surrounds (source: AdelaideMetro)

2.4 Cycling and Walking Infrastructure

The existing cycling network around Aldinga is provided in Figure 2-6. The recently constructed off-road shared path on the southern side of Quinliven Road is not incorporated in the cycling map but connects How Road to Old Coach Road.

A pedestrian actuated crossing (PAC) is provided on Quinliven Road adjacent the Galilee school to access the bus stops on the northern side of the road. A pedestrian crossing with a central refuge is provided just west of the Port Road intersection to connect the existing northern footpath of Quinliven Road to the shared path on the southern side of Quinliven Road.

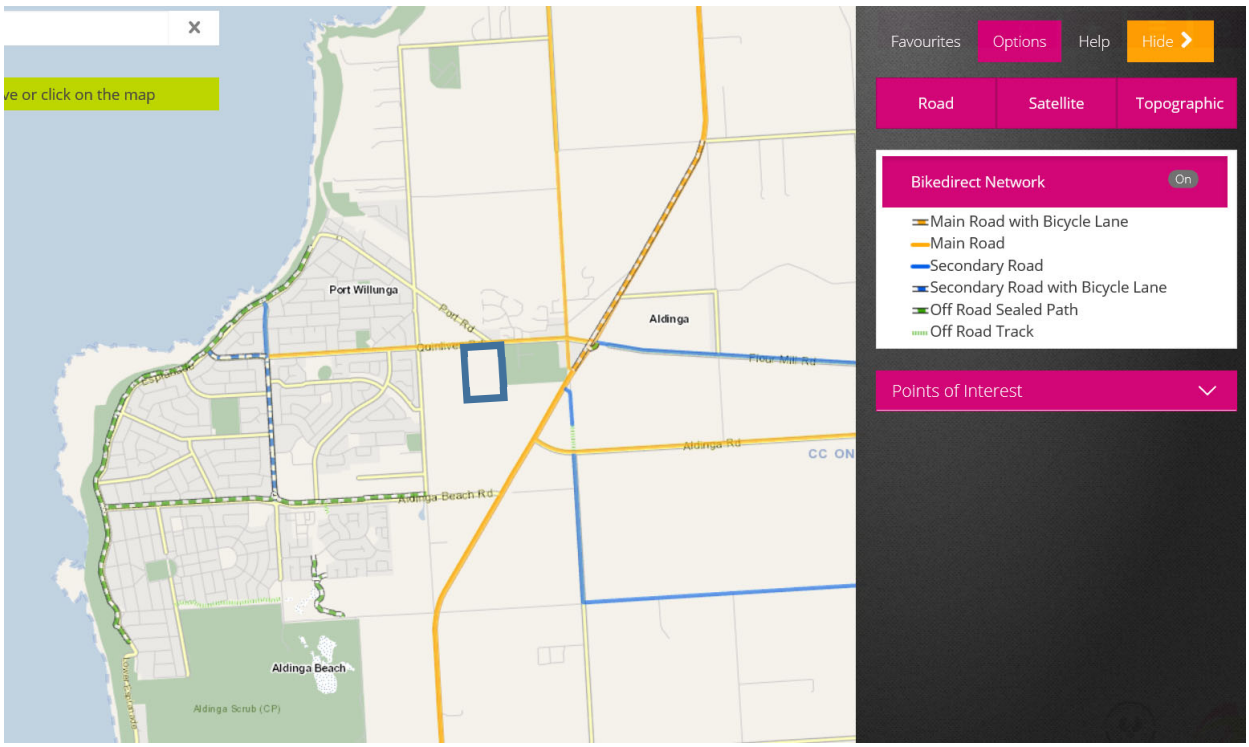

Figure 2-6: Existing cycling network in Aldinga (source: CycleInstead website)

2.5 Road Safety

The previous 5 years of crash information that surrounds the school site is provided in Figure 2-7. Crash frequency is concentrated at the How Road intersections with Port Road, Quinliven Road and Aldinga Beach Road. A high occurrence of crashes is also present along Main South Road at intersections with Aldinga Beach Road and Port Road.

Figure 2-7: Road Crashes (source: Location SA)

Table 2-2: Major crash locations adjacent school site

Location	No. of crashes	Predominant Crash Type	No. of casualties
Quinliven Road / How Road intersection	6	Right angle (5)	5
Aldinga Beach Road / How Road intersection	5	Right angle (3)	3
Port Road / How Road intersection	8	Right angle (6)	5

There were three crashes along Quinliven Road between How Road and Port Road which were a side swipe (at Port Road intersection with one casualty), a rear end (western edge of school site) and hit fixed object (adjacent Galilee School). It is not understood when these three crashes occurred against the timing of the recent upgrade to Quinliven Road.

2.6 Future Adjacent Developments

Renewal SA are looking to develop their land allotments surrounding the school site to the south as per Figure 2-8.

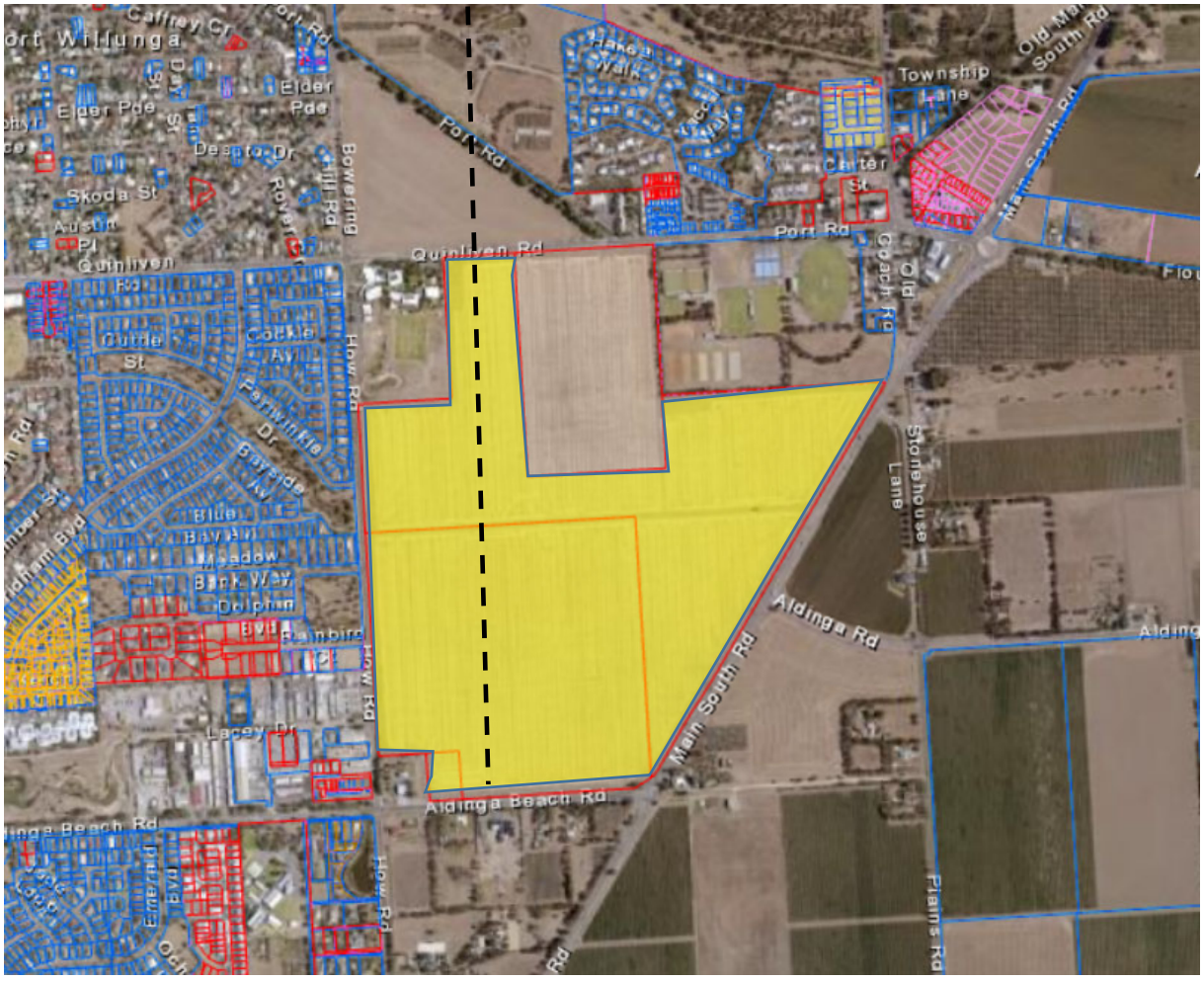

Figure 2-8: Renewal SA development

DPTI are proposing an extension to the Seaford rail line, which connects through to Aldinga with a new rail station located north of Aldinga Beach Road. DPTI are also undertaking a Planning Study to duplicate Main South Road from Seaford through to Aldinga.

DPTI has received funding for the duplication which is expected to commence in 2021. The rail extension to Aldinga is unfunded. DPTI are undertaking demand modelling to better understand traffic and transport modelling / planning associated with both projects and future developments in the area. The traffic analysis associated with the new school does not incorporate these developments.

3. Proposal

3.1 School Master Plan

The proposed site plan of the new school is provided in Figure 3-1 with the school master plan provided in Figure 3-2.

Figure 3-1: Proposed Site Plan

A number of the facilities including the main hall, gymnasium and sporting fields will available for community use outside of school hours.

The Master Plan in Figure 3-2 is in alignment with Department of Education Childhood Development (DECD) requirements with respect to Kiss and Drop Zones for primary and secondary students to be using the external road network and that car parking is only for staff and visitors with short-term parking for the Long Day Care and Pre-sechool i.e. no student car parking is provided on the school site. The only other drop-off facilities are provided for Primary and Secondary Inclusive Learning Centres (ILC) as indicated in Figure 3-2.

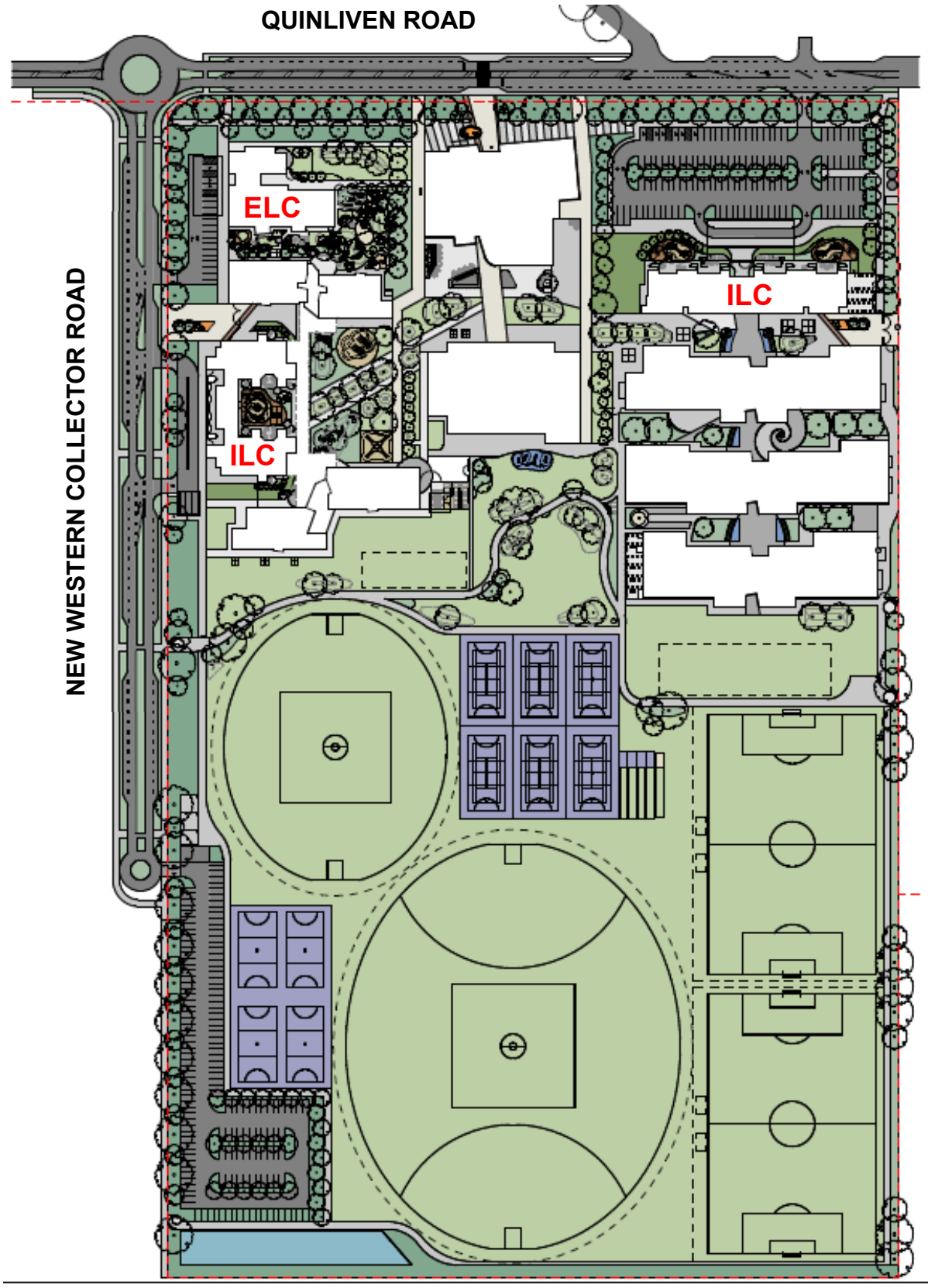

Figure 3-2: School site master plan

4. Trip Generation and expected mode share

4.1 School catchment area

DECD has provided some preliminary advice regarding the proposed school catchment for this new Southern School. Further assessment by the Department of Education is required to confirm the school zoning however, the following suburbs listed below are expected to be catered for by the new southern school:

- Aldinga Beach 55%
- Port Willunga 20%
- Aldinga 5%
- Sellicks Beach, 10%
- Whites Valley, 5%
- Sellicks Hill 5%

4.2 Mode Share

In 2017, Way2Go unit in DPTI undertook a study to understand the travel choices, attitudes and preferences of students, teachers and families for travel to primary schools. The data collected included students' modes of travel to and from school across more than 20 primary schools in South Australia. The data showed that on average most students' trip to and from school are:

- Car with 67%
- Walking with 18%
- Public transport with 8%
- Cycling with 7%.

The survey focused on primary school students and understanding parental barriers that may impact on student's ability to choose a more active travel mode.

It is also understood that as students' progress into high school age their reliance on parents to drop them off and pick them up from school will reduce. Therefore, the number of high school students travelling via an active mode of travel (walk, cycle or catch public transport) will increase and travel by private car will reduce.

Schools in semi-rural locations like Aldinga may have a greater reliance on car travel but will also have a regional bus service available for students attending the school from greater than five kilometres away.

4.3 School traffic generation

The traffic generation for the school has been extracted from the "Southern School Traffic Impact Assessment" for SA Department of Treasury and Finance by Aurecon dated 14 June 2019 (Reference: 504550). This information is summarised in the following paragraphs.

Initial capacity projections for the new school are expected to be achieved in 2025, which will comprise 1,675 places for students from Birth to Year 12 and approximately 211 teaching and support staff. Using mode share percentages from Section 4.2 and applying it to the estimated

1,886 people who will attend the school each, the detailed school traffic generation is shown in Table 4-1.

Table 4-1: School Staff / Student Mode Share

Mode	Mode %	Person Trips
Walk	18%	288
Cycling	7%	112
Public Transport	8%	128
Car (Students)	67%	1,072
Car (Staff)	-	211
Car (Childcare)	-	75
Total	**100%**	**1,886**

It is assumed that all 211 staff will to drive to the school in separate vehicles. The 1,072 student car trips, it is assumed there will be two students per car (i.e. 536 vehicle trips) and of the childcare centre students all 75 will arrive via car assuming one student per vehicle. No further allowance has been made to reduce the number of trips.

For the student and child care vehicle trips, two trips will be generated being one for the drop-off and the second to return home or elsewhere. On this basis, a total of 1,222 trips are expected to be generated by private vehicle each school morning and afternoon during the school periods, for the students of the school. In addition to the student trips, there will be 211 staff trips per peak hour period although there is likely to be staggered between staff trips and student trips.

As Aldinga Beach develops further, active transport facilities will be incorporated into the development encouraging more students will walk or ride to schools which may result in less children being driven to school. Public transport routes may also change to reflect the new school location and increase patronage on public transport.

4.4 Adjacent intersections impacted by the new school

Due to the large catchment area for the school, the determination of routes that vehicles will travel to the school is challenging. The only existing road to access the school is Quinliven Road however, as part of the school development, a new collector road will be constructed along the western edge of the school connecting to Quinliven Road. In the future as part of the proposed Renewal SA development, this new collector road will continue south towards Aldinga Beach Road and / or towards the west to How Road providing a second way to access the school site. Until that time, the main adjacent intersections that will be impacted by the works are:

- Bowering Hill Road / How Road / Quinliven Road intersection
- Aldinga Beach Road / How Road intersection
- Port Road / Quinliven Road intersection
- Old Coach Road / Port Road intersection
- Main South Road / Port Road intersection.

It should be noted that DPTI are undertaking planning and design for three of the five locations above as part of the enabling works by the State Government. While these intersection upgrades will be briefly discussed in the following sections, the upgrades will form part of the

TESA scope of works. Main South Road / Port Road intersection was recently upgraded to a roundabout as was the Old Coach Road / Port Road intersection.

4.5 Trip Assignment

The assumed trip assignment patterns for school traffic are extracted from the Aurecon Traffic Impact Assessment and provided in Table 4-2.

Table 4-2: School trip assignment

Trip Generation Assumption- AM	Direction/Leg	Additional Traffic During AM Peak
45%	Travelling eastbound on Quinliven Road	275 *45% of the total additional traffic 611
20%	Travelling eastbound on Aldinga Beach Road	123 *20% of the total additional traffic 611
25%	Travelling westbound on Quinliven (for students coming from Aldinga, Sellicks beach, Sellicks Hill and Whites Valley)	153 *25% of the total additional traffic 611
10%	Travelling southbound on Bowering Hill Road (for students living in Port Willunga)	62 *10% of the total additional traffic 611

5. Traffic Impact Assessment

The purpose of this Traffic Impact Assessment is to identify and assess impacts the proposed development may have on the surrounding road network. As highlighted previously, DPTI has assumed responsibility for the planning and design of all external intersection upgrades beyond the immediate school site. As such, the traffic impacts associated with the new school site will be investigated and managed outside the scope of this Contract and DPTI will be responsible for liaison / approval of these works with Onkaparinga Council. The intersections shown in Figure 5-1 are a part of DPTI's scope of works.

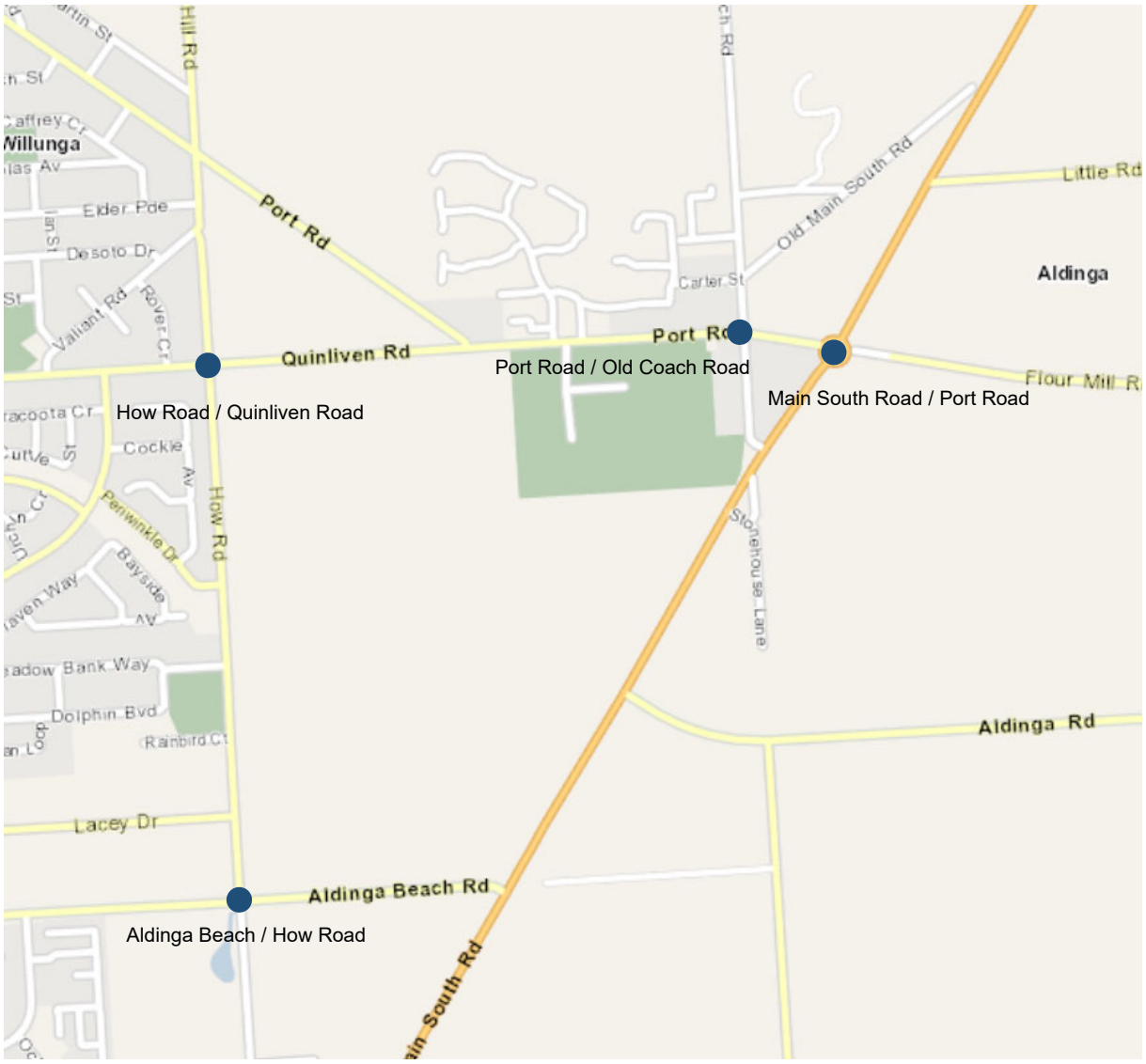

Figure 5-1: Intersections a part of DPTI Scope of Works

As such, this Traffic Impact Assessment (TIA) will only cover the school site and directly adjacent road network. However, for completeness, a discussion on the current preferred treatments being considered by DPTI for the above intersections will be included in this section along with the Aurecon Traffic Impact Assessment Report provided in **Appendix A**.

242 car parks are provided on site for staff and ancillary personnel. 15 car parks with additional 3 disabled car parks are provided for ELC drop-offs. Three long car parks are provided for the ILC for small bus and access taxi use. The staff car parks are split across the site with the one car park in the north-east corner off Quinliven Road and the second in the south-west corner off

the Western Collector Road. The car parks will also be accessible after hours for community use.

Given that staff will access the car parks at different times to student access, there will be significant reduction in interaction between cars on the internal road networks which will improve safety. This combined with external kiss and drop areas for students along with separate / convenient parking areas for ELC and ILC will help contribute to the safe operation of vehicles and the circulation of pedestrians throughout the site.

5.1 Works by DPTI

The following sections incorporate the proposed works being planning and designed independently by DPTI. DPTI will manage the approval process, consultation process with Councils as well as construction of the identified works. DPTI are also undertaking broader strategic modelling for the Aldinga area as part of the Main South Road Duplication Planning Study which will help inform the following intersection layouts as treatments for Main South Road / Aldinga Beach Road.

5.1.1 How Road / Quinliven Road / Bowering Hill Road Intersection

The existing intersection is an unsignalised four-way intersection with priority for the east-west movements along Quinliven Road, refer Figure 5-2. The Bowering Hill Road and How Road approaches are controlled by give way signs. Right turn slip lanes are provided on each approach. Pedestrian actuated crossings (PAC) are located on the eastern and southern approaches to the intersections to access Galilee Catholic School. A shared path is located on the southern side of Quinliven Road.

Figure 5-2: Existing configuration of How Road / Quinliven Road intersection

Based on the traffic analysis in the Aurecon Report, the proposal is to install a roundabout at this intersection to improve traffic flow through the intersection as well as improve safety. The roundabout achieves the required efficiency to cater for future traffic volumes associated with the new school.

5.1.2 Aldinga Beach Road / How Road intersection

The existing intersection is an unsignalised four-way intersection with priority for the east-west movements along Quinliven Road, refer Figure 5-3. The How Road approaches are controlled by give way signs. Aldinga Beach Road to the west of the intersection has a painted median scheme however, the other three approaches just have a centre line separating the opposing traffic lanes.

Figure 5-3: Existing configuration of Aldinga Beach Road / How Road intersection

Based on the traffic analysis in the Aurecon Report, the proposal is to install a roundabout at this intersection to improve traffic flow through the intersection as well as improve safety. The roundabout achieves the required efficiency to cater for future traffic volumes associated with the new school.

5.1.3 Port Road / Old Coach Road intersection

The existing intersection is a four-way intersection with a roundabout, refer Figure 5-4

Figure 5-4: Existing intersection of Port Road / Old Coach Road

Based on the traffic analysis in the Aurecon Report, the existing roundabout achieves the required efficiency to cater for future traffic volumes associated with the new school.

5.1.4 Main South Road / Port Road

The intersection has recently upgraded to have a roundabout to improve accessibility and safety at the intersection.

Figure 5-5: Existing Main South Road / Port Road intersection

Based on the traffic analysis in the Aurecon Report, the existing roundabout will not achieve the required efficiency to cater for future traffic volumes associated with the new school and developments. However, DPTI are undertaking a planning study for the duplication of Main South Road, which would incorporate the upgrade of this roundabout to suit two lanes in each direction on Main South Road.

5.2 Quinliven Road

Figure 5-6 demonstrates the existing layout of Quinliven Road and the proximity of the Port Road intersection to the school site. The existing shared path is located on the southern verge whilst the northern footpath along extends stops just west of Port Road with an unsignalised pedestrian crossing. Bus stops are located at the eastern border of the school site with bus stops located in front of the Galilee school to the west.

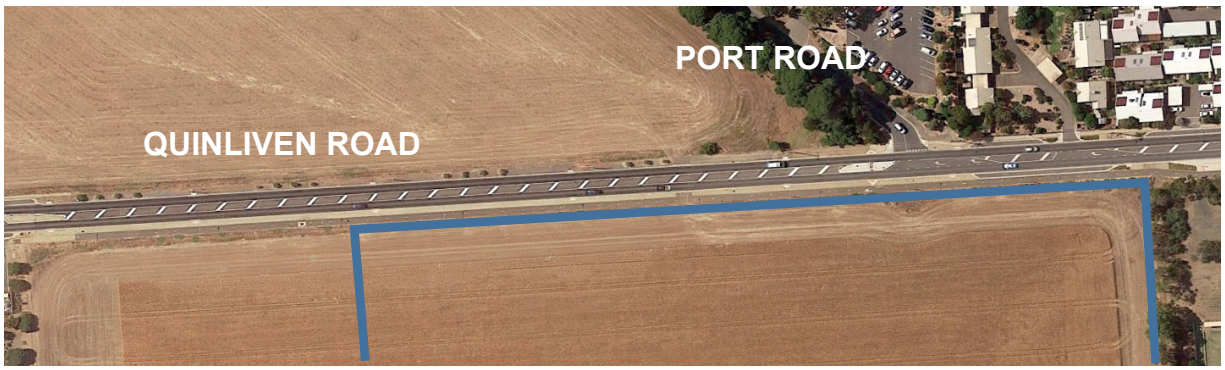

Figure 5-6: Quinliven Road Layout

As discussed in Section 3.1, Department of Education policy is for Kiss and Drop Zones for students to be external to the school site with the exception of ELC and ILC drop-offs. As a result, indented parking bays will be provided along Quinliven Road for the kiss and drop / pick-up of students, refer Figure 5-10. Council's typical cross-section for a distributor road (Figure 5-7), with the addition of a centre median however this results in a 23.5 m road corridor rather than 20 metres as per the existing Quinliven Road cross-section. Further discussions are being undertaken with Council to refine the cross-section in terms of where the shared path is located and the width of the vegetated verges. Parking lane and traffic lanes widths will be provided as per Figure 5-7

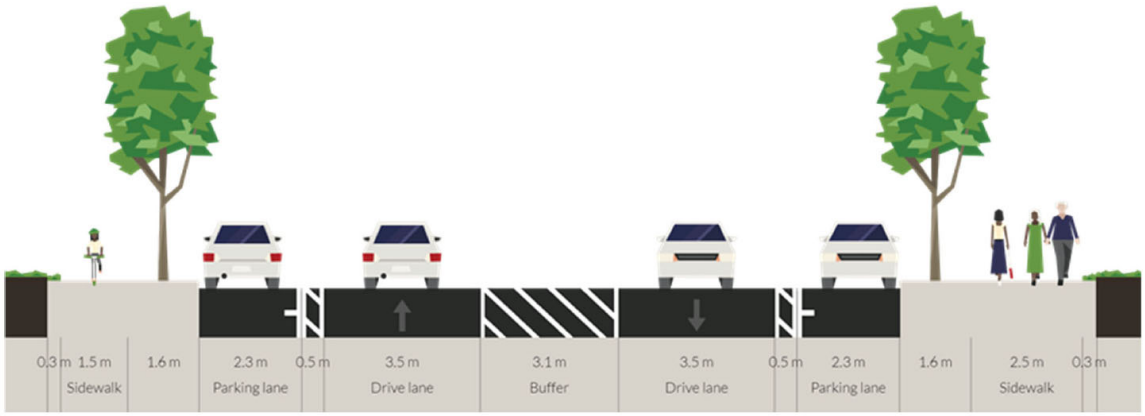

Figure 5-7: City of Onkaparinga typical cross section for urban distributor road (Source: City of Onkaparinga Road Network Plan 2016-2021)

The parking restrictions during school drop-off will be limited to 5 minutes but longer term parking would be available outside of these times. The central median will be a raised concrete median to prevent U-turns on Quinliven Road by parents after drop-offs which will be a safety issue. A roundabout with the new Western Collector Road will help facilitate U-turn movements.

To facilitate safe access for students across Quinliven Road, a signalised pedestrian actuated crossing (PAC) will be provided adjacent the main entrance and potential bus stop locations.

A new unsignalised pedestrian crossing will provided adjacent to the proposed roundabout, refer Figure 5-10 for example treatment. An existing unsignalised pedestrian crossing will also be retained just west of the Port Road intersection.

Figure 5-8: Typical unsignalised pedestrian crossing with kerb protuberance

Crossings across Quinliven Road will be linked to a shared path on the southern side (refer dashed green line in Figure 5-10) to provide separation to the road and on-street parking. The increased separation will allow priority to be given to shared path users in lieu of vehicles accessing the car park / ILC (secondary) drop-off. The shared path will be raised at vehicle crossovers to indicate priority for shared path users over vehicles. An example of the proposed treatment is provided in Figure 5-9 which demonstrates the various treatments for a shared path crossing a road with the shared path having priority. The treatments include signage, line marking, use of different materials at the threshold and the road ramping up to meet the level of the shared path.

Figure 5-9: Shared path treatment Gibson Street, Bowden (source: Google Earth)

Footpaths will be provided on both sides of Quinliven Road to direct pedestrians to the designated crossing points.

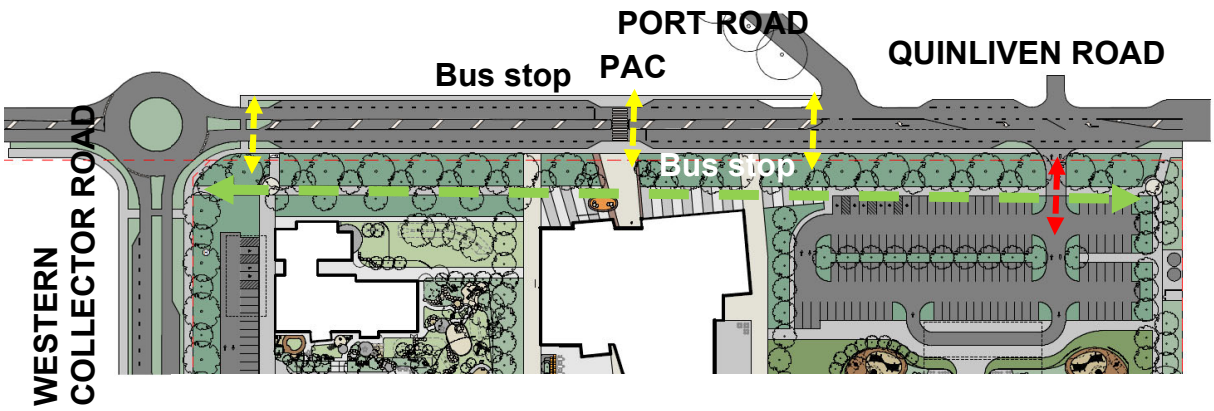

Figure 5-10: Quinliven Road proposed improvements

On Quinliven Road, it is anticipated that Adelaide Metro bus stops will be established on either of the PAC to provide improved accessibility for passengers to access the school. These new stops will be spaced approximately 300 m from the existing stops to the east and west.

To access the staff car park off Quinliven Road, a left turn slip lane has been provided in addition to a right turn slip lane for traffic from the west. The length of the right turn slip lane has been extended as far as possible without impacting the existing right turn slip lane into Port Road.

5.3 Western Collector Road

A new Western Collector road will be built as part of the school development to facilitate access to the primary school, ELC, ILC, second staff car park and sporting facilities, refer Figure 5-11. This road will be vested with Council on completion of the project. A similar approach to Quinliven Road will be adopted by maximising the length of indented parking bays for the purpose of kiss and drop for students. Short term parking will be permitted during drop-off / pickup times but otherwise will be available for longer term parking during the day. Several unsignalised pedestrian crossing with protuberances (yellow dashed lines) will be provided for students to cross the new road safely to enter the school. A shared path (green dashed line) will be provided on the eastern side of the new road with a footpath on the opposite side of the road. The shared path will be raised at vehicle crossovers to indicate priority for shared path users over vehicles (other forms of delineation and signage may also be used).

A roundabout will be provided at the end of the new road to facilitate U-turn movements in addition to improved accessibility to the staff car park in the future when the Western Collector Road is continued south to access the future development.

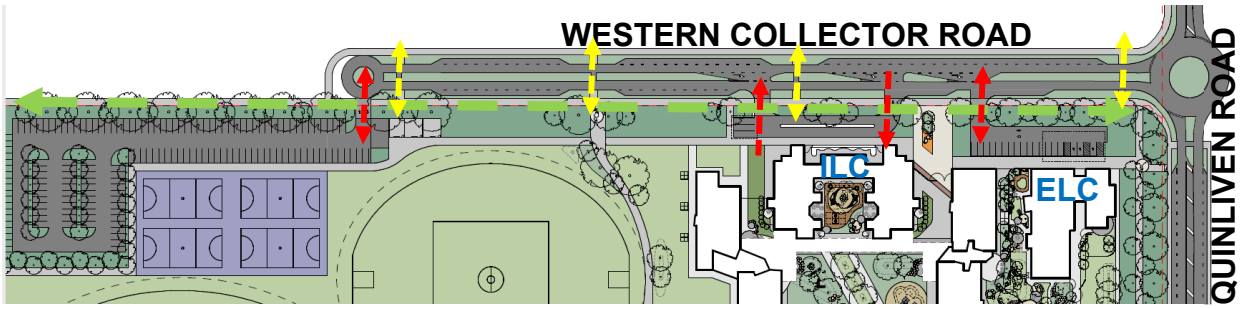

Figure 5-11: Proposed Western Collector Road

The school access points along the Western Collector Road will consist of the following:

- Two-way access point for the ELC with 16 car parks (only for use by passenger vehicles)

- Entry and exit access points for the ILC with provision for three 20 seater buses as well as access cabs.
- A two-way access point to access the staff car park and waste management area near the entrance to the car park.

Right turn slip lanes have been provided for these access points to allow for future access from the south via the extended Western Collector Road.

Turning paths for are shown for a 20 seater bus to access the primary and secondary ILC drop-off locations are in Figure 5-12 and Figure 5-13 respectively.

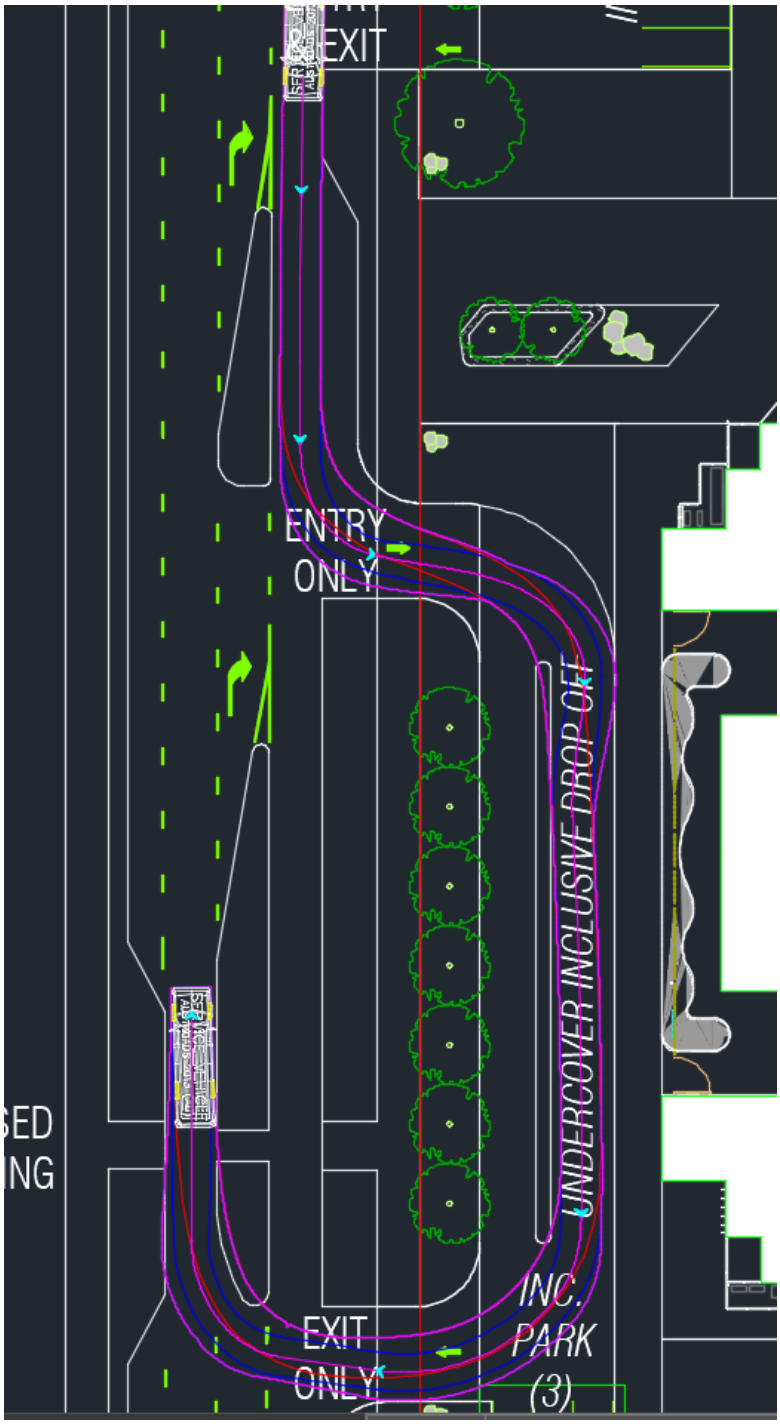

Figure 5-12: Turning path movements for ELC (primary)

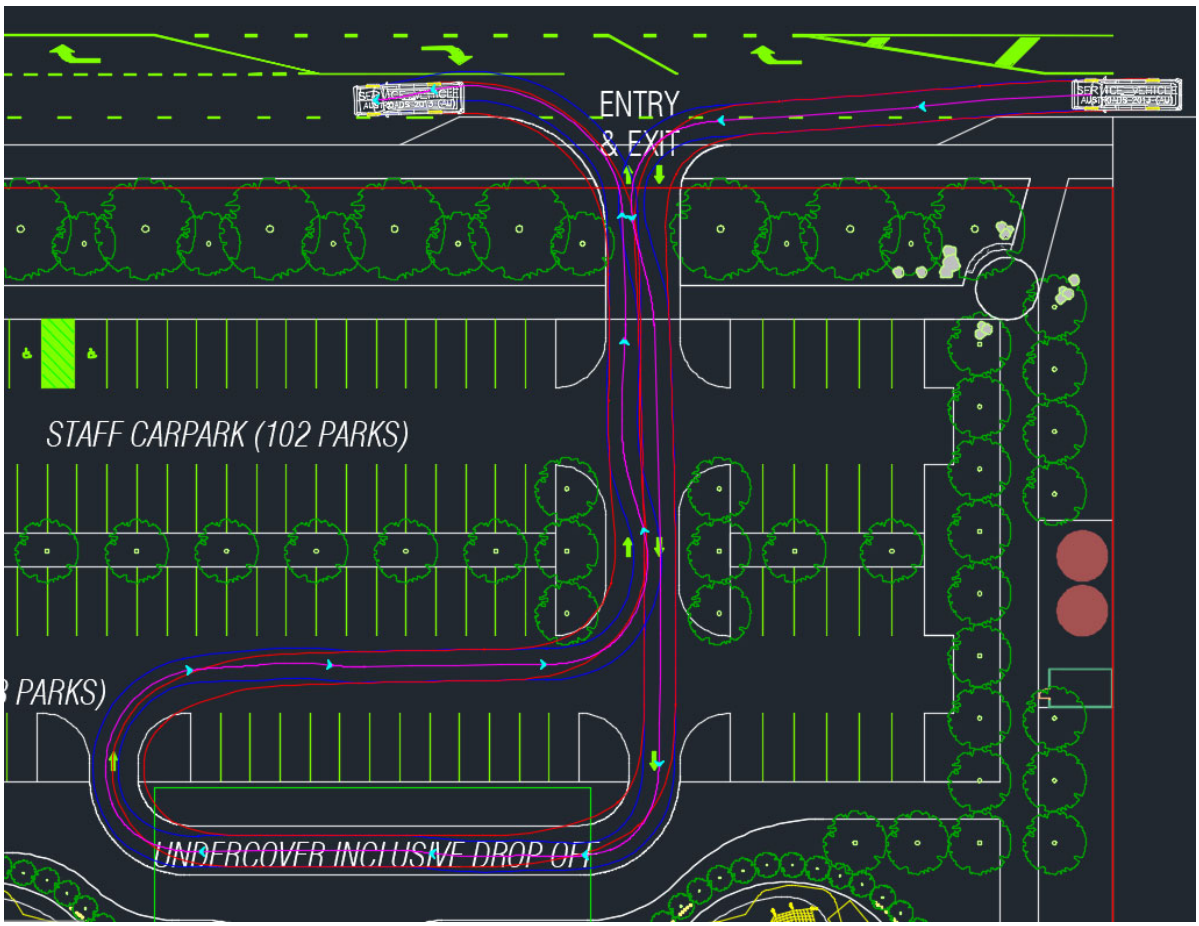

Figure 5-13: Turning path for ILC drop off (secondary)

5.4 Quinliven Road / Western Collector Road intersection

As both Quinliven Road and the new Western Collector Road will have significant traffic volumes particularly during school peak periods, there is a need for an intersection treatment to safely accommodate the predicted volumes. Three options were considered being a T-junction with give way or stop signage, a roundabout or a signalised T-intersection. A give-way or stop sign T-junction is not considered a safe option due to the traffic volumes and as such has been discounted. A roundabout and a signalised intersection were both assessed using the SIDRA and the traffic volume estimates provided in Section 4.3. It should be noted that the spilt of traffic utilising Quinliven Road or the Western Collector Road for drop-off is difficult to accurately quantify based on a number of factors of where they are coming from and going to after the drop-off, whether they drop off based on being closest to primary or secondary entry points and kerbing availability / congestion.

5.4.1 Roundabout option

A single lane roundabout was evaluated using SIDRA in the AM and PM peak periods as per the configuration in Figure 5-14 when the school is operating at full capacity in 2026.

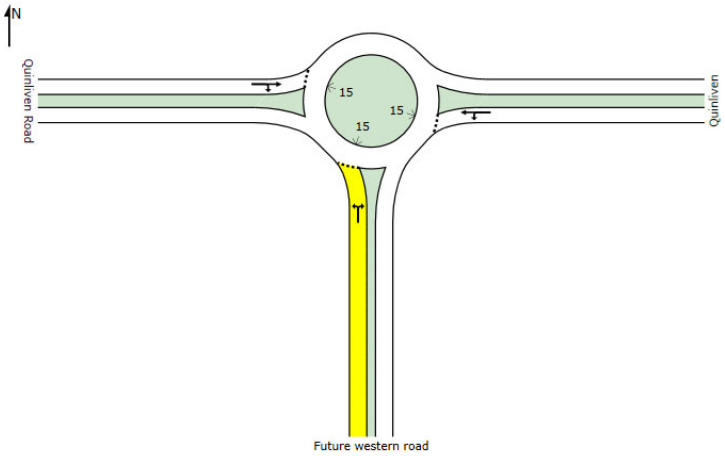

Figure 5-14: Potential roundabout layout

The AM and PM peak periods SIDRA results are provided in Figure 5-15.

Site: 101 [Quinliven Future Road AM 2026]

Quinliven Road / Future Road roundabout
Roundabout

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: Future western road											
1	L2	468	0.0	0.495	3.4	LOS A	4.2	29.1	0.57	0.55	42.9
3	R2	117	0.0	0.495	6.9	LOS A	4.2	29.1	0.57	0.55	44.3
Approach		585	0.0	0.495	4.1	LOS A	4.2	29.1	0.57	0.55	43.2
East: Quinliven											
4	L2	60	0.0	0.321	8.1	LOS A	2.2	15.7	0.77	0.77	47.5
5	T1	189	0.0	0.321	8.5	LOS A	2.2	15.7	0.77	0.77	52.8
Approach		249	0.0	0.321	8.4	LOS A	2.2	15.7	0.77	0.77	51.9
West: Quinliven Road											
11	T1	360	0.0	0.682	5.8	LOS A	8.4	58.9	0.63	0.58	52.2
12	R2	547	0.0	0.682	9.8	LOS A	8.4	58.9	0.63	0.58	45.6
Approach		907	0.0	0.682	8.2	LOS A	8.4	58.9	0.63	0.58	48.8
All Vehicles		1742	0.0	0.682	6.8	LOS A	8.4	58.9	0.63	0.60	47.6

Site: 101 [Quinliven Future Road PM 2026]

Quinliven Road / Future Road roundabout
Roundabout

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: Future western road											
1	L2	548	0.0	0.633	6.3	LOS A	6.6	46.3	0.83	0.82	41.5
3	R2	61	0.0	0.633	9.8	LOS A	6.6	46.3	0.83	0.82	42.7
Approach		609	0.0	0.633	6.7	LOS A	6.6	46.3	0.83	0.82	41.6
East: Quinliven											
4	L2	122	0.0	0.559	9.5	LOS A	5.1	35.7	0.81	0.85	46.4
5	T1	367	0.0	0.559	9.8	LOS A	5.1	35.7	0.81	0.85	52.0
Approach		489	0.0	0.559	9.7	LOS A	5.1	35.7	0.81	0.85	50.9
West: Quinliven Road											
11	T1	214	0.0	0.473	4.9	LOS A	4.8	33.3	0.36	0.55	52.8
12	R2	464	0.0	0.473	8.9	LOS A	4.8	33.3	0.36	0.55	46.4
Approach		678	0.0	0.473	7.6	LOS A	4.8	33.3	0.36	0.55	49.0
All Vehicles		1777	0.0	0.633	7.9	LOS A	6.6	46.3	0.64	0.73	47.2

Figure 5-15: AM and PM SIDRA results for the roundabout option

As the SIDRA results demonstrate, the single lane roundabout operates well with a Level of Service A with 95% queue lengths less than 60 m. The use of the roundabout will be in line with the proposed DPTI enabling works of a roundabout at the adjacent Quinliven Road / How Road intersection. There are no other signalised intersections within Aldinga and Council's preference is for a roundabout.

5.4.2 Signalised intersection option

A signalised intersection was evaluated using SIDRA in the AM and PM peak periods as per the configuration in Figure 5-10 when the school is operating at full capacity in 2026.

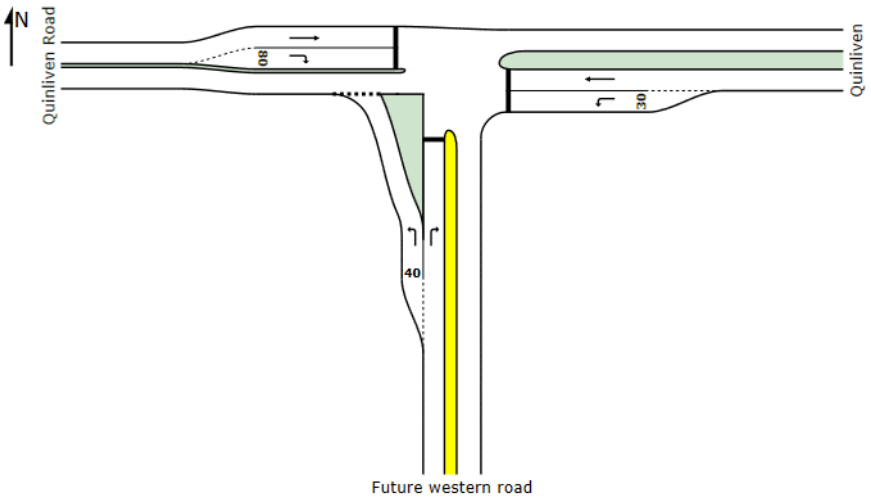

Figure 5-16: Potential signalised intersection layout

The AM and PM peak periods SIDRA results are provided in

MOVEMENT SUMMARY

Site: 101v [Quinliven Future Road AM 2026 - signals]

Quinliven Road / Future Road roundabout
Signals - Fixed Time Isolated Cycle Time = 40 seconds (Practical Cycle Time)

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: Future western road											
1	L2	468	0.0	0.445	4.9	LOS A	2.4	17.1	0.49	0.63	43.0
3	R2	117	0.0	0.415	21.5	LOS C	2.2	15.7	0.95	0.76	32.0
Approach		585	0.0	0.445	8.2	LOS A	2.4	17.1	0.58	0.66	40.3
East: Quinliven											
4	L2	60	0.0	0.058	10.1	LOS B	0.5	3.8	0.49	0.67	44.3
5	T1	189	0.0	0.175	4.9	LOS A	1.9	13.1	0.53	0.43	55.5
Approach		249	0.0	0.175	6.1	LOS A	1.9	13.1	0.52	0.49	53.4
West: Quinliven Road											
11	T1	360	0.0	0.332	5.4	LOS A	3.9	27.6	0.59	0.50	55.1
12	R2	547	0.0	0.825	21.8	LOS C	12.3	86.4	0.90	0.99	35.6
Approach		907	0.0	0.825	15.3	LOS B	12.3	86.4	0.77	0.80	43.8
All Vehicles		1742	0.0	0.825	11.6	LOS B	12.3	86.4	0.67	0.71	44.1

MOVEMENT SUMMARY

Site: 101v [Quinliven Future Road PM 2026 - signals]

Quinliven Road / Future Road roundabout
Signals - Fixed Time Isolated Cycle Time = 50 seconds (Practical Cycle Time)

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: Future western road											
1	L2	548	0.0	0.579	5.7	LOS A	4.9	34.0	0.55	0.67	42.6
3	R2	61	0.0	0.264	26.6	LOS C	1.5	10.2	0.94	0.73	29.7
Approach		609	0.0	0.579	7.8	LOS A	4.9	34.0	0.59	0.68	40.8
East: Quinliven											
4	L2	122	0.0	0.102	9.3	LOS A	1.1	8.0	0.41	0.67	45.0
5	T1	367	0.0	0.291	4.3	LOS A	4.0	27.9	0.47	0.41	56.0
Approach		489	0.0	0.291	5.5	LOS A	4.0	27.9	0.46	0.47	53.9
West: Quinliven Road											
11	T1	214	0.0	0.169	3.9	LOS A	2.1	14.7	0.43	0.36	56.4
12	R2	464	0.0	0.812	23.4	LOS C	12.3	86.2	0.87	0.97	34.7
Approach		678	0.0	0.812	17.2	LOS B	12.3	86.2	0.73	0.77	41.8
All Vehicles		1777	0.0	0.812	10.8	LOS B	12.3	86.2	0.61	0.66	44.9

Figure 5-17: AM and PM SIDRA results for the signalised option

The signalised intersection performs slightly worse than the roundabout with a Level of Service B with queues on the western approach of Quinliven Road exceeding 80 m.

5.4.3 Preferred intersection treatment

The preferred intersection treatment for the Quinliven Road / Western Collector Road is a roundabout due to the following reasons:

- Improved traffic efficiency during school peak periods and throughout the day when compared to a signalised intersection
- A roundabout requires all vehicles to slow down to manoeuvre through the roundabout improving safety
- A roundabout is in line with the rural nature of Aldinga as there currently no signalised intersection in Aldinga and aligns with Council's expectations.
- Provides a consistent approach with DPTI's enabling works for a roundabout at the nearby Quinliven Road / How Road intersection.

6. Findings and impact mitigations

The introduction of a new reception to secondary school in January 2022, to Aldinga will have a significant impact on the number and direction of traffic movements around Aldinga and the surrounding areas. As such, there will be a number of adjacent intersections, refer Table 6-1 that surround the school that will require upgrade or modification to suit the increased traffic demand.

Table 6-1: Proposed intersection upgrades

Location	Treatment	Responsibility & Timing
Quinliven Road / How Road intersection	Upgrade intersection to a roundabout	DPTI – prior to school opening in January 2022
Aldinga Beach Road / How Road intersection	Upgrade intersection to a roundabout	DPTI – prior to school opening in January 2022
Port Road / Old Coach intersection	No upgrade required	Not applicable
Port Road / Main South Road	Duplication of existing roundabout	DPTI to upgrade as part of Main South Road duplication
Aldinga Beach Road / Main South Road	Intersection upgrade to suit duplication of Main South Road	DPTI to upgrade as part of Main South Road duplication
Quinliven Road / new Western Collector Road	Installation of roundabout	TESA consortium to construct new roundabout and road prior to school opening in January 2022.

It is important to note that the analysis in this TIA and the Aurecon TIA does not incorporate traffic volumes associated with development to the south of the school site. Changes in the road network to the south particularly the extension to the Western Collector Road, nor the future plan to extend the Seaford rail line to Aldinga with the associated change in traffic patterns. These impacts are currently being considered by DPTI as part of the Main South Road Duplication Planning Study and will be implemented separately to the school development.

To provide safe access to the school from Riverbanks Road and the Northern Collector Road, it is necessary to update the cross section of Quinliven Road and construct the new Western Collector Road to match City of Onkaparinga requirements for a distributer road, as per Figure 5-7. Further discussions with DPTI are to be held on whether Adelaide Metro bus routes will be changed to provide more direct access to the school.

A total of 242 car parks are provided on-site for staff and ancillary staff as per the Department of Education brief requirements. Additional car parking provisions are provided for ELC, ILC and long stay child care facilities. The car parking areas are designed in accordance with AS 2890 - 2004: Parking facilities - Off-street car parking. Coach bus access is provided to the ILC.

The other main impacts associated with the school development are because of Department of Education policies, which are:

- All student drop-offs and pick-ups, with the exception of ILC and ELC, to be off the school site i.e. on the external road network being Quinliven Road and the new Western Collector Road.
- No provision for student car parking on the school site.

The impacts associated with the external road drop-offs will be additional congestion relating to cars entering and exiting the parallel parking areas as well as students crossing the respective roads at locations other than the designated crossing points. It is likely the speed limit on Quinliven Road will be reduced to 50 km/h but driver and student behaviour should be monitored after opening to identify improvements to safety (if required).

It is difficult to estimate how many secondary students may elect to drive to school but it is hoped that with good cycling and walking connections and public transport that the numbers might be small. Students may elect to park on Quinliven Road beyond the school boundary or on Port Road on the verge, which may cause congestion and safety issues. The Department of Education should work with Council to consider a broader parking management strategy in the roads surrounding the school site to ensure students who choose to drive have somewhere appropriate to park without causing undue congestion, impacts on adjacent residents or safety issues.

Appendices

Appendix A – Aurecon TIA

SA Schools PPP Project

Southern School Traffic Impact Assessment

Department fo Treasury and Finance

Reference: 504550

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aurecon

Bringing ideas to life

Document control record

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Glossary of terms

Acronym or Term	Meaning
AWT	Average Weekday Traffic
ABS	Australian Bureau of Statistics
AADT	Annual Average Daily Traffic
CBD	Central Business District
DoS (Degree of Saturation)	The ratio of arrival (demand) flow rate to capacity during a given traffic flow period
DTF	South Australian Department of Treasury and Finance
DPTI	Government of South Australia Department of Planning, Transport and Infrastructure
HV	Heavy Vehicle
LoS (Level of Service)	An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network, 'A' meaning good performance, 'F' meaning poor performance
LV	Light Vehicle
TV	Total Vehicle
SIDRA	Industry-wide traffic modelling software – 'Signalised and Unsignalised Intersection Design and Research Aid'
SA	South Australia
SVCC	Southern Vales Christian College
TIA	Traffic Impact Assessment

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Executive Summary

This Traffic Impact Assessment (TIA) has been prepared for the South Australian Department of Treasury and Finance, for the South Australian Schools Public Private Partnership (PPP) Project and the proposed new Southern School located in the suburb of Aldinga Beach.

The school, once open and operating at full capacity in 2026, will comprise of 1,675 students and 211 teaching/supporting staff totalling 1,886 people. The breakdown of is shown in the Table below.

Students	Teaching/Supporting Staff
1500 R- 12 Students	130 teaching staff
100 R-12 students with disability	81 support staff
75 children's centre	
1675 total students	**211 total staff**

A population growth rate of 2% is forecasted according to the City of Onkaparinga community profile. A background traffic growth rate of 2% compounding per annum has been adopted from 2018 onwards to assess traffic performance at 2026 (eight years of growth) for the key intersections.

Recent DPTI research demonstrates the typical mode split of arrivals at a school. From this, the following mode splits, and hence the number of car trips, have been assumed for the Southern School:

Mode	Mode %	Person Trips
Walk	18%	302
Cycling	7%	117
Public Transport	8%	134
Car (Students)	67%	1,122
Total Students	**100%**	**1,675**

It is assumed that the 1,122 trips will have on average two students per car. In addition, it is expected that all 211 staff will drive, thereby generating 772 car trips. From this, and considering future growth patterns in the Aldinga Beach area, the following car traffic assignment has been assumed during the AM peak:

Assignment	Direction	Additional Traffic During AM Peak
40%	Travelling eastbound on Quinliven Road	309
20%	Travelling eastbound on Aldinga Beach Road	155
20%	Travelling westbound on Aldinga Beach Road (For students coming from east side of Main South Road)	155
10%	Travelling northbound on How Road (for students living in southern suburbs such as Sellicks Beach)	77
10%	Travelling westbound on Quinliven Road (For students coming from east side of Main South Road)	77

The reverse is assumed to occur during the PM peak.

It is important to note that at the time of writing, no traffic count or Bluetooth data was available for the subject intersections. Therefore, traffic numbers (including turn volumes) have been based on broad assumptions from the mid-block count data which were made available.

It is recommended that, post-February 2019 (i.e. following the return to school), manual traffic counts are undertaken at the intersections. Should there be any substantial difference to the assumption in this report the impacts should be re-evaluated.

From the traffic distributions, project traffic has been superimposed on background traffic numbers and assigned to a number of adjacent affected intersections, with and without the project in 2026.

The introduction of the new school in Aldinga Beach will have a minor impact on the surrounding road network. The findings of the SIDRA analysis are summarised in the following Table and Figure.

Item Number	Location	Peak	Base Year (2018) LoS*	2026 Year of Full Occupation LoS		Recommended Upgrades prior to January 2022
				Without Project	With Project	
1	Aldinga Beach Road/ How Road	AM	C	F	F	Install a single lane roundabout. This is in line with recommendations from the Aldinga Urban Land Development Plan Amendment.
		PM	C	F	F	
2	Quinliven Road/ How Road	AM	B	C	F	Install a single lane roundabout.
		PM	B	B	F	
3	Quinliven Road/ Port Road	AM	A	A	B	No upgrade required.
		PM	A	B	B	
4	Port Road/ Old Coach Road	AM	A	A	A	No upgrade required.
		PM	A	A	A	
5	Quinliven Road/ School Access	AM				Channelised intersection to provide a right turn lane on Quinliven Road for eastbound traffic and a left turn lane for westbound traffic entering the school (level of service C). Or install a roundabout which will provide a level of service A.
		PM				
8	▪ Installation of bus stops near the frontage of the site on Quinliven Road to cater for future bus routes serving the area. ▪ Construction of a pedestrian crossing across Quinliven Road to provide provide a safe pedestrian crossing point including catering for primary school children. ▪ Provide a vehicle access point to the school with parking suitable to meet the expected demand. A suitable drop off and pick area should also be included on-site. ▪ Addition of bike racks within the school grounds to provide storage for bikes.					

*Level of Service (LoS) is an index of the operational performance of traffic on a given road/ intersection. This provides a quantitative measure that represent quality of service, measured on an A to F scale, with LoS A representing the best operating conditions from the traveller's perspective and LoS F the worst.

Port Rd
Quinliven Rd
Aldinga Arts Eco Village
Aldinga Catholic Community Hall
Aldinga Football Club
Southern Vales Dressage Club
Aldinga Uniting Church
St Ann's Anglican Church
Aldinga Day & Night Surgery
Aldinga Central Pizza & Pasta
Home Grain Bakery
OTR
Main S Rd
How Rd
Aldinga Rd
Aldinga Beach Rd
Aldinga Beach Motor Homes & Caravans
M D Auto Care
Aldinga Recycle Centre
Aldinga Landscape Supplies
Flinders Mitre 10
AMAC Aldinga Mowers & Cycles
Cana Cottages
Southern Vales Christian College
Citizens
Ducks in a Row Winemakers
Google
1
2
3
4
5
LEGEND
8 Requiring Upgrade
4 Upgrade not required
New school road
Future rail corridor

1 Introduction

1.1 Project Background

Aurecon has been commissioned by the South Australian Department of Treasury and Finance (DTF) to prepare a Traffic Impact Assessment (TIA) for a new B-12 educational facility located in the southern suburb of Aldinga Beach, South Australia (the Southern School).

The school is proposed to open in 2022 and estimated to reach full capacity in 2026. The school will comprise of 1,675 students and 211 teaching/ support staff totalling 1,886 people. The breakdown of is shown in the Table below.

Table 1 School Population Breakdown

Students	Teaching/ Supporting Staff
1500 R- 12 Students	130 teaching staff
100 R-12 students with disability	81 support staff
75 children's centre	
1675 total students	**211 total staff**

This assessment incorporates the considerations for road widening, access, parking, traffic generation, modelling and road treatment matters to inform infrastructure requirements for the Southern School development. The report follows the Government of South Australia Department of Planning, Transport and Infrastructure (DPTI) guidelines for the preparation of a TIA.

This report presents the findings of the TIA which include:

- A summary of the proposed school development with respect to the expected changes to traffic compared to existing conditions.
- The methodology used to identify and assess any impacts from the proposed school development on the external road networks across different modes of transport including private vehicles, bicycles, walking and public transport.
- A review of the impacts and findings.
- Recommendations and mitigation requirements for the associated infrastructure.

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2 Existing Transport Context

2.1 Site Location

The following map (Figure 1) illustrates the Project site within the context of the surrounding suburban road and higher order arterial road networks. Main South Road to the east of the site forms the key arterial link between the school and surrounding suburbs to the north and south such as Maslins Beach and Sellicks Beach respectively.

The school catchment is expected to be mainly be concentrated in the areas to the west of the site and discussed in section 4.1.

East-west distributors linking the school to its western catchment include Port/ Quinliven Road and Aldinga Beach Road. The key north-south collector roads to the west of the site are How Road/ Bowering Hill Road.

Old Coach Road and Aldinga Road form key distributor routes to the east.

Figure 1 Project Site Context (source: SA Government)

Figure 2 illustrates the proposed site in Aldinga Beach. The Project site is located on land under the remit of Renewal SA. The Project site is bounded by Port Road/ Quinliven Road to the north, Aldinga Sports Complex to the east, and a future rail corridor (hatched area immediately to the west of the Project site) and Aldinga Galilee Catholic School to the west of the site.

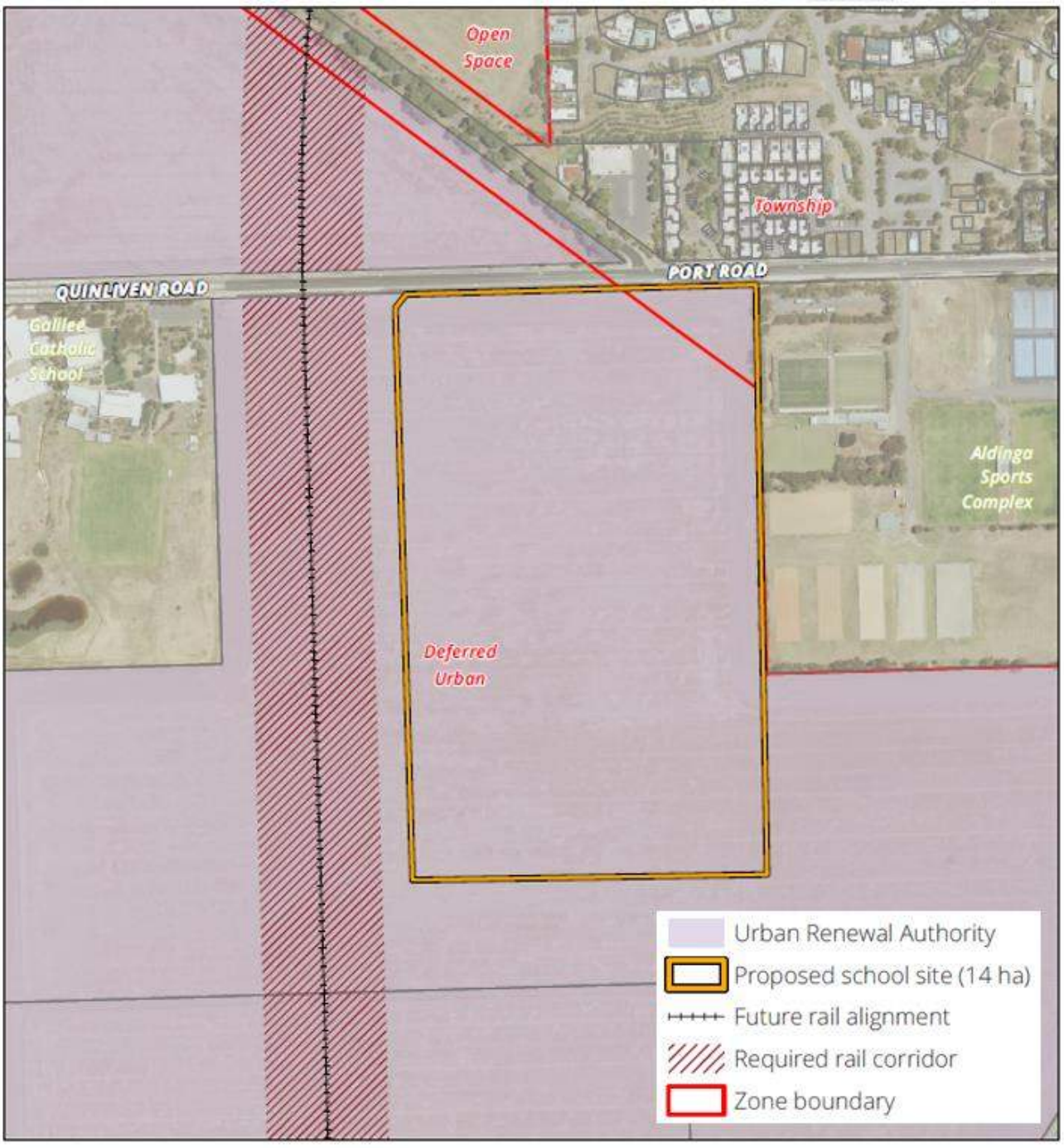

Figure 2 Proposed School Site Area (source: Renewal SA)

2.2 Supporting Road Network

A summary of traffic data received and used to support the traffic analysis in this report is shown below. Data included AM/PM peak turn counts, 11-hours total flows and AADT in case.

- Intersection of Main South Road/ Little Road (10/02/2016)
- Intersection of Main South Road/ Port Road (12/04/2016)
- Intersection of Main South Road/ Aldinga Beach Road (12/04/2016)
- Intersection of Main South Road/ Aldinga Road (12/04/2016)
- Intersection of Main South Road/ Malpas Road (09/08/2017)
- Intersection of Main South Road/ Old Coach Road/ Stonehouse Lane (12/04/2016)

Details of the supporting road network are summarised in Table 2, which should be read in conjunction with Figure 3.

Table 2 Supporting Road Network – Southern School

Road	Classification	Configuration Mid-Block	Posted Speed	AADT*
Main South Road between Malpas Road and Aldinga Beach Road	Arterial	Two-lane undivided, channelised intersections, no parking, narrow shoulders	70-90 km/hr	17,000
Port Road between Main South Road and Port Road	Distributor	Two-lane divided, no shoulders, partial parking	60km/hr	1,042
Quinliven Road between Port Road and How Road	Distributor	Two-lane divided, no shoulders, partial parking	60km/hr	1,042*
Aldinga Beach Road between Main South Road and How Road	Distributor	Two-lane undivided, partial parking	60km/hr	11,000
Old Coach Road between Port Road and Bourke Road	Distributor	Two-lane undivided	70km/hr	8,115
Aldinga Road between Main South Road and Ryan Road	Distributor	Two-lane undivided, wide shoulders, no parking	80km/hr	5,000
How Road between Quinliven Road and Aldinga Beach Road	Collector	Two-lane undivided, partial kerb and channel	60km/hr	3,000*
Bowering Hill Road between Quinliven Road and Bourke Road	Collector	Two-lane undivided, no shoulders, partial parking	50km/hr	2,522

source: DPTI Traffic Maps and Traffic Counts from Local Government and/or nominal estimates for AADT values
* Estimated volumes, counts to be completed in February 2019 to verify volumes.

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Figure 3 Road Hierarchy and AADT Estimates Map (Source DPTI)

Class 6: main function is to form the principal avenue of communication for massive traffic movements.

Class 7: main function is to supplement the Class 6 roads in providing for traffic movements or which distribute traffic to local street systems.

Class 8: main function is to provide access to abutting property

Class 9: main function is to provide almost exclusively for one activity or function and which cannot be assigned to Classes 6, 7 and 8.

2.2.1 Quinliven Road

Quinliven Road is a two-way road, aligned in an east west direction, under the care and control of The City of Onkaparinga. It is configured with an 9m wide carriageway and contains a kerb and gutter on both sides and a painted median with provision for sheltered turn lanes. There is a shared used path on the southern kerb line adjacent to the school site. It is estimated that Quinliven Road carries between 1000-2000 vehicles per day.

Figure 4 Quinliven Road adjacent to the school site

2.2.2 How Road

How Road is a two-way road aligned in a north-south direction, under the care and control of The City of Onkaparinga. It is configured with an 8m wide carriageway within an approximate 20m wide road reserve. How Road between Aldinga Beach Road and Quinliven Road contains kerb and gutter with kerbside parking permitted along both sides of the carriageway. How Road is subject to the default built up urban area speed limit of 50km/h and carries approximately 2,000-3,000 vehicles per day.

Figure 5 How Road between Quinliven Road and Aldinga Beach Road

2.2.3 Main South Road

Main South Road is under the care and control of DPTI. The road consists of a 7.6m wide two-way carriageway set within an approximately 23.5m wide road reserve. The road does not contain any kerb and gutter and has sealed shoulders on both sides. The speed limit on Main South Road varies. On the northbound approach to Aldinga Beach Road the speed limit changes from 100km/h to 80km/h. Conversely, the speed limit changes from 80km/h to 100km/h when travelling in a southbound direction. Main South Road carries approximately 17,600 vehicles per day. In 2017/ 2018, the intersection of Main South Road and Port Road was upgraded to a roundabout to address a number of crash issues. The image below was taking during one of our site visits.

Figure 6 New roundabout at Main South Road and Port Road

2.2.4 Aldinga Beach Road

Aldinga Beach Road is under the care and control of Council and is identified as a Distributor Road in the Development Plan. It is a two-way road aligned in an east-west direction. To the east of How Road, Aldinga Beach Road consists of a 7m wide carriageway with no kerb and gutter and unsealed shoulders. To the west of How Road, the road contains kerb and gutter and consists of a single lane in each direction separated by an approximately 3m wide painted median. Aldinga Beach Road is set within an approximately 20m wide road reserve. Aldinga Beach Road is subject to the default built up urban area speed limit of 50km/h near the subject site. Approximately 120m east of How Road the speed limit increases to 60km/h. Aldinga Beach Road carries in the order of 11,000 vehicles per day.

2.3 Public Transport

The Aldinga Beach area is currently services by a number of Adelaide Metro bus routes.

Currently, the 750 route operates across the northern frontage of the site via Quinliven/Port Roads between Sellicks Beach and the Adelaide CBD. The 751/ 755/ 756 services operate from the east (Willunga and Seaford Rise) into Aldinga via Pridham Boulevard/Quinliven Road and vice versa. Current service frequencies are as follows:

Table 3 Bus service frequency in Aldinga Beach area

Route Number	Service Frequency
750	hourly from 8.06AM to 8.57PM
750a	hourly between 9.27PM and 11.27PM;
750x	express service running every 10 minutes approximately in the AM and PM peaks;
751	hourly between 6.24PM and 9.41PM
755	every 15 minutes approximately during the AM and PM peaks
756	every 15 minutes approximately during the AM and PM peaks

Existing infrastructure within an 800m walk of the Project site is as follows:

- Quinliven Road – indented bus stops for the 750 route outside the Galilee Catholic School near the How Rd intersection;
- Pridham Blvd – kerbside stops for the 750, 755 and 756 near Cockle Ave.

The following figure (Figure 7) illustrates the public transport network in the vicinity of the site.

Figure 7 Aldinga Public Transport (Bus) Network (source: Adelaide Metro 14/12/2018)

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2.4 Pedestrian Infrastructure

The walking and cycling network in the immediate vicinity of the site is shown in the map below.

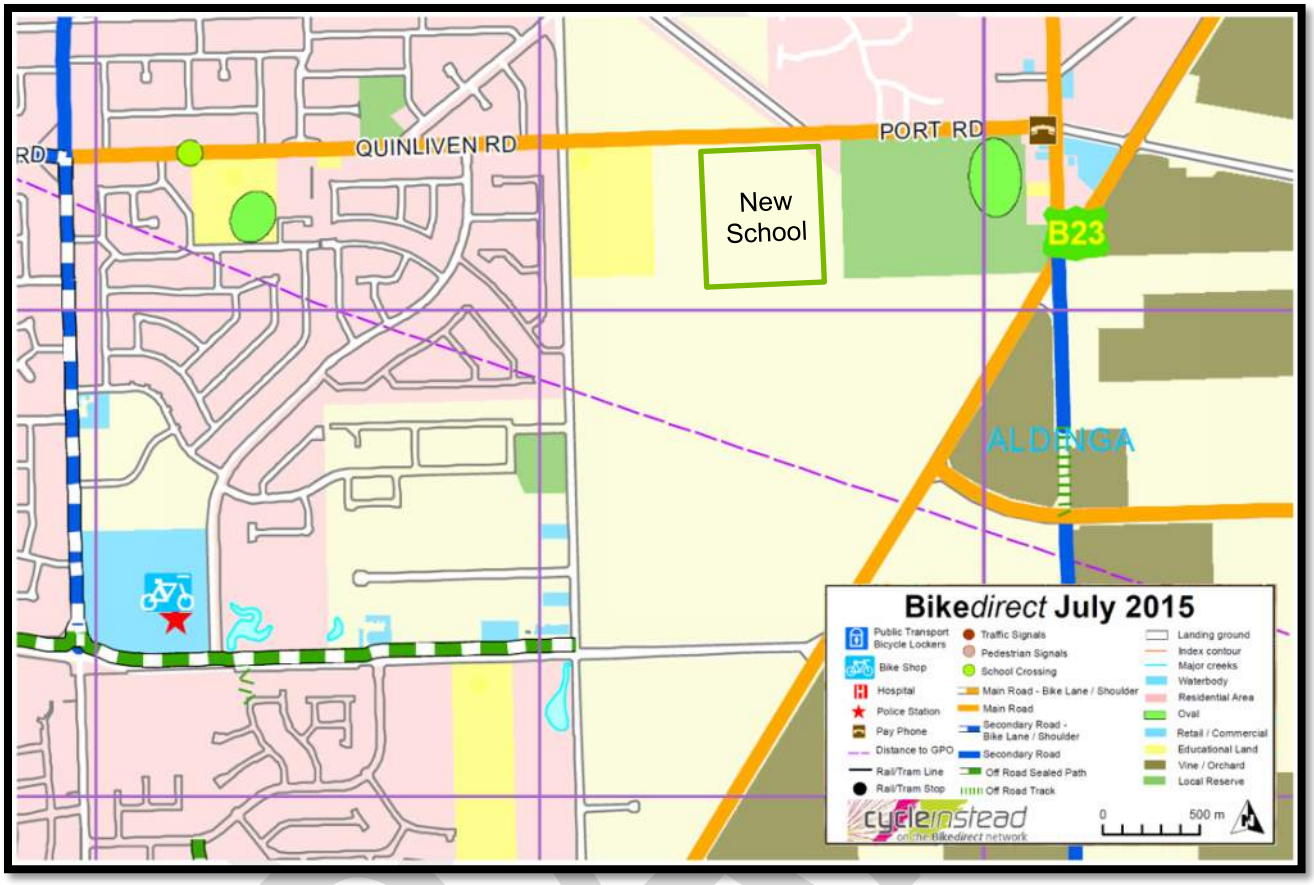

Figure 8 Aldinga Active Transport Network (source: SA Government 14/12/2018)

A summary of key infrastructure provisions is listed below:

- Quinliven Road on the southern side – high quality separated cycleway between Old Coach and Rowley Roads;
- Access from Pridham Blvd through to How Rd via a preserved right of way;
- A mid-block school crossing on Quinliven Rd on the eastern side of the How Rd intersection;
- An uncontrolled pedestrian crossing of Quinliven Rd at the southern end of Port Rd;
- A mid-block school crossing on How Rd approximately 50m south of the Quinliven Rd intersection.

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2.5 Road Safety

A review of the previous four years' crash history[1] of the surrounding road network was undertaken to determine if the Southern School Project would affect the existing crash risk. Figure 9 indicates the crash history in terms of concentrations of crashes. It can be seen that crashes have mainly occurred at the key intersections around the site (as expected). The main cause for concern is the mid-block crashes on Quinliven Road near the existing school where school children will be walking. The cause of these crashes should be investigated further to understand any underlying road safety risks in this area associated with pedestrians.

Figure 9 10-Year Crash History (source: SA Government 18/12/2018)

[1] Road crashes recorded from 2013 to end of 2017.

2.6 Surrounding Projects

2.6.1 Aldinga Structure Plan

Renewal SA has engaged a consultant to undertake a structure plan for a large parcel of land adjacent to the new School (shown in Figure 10). The engagement will include a structure plan and draft development plan amendment.

The structure plan is proposed to rezone the land from Deferred Urban Zone to Residential Zone as per "The 30 Year Plan for Greater Adelaide". The redevelopment will be planned around the proposed rail extension running through the site as seen in Figure 10. There is also the potential for light industry in the southwest corner of the site, to the west of the proposed rail corridor. The total residential area is estimated to be approximately 55ha, and with an estimate of 15 dwellings per hectare, results in approximately 800 dwellings immediately south of the school site.

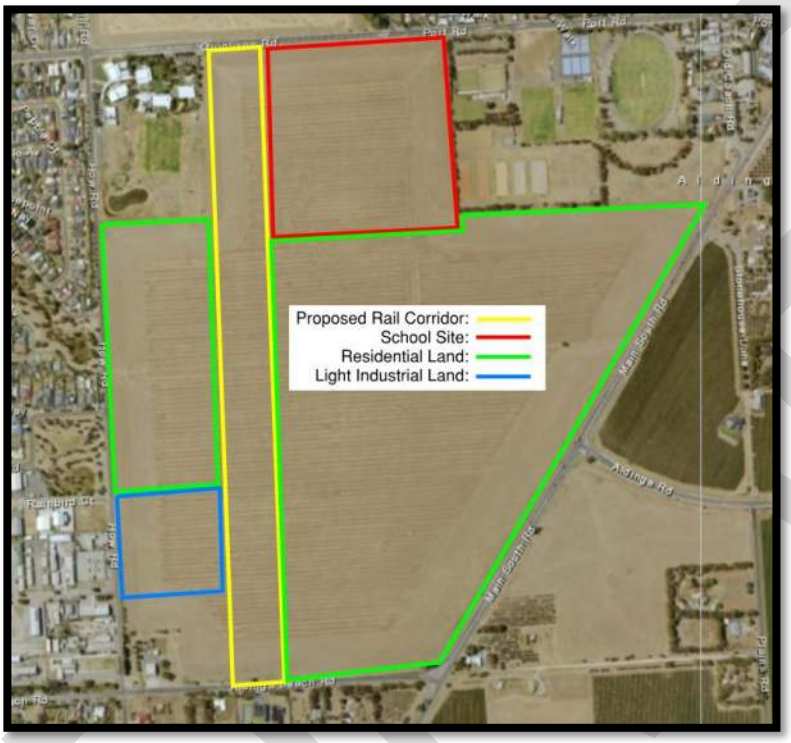

Figure 10 Aldinga Structure Plan Subject Area (source: SA Government 14/1/19)

2.6.2 Aldinga Urban Lands Development Plan Amendment

On 13 December 2018, the Minister for Planning approved the Aldinga Urban Lands Development Plan Amendment, which has rezoned the land at How Road/ Hart Road and 240 Aldinga Beach Road, Aldinga Beach from the Deferred Urban Zone to Residential Zone (shown in the following Figure 11).

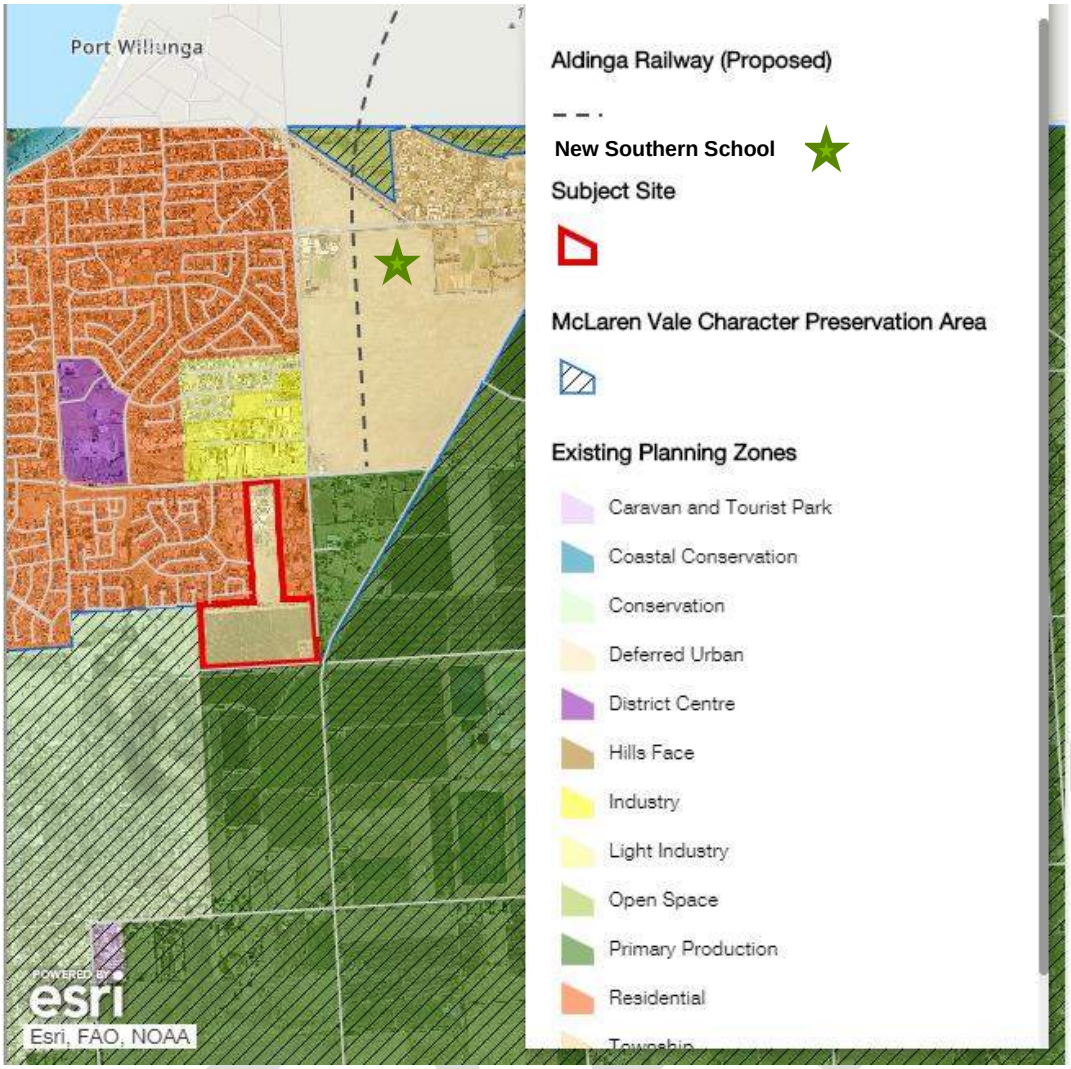

Figure 11 Map of Aldinga Urban Lands DPA (source: City of Onkaparinga)

The 2 land parcels are approximately 24ha in size and proposed to be developed into approximately 300 residential allotments of 300 – 600m^2 in size.

A traffic impact assessment undertaken by GTA in in 2018 recommended the intersection of How Road and Aldinga Beach Road be upgraded as the additional traffic generated by the development would trigger the need for an upgrade. In the short term to facilitate this land development, Aldinga Beach Road/ How Road intersection requires upgrading to the equivalent of channelised right turn lanes on Aldinga Beach Road, or long term upgrading to the provision of a roundabout to support other developments proposed in the area.

2.6.3 Main South Road Duplication

DPTI are currently seeking submissions from consultants to undertake a planning study for the Duplication of Main South Road between Seaford and Sellicks Beach. This upgrade will include the segment of Main South Road adjacent to the Aldinga Structure Plan site and therefore will have an impact on the traffic flows in the area. The segment of Main South Road that is adjacent to the site is part of Stage 1 of DPTI's duplication plan, which is expected to commence construction in late 2019 and be completed by June 2023. DPTI have considered the new school with allowance for 1,675 students and the impact it will have on traffic flow, but more precise figures may need to be provided in terms of the additional traffic volumes added.

3 Proposal

3.1 School Access

It is proposed that the school will have access via Quinliven Road and a new collector road to the west. This is illustrated in Figure 12. Red circles indicate existing intersections and blue circles indicate potential new points of access including the potential new collector road link (the route for this will be confirmed as part of the structure plan). These access points are analysed further in the following sections.

Figure 12 Additional School Access (source: Renewal SA)

4 Trip Generation and Expected Mode Share

4.1 School Catchment Area

The department of Education has provided some preliminary advice with regard to the proposed school catchment for this new Southern School. Further assessment by the Department of Education is required to confirm the school zoning however the following suburbs listed below are expected to be catered for by the new southern school. Refer also Figure 13.

- Aldinga Beach
- Port Willunga
- Aldinga
- Sellicks Beach
- Whites Valley
- Sellicks Hill

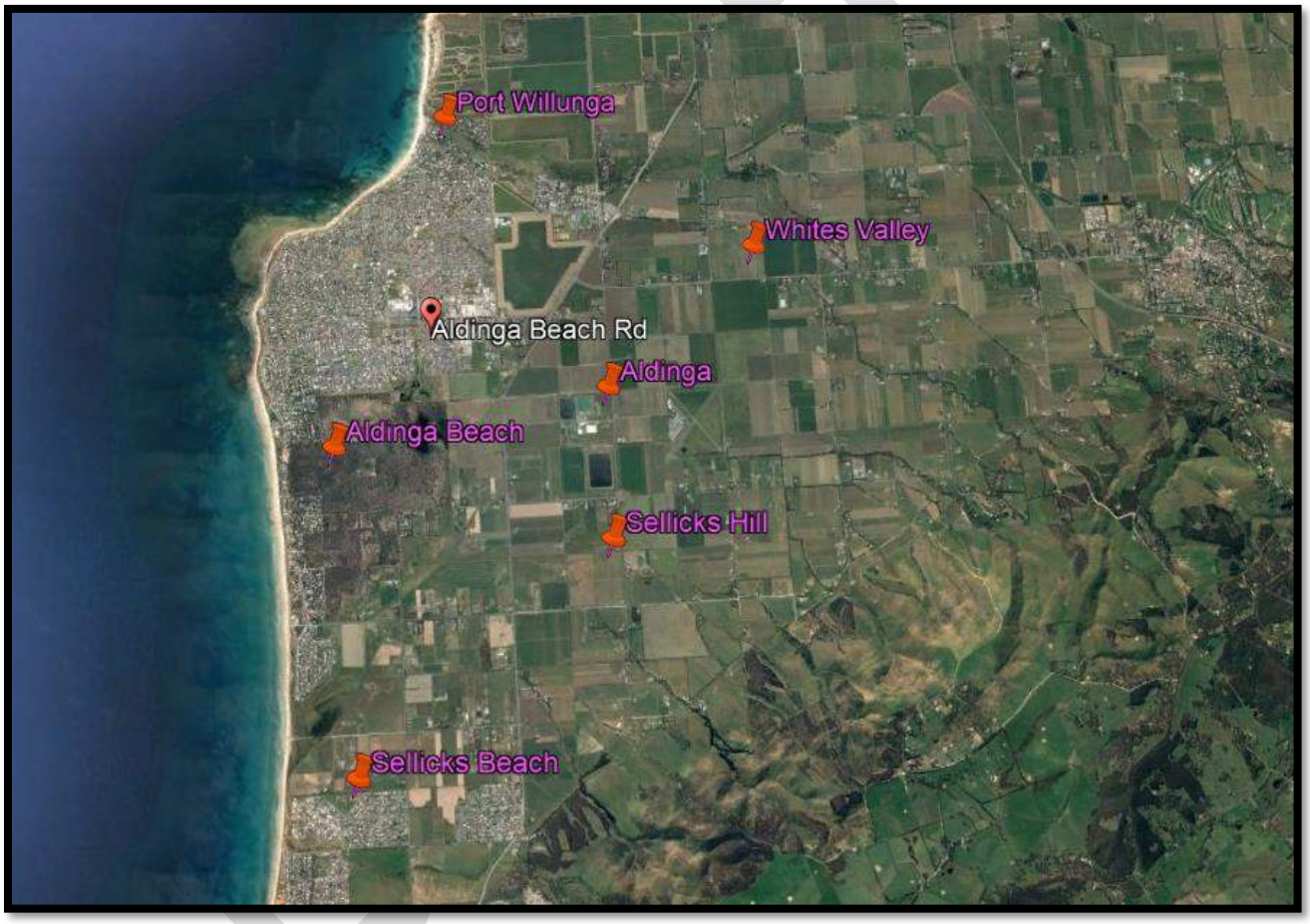

Figure 13 Suburbs within the proposed catchment for the Southern School (source: Google Earth)

4.2 Mode Share

In 2017, Way2Go unit in DPTI undertook a study to understand the travel choices, attitudes and preferences of students, teachers and families for travel to primary schools. The data collected included students' modes of travel to and from school across more than 20 primary schools in South Australia. The data showed that on average the majority of students' trip to and from school are by car (67%), followed by walking (18%), public transport (8%) and cycling (7%). This mode split is represented in the graph below.

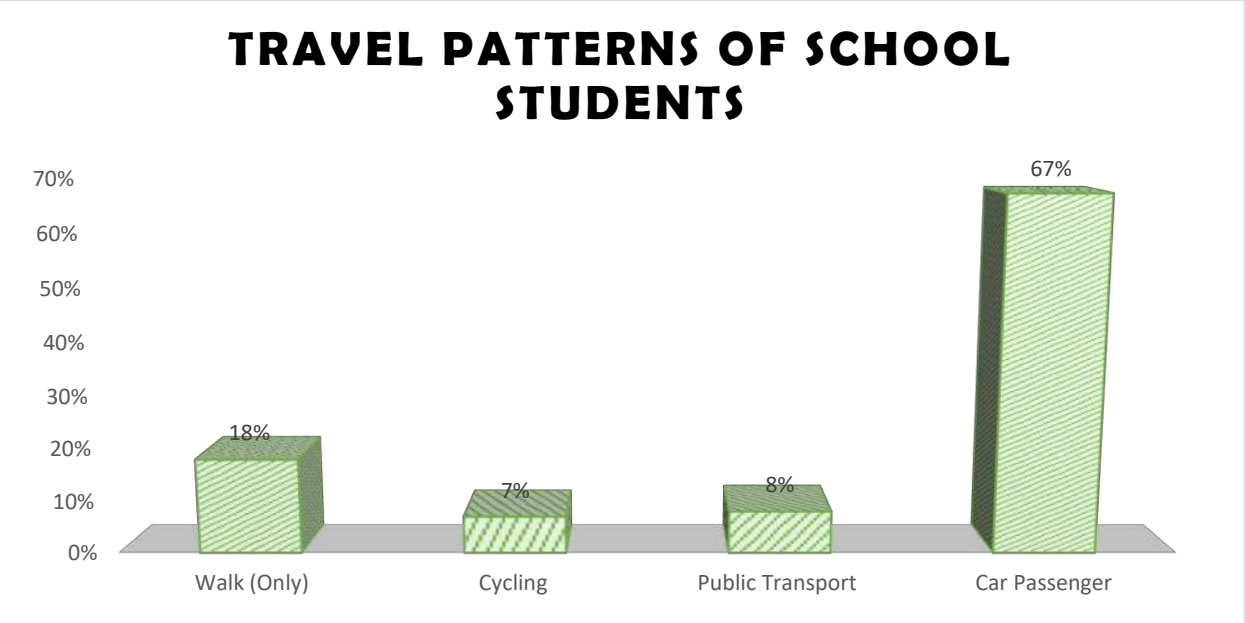

Figure 14 Students' Mode of Travel to/from school in SA

The survey focused on primary school students and understanding parental barriers that may impact on student's ability to choose a more active travel mode.

It is also understood that as students' progress into high school age their reliance on parents to drop them off and pick them up from school will reduce. Therefore, the number of high school students travelling via an active mode of travel (walk, cycle or catch public transport) will increase and travel by private car will reduce.

Due to the lack of facilities for cycling and walking and the limited bus service in the area, the findings in Figure 14 on average may still be appropriate for both primary school students and high school students; noting that the Aldinga Framework Plan is aiming at facilitating changes to the cycling, walking and bus network.

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4.3 School Traffic Generation

When the proposed Southern School reaches its full capacity in 2026, the school will comprise 1,675 places for students from Birth to Year 12, with approximately 211 teaching and support staff. Using the findings of Table 4 and applying it to the estimated 1,886 people who will attend and teach at the school, detailed school traffic generation is shown in the Table below.

Table 4 Southern School Mode share

Mode	Mode %	Person Trips
Walk	18%	302
Cycling	7%	117
Public Transport	8%	134
Car (Students)	67%	1,122
Car (Staff)	-	211
Total	**100%**	**1,886**

It is assumed that all 211 staff will to drive to the school and of the 1,122 student car trips, it is assumed there will be two students per car (i.e. 561 vehicle trips). No further allowance has been made to reduce the number of trips.

Therefore, a total of 772 trips is expected to be generated by private vehicle each morning and afternoon during the school peak periods.

The number of car trips generated by the Southern School staff is likely to be influenced by the number of on- site carparking supplied. Staff members are also likely to arrive before students start arriving and leave after students have departed. Thus, these trips are unlikely to add to the school peak hour trips.

As the Aldinga Beach areas develop, it is expected that active transport facilities will be conveniently accessible to the residents, including pedestrian and cycle routes. Therefore, it is anticipated that in the future more students will walk or ride to schools and the total number of children being driven to school will decrease.

4.4 Impacted intersections

Due to the large catch area for the school coming from all directions, it is difficult to predict the number of students coming from each suburb and the roads they will use to travel to the school. This TIA therefore focuses on the impacted intersections nearest to the school where the majority of traffic is expected to travel through.

- Aldinga Beach Road/ How Road Intersection
- Bowering Hill Road/ Quinliven Road Intersection
- Port Road/ Quinliven Road Intersection
- Old Coach Road/ Port Road Intersection

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4.5 Trip Assignment

Assumed trip assignment patterns for school traffic are indicated in Table 6 below.

Table 5 Southern School trip assignment

Trip Generation Assumption-AM	Direction/Leg	Additional Traffic During AM Peak
40%	Travelling eastbound on Quinliven Road	308 *40% of the total additional traffic 772
20%	Travelling eastbound on Aldinga Beach Road	155 *20% of the total additional traffic 772
20%	Travelling westbound on Aldinga Beach Road (For students coming from east side of Main South Road)	155 *20% of the total additional traffic 772
10%	Travelling northbound on How Road (for students living in southern suburbs such as Sellicks Beach)	77 *10% of the total additional traffic 772
10%	Travelling westbound on Quinliven Road (For students coming from east side of Main South Road)	77 *10% of the total additional traffic 772

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5 Traffic Impact Assessment

The purpose of the traffic impact assessment is to identify and assess impacts the proposed development may have on the surrounding road network.

It is important to note that at the time of writing, no traffic count or Bluetooth data was available for the subject intersections. Therefore, traffic numbers (including turn volumes) have been based on broad assumptions from the mid-block count data which was made available.

It is recommended that, post-February 2019 (i.e. following the return to school), manual traffic counts are undertaken at the intersections and, should there be any substantial differences, the impacts re-evaluated.

Notwithstanding, a review and summary of all available traffic data for the intersections (where available) was undertaken, to support SIDRA analysis. Performance has been assessed in SIDRA for the AM peak (Commuter Peak 0800-0900) and PM school peak (1500-1600) for the year of opening of full operations (2026). For this project, the following has been assessed:

- Impacts on the Aldinga Beach Road/ How Road Intersection
- Impacts on the How Road/ Quinliven Road Intersection
- Impacts on the Port Road/ Quinliven Road Intersection
- Impacts on the Old Coach Road/ Port Road Intersection

The Traffic Impact Assessment has been undertaken in accordance with the expected vehicle movements during the morning and evening peak periods after the school opening. All SIDRA calculations are appended to this report in Appendix A.

It is worth noting that, at the time of writing, the traffic counts only available at the following intersections. Therefore, Aurecon has made several educated assumptions to estimate the traffic flows at the locations without traffic data.

- Main South Road/ Little Road Intersection (Date of Count: 10/02/2016)
- Main South Road/ Port Road Intersection (Date of Count: 12/04/2016)
- Main South Road/ Aldinga Beach Road Intersection (Date of Count: 12/04/2016)
- Main South Road/ Aldinga Road Intersection (Date of Count: 12/04/2016)
- Main South Road/ Malpas Road Intersection (Date of Count: 09/08/2017)
- Main South Road/ Old Coach Road/ Stonehouse Lane Intersection (Date of Count: 12/04/2016)

5.1 Impacts on Road Operations

5.1.1 SIDRA Intersection Analysis

SIDRA Intersection is a key piece of industry software used to analyse the performance of signalised and unsignalized intersections under different traffic loadings.

Key SIDRA parameters for measuring intersection performance, reported here, include the following:

- **Level of Service (LoS)** - An index of the operational performance of traffic on a given roadway, traffic lane, approach, intersection, route or network. This provides a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A to F scale, with LoS A representing the best operating conditions from the traveller's perspective and LoS F the worst.
- **Degree of Saturation (DoS)** - The ratio of arrival (demand) flow rate to capacity during a given flow period. Also known as the volume to capacity ratio (v/c ratio). Up to 0.6 is excellent, 0.8 to 0.9 is fair, and above 1.0 represents very poor, congested conditions. The target DoS for unsignalized intersections is no more than 0.8. The maximum permissible DoS for priority intersections is 0.8 and 0.85 for roundabouts.

- **Average Delay** - The delay time, in seconds, which can be expected over all vehicles making a particular movement in the peak hour. More than 80 seconds of delay on a movement equates to a Level of Service of F and usually indicates severely congested conditions, while 20-50 seconds can be within acceptable limits.
- **95th Percentile Queue** - The maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour. The acceptability of this length varies according to site conditions but as a minimum it is important to at least achieve sight distance to the back of queue to avoid a safety risk, and to minimise queuing and therefore reduce congestion.

SIDRA has been used to assess intersection performance with and without the Southern School project, for each of the identified intersection, for the AM and PM peak hours. The assessments are summarised below.

Table 6 Year of assessment

Year of assessment	Scenario	
	Without Project	With Project
2018 (Current operation)	AM Peak	--
	PM Peak	--
2026 (Without the Project)) **	AM Peak	AM Peak
	PM Peak	PM Peak
2026 (With the Project) *	AM Peak	AM Peak
	PM Peak	PM Peak

- * It is assumed that the Southern school will reach its full capacity in 2026
- ** A compounding growth rate of 2% per annum has been used to extrapolate 2026 traffic volumes from 2018 volumes based on ABS growth rate in the area

5.1.2 Aldinga Beach Road/ How Road Intersection

This is an unsignalized priority control intersection and the major road is Aldinga Beach Road which travels east-west direction. Aldinga Beach Road connect to the Main South Road forming a priority control T intersection at east and it connects to the Esplanade to the west. The approximate length of the How Road is 2 km. The Aldinga Beach Road/ How Road intersection is located about 1.6 km to the south of the proposed school. The current layout and the proposed future layout at the intersection illustrated in Figure 15.

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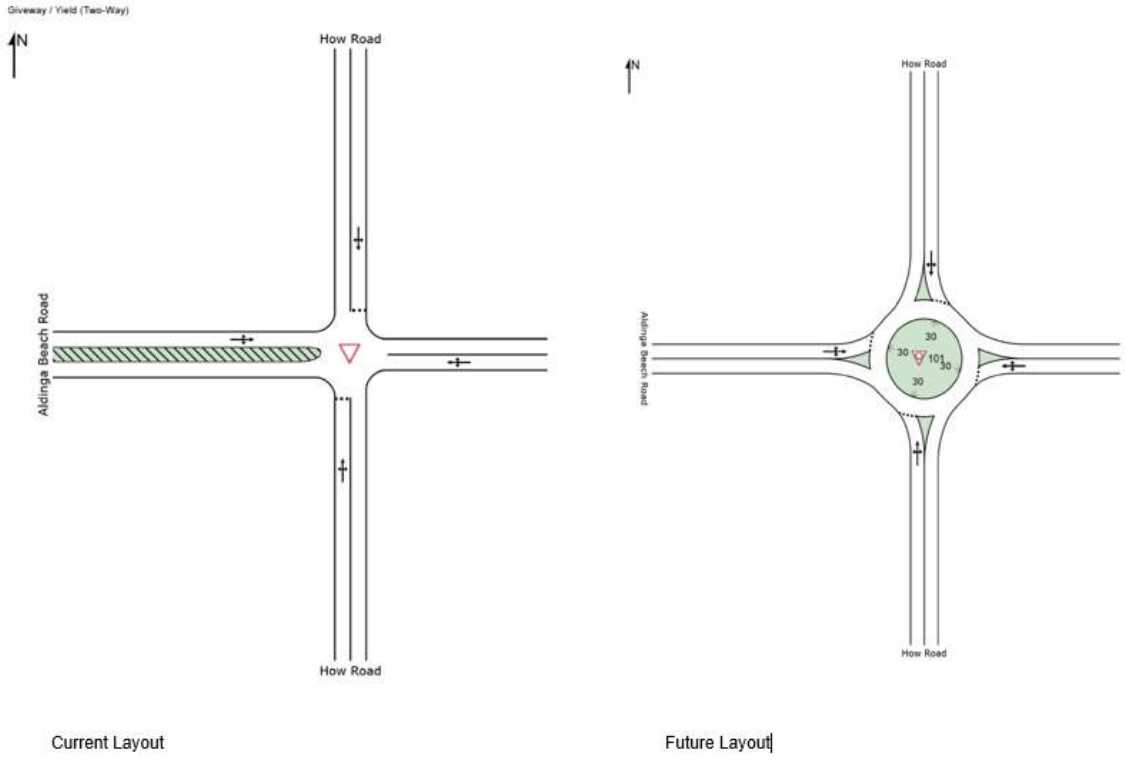

Figure 15 Aldinga Beach Road/How Road Intersection Layouts

Analysis of intersection is summarised in Table 8 below for the base case (2018), Without project (2026) and with project case (2026). Refer to Appendix A for detailed SIDRA analysis results.

Table 7 Aldinga Beach Road/How Road intersection SIDRA Analysis

Aldinga Beach Road/ How Road	Base Case (2018)		Without Project (2026)		With Project (2026)- Roundabout option	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DoS	0.596	0.643	0.983	1.024	0.877	0.895
Highest Average Delay (seconds)	24.8	22.9	85.1	191.3	20.7	26
Queue length (m)	22.2	28.4	87	126.1	131	146.4

The current unsignalised intersection operates below its practical capacity (Degree of Saturation (DoS) of 0.8 for unsignalised intersections). The queue length of all the legs are below 28.4m. The highest degree of saturation is 0.596 and 0.643 in the AM peak and PM peak respectively.

In 2026 scenario the intersection operates beyond its practical capacity with a DoS in the aggregate of 0.983 and 1.024 in the AM and PM peak hence the LoS at the intersection is F. The critical movements in the AM peak are southbound through and right turn movements with average delay of 85 seconds. All the movements at northbound and southbound movements are critical in the PM peak with maximum 95th%ile back of queue 89.6m and 126.1m. This result indicated that the intersection will fail in 2026 even without the school project traffic.

With the school Project in 2026, the intersection will operate well beyond its practical capacity with significant queues and delays. Without significant upgrades, the existing layout at the intersection does not achieve its practical capacity.

As previously discussed in section 2.6.2, a traffic impact assessment undertaken for the Aldinga Urban Lands Development Plan amendment also recommended an upgrade be required to support this development. The long term recommended upgrade was a roundabout.

A single lane roundabout option modelled for the school traffic indicates that the roundabout layout will provide a sufficient level of service of B.

Further investigation is required on this intersection to identify the appropriate future intersection configuration based on the traffic that will be generated by the school, Aldinga Urban Lands Development and the Renewal SA land adjacent to the school.

5.1.3 Quinliven Road/ How Road Intersection

This is an unsignalized priority control intersection and the major road is Quinliven Road which travel east-west direction. The existing intersection comprises of four legs with two lanes with additional auxiliary right turn lane of 25 m-45m is situated on all approaches. Approximately 3m centre median is sited on the Quinliven Road. The proposed school is located about 200m east to this intersection. Quinliven Road provide access to the residential properties from the Main South Road. The current layout at the intersection illustrated in Figure 16.

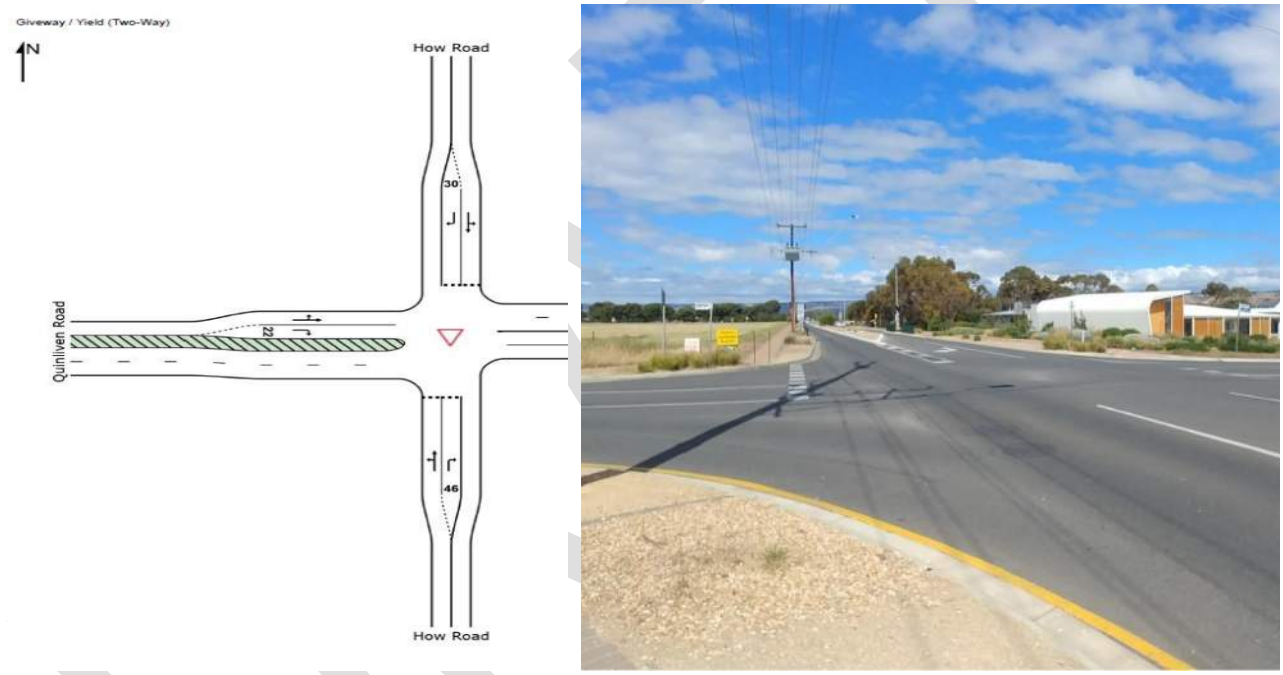

Figure 16 Quinliven Road/How Road Intersection Layout

Table 8 below summarised the performance of the intersection across the varying years with and without the project.

Table 8 Quinliven Road/How Road Intersection SIDRA Analysis

Quinliven Road/ How Road	Base Case (2018)		Without Project (2026)		With Project (2026)- Option 1- Roundabout		With Project (2026)- Option 2-Additional right turn lanes	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DoS	0.187	0.327	0.252	0.436	0.733	0.83	>1	>1
Highest Average Delay (seconds)	13.9	12.7	16.8	15	18.5	15.4	>2mns	>2mns
Queue length (m)	5.9	12.6	8.3	19.6	68.3	103.4	242	603

In 2018, the intersection operates well below its practical capacity of 0.8 and the DoS is less than 0.35 for both AM and PM peak hours for all movements. The highest average delay is 13.9 seconds and 12.7 seconds for the AM and PM peak hour, respectively. The queue length of all the approaches in both peaks is below 13 m or approximately two car lengths. The intersection operates at LoS B in both AM and PM peaks.

In 2026, without the Project the intersection operates very similar to the previous case with max DoS of 0.436 in the PM peak. The LoS of all the legs remain the same as base case except for the right turn movement from How Road onto the Quinliven Road where the LoS has reduced from B to C. Minimal impacts to queues and delays has been noted on all legs.

With the school Project in 2026, the intersection operates beyond to its practical capacity and DoS exceed 2. The critical movements are south approach right turn from How Road onto Quinliven Road in AM peak and north approach right turn from How Road on to Quinliven Road in the PM peak with significant queues and delays during both peaks. It can conclude that this intersection needs to be upgraded to cater for the additional school traffic.

It is recommended that the intersection be upgraded to a single lane roundabout. This layout should also be discussed with council due to other developments occurring in the area.

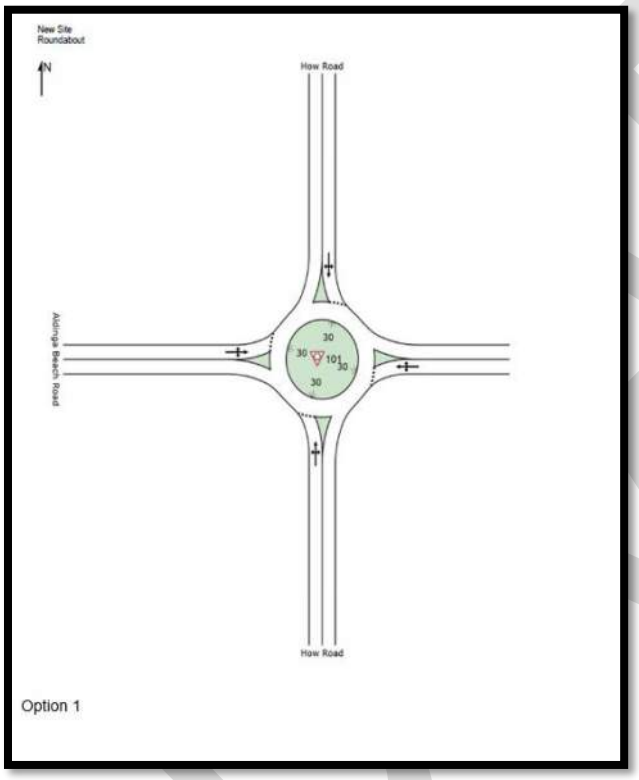

Figure 17 Quinliven Road/How Road Future Layouts Options

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5.1.4 Quinliven Road/ Port Road Intersection.

This is a priority control T intersection located to the north of the proposed school. The major road is Quinliven Road which travels in an east-west direction and the Port Road intersects with the Quinliven Road at a skew. Port Road links the northwest residential community to the Main South Road. An auxiliary right turn lane is situated on the Quinliven Road west approach. The Figure 18 shows the current layout of this intersection.

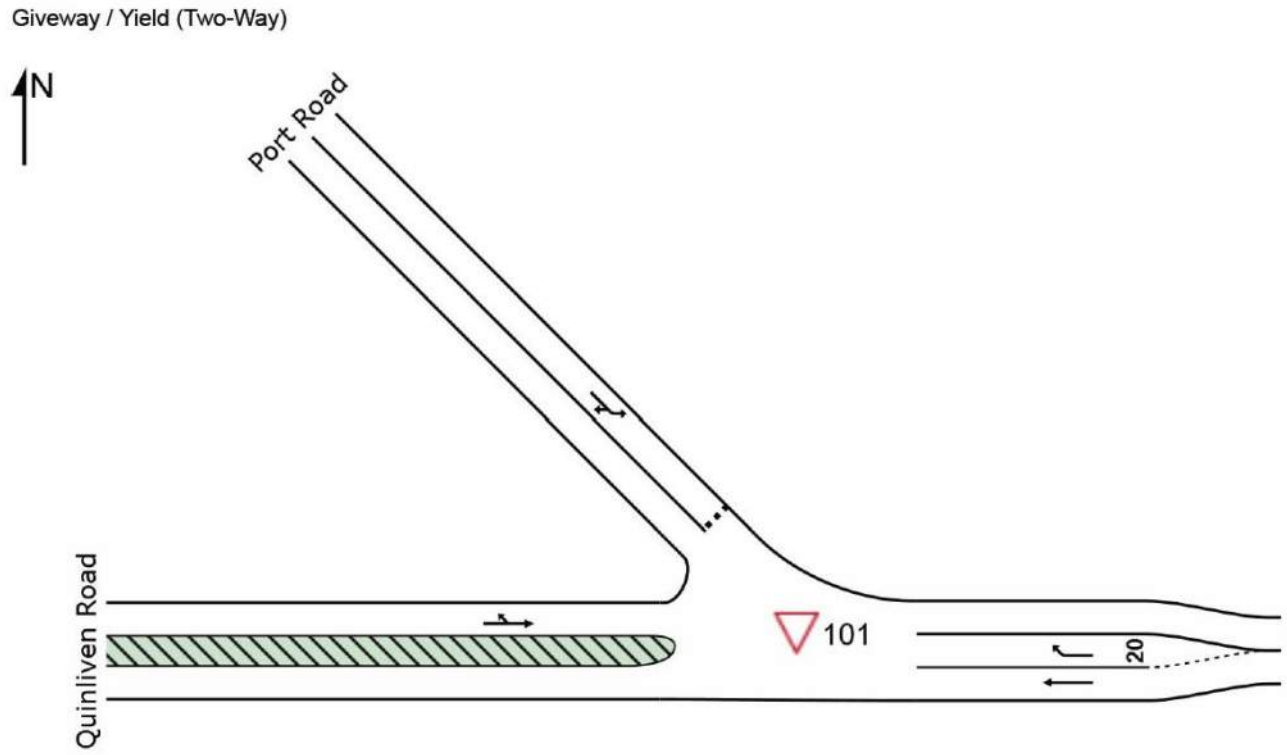

Figure 18 Quinliven Road/Port Road Intersection Layout

Table 9 below summarises the performance of the intersection.

Table 9 Quinliven Road/Port Road Intersection SIDRA Analysis

Quinliven Road/Port Road	Base Case (2018)		Without Project (2026)		With Project (2026)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DoS	0.155	0.153	0.181	0.179	0.181	0.179
Highest Average Delay (seconds)	9.1	9.4	9.9	10.3	10.7	11.1
Queue length (m)	2	1.6	2.5	2	2.7	2.2

The current intersection operates at DoS of 0.153 in the PM peak with negligible queue lengths at all the legs. In 2026, the intersection still operates well below to its practical with the highest DoS of 0.18 in AM and PM peaks.

In 2026, with the Southern School operating at full capacity, the intersection will operate below its practical capacity with a maximum DoS of 0.18 same as the previous without the Project case scenario.

The LoS of all legs remain the same as the previous AM and PM peak, except for the right turn movement from the Port Road onto Quinliven Road where the DoS has decreased from A to B. The highest average delay has increased by less than1 second compared with the previous scenario without the new Southern

school Project. Therefore, the introduction of the additional vehicles as a result of the school at 2026 will be negligible.

5.1.5 Port Road/ Old Coach Road Roundabout

The current layout of the roundabout illustrated in the Figure 19 below.

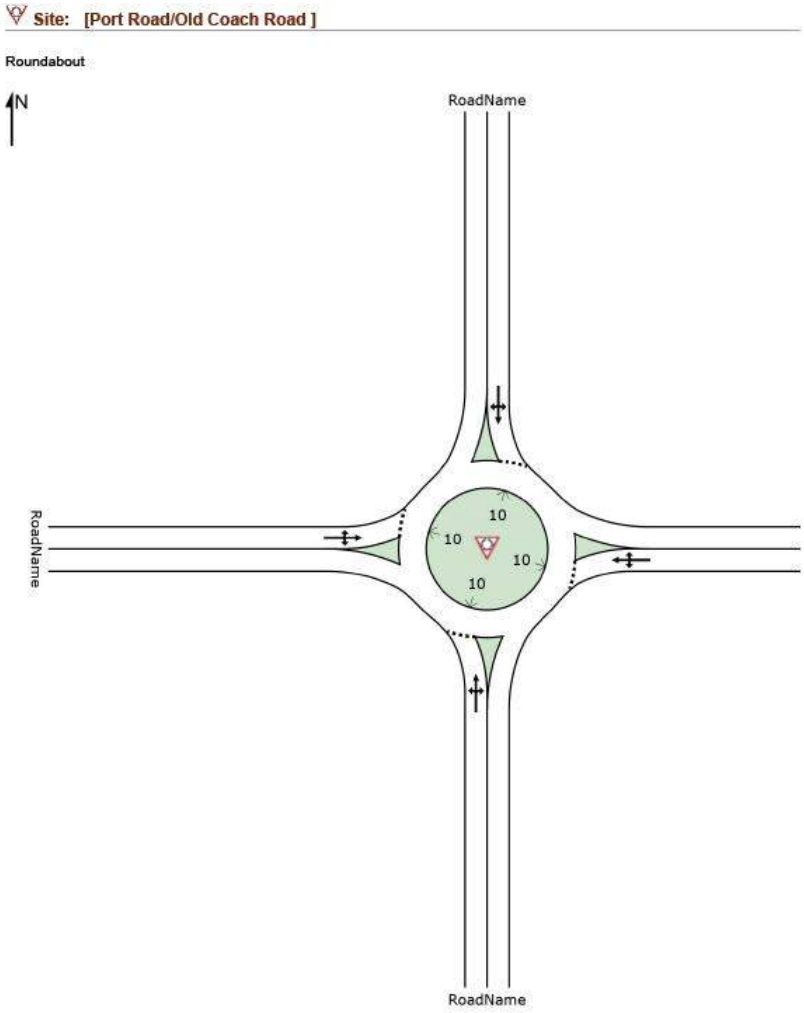

Figure 19 Port Road/Old Coach Road Roundabout Layout

Table 10 summarises the scenarios analysed for the intersection

Table 10 Port Road/Old Coach Road Roundabout SIDRA Analysis

Quinliven Road/Port Road	Base Case (2018)		Without Project (2026)		With Project (2026)	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
DoS	0.195	0.274	0.234	0.328	0.234	0.328
Highest Average Delay (seconds)	9.3	9.6	9.6	10	9.6	10
Queue length (m)	7.7	11.8	9.6	14.9	9.8	15.1

The roundabout currently operates well below its practical capacity with a maximum DoS of 0.274 in the PM peak. Negligible queue lengths and delays are noted on all legs.

In 2026 with and without Project case scenarios, shows very similar results with a DoS of 0.234 and 0.328 in the AM and PM peaks for with and without the Project Cases. The

maximum queue length of the intersection is 15.1m with the Southern School Project traffic. The intersection operates at LoS A at all scenarios.

5.1.6 Quinliven Road/ School Access Roundabout

Two options were investigated to provide access onto the proposed Southern school main carpark and the options are illustrated in Figure 20.

A new roundabout is proposed at the school main entrance point at the Quinliven Road. The proposed roundabout is located about 320m to the west of the Quinliven Road/ How Road intersection and it comprises of one lane two-way approach with three legs. This roundabout will be used to access the school car park from north of the proposed school. The below figure shows the proposed roundabout.

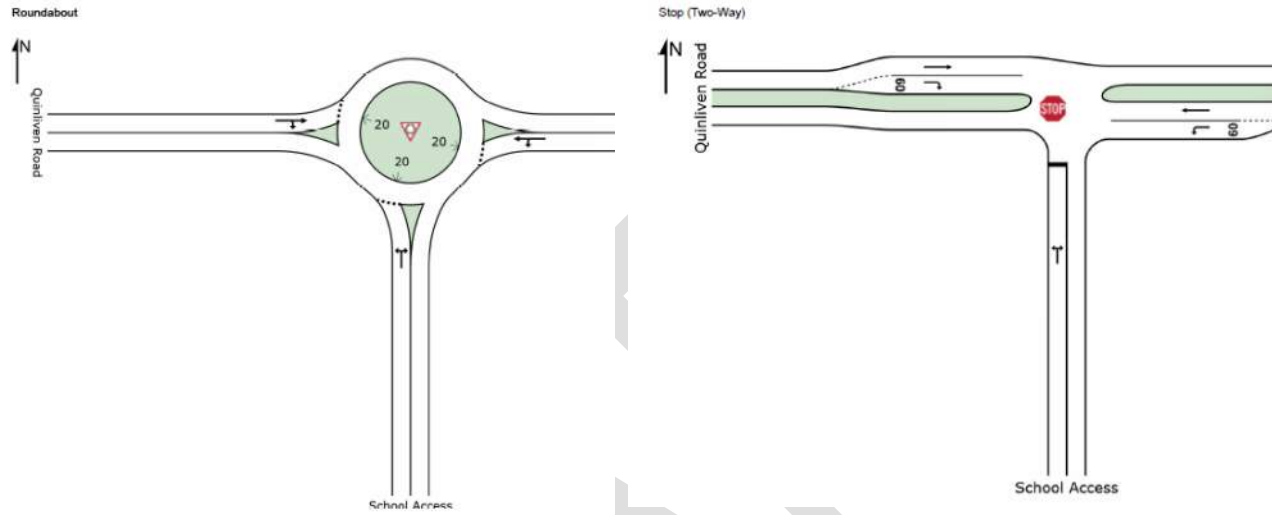

Figure 20 Quinliven Road/School Access Layout options (Option 1 Roundabout, Option 2 Channelised Turn Lanes)

Table 11 below summarises the operation of the proposed roundabout with the school traffic in 2026.

Table 11 Quinliven Road/School Access Option 2 SIDRA Analysis

Quinliven Road/School Access	With Project (2026)-Roundabout-Option 1		With Project (2026)-Channelised left and right turn lanes-Option 2	
	AM Peak	PM Peak	AM Peak	PM Peak
DoS	0.447	0.407	0.586	0.642
Highest Average Delay (seconds)	10.5	11.1	36.1	38.5
Queue length (m)	27.3	23.8	33.1	36.9

According to **Option 1**, a new single lane ,3 legs roundabout will operate well below its practical capacity of 0.8. The maximum queue length is less than 28m on all legs with highest average delay of 11.1 in the PM peak. The LoS of the Quinliven road is A.

Option 2 provides additional right/left turn movement on west and east approaches at the school main entrance point. The results indicate that the intersection still operates within its practical capacity with a DoS of 0.642 in the PM peak. The maximum queue length of 37m and the maximum average delay of 38.5 seconds will occur on the School Access road. The LoS of the Quinliven Road remains at A as the roundabout option.

On this basis, it can be concluded that new auxiliary right turn lanes from west approach and new auxiliary left turn lane from east approach on Quinliven Road will also cater for additional school traffic.

6 Findings and mitigation of impacts

The introduction of a new school in January 2022 (which will be at full capacity by 2026), will require upgrades to a number of intersection surrounding the school.

Noting that this analysis does not take into consideration of future development volumes (over and above the assumed growth rate) from the Aldinga Urban Lands Development or the proposed development adjacent to the school.

The intersections that require upgrading due to capacity reasons is How Road/ Quinliven Road, How Road/ Aldinga Beach Road and the new entrance to the school. The findings are summarised in Table 12 Summary of findings.

Table 12 Summary of findings

Item Number	Location	Recommended Upgrades prior to January 2022
1	Aldinga Beach Road/ How Road	Install a single lane roundabout in conjunction with other developments in the area (such as Aldinga Urban Lands and Renewal SA)
2	Quinliven Road/ How Road	Install a single lane roundabout in conjunction with other developments in the area (such as Renewal SA)
3	Quinliven Road/Port Road	No upgrade required.
4	Port Road/ Old Coach Road	No upgrade required.
5	Quinliven Road/School Access	Channelised intersection to provide a right turn lane on Quinliven Road for eastbound traffic and a left turn lane for westbound traffic, entering the school (level of service C). Or install a roundabout which will provide a level of service A.
8	Other infrastructure upgrades ■ Installation of bus stops near the frontage of the site on Quinliven Road to cater for future bus routes serving the area; ■ Construction of a pedestrian crossing across Quinliven Road to provide pedestrian access to provide a safe pedestrian crossing point including catering for primary school children, ■ Provide a vehicle access point to the school with parking suitable to meet the expected demand. A suitable drop off and pick area should also be included on-site, ■ Addition of bike racks within the school grounds to provide storage for bikes.	

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Appendix A – SIDRA Results

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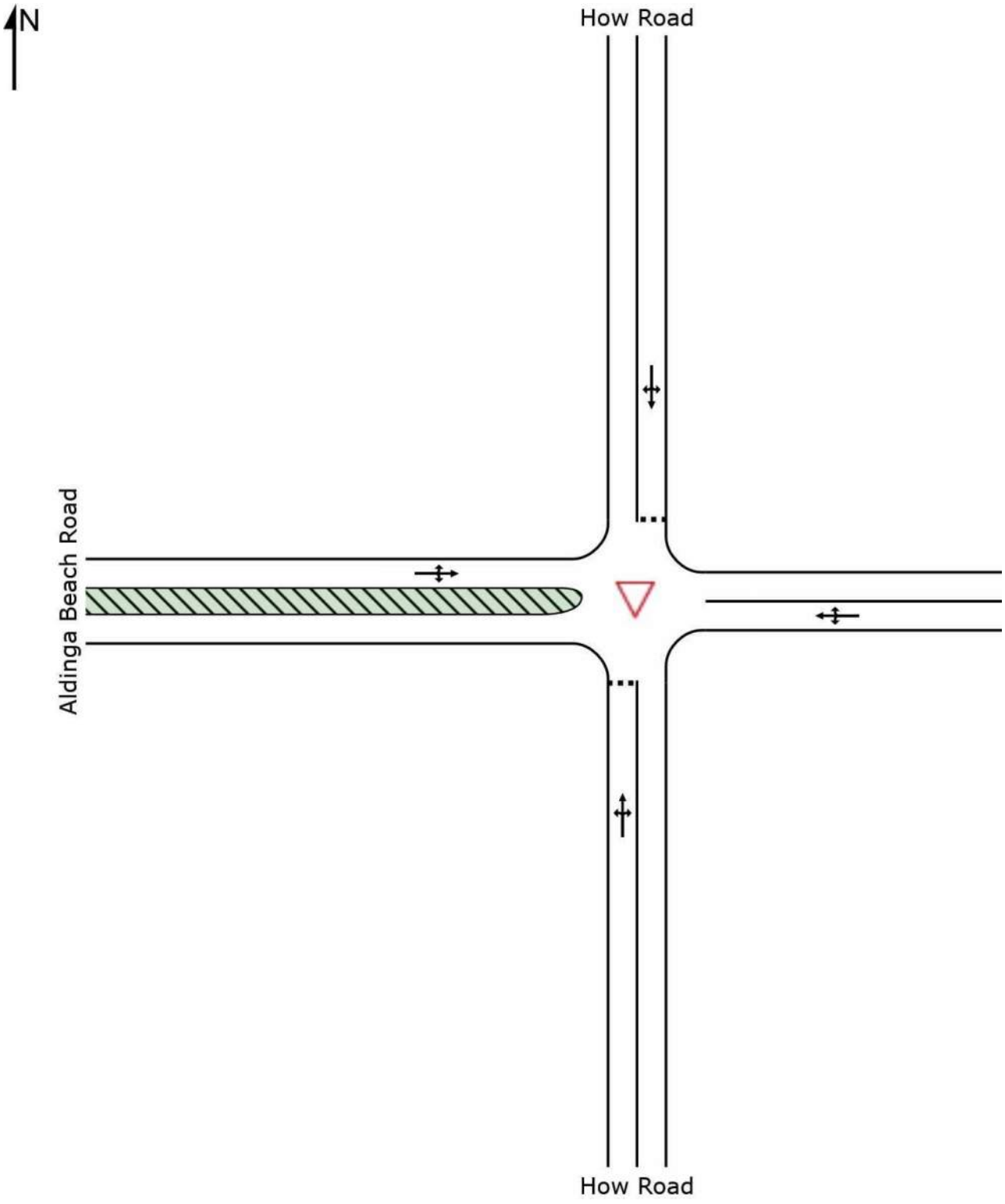
SITE LAYOUT

Site: [Aldinga Beach Road/How Road]

Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: [2018 Base Case Aldinga Beach Road/How Road AM]

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: How Road											
1	L2	10	0.0	0.244	7.1	LOS A	0.8	6.3	0.74	0.87	46.5
2	T1	55	9.1	0.244	15.6	LOS C	0.8	6.3	0.74	0.87	46.4
3	R2	12	16.7	0.244	24.7	LOS C	0.8	6.3	0.74	0.87	45.6
Approach		77	9.1	0.244	15.9	LOS C	0.8	6.3	0.74	0.87	46.3
East: Aldinga Beach Road											
4	L2	45	0.0	0.256	10.2	LOS B	1.5	10.9	0.40	0.16	54.4
5	T1	264	0.0	0.256	2.4	LOS A	1.5	10.9	0.40	0.16	55.8
6	R2	61	26.2	0.256	11.4	LOS B	1.5	10.9	0.40	0.16	52.6
Approach		370	4.3	0.256	4.8	NA	1.5	10.9	0.40	0.16	55.1
North: How Road											
7	L2	62	0.0	0.596	14.0	LOS B	3.0	22.2	0.85	1.11	43.6
8	T1	79	21.5	0.596	24.0	LOS C	3.0	22.2	0.85	1.11	43.2
9	R2	62	0.0	0.596	24.8	LOS C	3.0	22.2	0.85	1.11	43.2
Approach		203	8.4	0.596	21.2	LOS C	3.0	22.2	0.85	1.11	43.3
West: Aldinga Beach Road											
10	L2	30	0.0	0.371	6.5	LOS A	0.4	3.0	0.07	0.05	57.7
11	T1	647	0.0	0.371	0.1	LOS A	0.4	3.0	0.07	0.05	59.2
12	R2	30	0.0	0.371	7.1	LOS A	0.4	3.0	0.07	0.05	57.0
Approach		707	0.0	0.371	0.7	NA	0.4	3.0	0.07	0.05	59.1
All Vehicles		1357	2.9	0.596	5.7	NA	3.0	22.2	0.31	0.28	54.2

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.

MOVEMENT SUMMARY

Site: [2018 Base Case Aldinga Beach Road/How Road PM]

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: How Road											
1	L2	10	0.0	0.215	8.1	LOS A	0.7	5.5	0.74	0.89	47.7
2	T1	55	9.1	0.215	13.2	LOS B	0.7	5.5	0.74	0.89	47.6
3	R2	12	16.7	0.215	22.9	LOS C	0.7	5.5	0.74	0.89	46.7
Approach		77	9.1	0.215	14.1	LOS B	0.7	5.5	0.74	0.89	47.4
East: Aldinga Beach Road											
4	L2	100	10.0	0.413	6.7	LOS A	1.6	11.4	0.21	0.15	55.8
5	T1	525	0.0	0.413	0.4	LOS A	1.6	11.4	0.21	0.15	57.8
6	R2	105	14.3	0.413	7.2	LOS A	1.6	11.4	0.21	0.15	55.0
Approach		730	3.4	0.413	2.3	NA	1.6	11.4	0.21	0.15	57.1
North: How Road											
7	L2	100	0.0	0.643	11.2	LOS B	4.1	28.4	0.66	1.00	45.5
8	T1	102	0.0	0.643	19.6	LOS C	4.1	28.4	0.66	1.00	45.6
9	R2	100	0.0	0.643	22.2	LOS C	4.1	28.4	0.66	1.00	45.1
Approach		302	0.0	0.643	17.7	LOS C	4.1	28.4	0.66	1.00	45.4
West: Aldinga Beach Road											
10	L2	15	0.0	0.146	7.7	LOS A	0.2	1.7	0.12	0.07	57.2
11	T1	236	0.0	0.146	0.4	LOS A	0.2	1.7	0.12	0.07	58.8
12	R2	15	0.0	0.146	8.7	LOS A	0.2	1.7	0.12	0.07	56.6
Approach		266	0.0	0.146	1.3	NA	0.2	1.7	0.12	0.07	58.6
All Vehicles		1375	2.3	0.643	6.1	NA	4.1	28.4	0.32	0.36	53.7

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.

MOVEMENT SUMMARY

Site: [2026 Without the Project Aldinga Beach Road/How Road AM]

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: How Road											
1	L2	12	0.0	0.449	11.4	LOS B	1.7	12.8	0.85	0.99	40.8
2	T1	67	11.9	0.449	26.4	LOS D	1.7	12.8	0.85	0.99	40.7
3	R2	15	20.0	0.449	41.4	LOS E	1.7	12.8	0.85	0.99	40.0
Approach		94	11.7	0.449	26.9	LOS D	1.7	12.8	0.85	0.99	40.6
East: Aldinga Beach Road											
4	L2	53	0.0	0.327	12.8	LOS B	2.5	18.5	0.51	0.16	52.8
5	T1	309	0.0	0.327	4.0	LOS A	2.5	18.5	0.51	0.16	54.2
6	R2	72	26.4	0.327	14.2	LOS B	2.5	18.5	0.51	0.16	51.2
Approach		434	4.4	0.327	6.8	NA	2.5	18.5	0.51	0.16	53.5
North: How Road											
7	L2	73	0.0	0.983	67.6	LOS F	11.6	87.0	0.98	1.97	25.7
8	T1	92	20.7	0.983	84.8	LOS F	11.6	87.0	0.98	1.97	25.5
9	R2	73	0.0	0.983	85.1	LOS F	11.6	87.0	0.98	1.97	25.5
Approach		238	8.0	0.983	79.6	LOS F	11.6	87.0	0.98	1.97	25.6
West: Aldinga Beach Road											
10	L2	35	0.0	0.436	6.9	LOS A	0.7	4.8	0.08	0.05	57.6
11	T1	758	0.0	0.436	0.2	LOS A	0.7	4.8	0.08	0.05	59.2
12	R2	35	0.0	0.436	7.8	LOS A	0.7	4.8	0.08	0.05	57.0
Approach		828	0.0	0.436	0.8	NA	0.7	4.8	0.08	0.05	59.0
All Vehicles		1594	3.1	0.983	15.7	NA	11.6	87.0	0.38	0.42	47.2

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.

MOVEMENT SUMMARY

Site: [2026 Withiout the Project Aldinga Beach Road/How Road PM]

Giveway / Yield (Two-Way)

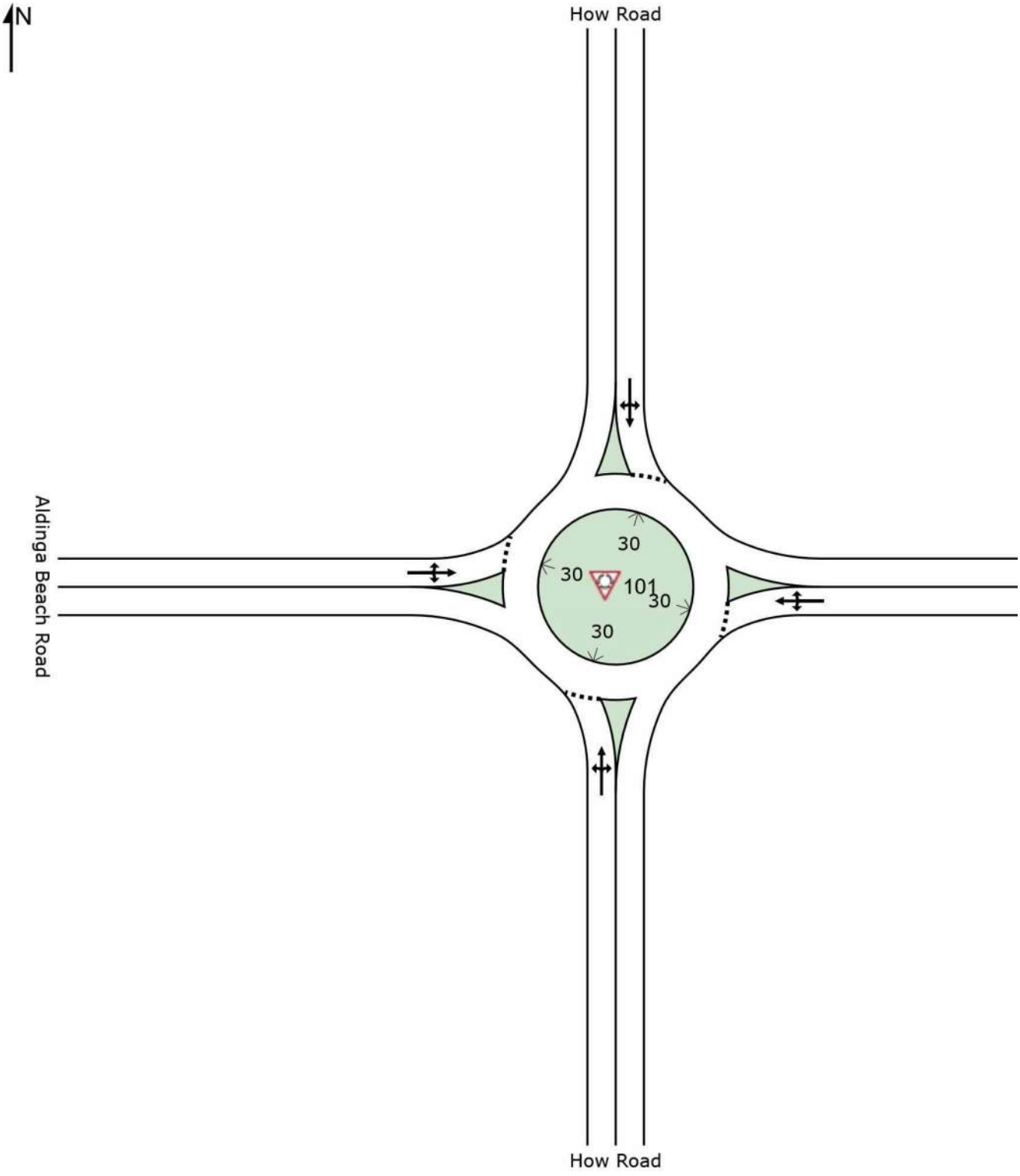
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: How Road											
1	L2	12	0.0	1.024	118.5	LOS F	10.0	89.6	1.00	1.93	17.1
2	T1	66	10.6	1.024	129.8	LOS F	10.0	89.6	1.00	1.93	17.0
3	R2	46	73.9	1.024	191.3	LOS F	10.0	89.6	1.00	1.93	16.7
Approach		124	33.1	1.024	151.5	LOS F	10.0	89.6	1.00	1.93	16.9
East: Aldinga Beach Road											
4	L2	117	10.3	0.489	7.3	LOS A	2.7	19.2	0.26	0.15	55.6
5	T1	615	0.0	0.489	0.8	LOS A	2.7	19.2	0.26	0.15	57.6
6	R2	123	14.6	0.489	8.0	LOS A	2.7	19.2	0.26	0.15	54.8
Approach		855	3.5	0.489	2.7	NA	2.7	19.2	0.26	0.15	56.9
North: How Road											
7	L2	117	0.0	0.998	61.9	LOS F	18.0	126.1	0.83	2.17	27.0
8	T1	120	0.0	0.998	76.3	LOS F	18.0	126.1	0.83	2.17	27.1
9	R2	117	0.0	0.998	79.0	LOS F	18.0	126.1	0.83	2.17	26.9
Approach		354	0.0	0.998	72.4	LOS F	18.0	126.1	0.83	2.17	27.0
West: Aldinga Beach Road											
10	L2	18	0.0	0.175	8.7	LOS A	0.4	2.6	0.14	0.07	56.9
11	T1	277	0.0	0.175	0.6	LOS A	0.4	2.6	0.14	0.07	58.5
12	R2	18	0.0	0.175	9.9	LOS A	0.4	2.6	0.14	0.07	56.3
Approach		313	0.0	0.175	1.6	NA	0.4	2.6	0.14	0.07	58.3
All Vehicles		1646	4.3	1.024	28.7	NA	18.0	126.1	0.42	0.70	40.3

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.

SITE LAYOUT

Site: 101 [Aldinga Beach Road/How Road]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [2026 Project Case Aldinga Beach Road/How Road AM]

New Site
Roundabout

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: How Road											
1	L2	12	0.0	0.201	6.7	LOS A	1.3	9.5	0.71	0.70	52.8
2	T1	144	5.6	0.201	6.9	LOS A	1.3	9.5	0.71	0.70	54.3
3	R2	15	20.0	0.201	13.1	LOS B	1.3	9.5	0.71	0.70	54.0
Approach		171	6.4	0.201	7.4	LOS A	1.3	9.5	0.71	0.70	54.2
East: Aldinga Beach Road											
4	L2	53	0.0	0.472	4.7	LOS A	3.9	28.2	0.57	0.57	52.8
5	T1	309	0.0	0.472	4.7	LOS A	3.9	28.2	0.57	0.57	54.3
6	R2	226	8.4	0.472	10.6	LOS B	3.9	28.2	0.57	0.57	54.4
Approach		588	3.2	0.472	7.0	LOS A	3.9	28.2	0.57	0.57	54.2
North: How Road											
7	L2	73	0.0	0.408	9.0	LOS A	3.3	24.7	0.96	0.93	50.7
8	T1	92	20.7	0.408	9.9	LOS A	3.3	24.7	0.96	0.93	51.8
9	R2	73	0.0	0.408	14.8	LOS B	3.3	24.7	0.96	0.93	52.4
Approach		238	8.0	0.408	11.1	LOS B	3.3	24.7	0.96	0.93	51.7
West: Aldinga Beach Road											
10	L2	189	0.0	0.877	15.0	LOS B	18.7	131.1	1.00	1.12	48.2
11	T1	758	0.0	0.877	15.0	LOS B	18.7	131.1	1.00	1.12	49.5
12	R2	35	0.0	0.877	20.7	LOS C	18.7	131.1	1.00	1.12	49.7
Approach		982	0.0	0.877	15.2	LOS B	18.7	131.1	1.00	1.12	49.2
All Vehicles		1979	2.5	0.877	11.6	LOS B	18.7	131.1	0.84	0.90	51.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: 101 [2026 Project Case Aldinga Beach Road/How Road PM]

New Site
Roundabout

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: How Road											
1	L2	12	0.0	0.309	11.2	LOS B	2.2	19.5	0.96	0.93	49.2
2	T1	66	10.6	0.309	11.8	LOS B	2.2	19.5	0.96	0.93	50.4
3	R2	46	73.9	0.309	21.4	LOS C	2.2	19.5	0.96	0.93	48.6
Approach		124	33.1	0.309	15.3	LOS B	2.2	19.5	0.96	0.93	49.6
East: Aldinga Beach Road											
4	L2	117	10.3	0.895	20.0	LOS B	20.3	146.4	1.00	1.28	45.0
5	T1	615	0.0	0.895	19.6	LOS B	20.3	146.4	1.00	1.28	46.3
6	R2	123	14.6	0.895	26.0	LOS C	20.3	146.4	1.00	1.28	46.2
Approach		855	3.5	0.895	20.5	LOS C	20.3	146.4	1.00	1.28	46.1
North: How Road											
7	L2	271	0.0	0.648	7.1	LOS A	6.8	47.3	0.77	0.78	51.9
8	T1	197	0.0	0.648	7.2	LOS A	6.8	47.3	0.77	0.78	53.4
9	R2	271	0.0	0.648	12.9	LOS B	6.8	47.3	0.77	0.78	53.8
Approach		739	0.0	0.648	9.3	LOS A	6.8	47.3	0.77	0.78	53.0
West: Aldinga Beach Road											
10	L2	18	0.0	0.263	4.7	LOS A	1.7	11.6	0.49	0.49	53.9
11	T1	277	0.0	0.263	4.8	LOS A	1.7	11.6	0.49	0.49	55.6
12	R2	18	0.0	0.263	10.5	LOS B	1.7	11.6	0.49	0.49	55.9
Approach		313	0.0	0.263	5.1	LOS A	1.7	11.6	0.49	0.49	55.5
All Vehicles		2031	3.5	0.895	13.7	LOS B	20.3	146.4	0.84	0.96	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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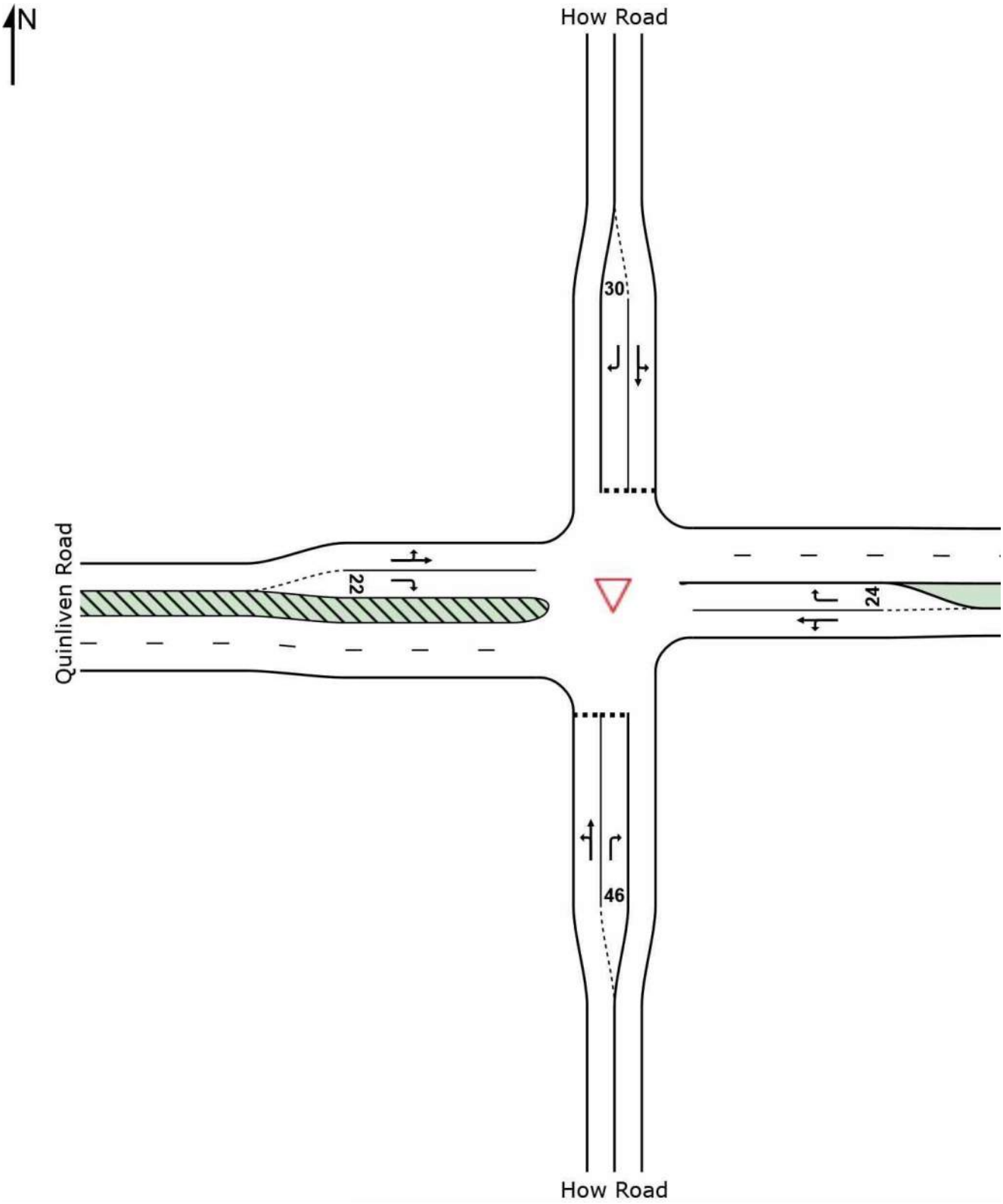
SITE LAYOUT

Site: [Quinliven Road/How Road]

Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: [2018 Base Case Quinliven Road/How Road AM]

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: How Road											
1	L2	42	0.0	0.145	5.8	LOS A	0.6	4.5	0.26	0.58	51.4
2	T1	54	22.2	0.145	10.8	LOS B	0.6	4.5	0.26	0.58	46.9
3	R2	53	20.8	0.147	13.9	LOS B	0.5	4.5	0.63	0.85	47.0
Approach		149	15.4	0.147	10.5	LOS B	0.6	4.5	0.39	0.67	48.2
East: Quinliven Road											
4	L2	69	10.1	0.072	5.7	LOS A	0.0	0.0	0.00	0.31	55.4
5	T1	62	0.0	0.072	0.0	LOS A	0.0	0.0	0.00	0.31	57.4
6	R2	62	0.0	0.045	6.4	LOS A	0.2	1.4	0.36	0.58	50.7
Approach		193	3.6	0.072	4.1	NA	0.2	1.4	0.12	0.40	54.7
North: How Road											
7	L2	6	0.0	0.187	6.6	LOS A	0.8	5.9	0.59	0.77	48.2
8	T1	94	10.6	0.187	10.3	LOS B	0.8	5.9	0.59	0.77	48.3
9	R2	6	0.0	0.013	11.0	LOS B	0.0	0.3	0.56	0.70	47.1
Approach		106	9.4	0.187	10.1	LOS B	0.8	5.9	0.59	0.77	48.2
West: Quinliven Road											
10	L2	40	0.0	0.143	5.6	LOS A	0.0	0.0	0.00	0.09	57.0
11	T1	237	0.0	0.143	0.0	LOS A	0.0	0.0	0.00	0.09	59.2
12	R2	40	0.0	0.025	5.9	LOS A	0.1	0.8	0.24	0.54	52.9
Approach		317	0.0	0.143	1.5	NA	0.1	0.8	0.03	0.14	58.1
All Vehicles		765	5.2	0.187	5.1	NA	0.8	5.9	0.20	0.40	53.8

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.

MOVEMENT SUMMARY

Site: [2018 Base Case Quinliven Road/How Road PM]

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: How Road											
1	L2	52	0.0	0.170	5.9	LOS A	0.7	5.4	0.34	0.60	51.6
2	T1	67	22.4	0.170	10.1	LOS B	0.7	5.4	0.34	0.60	47.2
3	R2	52	0.0	0.129	12.7	LOS B	0.5	3.3	0.62	0.84	48.3
Approach		171	8.8	0.170	9.6	LOS A	0.7	5.4	0.42	0.67	49.0
East: Quinliven Road											
4	L2	99	0.0	0.104	5.6	LOS A	0.0	0.0	0.00	0.30	55.9
5	T1	99	0.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.30	57.4
6	R2	99	0.0	0.063	6.0	LOS A	0.3	2.0	0.26	0.55	51.1
Approach		297	0.0	0.104	3.9	NA	0.3	2.0	0.09	0.38	54.9
North: How Road											
7	L2	12	0.0	0.327	6.6	LOS A	1.7	12.6	0.58	0.81	47.8
8	T1	177	8.5	0.327	10.8	LOS B	1.7	12.6	0.58	0.81	48.0
9	R2	12	0.0	0.025	10.4	LOS B	0.1	0.6	0.54	0.71	47.5
Approach		201	7.5	0.327	10.5	LOS B	1.7	12.6	0.58	0.81	47.9
West: Quinliven Road											
10	L2	40	0.0	0.077	5.5	LOS A	0.0	0.0	0.00	0.16	56.2
11	T1	109	0.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.16	58.6
12	R2	40	0.0	0.027	6.1	LOS A	0.1	0.8	0.30	0.55	52.7
Approach		189	0.0	0.077	2.5	NA	0.1	0.8	0.06	0.24	56.7
All Vehicles		858	3.5	0.327	6.3	NA	1.7	12.6	0.26	0.51	52.5

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.

MOVEMENT SUMMARY

Site: [2026 Without the Project Quinliven Road/How Road AM]

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: How Road											
1	L2	49	0.0	0.190	5.8	LOS A	0.8	5.9	0.30	0.59	50.6
2	T1	63	22.2	0.190	12.7	LOS B	0.8	5.9	0.30	0.59	46.1
3	R2	62	21.0	0.206	16.8	LOS C	0.8	6.3	0.71	0.89	45.3
Approach		174	15.5	0.206	12.2	LOS B	0.8	6.3	0.45	0.70	47.1
East: Quinliven Road											
4	L2	81	9.9	0.084	5.7	LOS A	0.0	0.0	0.00	0.31	55.4
5	T1	73	0.0	0.084	0.0	LOS A	0.0	0.0	0.00	0.31	57.4
6	R2	73	0.0	0.055	6.6	LOS A	0.2	1.7	0.40	0.60	50.5
Approach		227	3.5	0.084	4.2	NA	0.2	1.7	0.13	0.40	54.6
North: How Road											
7	L2	7	0.0	0.252	7.1	LOS A	1.1	8.3	0.64	0.83	46.6
8	T1	110	10.9	0.252	12.3	LOS B	1.1	8.3	0.64	0.83	46.7
9	R2	7	0.0	0.018	12.7	LOS B	0.1	0.4	0.61	0.75	45.8
Approach		124	9.7	0.252	12.0	LOS B	1.1	8.3	0.64	0.83	46.7
West: Quinliven Road											
10	L2	47	0.0	0.168	5.6	LOS A	0.0	0.0	0.00	0.09	57.0
11	T1	278	0.0	0.168	0.0	LOS A	0.0	0.0	0.00	0.09	59.2
12	R2	47	0.0	0.030	6.0	LOS A	0.1	0.9	0.26	0.54	52.8
Approach		372	0.0	0.168	1.5	NA	0.1	0.9	0.03	0.14	58.0
All Vehicles		897	5.2	0.252	5.7	NA	1.1	8.3	0.22	0.41	53.3

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.

MOVEMENT SUMMARY

Site: [2026 Without the Project Quinliven Road/How Road PM]

Giveway / Yield (Two-Way)

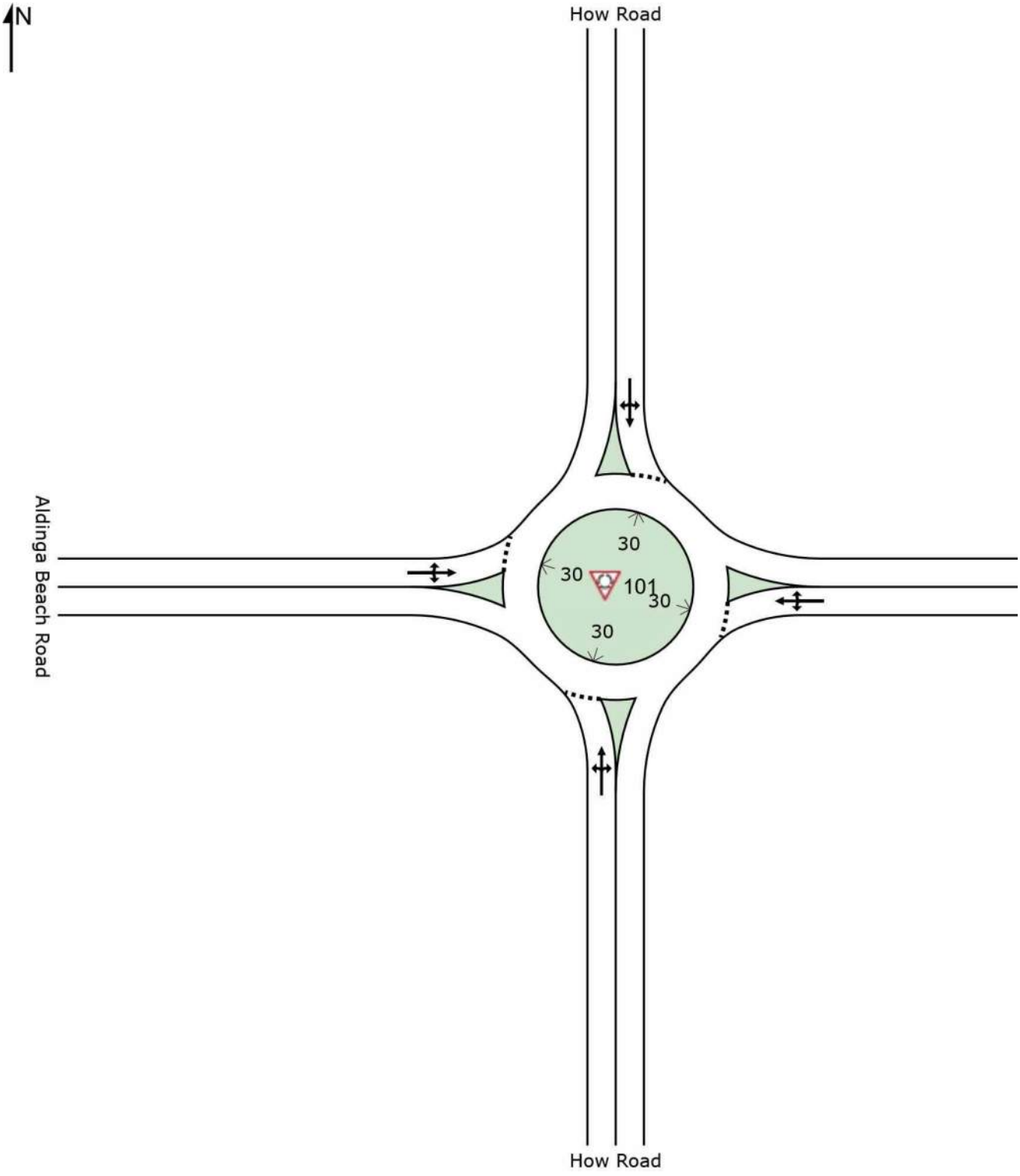
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: How Road											
1	L2	61	0.0	0.221	6.0	LOS A	0.9	7.2	0.39	0.63	51.0
2	T1	79	22.8	0.221	11.6	LOS B	0.9	7.2	0.39	0.63	46.4
3	R2	61	0.0	0.180	15.0	LOS B	0.7	4.6	0.70	0.87	46.9
Approach		201	9.0	0.221	10.9	LOS B	0.9	7.2	0.48	0.70	48.0
East: Quinliven Road											
4	L2	116	0.0	0.122	5.6	LOS A	0.0	0.0	0.00	0.30	55.9
5	T1	116	0.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.30	57.4
6	R2	116	0.0	0.075	6.1	LOS A	0.3	2.4	0.29	0.56	50.9
Approach		348	0.0	0.122	3.9	NA	0.3	2.4	0.10	0.38	54.9
North: How Road											
7	L2	14	0.0	0.436	7.9	LOS A	2.6	19.6	0.65	0.90	45.6
8	T1	208	8.7	0.436	13.7	LOS B	2.6	19.6	0.65	0.90	45.8
9	R2	14	0.0	0.034	11.8	LOS B	0.1	0.8	0.58	0.76	46.4
Approach		236	7.6	0.436	13.2	LOS B	2.6	19.6	0.65	0.90	45.8
West: Quinliven Road											
10	L2	47	0.0	0.091	5.5	LOS A	0.0	0.0	0.00	0.16	56.2
11	T1	128	0.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.16	58.6
12	R2	47	0.0	0.032	6.2	LOS A	0.1	1.0	0.33	0.56	52.6
Approach		222	0.0	0.091	2.5	NA	0.1	1.0	0.07	0.24	56.7
All Vehicles		1007	3.6	0.436	7.2	NA	2.6	19.6	0.30	0.54	51.7

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.

SITE LAYOUT

Site: 101 [Quinliven Road/How Road]

New Site
Roundabout



MOVEMENT SUMMARY

Site: 101 [2026 Project Case Quinliven Road/How Road AM]

New Site
Roundabout

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: How Road											
1	L2	49	0.0	0.418	4.3	LOS A	3.1	22.3	0.43	0.60	51.7
2	T1	63	22.2	0.418	4.7	LOS A	3.1	22.3	0.43	0.60	52.9
3	R2	447	2.9	0.418	10.1	LOS B	3.1	22.3	0.43	0.60	53.4
Approach		559	4.8	0.418	9.0	LOS A	3.1	22.3	0.43	0.60	53.2
East: Aldinga Beach Road											
4	L2	81	9.9	0.181	4.3	LOS A	1.1	8.1	0.39	0.52	53.5
5	T1	73	0.0	0.181	4.2	LOS A	1.1	8.1	0.39	0.52	55.3
6	R2	73	0.0	0.181	9.9	LOS A	1.1	8.1	0.39	0.52	55.7
Approach		227	3.5	0.181	6.1	LOS A	1.1	8.1	0.39	0.52	54.7
North: How Road											
7	L2	7	0.0	0.261	12.5	LOS B	1.9	14.6	0.96	0.92	49.4
8	T1	110	10.9	0.261	13.1	LOS B	1.9	14.6	0.96	0.92	50.6
9	R2	7	0.0	0.261	18.2	LOS B	1.9	14.6	0.96	0.92	51.1
Approach		124	9.7	0.261	13.4	LOS B	1.9	14.6	0.96	0.92	50.6
West: Aldinga Beach Road											
10	L2	47	0.0	0.733	12.8	LOS B	9.8	68.3	0.95	1.07	49.4
11	T1	586	0.0	0.733	12.9	LOS B	9.8	68.3	0.95	1.07	50.8
12	R2	47	0.0	0.733	18.5	LOS B	9.8	68.3	0.95	1.07	51.1
Approach		680	0.0	0.733	13.2	LOS B	9.8	68.3	0.95	1.07	50.7
All Vehicles		1590	3.0	0.733	10.7	LOS B	9.8	68.3	0.69	0.82	52.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: [2026 Project Case Quinliven Road/How Road PM]

Roundabout

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: How Road											
1	L2	61	0.0	0.243	6.3	LOS A	1.7	12.6	0.74	0.72	52.3
2	T1	79	22.8	0.243	7.0	LOS A	1.7	12.6	0.74	0.72	53.4
3	R2	61	0.0	0.243	12.0	LOS B	1.7	12.6	0.74	0.72	54.1
Approach		201	9.0	0.243	8.3	LOS A	1.7	12.6	0.74	0.72	53.3
East: Aldinga Beach Road											
4	L2	501	0.0	0.835	9.6	LOS A	14.8	103.4	0.92	0.85	51.4
5	T1	424	0.0	0.835	9.7	LOS A	14.8	103.4	0.92	0.85	52.9
6	R2	116	0.0	0.835	15.4	LOS B	14.8	103.4	0.92	0.85	53.2
Approach		1041	0.0	0.835	10.3	LOS B	14.8	103.4	0.92	0.85	52.2
North: How Road											
7	L2	14	0.0	0.201	4.5	LOS A	1.2	8.6	0.44	0.48	54.2
8	T1	208	8.7	0.201	4.7	LOS A	1.2	8.6	0.44	0.48	55.7
9	R2	14	0.0	0.201	10.3	LOS B	1.2	8.6	0.44	0.48	56.2
Approach		236	7.6	0.201	5.0	LOS A	1.2	8.6	0.44	0.48	55.7
West: Aldinga Beach Road											
10	L2	47	0.0	0.186	4.6	LOS A	1.1	7.6	0.46	0.53	53.8
11	T1	128	0.0	0.186	4.7	LOS A	1.1	7.6	0.46	0.53	55.4
12	R2	47	0.0	0.186	10.4	LOS B	1.1	7.6	0.46	0.53	55.7
Approach		222	0.0	0.186	5.9	LOS A	1.1	7.6	0.46	0.53	55.1
All Vehicles		1700	2.1	0.835	8.7	LOS A	14.8	103.4	0.77	0.74	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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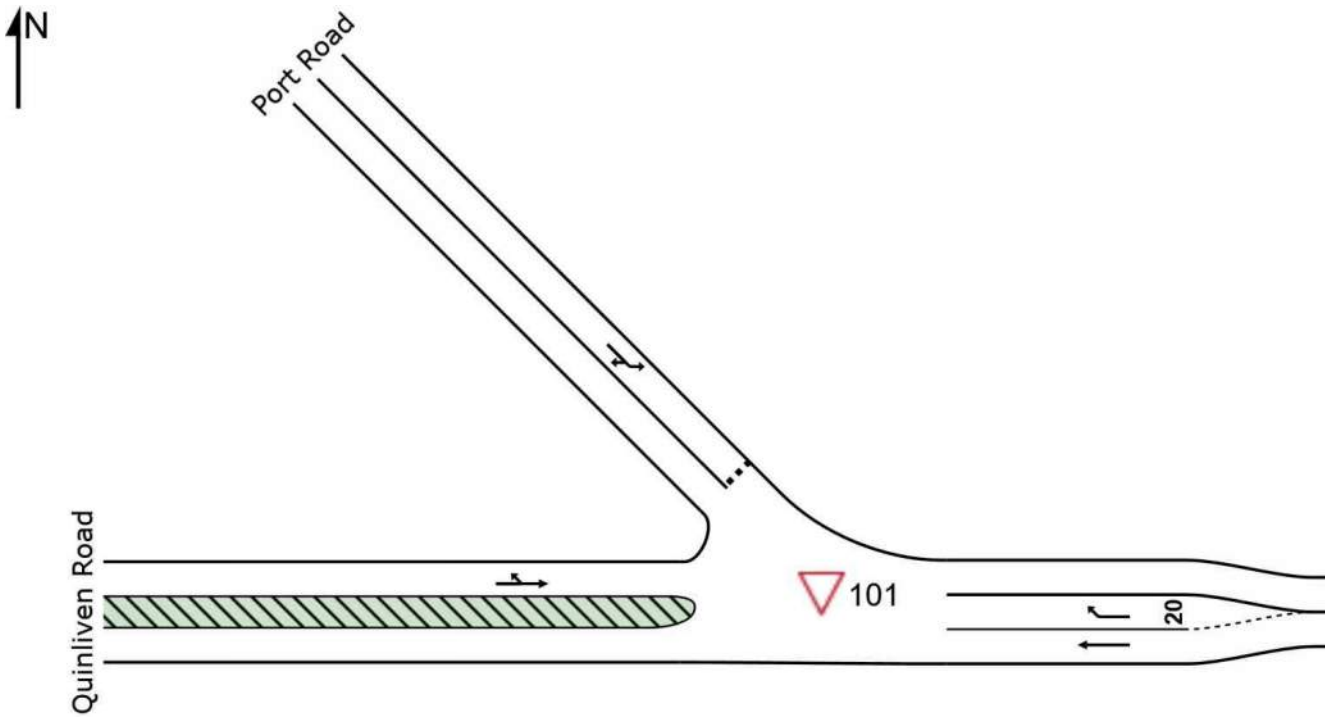
SITE LAYOUT

Site: 101 [Quinliven Road/Port Road]

New Site
Giveway / Yield (Two-Way)



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Organisation: AURECON AUSTRALASIA PTY LTD | Created: Friday, 18 January 2019 10:06:53 AM
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MOVEMENT SUMMARY

Site: 101 [2018 Base Case Quinliven Road/Port Road 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
East: Quinliven Road											
5	T1	154	0.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	16	0.0	0.012	5.5	LOS A	0.0	0.3	0.37	0.54	53.3
Approach		170	0.0	0.079	0.5	NA	0.0	0.3	0.03	0.05	59.3
NorthWest: Port Road											
27a	L1	33	0.0	0.073	5.9	LOS A	0.3	2.0	0.42	0.66	51.8
29b	R3	33	0.0	0.073	9.1	LOS A	0.3	2.0	0.42	0.66	51.5
Approach		66	0.0	0.073	7.5	LOS A	0.3	2.0	0.42	0.66	51.7
West: Quinliven Road											
10b	L3	23	30.4	0.155	6.8	LOS A	0.0	0.0	0.00	0.05	56.9
11	T1	269	0.0	0.155	0.0	LOS A	0.0	0.0	0.00	0.05	59.6
Approach		292	2.4	0.155	0.6	NA	0.0	0.0	0.00	0.05	59.4
All Vehicles		528	1.3	0.155	1.4	NA	0.3	2.0	0.06	0.13	58.3

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.

MOVEMENT SUMMARY

Site: 101 [2018 Base Case Quinliven Road/Port Road 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
East: Quinliven Road											
5	T1	298	0.0	0.153	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	34	0.0	0.022	5.0	LOS A	0.1	0.7	0.27	0.52	53.5
Approach		332	0.0	0.153	0.5	NA	0.1	0.7	0.03	0.05	59.2
NorthWest: Port Road											
27a	L1	27	0.0	0.059	5.4	LOS A	0.2	1.6	0.31	0.62	51.9
29b	R3	27	0.0	0.059	9.4	LOS A	0.2	1.6	0.31	0.62	51.6
Approach		54	0.0	0.059	7.4	LOS A	0.2	1.6	0.31	0.62	51.7
West: Quinliven Road											
10b	L3	34	0.0	0.092	6.5	LOS A	0.0	0.0	0.00	0.13	57.6
11	T1	139	0.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.13	58.8
Approach		173	0.0	0.092	1.3	NA	0.0	0.0	0.00	0.13	58.5
All Vehicles		559	0.0	0.153	1.4	NA	0.2	1.6	0.05	0.13	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.

MOVEMENT SUMMARY

Site: 101 [2026 Without the Project Quinliven Road/Port Road 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
East: Quinliven Road											
5	T1	180	0.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	19	0.0	0.015	5.7	LOS A	0.1	0.4	0.40	0.56	53.2
Approach		199	0.0	0.092	0.5	NA	0.1	0.4	0.04	0.05	59.3
NorthWest: Port Road											
27a	L1	39	0.0	0.094	6.1	LOS A	0.4	2.5	0.46	0.69	51.4
29b	R3	39	0.0	0.094	9.9	LOS A	0.4	2.5	0.46	0.69	51.2
Approach		78	0.0	0.094	8.0	LOS A	0.4	2.5	0.46	0.69	51.3
West: Quinliven Road											
10b	L3	27	29.6	0.181	6.8	LOS A	0.0	0.0	0.00	0.05	56.9
11	T1	315	0.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.05	59.6
Approach		342	2.3	0.181	0.6	NA	0.0	0.0	0.00	0.05	59.4
All Vehicles		619	1.3	0.181	1.5	NA	0.4	2.5	0.07	0.13	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.

MOVEMENT SUMMARY

Site: 101 [2026 Without the Project Quinliven Road/Port Road 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
East: Quinliven Road											
5	T1	349	0.0	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	40	0.0	0.027	5.1	LOS A	0.1	0.8	0.30	0.53	53.5
Approach		389	0.0	0.179	0.5	NA	0.1	0.8	0.03	0.05	59.2
NorthWest: Port Road											
27a	L1	32	0.0	0.076	5.5	LOS A	0.3	2.0	0.36	0.65	51.5
29b	R3	32	0.0	0.076	10.3	LOS B	0.3	2.0	0.36	0.65	51.2
Approach		64	0.0	0.076	7.9	LOS A	0.3	2.0	0.36	0.65	51.4
West: Quinliven Road											
10b	L3	40	0.0	0.108	6.5	LOS A	0.0	0.0	0.00	0.13	57.6
11	T1	163	0.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.13	58.7
Approach		203	0.0	0.108	1.3	NA	0.0	0.0	0.00	0.13	58.5
All Vehicles		656	0.0	0.179	1.5	NA	0.3	2.0	0.05	0.14	58.1

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.

MOVEMENT SUMMARY

Site: 101 [2026 Project Case Quinliven Road/Port Road 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
East: Quinliven Road											
5	T1	257	0.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	19	0.0	0.015	5.7	LOS A	0.1	0.4	0.40	0.56	53.2
Approach		276	0.0	0.132	0.4	NA	0.1	0.4	0.03	0.04	59.5
NorthWest: Port Road											
27a	L1	39	0.0	0.100	6.1	LOS A	0.4	2.7	0.48	0.71	51.1
29b	R3	39	0.0	0.100	10.7	LOS B	0.4	2.7	0.48	0.71	50.9
Approach		78	0.0	0.100	8.4	LOS A	0.4	2.7	0.48	0.71	51.0
West: Quinliven Road											
10b	L3	27	29.6	0.181	6.8	LOS A	0.0	0.0	0.00	0.05	56.9
11	T1	315	0.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.05	59.6
Approach		342	2.3	0.181	0.6	NA	0.0	0.0	0.00	0.05	59.4
All Vehicles		696	1.1	0.181	1.4	NA	0.4	2.7	0.06	0.12	58.3

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.

MOVEMENT SUMMARY

Site: 101 [2026 Project Case Quinliven Road/Port Road PM]

New Site
Giveway / Yield (Two-Way)

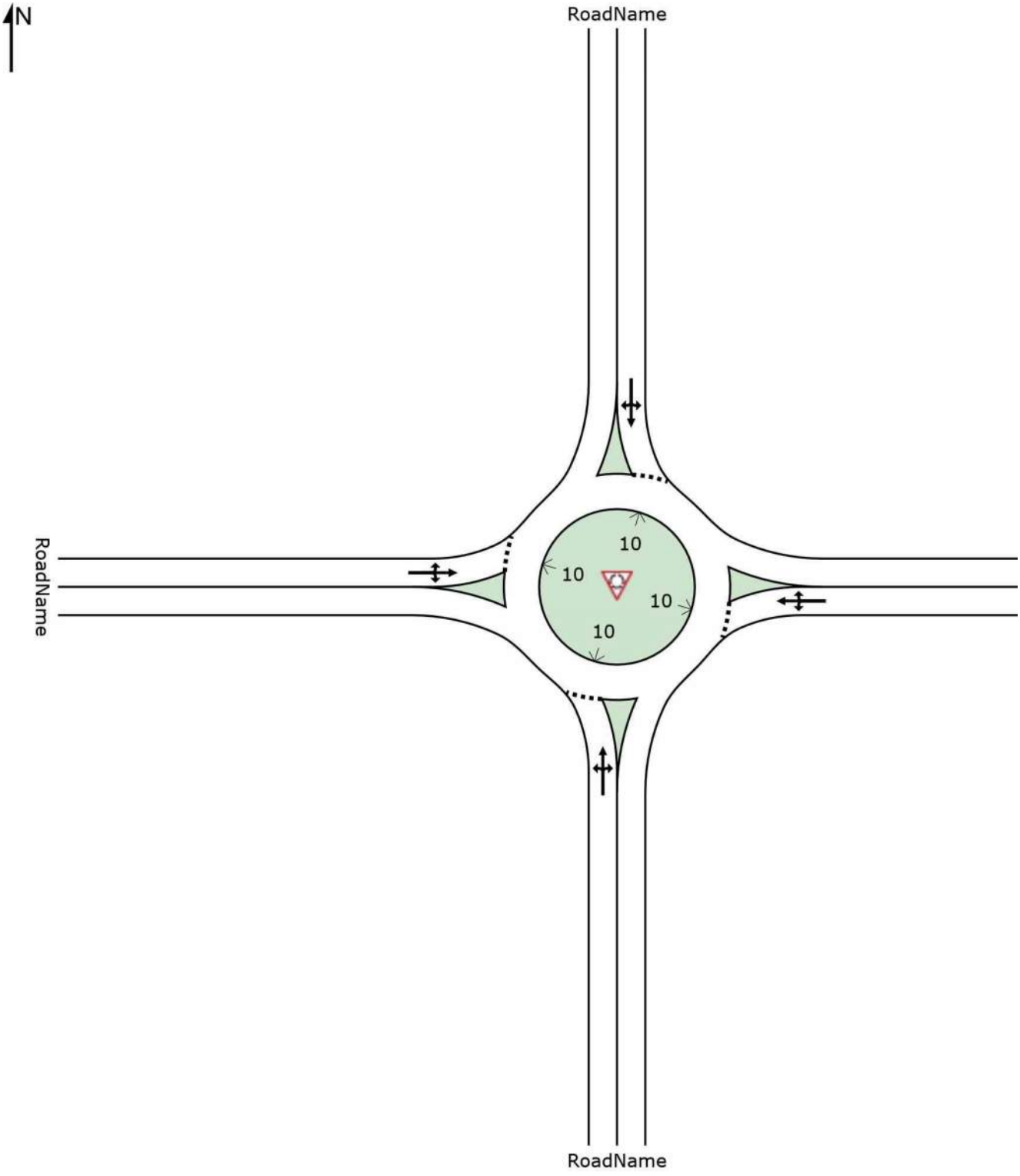
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Quinliven Road											
5	T1	349	0.0	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	40	0.0	0.029	5.4	LOS A	0.1	0.9	0.36	0.55	53.3
Approach		389	0.0	0.179	0.6	NA	0.1	0.9	0.04	0.06	59.2
NorthWest: Port Road											
27a	L1	32	0.0	0.084	5.7	LOS A	0.3	2.2	0.44	0.68	51.1
29b	R3	32	0.0	0.084	11.1	LOS B	0.3	2.2	0.44	0.68	50.8
Approach		64	0.0	0.084	8.4	LOS A	0.3	2.2	0.44	0.68	51.0
West: Quinliven Road											
10b	L3	40	0.0	0.148	6.5	LOS A	0.0	0.0	0.00	0.10	57.9
11	T1	240	0.0	0.148	0.0	LOS A	0.0	0.0	0.00	0.10	59.1
Approach		280	0.0	0.148	0.9	NA	0.0	0.0	0.00	0.10	58.9
All Vehicles		733	0.0	0.179	1.4	NA	0.3	2.2	0.06	0.13	58.3

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.

SITE LAYOUT

Site: [Port Road/Old Coach Road]

Roundabout



MOVEMENT SUMMARY

Site: [2018 Base Case Port Road/Old Coach Road AM]

Roundabout

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: RoadName											
1	L2	30	0.0	0.086	5.7	LOS A	0.4	3.1	0.33	0.58	50.1
2	T1	33	9.1	0.086	5.8	LOS A	0.4	3.1	0.33	0.58	50.7
3	R2	30	0.0	0.086	8.6	LOS A	0.4	3.1	0.33	0.58	45.1
Approach		93	3.2	0.086	6.7	LOS A	0.4	3.1	0.33	0.58	49.1
East: RoadName											
4	L2	13	23.1	0.118	5.7	LOS A	0.6	4.7	0.26	0.51	41.2
5	T1	110	0.0	0.118	5.3	LOS A	0.6	4.7	0.26	0.51	51.0
6	R2	14	28.6	0.118	8.7	LOS A	0.6	4.7	0.26	0.51	48.8
Approach		137	5.1	0.118	5.7	LOS A	0.6	4.7	0.26	0.51	50.0
North: RoadName											
7	L2	30	0.0	0.114	6.4	LOS A	0.6	4.1	0.44	0.62	48.7
8	T1	53	0.0	0.114	6.3	LOS A	0.6	4.1	0.44	0.62	50.7
9	R2	30	0.0	0.114	9.3	LOS A	0.6	4.1	0.44	0.62	52.3
Approach		113	0.0	0.114	7.1	LOS A	0.6	4.1	0.44	0.62	50.8
West: RoadName											
10	L2	1	0.0	0.195	5.3	LOS A	1.1	7.7	0.26	0.49	53.0
11	T1	242	0.0	0.195	5.3	LOS A	1.1	7.7	0.26	0.49	51.2
12	R2	1	0.0	0.195	8.2	LOS A	1.1	7.7	0.26	0.49	51.6
Approach		244	0.0	0.195	5.3	LOS A	1.1	7.7	0.26	0.49	51.2
All Vehicles		587	1.7	0.195	5.9	LOS A	1.1	7.7	0.31	0.53	50.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: [2018 Base Case Port Road/Old Coach Road PM]

Roundabout

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: RoadName											
1	L2	37	0.0	0.118	6.8	LOS A	0.6	4.3	0.49	0.65	49.4
2	T1	37	0.0	0.118	6.7	LOS A	0.6	4.3	0.49	0.65	50.3
3	R2	37	0.0	0.118	9.6	LOS A	0.6	4.3	0.49	0.65	44.1
Approach		111	0.0	0.118	7.7	LOS A	0.6	4.3	0.49	0.65	48.5
East: RoadName											
4	L2	34	0.0	0.274	5.6	LOS A	1.7	11.8	0.32	0.53	45.1
5	T1	265	0.0	0.274	5.5	LOS A	1.7	11.8	0.32	0.53	50.7
6	R2	35	2.9	0.274	8.4	LOS A	1.7	11.8	0.32	0.53	50.0
Approach		334	0.3	0.274	5.8	LOS A	1.7	11.8	0.32	0.53	50.2
North: RoadName											
7	L2	30	0.0	0.107	6.0	LOS A	0.5	3.8	0.38	0.59	49.0
8	T1	53	0.0	0.107	5.9	LOS A	0.5	3.8	0.38	0.59	51.0
9	R2	30	0.0	0.107	8.8	LOS A	0.5	3.8	0.38	0.59	52.5
Approach		113	0.0	0.107	6.7	LOS A	0.5	3.8	0.38	0.59	51.0
West: RoadName											
10	L2	1	0.0	0.142	5.5	LOS A	0.8	5.4	0.30	0.53	52.6
11	T1	139	0.0	0.142	5.4	LOS A	0.8	5.4	0.30	0.53	50.7
12	R2	25	0.0	0.142	8.3	LOS A	0.8	5.4	0.30	0.53	51.1
Approach		165	0.0	0.142	5.9	LOS A	0.8	5.4	0.30	0.53	50.8
All Vehicles		723	0.1	0.274	6.2	LOS A	1.7	11.8	0.35	0.56	50.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: [2026 Without the Project Port Road/Old Coach Road AM]

Roundabout

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: RoadName											
1	L2	35	0.0	0.104	5.9	LOS A	0.5	3.8	0.37	0.59	49.9
2	T1	39	10.3	0.104	6.0	LOS A	0.5	3.8	0.37	0.59	50.5
3	R2	35	0.0	0.104	8.7	LOS A	0.5	3.8	0.37	0.59	44.9
Approach		109	3.7	0.104	6.9	LOS A	0.5	3.8	0.37	0.59	49.0
East: RoadName											
4	L2	16	25.0	0.142	5.9	LOS A	0.8	5.8	0.29	0.52	40.8
5	T1	129	0.0	0.142	5.4	LOS A	0.8	5.8	0.29	0.52	50.9
6	R2	17	29.4	0.142	8.8	LOS A	0.8	5.8	0.29	0.52	48.6
Approach		162	5.6	0.142	5.8	LOS A	0.8	5.8	0.29	0.52	49.8
North: RoadName											
7	L2	35	0.0	0.139	6.8	LOS A	0.7	5.1	0.49	0.64	48.5
8	T1	62	0.0	0.139	6.7	LOS A	0.7	5.1	0.49	0.64	50.5
9	R2	35	0.0	0.139	9.6	LOS A	0.7	5.1	0.49	0.64	52.1
Approach		132	0.0	0.139	7.5	LOS A	0.7	5.1	0.49	0.64	50.5
West: RoadName											
10	L2	2	0.0	0.234	5.5	LOS A	1.4	9.6	0.29	0.50	52.8
11	T1	284	0.0	0.234	5.4	LOS A	1.4	9.6	0.29	0.50	51.0
12	R2	2	0.0	0.234	8.3	LOS A	1.4	9.6	0.29	0.50	51.4
Approach		288	0.0	0.234	5.4	LOS A	1.4	9.6	0.29	0.50	51.1
All Vehicles		691	1.9	0.234	6.1	LOS A	1.4	9.6	0.34	0.55	50.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: [2026 Without the Project Port Road/Old Coach Road PM]

Roundabout

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: RoadName											
1	L2	43	0.0	0.145	7.2	LOS A	0.8	5.5	0.54	0.68	49.1
2	T1	43	0.0	0.145	7.1	LOS A	0.8	5.5	0.54	0.68	50.0
3	R2	43	0.0	0.145	10.0	LOS B	0.8	5.5	0.54	0.68	43.6
Approach		129	0.0	0.145	8.1	LOS A	0.8	5.5	0.54	0.68	48.1
East: RoadName											
4	L2	40	0.0	0.328	5.7	LOS A	2.1	14.9	0.37	0.54	44.8
5	T1	310	0.0	0.328	5.6	LOS A	2.1	14.9	0.37	0.54	50.5
6	R2	42	4.8	0.328	8.6	LOS A	2.1	14.9	0.37	0.54	49.6
Approach		392	0.5	0.328	6.0	LOS A	2.1	14.9	0.37	0.54	49.9
North: RoadName											
7	L2	35	0.0	0.129	6.2	LOS A	0.7	4.7	0.42	0.61	48.8
8	T1	62	0.0	0.129	6.1	LOS A	0.7	4.7	0.42	0.61	50.8
9	R2	35	0.0	0.129	9.1	LOS A	0.7	4.7	0.42	0.61	52.4
Approach		132	0.0	0.129	6.9	LOS A	0.7	4.7	0.42	0.61	50.9
West: RoadName											
10	L2	2	0.0	0.171	5.7	LOS A	0.9	6.6	0.33	0.54	52.5
11	T1	163	0.0	0.171	5.6	LOS A	0.9	6.6	0.33	0.54	50.5
12	R2	29	0.0	0.171	8.5	LOS A	0.9	6.6	0.33	0.54	50.9
Approach		194	0.0	0.171	6.0	LOS A	0.9	6.6	0.33	0.54	50.6
All Vehicles		847	0.2	0.328	6.5	LOS A	2.1	14.9	0.40	0.57	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: [2026 Project Case Port Road/Old Coach Road AM]

Roundabout

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: RoadName											
1	L2	35	0.0	0.112	6.4	LOS A	0.6	4.1	0.44	0.62	49.6
2	T1	39	10.3	0.112	6.5	LOS A	0.6	4.1	0.44	0.62	50.2
3	R2	35	0.0	0.112	9.2	LOS A	0.6	4.1	0.44	0.62	44.5
Approach		109	3.7	0.112	7.3	LOS A	0.6	4.1	0.44	0.62	48.7
East: RoadName											
4	L2	16	25.0	0.202	5.9	LOS A	1.2	8.7	0.31	0.51	40.8
5	T1	206	0.0	0.202	5.4	LOS A	1.2	8.7	0.31	0.51	50.9
6	R2	17	29.4	0.202	8.8	LOS A	1.2	8.7	0.31	0.51	48.6
Approach		239	3.8	0.202	5.7	LOS A	1.2	8.7	0.31	0.51	50.1
North: RoadName											
7	L2	35	0.0	0.139	6.8	LOS A	0.7	5.1	0.49	0.64	48.5
8	T1	62	0.0	0.139	6.7	LOS A	0.7	5.1	0.49	0.64	50.5
9	R2	35	0.0	0.139	9.6	LOS A	0.7	5.1	0.49	0.64	52.1
Approach		132	0.0	0.139	7.5	LOS A	0.7	5.1	0.49	0.64	50.5
West: RoadName											
10	L2	2	0.0	0.234	5.5	LOS A	1.4	9.8	0.30	0.50	52.8
11	T1	284	0.0	0.234	5.4	LOS A	1.4	9.8	0.30	0.50	51.0
12	R2	2	0.0	0.234	8.3	LOS A	1.4	9.8	0.30	0.50	51.4
Approach		288	0.0	0.234	5.4	LOS A	1.4	9.8	0.30	0.50	51.0
All Vehicles		768	1.7	0.234	6.1	LOS A	1.4	9.8	0.35	0.55	50.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: [2026 Project Case Port Road/Old Coach Road PM]

Roundabout

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: RoadName											
1	L2	43	0.0	0.145	7.2	LOS A	0.8	5.5	0.54	0.68	49.1
2	T1	43	0.0	0.145	7.1	LOS A	0.8	5.5	0.54	0.68	50.0
3	R2	43	0.0	0.145	10.0	LOS B	0.8	5.5	0.54	0.68	43.6
Approach		129	0.0	0.145	8.1	LOS A	0.8	5.5	0.54	0.68	48.1
East: RoadName											
4	L2	40	0.0	0.328	5.7	LOS A	2.2	15.1	0.38	0.54	44.8
5	T1	310	0.0	0.328	5.6	LOS A	2.2	15.1	0.38	0.54	50.4
6	R2	42	4.8	0.328	8.6	LOS A	2.2	15.1	0.38	0.54	49.6
Approach		392	0.5	0.328	6.0	LOS A	2.2	15.1	0.38	0.54	49.9
North: RoadName											
7	L2	35	0.0	0.138	6.7	LOS A	0.7	5.1	0.49	0.64	48.5
8	T1	62	0.0	0.138	6.6	LOS A	0.7	5.1	0.49	0.64	50.5
9	R2	35	0.0	0.138	9.5	LOS A	0.7	5.1	0.49	0.64	52.2
Approach		132	0.0	0.138	7.4	LOS A	0.7	5.1	0.49	0.64	50.6
West: RoadName											
10	L2	2	0.0	0.233	5.7	LOS A	1.4	9.6	0.35	0.54	52.5
11	T1	240	0.0	0.233	5.6	LOS A	1.4	9.6	0.35	0.54	50.5
12	R2	29	0.0	0.233	8.5	LOS A	1.4	9.6	0.35	0.54	50.9
Approach		271	0.0	0.233	5.9	LOS A	1.4	9.6	0.35	0.54	50.6
All Vehicles		924	0.2	0.328	6.5	LOS A	2.2	15.1	0.41	0.58	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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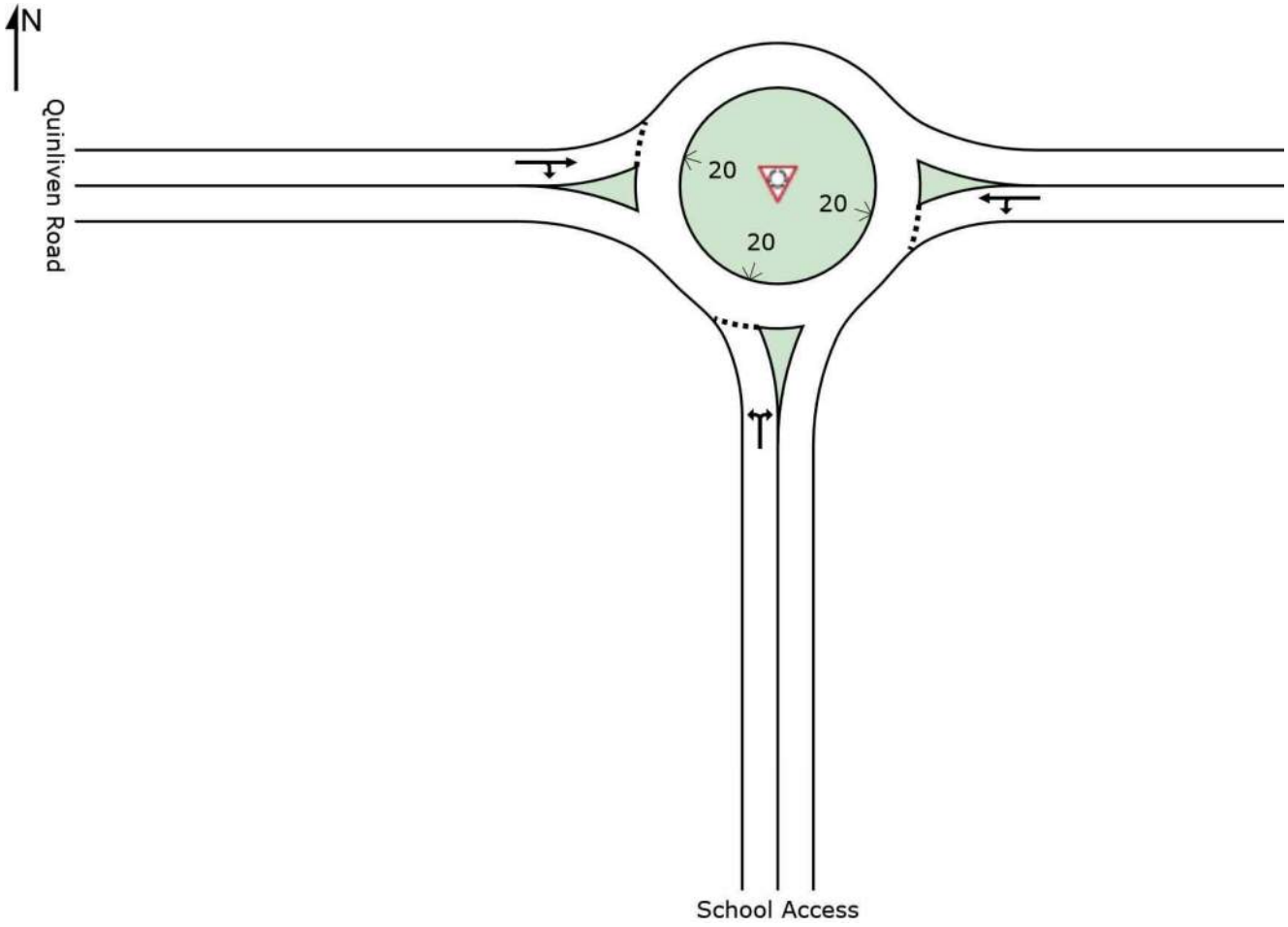
SITE LAYOUT

Site: [Quinliven Road/School Access]

Roundabout



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MOVEMENT SUMMARY

Site: [2026 Project Case Quinliven Road/School Access AM]

Roundabout

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: School Access											
1	L2	347	0.0	0.360	5.7	LOS A	2.5	17.2	0.58	0.64	49.8
3	R2	39	0.0	0.360	10.5	LOS B	2.5	17.2	0.58	0.64	51.7
Approach		386	0.0	0.360	6.2	LOS A	2.5	17.2	0.58	0.64	50.0
East: Quinliven Road											
4	L2	39	0.0	0.318	5.9	LOS A	2.0	13.7	0.56	0.61	49.4
5	T1	296	0.0	0.318	6.2	LOS A	2.0	13.7	0.56	0.61	54.3
Approach		335	0.0	0.318	6.1	LOS A	2.0	13.7	0.56	0.61	53.9
West: Quinliven Road											
11	T1	342	2.3	0.447	4.4	LOS A	3.9	27.3	0.23	0.52	54.1
12	R2	347	0.0	0.447	9.0	LOS A	3.9	27.3	0.23	0.52	47.8
Approach		689	1.2	0.447	6.7	LOS A	3.9	27.3	0.23	0.52	51.5
All Vehicles		1410	0.6	0.447	6.4	LOS A	3.9	27.3	0.40	0.57	51.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

MOVEMENT SUMMARY

Site: [2026 Project Case Quinliven Road/School Access PM]

Roundabout

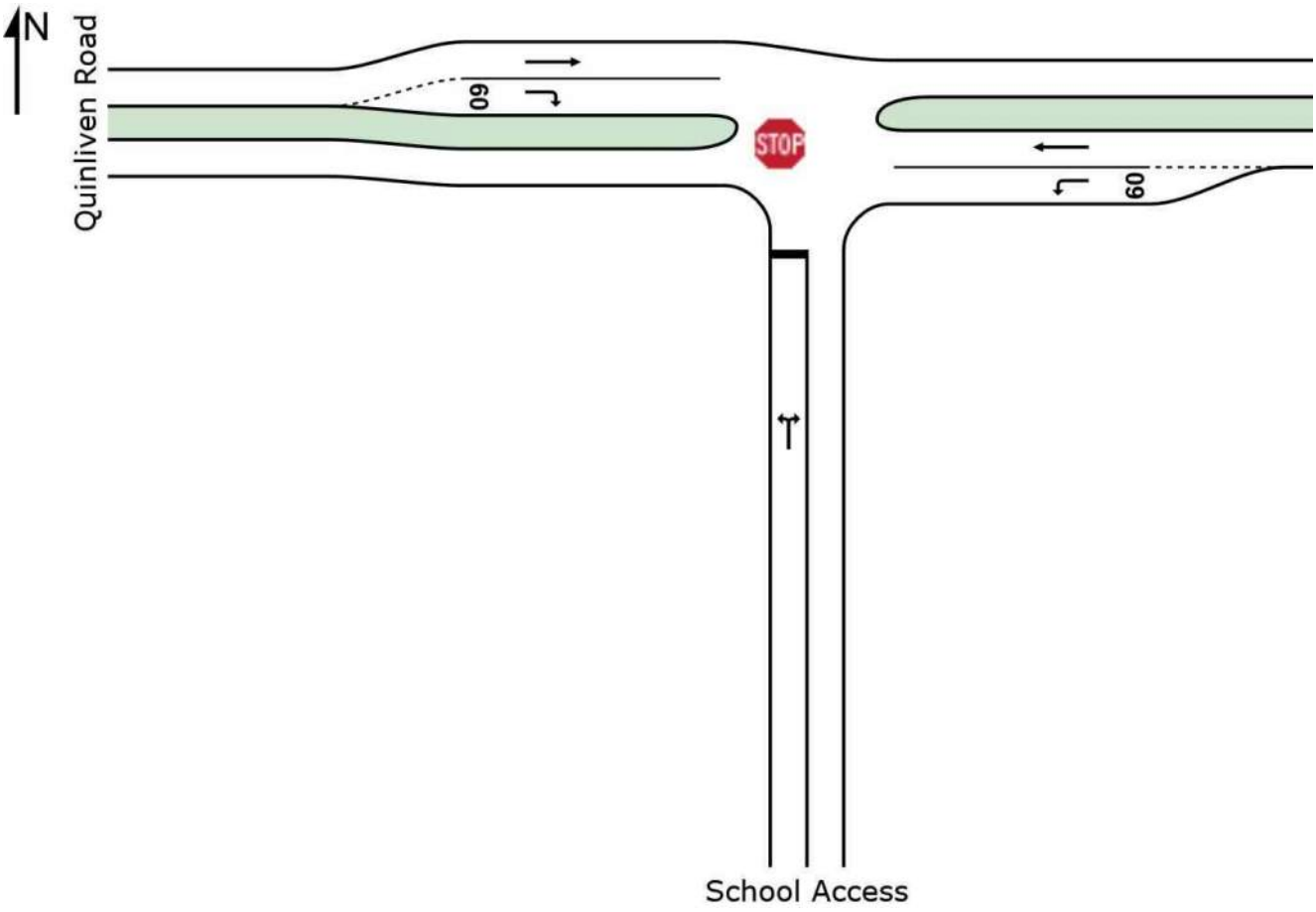
Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: School Access											
1	L2	347	0.0	0.390	6.3	LOS A	2.7	19.0	0.66	0.70	49.4
3	R2	39	0.0	0.390	11.1	LOS B	2.7	19.0	0.66	0.70	51.2
Approach		386	0.0	0.390	6.8	LOS A	2.7	19.0	0.66	0.70	49.6
East: Quinliven Road											
4	L2	39	0.0	0.398	6.1	LOS A	2.6	18.3	0.60	0.63	49.1
5	T1	381	0.0	0.398	6.4	LOS A	2.6	18.3	0.60	0.63	54.1
Approach		420	0.0	0.398	6.3	LOS A	2.6	18.3	0.60	0.63	53.8
West: Quinliven Road											
11	T1	280	0.0	0.407	4.3	LOS A	3.4	23.8	0.23	0.53	54.0
12	R2	347	0.0	0.407	8.9	LOS A	3.4	23.8	0.23	0.53	47.6
Approach		627	0.0	0.407	6.9	LOS A	3.4	23.8	0.23	0.53	51.1
All Vehicles		1433	0.0	0.407	6.7	LOS A	3.4	23.8	0.45	0.61	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: [Quinliven Road/School Access]

Stop (Two-Way)



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Project: C:\Users\Thilini.Pathiranage\Desktop\SIDRA\Adelaid-Schools\Southern\South Australia Southern.sip7

MOVEMENT SUMMARY

Site: [2026 Project Case Quinliven Road/School Access AM]

Stop (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: School Access											
1	L2	347	0.0	0.586	13.2	LOS B	4.7	33.1	0.60	1.11	41.9
3	R2	39	0.0	0.586	36.1	LOS E	4.7	33.1	0.60	1.11	41.7
Approach		386	0.0	0.586	15.5	LOS C	4.7	33.1	0.60	1.11	41.9
East: Quinliven Road											
4	L2	39	0.0	0.021	5.5	LOS A	0.0	0.0	0.00	0.58	49.1
5	T1	296	0.0	0.152	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		335	0.0	0.152	0.7	NA	0.0	0.0	0.00	0.07	59.0
West: Quinliven Road											
11	T1	342	2.3	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	347	0.0	0.338	7.5	LOS A	1.7	11.9	0.49	0.72	46.7
Approach		689	1.2	0.338	3.8	NA	1.7	11.9	0.25	0.36	54.1
All Vehicles		1410	0.6	0.586	6.2	NA	4.7	33.1	0.29	0.50	52.1

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.

MOVEMENT SUMMARY

Site: [2026 Project Case Quinliven Road/School Access PM]

Stop (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: School Access											
1	L2	347	0.0	0.642	15.1	LOS C	5.3	36.9	0.68	1.22	40.5
3	R2	39	0.0	0.642	38.5	LOS E	5.3	36.9	0.68	1.22	40.3
Approach		386	0.0	0.642	17.4	LOS C	5.3	36.9	0.68	1.22	40.5
East: Quinliven Road											
4	L2	39	0.0	0.021	5.5	LOS A	0.0	0.0	0.00	0.58	49.1
5	T1	381	0.0	0.195	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		420	0.0	0.195	0.5	NA	0.0	0.0	0.00	0.05	59.2
West: Quinliven Road											
11	T1	280	0.0	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	347	0.0	0.374	8.5	LOS A	2.1	14.6	0.56	0.81	45.7
Approach		627	0.0	0.374	4.7	NA	2.1	14.6	0.31	0.45	52.9
All Vehicles		1433	0.0	0.642	6.9	NA	5.3	36.9	0.32	0.54	51.6

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.

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3319197-76867/https://projects.ghd.com/oc/SouthAustralia/sastategovernmentinv/Delivery/Documents/331991 97_Traffic Impact Statement for Southern School for DA Submission.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	N. Wass	N. Phillips	NP*	A. Jackson	AHJ	4/12/2019

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Sarah Constructions Pty Ltd

PPP Schools - Aldinga

Services Infrastructure Summary

December 2019

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Appendix A - Services Infrastructure Documentation

1. Introduction

1.1 Background

GHD forms part of the TESA consortium which has been commissioned by the State Government to construct a new B-12 educational facility located in the southern suburb of Aldinga adjacent Quinliven Road. A similar facility will also be constructed at Angle Vale adjacent Riverbanks Road.

The school is proposed to open in 2022. The Education Department is currently working through the planned enrolment for the school and therefore full operation may not be reached for several years after opening. The school will comprise of 1,675 students and 211 teaching/ support staff totalling 1,886 people.

1.2 Purpose of this report

The purpose of this report is to provide a preliminary summary of services infrastructure to be provided for the school in order to inform the development application. This report covers the following services:

- Hydraulics (including water, Sewerage disposal, Waste Water, Gas);
- Electrical (including supply, transformer and roof mounted services);
- General (Common Service Trenches).

The following services are covered in a separate document prepared by BCA Engineers:

- Fire Services (wet and dry Fire);
- Mechanical Services;
- ICT (Information and Communication Technology).

1.3 Scope and limitations

This report: has been prepared by GHD for Sarah Constructions Pty Ltd and *may only be used and relied on by Sarah Constructions Pty Ltd for the purpose agreed between GHD and the Sarah Constructions Pty Ltd as set out in this report.*

GHD otherwise disclaims responsibility to any person other than Sarah Constructions Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

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1.4 Assumptions

This summary report is subject to the following assumptions and limitations:

- This summary is applicable to the current site layouts and associated maximum demands for each service;
- This summary is based on advice received from Supply Authorities to date.

2. Hydraulic Services

2.1 Water Supply

2.1.1 Potable Water

SA Water is the authority responsible for potable water connections for the site and as such is the AHJ (Authority Having Jurisdiction) for obtaining domestic cold water supply connections from the SA Water potable water network. TESA Education will provide to the AJH:

- Estimated daily water demand in kL/day and peak flow in litres per second;
- Preliminary site plans showing desired points of connection to the SA Water network.

SA Water will conduct desktop modelling to confirm to the design services consultant whether the existing network will be able to sustain the demand or whether upgrades are required. They will also be responsible for recommending the size of the site water meter. Once this is confirmed SA Water will approve the design for connection. TESA Education will lodge an official connection application to SA Water to obtain a connection date.

SA Water will tap the water main into the property and supply the water meter and as such own the service up to the water meter.

Reticulation from the main water meter will be via underground trenches (in common services trenches where possible) to each building and service.

2.1.2 Non-Potable Water

Recycled water mains are owned by the Council for the proposed site. The same process as above will apply, however the submission of demands and site plans will be made to the Council.

There are existing supply agreements in place between Onkaparinga Council and the State. TESA Education will utilise these to connect recycled water to the sites.

Non-potable water will be utilised for irrigation purposes for the site.

2.2 Wastewater and Sewerage Disposal

2.2.1 Sewer

SA Water is the authority responsible for sewer connections for the site and as such the authority having jurisdiction (AHJ) for obtaining discharge connections for sewage to the SA Water sewerage network. TESA Education will provide to the AJH:

- Estimated sewer discharge loads in the form of total sewage in kL/day, total loading units and peak flow;
- Preliminary site plans showing desired points of discharge to the SA Water network.

Upon receipt of this information SA Water will conduct desktop modelling to confirm to the design services consultant if the existing network will be able to sustain the flow or if upgrades are required. Once this is confirmed SA Water will approve the design for connection. TESA Education will lodge an official connection application to SA Water to obtain a connection date.

The site sewer network will discharge by gravity to a pump station on the site. From there the sewer will discharge via a pumped main to an SA Water connection point.

2.2.2 Trade Waste

SA Water is the authority responsible for trade waste connections for the site and as such the AHJ for obtaining permission to discharge treated trade waste to sewer and confirming the level of treatment required. TESA Education will provide to the AJH:

- Calculated trade waste load in accordance with SA Water trade waste guidelines and list of discharge fixtures;
- Type of treatment device to be installed;
- Risk assessment category in accordance with SA Water trade waste guidelines;
- The location of treatment device and sampling points.

The SA Water trade waste team will verify the risk assessment category and verify the calculation and selected treatment device. If acceptable, TESA Education may proceed with installation of the treatment device, e.g. grease interceptor.

A similar process with the exception of the risk assessment category will apply to settling pits for arts areas where paint is expected to be washed into the waste system.

Multiple hydraulic systems at the school will require pre-treatment and as such are classified as trade waste. These include:

- Commercial kitchen waste;
- Art rooms (paint and clay sinks);
- Science labs.

Generally, trade waste will be plumbed independently to the sanitary drainage system from each relevant fixture, with gravity discharge from a single main to the dedicated pre-treatment device (for the local group of fixtures).

Pre-treatment devices will be located close to the trade waste discharge points. For any distance over 30m (e.g. for kitchen trade waste) an automatic hot flushing device will be implemented for the branch.

Neutralising tanks will be installed to receive trade waste discharge from all science labs. The sizing of the tanks has been based on advice from the SA Water Trade Waste team and will account for a peak flow based on one-hour detention time.

2.3 Gas

APA Group is the authority responsible for gas connections for the site and as such the AHJ for obtaining a gas supply connection. TESA will provide to the AJH:

- Estimated peak gas load in MJ/hour;
- Preliminary site plans highlighting desired points of connection to an existing gas main.

APA Group will confirm available capacity and tapping pressure to site. TESA Education will need to lodge an official application to receive the new gas connection including gas meter. The APA Group will be responsible for providing the connection to the site.

A new connection will be provided from Quinliven Road from an existing DN100 authority high pressure gas main. A gas meter with a primary regulator and site gas shutoff will be provided on the site boundary.

3. Electrical Services

3.1 Electrical Supply

SA Power Networks (SAPN) is the authority responsible for power connections and as such the authority having jurisdiction (AHJ) for obtaining a power connection to a site. The process for obtaining a connection involves:

- Providing AHJ with a calculation of the estimated maximum demand for the site, proposed type of use of the facility and hours of operation. The initial documentation will also include details of any easements, PV system details as well as proposed location of the connection (transformer) on site and an indication of the location of the SMSB. This has been completed by the State during the Tender period.
- Requesting a preliminary quotation from the AHJ for the provision of the power connection noting network augmentation charges and contestable and non-contestable works. This has been completed by the State during the Tender period.
- The preliminary quotation will provide an estimate of cost but is not binding. To obtain a binding firm quotation, SAPN will require payment. This is typically a small amount that is deducted from the connection cost should the connection proceed. This is currently underway through TESA.
- To request firm quotation a completed section of the preliminary quotation must be returned to SAPN with payment. This is currently underway through TESA.
- The formal quotation will present the total cost of the connection showing network augmentation costs, contestable works, non-contestable works and any relevant rebates. This is expected to be provided by SAPN in the near future.

As part of the above process a concurrent application will be made to connect the 400kW solar PV system to the grid. This process will involve:

- Completing and submitting sections 1 and 2 of the Large Embedded Generation Application Form;
- SAPN providing a Connection Enquiry Response either requesting further information (through a High-Level Feasibility Response which may be subject to fees) or progressing directly to an Application to Connect;
- Completing section 3 of the Large Embedded Generation Application Form if requested;
- SAPN providing an Engineering Report and a Connection Offer.

Once the Connection Offer is returned with the applicable payment made for SAPN design and planning, SAPN will commence preparing for the works.

TESA will seek ESCOSA approval. Given the size of the proposed PV system it is likely that information provided to SAPN will be adequate for an ESCOSA submission. An additional application form will be required with specific information required about the owner/operator of the plant before approval is given for the PV system to be connected.

3.1.1 HV Reticulation

A 1500kVA transformer will be provided located as centrally as possible to the electrical load and connected to the local 11kV SAPN infrastructure. The transformer will be connected via an easement through the site. The location of the transformer and easement are shown on the plans provided.

The 1500kVA transformer is sized based on the calculated maximum design for each site of 1200kVA including 25% spare capacity. The calculated maximum demand takes into account the future primary and secondary buildings.

3.1.2 Photovoltaic (PV) System

A 400kW PV system will be deployed at the site. Solar panels will be installed on the secondary school buildings' North facing roofs. The secondary school buildings have been selected due to the nature of likely use of the buildings (home economics, trade training centres, media rooms etc) and likely higher daily demand.

Solar power will be connected to local MDBs on buildings where it is installed. All metering above the solar power connection will be import/export type.

4. General Services

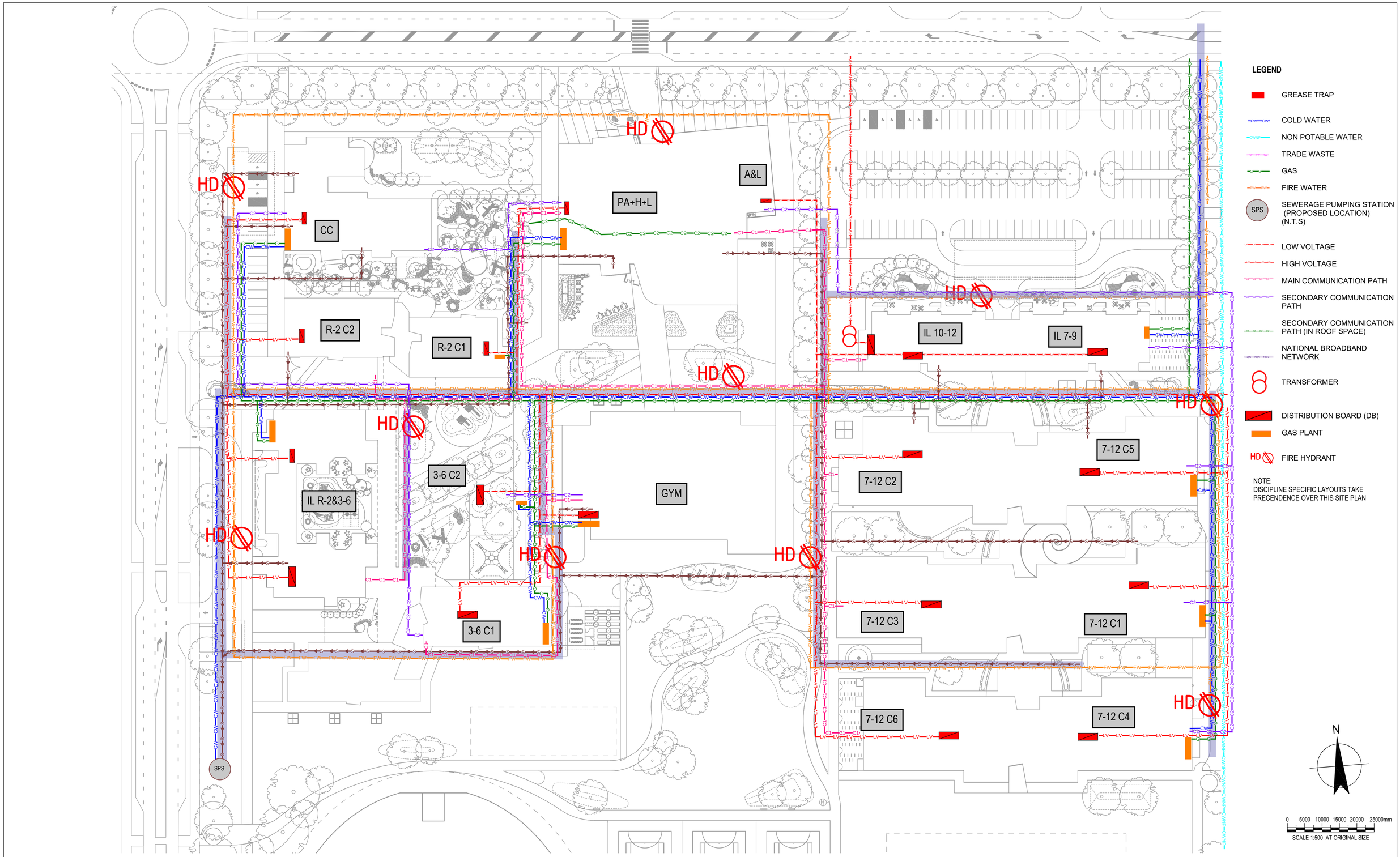
4.1 Common Service Trenches

All site distribution will be arranged in common services trenches where possible to minimise trenching and more effectively connect buildings.

Layouts showing common services trenches are shown in Appendix A.

Appendices

Appendix A - Services Infrastructure Documentation



LEGEND

- GREASE TRAP
- COLD WATER
- NON POTABLE WATER
- TRADE WASTE
- GAS
- FIRE WATER
- SPS — SEWERAGE PUMPING STATION (PROPOSED LOCATION) (N.T.S)
- LOW VOLTAGE
- HIGH VOLTAGE
- MAIN COMMUNICATION PATH
- SECONDARY COMMUNICATION PATH
- SECONDARY COMMUNICATION PATH (IN ROOF SPACE)
- NATIONAL BROADBAND NETWORK
- TRANSFORMER
- DISTRIBUTION BOARD (DB)
- GAS PLANT
- HD — FIRE HYDRANT

NOTE:
DISCIPLINE SPECIFIC LAYOUTS TAKE PRECENDENCE OVER THIS SITE PLAN

N

0 5000 10000 15000 20000 25000mm

SCALE 1:500 AT ORIGINAL SIZE

CO-ORDINATED PART PLAN A

SCALE 1:500

PRELIMINARY

No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
D	DA SUBMISSION	NH	MV	AHJ	04.12.19
C	RFP SUBMISSION	MS	MV	AHJ	08.08.19
B	RFP SUBMISSION	MS	MV	AHJ	01.08.19
A	RFP SUBMISSION	MS	MV	AHJ	24.07.19

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Drafting Check		Design Check	
Approved (Project Director)		Approver	
Date			
Scale	1:500	This Drawing must not be used for Construction unless signed as Approved	

Client **SARAH CONSTRUCTIONS**
Project **S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP**
Title **HYDRAULIC SERVICES**
GAS SERVICES - SCHEMATIC

Original Size **A1** Drawing No: **33-19197-G004** Rev: **D**

Plot Date: --
Cad File No: --

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3319197-82134/https://projects.ghd.com/oc/SouthAustralia/sastategovernmentinv/Delivery/Documents/3319197-REP_Service Infrastructure Report - South Site.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	M Vujasinovic	A Johns	ALJ*	A Jackson	AHJ*	04.12.2019

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Sarah Constructions Pty Ltd

PPP Schools - Aldinga

Environmental Site History and Assessment

December 2019

03 December 2019

City of Onkaparinga
PO Box 1
NOARLUNGA CENTRE SA 5168

Our ref: 12521992
Your ref:

Dear Sir/Madam

State Public Private Partnership Schools Project
Supporting Information for Development Application - Summary of Prelimminary Site Investigation, Southern Site, Aldinga

1 Introduction

This letter provides a summary of the Preliminary Site Investigation (PSI) undertaken by Aurecon Australasia Pty Ltd (Aurecon) for the purpose of supporting the development application (DA) for the State Public Private Partnership (PPP) Schools Project.

The review of the PSI report has been undertaken by Julian Howard of GHD, who is a certified environmental practitioner (site contamination specialist).

2 Summary

2.1 Guidelines

The PSI was considered to have been undertaken in accordance with the requirements set out in the National Environment Protection (Assessment of Site Contamination) Measure, 1999, as amended in 2013 (ASC NEPM) and the South Australian Environment Protection Authority (SA EPA), 2018 Guideline on the assessment and remediation of site contamination.

2.2 Site Details

The site is located within a larger certificate of title described as CT volume 5969 in folio 161 and is bound by broad acre agriculture to the east and south, recreational facilities to the east and a mix of broad acre agriculture and residential land use to the north.

2.3 Desktop Site History Review

The desktop site history review confirmed the site has been used for broad acre agriculture from sometime before 1949 through to present day. No other potentially contaminating activities (PCAs) were identified to have occurred on the site as part of the site history review.

A site, located approximately 250 m up and/or cross hydraulic gradient of the site was identified to have a notification under Section 83A of the Environment Protection Act 1993 relating to contamination that threatens or harms groundwater.

2.4 Site Inspection

The site inspection identified the following in relation to the site:

- No evidence of contamination or PCAs was observed on the site;
- A number of PCAs were identified within or adjacent to the certificate of title boundary associated with a stockpile of uncontrolled fill material and burn piles;
- A possible fire training area was identified to the south west of the site associated with the Aldinga Country Fire Service.

2.5 Potentially Contaminating Activities and Contaminants of Concern

The PCAs identified during the site history investigation and site walk over are summarised in Table 1.

Table 1 Summary of PCAs and associated contaminants of potential concern (CoPCs)

PCAs	CoPCs
Use of herbicides/Pesticides	Organochlorine Pesticides/Organophosphate Pesticides (OCPs/OPPs), Phenoxy herbicides, Glyphosate, metals
Use, storage and maintenance of machinery	Hydrocarbons and metals
Storage of chemicals	OCPs/OPPs, metals herbicides, nitrates, nutrients and hydrocarbons

2.6 Limited Soil Investigation

The limited soil investigation included drilling of 25 boreholes and analysis of samples collected from six boreholes. The locations of the six boreholes were spread across the site, which was considered reasonable considering the desktop site history did not identify any localised PCA on the site.

The analytical suite selected for the samples analysed was considered sufficient to assess CPoCs, with the exception of phenoxy herbicides and glyphosate.

2.7 Conclusions and Recommendations

The review of the Preliminary site investigation identified the following:

- The PSI was undertaken in accordance with the ASC NEPM and SA EPA Guidelines;
- The PCAs identified as part of the site history review and site walkover were considered reasonable;
- The limited soil sampling and analysis assessed for the presence of most of the CoPCs with the exception of phenoxy herbicides and glyphosate.

It is recommended that limited soil sampling is undertaken in conjunction with geotechnical investigations to assess whether phenoxy herbicides and glyphosate are present in the soil at the site.

3 Closing

We trust this summary of previous investigations is sufficient to inform the progression of the Development Application. Should you have any questions please do not hesitate to contact the undersigned.

Sincerely
GHD

Julian Howard
Manager - Environmental and Planning
+61 8 81116672

SA Schools PPP Project

Crime Prevention Through Environmental Design

4 December, 2019

SA Schools PPP

Crime Prevention Through Environmental Design

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Ref: 51354CPTEDSOUTH01
Date: 9 December 2019
Revision: B

SA Schools PPP

Crime Prevention Through Environmental Design

REVISION HISTORY

Date	Revision
3 December, 2019	Draft for review.
4 December, 2019	Planner feedback incorporated. Issue for inclusion in DA documentation.

SA Schools PPP

Crime Prevention Through Environmental Design

1 PROJECT OVERVIEW

The SA Schools PPP Project will deliver two new birth to Year 12 schools, each designed for 1,675 students with capacity to expand in the future to 2,084 students. The school sites are at Angle Vale to the north of Adelaide and Aldinga to the south. The TESA Education team has designated the two schools as the ‘River’ and ‘Coast’ schools respectively.

The vision for the new schools is to provide a strong sense of community within a village-like environment, focused on learners and learning. The school facilities will be integrated with the local context to foster community connections and maximise utilisation of this significant asset. Vibrant, busy and active places, the schools will support wellbeing of the school and their respective local community.

The State’s requirements for the schools are described in the suite of RFP documents, in particular Volume 3 Outline Scope and Requirements (OSR). The Education Framework and ODASA School Design Principles are consistent for both schools.

Local context statements have been provided by the local councils for each site. These statements reflect the site-specific cultural context and Council’s aspiration for integration of the schools into the local community. Each council has requested opportunity for community use of school facilities. This is in alignment with Education’s goal to design schools as community hubs.

The school designs for both the River and Coast school campuses are alike, consistent with the Education Framework. The intention is to ensure equity of provision for all learners, irrespective of where they may live.

Landscape and urban design principles have guided the master plan approach for each campus, informed by site specific opportunities and constraints. Key factors are the local context and connections and dimensions of the sites. The two sites are of equivalent area; however, the north site is square while the south site is rectangular. There is variation in the layout of site works elements, including access and parking, sports fields and utilities.

2 REPORT PURPOSE

This **Crime Prevention Through Environmental Design (CPTED)** report has been prepared to accompany the Development Application for the new school at Aldinga.

CPTED is guided by four (4) principles, which include:

- Territorial reinforcement;
- Surveillance;
- Access control; and
- Space / activity management.

All CPTED strategies aim to create the perception or reality of *capable guardianship*.

This report outlines measures or features incorporated into the proposal to deter criminal behaviour through environmental design.

A formal crime risk assessment has not been carried out.

3 DESIGN BRIEF

The project design has been developed in response to:

- The suite of RFP Documents, in particular Volume 3 Outline Scope and Requirements (OSR); and
- Education Design Standards

These documents outline the User Requirements for safety and security.

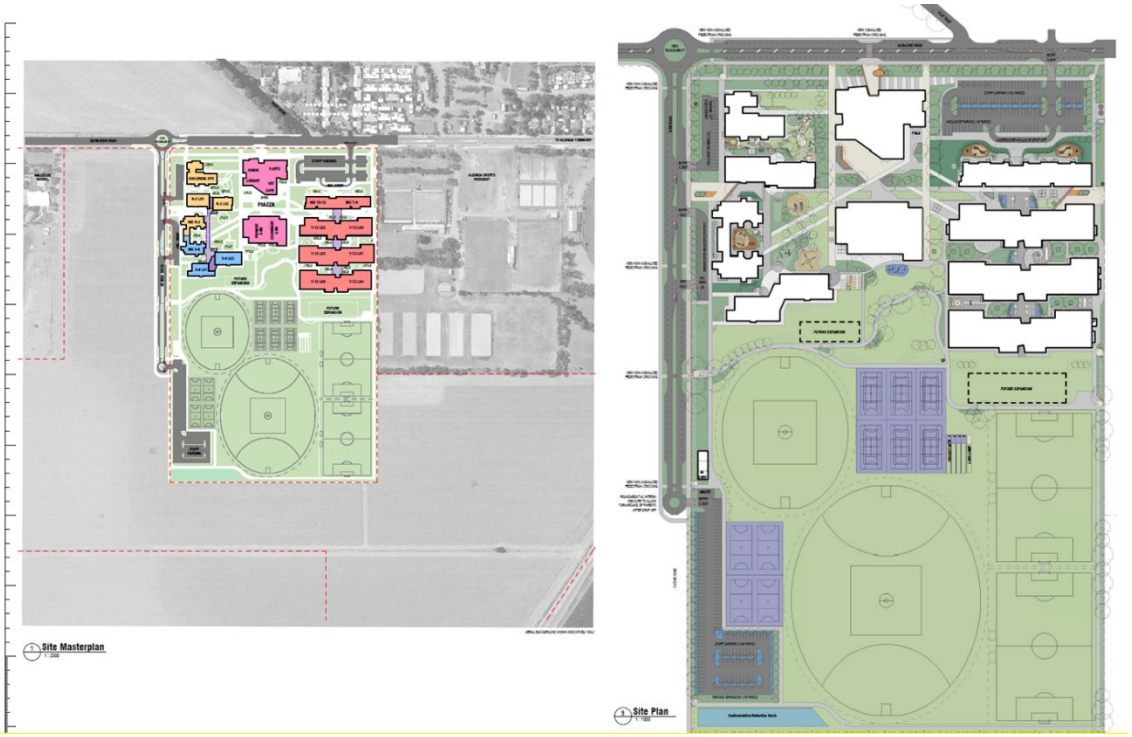
Input from the local Council(s), DPTI and ODASA has informed the site master plan design and provision for connectivity with the local environment.

Primary safety concerns for the School are:

- User safety – personal safety, separation of pedestrians and vehicles; and
- Minimising the potential for vandalism of the built fabric and school grounds.

4 DESIGN PROPOSAL

4.1 MASTER PLAN LAYOUT



Aldinga Master Plan

The school buildings are located in the northern part of the site, close to the principal address point. Outdoor sporting facilities are in the south. The master plan consolidates the building footprint in order to maximise open outdoor space and reduce impermeable area. A key benefit of this strategy is excellent proximity of the diverse functional areas within the school and ease of access between.

The topography of both school sites has a very gentle gradient, apparently flat. The school building layout is based on a grid, aligned north-south and broadly parallel with the site contours. This has produced a design response with optimal orientation of buildings for good environmental outcomes.

Buildings are laid out to form a series of outdoor spaces, with variety of scale, size and functionality. In the primary and secondary school zones, the building forms are designed to enclose the interstitial courtyards, providing shelter from wind and adverse weather in particular from the south-west. This will enable use of these spaces throughout the year.

Building setout, in particular the spaces between buildings, is designed to optimise daylighting and sun-shading, providing a high level of amenity for all building users. This strategy will also contribute to energy efficient building systems.

The plaza entry is at the north, addressing the principal school access point. There are designated entries for primary and secondary school zones in the west and east. Informal access points are provided around the campus to enable mainstream students and community access to the school and to the outdoor sports facilities. There are cross-site pedestrian and cycle paths.

Walking and cycling connectivity plan

The principal school address point is the group of ‘civic’ scale community buildings laid out to create a north facing entry plaza. This space will be an important gathering area, a place of convergence of various pedestrian and cycle access routes, and the key public face of the school. The community buildings are sited close to the northern site boundary, adjacent the road frontage, to create a prominent frontage and unambiguous point of entry to the school.

The master plan is designed for permeability, with numerous access points around the perimeter. These will support connectivity and ease-of-access, helping to establish strong community links with the school.

TESA Educations public art strategy proposes site specific artworks be embedded at key points within the school, namely the Entry Plaza, Primary Hub outdoor area and Secondary Hub interface with the Piazza. The wayfinding strategy connects these elements physically and symbolically, creating a strong sense of place and identity.

The community buildings are two storeys in volume, and include the performing arts facilities, library, administration and gymnasiums. The primary school and secondary school buildings are single storey volumes on the west and east sides of the campus respectively. This creates a subtle transition from the larger scale buildings at the centre of the school to smaller scale buildings at the site edges. This will be an appropriate scale aligned with the planned residential developments in the neighbourhood. Building size and scale across the campus is commensurate with group size and age, as per the OSR.

The component parts of the school are linked by the piazza. The piazza is the external expression of the Community Hub, linking all school zones. Envisaged as a linear space providing connections between the various functional areas arranged along the edges, the piazza is designed to support a variety of activities along the length. Outdoor seating for the café, planted areas, informal gathering spaces and outdoor learning area for performing arts, library and vocational education training are provided for. Moving through this central open space is a 'journey' designed to build community through connections between different functional areas and encouraging physical movement.

The school design embodies the principle of 'school as community hub', providing for community use of school facilities. The piazza at the heart of the school will be a gathering and meeting place, providing safe place for students before, during and after school.

School Zones

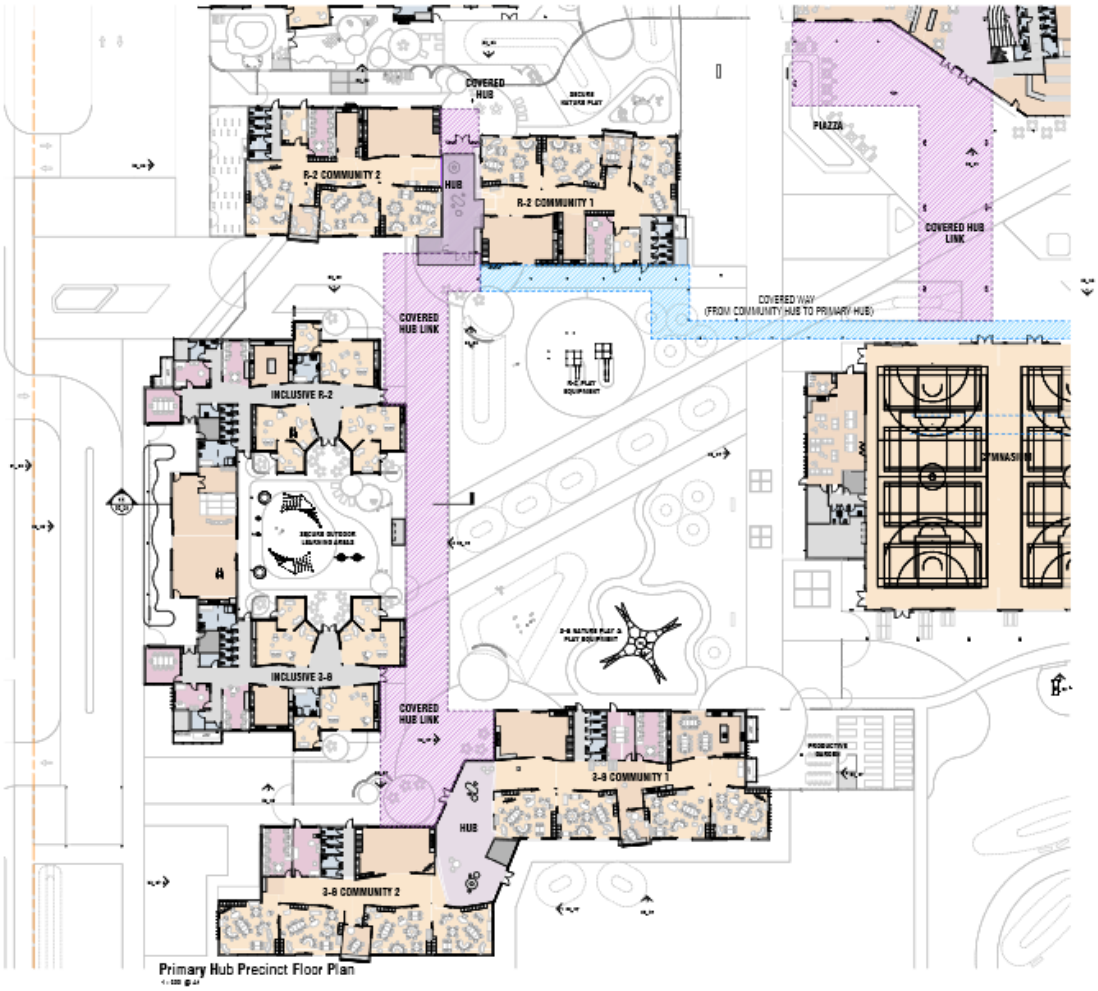
The school design provides for students from birth to year 12. The master plan embodies the principle of 'schools within schools', with four distinct zones:

- Early Years;
- 3–6;
- 7–12; and
- Community.

The master plan design creates a distinct character or identity for each zone through building size and scale and the form of complementary outdoor spaces.

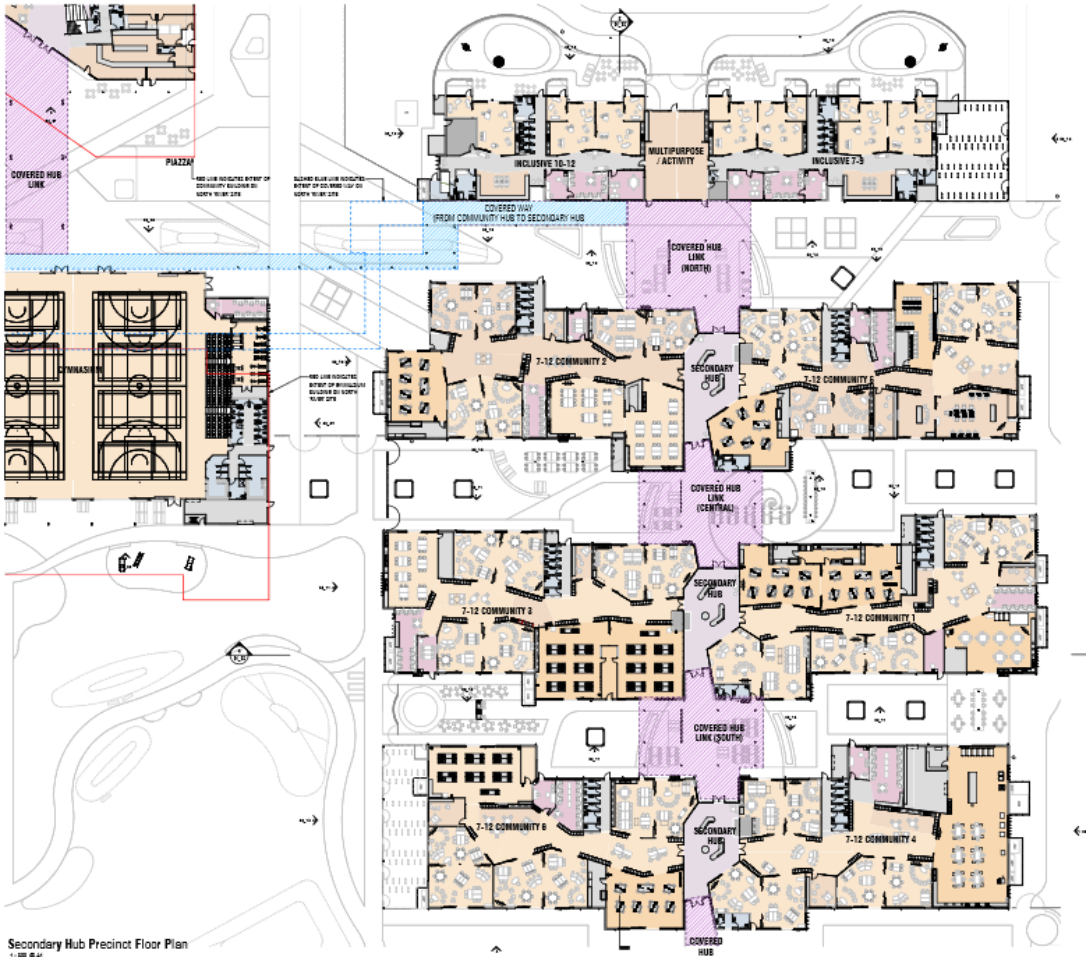
The layout of learning zones and learning communities is arranged to reflect students' progression through the school. The pathway from children's centre to early years, primary and then secondary schools is visible to students. At each point on their education journey students have a visual connection to their next destination.

The Early Years R–2 and 3–6 buildings are arranged around a central open space connected by the Primary Hub. Within the open space are a range of nature play, playground and outdoor learning settings.



Primary Hub Precinct Floor Plan

The 7–12 buildings are laid out as a series of parallel ‘fingers’, linked by a central linear ‘spine’ which creates the Secondary Hub. The interstitial spaces are ‘discipline’ outdoor learning spaces with direct connection to the discipline indoor learning spaces. The outdoor areas are designed with flexibility for both discipline specific use and informal uses.



Secondary Hub Precinct Floor Plan

4.2 ARCHITECTURAL DESIGN

The vision for the school is to provide a strong sense of community within a village-like environment focused on learners and learning. The school design has been developed in a logical manner based on the adjacencies and functional requirements described in the OSR and supporting documents.

Architectural Presentation

Focused around a central group of community buildings, the school campus is designed with distinct zones for primary and secondary school buildings at either side. The design solution is predominantly single storey. This strategic approach ensures universal access across the site, enabling direct, functionally effective connectivity between indoor and outdoor spaces throughout the school.

The principal school address point is defined by the group of ‘civic’ scale community buildings, laid out to create a north facing entry plaza. This space will be an important gathering area, a place of convergence of various pedestrian and cycle access routes and the key public face of the school. The community buildings are sited close to the northern site boundary adjacent to the road frontage to create a prominent frontage and unambiguous point of entry to the school.

Building Height and Form

The community buildings are two storeys in volume, and include the performing arts facilities, library, administration and gymnasiums. The primary school and secondary school buildings are single storey volumes at the west and east sides of the campus respectively. This strategy creates a subtle transition from the larger scale buildings at the centre of the school to smaller scale buildings at the site edges. Building size and scale across the campus is commensurate with the respective user group size and age, as per the OSR.

A strong, cohesive visual language unites the building designs. This is characterised by simple, rectilinear footprints, skillion roof forms and a restrained materials palette appropriate to the semi-rural context. The collection of small-scale buildings is linked by a variety of open spaces together forming a village-like environment in which people will feel welcome and safe.

External Spaces

The component parts of the school are linked by the piazza. The piazza is the external expression of the Community Hub, linking all school zones. Envisaged as a linear space, connecting the various functional areas arranged along the edges, the piazza is designed to support a variety of activities along the length. Outdoor seating for the café, planted areas, informal gathering spaces, and outdoor learning area for performing arts, library and vocational education and training are woven into the fabric of the piazza. Moving through this central open space is a ‘journey’, designed to build community through connections between different functional areas and encouraging physical movement.

At the heart of the school, the piazza will be a gathering and meeting place, providing safe place for students before, during and after school. The library, gymnasiums and performing arts facilities are located adjacent to the piazza to create a fully integrated and functional facility for community use. The façades which adjoin the piazza have generous openings, enabling the whole area to be physically connected to create a large gathering space suitable for a variety of school and community events.

Relationship of External to Internal Spaces

Consistent with the objective of maximising site utilisation, the outdoor spaces distributed around the school are each designed with clear functional intent, providing for formal and informal learning settings and casual gathering. Of various sizes, scale and character, each outdoor space is physically and visually connected with the adjacent indoor functional areas. Size, proportion and orientation of the open spaces are designed for optimal shelter and sunlight access. The design ensures visual connectivity between outdoor spaces for observation and safety of all users.

Access and Movement

Principal pathways for access and movement through the school are through the shared outdoor spaces. This strategy will reinforce the village-like environment, fostering informal and spontaneous interaction between the school users. A covered pathway is provided to each space within the school for convenience of movement in all weather conditions. Shelter is provided by a variety of roof overhangs, verandahs and freestanding canopies. The hubs provide generous circulation, gathering and learning spaces for each of the community, primary and secondary zones, expressed as a sequence of indoor and sheltered outdoor spaces.

5 CPTED MEASURES

5.1 TERRITORIAL REINFORCEMENT

Schools as Community Hubs

The new school will be a community focal point. The design approach acknowledges the importance of the school to the community by providing convenient access into the school and enabling community use of school facilities.

The master plan layout provides ease of access into the school, and to the particular spaces designated for community use. The principal entry connects directly to the Community Hub, the actual and symbolic heart of the school design. There are multiple points of entry to the school, providing great connectivity with the community – both physically and symbolically.

The library, gymnasiums and performing arts facilities are located adjacent to the piazza to create a fully integrated and functional facility for community use. The façades which adjoin the piazza have generous openings, enabling the whole area to be physically connected to create a large gathering space suitable for a variety of school and community events.

The primary and secondary gymnasiums are co-located in a single building for enhanced functionality. The two playing courts are divided by a retractable net. The combined space will accommodate large gatherings of school groups and community groups. The gymnasium building and sports fields are close to the outdoor sports facilities. PE outdoor learning areas at the southern edge of the gymnasium connect the indoor and outdoor sporting facilities. This arrangement meets the school's adjacency requirements and offers convenience for integrated community use of all the sporting facilities.

The locations of site entry points and community use facilities are coordinated to ensure community users have convenient options for accessing the site via a range of travel options.

Utilisation of the school facilities outside school hours will enhance the security of the school precinct by providing natural surveillance. Users will be encouraged to take ownership and feel a sense of responsibility for the school grounds.

5.2 SURVEILLANCE

Natural Surveillance

The school is designed with transparency and connectivity of open spaces and circulation, enabling users to see and be seen by others. This natural surveillance approach will provide a safe and welcoming environment.

Natural surveillance of open space and sports / community areas is provided by:

a) Locating adjacent to activity centres, in particular the Community access spaces;

b) Providing for pedestrian (and cyclist where appropriate) movement through the space;

c) Ensuring clear sight lines from, and between, buildings and open space areas; and

d) Designing out entrapment spaces.

Planning arrangements within the school are designed to enable natural surveillance of outdoor areas and within all learning spaces. Clear sightlines are provided from the central open space to adjoining spaces. Alternative means of access / egress are provided for all spaces to minimise the possibility of entrapment. Student toilets are conveniently accessed from the circulation zones and the entrances are highly visible.

Natural surveillance will be enhanced through the planned community use of school facilities outside of school hours, in alignment with *DEC Schools as Community Hubs* policy. Ongoing community user presence will both provide informal surveillance and foster a sense of ownership and responsibility for the school buildings and grounds.

The site-wide lighting design provides for safe circulation through the outdoor spaces. Illuminance levels required for this purpose are suitably low to avoid creating a light spill nuisance.

Lighting will be provided to carpark areas.

Councils have requested lighting to allow the sports fields to be used by the community outside of school hours. This lighting will be switched on when sports fields are in use.

Technical / Mechanical Surveillance

CCTV coverage is incorporated within the school grounds.

Peripatetic security patrols / inspections will supplement natural surveillance.

5.3 ACCESS CONTROL

Access and Movement Principles

Natural access is considered, providing clear entry and exit points and legible, accessible routes through and around the school site.

The school address is welcoming and approachable. Designed to provide ease of access, the school layout is physically and visually permeable. Transparency of the building facades, in particular at the principal entry, provides unobtrusive wayfinding and enables school users and visitors to confidently identify their destination.

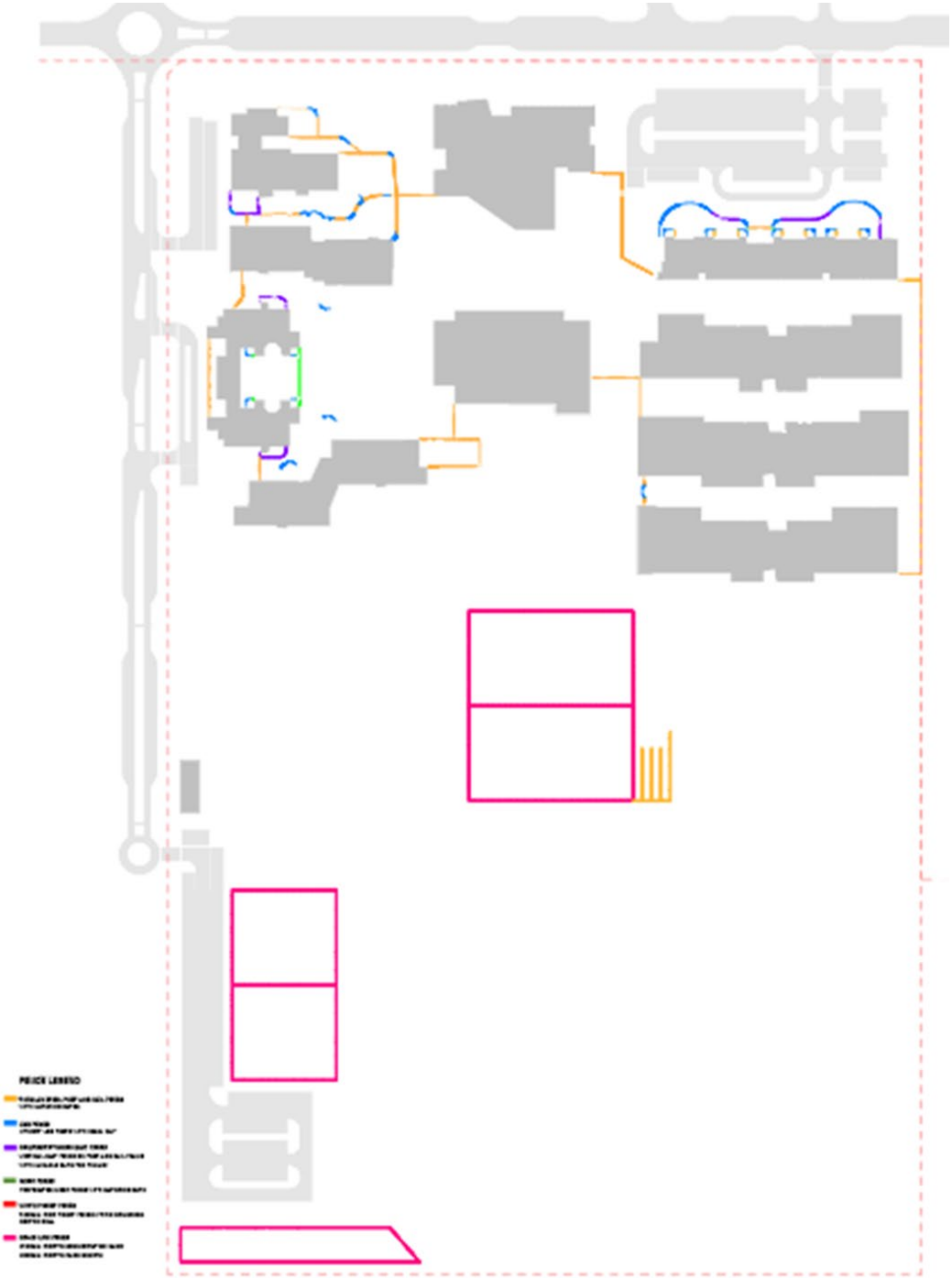
Principal pathways for access and movement through the school are through the shared outdoor spaces. This strategy will reinforce the village-like environment, fostering informal and spontaneous interaction between the school users. A covered pathway is provided to each space within the school for convenience of movement in all weather conditions. Shelter is provided by a variety of roof overhangs, verandahs and freestanding canopies. The hubs provide generous circulation, gathering and learning spaces for each of the community, primary and secondary zones, expressed as a sequence of indoor and sheltered outdoor spaces.

School buildings

The school layout has been designed to meet security and duty of care responsibilities throughout the course of the day, before, during and after school hours. The master plan layout forms four zones (learning communities). To manage access at different times of day or year, these zones may be independently opened or secured to suit the various modes of operation anticipated.

The fencing strategy uses the buildings as a containment line, supplemented by infill fencing and gates. The fencing will be visually permeable, enabling sightlines into the secure area. These will be complemented by CCTV coverage and security patrols.

The following diagrams show the proposed fence and gate locations, and the zones contained within the secured areas.



Fencing Plan

A variety of fencing styles are proposed across the site as identified below and illustrated on the fencing plan NOR-ARC-DA-DWG-09_20.

- Tubular steel post and rail fence with matching gates
- Log fence comprising upright log posts with 85-millimetre gap;
- Composite timber slat fence comprising vertical slat fence on post and rail frame with variable gaps for privacy;
- Mesh fence comprising perforated mesh fence with matching gate;
- White picket fence comprising 1,200-millimetre-high picket fence within Children Centre Nola; and
- Chain link fence:
    - 2,100-millimetre-high to sedimentation basin; and
    - 3,600-millimetre-high to hard courts.

The balance of the site will not be fenced.

The main securable area will be opened during school hours and closed out of school hours.

Fences will be located to create a secure zone at the heart of the school. When secured, this zone allows access to the community facilities in the gymnasium and performing arts facilities.

Access to drop off zones, carparking, and community spaces, including the sports fields and gymnasium is maintained during and outside school hours, independent of the securable area.

Site boundary

The site boundary will be primarily defined by a vegetation buffer, consisting of trees and low-level vegetation. This is deliberate strategy to avoid barriers and to encourage informal use of the school grounds by the community.

Adjacent to the ovals and sports fields, a continuous garden mound / planted berm (approximately 600-millimetre-high) will be integrated into the vegetation buffer. This element, along with strategically placed boulders, will create a physical barrier to ingress and egress for both students and vehicles.

At all pathway entrances to the school site, a feature pavement denotes the site threshold. All pedestrians and cyclists entering the site will cross this pavement. At the three principal entry points, this is a significant entrance statement combined with art installations linking directly to the piazza. At minor site entry ‘nodes’ this will be a smaller paving feature in combination with a seat. This is also a safety measure, requiring cyclists to reduce speed upon entering and leaving the school site.

Pedestrians and vehicles

Master planning of the school ensures separation of pedestrian and vehicle movements.

Car parking is distributed in two key locations: a northern location and southern location on each site. This zoning will spread traffic load at arrival and departure times. Pedestrian access routes between the car parks and the school / community accessible facilities are clear and direct.

Outside school hours, the two car parking areas are designed to serve the two principal zones of community accessible facilities, ie the northern parking areas will serve the Theatre, Library, and OSHC, and the southern parking areas will serve the sports / playing fields. The Gym, being centrally located will be equally convenient to access from the north and south parking areas.

Car parking areas are located at the school site periphery. A landscape buffer is designed between the car parking areas and the site boundary, comprising tree planting and low shrubs / groundcover plants. This will provide both visual amenity and passive surveillance from the public roads into the site.

5.4 SPACE / ACTIVITY MANAGEMENT

Extended hours of occupation by the School, Community and local Council access and use regime will engender natural community control and maximise community safety around the School site.

Maintenance

The PPP Contract includes provision of Security and Maintenance services for the term of the Contract. The regular maintenance and security regime will ensure that the school and grounds are attractive and inviting, supporting ongoing school and community occupation of the school facilities.

Durability of External Materials, Finishes and Fixtures

The proposed palette of external materials is robust and durable, with low maintenance requirements. They will be self-finished or prefinished requiring minimal maintenance.

Masonry at low level provides robustness and durability in areas of intense student activity. The civic buildings, in particular the performing arts and gymnasium buildings, will have precast concrete walls. The learning communities will have blockwork.

Above a datum level, there is a variety of profiled metal wall cladding and prefinished sheet cladding.

Furniture and fixtures. Outside the “*securable zone*”, minimal furniture and fixtures will be provided. Concrete seats will provide an informal barrier in addition to providing seating opportunities. Within the School zones, specified outdoor furniture and fixtures are robust, being designed for use in public spaces.

Sarah Constructions Pty Ltd

PPP Schools - Bid Phase Delivery

Stormwater Management Plan - South Site - Aldinga

December 2019

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Appendix A - Proposed Stormwater Control Infrastructure
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1. Introduction

1.1 Background

GHD Pty Ltd (GHD) forms part of the TESA consortium which has been commissioned by the South Australian Government (the **State**) to construct a new B – 12 educational facility located in the southern suburb of Aldinga adjacent Quinliven Road (the **Site**).

The school will be constructed on approximately 14 Hectares, comprising of building facilities on the northern half and sport facilities (grassed playing fields, multi-use sealed courts) on the southern half. The development is classified as Large Scale Development (>1500m^2) in accordance with the City of Onkaparinga Stormwater Management Design Guide (February 2019).

1.2 Purpose of this report

This Stormwater Management Plan (SMP) outlines the general requirements of the site in order to comply with the City of Onkaparinga stormwater management requirements and any other relevant planning and design guidelines put forward by the State. The works undertaken for this plan includes:

- analysis of pre-development flow rates;
- analysis of existing drainage infrastructure surrounding the site;
- assessment of the stormwater quantity and quality requirements for the site; and
- a conceptual stormwater management design to accommodate the proposed development.

The SMP comprises the following sections:

- Section 2: Existing Development
- Section 2: Stormwater Management Strategy
- Section 4: Modelling Approach
- Section 5: Analysis and Outcomes
- Section 6: Maintenance
- Section 7: Conclusion

1.3 Scope and limitations

This report: has been prepared by GHD for Sarah Constructions Pty Ltd and *may only be used and relied on by Sarah Constructions Pty Ltd for the purpose agreed between GHD and the Sarah Constructions Pty Ltd as set out in this report.*

GHD otherwise disclaims responsibility to any person other than Sarah Constructions Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Sarah Constructions Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

Any assumptions made at a more detailed level are outlined in the relevant sections of this report.

1.5 Available Documentation

The following table (Table 1) summarises the documentation that forms the basis for this assessment.

Table 1: Documentation / Information forming basis of assessment

Document No	Reference
1	City of Onkaparinga Stormwater Design Guide – February 2019
2	DR 66 – Stormwater_Southern Site – issued via Aconex on 5 July 2019
3	DR 21_Site – Technical Assessment – South Adelaide Rev 4_PI_V1.pdf
4	DR23_Appendix B_Site – Technical Assessment – South Adelaide Rev 4 – Geotechnical Investigations Report_PI_V1.pdf
5	DR21.A_Aldinga Division Plan.pdf
6	DFT19/0125 -SA School PPP Project – RFP Volume 3 – Outline Scope and Requirements (OSR)
7	DR41_City of Onkaparinga_Aldinga School Proponent Briefing Notes + attachments.pdf

2. Existing Development

2.1 Location

The Site at Aldinga is situated in the City of Onkaparinga and is highlighted in blue as shown in Figure 1. The figure is orientated in the direction of the north point (north - top of the page).

The site is bounded by Quinliven Road and Port Road to the North. A sports complex borders the site to the east. The western and southern boundaries of the Site are currently undefined by any physical boundaries within the larger allotment.

Figure 1: Southern School Site off Quinliven Road (Source: Locations SA)

2.2 Site Topography

Existing site levels comprise of a localised high point within the centre of the site which splits the site into a northern and southern sub-catchment respectively. Approximately two-thirds of the northern sub-catchment discharges to an existing stormwater connection in Quinliven Road. The remaining third generally falls towards the western boundary.

The southern sub-catchment generally grades towards the southern boundary into the adjoining Renewal SA land. This catchment eventually discharges underneath Aldinga Beach Road to the council system.

Topographic maps available on the Locations SA Map Viewer (2019) do not indicate any stormwater runoff contribution from external catchments (Figure 2).

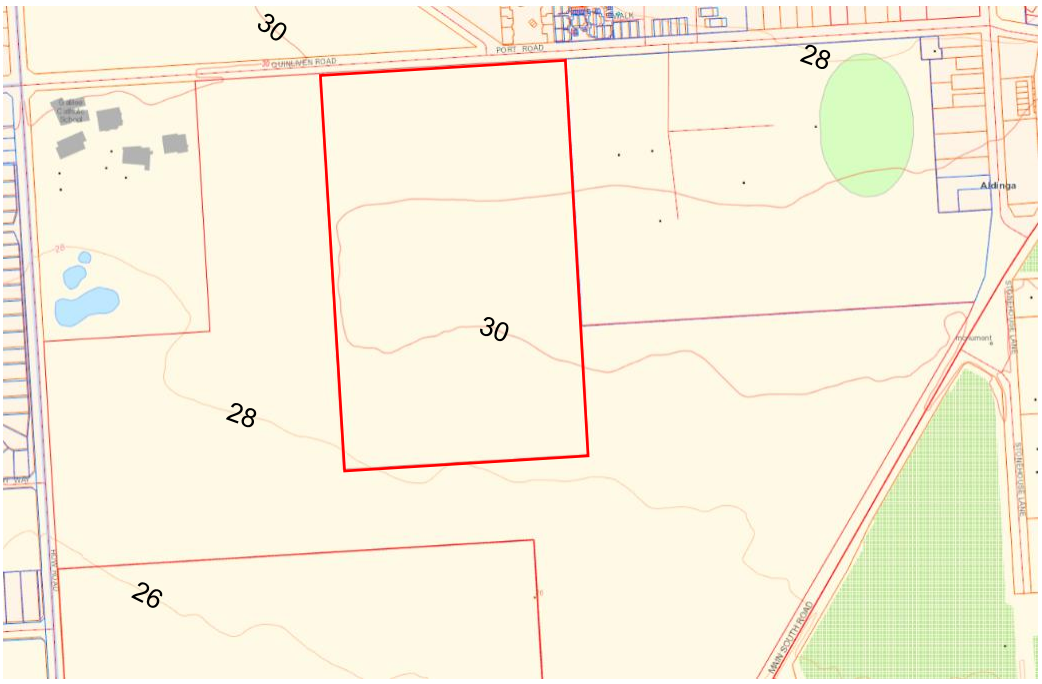


Figure 2: Site Locality and Contour Map (Source: Locations SA, 2019)

2.3 Site Features

2.3.1 General

The current site is largely pervious and generally covered in cropped vegetation with slight local undulations. There is no known existing stormwater drainage infrastructure within the Site.

2.3.2 Surrounding Infrastructure

The nearest stormwater infrastructure to the Site resides in Quinliven Road. A field gully pit in the north eastern corner has been provisioned for the Site and is the preferred connection point for the northern sub-catchment.

2.3.3 Easements

A 6 m wide, 200 m long stormwater easement has been provisioned for the Site which spans from the western boundary to How Road through Renewal SA land (Figure 3). The works to convey stormwater from the site along How Road to the existing council discharge point will be undertaken by the State.

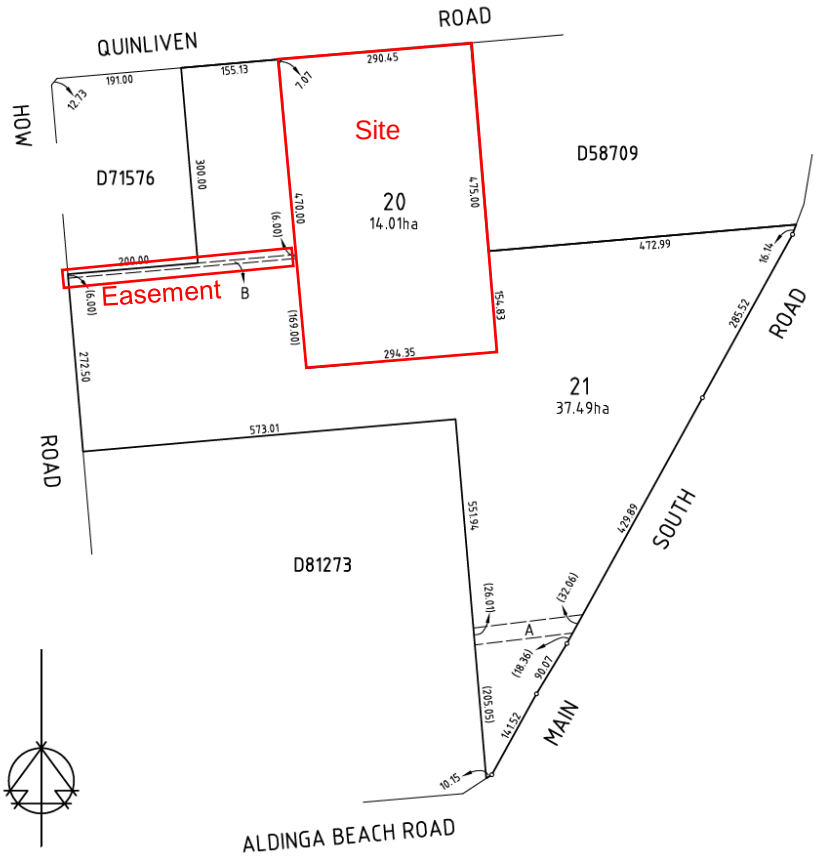


Figure 3: Drainage Easements (Source : DR21_A)

2.4 Geotechnical Information

2.4.1 Regional Geology

A geotechnical investigation was undertaken by Aurecon for the Site. Key extracts from the Geotechnical Investigation Report (DR 23) are provided below:

- *Reference to the 1:50,000 scale geological map "Yankalilla" (Department of Primary Industries and Resources SA, 2006) and the 1:63,660 scale geological map "Yankalilla" (Department of Mines Adelaide,1954) suggests that the site will be underlain by alluvial clays, with the Port Willunga Formation encountered at depth.*
- *The 1:250,000 scale geological map "Barker" (Department of Mines Adelaide, 1962) extends on the above, suggesting that calcareous sheets cap the alluvial clays and soil formations encountered on site.*
- *Based on these suggestions, and experience at nearby sites, it is expected that at shallow depths, the site will be underlain by what is referred to as a "Brown solonized soil – Type BS" which generally comprises approximately 300 to 500 mm of sandy or clayey topsoil and some high plasticity clays overlying calcareous soils or calcrete sheets to depths of approximately 1300 mm below ground level. Below the calcareous layers is high plasticity Hindmarsh Clay generally grey in colour.*

2.4.2 Geotechnical Investigation

The geotechnical investigation drilled a total of 25 boreholes to a targeted depth of 3m. The DR23 report stated that:

The results of the borehole drilling show the naturally occurring material was broadly consistent with available geological and geotechnical information.

Table 1 from the DR23 report defined a typical geotechnical model for the site. This is given below in Figure 4.

Layer	Depth to top of layer (m)	ϕ and ϕ' (degrees)	c_u and c' (kPa)	E_u and E' (MPa)	ν and ν'	γ_{bulk} (kN/m³)
Topsoil, Silty Sandy Clay, very low plasticity, friable	0	-	-	-	-	-
Calcrete (generally recovered as calcareous silty clay with low plasticity, with sand and gravel present)	0.3	0, 27	40, 0	8, 6	0.3, 0.3	19
Silty Clay or Sandy Clay, medium to very high plasticity, taken as very stiff consistency, with sand lenses/pockets	1.0	0, 30	150, 8	45, 33	0.4, 0.4	21

Figure 4: Geotechnical Model for the Site (Source: DR23)

The site has been classified by Aurecon as a Class E-D in accordance with AS 2870- 2011 – Residential Slabs and Footings. Such a classification infers that the site is an extremely reactive that may experience extreme ground movement from deep soil moisture changes.

2.4.3 Groundwater

The DR23 report stated that:

True groundwater is assumed to not be shallower than 3 m below the existing ground surface. Perched water may occur at shallower depth, and was encountered in BH21 only at 2.7 m below existing ground surface.

3. Stormwater Management Strategy

3.1 School Master Plan

The proposed site plan of the new school is provided in Figure 5 with the school master plan provided in Figure 6.

Figure 5: Proposed Site Plan

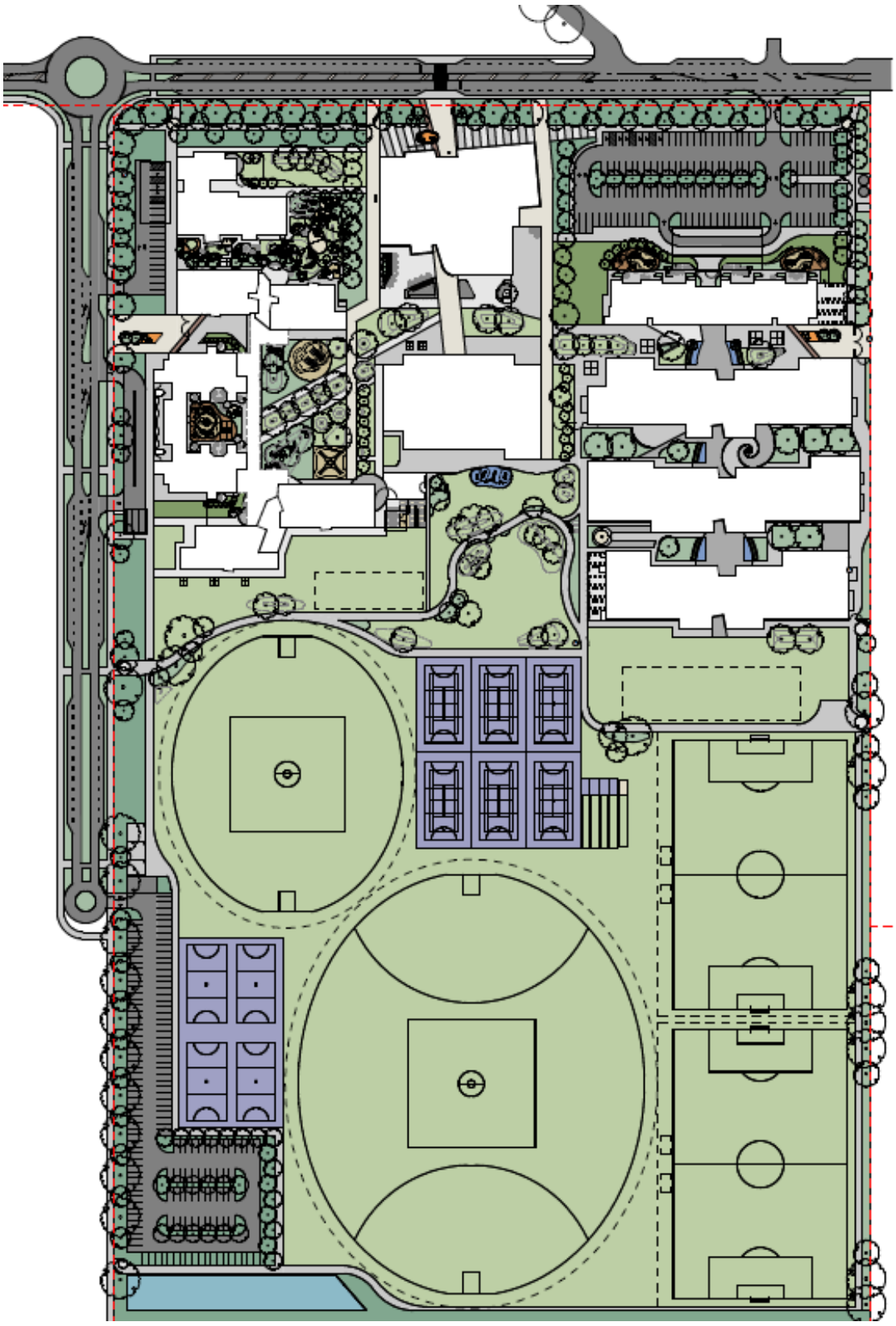


Figure 6: Site Master Plan

The majority of the impervious area of the development is situated in the northern sub-catchment which largely consists of roofed area. The southern sub-catchment is largely pervious and comprises grassed playing fields and multi-use sealed playing courts. Both the northern and southern sub-catchments contain sealed car parking facilities. A new access road is also proposed along the western boundary, external to the Site.

3.2 Stormwater Design Requirements

DR 66 (Stormwater_Southern Site issued via ACONEX on 5 July 2019) specified the stormwater management requirements for the site. These are as follows:

- Detention requirements for the school project will be located within the boundaries of the School Site.
- The site consists of two catchments, North and South.
- The northern catchment is to discharge to the existing stormwater connection in Quinliven Road, and be detained to predevelopment flows.
- The southern catchment is to discharge to stormwater pipework within the proposed easement heading to How Road on the west, and to be detained to predevelopment flows or lower. Ideally south discharge is controlled with a replaceable orifice plate at the How Road discharge location. This may allow for some storage to be considered within the easement pipework.
- All paved areas (within reason) for the site are to discharge to the northern discharge location (maximise north catchment area).
- The final form of the southern catchment is to be all grassed (within reasonable practicality).
- The southern catchment should include additional opportunistic detention storage when it can be easily accommodated.
- The works to convey stormwater from the site along How Road to the existing Council discharge point will be undertaken by the State.
- The underground storm water system must achieve a minimum grade of 0.35% and demonstrate that flows through the culvert/pipe are self-cleaning so sediment does not accumulate in the stormwater system.
- The available cover, level of protection and accessibility to the system will determine the type of storm water infrastructure that forms the underground stormwater system.

In addition to the requirements specified in DR66, the following key design criteria relevant to the proposed development are to be applied.

Table 2: Design Criteria

Attribute	Description	Reference
Design storm events (Site drainage)	Minor system – 0.2% EY Major system – 1% AEP	RFP Vol 3 Appendix B.2, Section 3.2, Table B.3.2
Minimum pit freeboard	200mm – minor event	RFP Vol 3 Appendix B.2, Section 3.2, Table B.3.2
Minimum pipe sizes	DN100 – downpipe connections DN150 – downstream of any grated inlet pit DN225 – downstream of any side entry pit	RFP Vol 3 Appendix B.2, Section 3.2 (g)
Pre-development discharge rates (to Council infrastructure)	Minor events – 10% AEP Major Events – 1% AEP	Table 1 – City of Onkaparinga- Stormwater Management Design Guide – February 2019 Quinliven Road is classified as a distributor/collector road

Attribute	Description	Reference
		in City of Onkaparinga's Road Network Plan
Pipe material	PVC-U – rubber ring jointed RCP – rubber ring jointed	RFP Vol 3 Appendix B.2, Section 3.2 (h) – for expansive soils
Inlet blockage factors	Sag inlet – 50% On-grade – 20%	Section 3.6 City of Onkaparinga – Stormwater Management Design Guide (February 2019)
Safe Depth X Velocity	0.4 m2s-2	Book 6, Chapter 7 – ARR 2019 Low hazard regime for children
Pit spacing	Max 100m	RFP Vol 3 Appendix B.2, Section 3.2 (i)
Maximum detention basin flood level (un-fenced)	1.0m	RFP Vol 3 Appendix B.2, Section 6.12 (e, iii)
Batter slopes	Maximum 1:5 (V:H)	RFP Vol 3 Appendix B.2 – Section 6.10 (g, iii)
Climate Change Multiplier	1.12	Based on ARR 2019, Book 1, Chapter 6, Table 1.6.8

The climate change multiplier was used during all post-development modelling. The pre-developed modelling has not factored in increased rainfall intensity as a result of climate change.

3.3 Stormwater Management Strategy Overview

3.3.1 Layout

A layout of the proposed stormwater management strategy for the site is given in Figure 7 and Figure 8. Figure 7 highlights the informal above-ground detention storages and major overland flow paths for the Site. Figure 8 highlights the key detention and stormwater quality improvement measures proposed.

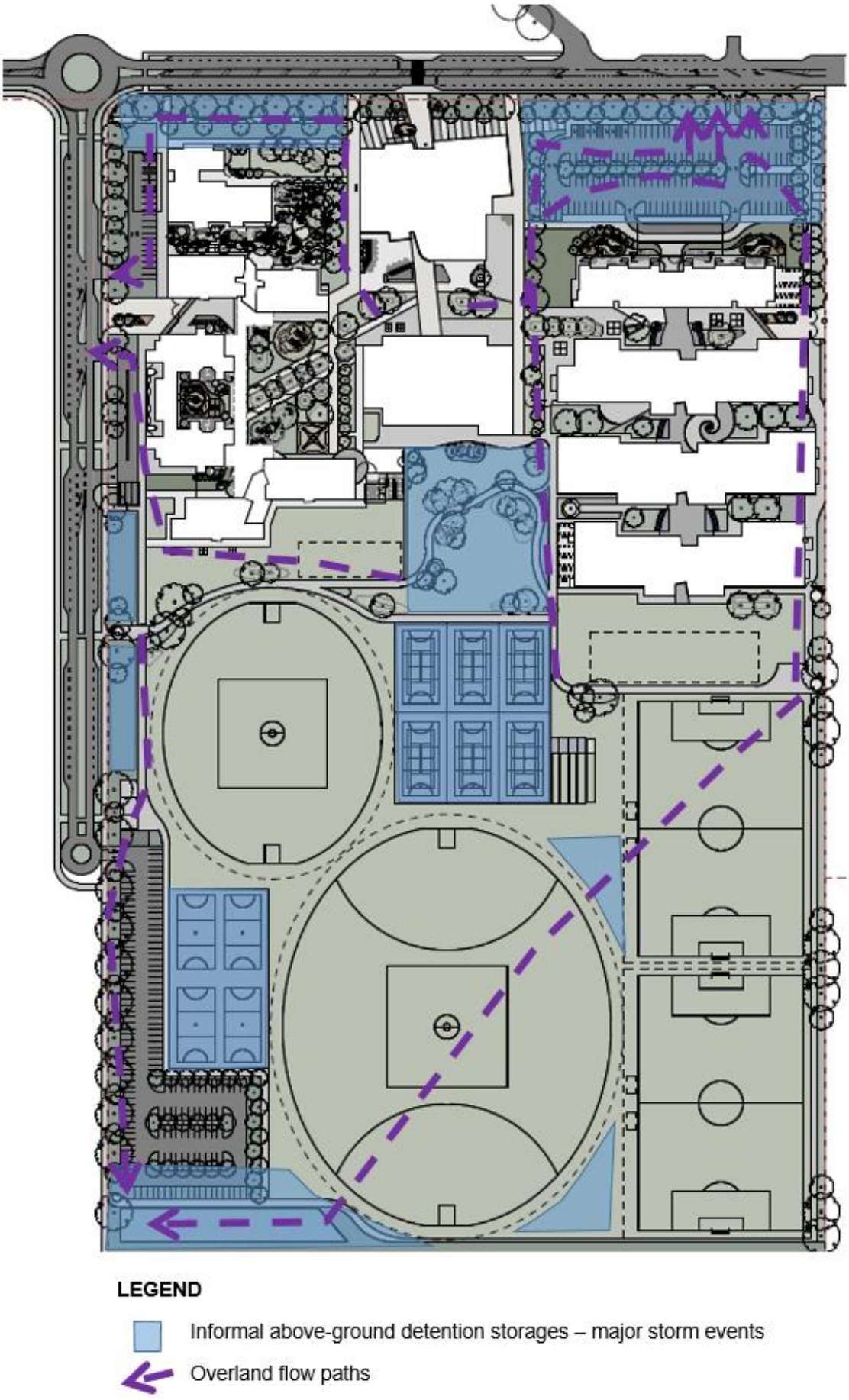


Figure 7: Overland Flow and above-ground detention storages

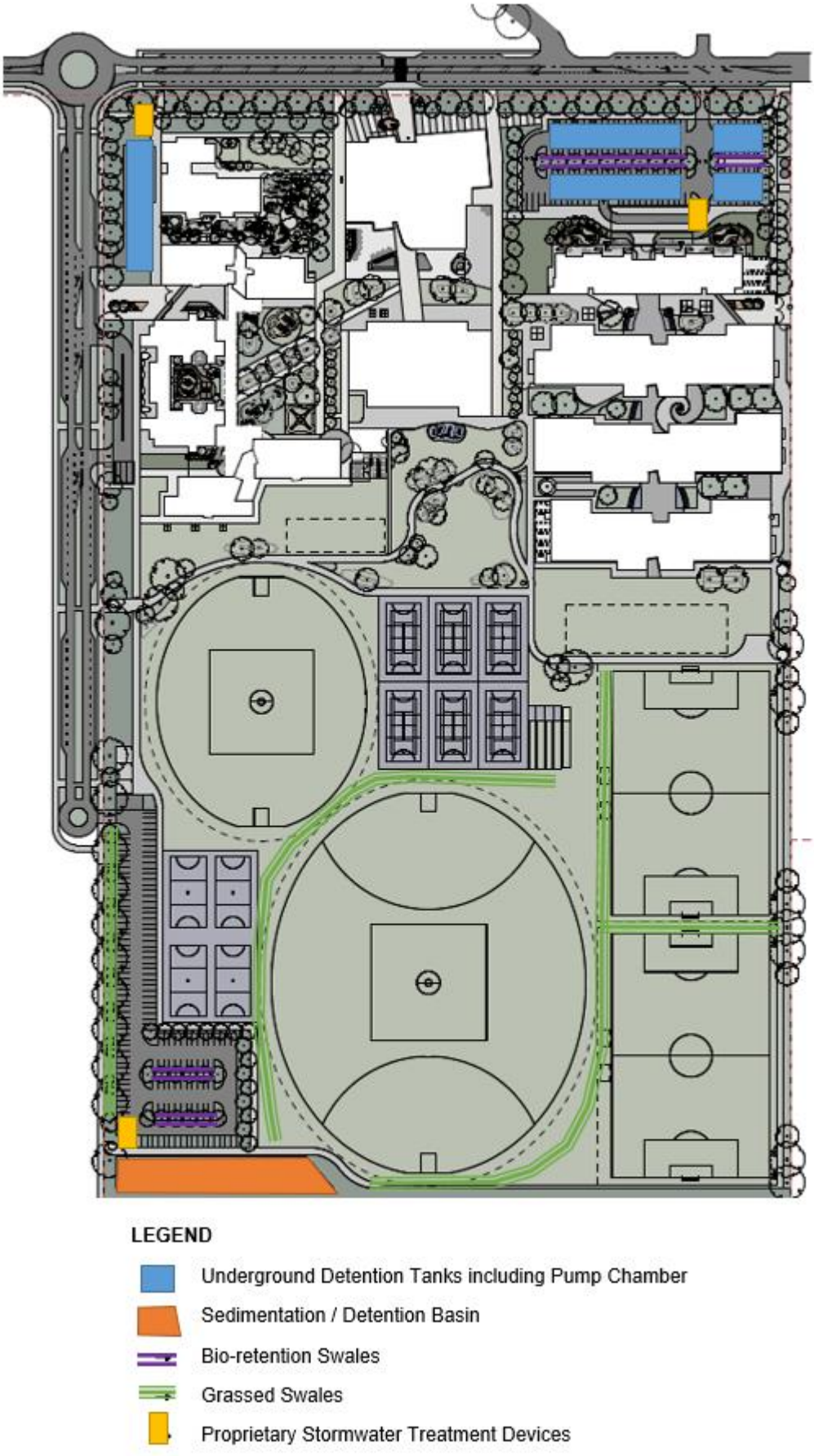


Figure 8: Detention and Water Quality Treatment Measures

3.3.2 Water Quantity

In accordance with the project requirements, the northern sub-catchment is to drain towards Quinliven Road where it can connect into City of Onkaparinga's drainage network. To limit stormwater discharge rates to that of the pre-development condition (for the various Annual Exceedance Probability [AEP] design storm events), a series of underground detention tanks are to be employed along the Quinliven Road frontage. These detention tanks will discharge via a series of pumps to the Quinliven Road underground stormwater system. Any overland flows will be controlled and discharged through proposed driveway crossovers connecting to Quinliven Road and the proposed western access road. All underground tanks will be completely sealed.

Existing site levels consist of a localised high point in the centre of the site with catchments contributing towards the north and south respectively. Stormwater runoff from the southern catchment will be intercepted via a swale/bund along the southern boundary and be directed into a detention/sedimentation basin in the south west corner of the site. Captured runoff within the basin will be pumped to the inlet point on the upstream side of the How Road Drainage easement (within the Site) where it is anticipated that the flows will discharge under gravity conditions to the discharge point in How Road. The detention/ sedimentation basin will be lined along the walls and floor to ensure it is impermeable.

3.3.3 Water Quality

To achieve stormwater quality requirements, a series of oil/water separators, gross pollutant traps (GPTs), fine filtration units, sedimentation basins and bio-retention swales will be arranged in a 'treatment train' to remove site pollutants.

3.3.4 Flood level Assessment

A desktop review of City of Onkaparinga's Development Plan and Water Connects Flood Awareness Map did not highlight any known flood areas near or within the site. As per the design requirements, the finished floor level (FFL) for any new site buildings will be set 300 mm above flood levels from the existing natural site levels within the footprint of the development.

3.3.5 Proposed Stormwater Control Infrastructure

The stormwater infrastructure proposed as part of this SMP are documented in Drawings 12591992 – DRG – C102 – C109 which can be found in Appendix A. These drawings contain information on the following:

- Pit and pipe infrastructure;
- Detention and stormwater quality improvement infrastructure;
- Finished floor levels; and
- Concept design contours

4. Modelling Approach

4.1 Hydrological Analysis

The urban drainage modelling software DRAINS was used to analyse the performance of the existing stormwater drainage system, understand limitations, identify the extent of additional infrastructure required, and to determine preliminary storage volumes required to meet pre-development flow rates. The City of Onkaparinga requires the use of a DRAINS model for all large scale land divisions and industrial / commercial development. The model was developed using the design parameters given in the City of Onkaparinga Stormwater Management Design Guide as well as site-specific input data and assumptions based on the survey information obtained.

As identified in DR23 (Aurecon, 2019), the site has been classified as extremely reactive consisting of clay soils with a very high swelling potential. These type of soils are known to have higher runoff potential. Based on this assessment, the catchment parameters listed in Table 3 were adopted for the ILSAX hydrological model in DRAINS.

As per the requirements of the City of Onkaparinga Stormwater Management Design Guide, the ILSAX hydrological model was used to determine the relationship between rainfall and runoff. The following hydrological modelling parameters in Table 3 were adopted in the analysis.

Table 3: South Site - DRAINS hydrological model parameters

Parameter	Value
Soil Type	4
Paved area depression storage (mm)	1
Supplementary area depression storage (mm)	1
Grassed area depression storage (mm)	5
Antecedent Moisture Content (AMC)	2.5

The modelling within DRAINS was undertaken in accordance with the procedures recommended in Australian Rainfall and Runoff (ARR) 2019. Rainfall intensity data and temporal patterns were obtained from the Bureau of Meteorology website and the ARR Data Hub, and are based on 2016 Intensity Frequency Duration (IFD) rainfalls.

4.2 Hydraulic Analysis

The one-dimensional (1D) hydraulic model of the site catchment was undertaken using the software program DRAINS. The hydraulic model uses the outputs of the hydrologic modelling to determine the extent, depth and behaviours of design storm flows within the study area.

The hydraulic model was run to simulate the following design storm events:

- Major event - 1% Annual Exceedance Probability (AEP) (1 in 100 year Average Recurrence Interval (ARI))
- Minor Event (City of Onkaparinga) - 10% AEP (1 in 9.49 year ARI).
- Minor Event (internal site drainage) – 0.2 Exceedances per Year (EY) (1 in 5 year ARI)

4.2.1 Initial conditions

Open channels and basins within the Site model were assumed to be ‘dry’ before the onset of the design storm events. Consequently, no initial conditions were applied. This meant the stormwater systems were free to discharge to atmosphere and all detention basins were initially modelled as empty.

4.2.2 Modelling of inlet structures

The existing Field Gully (discharge point at Quinliven Road) was modelled based on head – flow relationships obtained through the HEC 22 wizard inbuilt within DRAINS. In the post-development scenario, custom field gullies were utilised, again based on head – flow relationships obtained through the HEC 22 wizard.

Standard City of Onkaparinga Side Entry Pits were modelled for the external drainage utilising the pre-defined relationships obtained within DRAINS. These relationships are based on the hydraulic testing undertaken at the University of South Australia.

No allowance was made for pit blockages as part of the initial assessment. This approach allows for the full capacity of the underground drainage system to be taken into account when assessing peak flow rates leaving the site. A sensitivity test was undertaken with pit blockage factors applied to assess the above ground system performance and to refine overland flow paths within the site.

4.2.3 Surface roughness

As with all hydraulic models, the roughness of the various surfaces which convey flow (surface and piped) will impact on the flow rates and velocities arriving at each point of interest (e.g. pits, basins etc.). Areas which are relatively smooth such as paved surfaces have low Manning's n values. Conversely, unsealed surfaces such as gravel and natural earth which are 'rougher' have higher Manning's n coefficients. The Manning's n roughness coefficients used within the model are listed in Table 4.

Table 4: Manning's n roughness coefficients

Surface Type	Manning's n
Asphalt	0.014
Gravel	0.020
Concrete conduits	0.013
Short grass	0.035

Typical surface roughness values applied in the model are given in Table 5 below.

Table 5: Surface roughness coefficients

Surface Type	Surface roughness coefficient
Paved	0.013
Pre-development surface	0.053
Lawns	0.17

4.2.4 Infiltration rates

All proposed detention basins are to be lined based on the highly reactive clays found on the site. Consequently, infiltration rates for basins have been set to zero.

4.3 Limitations of the modelling

While care has been taken in the preparation of the model and the choice of the adopted parameter values, all hydrological and hydraulic modelling has an inherent level of uncertainty. This is due to a number of factors including the following:

- The analysis to date has been undertaken at a conceptual level. Further refinements to the design will occur during the detailed design phase which may result in different storage volumes.
- Estimation of input parameters for the model such as Manning's roughness, entry and exit losses, and time of concentration.
- Dynamic changes to topography due to erosion or deposition of soils during a flood event, which can lead to changes in the distribution of flow. These process have not been included in the model.
- Uncertainty in the rainfall pattern and catchment conditions prior to a flood. Actual flood events are dependent on antecedent moisture conditions prior to rainfall, initial detention storage levels at the beginning of rainfall runoff and the intensity and uniformity of the rainfall event within the analysis area. The floods modelled in this assessment 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 a differing temporal pattern that those modelled. In any case, AMC values and 2016 IFD's have been utilised in accordance with the City of Onkaparinga Stormwater Design Guide.

5. Analysis and Outcomes

5.1 Pre- Development Catchment Characteristics

The project site consists of two distinct watershed boundaries dividing the site into the northern catchment and southern catchment. With reference to Figure 9 the northern catchment consists of two sub-catchments (Cat 1 and Cat 2) which grade towards Quinliven Road.

The southern catchment also consists of two sub-catchments (Cat 3 and Cat 4) which grades towards the southern boundary towards Renewal SA land. There are no known external catchments contributing to the project site.

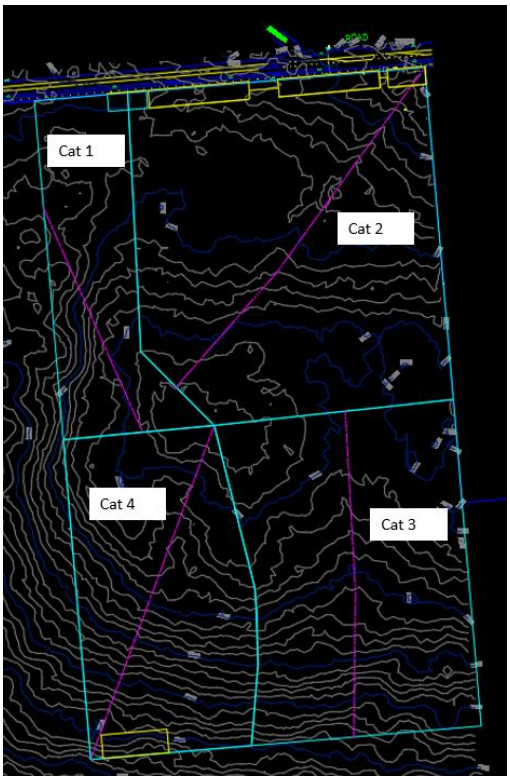


Figure 9: Pre-Development site catchments

The catchment areas are defined in Table 6 below.

Table 6: Pre- development sub-catchment areas

Sub-catchment	Area (Ha)
Catchment 1	1.79
Catchment 2	5.35
Catchment 3	3.95
Catchment 4	2.91
TOTAL	14

Being a Greenfield site, the catchment was analysed assuming 100% perviousness. The pre-development flow rates for the 10% and 1% AEP design storm were determined from DRAINS using ARR 2016 IFD's and the hydraulic parameters given in Table 3. These are listed below in Table 7.

Table 7: Pre-development flow rates

Sub-catchment	10% AEP (L/s)	1% AEP (L/s)
1	65	220
2	160	538
3	139	447
4	142	454

To meet the stormwater management requirements, the following strategies have been adopted:

- It is recognised that not all of the northern catchment contributes to Quinliven Road. As such, the target pre-development flow rate for the development during the minor storm event (10% AEP) is as per the rate defined for Cat 2 above.
- How Road is classified as a Local Road under City of Onkaparinga's Road Network Plan. Consequently, the maximum discharge rate is to match the pre development rate for the 0.2EY storm event. The 0.2EY pre-development flow rate from the southern catchment is 76 L/s and 79 L/s for Cat 3 and Cat 4 respectively (155 L/s in total).
- In recognising the stormwater capacity constraints in How Road, the southern catchment detention storages have been sized to retain both the major and minor southern catchment post-development flows to the 0.2EY pre-developed flow rate of 155 L/s. All stormwater flows for both major and minor events will be discharged through the easement drainage pipe.

5.2 Post-development Site Catchment Characteristics

A DRAINS model has been developed to estimate peak flows and detention requirements for the southern site. The model was developed using site-specific input data and assumptions based on the information provided. The analysis was undertaken to understand any limitations and identify the extent of detention requirements.

The ILSAX hydrological model within DRAINS was utilised (the same approach as in analysing pre-development conditions) adopting the same parameters given in Table 3 above. The proportion of pervious to impervious area for the northern and southern post-developed catchments is shown in Table 8 below.

Table 8: Post-developed catchment characteristics

Catchment	% Impervious	% Pervious	% Supplementary
North	95	5	0
South	25	75	0

The resultant peak flow rates from the northern and southern catchment are given in Table 9 below.

Table 9: Post-developed peak flow rates

Catchment	Q(10% AEP) L/s	Q(1% AEP) L/s
North	1001	1,465
South	196*	505

*peak result shown has been attenuated by storage areas provisioned on the sports ovals prior to discharge to the formal sedimentation / detention basin.

In order to reduce peak flow rates to the pre-developed flow equivalent, the indicative detention storage volumes given in Table 10 are required.

Table 10: Detention storage volumes

Catchment	Storage Volume (m^3)	Storage Methods
North	2200	Underground storage tanks
	100	Above-ground detention storage (e.g. car parks, playing courts)
South	850*	Detention/sedimentation basin (fenced)
	200	Above-ground detention storage (e.g. car parks, playing courts and ovals)
TOTAL	3,350	

*detention basin size accommodates a permanently wet zone (nominally 1m deep) necessary to allow sediments to settle out. This volume is also included in the detention/ sedimentation basin volume indicated above.

5.3 Method of Stormwater Conveyance

5.3.1 Minor System

A gravity system is the preferred stormwater conveyance mechanism for this site based on its ease of maintenance and lower operating costs when compared to the pumped equivalent. Initial concepts incorporated a series of shallow detention basins/swales (depth limited to 1m) along the northern frontage which discharged under gravity conditions. Due to site layout constraints, aesthetic preferences and the depth of the receiving stormwater network, site flows could not be discharged to the receiving system under gravity conditions with the removal of the northern detention basins.

Discharge to the Quinliven Road and How Road drainage system is proposed to occur under pumped conditions from their respective detention storages. All internal site drainage which feeds the various detention systems will be conveyed under gravity conditions and sized appropriately to maintain self-cleaning characteristics.

In order to minimise the risk of pump failure two pumps are recommended per outlet system consisting of a duty and standby pump. A back up diesel generator is proposed to power the pumps in the event of a site wide mains power failure. Safe overland flow paths are provided at every discharge point to ensure internal buildings are not flooded in the event of a power failure.

Pit covers and grates have been selected to suit the loading expected at each pit location. Pit grates have been selected with anti-slip and ‘heel-proof’ properties in all pedestrian accessible areas.

5.3.2 Major System

Flood immunity for the internal buildings was a main focus of the overall stormwater management design intent. Dedicated overland flow paths were provided throughout the site as shown Figure 7. Low spots (sag points) were minimised in paved areas surrounding the main site buildings to remove the risk of ponded areas in the event of an underground drainage system blockage/pump failure. This approach improves the flood conveyance and flood immunity for the school buildings.

5.4 Water Quality Management

According to City of Onkaparinga's stormwater discharge requirements, the Water Sensitive Urban Design (WSUD) initiatives that promote collection, treatment and utilisation of water flows within the catchment is encouraged. As such, in addition to managing the magnitude of stormwater runoff, management of the discharge water quality was also considered. In determining an appropriate stormwater treatment system for the site while working within the constraints of the site, a number of aspects were considered, as discussed below.

5.4.1 Stormwater Runoff Quality Targets

The stormwater runoff quality targets as defined by City of Onkaparinga are as follows:

- 80% reduction in Total Suspended Solids
- 60% reduction in Total Phosphorous
- 45% reduction in Total Nitrogen
- 90% reduction in Gross Pollutants.

5.4.2 Water Quality Modelling

A MUSIC model was established in accordance with the drainage strategy proposed for the site to estimate the treatment efficiency of the proposed WSUD measure above. In the absence of any site specific pollutant generation information the preliminary analysis was based on software default parameters for the estimated generation of pollutant loads. The modelled treatment system incorporated the treatment nodes provided by SPEL Environmental.

A layout of the MUSIC model showing the treatment train is given in Figure 10. Grassed swales were not included within the MUSIC model.

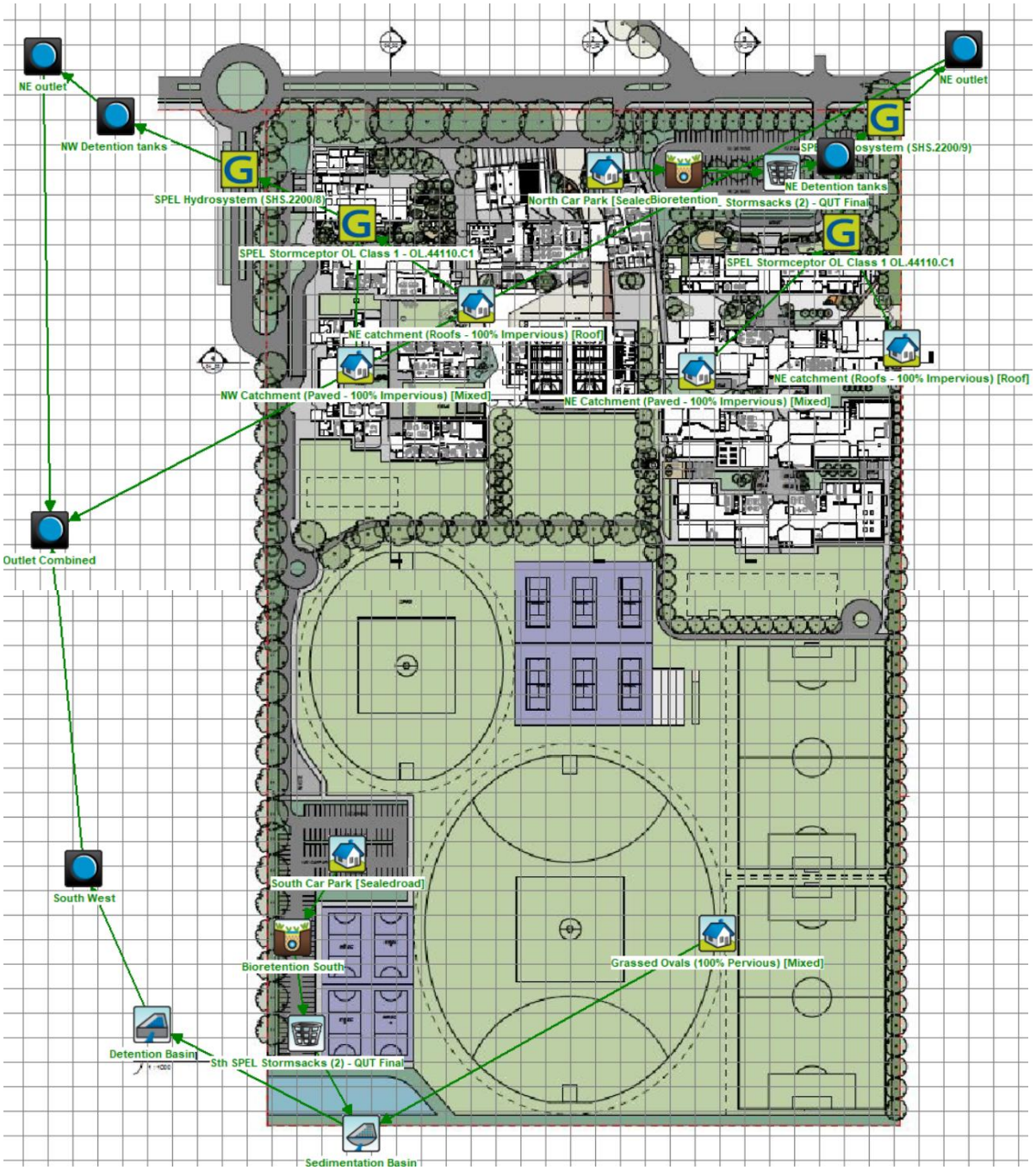


Figure 10: MUSIC Model Treatment Train

5.4.3 Meteorological Data

The rainfall and evaporation data adopted for MUSIC modelling within the City of Onkaparinga is from the Noarlunga Weather Station, station number 023885. Six-minute rainfall data for the period 01/01/2005 to 01/10/2009 was utilised. The meteorological data applied was in accordance with the values defined under the MUSIC-Link feature specific to the City of Onkaparinga.

5.4.4 Water Quality Treatment Devices

The achieve Council's stormwater quality targets, a series of water quality treatment devices arranged to form a treatment train is proposed.

A SPEL Stormceptor GPT is proposed for the northern catchment. At the beginning of the treatment train, a primary treatment device such as this would typically remove solids conveyed

by stormwater typically greater than 5mm in particle size. Depending on the type of GPT used, the device can also provide secondary treatment functions such as the removal of total suspended solids and oil and grease and fine sediment.

Following the primary and secondary treatment functions, a tertiary treatment device such as a sand filter can be implemented to remove very fine particulates such as dissolved nutrients (Phosphorus and Nitrogen). A SPEL Hydrosystem is proposed for this site. It is necessary to incorporate a GPT and settling tank prior to the tertiary device to avoid clogging of the filter media.

The northern carpark area also incorporates a central bio-retention swale to capture and treat carpark runoff. The overflow pit will contain trash racks to capture gross pollutants. The device, a SPEL Stormsack, also incorporates an oil boom to capture and filter oil and hydrocarbons. The water quality devices are to be located directly upstream of the detention tanks and will incorporate a high discharge weir to allow for the safe bypass of high flows.

The southern catchment is largely pervious consisting of grassed playing fields as well as sealed surfaces such as playing courts and car parking facilities. The grassed playing fields discharge to the detention/sedimentation basin in the southwest corner of the site through a series of grassed swales. The influence of the grassed swales on achieving water quality targets has been excluded from the MUSIC modelling. The south-western carpark discharges to two separate bio-retention systems which incorporate overflow pits, with the SPEL Stormsack unit to capture gross pollutants and hydrocarbons.

The detention basin is completely lined and is proposed to incorporate a sedimentation basin to allow fine sediments >125µm to settle out before discharge. The detention basin also incorporates approximately 200mm of extended detention to reduce flow velocities and increase detention times for greater pollutant removal efficiency. An access zone has been allowed for along the eastern side of the basin to allow for periodic removal of stored sediment.

To minimise odour from standing water within the basin, a timed float switch is proposed for the basin pump so the basin can be emptied over a few hours between rainfall events.

Information on the proprietary stormwater treatment devices are provided in Appendix B

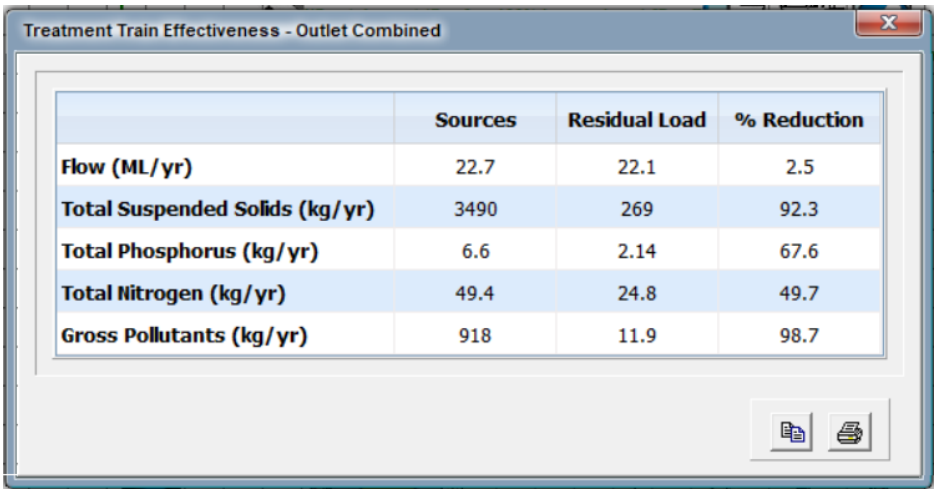
5.4.5 Modelling Results

The MUSIC modelling results for the south site are provided below in Table 11.

Table 11: MUSIC modelling results

Pollutant	Treatment Target (% Removed)	Pollutant Removal Achieved (% Removed)
Total Suspended Solids	80%	92%
Total Phosphorus	60%	67%
Total Nitrogen	45%	48%
Gross Pollutants	90%	98%

The treatment train effectiveness summary table (for Outlet Combined node) is also given below in Figure 11.



	Sources	Residual Load	% Reduction
Flow (ML/yr)	22.7	22.1	2.5
Total Suspended Solids (kg/yr)	3490	269	92.3
Total Phosphorus (kg/yr)	6.6	2.14	67.6
Total Nitrogen (kg/yr)	49.4	24.8	49.7
Gross Pollutants (kg/yr)	918	11.9	98.7

Figure 11: Treatment train effectiveness summary table

The results indicate that the application of the proposed water quality devices will achieve Council's water quality targets. Although not indicated in the modelling results, the SPEL Stormsack and Hydrosystems also remove oils and grease (residue typically found on car park surfaces). These units have been provisioned to manage and treat runoff from the internal car parking areas.

6. Maintenance

Interception of gross pollutants and sediments prior to entry into the detention tanks is essential to maximise the effectiveness of the site stormwater system as a whole. In order to ensure that the site stormwater system is functioning at maximum capacity, regular maintenance is also required.

The following maintenance activities are proposed:

- The paved areas and internal kerb and gutter systems should be regularly swept to prevent silt and debris being washed off of the surface.
- Cleaning of gutters and any filters on downpipes should be undertaken annually or as required based on inspections.
- It is recommended that monthly inspections of the GPT's and pit trash racks occur during the wetter months following installation to gauge the rate of pollutant loading from the contributing catchment. The proprietary treatment devices are designed to be maintained in place with a vacuum hose attached to a sweeper or vacuum truck. The trash racks can be manually removed and cleaned if required.
- The sedimentation basin should be inspected prior to the commencement of the wetter months to ensure sufficient storage volume is available. Depending on pollutant loading from the site, the sedimentation basin will require de-silting typically every 3 to 5 years.
- The frequency of inspection of the new proposed stormwater infrastructure system should be determined during the immediate post-construction period. It is suggested that, for the first 12 months, monthly inspection are carried out to determine the rate of accumulation of pollutants.

7. Conclusion

In accordance with the design requirements of the State and City of Onkaparinga, the conceptual design for the proposed development area outlined with the Stormwater Management Plan will allow for the detention of the post development flow rates to the pre-developed equivalent for both the 10% and 1% AEP design storm events. This result has also factored in the impacts of climate change for the post-developed scenario.

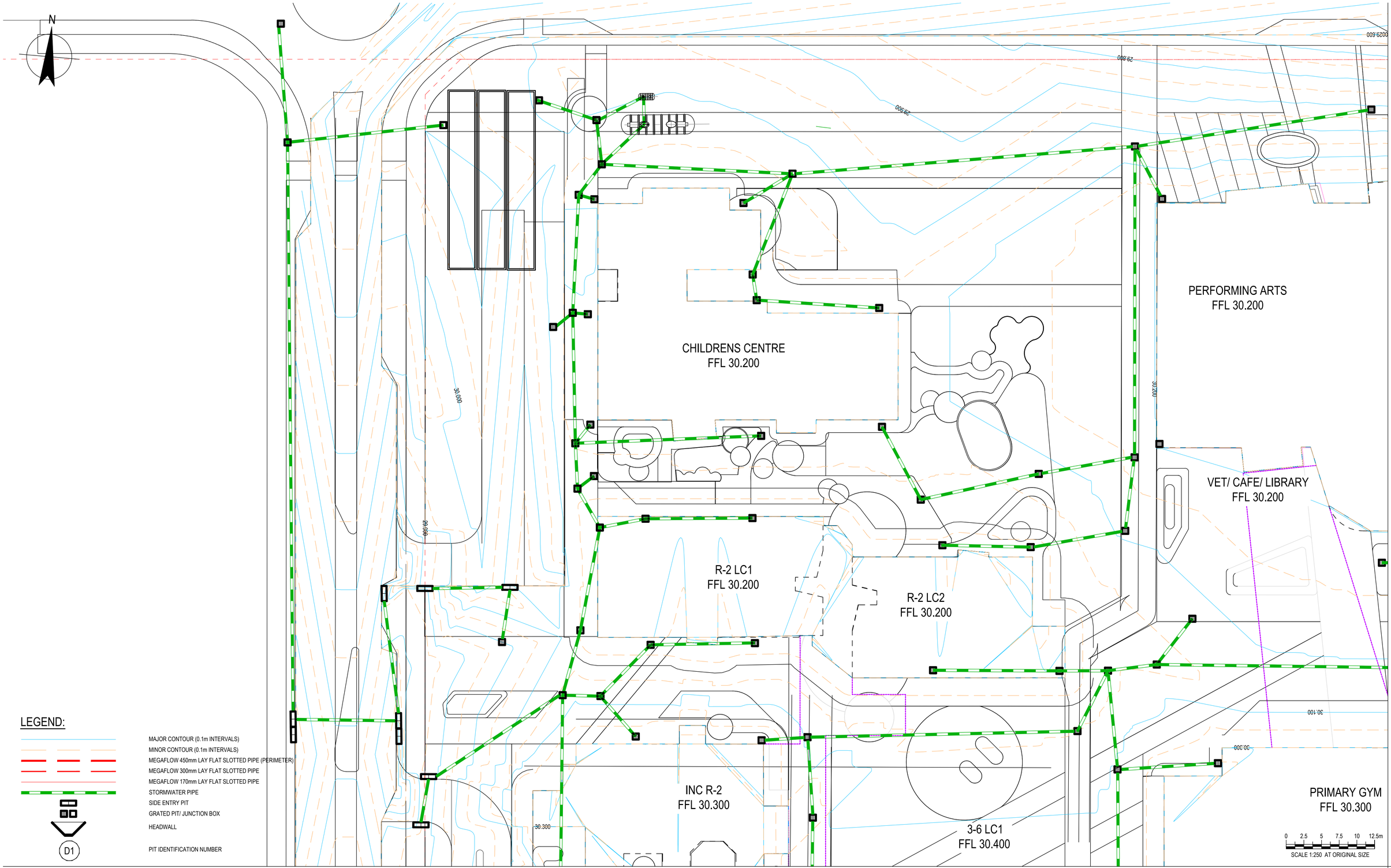
The Site must have a capacity to contain approximately 3350 m^3 of stormwater to achieve the pre-developed flow rates. This will be achieved by a series of underground tanks, detention basins and informal above-ground storage areas (e.g. car parks, playing courts and oval swales). All underground detention tanks and basins are to be lined and impermeable.

The Site will discharge to councils Quinliven Road drainage system and the easement provisioned to the west of the site towards How Road. All underground discharge from the site will be under pumped conditions. Pumped flow rates are intended to be variable and aligned to the pre-developed flow rate for each design storm event.

A series of water quality treatment devices, arranged in a treatment train have been proposed for the site in order to meet the water quality requirements specified by the City of Onkaparinga. The MUSIC modelling results indicate that the application of the proposed water quality devices will achieve Council's water quality targets

Appendices

Appendix A - Proposed Stormwater Control Infrastructure



LEGEND:

- MAJOR CONTOUR (0.1m INTERVALS)
- MINOR CONTOUR (0.1m INTERVALS)
- MEGAFLOW 450mm LAY FLAT SLOTTED PIPE (PERIMETER)
- MEGAFLOW 300mm LAY FLAT SLOTTED PIPE
- MEGAFLOW 170mm LAY FLAT SLOTTED PIPE
- STORMWATER PIPE
- SIDE ENTRY PIT
- GRATED PIT/ JUNCTION BOX
- HEADWALL
- D1 — PIT IDENTIFICATION NUMBER

No	Revision Note: □indicates si□natures on ori□inal issue of drawin□ or last revision of drawin□	Drawn	Jo□ Mana□er	Pro ect Director	Date
A	FOR DA S□BMISSION	□WS	AJ□	AJ□	06.12.19

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Pro□ect: S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP
Title: SOUTH SITE
STORMWATER DRAINAGE PLAN

Ori□inal Si□e: A1
Drawing No: 12521992-DRG-C102
Rev: A

Plot Date: 22/07/2019 5:00:35 PM
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FOR CONTINUATION REFER TO 12521992-DRG-C102

LIBRARY/ ADMIN
FFL 30.200

SECONDARY GYM
FFL 30.300

INC 10-12
FFL 30.300

INC 7-9
FFL 30.300

7-12 LC2
FFL 30.300

7-12 LC5
FFL 30.300

BIODETENTION SWALE 60.1m

BIODETENTION SWALE 15.6m

29.700
30.000
30.100
29.900
29.500
29.200
29.300
29.400
29.100

N

LEGEND:

- MAJOR CONTOUR (0.1m INTERVALS)
- MINOR CONTOUR (0.1m INTERVALS)
- MEGAFLOW 450mm LAY FLAT SLOTTED PIPE (PERIMETER)
- MEGAFLOW 300mm LAY FLAT SLOTTED PIPE
- MEGAFLOW 170mm LAY FLAT SLOTTED PIPE
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- SIDE ENTRY PIT
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- D1 — PIT IDENTIFICATION NUMBER

0 2.5 5 7.5 10 12.5m
SCALE 1:250 AT ORIGINAL SIZE

FOR CONTINUATION REFER TO12521992-DRG-C105

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Client SARAH CONSTRUCTIONS
Pro□ect S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP
Title SOUTH SITE
STORMWATER DRAINAGE PLAN

Ori□inal Si□e A1
Drawing No: 12521992-DRG-C103
Rev: A

Plot Date: 22/07/2019 5:00:35 PM
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N

INC R-2
FFL 30.300

INC 3-6
FFL 30.300

3-6 LC1
FFL 30.400

PRIMARY GYM
FFL 30.300

3-6 LC2
FFL 30.500

EXPANSION
FFL 30.500

225 PVC-U
0.5m COVER

1:150

1%

30.000
29.800
30.200
30.300
30.100
30.400
30.600

FOR CONTINUATION REFER TO 12521992-DRG-C105

LEGEND:

- MAJOR CONTOUR (0.1m INTERVALS)
- MINOR CONTOUR (0.1m INTERVALS)
- MEGAFLOW 450mm LAY FLAT SLOTTED PIPE (PERIMETER)
- MEGAFLOW 300mm LAY FLAT SLOTTED PIPE
- MEGAFLOW 170mm LAY FLAT SLOTTED PIPE
- STORMWATER PIPE
- SIDE ENTRY PIT
- GRATED PIT/ JUNCTION BOX
- HEADWALL
- PIT IDENTIFICATION NUMBER (D1)

0 2.5 5 7.5 10 12.5m
SCALE 1:250 AT ORIGINAL SIZE

FOR CONTINUATION REFER TO 12521992-DRG-C106

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Title: SOUTH SITE
STORMWATER DRAINAGE PLAN

Ori□inal Si□e: A1
Drawing No: 12521992-DRG-C104
Rev: A

Plot Date: 22/07/2019 5:00:35 PM
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FOR CONTINUATION REFER TO 12521992-DRG-C104

0

SECONDARY GYM
FFL 30.300

7-12 LC2
FFL 30.300

7-12 LC5
FFL 30.300

7-12 LC3
FFL 30.400

7-12 LC1
FFL 30.400

7-12 LC6
FFL 30.400

7-12 LC4
FFL 30.400

EXPANSION
FFL 30.500

1%

1%

30.300

30.200

30.380

30.400

30.300

30.400

29.700

29.900

N

LEGEND:

- MAJOR CONTOUR (0.1m INTERVALS)
- MINOR CONTOUR (0.1m INTERVALS)
- MEGAFLOW 450mm LAY FLAT SLOTTED PIPE (PERIMETER)
- MEGAFLOW 300mm LAY FLAT SLOTTED PIPE
- MEGAFLOW 170mm LAY FLAT SLOTTED PIPE
- STORMWATER PIPE
- SIDE ENTRY PIT
- GRATED PIT/ JUNCTION BOX
- HEADWALL
- PIT IDENTIFICATION NUMBER

D1

0 2.5 5 7.5 10 12.5m
SCALE 1:250 AT ORIGINAL SIZE

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Pro□ect S.A. SCHOOLS PUBLIC PRIVATE PARTNERSHIP

Title SOUTH SITE
STORMWATER DRAINAGE PLAN

Ori□inal Si□e A1

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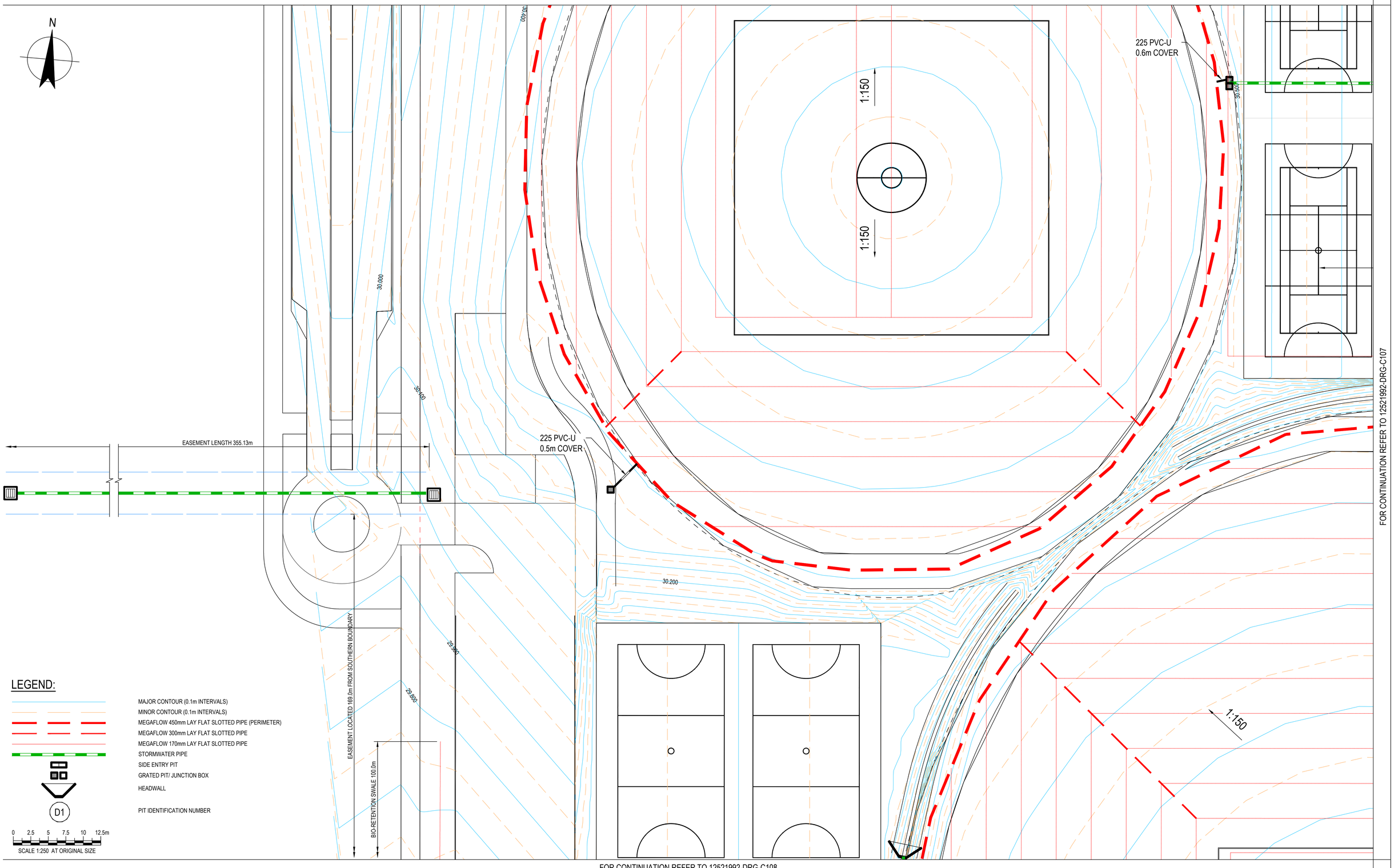

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STORMWATER DRAINAGE PLAN

Ori□inal Si□e A1
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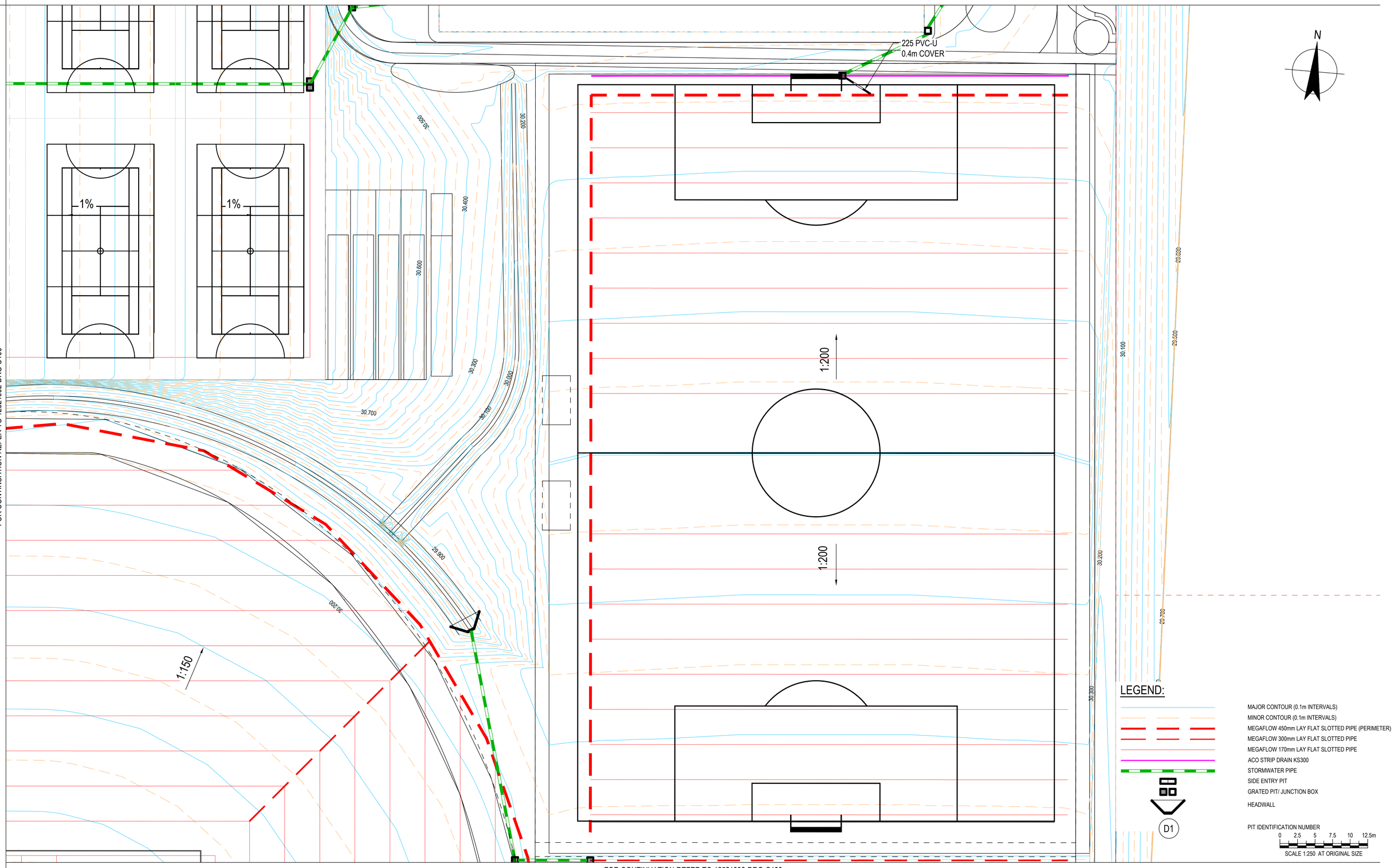

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Drawing No:	12521992-DRG-C107
Rev:	A

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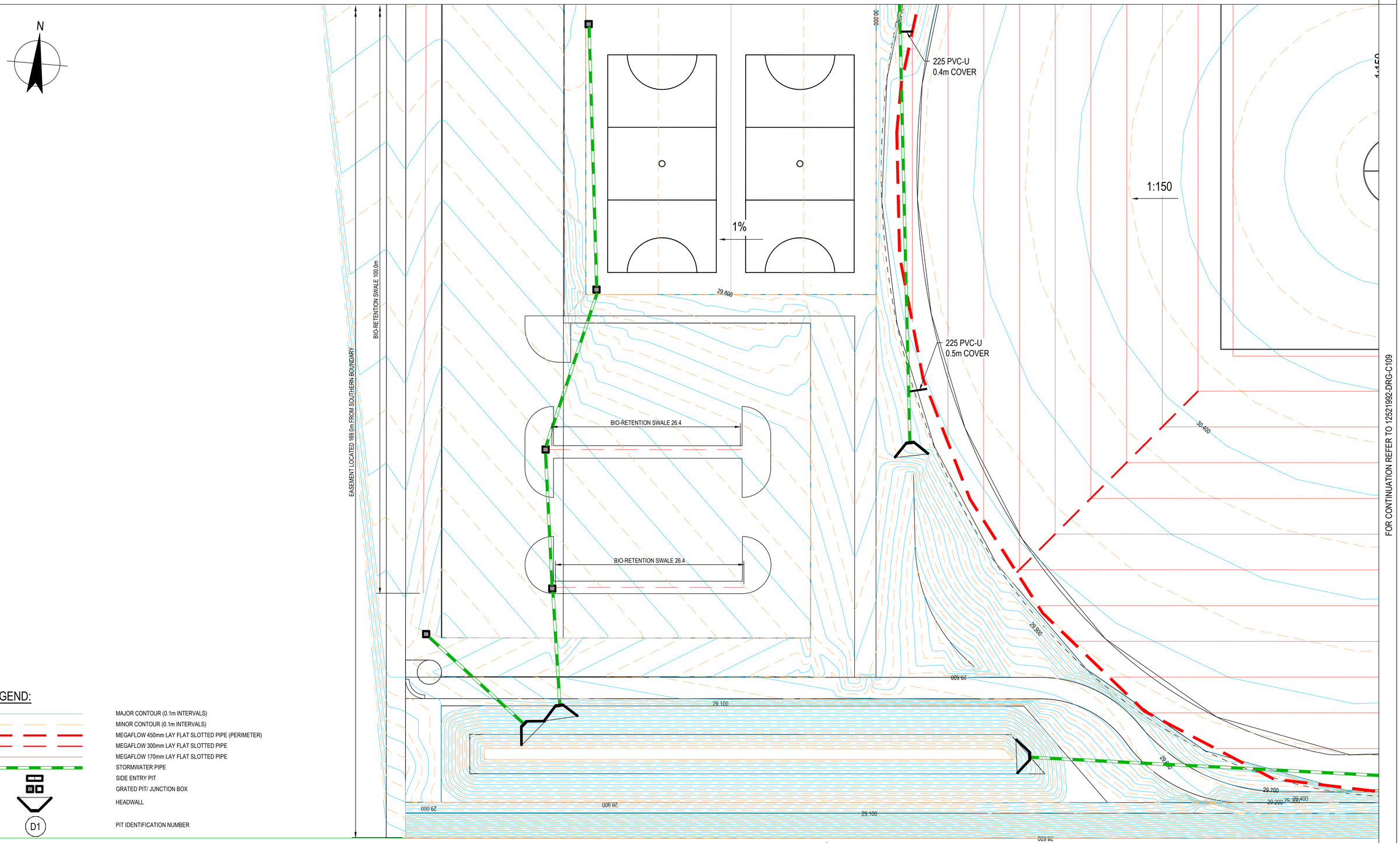

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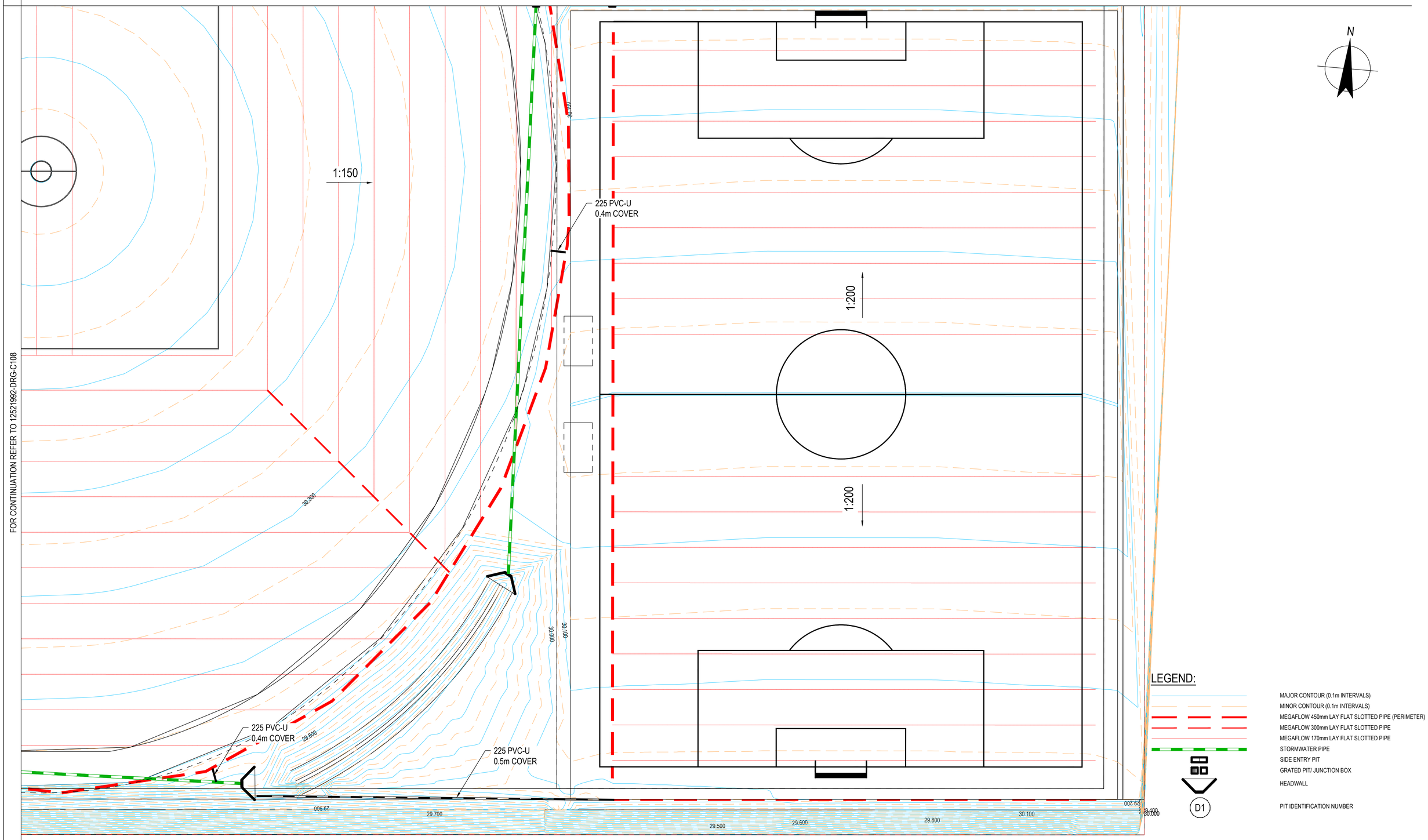

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Appendix B – Proprietary Stormwater Treatment Devices

SPELFilter Hydrosystem

Environmentally aware and efficient.

www.spel.com.au

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS

The Technology

A specialist rainwater filter, designed for installation within load bearing shafts and chambers of concrete or plastic construction. The pre fitted plastic housing is safe and easy to fit at site.

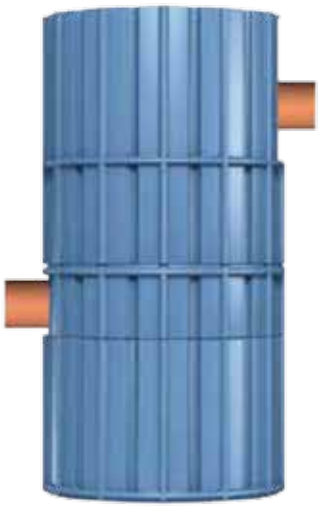
The Hydrosystem 1000 Filter uses an up-flow process. This means there is a minimal head drop between the inlet and the outlet. The cleaned water is of an outstanding water quality. The rainwater is treated within the unit by the following processes: sedimentation, filtration, adsorption and precipitation.

The initial treatment steps take place in the Dynamic Separator, where sedimentation of solid particles occurs within a radial flow regime, characterised by secondary flows.

A settling funnel to the silt trap chamber entrance ensures sediments are not remobilised. Above the separator are the filter inserts, covering the entire diameter of the unit's housing, where the second treatment step takes place.

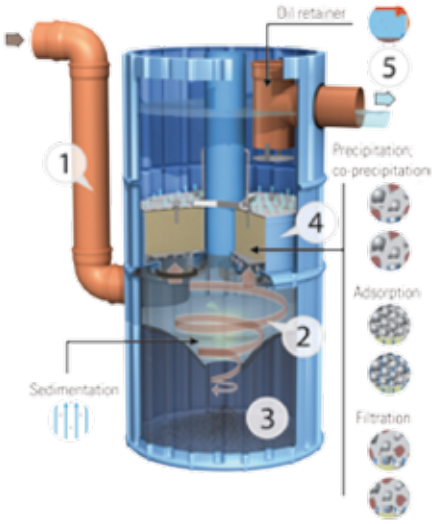
Water flows upwards through the removable filter element. As a result of both the upward flow within the filter element and the fact that the filter remains saturated, the rate of filter clogging by solids is both very limited and slow.

The filter inserts are easy to exchange.



How it works

1. The stormwater from the drained area is fed into the inlet, which is at the lower end of the shaft. A deflector plate sets up a radial flow.
2. Here, sedimentation of particles, especially the sand faction and above, takes place in the hydrodynamic separator. This is due to turbulent secondary flows within a radial laminar flow regime.
3. The settlable solids are collected via an opening in the silt trap chamber. This chamber is evacuated periodically, via the by-pass central tube at intervals.
4. Four filter elements are located within the filter shaft. As waters flow upwards the finer particles are filtered out, whilst the dissolved pollutants are precipitated and absorbed. The filter is easily backwashed, and if completely clogged or exhausted, is easily replaced.
5. Clean water above the filter elements passes to discharge via an oil trap assembly. In the event of major spill, free floating oils etc are retained here. Normal concentrations of dissolved oils are retained within the filter elements.



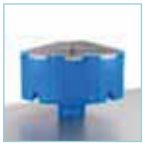
Technical Data

Stormwater filter complying with DIN 1989-2. Connections: DN 200; the various types of filter elements have different material structures.

Housing material: Polyethylene
Housing weight: 68 kg
Total weight: 220 to 350 kg depending on filter type
Packing unit SPEL Hydrosystem 1000: Pallet: 1 piece

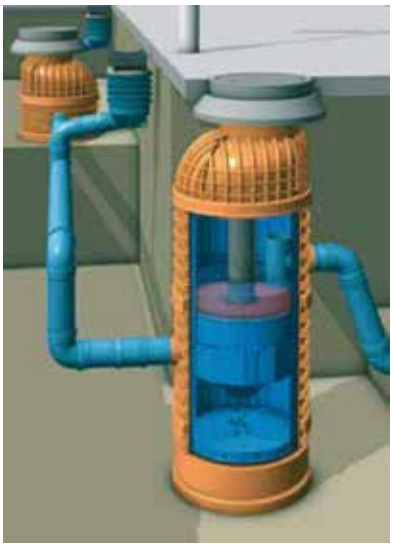
Accessories 1

SPELFilter element
Weight per filter element:
34 kg (roof / traffic)



Accessories 2

SPELFilter element
Weight per filter element:
54 kg (heavy traffic)
66 kg (metal)



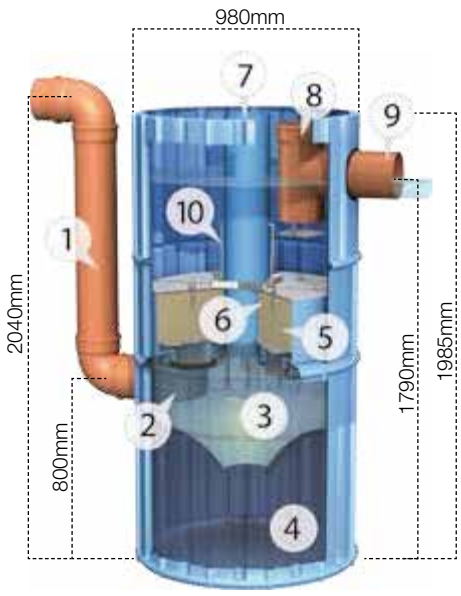
Example: Installation in a shaft made of plastic

Example:

The SPEL Hydrosystem 1000 traffic installed in a concrete shaft DN1000.

Product structure:

1. Stormwater inlet (DN 200)
2. Deflector plate
3. Hydrodynamic separator
4. Silt trap
5. Filter element
6. Extraction aid for filter element
7. Overflow and suction pipe
8. Oil trap
9. Outlet stormwater storage, soakaway system or surface waters
10. Buoyancy restraint for filter elements



The SPEL Hydrosystem is available with various filter types, depending on the usage of the connected area. The Roof type is used for roof areas that do not have a significant proportion of uncoated metals; the Metal type is employed for metal roof areas, and the Traffic type is used for slightly polluted traffic areas.

The Heavy Traffic type is employed for heavily polluted traffic areas and has been granted general technical approval (Z-84.2-4) by the German Institute for Structural Engineering (DIBt). The maximum areas that may be drained depend on the nature of the surfaces. These are given in the following table.

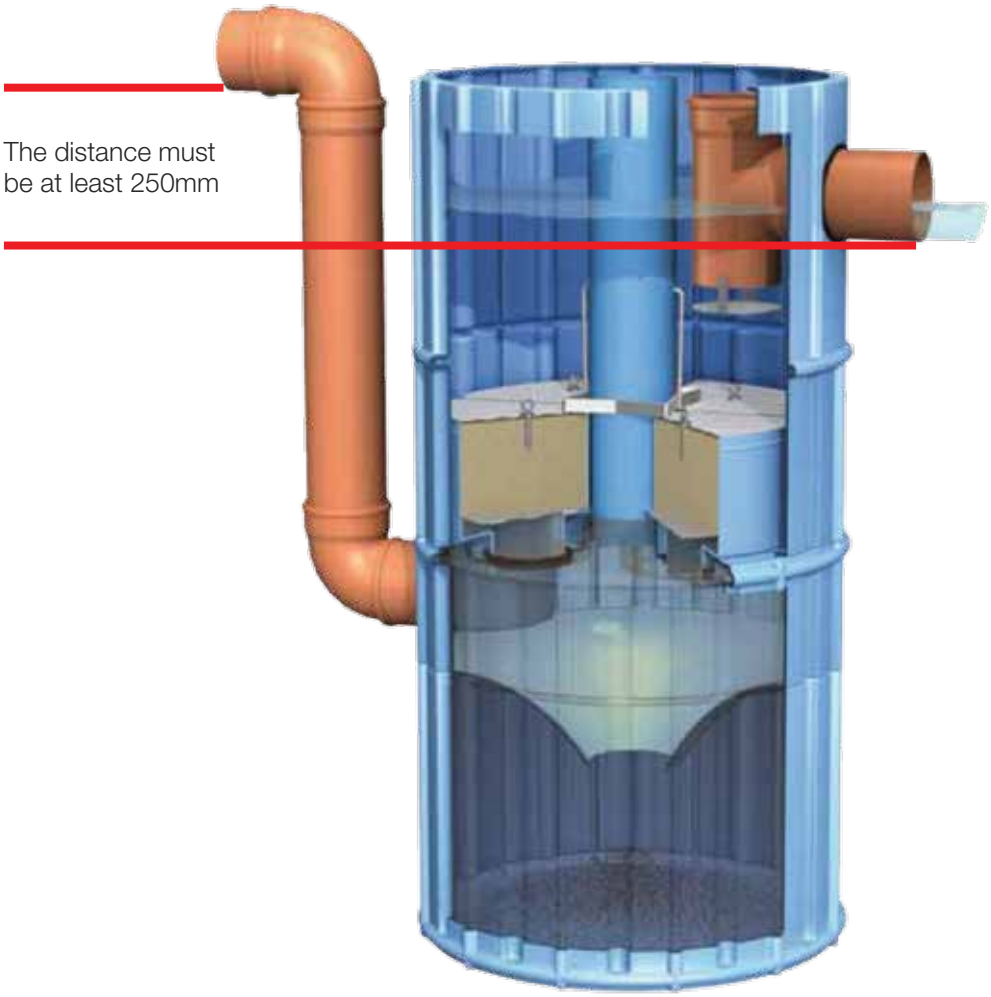
Type	**Nature of the surface to be drained**	**Weight of filter element / piece**	**Total Weight**
Heavy traffic with technical approval (Z-84.2-4)	Highly polluted traffic areas (car parks in front of supermarkets, main roads, HGV access roads)	54kg	300kg
Traffic	Slightly polluted traffic areas (side streets, staff car parks, yards)	34kg	220kg
Roof	Roofs without a significant proportion of uncoated metals (< 50m²)	34kg	220kg
Metal	Roofs made of uncoated metals (copper, zinc, lead)	66kg	350kg

Parameter	Unit	Non Metal Roof		Copper Roof		Zinc Roof		Parking lot, residential street		Main road Distributer		1 Aims of LAWA	2 Drinking Water	3 Seepage	4 SPEL Hydrosystem
		from	to	from	to	from	to	from	to	from	to	permissible limit	permissible limit	control value	aim
Phsico-chemical parameters												90 Percentile			
electrical conductivity	[uS/cm]	25	270	25	270	25	270	50	2400	110	2400	–	2500	–	< 1500
pH value	[–]	4.7	6.8	4,7	6,8	4,7	6,8	6,4	7,9	6,4	7,9	–	6,5 – 9,5	–	7,0 – 9,5
Nutrients															
phosphorous (P ges)	[mg/l]	0,06	0,50	0,06	0,50	0,06	0,50	0,09	0,30	0,23	0,34	–	–	–	0,20
ammonium (NH_4)	[mg/l]	0,1	6,2	0,1	6,2	0,1	6,2	0,0	0,9	0,5	2,3	–	0,5	–	0,3
nitrate (NO_3)	[mg/l]	0,1	4,7	0,1	4,7	0,1	4,7	0,0	16,0	0,0	16,0	–	50,0	–	–
Heavy Metals															
cadmium (Cd)	[µg/l]	0,2	2,5	0,2	1,0	0,5	2,0	0,2	1,7	0,3	13,0	1,0	5,0	5,0	< 1,0
zinc (Zn)	[µg/l]	24	4.880	24	877	1.731	43.674	15	1.420	120	2.000	500	–	500	< 500
copper (Cu)	[µg/l]	6	3.416	2.200	8.500	11	950	21	140	97	104	20	2000	50	< 50
lead (Pb)	[µg/l]	2	493	2	493	4	302	98	170	11	525	50	10	25	< 25
nickel (Ni)	[µg/l]	2	7	2	7	2	7	4	70	4	70	50	20	50	< 20
chromium (Cr)	[µg/l]	2	6	2	6	2	6	6	50	6	50	50	50	50	< 50
Organic Substances															
polynuclear aromatic hydrocarbons (PAK)	[ug/l]	0.4	0.6	0.4	0.6	0.4	0.6	0,2	17,1	0,2	17,1	–	0,1 6 compounds	0,2	< 0,2
petroleum-derived hydrocarbons (MKW)	[mg/l]	0,1	3,1	0,1	3,1	0,1	3,1	0,1	6,5	0,1	6,5	–	–	0,2	< 0,2

1 Aims of the German working group on water issues of the Federal States and the Federal Government (LAWA) for surface water, usage as potable water (1998). 2 Permessible of the German Drinking Water Ordinance (2001). 3 Control value for seepage of the German Federal Soil Protection Act an Ordinance (1999) according to § 8 1,2. 4 The aims of the system refer to average annual loads.

Installation

CAUTION! Important information, please observe.



The following is to be checked before installation:

The filter must be installed with a so-called fall. This means that the incoming pipe (stormwater inlet) is led downwards just ahead of the shaft and can be connected to the lower connection as described.

The difference in invert between the incoming pipe and the outlet to discharge must be at least 250mm.

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SPELFilter Hydrosystem 1.0

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS

SPEL Separator Commisioning Operation and Maintenance

SPEL

Stormceptor Off-Line Class 1

Operation and Maintenance Manual

SPEL PURACEPTOR™
OIL RETENTION AND CONTAINMENT

02 8838 1055
AUSTRALIA WIDE

SPEL STORMCEPTOR™
THE DISTINCT ADVANTAGE IN WATER TREATMENT

Introduction

Congratulations on your purchase of a SPEL Environmental Stormwater Quality Improvements Device. With proper care and by following a few simple guide lines your system will give you many years of dependable service.

Important

Only qualified personnel should maintain, operate and repair you Stormwater system. Any wiring of equipment should be performed by a qualified electrician.

Warning

Operation may cause injury. Take all necessary precautions, wear protective equipment, refer to Engineers Department. For your own safety, read all instruction manuals prior to working on equipment.

Safety Precautions

- Follow all “occupation, health and safety” regulations.
- Ensure maintenance personnel are aware of “Confined Spaces” guidelines, which must be followed.
- Make sure that there is sufficient oxygen and that there are no poisonous gases present.
- Check the explosion risk before wielding or using electric hand tools.
- Do not ignore health hazards. Observe strict cleanliness.
- Ensure that the lifting equipment (where required) is in good condition.
- All personnel who are to work with these systems should be vaccinated against diseases that can occur.
- Keep a first aid kit handy.

Health & Safety

Maintenace should be carried out by a competent contractor in accordance with the above procedures. Health and Safety at Work legislation and good building practice.

A warning notice should be visible at the top of each access shaft - ‘danger, harmful fumes’ and ‘ respirators should be worn in this tank.’ Before entering persons must be qualified in accordance with ‘confined space’ requirements

Information contained in this data sheet is approximate and for general guidance only. In accordance with the companies policy of constant improvement and development SPEL Products reserves the right to change the specification without prior notice.

SPEL ENVIRONMENTAL
STORMCEPTOR™ PURACEPTOR™

Stormceptor Off-LineClass 1

SPEL Operation and Maintenance Manual

- Car Parks & Shopping Centres
- Council Depots
- Industrial Estates
- Mining & Heavy Vehicle
- Maintenance & Storage Areas
- Transport Depots & Loading Bays
- Tunnels
- Highways & Transport Corridors
- Recycling Yards
- Airport Aprons & Tarmacs

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SPEL	Stormceptor - How it works	page 2
SPEL	Stormceptor Maintenance	page 3
SPEL	Coalescer Units	page 4
SPEL	Oil Alert System (optional)	page 5
	Spare Parts List	page 7

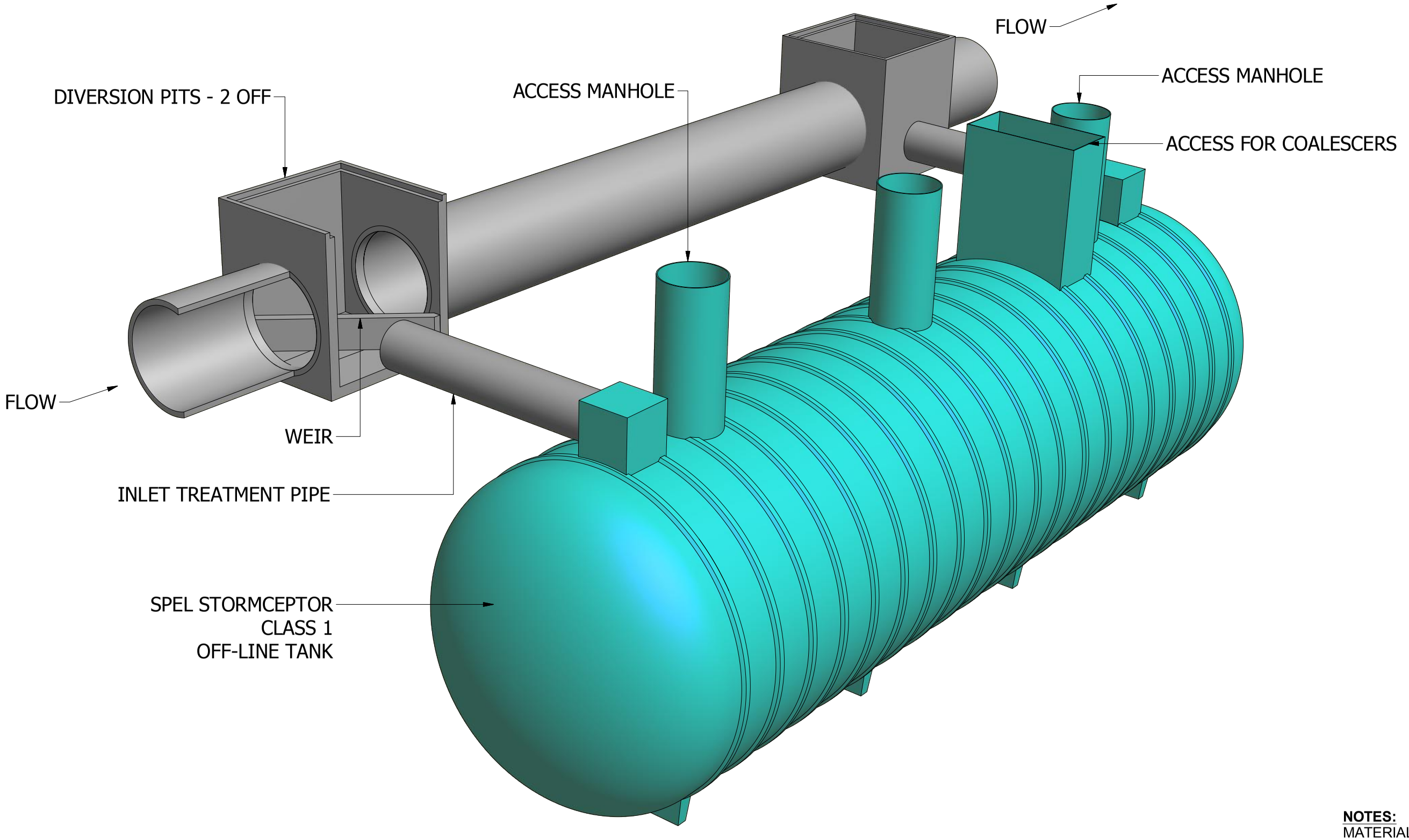
SPELPURACEPTOR™ OIL RETENTION AND CONTAINMENT

02 8838 1055 AUSTRALIA WIDE

SPELSTORMCEPTOR™ THE DISTINCT ADVANTAGE IN WATER TREATMENT

STORMCEPTOR OFF-LINE

GENERAL ILLUSTRATION



NOTES:
MATERIAL = FIBREGLASS
MATERIAL COLOR = CYAN

DATE	REVISED	BY
17/6/2011	FOR FABRICATION	J.L

SPEL ENVIRONMENTAL
STORMCEPTOR® PURACEPTOR® TRICEPTOR®
STORMWATER QUALITY IMPROVEMENT DEVICE
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NSW. 2150.
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EMAIL: sales@spelenvironmental.com.au
www.spelenvironmental.com.au

TITLE:
SPEL STORMCEPTOR OFF-LINE CLASS 1
TYPICAL ARRANGEMENT - NEW
PERSPECTIVE

SIZE	CODE	DWG No:	REV
A3	N/A	SP11-7220	1

SCALE	DRAWN BY: P.LEE	SHEET
N.T.S	DATE: 18/9/2012	1 of 1

ALL DIMENSIONS IN MM

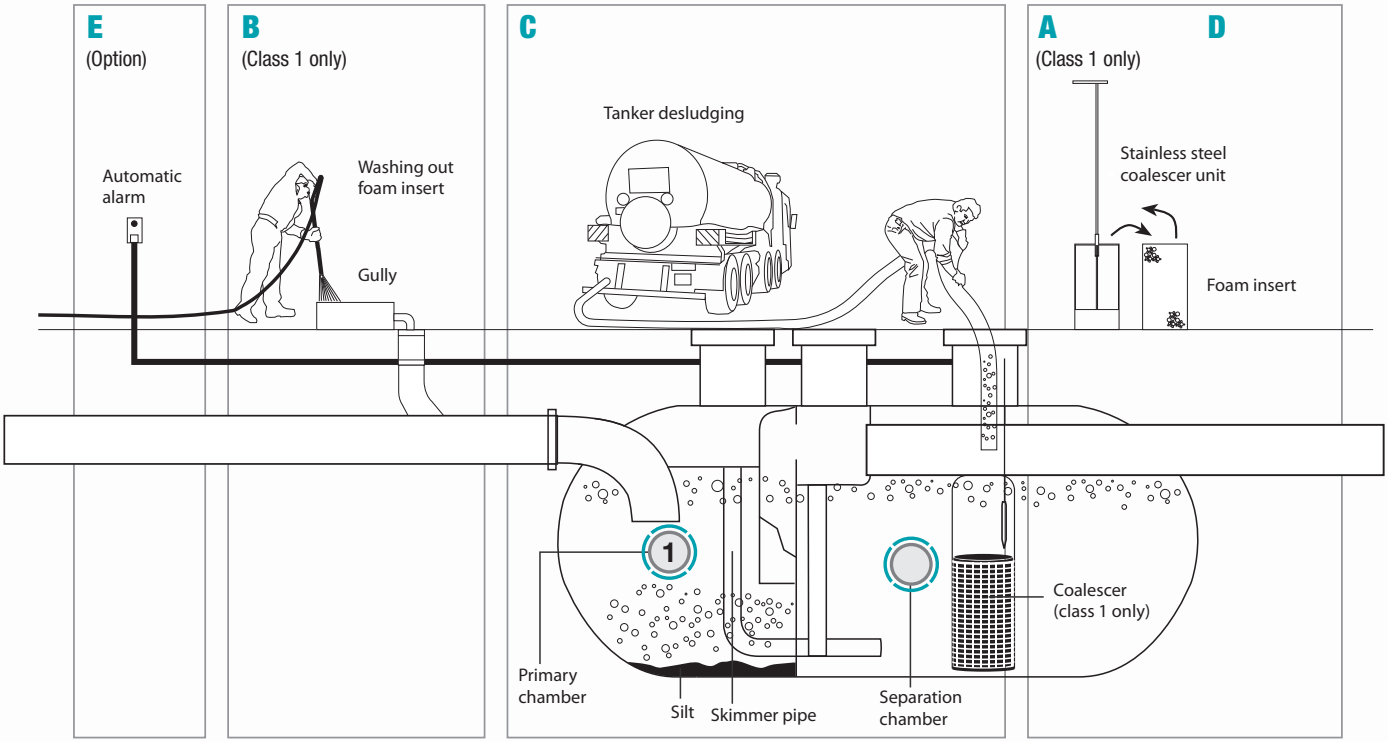
SPEL STORMCEPTOR™ Off-Line CLASS 1

Stormceptors™ should be inspected at three - six - or twelve monthly intervals depending on site conditions, to determine the depth of retained pollutants and silt in both chambers. When the depth of the pollutants retained has reached the predetermined design level, (approx. 350mm) it should be cleaned out.

1 **PRIMARY CHAMBER:** The inlet connects directly into chamber 1 - the primary chamber where silt etc. is deposited and light liquids are skimmed off to be transferred to the main separation chamber, chamber 3.

Maintenance requires the removal of accumulated silt etc., checking the skim pipe is not blocked and removing floating debris.

2 **SECONDARY/SEPARATION CHAMBER:** The separation chamber is where the light liquids are retained and in the case of "Class 1" Stormceptors™ , where the coalescer units are incorporated.
If coalescer units are incorporated, these should be removed and cleaned in accordance with the requirements set out in the coalescer Data Sheet.
Retained light liquids should be removed from the top and any sediment from the bottom.



MAINTENANCE PROCEDURE

A Coalescer unit
(Class 1 only)
Use the lifting handle or chain and lift the coalescer unit out of the tank and place in a retained area so pollutants do not escape.

B Cleaning foam insert
(Class 1 only)
Remove foam insert and wash with normal water pressure ensuring the dirty water runs into the Stormceptor™.

C Sucking out oil/fuel and silt
Suck off the retained oil from both chambers of the Stormceptor™ and then the silt deposited on the bottom of each chamber.

Important note:
When cleaning out, ensure both chambers are sucked out equally starting with the first chamber and then the second chamber and back again. Ensuring even water pressure against baffle wall.

D Re-insert coalescer unit
Re-insert the foam insert into the stainless steel coalsescer unit and re-insert the coalescer unit into the Stormceptor™ as provided with the SPEL lifting/location/locking system.

There is no need to top-up the Stormceptor™ with clean water as it will self level at the next rain event.
Note: The Stormceptor™ may need filling if for some reason the unit was totally emptied.

E SPEL automatic alarm/monitoring system (option)
The SPEL automatic alarm/monitoring system probe should be lifted out of the probe protection tube, wiped clean and re-inserted. the system should now be reset according to instructions.

SPEL COALESCER UNITS

The SPEL Puraceptor™ Class 1 separator and the SPEL Stormceptor™ Class 1 by-pass separators incorporate coalescer units. The coalescer units provide a coalescence process for the separation of small globules of light liquid pollutants before final discharge to the surface water drain.

Coalescers are found in the second chamber of the SPEL Puraceptor™ and the second chamber of the SPEL Stormceptor™ Class 1

Prior to installation

1. Remove any strapping / ropes which have been used to hold the coalescer units from shifting in transit.
2. The access shaft(s) above the coalescer units should be covered to prevent ingress of concrete, dust, debris etc., which could clog the foam inserts.
3. On completion of installation, check that the coalescer unit is inserted securely into the base socket.

On heavily polluted sites silt and contaminants may build up in the coalescer unit foam inserts and add significantly to it's weight. Use lifting chain sets that are on hooks at ground level for safe lifting with a tripod or hoist.

Installation

During installation, it is important that the foam inserts are not clogged with dust, debris or drops of wet concrete. To safeguard against this, we recommend covering the access shaft with a sheet of polythene, if not already covered.

Commissioning

On completion of installation, check the foam insert is fitted inside the stainless steel coalescer unit and the coalescer unit is inserted securely into the base socket.

Maintenance

1. Lift handle and coalescer unit out of the tank and place in a retained area so pollutants do not escape.
2. Remove foam insert and wash with normal water pressure ensuring the dirty water runs into the Puraceptor™ / Stormceptor™.
3. Make sure the hole in the centre of the coalescer foam is facing towards the manhole when installed in the tank.
4. Re-insert the foam insert into the stainless steel coalescer unit and re-insert the coalescer into the Puraceptor™ / Stormceptor™. After the tank has been cleaned.

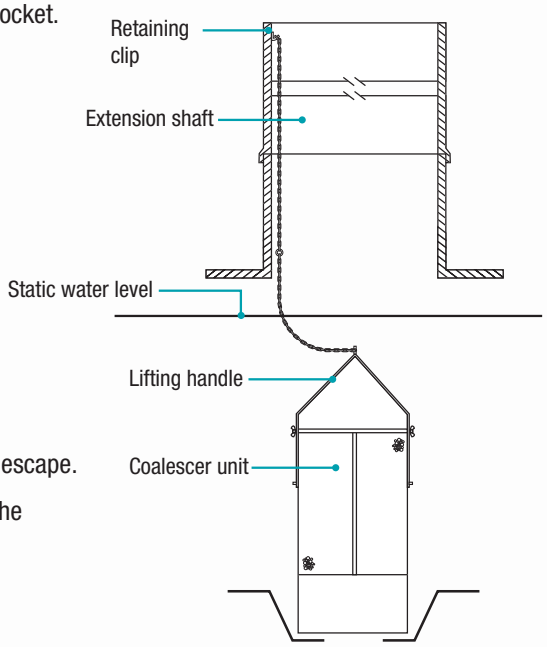


Figure 1. Coalescer unit with lifting chains

SPEL COALESCER UNITS GUIDE RAIL SYSTEM/LIFTING, LOCATING AND LOCKING SYSTEM

SPEL coalescer unit guide rail system

This facilitates easy insertion and removal of coalescer units. The system is robust, manufactured throughout in stainless steel and is action positive, leaving no doubt the coalescer unit is located properly.

Brackets fixed to the top and bottom of the coalescer unit simply engage the stainless steel guide rail fixed to the top of the stub access shaft. The coalescer is then lowered in the normal way, being guided at the correct angle into the conical base unit which finally locates the coalescer unit into it's final position.

Extension guide rails can be incorporated into the SPEL extension shafts to suit (preferably when ordered with the separator).

However, when the separator is full of water, debris or sludge accumulated over a period could prevent the coalescer unit from re-seating correctly after servicing.

The coalescer unit lifting / locating / locking system ensures the coalescer unit is seated correctly and can be locked into position to prevent tampering.

The stainless steel lifting handle can be extended to suit deep tank inverts and provide easy access for lifting manually or with a tripod and hoist utilising the lifting hook.

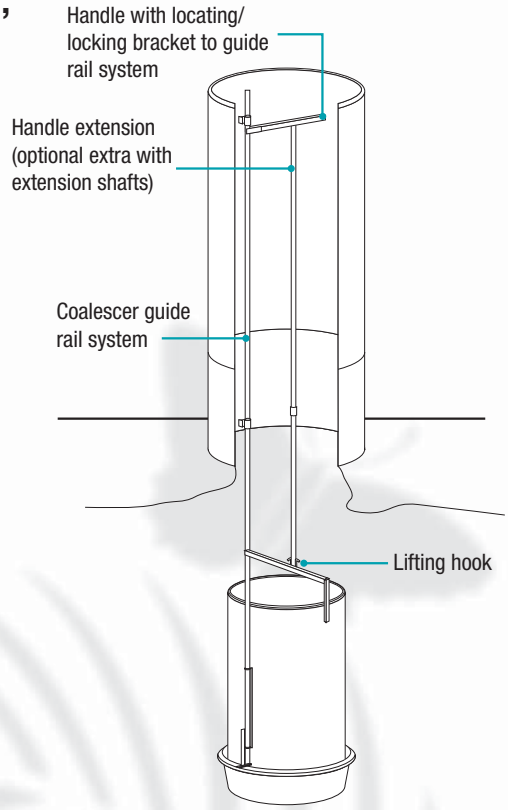
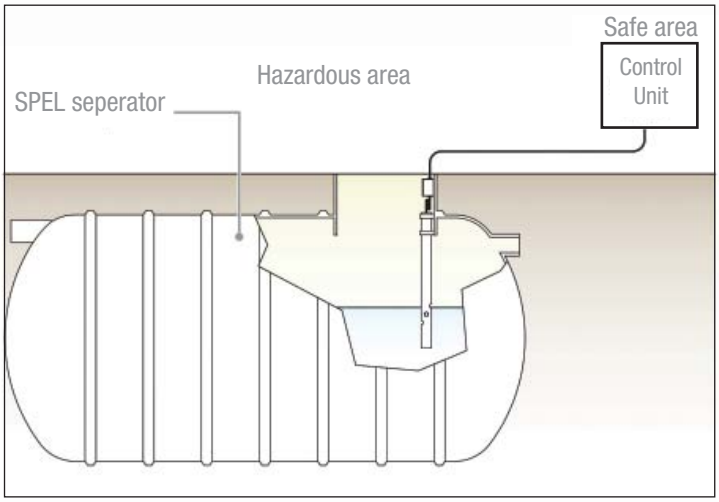


Figure 2. SPEL coalescer unit guide rail system/lifting, locating and locking system

SPEL Automatic Alarm/Monitoring System

The SPEL automatic alarm/monitoring system provides a audible warning alarm when the level of the oil in the SPEL separator reaches approximately 10% of the storage volume under static liquid level conditions. This is a early warning system that is used for spills or lack of maintenance.
The system comprises of a probe mounted in the main separation chamber which senses when the designed volume of light liquids has accumulated and sends a signal to the electronic control unit activating a red 'empty now' warning light and an audible alarm,



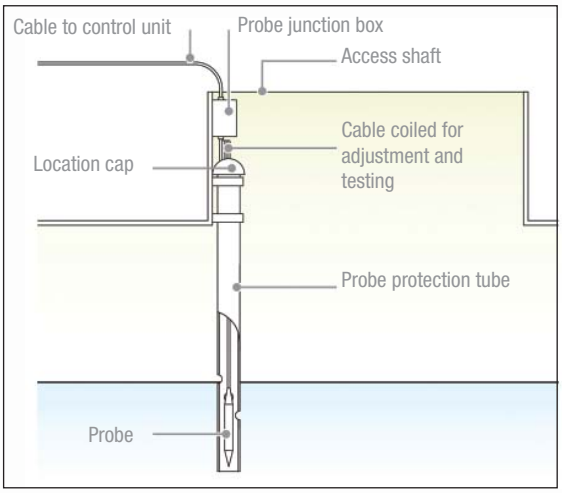
Operation

The probe is freely suspended in the probe protection tube in the separator at the correct level. When the oil-layer or depth of hydrocarbons reaches the predetermined level, the top of the probe will be immersed in the oil, breaking the circuit and activating the alarm. It is a 'fail-safe' system providing complete assurance that it is operative. If a fault occurs it will be signalled immediately.

Installation

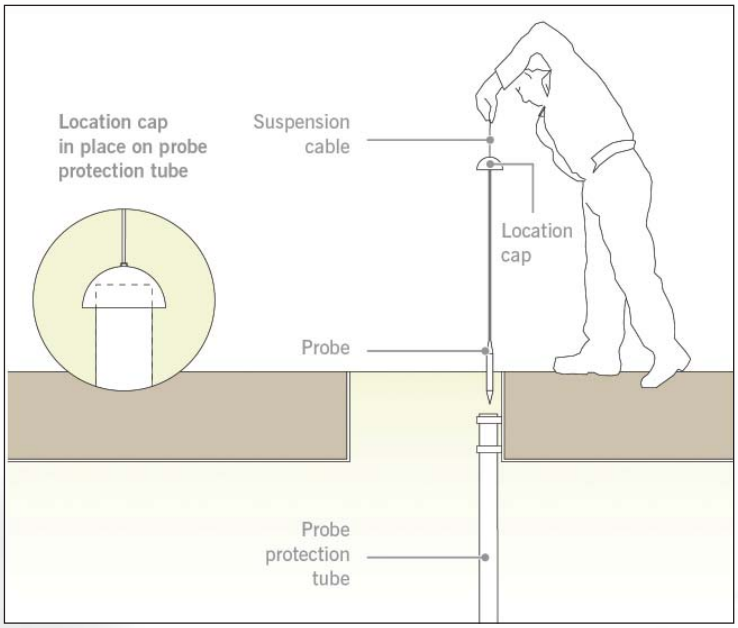
Control unit (general positioning)

The control unit has been designed to be located indoors and outdoors, within a nonhazardous area. It should be wall mounted and positioned such that the LED display and push switches on the front panel can be readily seen and accessed. The unit can be secured to the wall by using the four mounting holes provided. Included within the control is an intrinsically safe circuit (approved according to ATEX Directive 94/9/EC), to which the probe unit is connected.



Maintenance

When the separator is maintained, lift the probe out of the probe protection tube, check it operates the alarm (see under Tests Ref. 10.2) and at the same time wipe oil and contaminants from the probe to prevent a fake alarm after re-inserting.



Insert probe onsite

The probe protection tube is factory fitted and the probe matched to ensure the alarm is activated when the light liquids reach approximately 10% of the storage volume the SPEL separator is designed for.

All that is required on site is to undertake the electrical installation in accordance with the instructions provided and lower the probe with the pre-fixed location cap into the probe protection tube. When the cap locates onto the top of the probe protection tube, the probe is suspended at the correct level.

Control unit (electrical connections)

1. Mains voltage connection;

The control unit should be connected to a suitable 220/240V AC supply and fused at 3 amps.

Note: This appliance must be earthed.

2. Control unit/probe junction box connection

Wiring from the control unit to the probe junction box in the separator chamber requires a 3-core screened. 0.75mm core section cable.

Maximum cable length: 300 metres.

3. Probe connection

A 5 metre 3-core probe cable is normally fitted to the junction box and the probe.

After all connections have been made, the cables must be secured by tightening each entry gland.

Probe

The probe is installed freely suspended in the SPEL separator within the probe protection tube. The 3-core cable is connected into the junction box mounted in the access shaft above the probe protection tube. Extra cable is provided to enable raising the junction box where extension shafts are incorporated.

Important note: In all cases good, standard electrical practice should be followed and the installation must conform to the Australian Wiring Rules – AS 3000 – 2007. In essence, the installation must be such that the intrinsic safety is no compromised by:

- Exposure to risk of mechanical damage
- Unauthorised modification of interference
- Exposure to moisture, dust and foreign bodies
- Excessive heat
- Invasion of intrinsically safe circuit by other electrical equipment or circuitry

Certificate of conformity

The alarm device has been approved to be used in explosion-hazardous areas. The control unit and probe are approved according to ATEX Directive 94/9/EC. These approvals mean that the probes can be installed in Zone 0, which is continuously explosion-hazardous.

The SPEL oilset control unit must be located in the safe area, but it can be connected to the probe without any barrier.

Tests (10.2)

The function can be tested by lifting the probe within the probe protection tube. In approximately 5 seconds, the alarm is given by a red light and audible signal. Both relays release. Push the RESET button - the buzzer goes off and relay pulls in.

When the probe is placed in water again, relay pulls in and the red light goes off.

Cable break and short circuit test

Also the function can be tested in case of cable fault or short circuit. First cause short circuit in probe cable terminals 1 and 2. Then the yellow light of short circuit is lit. Both the relays pick up and the buzzer goes on. Remove the short circuit and reset the buzzer.

Simulated Function Test

The function of probe, cable and electronics can be tested. Push the TEST button for 2 to 5 seconds. Both relays pick up, and the red light is lit. When the TEST button is released, the red light goes off and relay returns to its normal position. The buzzer and relay must be reset.

Installation

Important note: It is important that installation is carried out by a competent technician familiar with this type of equipment or contact our Special Products Division for installation, commissioning and maintenance service.

SPEL ENVIRONMENTAL
STORMCEPTOR™ PURACEPTOR™

SPARE PARTS LIST

DATE: _____

INVOICE NO: _____

TYPE: _____

MODEL: _____

SERIAL NO: _____

JOB NO: _____

LINE	DESCRIPTION	QTY	PART No.
1			
2			
3			
4			
5			
6			
7			
8			

For all spare parts enquiries, please ring 02 8838 1055

SPEL Stormsack

At-source Gross Pollutant Trap

www.spel.com.au

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS

Stormwater Treatment

An all too common issue with today's highly impervious landscape is how to meet stormwater regulations with limited budgets and tight space constraints.

SPEL StormSack filtration solutions are highly engineered water quality devices that are deployed directly in the stormwater system to capture contaminants close the surface for ease of maintenance. Easily retrofitted into new or existing structures, SPEL StormSack filtration technology is a decentralized approach to stormwater treatment that essentially repurposes traditional site infrastructure and customizes it to meet specific site water quality goals. In this way, it satisfies important objectives of today's LID (Low Impact Development) criteria.

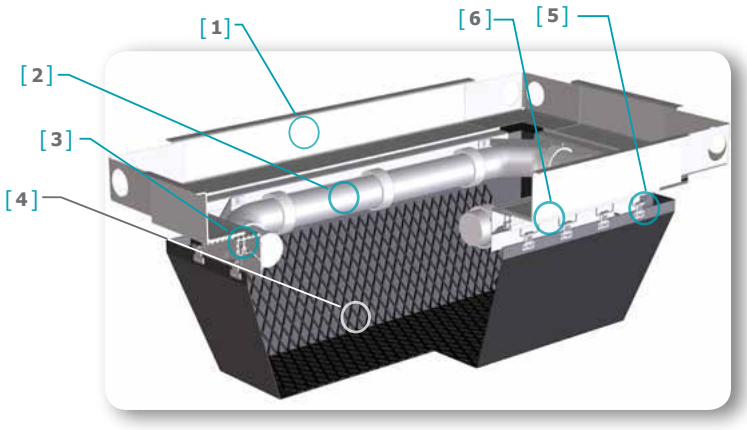
From an operations perspective, catch basins with SPEL Stormsack filters are also easier and quicker to clean out because pollutants are trapped just under the grate.

StormSack

The SPEL StormSack is specifically designed for the capture of gross pollutants: sediment, litter, and oil and grease. Ideally suited for municipal storm drain retrofits, the SPEL StormSack's unique design allows maintenance to be performed using conventional vacuum suction equipment.

Application	Regulatory Issue	Target Pollutants
Council Storm Drain Retrofits	At-source litter capture	Sediment, Litter, O&G
Commercial/Retail/Residential	Stormwater Compliance	Sediment, Litter, O&G
Litter Prone Urban Areas	Cost effective litter control	Litter ≥ 5 mm
Scrap Metal/Solid Waste/Oil Storage/Etc	Industrial Multi-Sector General Permit	Gross Pollutants, O&G
Part of Treatment Train	Council Stormwater Quality Improvement Targets	Sediment, Litter, O&G
Construction Sediment/Erosion	Sediment Control Plan	Sediment/Erosion Control

Features	
1.	Durable, aluminum frame construction
2.	Integral oil boom effectively captures oil and grease from spills
3.	Patented dovetailed flange – allows 12cm of length/width field adjustment
4.	Polypropylene netting protects sack from suction hose during maintenance
5.	Steel clip with locking tab holds replaceable filter sack in place
6.	Baffled bypass traps floatables



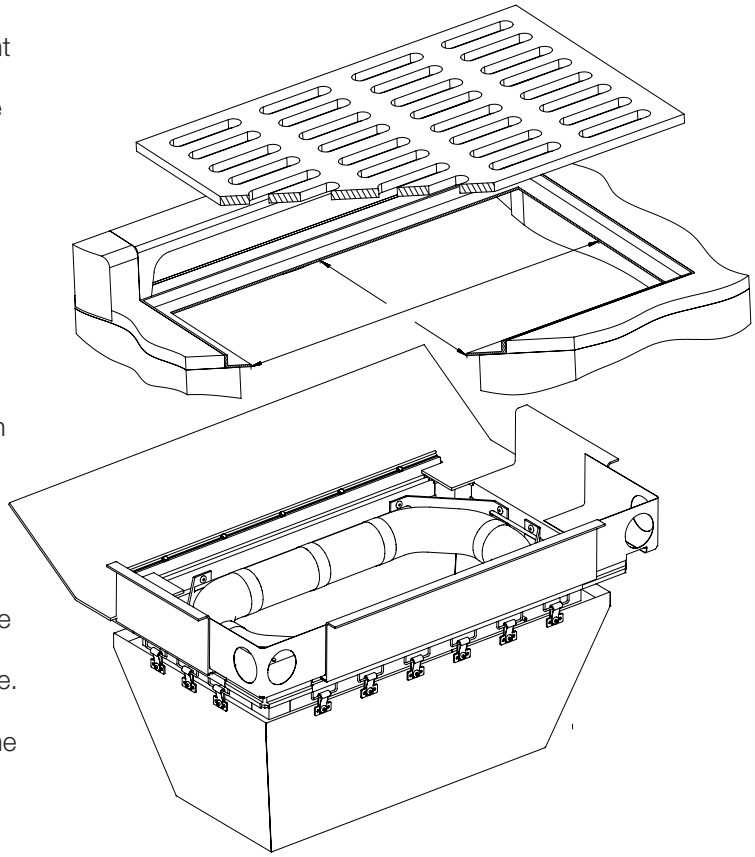
Standard SPEL Stormsack to suit Pit Sizes
450x450mm
600x600mm
900x600mm
900x900mm

Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times

Specifications & Details

General Description

This technology is a post developed stormwater treatment system. The SPEL StormSack provides effective filtration of solid pollutants and debris typical of urban runoff, while utilising the existing or new storm drain infrastructure. The StormSack is designed to rest on the flanges of conventional catch basin frames and is engineered for most hydraulic and cold climate conditions.



Installation And Maintenance

Installation procedures shall include removing the storm grate, cleaning the ledge of debris and solids, measuring catch basin clear opening and adjusting flanges to rest on grate support ledge. Install SPEL StormSack with splash guard under curb opening so the adjustable flanges are resting on the grate support ledge. Install corner filler pieces. Reinstall storm grate directly on support flanges [rise shall be no more than 1/8 inch (3 mm)].

Maintenance: Typically the SPEL StormSack is serviceable from the street level, and therefore maintenance does not require confined space entry into the catch basin structure. The unit is designed to be maintained in place with a vacuum hose attached to a sweeper or a vactor truck. The oil boom is also designed to easily be replaced from the street level. Use only SPEL replaceable parts.

Products

Material and Design

A. Adjustable Flange and Deflector: Aluminum Alloy 6063-T6

B. Splash Guard: neoprene rubber

C. Stormsack: woven polypropylene geotextile with US Mesh 20

D. Corner Filler: Aluminum Allow 5052-H32

E. Lifting Tabs: Aluminum Allow 5052-H32

F. Replaceable Oil Boom: polypropylene 3 inch (76 mm) diameter

G. Mesh Liner: HDPE, diamond configuration

H. Support Hardware: CRES 300 Series

Typical Performance Characteristics

A. Debris capacity: 8.5cu. ft. (0.24 m3)

B. Filtered flow rate: 7.3 cfs (207 lps)

C. Primary baffled bypass flow rate: 4.2cfs (119 lps)

D. Secondary bypass flow rate: 0.4 cfs (10 lps)

E. Total bypass flow rate: 4.6 cfs (130 lps)

F. Oil boom sorption capacity: 376 oz (11 L)

Recommended minimum clearance from bottom of SPEL StormSack to inside bottom of vault is 2 inches (50 mm) Typical frame adjustability range of 5 inches (127 mm) in each direction.

Benefits

- Low cost gross pollutant capture
- Quick & easy installation
- Simple maintenance
- At source capture
- Adjusts to custom pit sizes

Field Performance

The SPEL Stormsack was introduced to the Australian market in 2012 and field testing is underway at several locations in South-east Queensland. Laboratory testing has shown capture of 99.99% of gross pollutants up to the bypass flow rate.* Further results will be provided as they become available.

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0033 SPEL StormSack 2.0

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS

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3319197-39804/https://projects.ghd.com/oc/SouthAustralia/sastategovernmentinv/Delivery/Documents/3319197_Stormwater Management Plan for Southerrn School for DA Submission.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	S. Gianquitto	D. Fraser	DF*	A. Jackson	AHJ*	06/12/19

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