Government of **Western Australia**
Development Assessment Panels

Metro South-West Joint Development Assessment Panel Agenda

Meeting Date and Time: 16 July 2019, 10:00am
Meeting Number: MSWJDAP/187
Meeting Venue: City of Rockingham Boardroom
Civic Boulevard
Rockingham

Attendance

DAP Members

Mr Tony Arias (Presiding Member)
Ms Lee O'Donohue (Deputy Presiding Member)
Mr Andrew Macliver (Specialist Member)
Cr Chris Elliot (Local Government Member, City of Rockingham)
Cr Deb Hamblin (Local Government Member, City of Rockingham)

Officers in attendance

Mr Scott Jeffrey (Department of Finance)
Ms Deanna Kale (Department of Finance)
Ms Amanda Lees (Department of Finance)
Mr Grady O'Brien (GHD on behalf of Department of Finance)
Ms Collen Thompson (GHD on behalf of Department of Finance)
Mr Greg Delahunty (City of Rockingham)

Minute Secretary

Ms Nicole D'Alessandro (City of Rockingham)

Applicants and Submitters

Mr Hugh Gill (Oldfield Knott Architects Pty Ltd)

Members of the Public / Media

Nil

1. Declaration of Opening

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

2. Apologies

Nil

3. Members on Leave of Absence

Nil

4. Noting of Minutes

Signed minutes of previous meetings are available on the DAP website.

5. Declarations of Due Consideration

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Nil

7. Deputations and Presentations

The Department of Finance may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1

Property Location:	Lot 9009, Sixty Eight Road, Baldivis
Development Description:	New Public Primary School
Applicant:	Metro South-West JDAP
Owner:	Oldfield Knott Architects Pty Ltd
Responsible Authority:	Department of Finance
DAP File No:	DAP/19/01608

9. Form 2 – Responsible Authority Reports – Amending or cancelling DAP development approval

Nil

10. Appeals to the State Administrative Tribunal

Current Applications		
LG Name	**Property Location**	**Application Description**
City of Fremantle	Lot 1 (193) South Terrace, South Fremantle	Mixed Use Development
City of Rockingham	Lot 301 (2-6) Council Avenue, Rockingham	Proposed health studio, restaurant, showrooms and convenience store

11. General Business / Meeting Closure

In accordance with Section 7.3 of the DAP Standing Orders 2017 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

Government of Western Australia
Development Assessment Panels

Form 1 – Responsible Authority Report

(Regulation 12)

Property Location:	Lot 9009, Sixty Eight Road, Baldivis
Development Description:	New Public Primary School
DAP Name:	Metro South-West JDAP
Applicant:	Oldfield Knott Architects Pty Ltd
Owner:	Rockingham Park Pty Ltd
Value of Development:	$12,945,000
LG Reference:	20.2018.204.1-D19/87981
Responsible Authority:	Department of Finance, Strategic Projects
Authorising Officer:	Sandra McLeish, Director - Planning Department of Finance, Strategic Projects
DAP File No:	DAP/19/01608
Report Due Date:	5 July 2019
Application Received Date:	7 May 2019
Application Process Days:	81 Days
Attachment(s):	1. Location Plan 2. Aerial / Site Plan 3. Development Plans for Approval 4. City of Rockingham Referral Response 5. Transport Impact Assessment

Officer Recommendation:

That the Metro South-West JDAP resolves to:

Approve DAP Application reference DAP/19/01608 and accompanying architectural plans titled 'Baldivis South Primary School Masterplan – New Work', being drawing number SK1.01^{N}, and drawing numbers A2.01^{B}, A2.02^{B}, A2.03^{B}, A3.01^{B}, A3.02^{B}, A4.01^{B}, A4.02^{B}, A4.03^{B}, A4.04^{B}, A4.05^{B}, A5.01^{B}, A5.02^{B}, A6.01^{B}, A6.02^{B}, A8.01^{B}, A8.02^{B}, A8.03^{B}, A9.01^{B}, A9.02^{B} stamped 'SP RECEIVED 7 MAY 2019'; and the landscaping plans titled 'Baldivis South Primary School Schematic Design', being drawing number 'BMW-07 Rev B', stamped 'SP RECEIVED 7 MAY 2019', and the standard transportable classroom plans titled 'Transportable School Buildings – Western Australia' being drawing numbers A1.01$^{/1}$, A2.01$^{/o}$ and A2.02$^{/o}$ stamped 'SP RECEIVED 7 MAY 2019'; for the New Baldivis South Public Primary School in accordance with the provisions of the Metropolitan Region Scheme, subject to the following conditions:

Conditions

1. All stormwater produced shall be disposed of on-site to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission.

2. The development shall be connected to the reticulated sewerage system of the Water Corporation before commencement of any use where possible. Where reticulated sewerage is not available the development shall connect to an approved effluent disposal system to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission.

3. All on-site car parking and associated vehicle access areas shown on the approved plans shall be constructed, drained, sealed, marked and sign-posted prior to occupation of the proposed development and thereafter maintained to the satisfaction of the Western Australian Planning Commission.

4. All on-site car parking and associated vehicle access areas shown on the approved plans shall be available for vehicles and shall not be used for the purpose of storage or obstructed during school hours, to the satisfaction of the Western Australian Planning Commission.

5. Prior to occupation of the development, the school is to prepare and implement a Kiss and Drive Operational Plan to ensure that the proposed on-street kiss and drive facility is appropriately managed by staff or parent volunteers during peak drop-off and pick-up times, in consultation with the City of Rockingham and to the satisfaction of the Western Australian Planning Commission.

6. Landscaping, as specified in the approved landscaping plans, shall be substantially commenced prior to occupation of the proposed development, completed within three months of the date of occupation, and thereafter maintained to the satisfaction of the Western Australian Planning Commission. Final species selection is to be determined in consultation with the City of Rockingham.

7. Prior to the installation of any signage, a signage plan indicating the location and design of any proposed signage (including traffic directional signage) shall be prepared to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission.

8. Prior to the commencement of site works, a Construction Management Plan shall be prepared in consultation with the City of Rockingham and to the satisfaction of the Western Australian Planning Commission. The requirements of the Construction Management Plan shall be observed at all times during the construction process.

9. Prior to lodging a building permit, a Waste Management Plan is to be prepared to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission. Waste collection shall be carried out in accordance with the approved plan thereafter.

10. The access points for the proposed development are to be designed to connect seamlessly with abutting roads and public footpath infrastructure, to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission.

11. All piped and wired services, plant, equipment and storage areas are to be screened from public view, and in the case of roof mounted plant, screened or located so as to minimise visual impact, to the satisfaction of the Western Australian Planning Commission.

Advice Notes

1. All development must comply with the provisions of the Health Regulations, National Construction Code, Public Building Regulations and all other relevant Acts, Regulations and Local Laws. This includes the provision of access and facilities for people with disabilities in accordance with the National Construction Code.

2. The applicant is reminded of its obligations under the Building Act 2011.

3. This approval does not include the works within the adjoining road reserves, as indicated on the approved plans. Separate approval is required from the City of Rockingham for works within the road reserve, including any landscaping and/or on street parking. This includes the new vehicle crossovers for which separate approval is required under the Local Government (Uniform Local Provisions) Regulations 1996.

4. With respect to the required Construction Management Plan, the applicant is advised that this is to address earthworks management to control windblown sand, traffic management, the storage of construction materials, waste management, and suppression of dust.

5. The applicant is advised that any damage or removal of a City of Rockingham asset within the road reserve (roads, signage, verge etc.) shall be made good at the cost of the applicant to the specification of the City of Rockingham. The City of Rockingham has recommended that a dilapidation report is prepared prior to commencing work, in order to demonstrate the existing condition of infrastructure.

6. All car parking and associated vehicle access areas are to be constructed in accordance with relevant Australian Standards. The applicant is advised that commercial vehicles using the PPK car parking areas off Road 1 are to enter and exit the site in forward gear including manoeuvrability within the car parking area (i.e. no encroachment into car parking bays). Further, they shall be able to maintain sufficient vertical clearance to the underside (i.e. no bottoming or scraping) when travelling along the proposed ramp (1 in 8.5 or 11.8% gradient) within the car parking area. AS2890.2 requires a maximum rate of change of grade of 1 in 16 (6.25%) in 7.0m of travel.

7. All external lighting shall comply with requirements of AS 4282 - Control of Obtrusive Effects of Outdoor Lighting.

8. With respect to the approved landscaping plans, the City of Rockingham has advised that plantings adjacent to all public footpaths within the road reserve should be set back to allow for mature plant growth, whilst preventing overhanging of footpaths.

9. The City of Rockingham has advised that, given the Department of Education's position regarding the maintenance of the street verge area adjoining the school lot, a durable, low maintenance treatment such as paving and irrigated street trees in paved tree wells should be provided, to the specification of the City of Rockingham.

10. The school is encouraged to contact the Department of Transport regarding participation in the 'Your Move' campaign, which seeks to reduce car dependence and promote alternative modes of transport including walking, cycling and public transport.

If the development of the subject of this approval is not substantially commenced within a period of two years from the date of this letter, the approval shall lapse and be of no further effect. Where an approval has so lapsed no development shall be carried out without the further approval of the responsible authority having first been sought and obtained.

The decision is issued pursuant to the provisions of the Metropolitan Region Scheme, and has been made after due consideration of the local and regional planning implications of the proposal.

Should the applicant be aggrieved by this decision, there is a right to apply for a review pursuant to the provisions of Clause 33 of the Metropolitan Region Scheme. Such an application for review must be submitted to the State Administrative Tribunal, 565 Hay Street, Perth in accordance with Part 14 of the Planning and Development Act 2005. It is recommended that you contact the State Administrative Tribunal for further details (telephone 9219 3111) or go to its website. http://www.sat.justice.wa.gov.au

Details: outline of development application

Zoning	MRS:	Urban
	TPS2:	Development
Use Class:		Public Primary School (TPS2: Educational Establishment)
Strategy Policy:		N/A
Development Scheme:		East Baldivis District Structure Plan The Edge Local Structure Plan One71 Baldivis Local Structure Plan
Lot Size:		4.0316 ha (yet to be subdivided)
Existing Land Use:		Vacant

Under Section 6 of the *Planning and Development Act 2005* public authorities are exempt from the requirement to obtain development approval for public works under a local planning scheme. The development of a public primary school is a public work. Section 5(2) of the *Planning and Development Act 2005* does however require the Crown to seek approval under any applicable Region Planning Scheme. As such, there is no requirement for this development to obtain approval under the City of Rockingham Town Planning Scheme No. 2, however development approval is required under the provisions of the Metropolitan Region Scheme.

Under delegation instrument DEL 2009/02 Powers of Officers (Department of Finance) (as amended), the Director - Planning, Strategic Projects (SP), Department of Finance is authorised to determine development applications for public primary schools on MRS zoned land on behalf of the Western Australian Planning Commission.

However, the above delegation to determine applications does not extend to Development Assessment Panel (DAP) applications, where the value of the proposed development is $10 million or more. Therefore, given the estimated cost of development, this application requires the determination of the Metro South-West JDAP.

As per the delegation, the responsible authority for this application is the Department of Finance, Strategic Projects.

Background:

Site Information and Background

The school site is a yet to be subdivided portion of Lot 9009, Parklands Heights Estate, owned by Rockingham Park Pty Ltd. The 4.0316 ha site will be bound by Furnivall Parade to the north and yet un-named roads to the west, south and east. The site is currently a cleared sandy site, following mining of the Parklands Height Estate area for clean sand fill.

The applicant has advised that the subdivision works, road construction and the Department of Education taking ownership of the site are expected to be completed in advance of the scheduled opening of the school at the start of the 2021 school year.

Details of Proposed Development

The applicant proposes to construct a new public primary school on the subject site to accommodate up to 643 students from Kindergarten to Year 6, currently referred to as the future Baldivis South Primary School.

The new public primary school has been designed in accordance with the Department of Education's Primary Schools Brief, which sets out accommodation and design requirements for new public primary schools.

Specifically, the proposed development involves the construction of:

- An administration building.
- A library resource centre which also contains the staff room, conference room and staff toilet facilities.
- A pre-primary learning block, LB1, comprising an "L" shaped building containing five 80m^2 learning areas to accommodate kindergarten or pre-primary classes; all having direct access to a common pre-primary play area.
- A learning block 2 containing four learning areas.
- A learning block 3 containing four learning areas.
- A learning block 4 containing two learning areas, an inclusive education classroom and an arts and crafts/science room.
- A covered assembly building containing a covered assembly area, a canteen and a music room.
- Provision for six transportable classrooms and two pre-primary transportable classrooms.
- A fenced multi-purpose playing court and a mix of soft and hard paved play areas.
- A junior football oval with goal posts and two cricket practise nets.
- 110 onsite parking bays (additional on street parking is not subject to the development application).

The proposed public primary school is to be constructed primarily of face brick and Colorbond roof sheeting with feature multi-cell polycarbonate sheeting, as shown in the elevation drawings included at Attachment 3.

The proposed school has been designed to accommodate up to 643 students (613 full time equivalent), comprising 60 part-time kindergarten students and 583 pre-primary to year 6 students. Approximately 65 staff members will be employed at the school, based on the Department of Education's standard ratio of approximately one staff member for every ten students.

Department of Finance, Building Management and Works – Internal Design Review

The proposed development has undergone an internal design review process by the Department of Finance, Building Management and Works Building Research and Technical Services (BRaTS) team, having regard for the Department of Education's Primary Schools Brief. This review did not identify any areas of design concern.

Legislation and Policy:

Legislation

- *Planning and Development Act 2005*
- Metropolitan Region Scheme
- City of Rockingham Town Planning Scheme No. 2

The site is zoned 'Urban' under the Metropolitan Region Scheme and is zoned 'Development' under the City of Rockingham Town Planning Scheme No. 2 (TPS2). A number of Structure Plans have been adopted to guide the subdivision and development of the subject site and surrounds, as required under TPS2. These are discussed under the heading 'Local Policies', below.

State Government Policies

- Western Australian Planning Commission Development Control Policy 2.4 – School Sites.
- Western Australian Planning Commission Planning Bulletin 94 – Approval Requirements for Public Works and Development by Public Authorities.

Local Policies

- East Baldivis District Structure Plan

The East Baldivis District Structure Plan identifies the need for a primary school within the vicinity of the subject land, with the specific school location, lot configuration and road layout having been refined through the adoption of the Parkland Heights Local Structure Plan as discussed below.

- Local Structure Plan

The subject site is subject to the Parkland Heights Local Structure Plan which identifies the site as being reserved for 'Education – Primary School'. As such, the site is considered strategically suitable for the development of a new public primary school, as proposed by this application.

Consultation:

Consultation with other Agencies or Consultants

- City of Rockingham

The application was referred to the City of Rockingham (the City) for comment, as required under the WAPC's notice of delegation. The comments provided by the City are addressed in the Planning Assessment section of this report and are included as Attachment 4.

Planning Assessment:

Metropolitan Region Scheme

Clause 30 of the MRS requires the WAPC to have regard to the following factors when determining a development application:

- The purpose for which the land is zoned or reserved under the Scheme

The proposed development of Baldivis South Primary School is consistent with the Urban zoning of the site under the MRS.

- The orderly and proper planning of the locality

The proposal is consistent with the intended use of the site for education in accordance with the Parkland Heights Local Structure Plan and the orderly and proper planning of the locality.

- The preservation of amenities of the locality

The proposed development of Baldivis South Primary School has been sited and designed in a manner that integrates with the surrounds of the site, and will ensure the preservation of amenities of the locality.

Western Australian Planning Commission Development Control Policy 2.4 – School Sites

The proposed public primary school has been assessed against the provisions of Development Control Policy 2.4 – School Sites (DC Policy 2.4) as follows:

- Site Requirements

The proposed site area of 4.0316 hectares accords with the desirable 4 hectare minimum provided by DC Policy 2.4. Therefore, the site is of an appropriate size to accommodate all required school facilities, with the development plans provided indicating that a functional layout can be achieved on site.

- Site Selection and Planning

As noted previously, the school site is currently vacant and cleared of significant vegetation.

The existing fall across the main building footprint is too great to provide universal access to all of the buildings, therefore the school footprint requires fill, resulting in retaining to the eastern and western boundaries. To manage the extent of fill across the site and minimise external retaining, the school footprint will be elevated 1.7 metres above the oval which is located on the southern half of the site. The extent of retaining between the two levels will be minimised by raising the oval level up at its northern extent to meet the school buildings with tiered seating, ramps and stairs being utilised to make up the level differences. The school buildings will have a resulting finished floor level of 19.750 and 19.6 AHD, with the oval having a finished level of 16.90 to 17.51 AHD.

Retaining along the eastern edge of the school is set back behind peripheral car parking, and visually well within the school site. Retaining along the western boundary is setback approximately 2 metres within the school site, and will be screened by proposed trees as shown in the landscape plan. Retaining along the western boundary ranges from 0.5 to 1.5 metres, with a 15 metre section ranging from 1.5 to 1.95 metres.

No site services are installed at this stage, however essential utilities including sewer, water, power, gas and telecommunications will be available to the primary school site through sub divisional works. Connection to these services will be available in line with the operational requirements of the school.

- Access Considerations

The combined school site will ultimately maintain frontages to four public roads, with each to be provided with appropriate footpath infrastructure and on-street car parking bays where abutting the school site, as indicated on the plans provided. The roads are expected to be completed in advance of the scheduled opening of the school at the start of the 2021 school year.

- Relationship to Nearby Land Uses

The proposed primary school site is to be surrounded by residential land uses on all sides. However, the primary school site will be bound by public roads on all sides, which will reduce any potential conflict with surrounding residential properties.

Parking and Access

In order to promote a consistent approach across the metropolitan region, the provision of parking at new public primary schools is assessed against the guidelines contained within the Department of Education's Primary Schools Brief, which stipulates that parking for new primary schools be provided in accordance with the following:

- Kindergarten:
    - 8 bays as a minimum.
    - 7 additional bays as a Department of Education directive.

- Primary and Pre-Primary:
    - 14 pick-up/drop-off bays per 100 students, with a minimum of 60 bays.
    - 10 staff bays per 100 students, with a minimum of 46 on-site bays (including 3 visitor bays).

- Universal Access Bays:
    - 1 bay for every 30 on-site bays.

- Additional Non-Compulsory Parking:
    - 4 bays for canteen staff.
    - Additional universal access bays as required.

Based on the above, and the school site, inclusive of the proposed transportable classrooms, accommodating a maximum of 643 students (including 60 part-time

kindergarten students), the proposal requires a total of 161 car parking bays, broken down as follows:

- 15 bays for the kindergarten component;
- 64 bays for staff and visitors; and
- 82 drop-off / pick-up bays.

A further four (4) bays are also required for the canteen that forms part of the proposed covered assembly building, bringing the total number of required bays to 165.

The proposed development will provide a total of 110 on-site parking bays, including:

- 49 bay staff car park
- 40 pick-up/drop off bays
- 21 kiss and drive bays

Parking demand will also be met through on street parking, with 48 parking embayments provided by the current road design; this brings parking supply to a total of 158 bays. The Transport Impact Assessment (TIA) provided with the application (see Attachment 5) identified that additional on street parking bays had been explored to achieve a total of 165 bays, however was not progressed following discussion with the City of Rockingham to maintain sight lines.

The TIA identifies that the 21 kiss and drive bays provide the equivalent of 126 bays during peak periods of school activity; even if this level of efficiency is not achieved, the additional efficiency of kiss and drive is sufficient to meet the overall shortfall of 7 bays. In accordance with the requirements of the Primary Schools Brief, a condition has been recommended to require the school to prepare and implement a Kiss and Drive Operational Plan to ensure that the proposed on-street kiss and drive facility is appropriately managed by staff or parent volunteers during peak drop-off and pick-up times, in consultation with the City of Rockingham and to the satisfaction of the Western Australian Planning Commission (Recommended Condition 5). This will ensure that the kiss and drive facility operates effectively in improving the turnover of bays during peak periods. The proposed kiss and drive bays are identified on the masterplan diagram that is included at Attachment 3.

In accordance with the above, considering the additional efficiency achieved by kiss and drive bays, there is an adequate amount of car parking provided for the proposed primary school. This is consistent with the findings of the TIA and it is noted that the City of Rockingham has not raised any objections on the basis of car parking. It is also noted that the City of Rockingham's Town Planning Scheme No. 2 and associated Local Planning Policies do not specify a car parking requirement for public primary schools.

Based on the 110 on-site bays provided, the school site is required to provide four (4) of these bays as universal access bays. The plans provided indicate that a total of four (4) universal access bays will be provided, distributed between each of the on-site car parking areas to be provided.

In addition to the above, it is noted that the Transport Impact Assessment (TIA) that accompanies this application does not identify any concerns with respect to car parking and traffic generation, and concludes the following:

- *Assessment of the traffic attraction associated with the proposed school is shown to have no significant impact to the local road network. Forecast traffic flows are relatively low and all local intersections will operate with little delay and very good Levels of Service during the school peak periods. Sidra analysis has been undertaken that confirms the findings of the previous traffic report.*
- *An appropriate level of parking is provided for the school.*
- *As the locality is a new suburb all local roads have been designed cognisant of the proposed school and appropriate traffic management has already been constructed.*
- *Good access for traffic, pedestrians and cyclists is provided to the school.*
- *Acceptable visibility is provided at intersections and pedestrian crossing points as per the approved civil design plans (City of Rockingham).*
- *There are no reasons to indicate that the school will not operate in an acceptable manner.*

The TIA does identify a potential road safety issue, with Road 1 considered to be located too close to the Nairn Drive roundabout which raises a road safety concern. However, the broader layout of subdivisional roads is outside the scope of any development approval.

Based on the above, the proposed public primary school is not expected to have any unacceptable impact on the operation of the surrounding road network.

Environmental and Heritage Considerations

- Heritage Considerations

A desktop search of European and Aboriginal heritage indicates that the site has no known heritage significance.

- Contamination

A desktop search of the Department of Water and Environmental Regulation's Contaminated Sites Database indicates that the subject site is not a registered contaminated site.

- Acid Sulphate Soils

A desktop search of environmental factors indicates that the site is classified as having low to no risk of Acid Sulfate Soils (ASS) occurring generally at depths of less than 3 m.

- Wetlands

None.

- Bushfire

A desktop search of the State Map of Bush Fire Prone Areas indicates that the southern edge of the parent lot is affected by the bushfire prone area, as a result of remnant vegetation south of Sixty Eight Road. However, the school site (which will be

excised from that lot) is located entirely outside of the bushfire prone area, and more than 100 metres away from any remnant vegetation.

No conditions or advice notes are recommended with respect to bushfire.

City of Rockingham Recommendation

As noted previously, the application was referred to the City of Rockingham (the City) for comment, as required under the WAPC's notice of delegation.

The City recommended approval subject to several conditions.
The City's referral response was accompanied by a number of comments in relation to the submitted Transport Impact Assessment (TIA), which are discussed in relation to the City's recommended condition 9 below.

Recommended Conditions

1. *Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures shall be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.*

A standard condition has been recommended to require the preparation of a Construction Management Plan in consultation with the City of Rockingham and to the satisfaction of the Western Australian Planning Commission, prior to the commencement of site works, with the requirements of the Construction Management Plan to be observed at all times during the construction process (Recommended Condition 8). It is considered that the requested dust and sand management measures can therefore form part of the required Construction Management Plan, with an advice note having been recommended to this effect (Recommended Advice Note 4).

2. *The preparation, approval and implementation of a Construction Management Plan to address traffic management, the storage of construction materials, waste management and suppression of dust to the satisfaction of the City of Rockingham.*

A standard condition has been recommended to require the preparation of a Construction Management Plan in consultation with the City of Rockingham and to the satisfaction of the Western Australian Planning Commission, prior to the commencement of site works, with the requirements of the Construction Management Plan to be observed at all times during the construction process (Recommended Condition 8). An advice note is recommended to include the elements recommended by the City to be addressed in the Construction Management Plan (Recommended Advice Note 4).

3. *Prior to the commencement of works, Engineering Drawings are to be submitted for assessment and approval for the streetscape works required within the verges adjacent to the school site.*

The above condition relates to street verges, which fall outside the boundaries of the subject site and therefore do not form part of this approval. Separate approval is required from the City of Rockingham for all works within the road reserve. A

standard advice note (Recommended Advice Note 3) has been recommended to this effect.

4. *Any damage to existing City infrastructure within the road reservation including kerb, road pavement, and footpaths is to be repaired to the satisfaction of the City, Manager Land and Development Infrastructure at the cost of the applicant.*

The above condition relates to assets within the adjoining road reserves, which are located outside the boundaries of the subject site and are under the control of the City of Rockingham. As such, it is recommended that an advice note be included to this effect (Recommended Advice Note 5).

5. *Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the City of Rockingham for its approval. All stormwater generated by the development must be managed in accordance with Planning Policy 3.4.3 - Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.*

A condition (Recommended Condition 1) is recommended to require that all stormwater produced is disposed of on-site to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission, consistent with standard wording used by the Department of Finance, Strategic Projects. This is considered to appropriately address the City's recommended condition, noting that the requirements specified in the above condition can still be imposed, being the relevant specifications of the City.

6. *Prior to applying for a Building Permit, a Landscaping Plan must be prepared and include the following detail, to the satisfaction of the City of Rockingham:*
   - *(i) The location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;*
   - *(ii) Any lawns to be established and areas to be mulched;*
   - *(iii) Any natural landscape areas to be retained;*
   - *(iv) Those areas to be reticulated or irrigated;*
   - *(v) Shade trees in off-street car parks at a rate of one (1) tree to be provided for every four (4) parking bays;*
   - *(vi) Treatment of street verge areas that abutting the site (from the back of the road kerb to the property boundary – including the footpath); and*
   - *(vii) Colour and materials of the proposed verge paving.*

   The landscaping must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham.

In this regard, it is noted that a landscape schematic design for the proposed development site has been provided and forms part of the plans that are recommended for approval. As such, it is not considered necessary to require the provision of further landscaping plans as a condition of approval. However, it is recommended that a condition (Recommended Condition 6) be included to require that landscaping, as specified in the approved landscape design, shall be substantially commenced prior to occupation of the proposed development,

completed within three months of the date of occupation, and thereafter maintained to the satisfaction of the Western Australian Planning Commission, with final species selection to be determined in consultation with the City of Rockingham.

With respect to point (iii) of the above condition, it is noted that there are no existing natural landscape areas on the site, which has been extensively earthworked.

With respect to point (v) of the above condition, new tree plantings are proposed around the edges of proposed car parks insofar as possible. However, providing tree planting within the car park itself is contrary to the Department of Education Primary Schools Brief, as this configuration causes long-term maintenance problems in car parking areas due to root disturbance. As such, the current provision of shade trees adjacent to the proposed on-site car parking areas is considered acceptable, having regard to the requirements under the Primary Schools Brief, and therefore no conditions or advice notes have been included to require the planting of additional shade trees.

With respect to points (vi) and (vii) of the above condition, it is noted that the issue of landscaping within the adjoining road reserve is a matter to be negotiated between the applicant/owner and the City, with an advice note having been recommended with respect to verge landscaping (Recommended Advice Note 3). There is currently no verge landscaping shown on the plans provided.

7. The carpark(s) must:

(i) prior to applying for a Building Permit, be designed in accordance with User Class 3 of the Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking unless otherwise specified by this approval;

(ii) include a minimum of two (2) car parking space(s) dedicated to people with disabilities designed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities, linked to the main entrance of the development by a continuous accessible path of travel designed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;

(iii) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter;

(iv) have lighting installed, prior to the occupation of the development; and

(v) confine all illumination to the land in accordance with the requirements of Australian Standard AS 4282—1997, Control of the obtrusive effects of outdoor lighting, at all times.

The car park(s) must be constructed in accordance with the above requirements prior to occupation of the development and maintained in good working order for the duration of the development.

In relation to part (iii), it is recommended that a standard condition be included to require that all car parking and associated vehicle access areas shown on the approved plans shall be constructed, drained, sealed, marked and sign-posted prior to occupation of the proposed development and thereafter maintained to the satisfaction of the Western Australian Planning Commission (Recommended Condition 3).

Parts (i), (ii), (iv) and (v) can all be addressed through compliance with Australian Standards and have therefore been addressed through the inclusion of standard advice notes relating to the need for:

- All car parking and associated vehicle access areas are to be constructed in accordance with relevant Australian Standards (Recommended Advice Note 6); and
- All external lighting to comply with requirements of AS 4282 - Control of Obtrusive Effects of Outdoor Lighting (Recommended Advice Note 7).

8. *Prior to applying for a Building Permit, detailed plans and specifications must be submitted to and approved by the City of Rockingham for on-street car parking spaces within the adjacent road reserves.*

   The car parking spaces must:
   (i) be designed, constructed, sealed, kerbed, drained and marked in accordance with Australian Standard AS 2890.5—1993, Parking facilities, Part 5: On-street parking; and
   (ii) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and comply with the above requirements for the duration of the development.

The above condition relates to the construction of on-street parking bays, which fall outside the boundaries of the subject site and therefore do not form part of this approval. Separate approval is required from the City of Rockingham for all works within the road reserve. A standard advice note (Recommended Advice Note 3) has been recommended to this effect, and this condition is not recommended to be included.

9. *Prior to applying for a Building Permit, a revised Transport Impact Assessment (TIA) is to be provided demonstrating satisfactory performance of surrounding intersections and road networks, swept path analysis for commercial vehicles, safe locations for school crossings (especially across Nairn Drive), justification for assumptions made and correcting the information provided within the original TIA to the satisfaction of the City of Rockingham.*

The City of Rockingham provided a detailed list of specific traffic comments requested to be incorporated into a revised TIA. These were provided to the applicant, and a revised TIA (provided in Attachment 5) was prepared that provided additional analysis and included a response to all detailed traffic comments made by the City of Rockingham.

In response to the revised TIA, the City of Rockingham requested additional information in the form of *"swept path analysis for the commercial vehicles using the PPK car parking areas off Road 1. The swept path analysis is to demonstrate that the commercial vehicles (eg. rubbish truck) are able to enter and exit the site in forward gear including manoeuvrability within the car parking area (i.e. no encroachment into car parking bays). It shall also demonstrate sufficient vertical clearance to the underside (i.e. no bottoming or scraping) of the commercial vehicle by means of vertical swept path analysis when travelling along the proposed ramp (1 in 8.5 or 11.8% gradient) within the car parking area. AS2890.2 requires a maximum rate of*

change of grade of 1 in 16 (6.25%) in 7.0m of travel which the proposed ramp is unlikely able to satisfy therefore a vertical swept path analysis is also required."

The City's initial detailed comments on the TIA had not included this specific request, therefore the revised TIA does not provide this level of detail. It is considered that this comment more appropriately relates to detailed design of car parking and access, and not to the broader transport and parking themes of the TIA.

As discussed above in relation to the City's recommended condition 7, a standard advice note is recommended to advise that all car parking and associated vehicle access areas are to be constructed in accordance with relevant Australian Standards (Recommended Advice Note 6). It is recommended that the standard advice note is modified to reflect the specific requirements of compliance with the relevant Australian Standards. This is considered to address the City's comment.

10. *The proposed crossovers are to be designed and constructed in accordance with the City's Specification for the Construction of Commercial Crossovers.*

Separate approval is required from the City of Rockingham for all works within the road reserve; this includes crossovers. A standard advice note (Recommended Advice Note 3) has been recommended to this effect.

11. *Prior to applying for a Building Permit, engineering drawings and specifications are to be submitted and approved for the construction of full earthworks, carriageways, shared path(s), drainage facilities and pedestrian crossing(s) required for the proposed roads abutting the subject site.*

    The works must be completed prior to the occupation of the development.

As noted earlier, the roads around the school site are expected to be completed in advance of the scheduled opening of the school at the start of the 2021 school year. The requirement for the surrounding roads to be constructed (by the developers) is imposed under the terms of the subdivision approval, and therefore is not a relevant consideration for the development approval which relates only to works within the school site. Therefore, this condition is not recommended to be included.

12. *Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:*
    (i) the location of bin storage areas and bin collection areas;
    (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
    (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
    (iv) frequency of bin collections.

    All works must be carried out in accordance with the Waste Management Plan, for the duration of development and maintained at all times.

This is considered fair and reasonable, and it is recommended that it be included with a modified wording (Recommended Condition 9). The modified wording requires the preparation of a Waste Management Plan to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission, with waste collection to be carried out in accordance with the approved plan

thereafter. The requirements specified in the above condition can still be imposed, being the relevant specifications of the City.

Recommended Advice Notes:

1. *With respect to the landscaping plan, the applicant should liaise with the City of Rockingham's Land and Development Infrastructure Services to confirm requirements for landscaping plans. Planting adjacent to all footpaths should be set back to allow for mature plant growth and not overhang footpaths cause a tripping hazard or requiring continuous pruning.*

   It is recommended that that the proposed paving ties in with existing colour theme of Parkland Heights Subdivision Estate aesthetic.

   Given the Department of Education's position regarding the maintenance of the street verge area abutting the school site, a durable, low maintenance treatment such as paving and irrigated street trees in tree wells with staking and treatment around the tree (e.g. permeable paving or similar supported treatment) is recommended for verge areas.

As noted previously, detailed landscaping plans for the proposed development site have been provided and form part of the plans that are recommended for approval. These are considered acceptable, and therefore the City's recommended condition regarding the provision of further detailed landscaping plans has not been recommended. However, it is recommended that an advice note be included to advise the applicant of the City's comments in relation to plantings adjacent to public footpaths, and maintenance of the street verge (Recommended Advice Note 8 and 9).

2. *It is recommended that a dilapidation report is prepared prior to commencing work to demonstrate existing condition of infrastructure.*

Consistent with previous approvals within the City of Rockingham, an advice note is recommended to advise the applicant that any damage or removal of a City of Rockingham asset within the road reserve (roads, signage, verge etc.) shall be made good at the cost of the applicant to the specification of the City of Rockingham, and including the City's recommendation for a dilapidation report (Recommended Advice Note 5).

3. *The development must comply with the Food Act 2008, the Food Safety Standards and Chapter 3 of the Australian New Zealand Food Standards Code (Australia Only); the applicant and owner should liaise with the City's Health Services in this regard.*

A standard advice note (Recommended Advice Note 1) has been included to advise the applicant that all development must comply with the provisions of the Health Regulations, National Construction Code, Public Building Regulations and all other relevant Acts, Regulations and Local Laws. This is considered to adequately address the City's recommended advice note.

Additional Standard Conditions and Advice Notes

In addition to the conditions and advice notes recommended in the preceding sections of this report, additional standard conditions have been included in relation to the requirement for:

- Connection to reticulated sewerage system (Recommended Condition 2)

- All on-site car parking and associated vehicle access areas shown on the approved plans to be available for vehicles and not to be used for the purpose of storage or obstructed during school hours, to the satisfaction of the Western Australian Planning Commission (Recommended Condition 4).

- A signage plan indicating the location and design of any proposed signage (including traffic directional signage) to be prepared to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission, prior to the installation of any signage (Recommended Condition 7).

- The access points for the proposed development to be designed to connect seamlessly with abutting roads and public footpath infrastructure, to the specification of the City of Rockingham and the satisfaction of the Western Australian Planning Commission (Recommended Condition 10).

- All piped and wired services, plant, equipment and storage areas to be screened from public view, and in the case of roof mounted plant, screened or located so as to minimise visual impact, to the satisfaction of the Western Australian Planning Commission (Recommended Condition 11).

Standard advice notes have also been included to:

- Remind the applicant of its obligations under the Building Act 2011 (Recommended Advice Note 2); and

- Encourage the school to contact the Department of Transport regarding participation in the 'Your Move' campaign, which seeks to reduce car dependence and promote alternative modes of transport including walking, cycling and public transport (Recommended Advice 10).

Options/Alternatives:

The Department of Finance, Strategic Projects has no alternative recommendation.

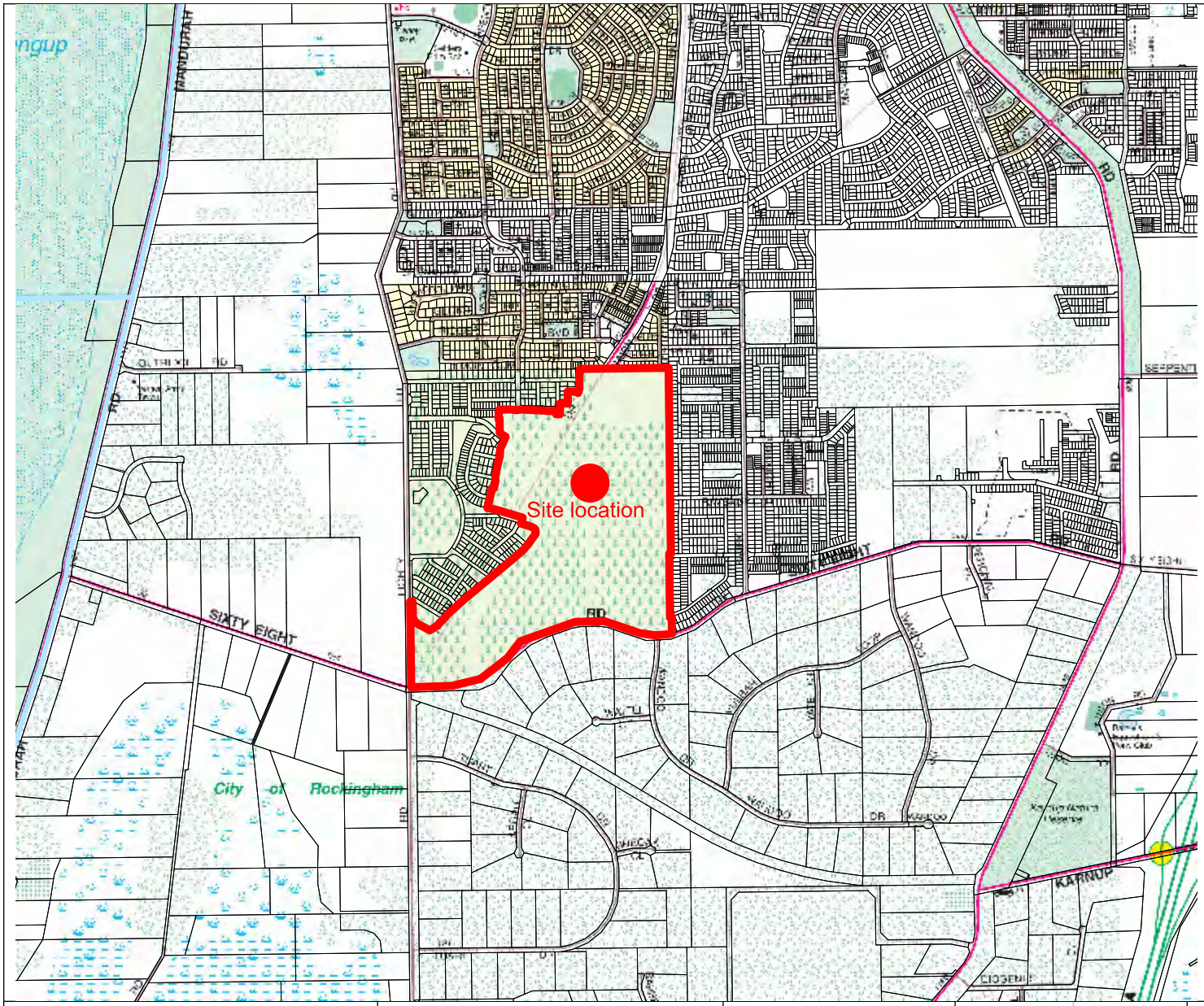
Conclusion:

The proposed Baldivis South Public Primary School is located on a site identified in the applicable District and Local Structure Plans as a primary school.

Car parking and access for the proposed development is assessed as sufficient to cater for the 643 students the combined school site is designed to accommodate.

There are no known environmental or heritage constraints that would inhibit the development of the site for a public primary school.

It is recommended that the proposed development should therefore be approved subject to conditions.



Parcel

Address	Sixty Eight Rd
Suburb	Baldivis
Lot On Plan	Lot 9010 on DP 407830

This document is compiled from various sources and whilst the City of Rockingham has made every effort to ensure the accuracy and currency of the information, Council accepts no responsibility or liability for any errors or omissions.

Scale: 1:25000
Print Date: 3/07/2019

Original Size

A4

NORTH

Civic Boulevard
Rockingham 6967
Western Australia
Tel. 9528 0333
Fax 9592 1705

city of Rockingham

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Aerial plan

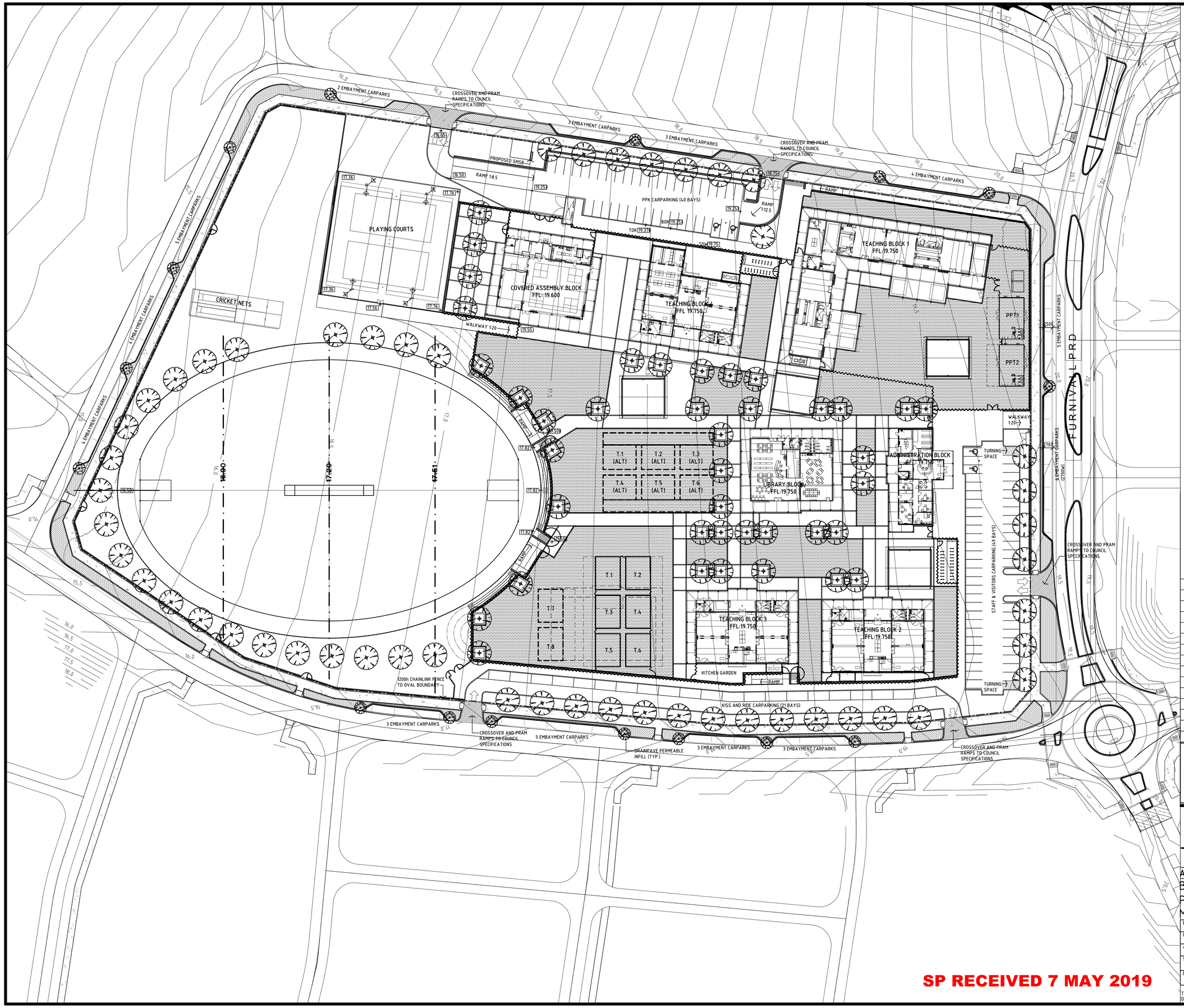
0.4 0 0.21 0.4 Kilometers

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

Notes



N

5 0 5 10 15 20 25 m

SCALE 1:500

NOTE:
NORTHPOINT ORIENTATED TO RHS OF PAGE

CAR PARKING SCHEDULE:

ONSITE PARKING :110 BAYS

OFFSITE PARKING :50 BAYS

TOTAL PARKING :160 BAYS

No	AMENDMENT	DWN	DATE	CHKD
N	6x EMBAYMENTS INCREASED TO 2700W	TC	02.05.19	HG
M	OUT OF BOUNDARY WORK REVISIONS	TC	24.04.19	HG
L	MINOR REVISIONS TO MASTERPLAN	TC	21.03.19	HG
K	WATER ENCLOSURE ADDED	TC		
J	OFFSITE EMBAYMENT PARKING REVISED	TC	05.03.19	HG
I	DEVELOPERS CIVIL LEVELS XREF UPDATED	TC	28.02.19	HG
H	INCORPORATED PCG COMMENTS	TC	20.02.19	HG
G	INCORPORATED DOE COMMENTS	TC	19.02.19	HG
F	INCORPORATED PCG COMMENTS	TC	11.02.19	HG
E	INCORPORATED PCG COMMENTS	TC	07.02.19	HG
D	PRELIMINARY SKETCH ISSUE	TC	07.02.19	HG
C	PRELIMINARY COLOURED SKETCH	TC	31.01.19	HG
B	PRELIMINARY SKETCH ISSUE	TC	22.01.19	HG
A	PRELIMINARY SKETCH ISSUE	TC	15.01.19	HG

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Government of **Western Australia**
Department of **Finance**
Building Management and Works

ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL
MASTERPLAN - NEW WORK

DRAWN TC	DESIGNED HG	REDUCTION 0 25	
CHECKED HG	PRINCIPAL		
APPROVED			
SCALE 1:500 @ A1	DATE 10.01.19	DRAWING No. SK1.01 N	
DF PROJ No. -	DF FILE No. -		

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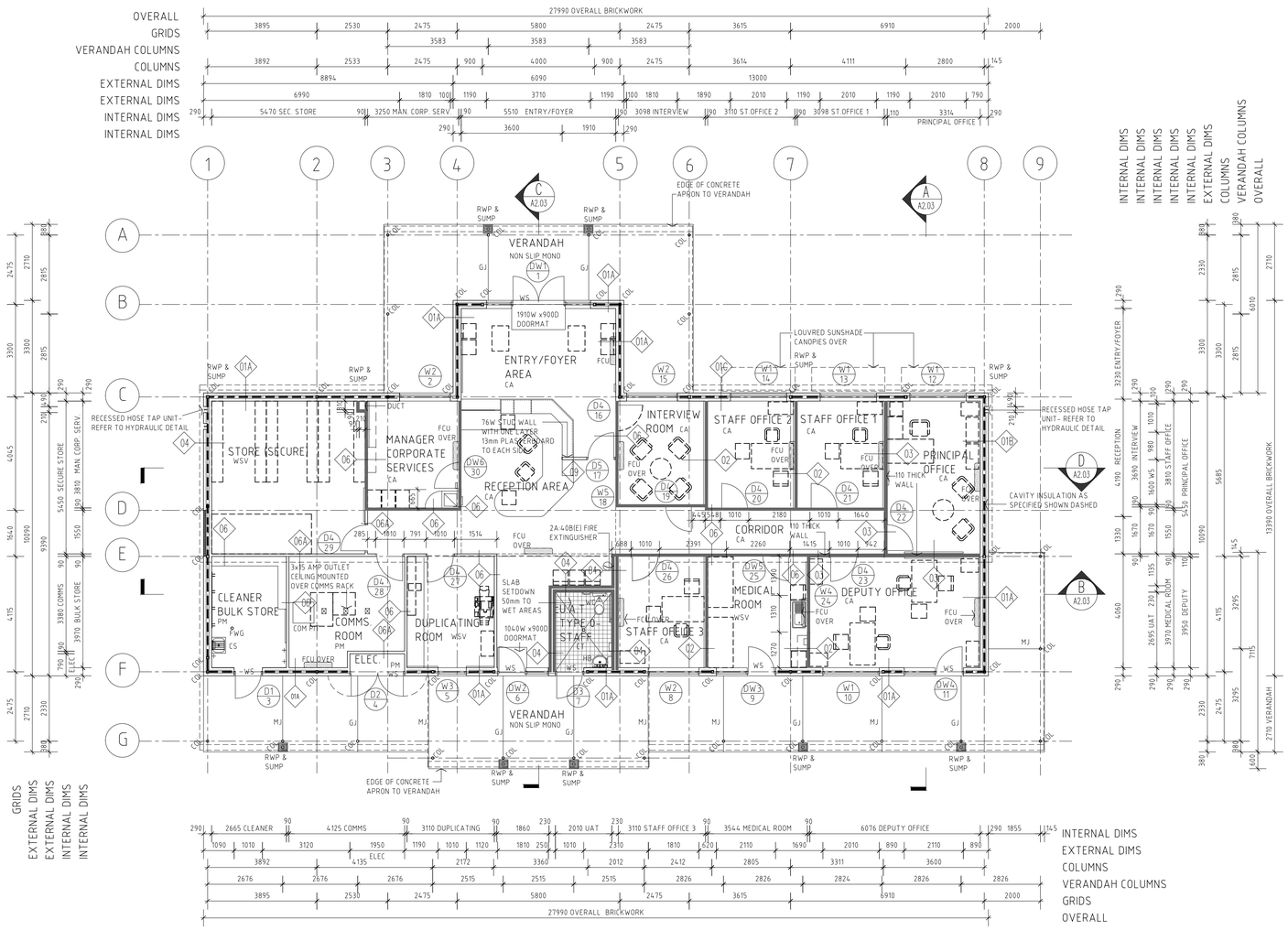

FLOOR PLAN
SCALE 1:100

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS
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7. THE CONTRACTOR SHALL VISIT THE SITE & NOTE ALL VISIBLE SITE CONDITIONS & ACCESS REQUIREMENTS

NOTE:

REFER TO ROOM LAYOUTS FOR STANDARD FURNITURE DETAILS

LEGEND

BWU	BOILING WATER UNIT	PM	PAINTED MONO
CA	CARPET	PUB	PIN-UP BOARD
CJ	CONTROL JOINT IN SLAB	PTD	PAPER TOWEL DISPENSER
COL	STEEL COLUMN - REFER TO S.E. DWGS	REF	REFRIGERATOR
CS	CLEANERS SINK	RWP	RAINWATER PIPE
CT	CERAMIC TILES	S.E.	STRUCTURAL ENGINEER
DG	DOOR GRILLE	SM	SEALED MONOLITHIC CONCRETE
DS	DIMINISHING STRIP	SS	STAINLESS STEEL
DW	DISH WASHER	ST	STOVE
FC	FILING CABINET	TPH	TOILET PAPER HOLDER
FCU	FAN COIL UNIT	V	VEE GROOVE CONTROL JOINT
FE	FIRE EXTINGUISHER	VS	VINYL SKIRTING
FWG	FLOOR WASTE GULLY	WB	WHITE BOARD
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HTR	HEATER		
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HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		
MWO	MICROWAVE OVEN		
N.I.C.	NOT IN CONTRACT		

SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J

D1 / 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE / OPENING NUMBER

03 — WALL TYPE TAG. REFER TO DRAWINGS A10.16

EXTERNAL WALLS TO FINISH TO THE UNDERSIDE OF ROOF SHEETING UNLESS OTHERWISE NOTED OR DETAILED.

GREY FILLED WALLS DENOTE FULL HEIGHT TO UNDERSIDE OF ROOF OR STRUCTURAL FRAMING AND SEALED WITH FIRE RATED INSULATION

RESILIENT WALL TIES SHOWN HATCHED

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG

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Department of Finance
Building Management and Works

ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL ADMINISTRATION BLOCK

FLOOR PLAN

DRAWN	TC	DESIGNED	NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19		DRAWING No. A2.01 B
DF PROJ No.	-	DF FILE No.	-		

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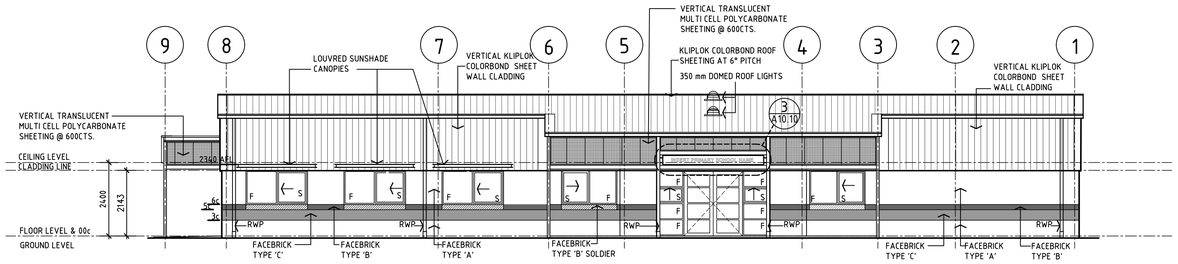
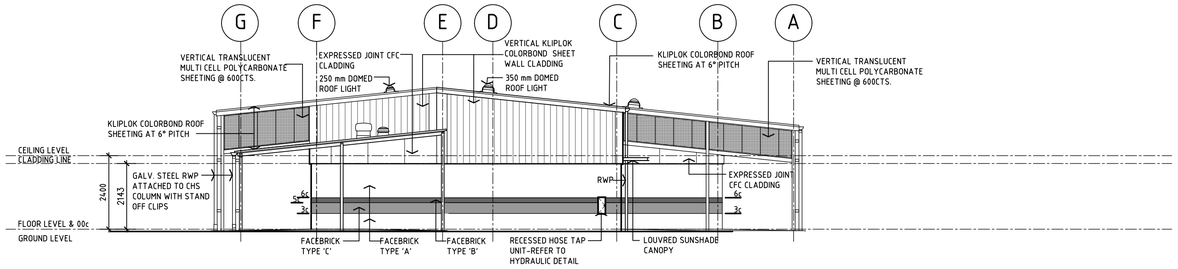
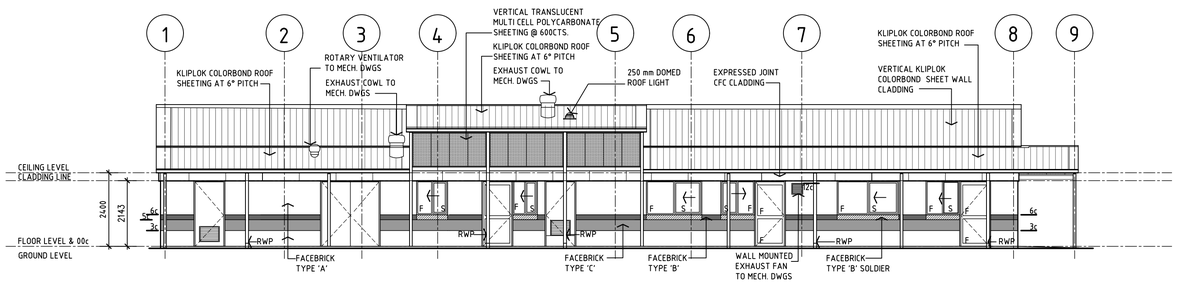


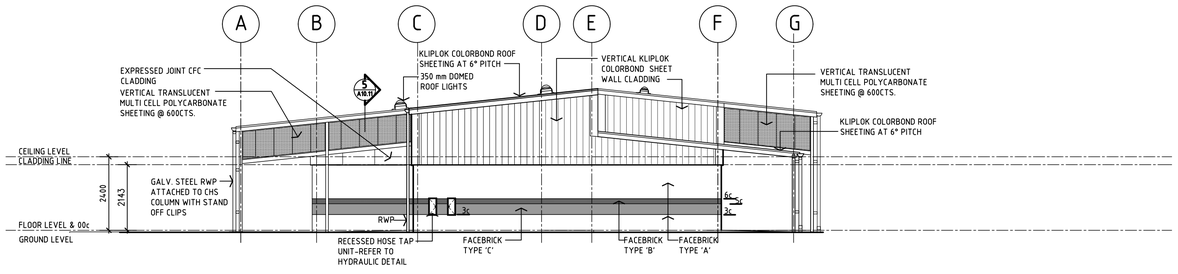
1 – **NORTH ELEVATION**
SCALE 1:100



2 – **EAST ELEVATION**
SCALE 1:100



3 – **SOUTH ELEVATION**
SCALE 1:100



4 – **WEST ELEVATION**
SCALE 1:100

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LEGEND

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CA	CARPET	RWP	RAINWATER PIPE
CJ	CONTROL JOINT IN SLAB	S.E.	STRUCTURAL ENGINEER
COL	STEEL COLUMN - REFER TO S.E. DWGS	SM	SEALED MONOLITHIC CONCRETE
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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL ADMINISTRATION BLOCK

ELEVATIONS

DRAWN	TC	DESIGNED	NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19		DRAWING No. A2.02 B
DF PROJ No.	-	DF FILE No.	-		

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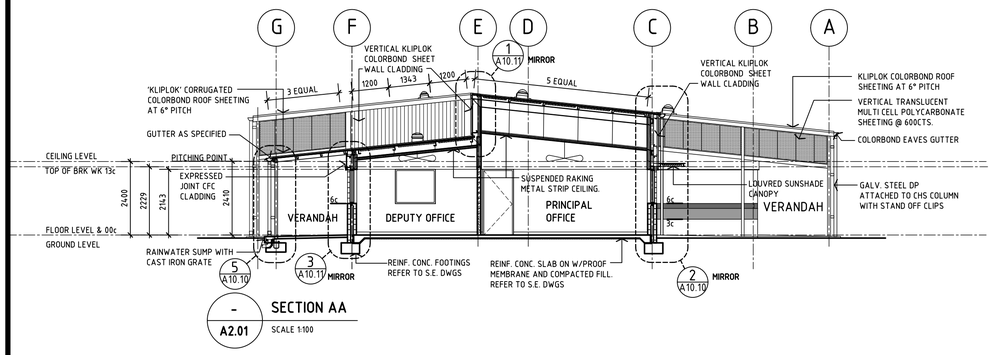

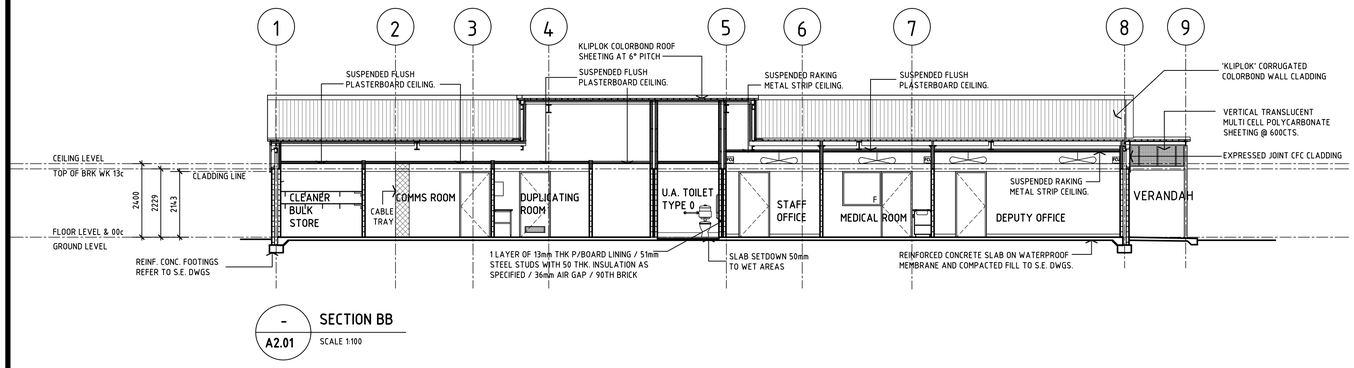

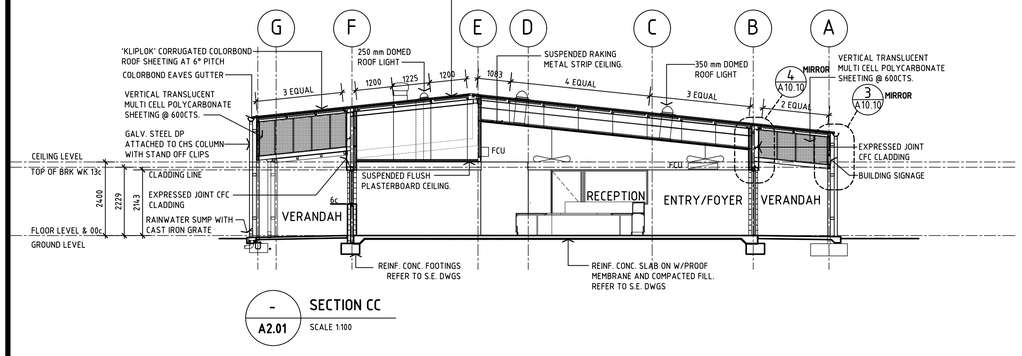

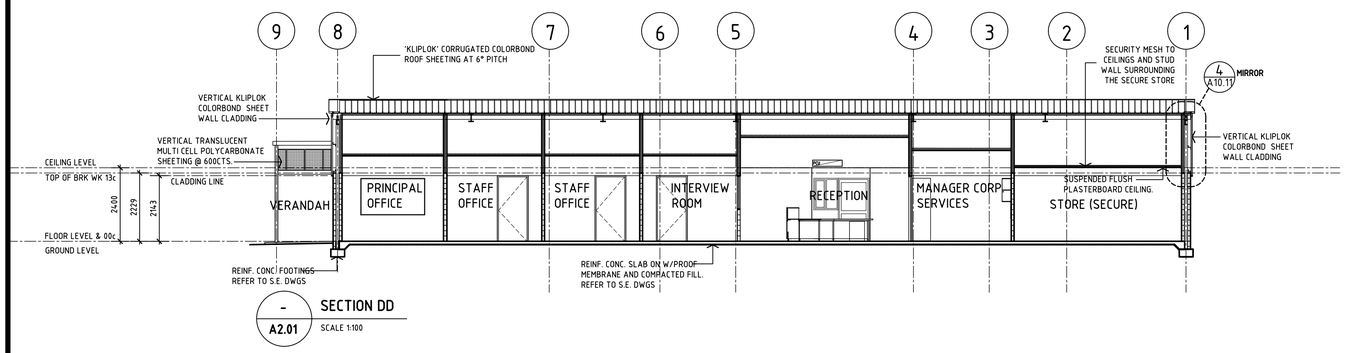

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Government of Western Australia
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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL ADMINISTRATION BLOCK

SECTIONS

DRAWN	TC	DESIGNED NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL		
APPROVED				
SCALE 1:100		DATE 10.01.19		DRAWING No. A2.03 B
DF PROJ No. -		DF FILE No. -		

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OKA JOB NO:18098

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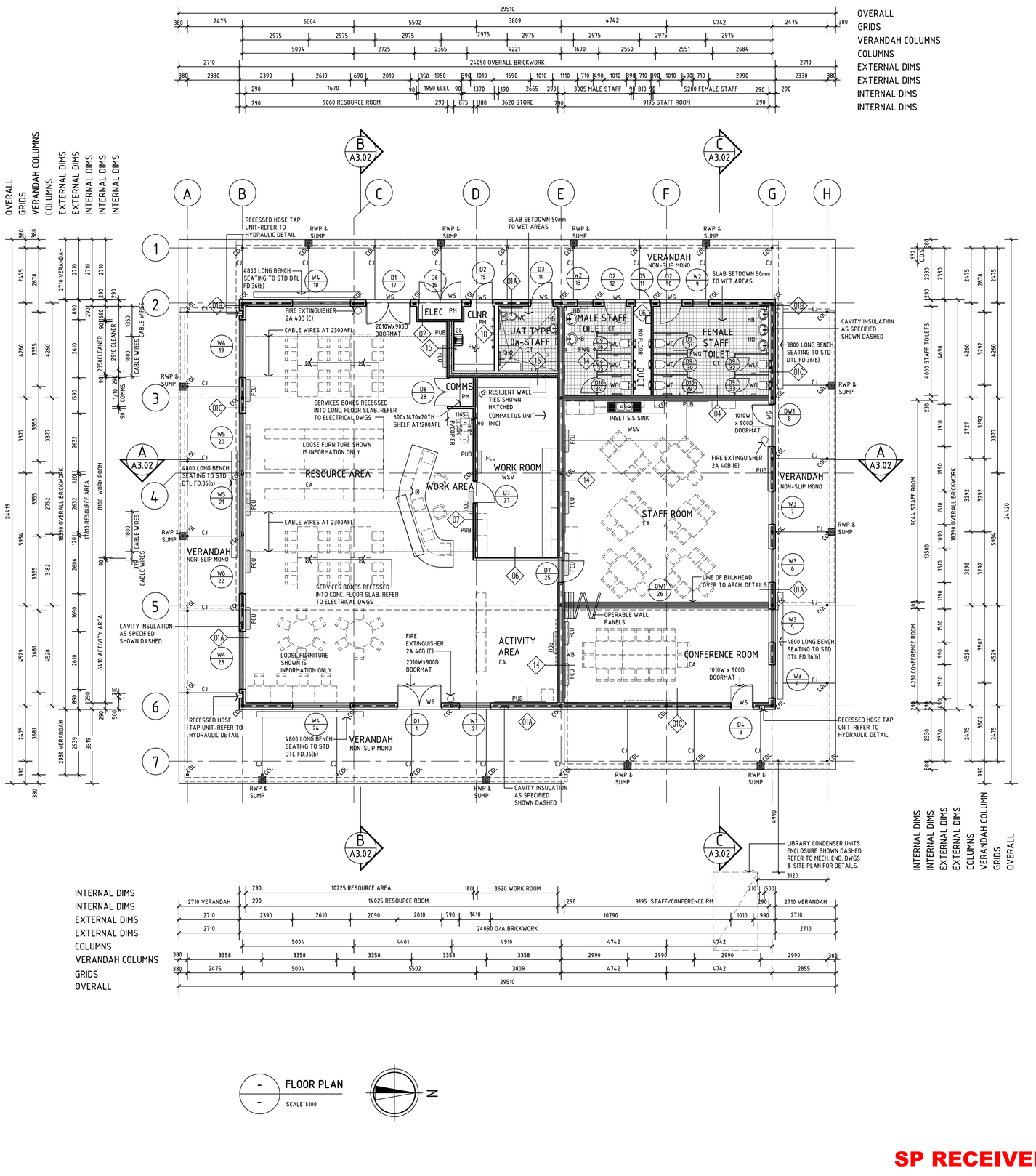

FLOOR PLAN
SCALE 1:100

N

SP RECEIVED 7 MAY 2019

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NOTE:

REFER TO ROOM LAYOUTS FOR STANDARD FURNITURE DETAILS

LEGEND

BR	BAG RACK	MWO	MICROWAVE OVEN
BWU	BOILING WATER UNIT	NSM	NON-SLIP MONO
CA	CARPET	N.I.C.	NOT IN CONTRACT
CPBD	CUPBOARD	PD	PAVING DRAIN
CJ	CONTROL JOINT IN SLAB	PM	PAINTED MONO
COL	STEEL COLUMN - REFER TO S.E. DWGS	PUB	PIN-UP BOARD
CS	CLEANERS SINK	PTD	PAPER TOWEL DISPENSER
CT	CERAMIC TILES	REF	REFRIGERATOR
DG	DOOR GRILLE	RWP	RAINWATER PIPE
DS	DIMINISHING STRIP	S.E.	STRUCTURAL ENGINEER
DW	DISH WASHER	SM	SEALED MONOLITHIC CONCRETE
FC	FILING CABINET	SS	STAINLESS STEEL
FCU	FAN COIL UNIT	ST	STOVE
FE	FIRE EXTINGUISHER	TPH	TOILET PAPER HOLDER
FWG	FLOOR WASTE GULLY	V	VEE GROOVE CONTROL JOINT
GFCR	GLASS FACE CEMENT RENDER	VS	VINYL SKIRTING
GJ	GROOVE JOINT IN SLAB	WB	WHITE BOARD
HB	HAND BASIN	WC	WATER CLOSET
HC	HOSE COCK (IN CONC. BOX)	WS	WEATHER STRIP
HTR	HEATER	WSV	WELDED SHEET VINYL- R11 ACCOLADE SAFE
HWU	HOT WATER UNIT		
HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		

D1 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE; OPENING NUMBER

SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

12 — WALL TYPE TAG. REFER TO DRAWINGS A10.XX AND A10.XX

EXTERNAL WALLS TO FINISH TO THE UNDERSIDE OF ROOF SHEETING UNLESS OTHERWISE NOTED OR DETAILED.

GREY FILLED WALLS DENOTE FULL HEIGHT TO UNDERSIDE OF ROOF OR STRUCTURAL FRAMING AND SEALED WITH FIRE RATED INSULATION.

RESILIENT WALL TIES SHOWN HATCHED

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG

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BALDIVIS SOUTH PRIMARY SCHOOL
LIBRARY BLOCK

FLOOR PLAN

DRAWN	TC	DESIGNED	NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19		DRAWING No. A3.01 B
DF PROJ No.	-	DF FILE No.	-		

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OKA JOB NO:18098

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LEGEND

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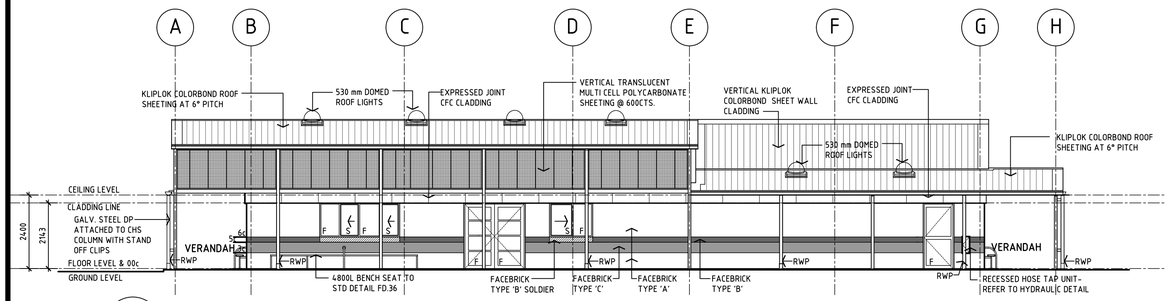
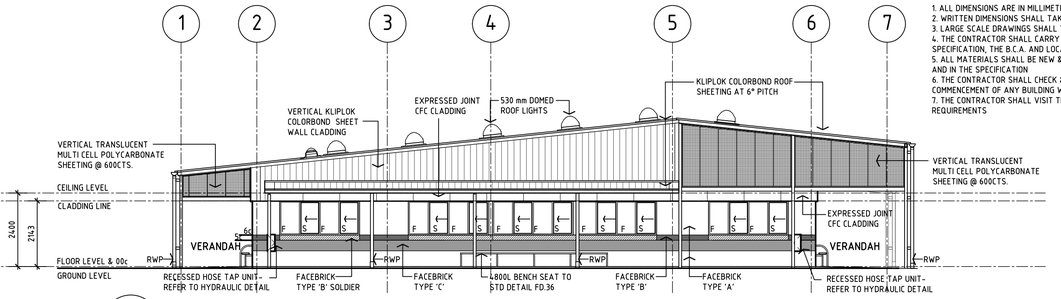
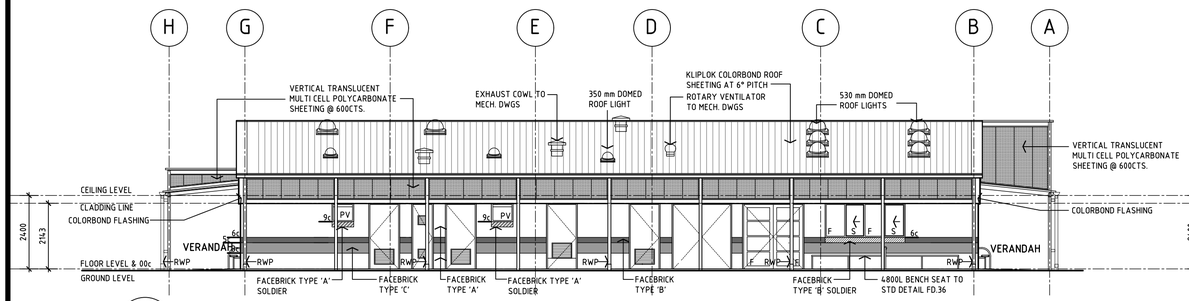
CA	CARPET
CJ	CONTROL JOINT IN SLAB
COL	STEEL COLUMN - REFER TO S.E. DWGS
CS	CLEANERS SINK
CT	CERAMIC TILES
DG	DOOR GRILLE
DS	DIMINISHING STRIP
DW	DISH WASHER
FC	FILING CABINET
FCU	FAN COIL UNIT
FE	FIRE EXTINGUISHER
FWG	FLOOR WASTE GULLY
GFCR	GLASS FACE CEMENT RENDER
GJ	GROOVE JOINT IN SLAB
HB	HAND BASIN
HC	HOSE COCK (IN CONC. BOX)
HWU	HOT WATER UNIT
HWP	HARDWALL PLASTER
LP	LAMINATED PLASTIC
MJ	MASTIC JOINT IN SLAB
MT	MOSAIC TILES
MWO	MICROWAVE OVEN
N.I.C.	NOT IN CONTRACT
PM	PAINTED MONO
PUB	PIN-UP BOARD
PTD	PAPER TOWEL DISPENSER
REF	REFRIGERATOR
RWP	RAINWATER PIPE
S.E.	STRUCTURAL ENGINEER
SM	SEALED MONOLITHIC CONCRETE
SS	STAINLESS STEEL
ST	STOVE
TPH	TOILET PAPER HOLDER
V	VEE GROOVE CONTROL JOINT
VS	VINYL SKIRTING
WB	WHITE BOARD
WC	WATER CLOSET
WS	WEATHER STRIP
WSV	WELDED SHEET VINYL - R11 ACCOLADE SAFE



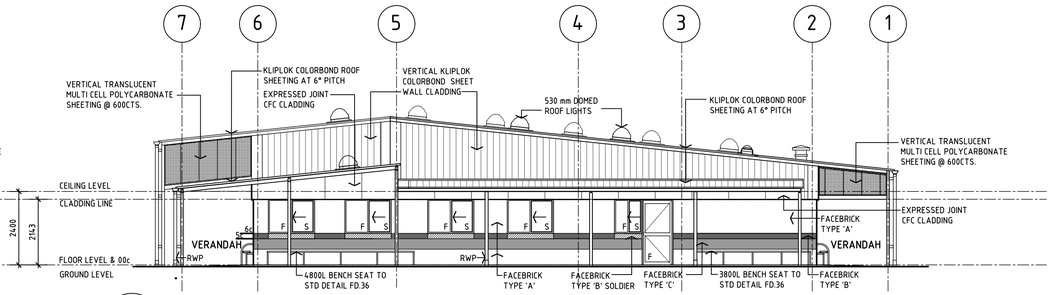
- EAST ELEVATION
SCALE 1:100



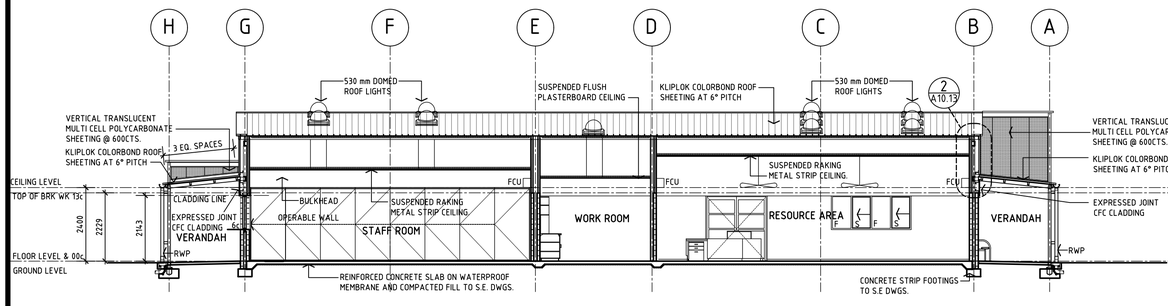
- SOUTH ELEVATION
SCALE 1:100



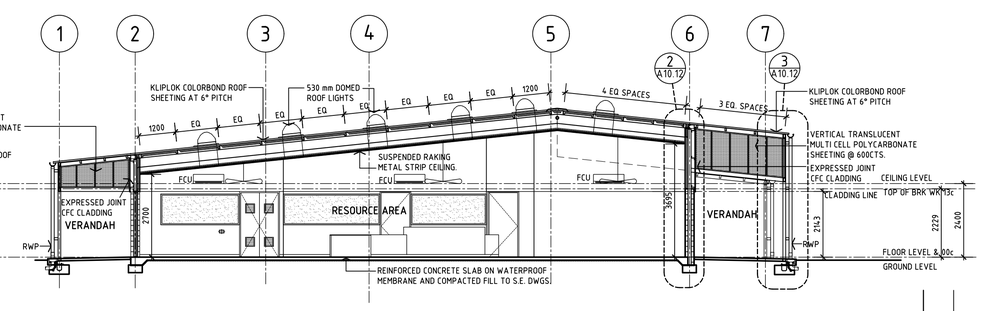
- WEST ELEVATION
SCALE 1:100



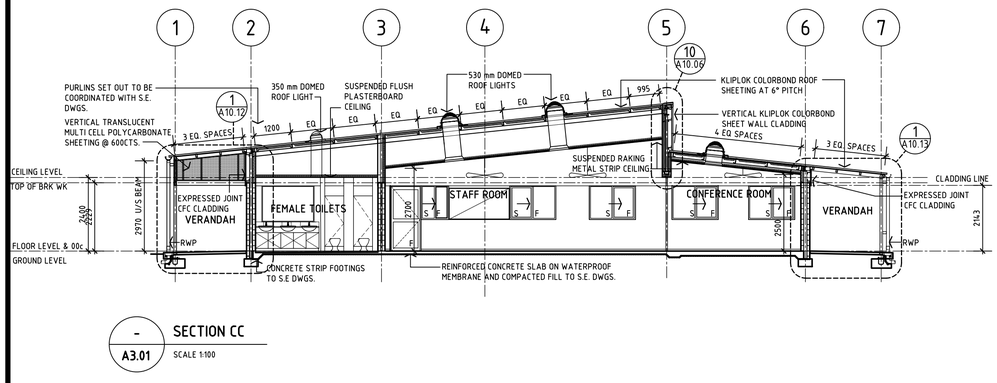
- NORTH ELEVATION
SCALE 1:100



- SECTION AA
A3.01 SCALE 1:100



- SECTION BB
A3.01 SCALE 1:100



- SECTION CC
A3.01 SCALE 1:100

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG

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Building Management and Works

ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL LIBRARY BLOCK

ELEVATIONS & SECTIONS

DRAWN	TC	DESIGNED NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL		
APPROVED				
SCALE 1:100		DATE 10.01.19		DRAWING No. A3.02 B
DF PROJ No. -		DF FILE No. -		

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OKA JOB NO:18098

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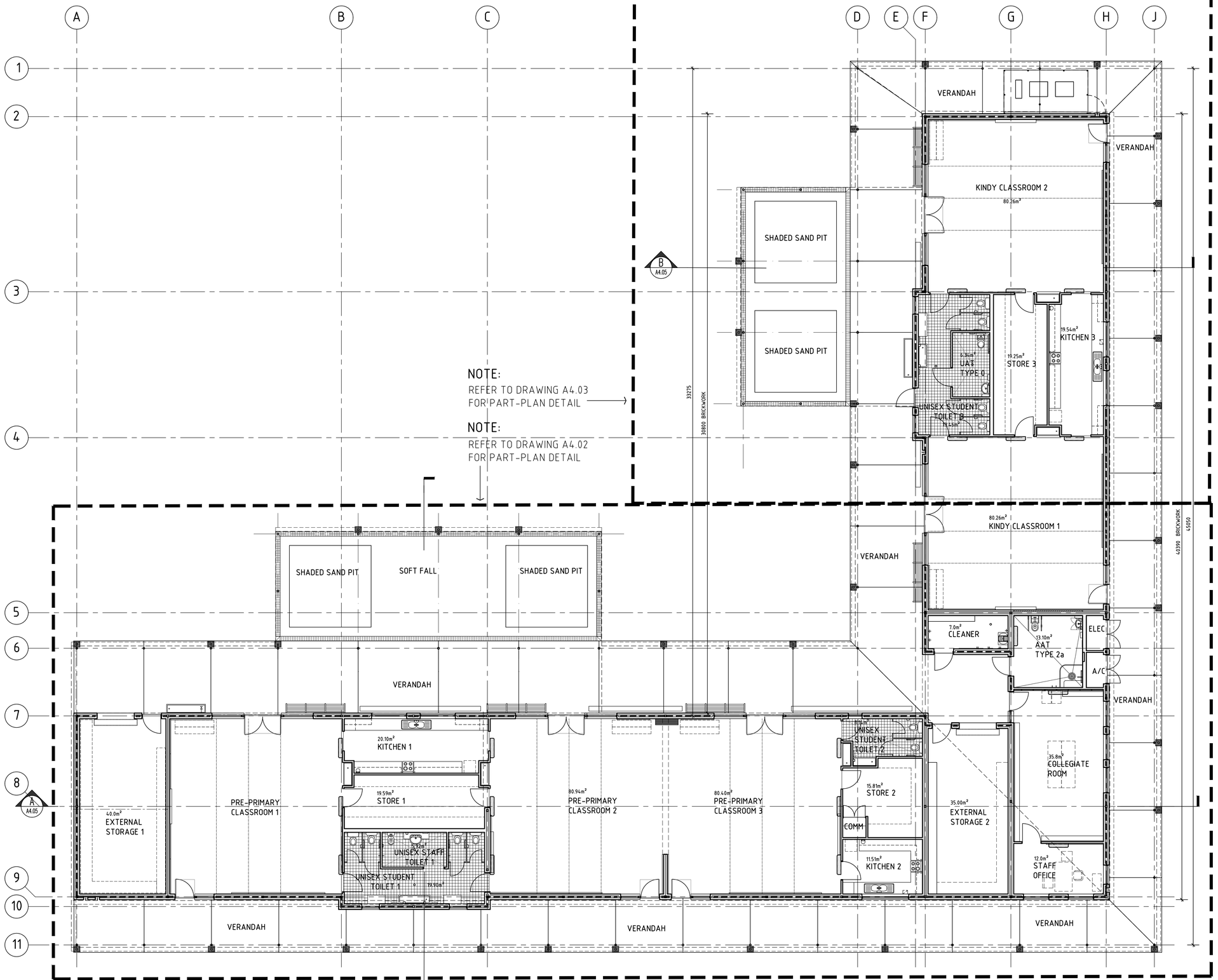

- FLOOR PLAN
- SCALE 1:100

N

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LEGEND

BWU	BOILING WATER UNIT	REF	REFRIGERATOR
CA	CARPET	RWP	RAINWATER PIPE
CJ	CONTROL JOINT IN SLAB	S.E.	STRUCTURAL ENGINEER
COL	STEEL COLUMN - REFER TO S.E. DWGS	SM	SEALED MONOLITHIC CONCRETE
CS	CLEANERS SINK	SS	STAINLESS STEEL
CT	CERAMIC TILES	ST	STOVE
DG	DOOR GRILLE	TPH	TOILET PAPER HOLDER
DS	DIMINISHING STRIP	V	VEE GROOVE CONTROL JOINT
DW	DISH WASHER	VS	VINYL SKIRTING
FC	FILING CABINET	WB	WHITE BOARD
FE	FIRE EXTINGUISHER	WC	WATER CLOSET
FWG	FLOOR WASTE GULLY	WS	WEATHER STRIP
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LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		
MWO	MICROWAVE OVEN		
N.I.C.	NOT IN CONTRACT		
PB	PLASTERBOARD		
PM	PAINTED MONO		
PUB	PIN-UP BOARD		
PTD	PAPER TOWEL DISPENSER		

SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

D1 / 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE / OPENING NUMBER

No	AMENDMENT	DWN	DATE	CHKD
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BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 1

FLOOR PLAN - OVERALL FLOOR PLAN

DRAWN	TC	DESIGNED	HG
CHECKED	HG	PRINCIPAL	
APPROVED			
SCALE		DATE	10.01.19
DF PROJ No.	-	DF FILE No.	-

REDUCTION 0 25

DRAWING No. A4.01 B

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NOTE:

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LEGEND

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CJ	CONTROL JOINT IN SLAB
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ST	STOVE
TPH	TOILET PAPER HOLDER
V	VEE GROOVE CONTROL JOINT
VS	VINYL SKIRTING
WB	WHITE BOARD
WC	WATER CLOSET
WS	WEATHER STRIP
WSV	WELDED SHEET VINYL– R11 ACCOLADE SAFE

PART FLOOR PLAN 1

SCALE 1:100

LEGEND

- SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)
- D1/26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE; OPENING NUMBER
- D1B — WALL TYPE. REFER TO CONSTRUCTION DETAILS DRAWING AXX.X
- WALLS TO HAVE RESILIENT WALL TIES
- FULL HEIGHT WALLS TO THE UNDERSIDE OF ROOF. REFER TO DETAILS

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A	ISSUED TO PCG GROUP	TC	20.02.19	HG

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BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 1

FLOOR PLAN – PART 1 OF 2

DRAWN	TC	DESIGNED	HG
CHECKED	HG	PRINCIPAL	
APPROVED			
SCALE	1:100	DATE	10.01.19
DF PROJ No.	–	DF FILE No.	–
REDUCTION	0 25	DRAWING No.	A4.02 B

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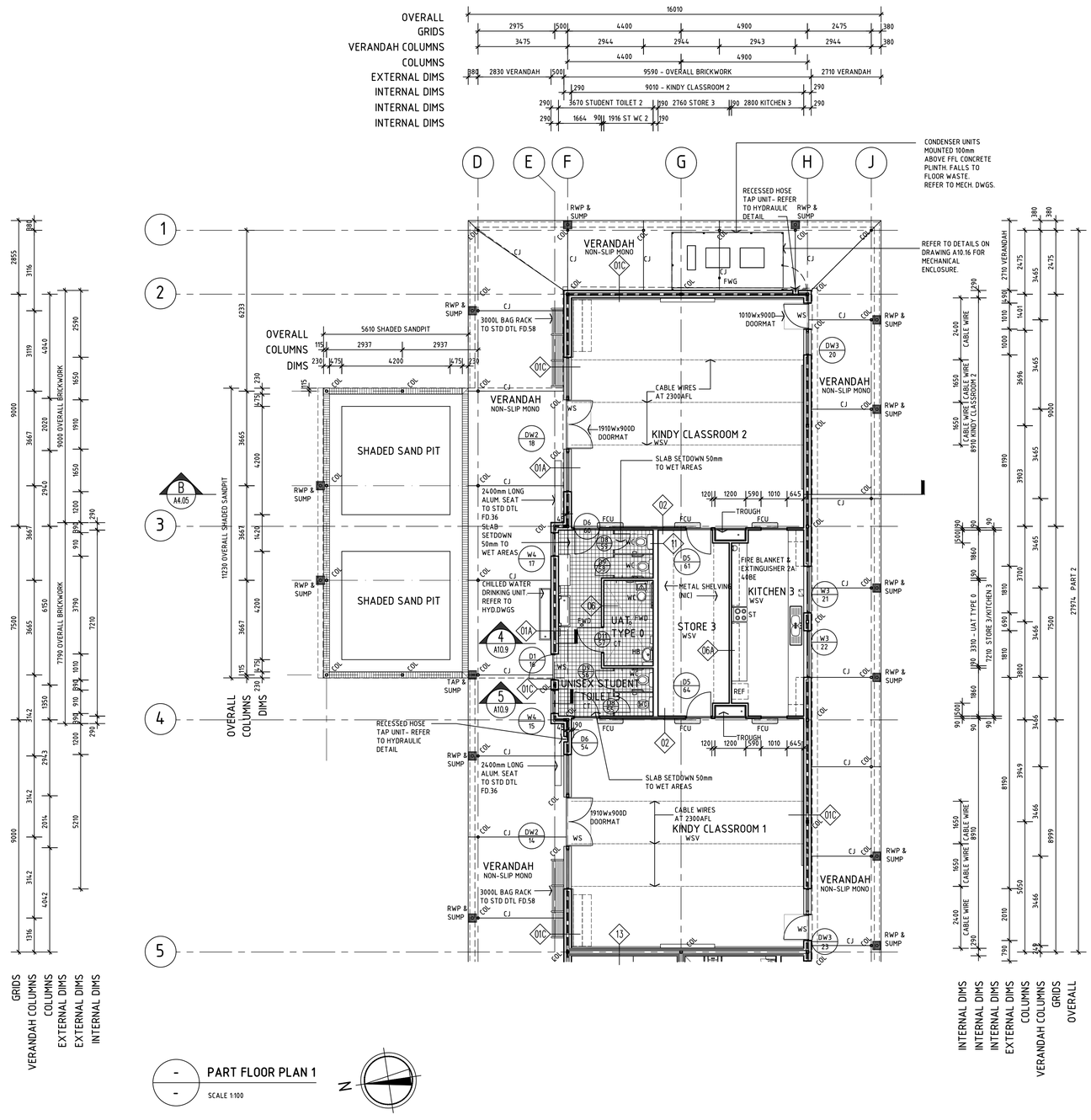

PART FLOOR PLAN 1

SCALE 1:100

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LEGEND

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CJ	CONTROL JOINT IN SLAB	S.E.	STRUCTURAL ENGINEER
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PM	PAINTED MONO		
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PTD	PAPER TOWEL DISPENSER		

SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

D1 / 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE; OPENING NUMBER

FAN COIL UNITS TO MECHANICAL WALL TIES WHERE REQUIRED AS PER CONSULTANTS DOCUMENTATION

FULL HEIGHT WALLS TO THE UNDERSIDE OF ROOF. REFER TO DETAILS

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BALDIVIS SOUTH PRIMARY SCHOOL
TEACHING BLOCK 1

FLOOR PLAN - PART 2 OF 2

DRAWN	TC	DESIGNED	HG	REDUCTION	0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19	DRAWING No.	A4.03 B
DF PROJ No.	-	DF FILE No.	-		

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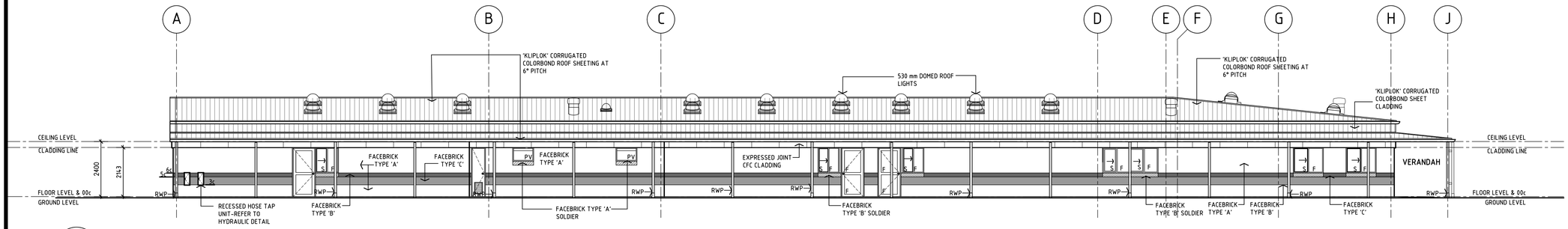
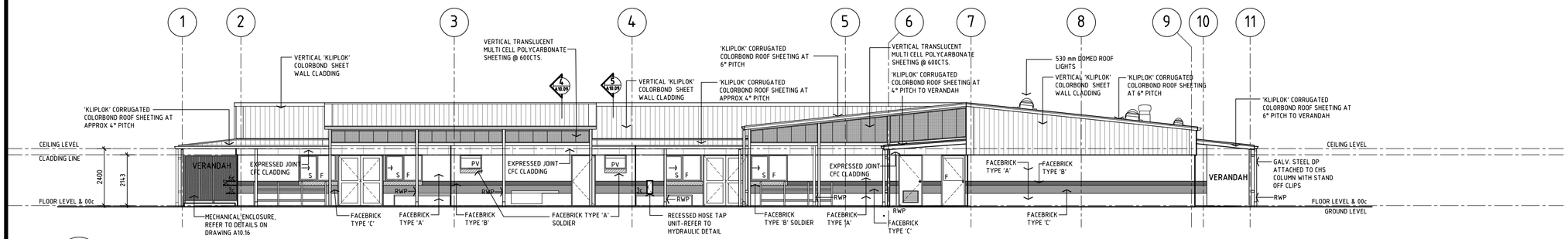
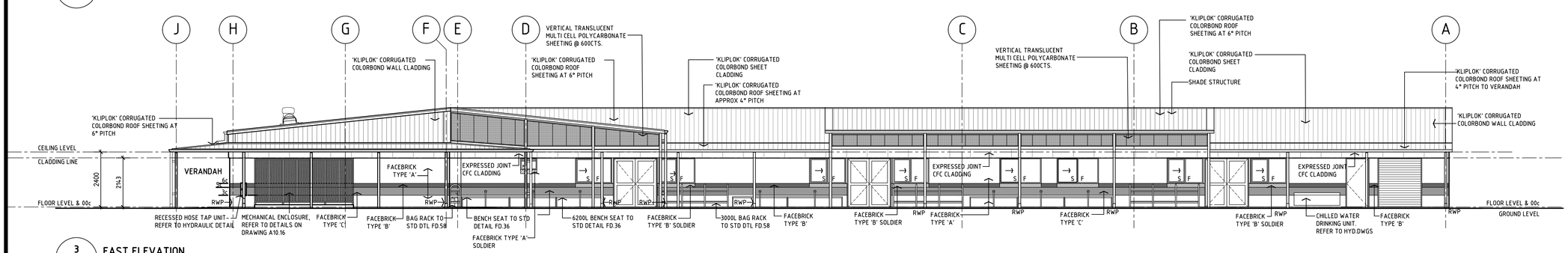


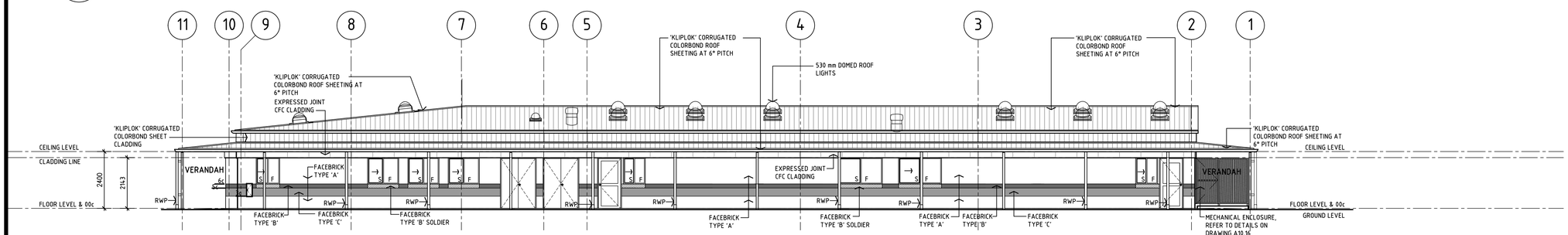
1 – WEST ELEVATION
SCALE 1:100



2 – NORTH ELEVATION
SCALE 1:100



3 – EAST ELEVATION
SCALE 1:100



4 – SOUTH ELEVATION
SCALE 1:100

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CJ	CONTROL JOINT IN SLAB	S.E.	STRUCTURAL ENGINEER
COL	STEEL COLUMN – REFER TO S.E. DWGS	SM	SEALED MONOLITHIC CONCRETE
CS	CLEANERS SINK	SS	STAINLESS STEEL
CT	CERAMIC TILES	ST	STOVE
DG	DOOR GRILLE	TPH	TOILET PAPER HOLDER
DS	DIMINISHING STRIP	V	VEE GROOVE CONTROL JOINT
DW	DISH WASHER	VS	VINYL SKIRTING
FC	FILING CABINET	WB	WHITE BOARD
FE	FIRE EXTINGUISHER	WC	WATER CLOSET
FWG	FLOOR WASTE GULLY	WS	WEATHER STRIP
GFCR	GLASS FACE CEMENT RENDER	WSV	WELDED SHEET VINYL-R11 ACCOLADE SAFE
GJ	GROOVE JOINT IN SLAB		
HB	HAND BASIN		
HC	HOSE COCK (IN CONC. BOX)		
HTR	HEATER		
HWU	HOT WATER UNIT		
HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		
MWO	MICROWAVE OVEN		
N.I.C.	NOT IN CONTRACT		
PB	PLASTER BOARD		
PM	PAINTED MONO		
PUB	PIN-UP BOARD		
PTD	PAPER TOWEL DISPENSER		
PV	PERMANENTLY VENTILATED		

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG

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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 1

ELEVATIONS

DRAWN	TC	DESIGNED	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL		
APPROVED				
SCALE 1:100		DATE 10.01.19		DRAWING No. A4.04 B
DF PROJ No. –		DF FILE No. –		

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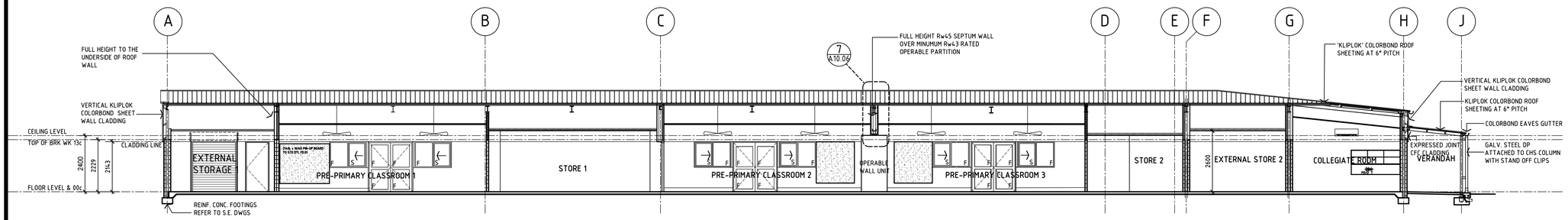
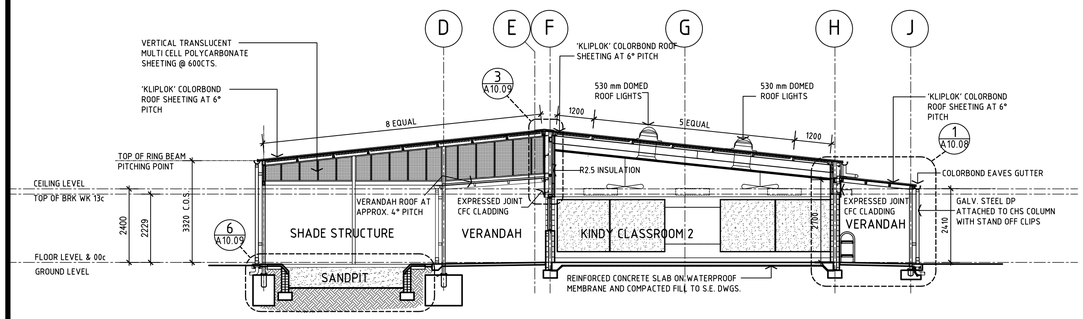
OKA JOB NO:18098

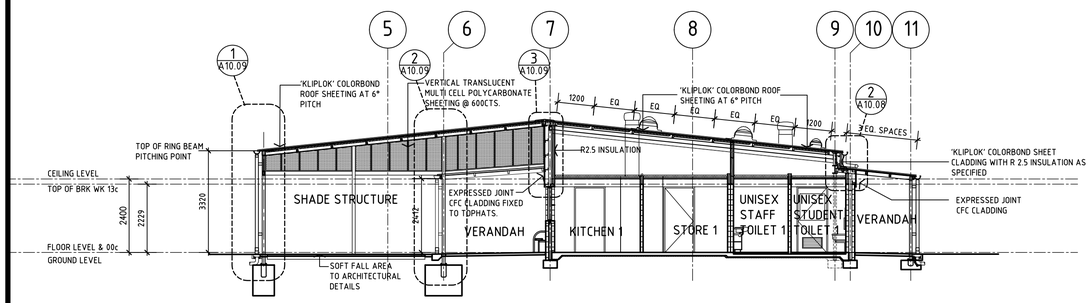
SP RECEIVED 7 MAY 2019



- **SECTION AA**
A4.02 SCALE 1:100



- **SECTION BB**
A4.03 SCALE 1:100



- **SECTION CC**
A4.02 SCALE 1:100

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LEGEND

BWU	BOILING WATER UNIT	REF	REFRIGERATOR
CA	CARPET	RWP	RAINWATER PIPE
CJ	CONTROL JOINT IN SLAB	S.E.	STRUCTURAL ENGINEER
COL	STEEL COLUMN - REFER TO S.E. DWGS	SM	SEALED MONOLITHIC CONCRETE
CS	CLEANERS SINK	SS	STAINLESS STEEL
CT	CERAMIC TILES	ST	STOVE
DG	DOOR GRILLE	TPH	TOILET PAPER HOLDER
DS	DIMINISHING STRIP	V	VEE GROOVE CONTROL JOINT
DW	DISH WASHER	VS	VINYL SKIRTING
FC	FILING CABINET	WB	WHITE BOARD
FCU	FAN COIL UNIT	WC	WATER CLOSET
FE	FIRE EXTINGUISHER	WS	WEATHER STRIP
FWG	FLOOR WASTE GULLY	WSV	WELDED SHEET VINYL- R11 ACCOLADE SAFE
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N.I.C.	NOT IN CONTRACT		
PB	PLASTER BOARD		
PM	PAINTED MONO		
PUB	PIN-UP BOARD		
PTD	PAPER TOWEL DISPENSER		

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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL
TEACHING BLOCK 1

SECTIONS

DRAWN	TC	DESIGNED	HG	REDUCTION	0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19	DRAWING No.	A4.05 B
DF PROJ No.	-	DF FILE No.	-		

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OKA JOB NO:18098

SP RECEIVED 7 MAY 2019

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NOTE:

REFER TO ROOM LAYOUTS FOR STANDARD FURNITURE DETAILS

LEGEND

BR	BAG RACK	MWO	MICROWAVE OVEN
BWU	BOILING WATER UNIT	NSM	NON-SLIP MONO
CA	CARPET	N.I.C.	NOT IN CONTRACT
CPBD	CUPBOARD	PB	PLASTERBOARD
CJ	CONTROL JOINT IN SLAB	PD	PAVING DRAIN
COL	STEEL COLUMN - REFER TO S.E. DWGS	PM	PAINTED MONO
CS	CLEANERS SINK	PUB	PIN-UP BOARD
CT	CERAMIC TILES	PTD	PAPER TOWEL DISPENSER
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DW	DISH WASHER	S.E.	STRUCTURAL ENGINEER
FC	FILING CABINET	SS	STAINLESS STEEL
FCU	FAN COIL UNIT	ST	STOVE
FE	FIRE EXTINGUISHER	TPH	TOILET PAPER HOLDER
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HWU	HOT WATER UNIT		
HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		

D1 / 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE; OPENING NUMBER

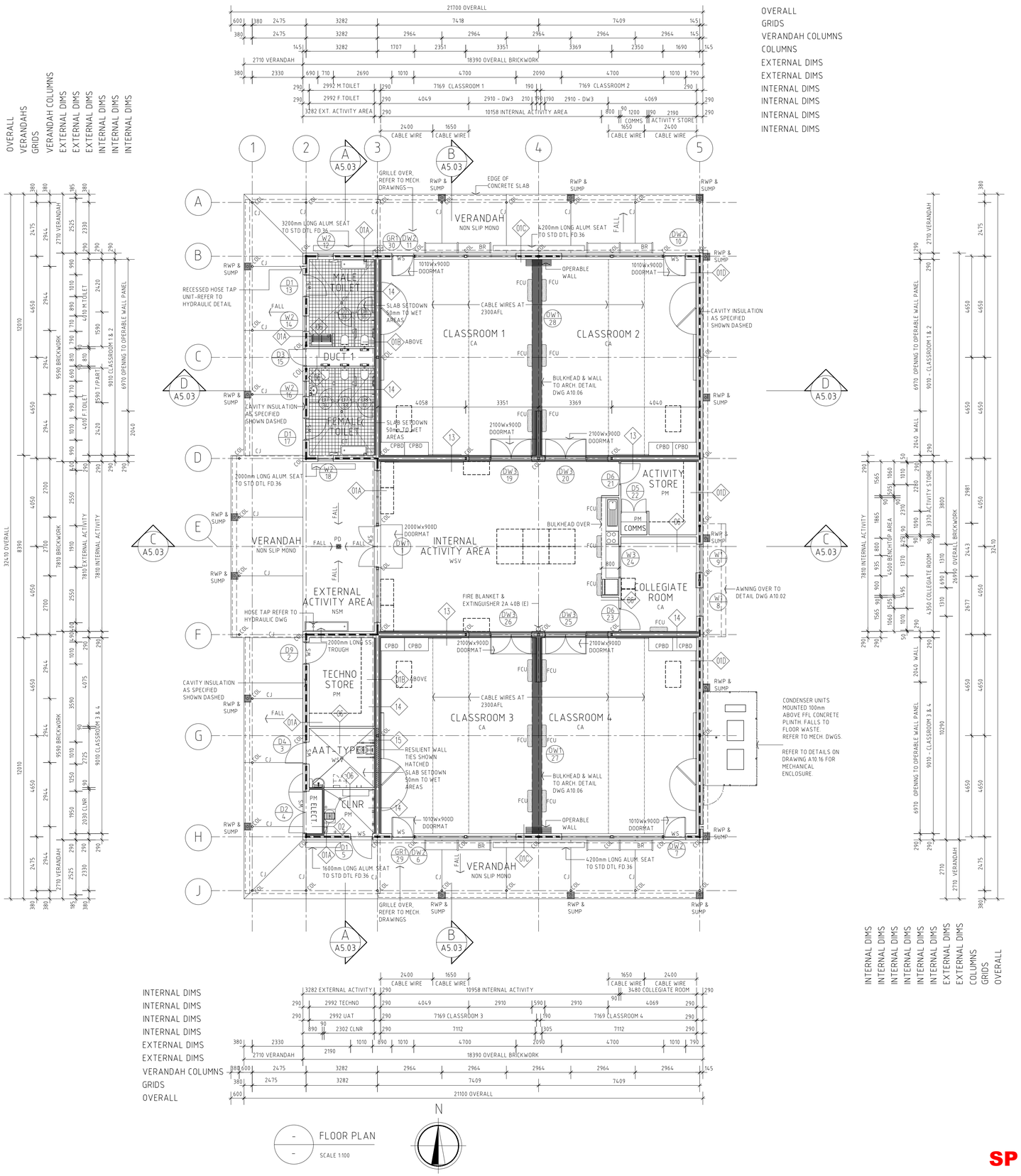
SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

01A — WALL TYPE TAG. REFER TO DRAWINGS A10.XX AND A10.XX

EXTERNAL WALLS TO FINISH TO THE UNDERSIDE OF ROOF SHEETING UNLESS OTHERWISE NOTED OR DETAILED.

GREY FILLED WALLS DENOTE FULL HEIGHT TO UNDERSIDE OF ROOF OR STRUCTURAL FRAMING AND SEALED WITH FIRE RATED INSULATION.

RESILIENT WALL TIES SHOWN HATCHED



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BALDIVIS SOUTH PRIMARY SCHOOL
TEACHING BLOCK 2
FLOOR PLAN

DRAWN	TC	DESIGNED NAME	HG
CHECKED	HG	PRINCIPAL	
APPROVED			
SCALE 1:100		DATE 10.01.19	
DF PROJ No. -		DF FILE No. -	

REDUCTION 0 25

DRAWING No. A5.01 B

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OKA JOB NO:18098

SP RECEIVED 7 MAY 2019

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LEGEND

BWU	BOILING WATER UNIT
CA	CARPET
CJ	CONTROL JOINT IN SLAB
COL	STEEL COLUMN - REFER TO S.E. DWGS
CS	CLEANERS SINK
CT	CERAMIC TILES
DG	DOOR GRILLE
DS	DIMINISHING STRIP
DW	DISH WASHER
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MWO	MICROWAVE OVEN
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PUB	PIN-UP BOARD
PTD	PAPER TOWEL DISPENSER
PV	PERMANENTLY VENTILATED
REF	REFRIGERATOR
RWP	RAINWATER PIPE
S.E.	STRUCTURAL ENGINEER
SM	SEALED MONOLITHIC CONCRETE
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TPH	TOILET PAPER HOLDER
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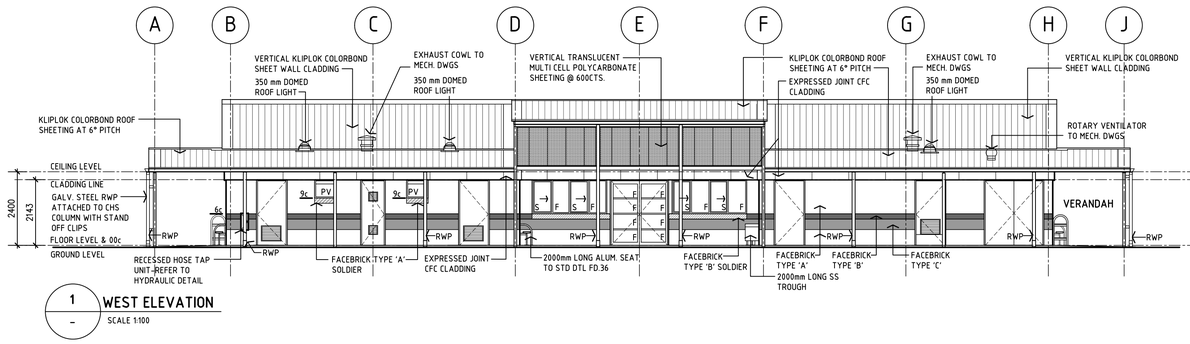
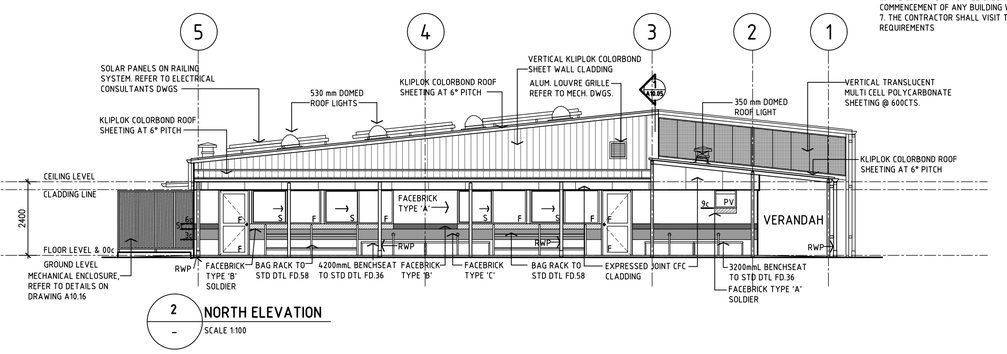
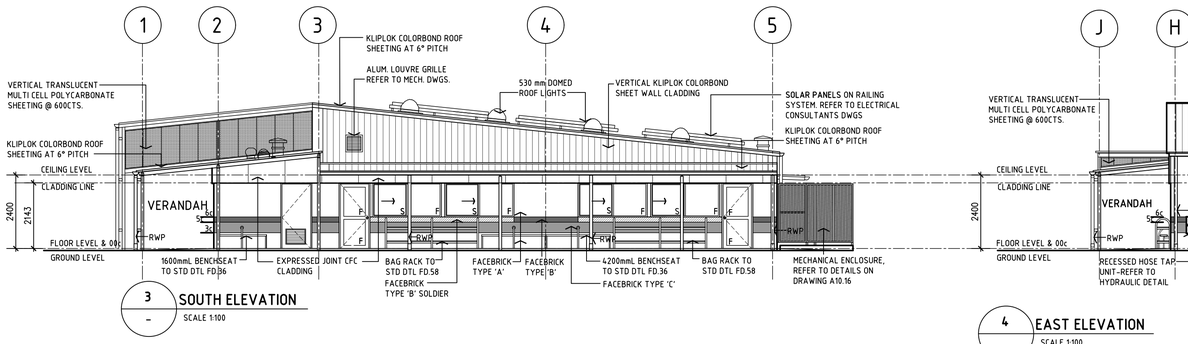
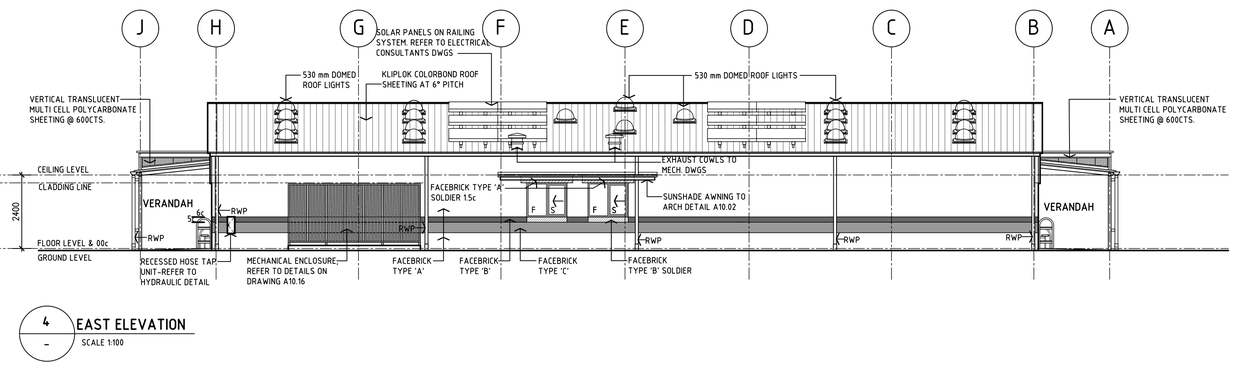
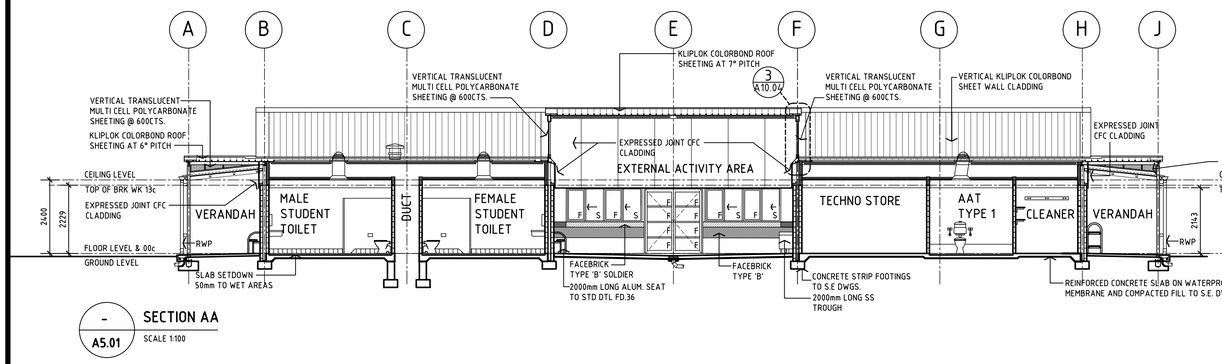
VS	VINYL SKIRTING
WB	WHITE BOARD
WC	WATER CLOSET
WS	WEATHER STRIP
WSV	WELDED SHEET VINYL- R11 ACCOLADE SAFE

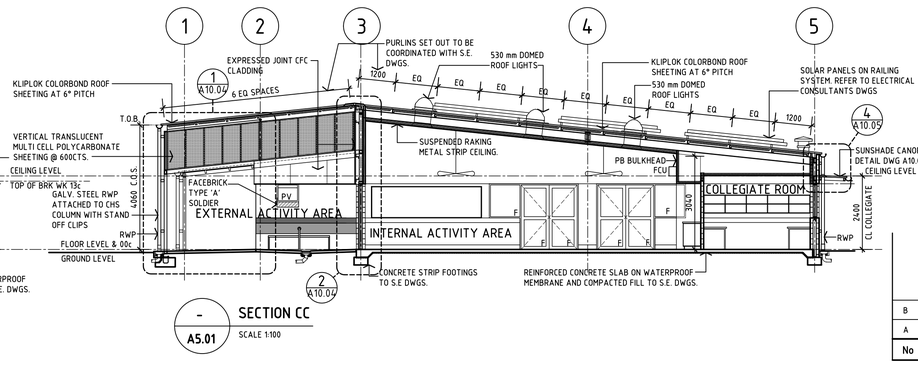


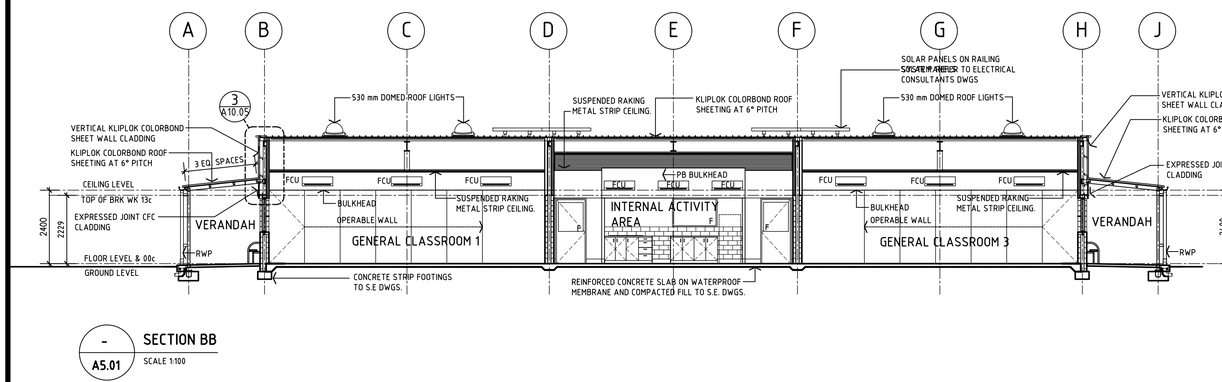


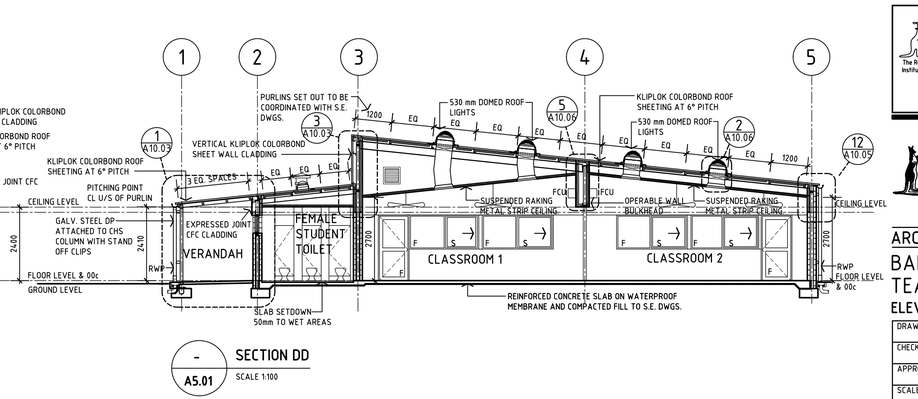












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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 2

ELEVATIONS & SECTIONS

DRAWN	TC	DESIGNED NAME	HG
CHECKED	HG	PRINCIPAL	
APPROVED			
SCALE	1:100	DATE	10.01.19
DF PROJ No.	–	DF FILE No.	–
REDUCTION	0 25	DRAWING No.	A5.02 B

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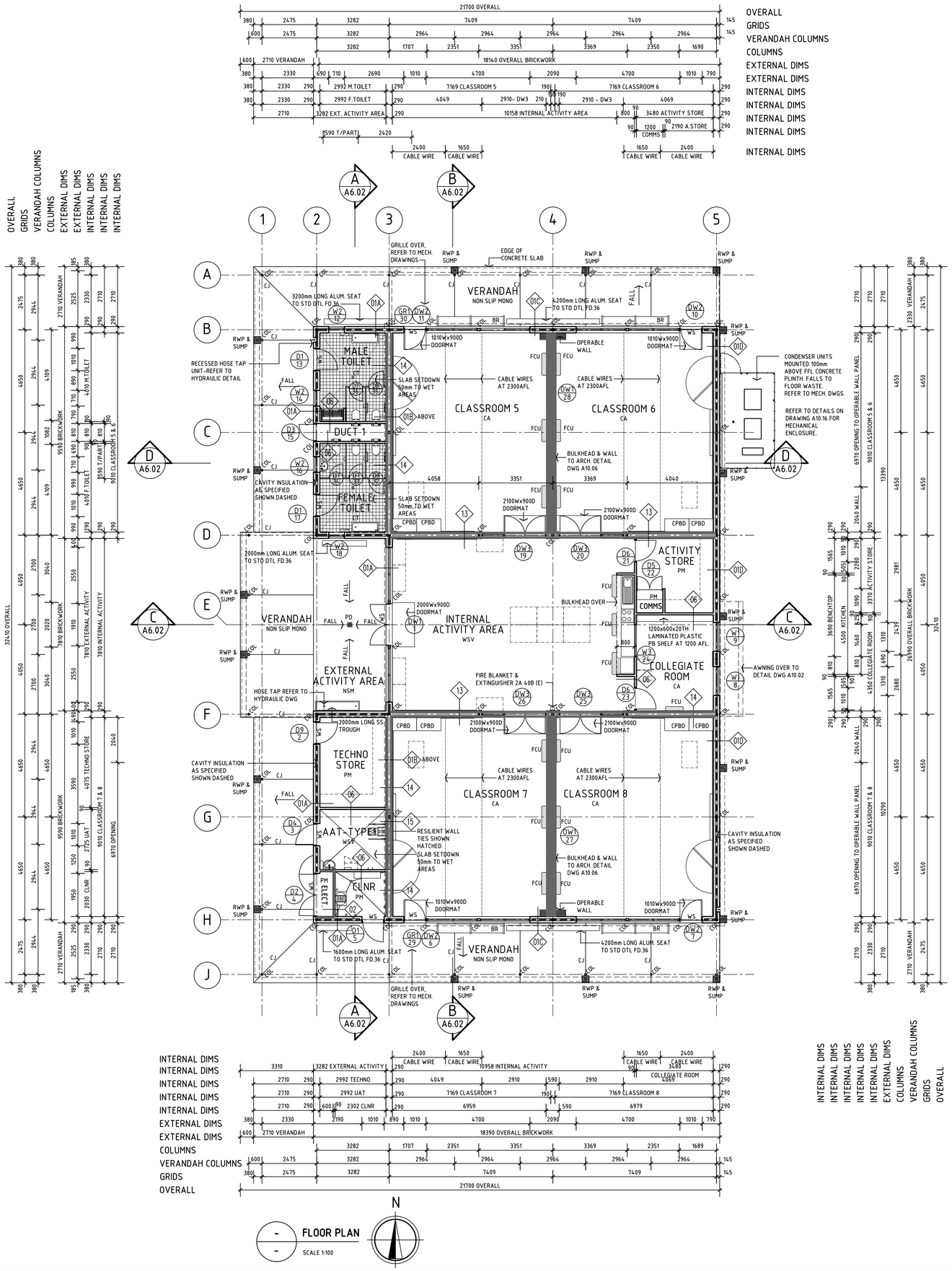
OKA JOB NO:18098



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NOTE:

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LEGEND

BR	BAG RACK	MWO	MICROWAVE OVEN
BWU	BOILING WATER UNIT	NSM	NON-SLIP MONO
CA	CARPET	N.I.C.	NOT IN CONTRACT
CPBD	CUPBOARD	PD	PAVING DRAIN
CJ	CONTROL JOINT IN SLAB	PM	PAINTED MONO
COL	STEEL COLUMN - REFER TO S.E. DWGS	PUB	PIN-UP BOARD
CS	CLEANERS SINK	PTD	PAPER TOWEL DISPENSER
CT	CERAMIC TILES	REF	REFRIGERATOR
DG	DOOR GRILLE	RWP	RAINWATER PIPE
DS	DIMINISHING STRIP	S.E.	STRUCTURAL ENGINEER
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DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE

OPENING NUMBER

SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

WALL TYPE TAG. REFER TO DRAWINGS A10.17

EXTERNAL WALLS TO FINISH TO THE UNDERSIDE OF ROOF SHEETING UNLESS OTHERWISE NOTED OR DETAILED.

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BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 3

FLOOR PLAN

DRAWN	TC	DESIGNED	NAME HG	REDUCTION	0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19	DRAWING No.	A6.01 B
DF PROJ No.	-	DF FILE No.	-		

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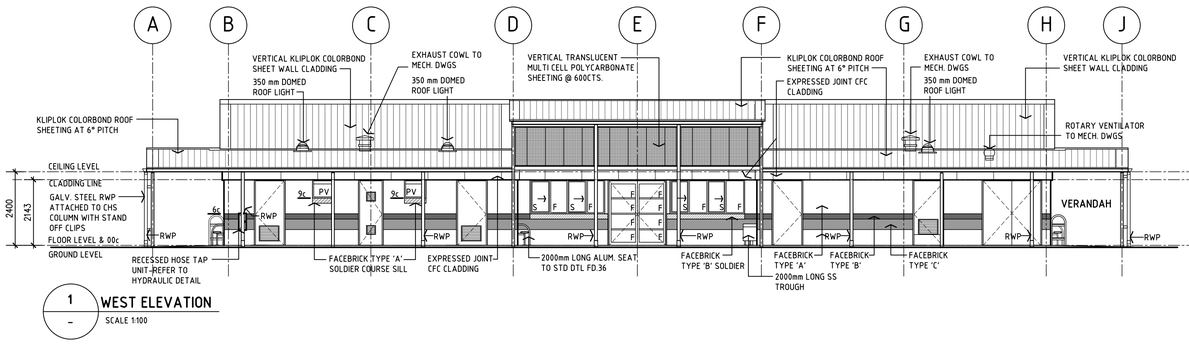

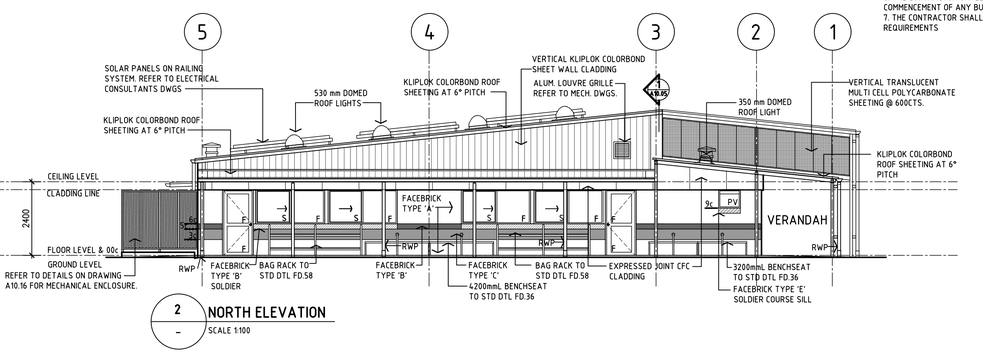

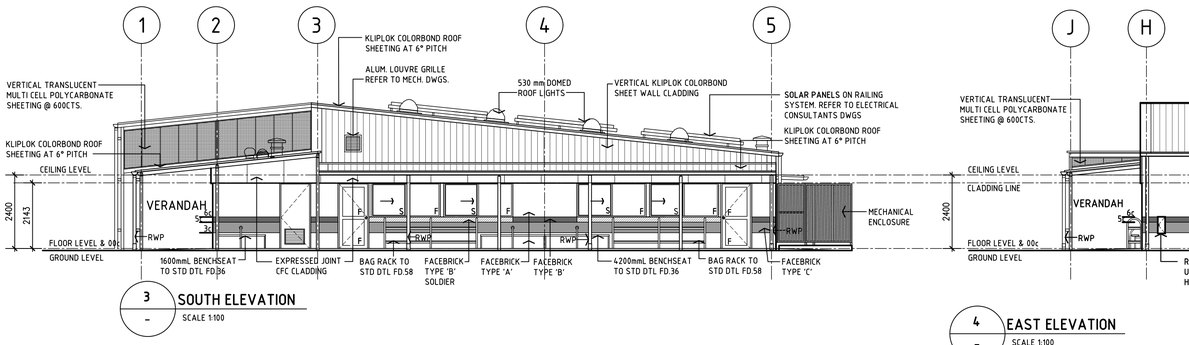

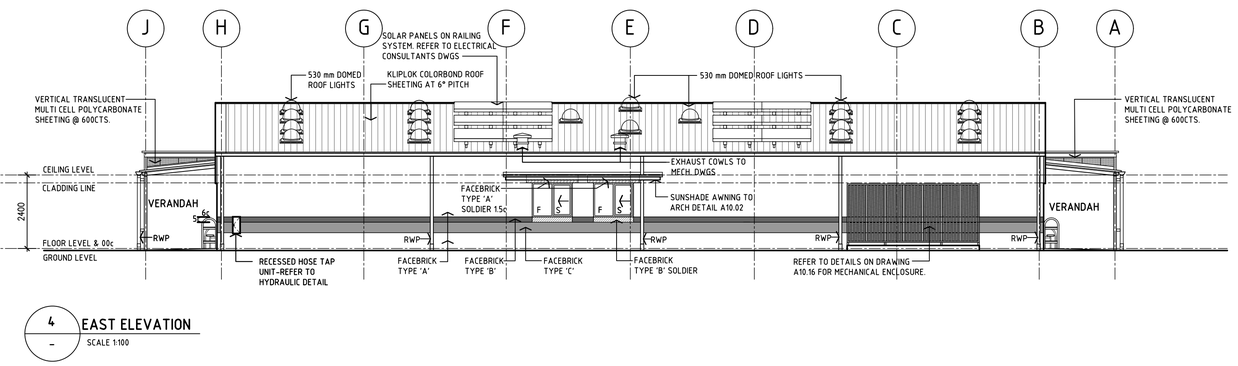

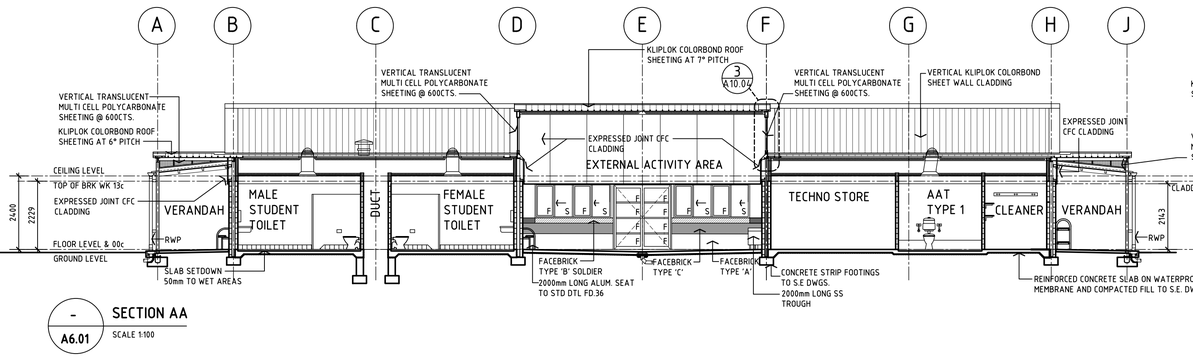

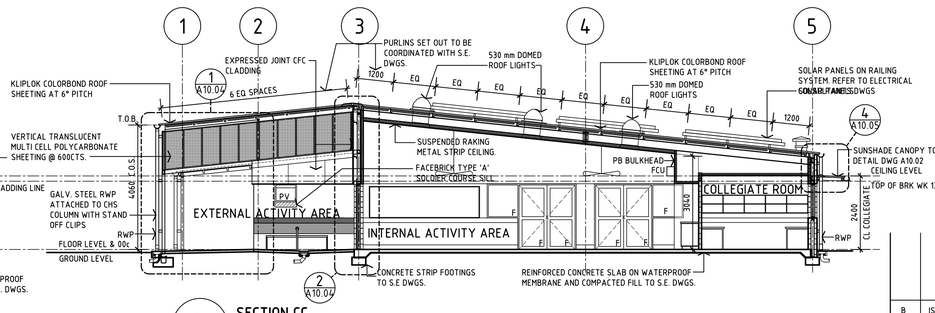

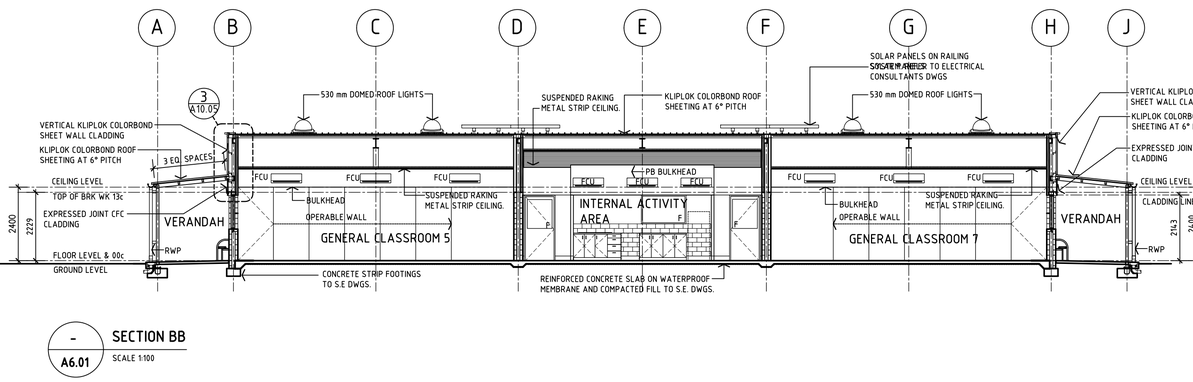

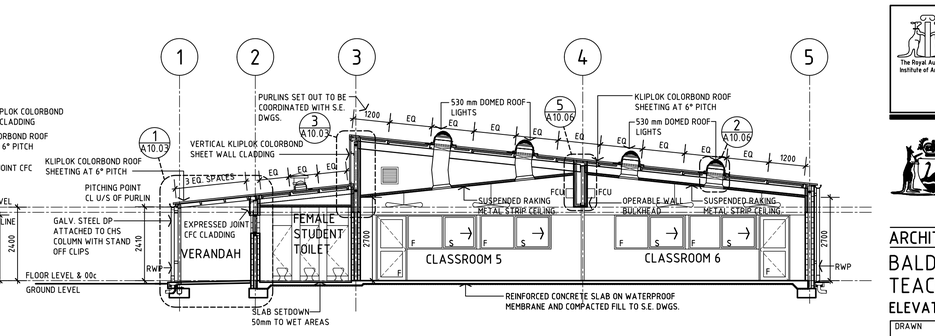

SP RECEIVED 7 MAY 2019

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG

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Department of Finance
Building Management and Works

ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 3

ELEVATIONS & SECTIONS

DRAWN	TC	DESIGNED NAME	HG
CHECKED	HG	PRINCIPAL	
APPROVED			
SCALE 1:100		DATE 10.01.19	
DF PROJ No. –		DF FILE No. –	
REDUCTION 0 2.5		DRAWING No. A6.02	B

THIS IS A CADD DRAWING DO NOT AMEND MANUALLY

OKA JOB NO:18098

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES
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7. THE CONTRACTOR SHALL VISIT THE SITE & NOTE ALL VISIBLE SITE CONDITIONS & ACCESS REQUIREMENTS

NOTE:

REFER TO ROOM LAYOUTS FOR STANDARD FURNITURE DETAILS

LEGEND

BCJ	BRICK CONTROL JOINTS	MWO	MICROWAVE OVEN
BR	BAG RACK	NSM	NON-SLIP MONO
BWU	BOILING WATER UNIT	N.I.C.	NOT IN CONTRACT
CA	CARPET	PB	PLASTERBOARD
CPBD	CUPBOARD	PD	PAVING DRAIN
CJ	CONTROL JOINT IN SLAB	PM	PAINTED MONO
COL	STEEL COLUMN - REFER TO S.E. DWGS	PUB	PIN-UP BOARD
CS	CLEANERS SINK	PTD	PAPER TOWEL DISPENSER
CT	CERAMIC TILES	REF	REFRIGERATOR
DG	DOOR GRILLE	RWP	RAINWATER PIPE
DS	DIMINISHING STRIP	S.E.	STRUCTURAL ENGINEER
DW	DISH WASHER	SM	SEALED MONOLITHIC CONCRETE
FC	FILING CABINET	SS	STAINLESS STEEL
FCU	FAN COIL UNIT	ST	STOVE
FE	FIRE EXTINGUISHER	TPH	TOILET PAPER HOLDER
FWG	FLOOR WASTE GULLY	V	VEE GROOVE CONTROL JOINT
GFCR	GLASS FACE CEMENT RENDER	VS	VINYL SKIRTING
GJ	GROOVE JOINT IN SLAB	WB	WHITE BOARD
HB	HAND BASIN	WC	WATER CLOSET
HC	HOSE COCK (IN CONC. BOX)	WS	WEATHER STRIP
HTR	HEATER	WSV	WELDED SHEET VINYL - R11 ACCOLADE SAFE
HWU	HOT WATER UNIT		
HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		

D15 / 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE; OPENING NUMBER

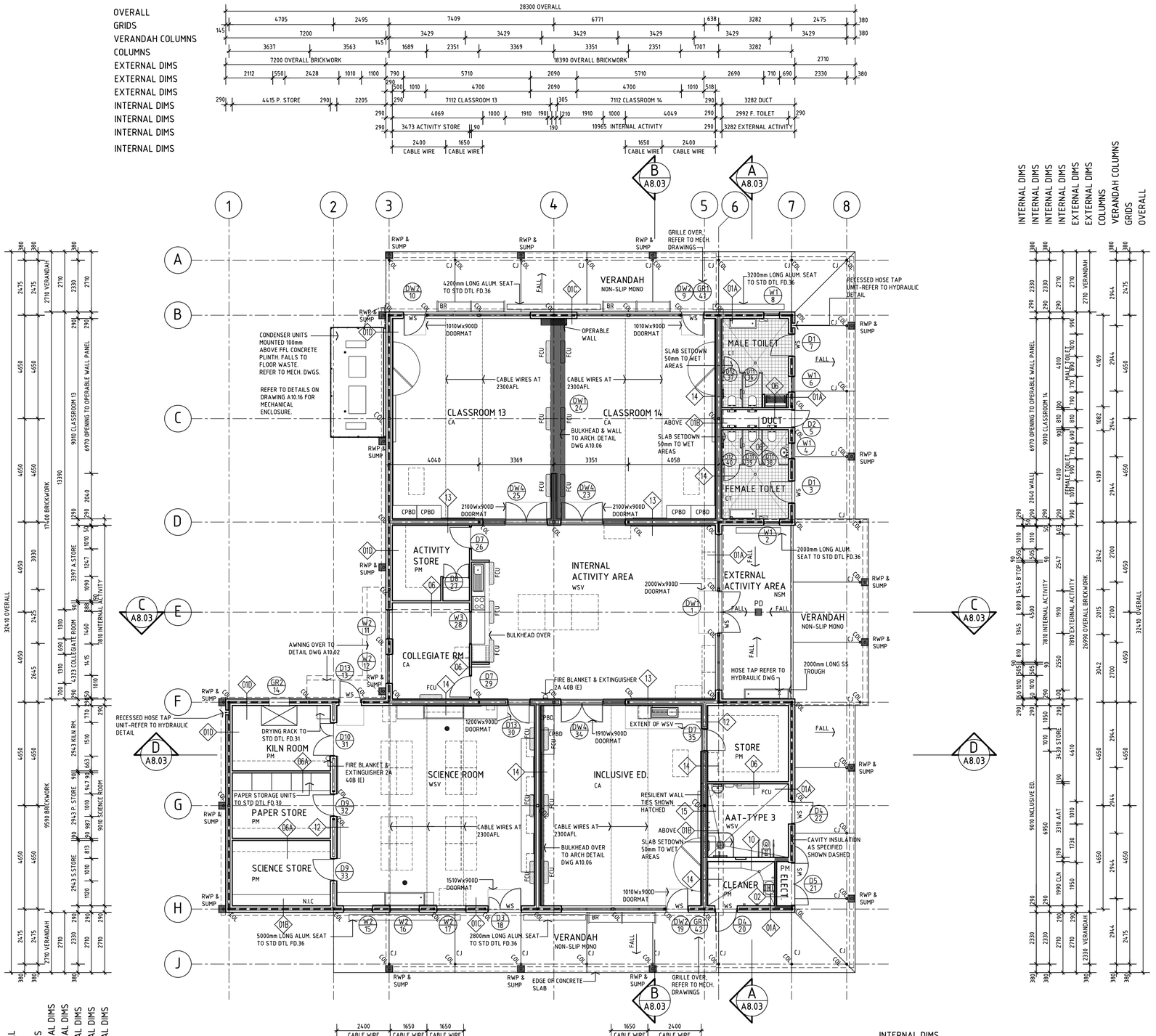
SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

14 — WALL TYPE TAG. REFER TO DRAWINGS A10.XX AND A10.XX

EXTERNAL WALLS TO FINISH TO THE UNDERSIDE OF ROOF SHEETING UNLESS OTHERWISE NOTED OR DETAILED.

GREY FILLED WALLS DENOTE FULL HEIGHT TO UNDERSIDE OF ROOF OR STRUCTURAL FRAMING AND SEALED WITH FIRE RATED INSULATION.

RESILIENT WALL TIES SHOWN HATCHED



FLOOR PLAN
SCALE 1:100

N

B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG
No	AMENDMENT	DWN	DATE	CHKD

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BALDIVIS SOUTH PRIMARY SCHOOL
TEACHING BLOCK 4

FLOOR PLAN

DRAWN	TC	DESIGNED NAME	HG
CHECKED	HG	PRINCIPAL	
APPROVED			
SCALE 1:100		DATE 10.01.19	
DF PROJ No. -		DF FILE No. -	

REDUCTION 0 25

DRAWING No. A8.01 B

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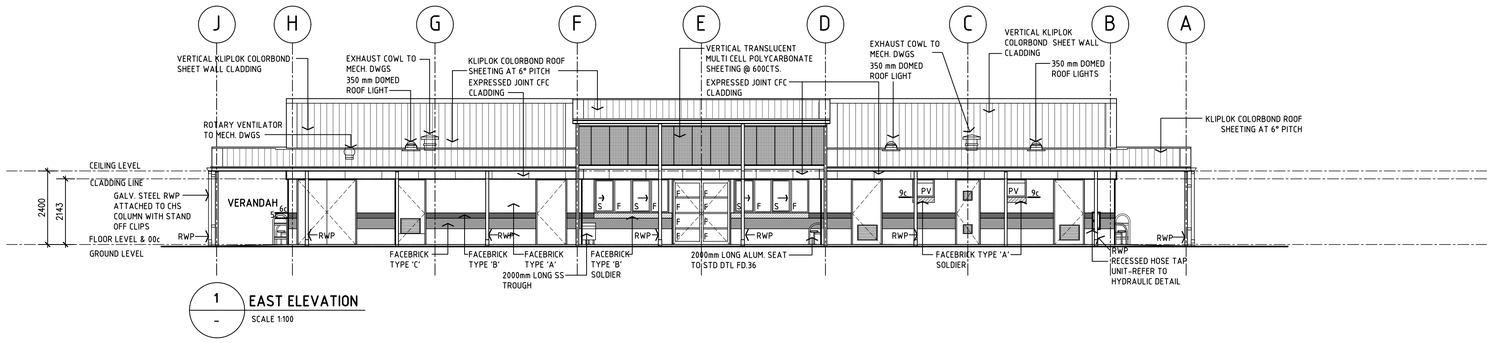
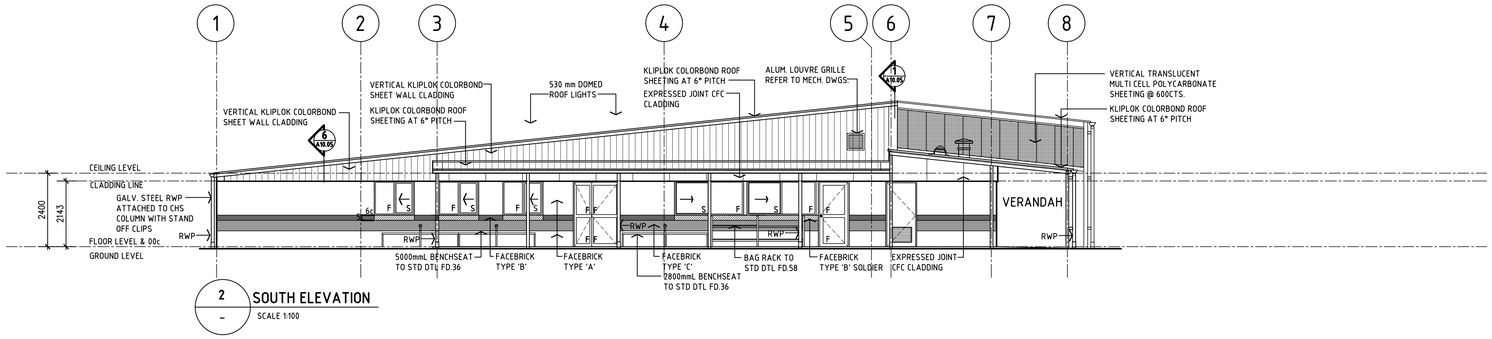
OKA JOB NO:18098

SP RECEIVED 7 MAY 2019



1 / – EAST ELEVATION
SCALE 1:100



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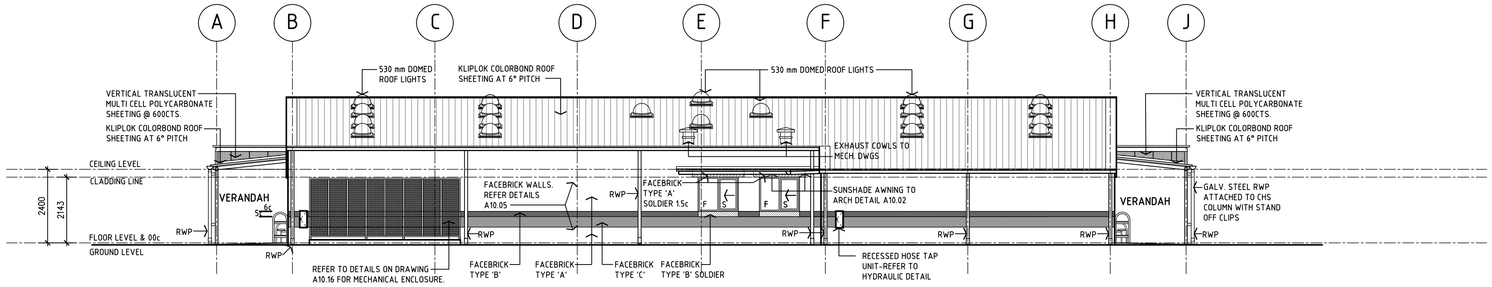
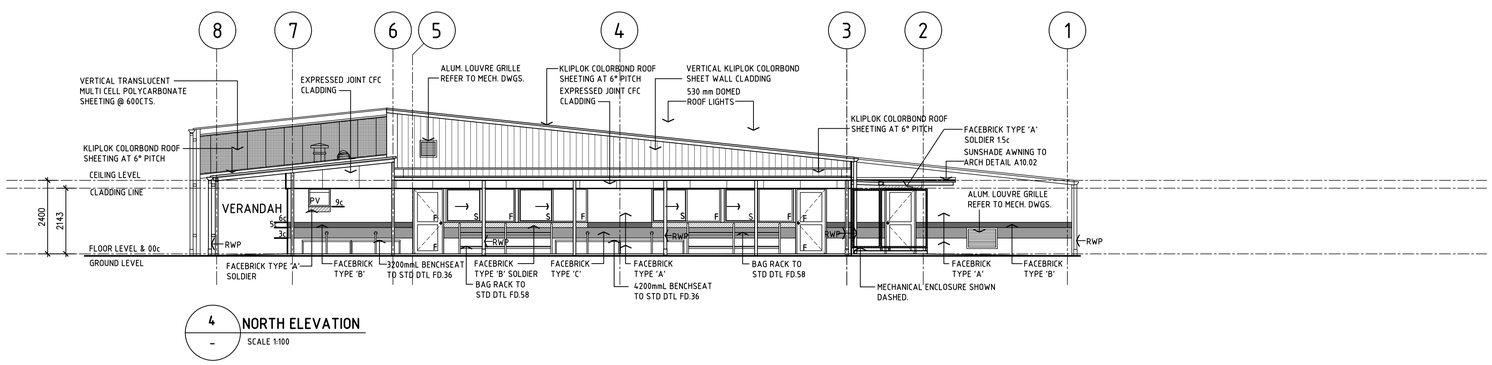
SCALE 1:100



3 / – WEST ELEVATION
SCALE 1:100



4 / – NORTH ELEVATION
SCALE 1:100

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LEGEND

BWU	BOILING WATER UNIT	REF	REFRIGERATOR
CA	CARPET	RWP	RAINWATER PIPE
CJ	CONTROL JOINT IN SLAB	S.E.	STRUCTURAL ENGINEER
COL	STEEL COLUMN – REFER TO S.E. DWGS	SM	SEALED MONOLITHIC CONCRETE
CS	CLEANERS SINK	SR	STUDDED RUBBER
CT	CERAMIC TILES	SS	STAINLESS STEEL
DG	DOOR GRILLE	ST	STOVE
DS	DIMINISHING STRIP	TPH	TOILET PAPER HOLDER
DW	DISH WASHER	V	VEE GROOVE CONTROL JOINT
FC	FILING CABINET	VS	VINYL SKIRTING
FCU	FAN COIL UNIT	WB	WHITE BOARD
FE	FIRE EXTINGUISHER	WC	WATER CLOSET
FWG	FLOOR WASTE GULLY	WS	WEATHER STRIP
GFCR	GLASS FACE CEMENT RENDER	WSV	WELDED SHEET VINYL- R11 ACCOLADE SAFE
GJ	GROOVE JOINT IN SLAB		
HB	HAND BASIN		
HC	HOSE COCK (IN CONC. BOX)		
HTR	HEATER		
HWU	HOT WATER UNIT		
HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		
MWO	MICROWAVE OVEN		
N.I.C.	NOT IN CONTRACT		
PUB	PIN-UP BOARD		
PB	PLASTERBOARD		
PTD	PAPER TOWEL DISPENSER		
PM	PAINTED MONO		

– – – SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (R2.0)

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL
TEACHING BLOCK 4

ELEVATIONS

DRAWN	TC	DESIGNED	NAME HG	REDUCTION	
CHECKED	HG	PRINCIPAL		0 25	
APPROVED					
SCALE	1:100	DATE	10.01.19	DRAWING No.	B
DF PROJ No.	–	DF FILE No.	–	A8.02	

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OKA JOB NO:18098

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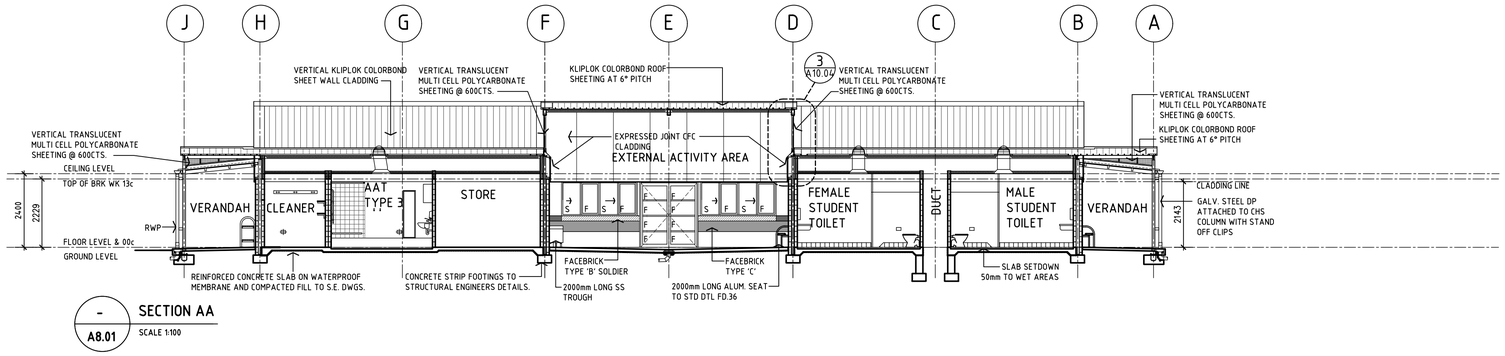
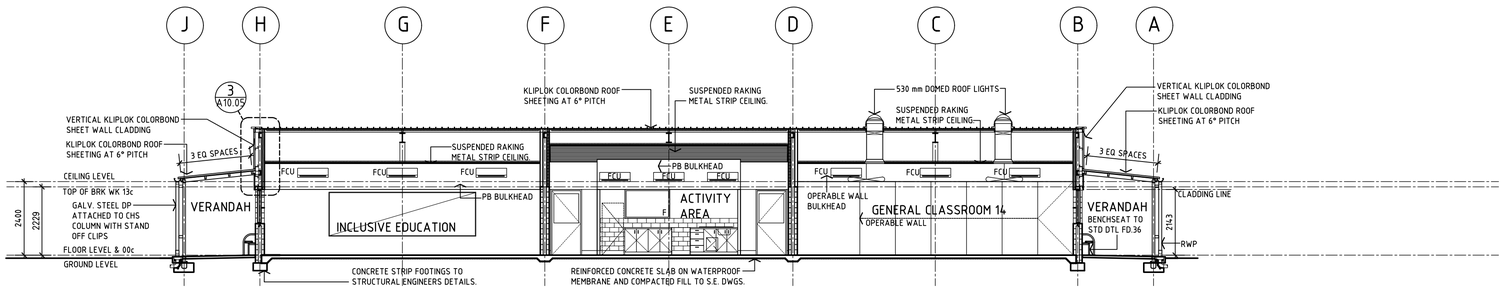


- A8.01 **SECTION AA**
SCALE 1:100



- A8.01 **SECTION BB**
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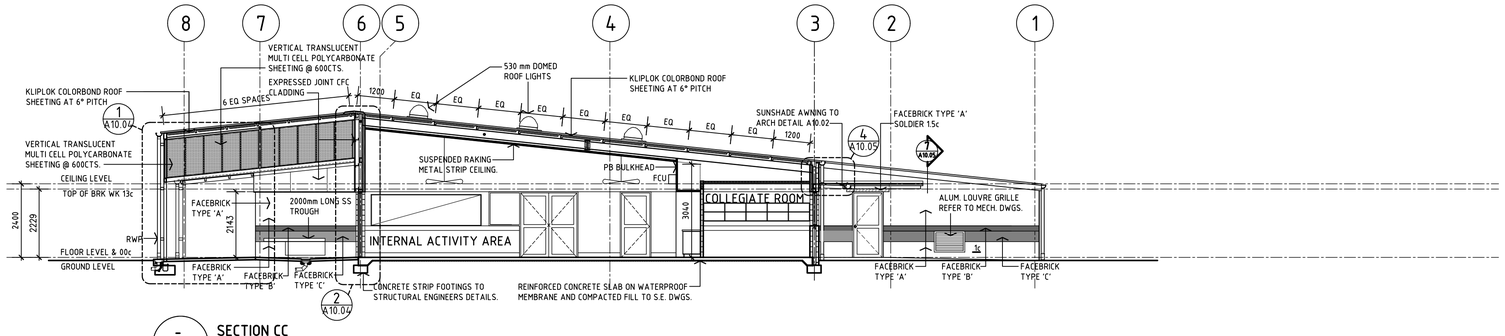
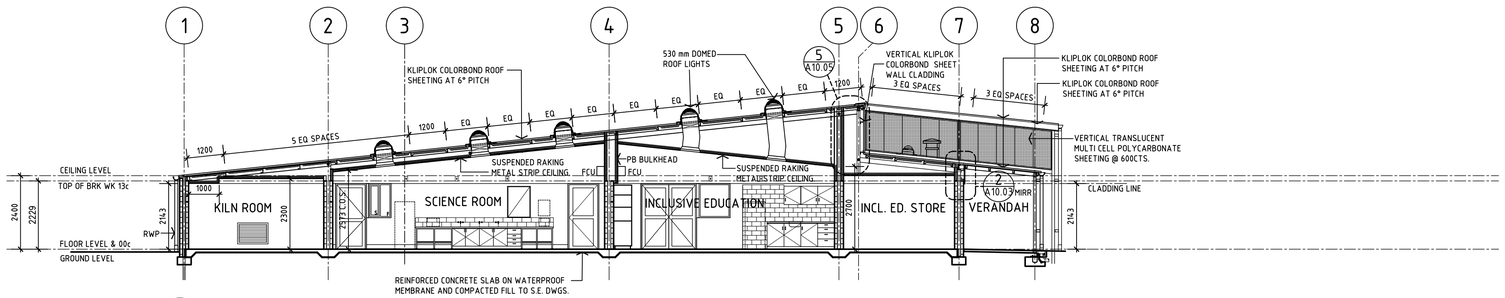


- A8.01 **SECTION CC**
SCALE 1:100



- A8.01 **SECTION DD**
SCALE 1:100

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LEGEND

BWU	BOILING WATER UNIT		
CA	CARPET	REF	REFRIGERATOR
CJ	CONTROL JOINT IN SLAB	RWP	RAINWATER PIPE
COL	STEEL COLUMN - REFER TO S.E. DWGS	S.E.	STRUCTURAL ENGINEER
CS	CLEANERS SINK	SM	SEALED MONOLITHIC CONCRETE
CT	CERAMIC TILES	SS	STAINLESS STEEL
DG	DOOR GRILLE	ST	STOVE
DS	DIMINISHING STRIP	TPH	TOILET PAPER HOLDER
DW	DISH WASHER	V	VEE GROOVE CONTROL JOINT
FC	FILING CABINET	VS	VINYL SKIRTING
FCU	FAN COIL UNIT	WB	WHITE BOARD
FE	FIRE EXTINGUISHER	WC	WATER CLOSET
FWG	FLOOR WASTE GULLY	WS	WEATHER STRIP
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PM	PAINTED MONO		
PTD	PAPER TOWEL DISPENSER		

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL TEACHING BLOCK 4

SECTIONS

DRAWN	TC	DESIGNED NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL		
APPROVED				
SCALE 1:100		DATE 10.01.19		DRAWING No. A8.03 B
DF PROJ No. -		DF FILE No. -		

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OKA JOB NO:18098

SP RECEIVED 7 MAY 2019

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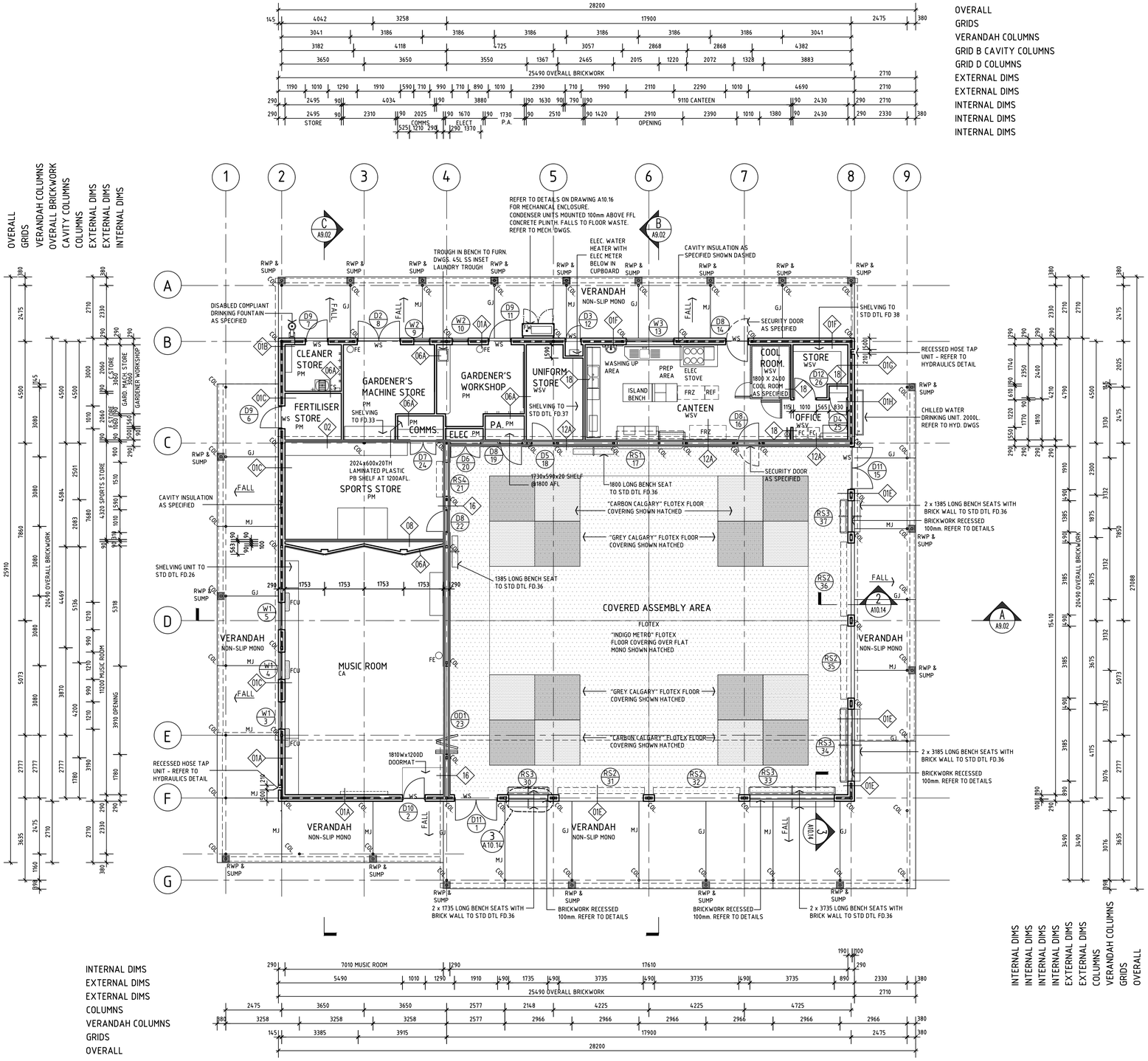
MT	MOSAIC TILES		
MWO	MICROWAVE OVEN		
N.I.C.	NOT IN CONTRACT		
PM	PAINTED MONO		
PUB	PIN-UP BOARD		
PTD	PAPER TOWEL DISPENSER		

SPECIAL EXTERNAL WALL CONSTRUCTION TO SATISFY SECTION J (RK2.0)

D1 / 26 — DOOR, WINDOW, DOOR/WINDOW OR GRILLE TYPE

OPENING NUMBER



B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
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No	AMENDMENT	DWN	DATE	CHKD

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ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL
COVERED ASSEMBLY BLOCK
FLOOR PLAN

DRAWN	SRW	DESIGNED	NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19		DRAWING No. A9.01 B
DF PROJ No.	-	DT FILE No.	-		

FLOOR PLAN
SCALE 1:100

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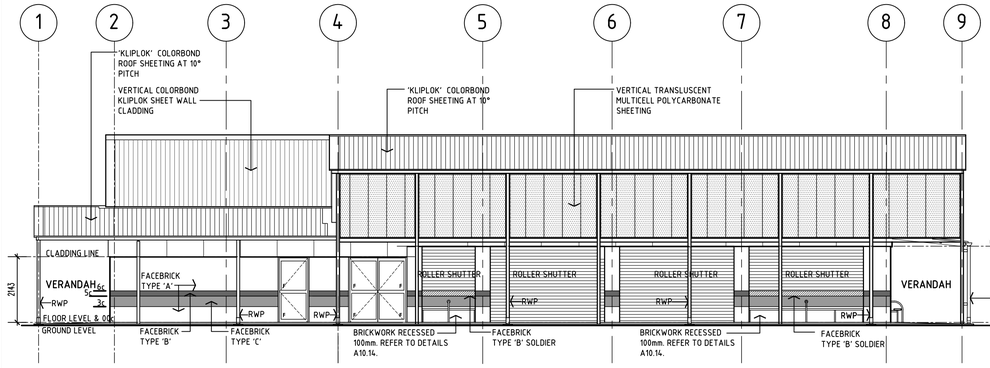
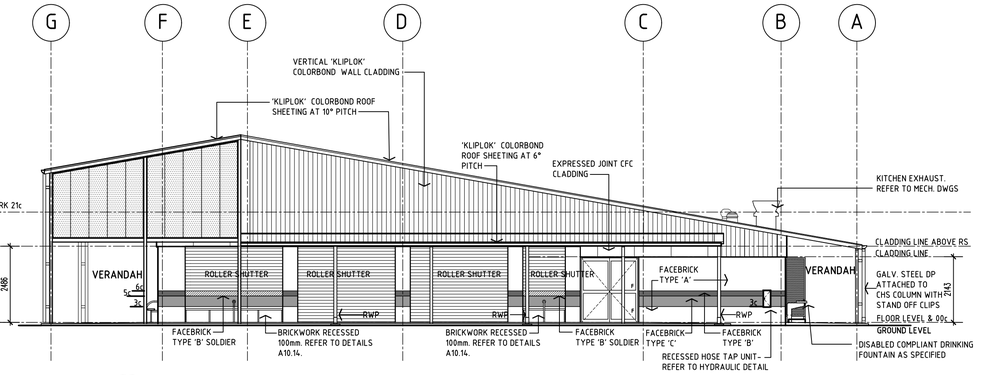
OKA JOB NO:18098

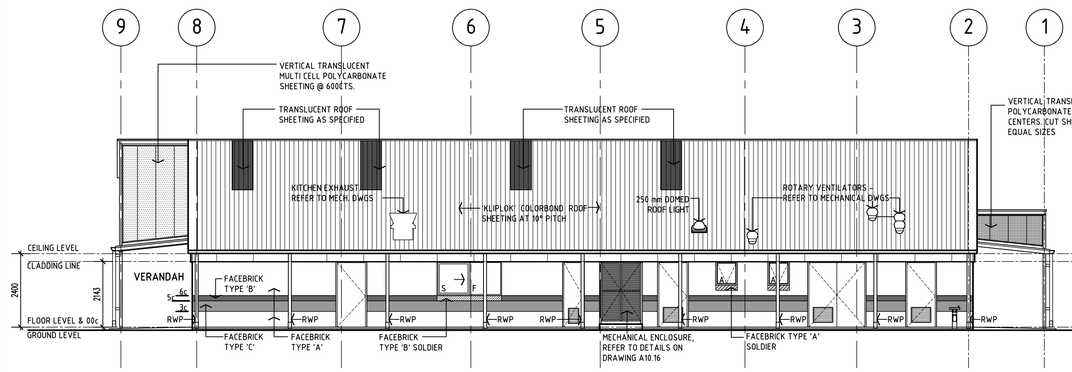
SP RECEIVED 7 MAY 2019



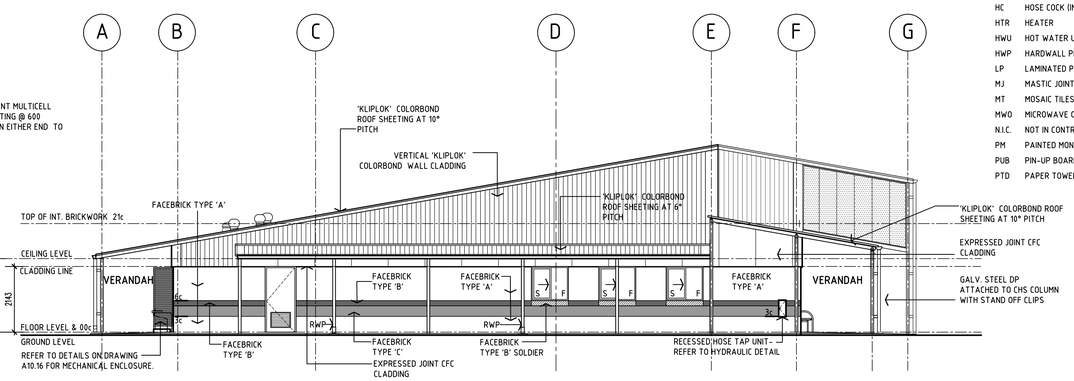
1 - EAST ELEVATION
SCALE 1:100



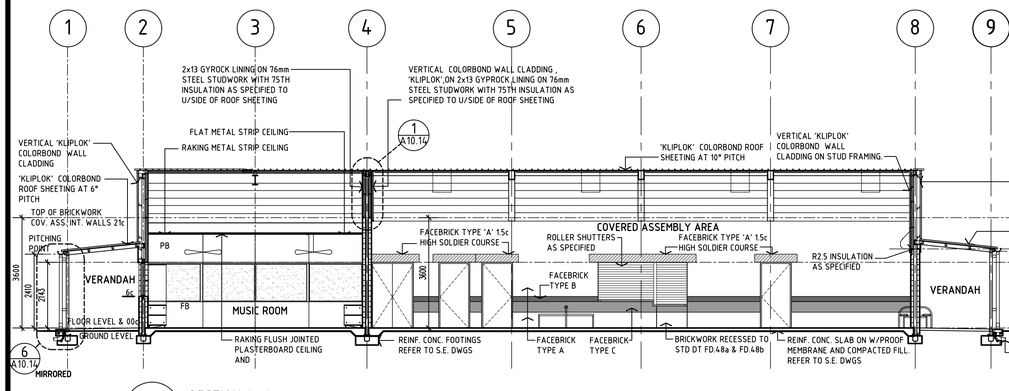
2 - NORTH ELEVATION
SCALE 1:100



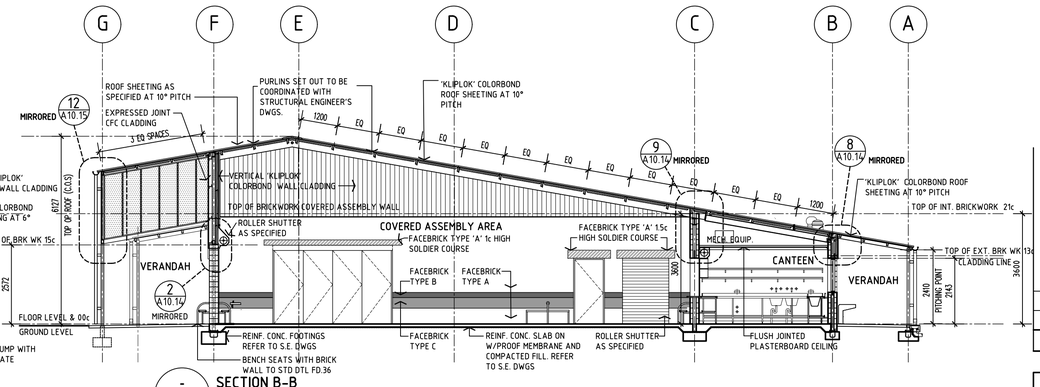
3 - WEST ELEVATION
SCALE 1:100



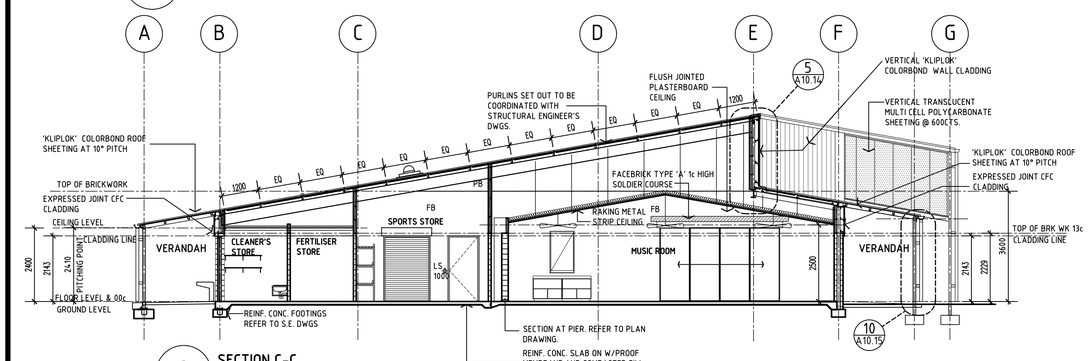
4 - SOUTH ELEVATION
SCALE 1:100



- A9.01 - SECTION A-A
SCALE 1:100



- A9.01 - SECTION B-B
SCALE 1:100



- A9.01 - SECTION C-C
SCALE 1:100

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS
3. LARGE SCALE DRAWINGS SHALL TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS
4. THE CONTRACTOR SHALL CARRY OUT THE WORK IN ACCORDANCE WITH THE SPECIFICATION, THE B.C.A. AND LOCAL AUTHORITY REQUIREMENTS
5. ALL MATERIALS SHALL BE NEW & CONFORM TO WHAT IS SHOWN ON THE DRAWINGS AND IN THE SPECIFICATION
6. THE CONTRACTOR SHALL CHECK & VERIFY ALL DIMENSIONS ON THE SITE, PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORK
7. THE CONTRACTOR SHALL VISIT THE SITE & NOTE ALL VISIBLE SITE CONDITIONS & ACCESS REQUIREMENTS

LEGEND

BWU	BOILING WATER UNIT	REF	REFRIGERATOR
CA	CARPET	RS	ROLLER SHUTTER
CJ	CONTROL JOINT IN SLAB	RWP	RAINWATER PIPE
COL	STEEL COLUMN - REFER TO S.E. DWGS	S.E.	STRUCTURAL ENGINEER
CS	CLEANERS SINK	SM	SEALED MONOLITHIC CONCRETE
CT	CERAMIC TILES	SS	STAINLESS STEEL
DG	DOOR GRILLE	ST	STOVE
DS	DIMINISHING STRIP	TPH	TOILET PAPER HOLDER
DW	DISH WASHER	V	VEE GROOVE CONTROL JOINT
FC	FILING CABINET	VS	VINYL SKIRTING
FE	FIRE EXTINGUISHER	WB	WHITE BOARD
FWG	FLOOR WASTE GULLY	WC	WATER CLOSET
GFCR	GLASS FACE CEMENT RENDER	WS	WEATHER STRIP
GJ	GROOVE JOINT IN SLAB	WSV	WELDED SHEET VINYL - R11 ACCOLADE SAFE
HB	HAND BASIN		
HC	HOSE COCK (IN CONC. BOX)		
HTR	HEATER		
HWU	HOT WATER UNIT		
HWP	HARDWALL PLASTER		
LP	LAMINATED PLASTIC		
MJ	MASTIC JOINT IN SLAB		
MT	MOSAIC TILES		
MWO	MICROWAVE OVEN		
N.I.C.	NOT IN CONTRACT		
PM	PAINTED MONO		
PUB	PIN-UP BOARD		
PTD	PAPER TOWEL DISPENSER		

No	AMENDMENT	DWN	DATE	CHKD
B	ISSUED FOR DESIGN DEVELOPMENT REPORT	TC	18.04.19	HG
A	ISSUED TO PCG GROUP	TC	20.02.19	HG

OLDFIELD KNOTT ARCHITECTS PTY. LTD.
The Royal Australian Institute of Architects
567 HAY STREET, DAGLISH 6008
P.O. BOX 849, SUBIACO, W.A. 6904
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Government of Western Australia
Department of Finance
Building Management and Works

ARCHITECTURAL

BALDIVIS SOUTH PRIMARY SCHOOL
COVERED ASSEMBLY BLOCK

ELEVATIONS & SECTIONS

DRAWN	TC	DESIGNED	NAME	HG	REDUCTION 0 25
CHECKED	HG	PRINCIPAL			
APPROVED					
SCALE	1:100	DATE	10.01.19		DRAWING No. A9.02 B
DF PROJ No.	-	DF FILE No.	-		

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OKA JOB NO.18098

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BALDIVIS SOUTH PRIMARY SCHOOL
LANDSCAPE SCHEMATIC DESIGN REPORT

INTRODUCTION
Emerge Associates were engaged by Oldfield Knott Architects (OKA) to undertake the design, documentation and contract administration of the Landscape and Irrigation works for the Baldivis South Primary School.

This report provides a guide to the proposed landscape treatments and a landscape schematic design for the Baldivis South Primary School.

SITE CONDITIONS
The site is located on Furnivall Parade Baldivis within a newly developed site in Baldivis.
There is a significant level difference across the existing site and substantial fill and retaining will be provided to create a level pad for the buildings and result in a 1.7m level difference down to the oval at the southern end of the site.

DESIGN
The landscape treatment will be designed and constructed in accordance with the DoE's design philosophy and specifications.

The schematic design below incorporates the following key elements:
- The proposed landscape treatments offer safe, functional and easily maintainable areas conforming to DoE's requirements.
- Shade trees lining pathways and outdoor spaces throughout provide an environmentally sustainable response
- The proposed site levels ensure a flat site and easy access throughout. Universal access is integrated into the design allowing safe movement from to and from the school facilities to car parking and the Oval and Recreation Courts on the periphery of the site.
- The oval and sporting facilities are located at the southern end of the site allowing surveillence from the school building to the north.Terraced seating with shade trees will look over the oval providing spectator viewing as well as opportunitues for outdoor teaching. Stairs and a universal access ramp will provide direct access to the Oval from the School site.
- A cluster of shade trees around school buildings allow comfotable access between buildings
- The turf courtyards between buildings provide flexible and adaptive outdoor spaces incorporating outdoor learning environments.
- Trees framing each outdoor space are bounded by a low seating wall. Providing protection for the tree as well as opportunities for colourful planting within, the seating wall also promotes social interaction during recess and lunch times.
- Incorporation of temporary irrigated turf treatment to the area of the future buildings and parking.

IRRIGATION
The irrigation will be designed and constructed in accordance with the DoE's irrigation specifications.

The irrigation works will include the construction of a new groundwater bore to provide an adequate water source for the irrigation system of the whole school site. The new groundwater bore will be located within the oval site and is to have a capacity to irrigate all turf and planted areas. As part of the bore works, a new pump, controller and electrical cabinet will be required. Dependent on groundwater results the bore may also require an iron filtration unit.

PLANTING
Trees
- Deciduous tree species Pyrus ussuriensis and Sapium sebiferum will line internal pathways and frame outdoor spaces to provide shade in summer and allow the sunlight in winter.
- Tree planting to the periphery including Eucalyptus victrix relate to street tree species and soften impact of retaining walls and car parking
- Shade trees including Agonis flexuosa provide optimum shade to the frame the edge of the oval and enhance the viewing experience.
- Tree selection includes fast growing species, water wise and easily maintainable

Agonis Flexuosa

Eucalyptus victrix

Pyrus ussuriensis

Sapium sebiferum

Srubs / Goundcovers
- Low planting species including acacia lasiocarpa and Grevillea Gin Gin Gem will provide mass over to the sites periphery and softening to parking areas and street interface.
- Medium shrub species including Hardenbergia violacea Meema and Eremophila glabra provide colour and texture within square planter / seating walls
- Kikuyu turf is proposed to all grassed areas.

Acacia lasiocarpa

Grevillea Gin Gin Gem

Hardenbergia violacea Meema

Eremophila glabra

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U:\CURRENT PROJECTS\Baldivis South Primary School\BMW-07 Photos Drawings & Scans\BMW-07 02_Concept Plans, Scans & Graphics\04 INDD\Baldivis South PS - Schematic Design Rpt B.indd

Baldivis South - Primary School

LEGEND

- PROPOSED FEATURE SHRUB PLANTING
- PROPOSED TURF
- RECON BLOCK PLANTER BEDS / SEATING WALL
- TERRACE SEATING AROUND OVAL
- PROPOSED PYRUS USSURIENSIS
- PROPOSED SAPIUM SEBIFERUM
- PROPOSED EUCALYPTUS VICTRIX
- PROPOSED AGONIS FLEXUOSA

BALDIVIS SOUTH PRIMARY SCHOOL
SCHEMATIC DESIGN

SP RECEIVED 7 MAY 2019

DWG **BMW-07**
REV **B**
DATE **27-02-19**
SCALE **1 : 1000 @ A3**
0 5 10 15 20 25 m

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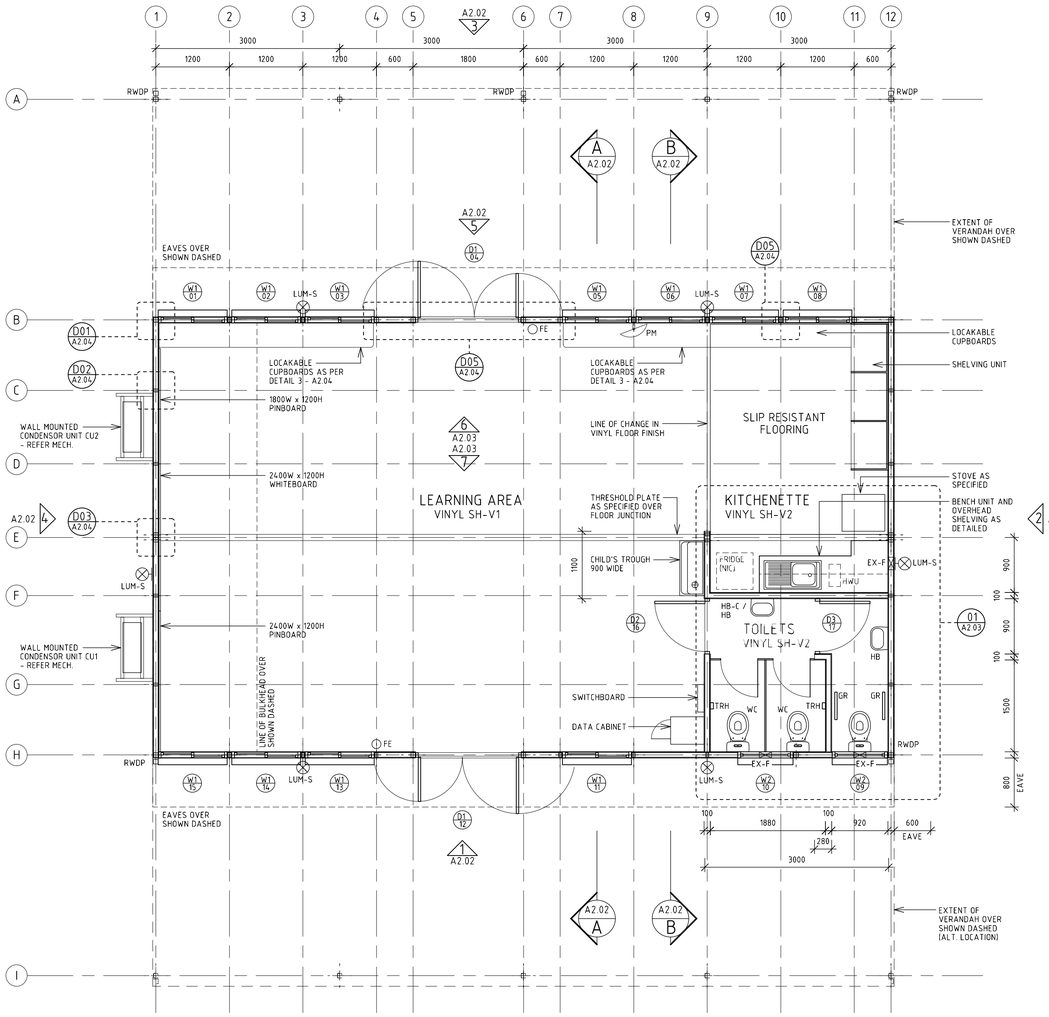
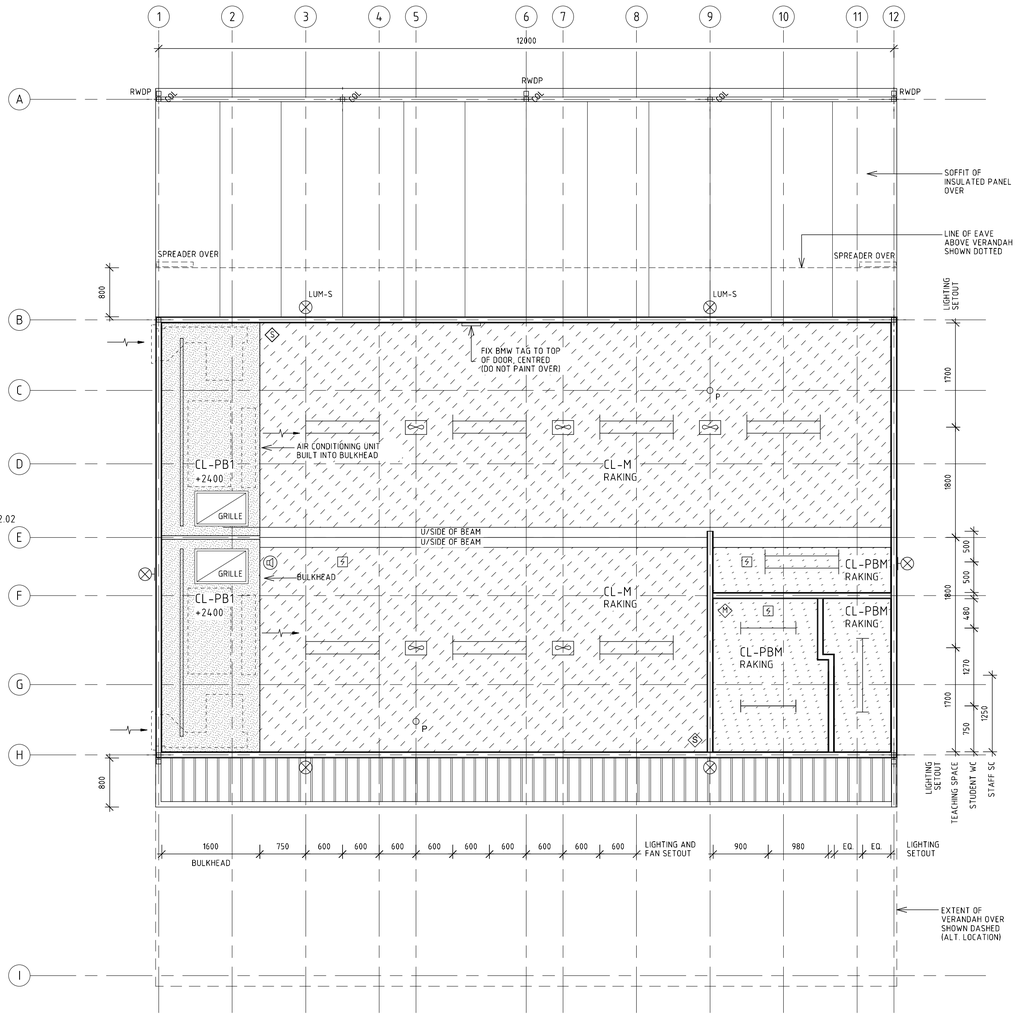
emerge ASSOCIATES

U:\CURRENT PROJECTS\Baldivis South Primary School\BMW-07 Photos Drawings & Scans\BMW-07 02_Concept Plans, Scans & Graphics\04 INDD\Baldivis South PS - Schematic Design Rpt.indd



01 FLOOR PLAN

1:50



02 CEILING PLAN

1:50

NOTES

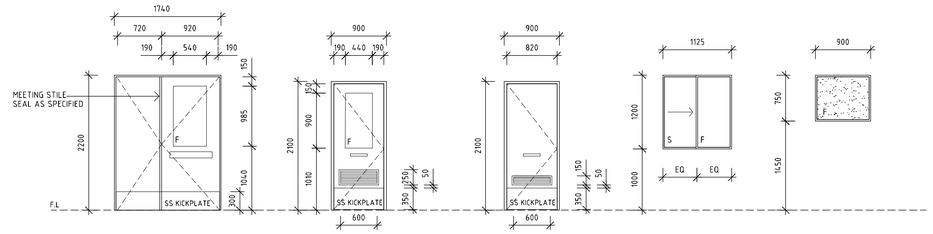
1. THE VERANDAH IS TO BE FABRICATED TO ALLOW FOR ATTACHMENT TO TRANSPORTABLE IN EACH ALTERNATIVE LOCATION AS SHOWN ON THE DRAWINGS.
2. LOCATION OF TRANSPORTABLE ONSITE & SITE WORKS IS NOT IN SCOPE OF WORKS.
3. REFER TO DOOR & HARDWARE SCHEDULE FOR EXTENT OF THRESHOLD PLATES & HARDWARE.
4. THIS TRANSPORTABLE BUILDING HAS BEEN DESIGNED TO BAL-19

LEGEND

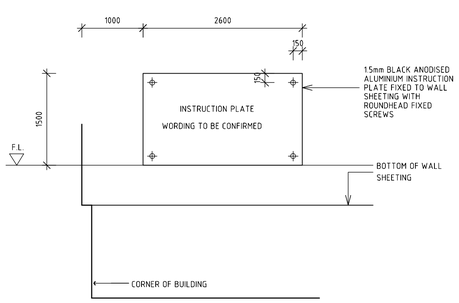
P.L	PLATE LEVEL	GR1	GRAB RAIL TYPE 1
F.L	FLOOR LEVEL	LS	LIGHT SWITCH
G.L	GROUND LEVEL	LUM-S	LUMINAIRE - SECURITY
AP	ACCESS PANEL	NIC	NOT IN CONTRACT
ACC	AIR CON CONTROL	PB	PINBOARD
AV	AV WALL PLATE	PM	PARABOLIC MIRROR
DATA	DATA WALL PLATE	PTD	PAPER TOWEL DISPENSER
EF	FIXED WINDOW SASH	RWDP	RAINWATER DOWNPIPE
EFS	EXHAUST FAN SWITCH	S	SLIDING WINDOW SASH
EFSO	FIXED WINDOW SASH	SD	SOAP DISPENSER
F	EXHAUST FAN	SS	STAINLESS STEEL
FB	FIRE BLANKET	TEL	TELEPHONE WALL PLATE
FE	FIRE EXTINGUISHER	TH	THERMOSTAT
FR	FRIDGE (NIC)	TRH	TOILET ROLL HOLDER
FWG	FLOOR WASTE GULLY	U/S	UNDERSIDE
GPO	SINGLE GPO WALL PLATE	USB	USB WALL PLATE
DGPO	DOUBLE GPO WALL PLATE	WB	WHITEBOARD
		VC	VOLUME CONTROL

CEILING LEGEND

- CL-PBM — MOISTURE RESISTANT P/BOARD, 'H' MOULD JOINTS
- CL-PB1 — P/BOARD BULKHEAD, FLUSH JOINTED
- CL-M — PERFORATED METAL ACOUSTIC CEILING.
- TWIN SURFACE MOUNTED LUMINAIRE WITH PRISMATIC DIFFUSER
- SINGLE SURFACE MOUNTED LUMINAIRE WITH PRISMATIC DIFFUSER
- AP — CEILING ACCESS PANEL LOCKABLE 600x600mm WITH DROP CHAIN
- WHITE CEILING FANS WITH CLEAR POLYCARBONATE BLADES
- PROVIDE CONDUIT AND DRAWWIRE FOR SMOKE DETECTOR, AND ENGRAVED BLANK PLATE OVER FIT OFF 'SMOKE DETECTOR'
- SURFACE MOUNTED EXTERNAL SECURITY LUMINAIRE
- SPEAKER
- THERMOSTAT
- P — DAYLIGHT SENSOR
- MOTION SENSOR
- SECURITY MOTION SENSOR



DOOR AND WINDOW TYPE:	D1	D2	D3	W1	W2
OPENING NUMBER:	04,12	16	17	01, 02, 03, 05, 06, 07, 08, 11, 13, 14, 15	09, 10
LOCATION:	EXTERNAL	STUDENT TOILET	STAFF TOILET	EXTERNAL	EXTERNAL
FRAME:	ALUMINIUM	STEEL 1.2 ZINCANNEAL	STEEL 1.2 ZINCANNEAL	ALUMINIUM	ALUMINIUM
WINDOW/DOOR:	40mm SOLID CORE DOOR WITH CRIMSAFE SECURITY GRILLE SCREW FIXED TO DOOR VIEWING PANEL AND WITH TAMPER RESISTANT FIXINGS	40mm SOLID CORE DOOR WITH LAMINATED SAFETY GLASS VIEWING PANEL	40mm SOLID CORE DOOR	CYCLONE RATED INSECT/ SECURITY SCREENS	CYCLONE RATED INSECT/ SECURITY SCREENS OBSCURE GLAZING
REMARKS:	- HEAVY DUTY DOOR HARDWARE - INTERNAL TURNSNIB WITH ANTI-LOCKOUT ESCAPE LOCK - 'HOLD OPEN' DOOR CLOSER MECHANISM SET AT 110° - PAINT FINISH TO ALL SIDES OF DOOR - 1 OFF DOOR SIGN - 'PRE-PRIMARY CLASSROOM' - REFER TO SPECIFICATIONS FOR GLAZING AND CYCLONE RATED INSECT SCREEN OVER - FULL WEATHER SEAL TO ALL SIDES AND MEETING STILE	- HEAVY DUTY DOOR HARDWARE - FLOOR MOUNTED DOOR STOP - 'HOLD OPEN' DOOR CLOSER MECHANISM SET AT 90° - PAINT FINISH TO ALL SIDES OF DOOR - 1 OFF DOOR SIGN - 'TOILET' - REFER TO SPECIFICATIONS FOR GLAZING - VANDAL PROOF STEEL POWDERCOATED DOOR GRILLE - REFER MECH	- HEAVY DUTY DOOR HARDWARE - INTERNAL TURNSNIB WITH ANTI-LOCKOUT ESCAPE LOCK - OCCUPANCY INDICATOR - FLOOR MOUNTED DOOR STOP - LIFT OFF HINGES FOR EMERGENCY ACCESS - 'HOLD OPEN' DOOR CLOSER MECHANISM SET AT 90° - PAINT FINISH TO ALL SIDES OF DOOR - 1 OFF DOOR SIGN - 'STAFF TOILET' - VANDAL PROOF STEEL POWDERCOATED DOOR GRILLE - REFER MECH	REFER TO SPECIFICATIONS FOR GLAZING, CYCLONE RATED INSECT SCREEN OVER AND WINDOW RATINGS	REFER TO SPECIFICATIONS FOR GLAZING, CYCLONE RATED INSECT SCREEN OVER AND WINDOW RATINGS



03 DETAIL ELEVATION

1:5 / INSTRUCTION PLATE

INSTRUCTIONS TO BE AS DETAILED ABOVE AND ENGRAVED INTO PLATE IN ISONORM TYPE

NO	REVISION	DATE	BY
0	ISSUE FOR TENDER	13.04.17	IPH

DOCUMENTATION BY: **iredale pedersen hook** architects

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Government of **Western Australia**
Department of **Finance**

Building Management and Works

FOR TENDER

TRANSPORTABLE SCHOOL BUILDINGS
WESTERN AUSTRALIA

24x PRE PRIMARY CLASSROOMS & 20x SHEDS

PRE PRIMARY PLANS AND DOOR / WINDOW SCHEDULE

DRAWN	IPH	DESIGNED	AI	REDUCTION 0 1250
CHECKED	AI	PRINCIPAL	ADRIAN IREDALE	
APPROVED	AI			
SCALE 1:50 @A1 1:100 @A3		DATE	APRIL 2017	DRAWING No. A 2.01 /0
DF PROJ No. 14343		DF FILE No. 2017/01627		

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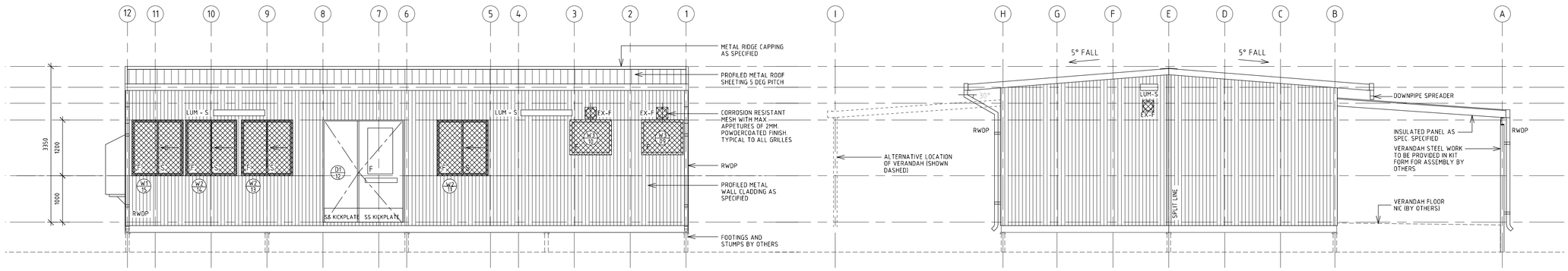
SP RECEIVED 7 MAY 2019

NOTES

1.THE VERANDAH IS TO BE FABRICATED TO ALLOW FOR ATTACHMENT TO TRANSPORTABLE IN EACH ALTERNATIVE LOCATION AS SHOWN ON THE DRAWINGS
2. LOCATION OF TRANSPORTABLE ONSITE & SITE WORKS IS NOT IN SCOPE OF WORKS
3. REFER TO DOOR & HARDWARE SCHEDULE FOR EXTENT OF THRESHOLD PLATES & HARDWARE
4. THIS TRANSPORTABLE BUILDING HAS BEEN DESIGNED TO BAL-19

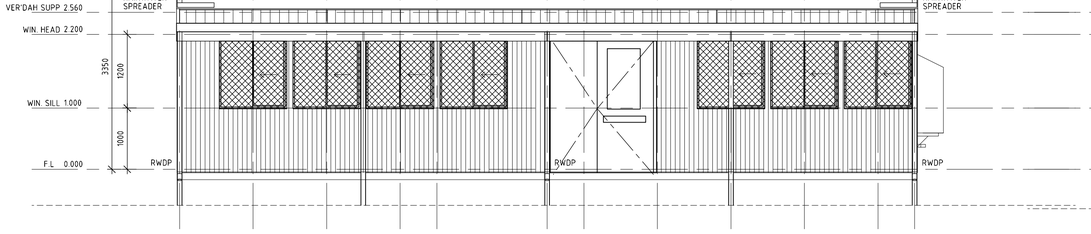
LEGEND

P.L	PLATE LEVEL	GR1	GRAB RAIL TYPE 1
F.L	FLOOR LEVEL	LS	LIGHT SWITCH
G.L	GROUND LEVEL	LUM-S	LUMINAIRE - SECURITY
AP	ACCESS PANEL	NIC	NOT IN CONTRACT
ACC	AIR CON CONTROL	PB	PINBOARD
AV	AV WALL PLATE	PM	PARABOLIC MIRROR
DATA	DATA WALL PLATE	PTD	PAPER TOWEL DISPENSER
EF	FIXED WINDOW SASH	RWDP	RAINWATER DOWNPIPE
EFS	EXHAUST FAN SWITCH	S	SLIDING WINDOW SASH
EFSO	FIXED WINDOW SASH	SD	SOAP DISPENSER
F	EXHAUST FAN	SS	STAINLESS STEEL
FB	FIRE BLANKET	TEL	TELEPHONE WALL PLATE
FE	FIRE EXTINGUISHER	TH	THERMOSTAT
FR	FRIDGE (NIC)	TRH	TOILET ROLL HOLDER
FWG	FLOOR WASTE GULLY	U/S	UNDERSIDE
GPO	SINGLE GPO WALL PLATE	USB	USB WALL PLATE
DGPO	DOUBLE GPO WALL PLATE	WB	WHITEBOARD
		VC	VOLUME CONTROL

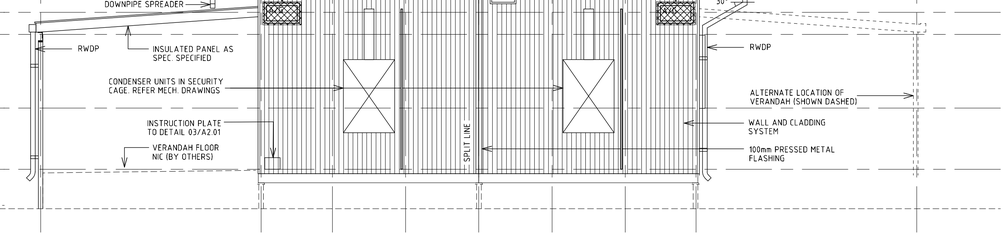


1 A2.01 ELEVATION 1
1:50

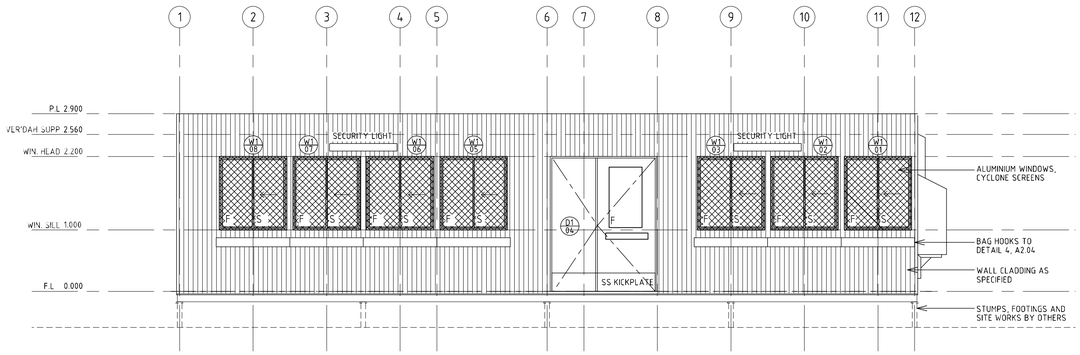
2 A2.01 ELEVATION 2
1:50



3 A2.01 ELEVATION 3
1:50 / INCLUDING PATIO



4 A2.01 ELEVATION 4
1:50



5 A2.01 ELEVATION 5
1:50

NO	REVISION	DATE	BY
0	ISSUE FOR TENDER	13.04.17	IPH

DOCUMENTATION BY: **iredale pedersen hook** architects
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FOR TENDER

TRANSPORTABLE SCHOOL BUILDINGS
WESTERN AUSTRALIA

24x PRE PRIMARY CLASSROOMS & 20x SHEDS

DRAWN	IPH	DESIGNED	AI	REDUCTION	
CHECKED	AI	PRINCIPAL		0 1250	
APPROVED	AI	ADRIAN IREDALE			
SCALE 1: 50 @A1 1: 100 @A3		DATE APRIL 2017		DRAWING No. A 2.02 /0	
DF PROJ No. 14343		DF FILE No. 2017/01627			

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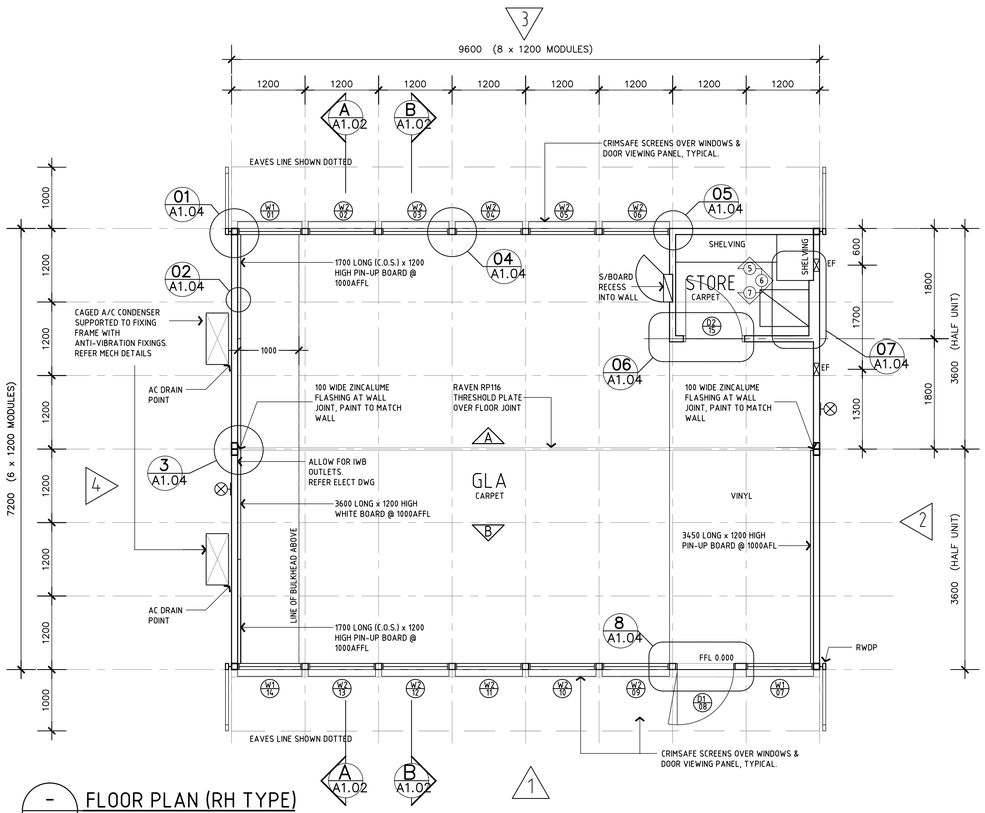
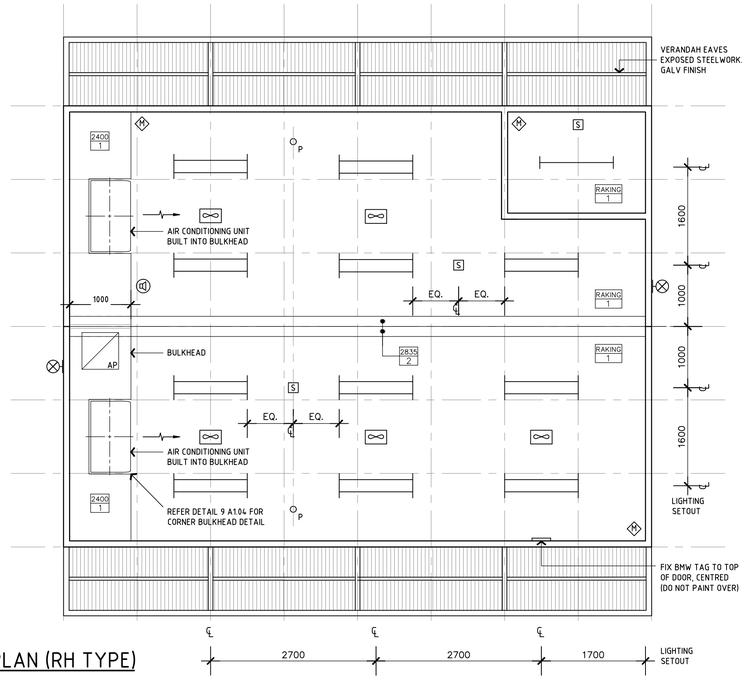


– A1.01 FLOOR PLAN (RH TYPE)
1:50



– A1.01 CEILING PLAN (RH TYPE)
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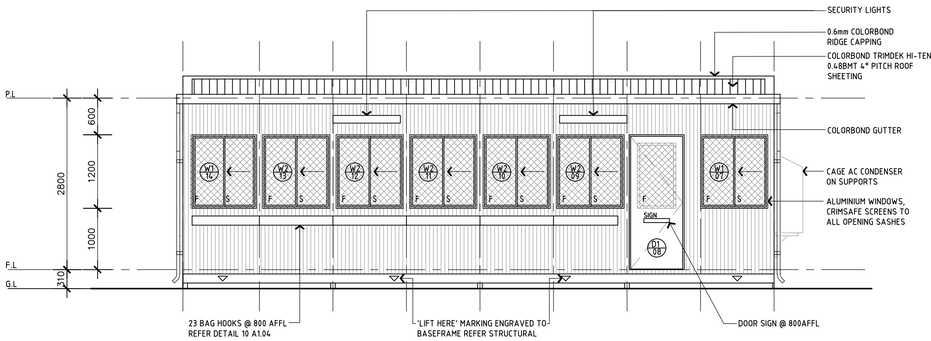
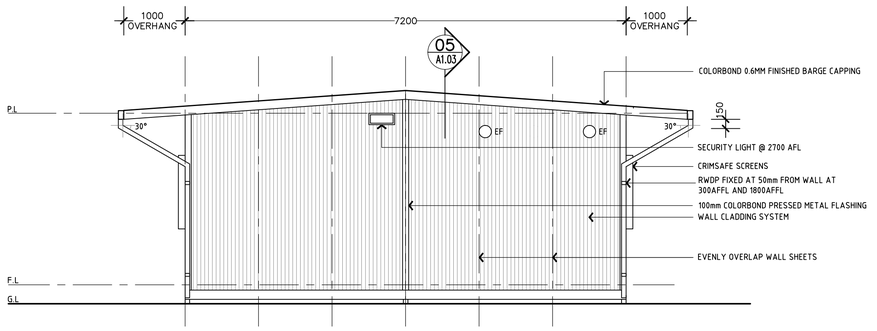


– A1.01 ELEVATION 1 (RH TYPE)
1:50 / SIDE A



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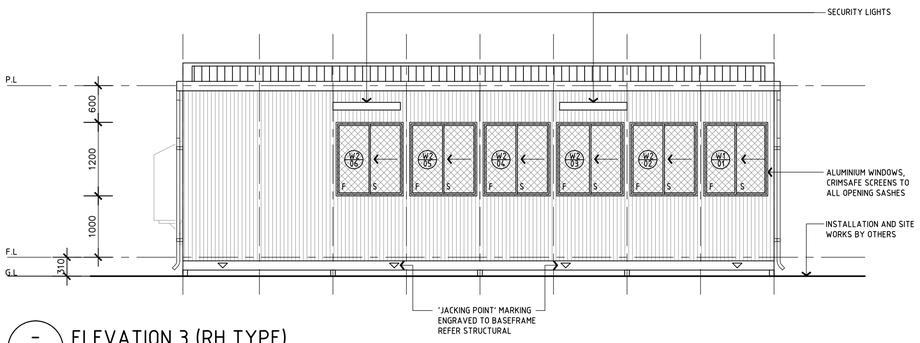

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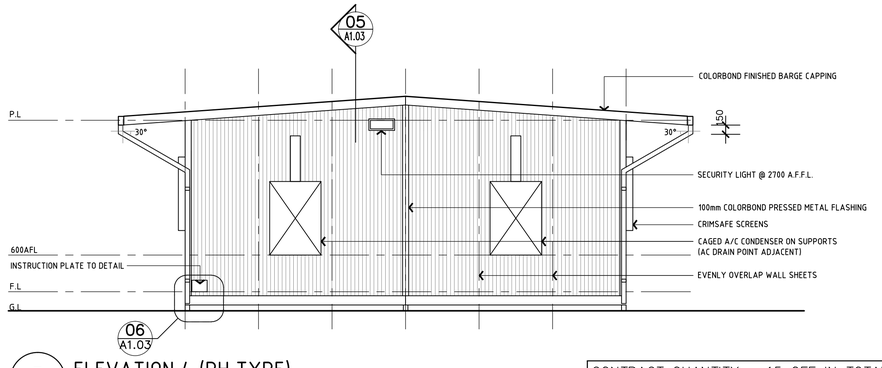
1:50 / SIDE B



– A1.01 ELEVATION 4 (RH TYPE)
1:50

CONTRACT QUANTITY = 15 OFF IN TOTAL	
STANDARD GLA – RIGHT HANDED	8
STANDARD GLA – MIRRORED	7

SP RECEIVED 7 MAY 2019

NOTES

1. LOCATION OF TRANSPORTABLE ONSITE & SITE WORKS IS NOT IN SCOPE OF WORKS

LEGEND

P.L	PLATE LEVEL
F.L	FLOOR LEVEL
G.L	GROUND LEVEL

AP	ACCESS PANEL	PM	ADJUSTABLE 300Φ PARABOLIC MIRROR FIXED AT HIGH LEVEL
ACC	AIR CON CONTROL		
AV	AV WALL PLATE	PTD	PAPER TOWEL DISPENSER
DATA	DATA WALL PLATE	RWDP	HDG PAINT FINISH STEEL DOWNPIPE FIXED TO STRUCTURE
EFS	EXHAUST FAN SWITCH		
EFSO	EXHAUST FAN SWITCH OVERRIDE	S	SLIDING WINDOW SASH
EF	EXHAUST FAN	SD	SOAP DISPENSER
F	FIXED WINDOW SASH	SS	STAINLESS STEEL
FR	FRIDGE (NIC)	TEL	TELEPHONE WALL PLATE
FS	FAN SWITCH	TH	THERMOSTAT
FWG	FLOOR WASTE GULLY	TRH	TOILET ROLL HOLDER
GPO	SINGLE GPO WALL PLATE	U/S	UNDERSIDE
DGPO	DOUBLE GPO WALL PLATE	USB	USB WALL PLATE
LS	LIGHT SWITCH	WB	WHITEBOARD
NIC	NOT IN CONTRACT	VC	VOLUME CONTROL
PB	PINBOARD		

CEILING LEGEND

1	10mm PLASTERBOARD WITH 'H' MOULD AT JOINTS WITH 75mm R1.5MIN GLASSWOOL INSULATION OVER		SURFACE MOUNTED EXTERNAL SECURITY LUMINAIRE
			SPEAKER
2	UNDERSIDE OF BEAM	T	THERMOSTAT
AP	CEILING ACCESS PANEL LOCKABLE 600x600mm WITH DROP CHAIN	S	PROVIDE CONDUIT AND DRAWWIRE FOR SMOKE DETECTOR, AND ENGRAVED BLANK PLATE OVER FIT OFF 'SMOKE DETECTOR'
	WHITE CEILING FANS WITH CLEAR POLYCARBONATE BLADES		TWI N SURFACE MOUNTED LUMINAIRE WITH PRISMATIC DIFFUSER
M	MOTION SENSOR		SINGLE SURFACE MOUNTED LUMINAIRE WITH PRISMATIC DIFFUSER
P	DAYLIGHT SENSOR		

Rev	Date	Issued To
1	19.11.12	ISSUED FOR TENDER

Rev	Date	Description
1	19.11.12	TENDER ISSUE

TENDER

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Government of Western Australia
Department of Finance
Building Management and Works

TRANSPORTABLE SCHOOL BUILDINGS
STANDARD GLA CLASSROOM
FLOOR & CEILING PLAN, ELEVATIONS

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Our Ref: 20.2018.204.1 –D19/87981

Your Ref:

Enquiries to: Mr Neels Pretorius

31st May 2019

Ms Sandra McLeish
Building Management and Works
Department of Finance
Locked Bag 44
CLOISTERS SQUARE WA 6850

Dear Sir/Madam

Re: Proposed Educational Establishment (Baldivis South Primary School) - Lot 9010 Sixty Eight Road, Baldivis

I refer to the above application referred to the DAP Secretariat on the 6th May 2019. The City supports the proposed development subject to the following conditions:

Conditions

1. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures shall be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.

2. The preparation, approval and implementation of a Construction Management Plan to address traffic management, the storage of construction materials, waste management and suppression of dust to the satisfaction of the City of Rockingham.

3. Prior to the commencement of works, Engineering Drawings are to be submitted for assessment and approval for the streetscape works required within the verges adjacent to the school site.

4. Any damage to existing City infrastructure within the road reservation including kerb, road pavement, and footpaths is to be repaired to the satisfaction of the City, Manager Land and Development Infrastructure at the cost of the applicant.

5. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site and those plans must be submitted to the City of Rockingham for its approval. All stormwater generated by the development must be managed in accordance with Planning Policy 3.4.3 - Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.

6. Prior to applying for a Building Permit, a Landscaping Plan must be prepared and include the following detail, to the satisfaction of the City of Rockingham:

   (i) The location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
   (ii) Any lawns to be established and areas to be mulched;
   (iii) Any natural landscape areas to be retained;
   (iv) Those areas to be reticulated or irrigated;
   (v) Shade trees in off-street car parks at a rate of one (1) tree to be provided for every four (4) parking bays;
   (vi) Treatment of street verge areas that abutting the site (from the back of the road kerb to the property boundary – including the footpath); and
   (vii) Colour and materials of the proposed verge paving.

   The landscaping must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham.

7. The carpark(s) must:

   (i) prior to applying for a Building Permit, be designed in accordance with User Class 3 of the Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking unless otherwise specified by this approval;
   (ii) include a minimum of two (2) car parking space(s) dedicated to people with disabilities designed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities, linked to the main entrance of the development by a continuous accessible path of travel designed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
   (iii) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter;
   (iv) have lighting installed, prior to the occupation of the development; and
   (v) confine all illumination to the land in accordance with the requirements of Australian Standard AS 4282—1997, Control of the obtrusive effects of outdoor lighting, at all times.

   The car park(s) must be constructed in accordance with the above requirements prior to occupation of the development and maintained in good working order for the duration of the development.

8. Prior to applying for a Building Permit, detailed plans and specifications must be submitted to and approved by the City of Rockingham for on-street car parking spaces within the adjacent road reserves.

   The car parking spaces must:

   (i) be designed, constructed, sealed, kerbed, drained and marked in accordance with Australian Standard AS 2890.5—1993, Parking facilities, Part 5: On-street parking; and
   (ii) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and comply with the above requirements for the duration of the development.

9. Prior to applying for a Building Permit, a revised Transport Impact Assessment (TIA) is to be provided demonstrating satisfactory performance of surrounding intersections and road networks, swept path analysis for commercial vehicles, safe locations for school crossings (especially across Nairn Drive), justification for assumptions made and correcting the information provided within the original TIA to the satisfaction of the City of Rockingham.

10. The proposed crossovers are to be designed and constructed in accordance with the City's *Specification for the Construction of Commercial Crossovers*.

11. Prior to applying for a Building Permit, engineering drawings and specifications are to be submitted and approved for the construction of full earthworks, carriageways, shared path(s), drainage facilities and pedestrian crossing(s) required for the proposed roads abutting the subject site.

    The works must be completed prior to the occupation of the development.

12. Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:

    (i) the location of bin storage areas and bin collection areas;
    (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
    (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
    (iv) frequency of bin collections.

    All works must be carried out in accordance with the Waste Management Plan, for the duration of development and maintained at all times.

Advice Notes:

1. With respect to the landscaping plan, the applicant should liaise with the City of Rockingham's Land and Development Infrastructure Services to confirm requirements for landscaping plans. Planting adjacent to all footpaths should be set back to allow for mature plant growth and not overhang footpaths cause a tripping hazard or requiring continuous pruning.

   It is recommended that that the proposed paving ties in with existing colour theme of Parkland Heights Subdivision Estate aesthetic.

   Given the Department of Education's position regarding the maintenance of the street verge area abutting the school site, a durable, low maintenance treatment such as paving and irrigated street trees in tree wells with staking and treatment around the tree (e.g. permeable paving or similar supported treatment) is recommended for verge areas.

2. It is recommended that a dilapidation report is prepared prior to commencing work to demonstrate existing condition of infrastructure.

3. The development must comply with the Food Act 2008, the Food Safety Standards and Chapter 3 of the Australian New Zealand Food Standards Code (Australia Only); the applicant and owner should liaise with the City's Health Services in this regard.

Please note that the application is exempt from requiring Development Approval under the *City of Rockingham Town Planning Scheme No.2*.

Should you have any enquiries with respect to this advice, please contact Mr Neels Pretorius on 9527 0763.

Yours faithfully

G DELAHUNTY
SENIOR PROJECTS OFFICER

cc. Oldfield Knott Architects Pty Ltd Email: hgill@okarch.com.au
Grady O'Brien (GHD): Email: grady.obrien@ghd.com

OLDFIELD KNOTT

BALDIVIS PRIMARY SCHOOL

TRAFFIC, PARKING AND ROAD SAFETY ASSESSMENT

JUNE 2019

Riley Consulting

PO Box Z5578

Perth WA 6831

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Issued on	28 June 2019	Amendments	Date
Version	V3	V1a Plan amended	20/3/19
		V2 Plan updated / parking numbers	30/4/19
Reference	1010	V3 Updated for JDAP	28-06-19

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1.0 EXECUTIVE SUMMARY

This report has been commissioned through Oldfield Knott Architects on behalf of the Department of Education to consider the proposed development of a primary school in Baldivis, City of Rockingham. This traffic report was based on 2011 structure plan traffic information provided by the City of Rockingham. The City recently provided a 2018 structure plan traffic report and thus report has been updated.

The pertinent findings of this report are set out below:

- The proposed Baldivis South primary school is to provide for a total of up to 643 students. Structure planning of the district is cognisant of the proposed school and includes for a school of 400 students.
- This traffic report assesses the forecast traffic movements of the school added to the structure plan traffic demands and therefore will double count the potential school traffic. This will add a level of robustness to the report findings.
- Assessment of the traffic attraction associated with the proposed school is shown to have no significant impact to the local road network. Forecast traffic flows are relatively low and all local intersections will operate with little delay and very good Levels of Service during the school peak periods. Sidra analysis has been undertaken that confirms the findings of the previous traffic report.
- An appropriate level of parking is provided for the school.
- As the locality is a new suburb all local roads have been designed cognisant of the proposed school and appropriate traffic management has already been constructed. Good access for traffic, pedestrians and cyclists is provided to the school.
- However, the location of Road 1 is considered to be too close to the Nairn Drive roundabout and raises a road safety concern. As the civil design has been approved by the City of Rockingham it is for that authority to address.
- Acceptable visibility is provided at intersections and pedestrian crossing points as per the approved civil design plans (City of Rockingham).
- There are no reasons to indicate that the school will not operate in an acceptable manner.

2.0 ISSUES RAISED DURING THE ASSESSMENT PERIOD

The City of Rockingham has raised some issues in regard to the traffic report which have been addressed as follows:

Amendment (Transcore, dated December 2018) has modelled the future primary school to have a maximum capacity of 400 students instead of what is assumed in the TIA (i.e. 430 students). Please amend the report accordingly.

The reduced number is noted. The reduction make no difference to the report findings as the school traffic is added to the structure plan forecasts.

Section 1 mentioned "Forecast traffic flows are relatively low and all local intersections will operate with little delay and good Levels of Service during the school peak periods". Intersection analysis by using a traffic software (eg. SIDRA) would be required to demonstrate that that the intersections and access points will perform satisfactorily. It should be noted that the reference used (i.e. Austroads' Guide to Traffic Engineering Practice Part 5 Table 4.1 and 5.5) to justify that no intersection analysis is required has been superseded therefore is considered to be not acceptable. Please provide the requested intersection analysis.

Intersection analysis for the following minimum locations are required to demonstrate that the proposed intersections/access points will perform satisfactorily;

- *Nairn Drive/Furnivall Parade (LDI has conducted a preliminary analysis which suggests that this intersection would exceed the "practical degrees of saturation" limit as recommended in Austroads' Guide to Traffic Management Part 3: Traffic Studies and Analysis therefore suggesting that the intersection would not be able to cater for the peak hour traffic flow);*
- *Nairn Drive/Baroness Road;*
- *Road 1/Furnivall Parade;*
- *Road 1/Road 2;*
- *Road 2/Regency Avenue;*
- *Road 2/Baroness Road;*
- *Western Access/Road 1;*
- *Eastern Access/Road 2;*
- *Northern Access/Road 23.*

Whilst the opinion of the City is not supported, Sidra analysis of intersections is provided.

The Transport Impact Assessment for the Parkland Heights Neighbourhood Centre LSP Amendment (Transcore, dated December 2018) has classified Nairn Drive to be an "Integrator B" between Furnivall Parade and Eighty Road. Please amend Section 2 accordingly.

Updated

The future daily traffic volumes shown within the Transport Impact Assessment for the Parkland Heights Neighbourhood Centre LSP Amendment (Transcore, dated December 2018) supersedes the structure plan traffic forecast that was included in Appendix A. Please revise report accordingly.

Updated

Nairn Drive is expected to have a posted speed limit of 60 km/hr between Furnivall Parade and Eighty Road (i.e. near the neighbourhood centre) and 70 km/hr outside of these areas. Please amend Section 2 accordingly.

Updated

Please note that a traffic signal controlled pedestrian crossing is proposed to be located somewhere close to the midblock of Nairn Drive between the two roundabouts near the neighbourhood centre however this would be dependent on pedestrian demand and MRWA's approval.

Noted

Austroads has mentioned that their Guide to Traffic Engineering Practice Part 2 and 3 has been superseded by their Guide to Traffic Management Part 3 (Traffic Studies and Analysis). Austroads specifically mentioned that superseded versions shall not be used. This suggests that Appendix B would no longer be applicable therefore please remove it and any other references to this information within the TIA.

Updated

The Transport Impact Assessment for the Parkland Heights Neighbourhood Centre LSP Amendment (Transcore, dated December 2018) has classified Road 1 to be an "Access Street B". Please amend Section 2 accordingly.

Updated

Please update Figure 2 to shown the currently approved Local Structure Plan because what is shown is an outdated version.

Updated

Please adopt a peak hour trip generation rate of 1 vehicle trip per student as per recommendation from WAPC's Transport Impact Assessment Guidelines Volume 5 (Technical Guidance), otherwise peak hour survey data and its analysis is required.

Updated

Please provide justification for adopting the trip distribution in Section 3 it is the Cities view that more traffic should be associated to the north and east instead of what is assumed in the TIA (i.e. north and west).

The distribution is based on population and future dwellings and is cognizant of other primary school catchments.

Please include Road 1 and 23 in the road capacity assessment in Table 1.

The TIA mentioned "As a new residential suburb all roads have been designed cognizant of the future traffic demands and the needs of local developments. No formal analysis is

required for intersections within a new subdivision, but a review of the accesses and critical intersections is undertaken". The City disagrees with this statement because critical intersections relevant to a proposed development is required to be analysed to demonstrate that they would have satisfactory level of service. This is especially true when heavy traffic peak hour volumes is expected from the primary school.

Sidra analysis included

Commercial vehicles will enter the western car parking area (Access to Road 1) therefore sight distance is to be provided in accordance with AS2890.2 (i.e. 69m). It should be noted that preliminary analysis suggests that adopting a 69m sight distance would reduce the number of on-street car parking bays by four (4).

Commercial vehicles would not access the school during peak times and deleting parking bays would therefore not be warranted.

Section 5 mentioned "It has been calculated that under good operating conditions sign short stay bays can accommodate 2 vehicles every 5 minutes". The City disagrees with this statement because parents are likely to stop for longer periods whilst waiting for their children. A 15 minute stopping restriction may be more reasonable.

This has been applied to many primary schools in Perth and has not been disputed. This period only applies to drop off only bays. It is acknowledged that parents often want to stay and chat and can do so in bays not marked as drop off.

Section 5 mentioned "It is unrealistic to provide sufficient car parking for all parents to park in close proximity to the school during the afternoon pick up period. In recognition of this matter, the Schools Taskforce was prepared to provide a guide to what is considered to be an acceptable level of parking. The parking provided for the school meets this advice". Please provide this guide to the City for assessment.

Refer to the DoE primary schools brief.

Section 5 mentioned that a dedicated bus embayment is not warranted and staff would be using traffic cones to designate a location for bus parking (i.e. on-street bays along Furnivall Parade). The width requirement for a bus embayment is different from a standard vehicle (i.e 3m wide instead of 2.6m). This must be allowed for in the design of the on-street bays along Furnivall Parade should it be used as bus embayment in such temporary cases.

Noted. However, it should be noted that PTA will only allow an embayment on roads >80kph and thus the depth of the embayment is wider to enable access at higher speeds. Normally 2.6m is used for bus bays. However, 6 bays in Furnivall Parade are provided to a width of 2.7 metres to allow for bus use.

Austroads' Guide to Road Design Part 4A (Unsignalised and Signalised Intersections) requires an Approach Sight Distance and Crossing Sight Distance of 55m and 83m respectively. Please amend Section 7 accordingly.

Noted. The on-street parking has already been designed and approved by others.

Check the turning movements provided in Appendix D because some traffic flows does not appear to be correct (eg. the sum of turning movements at an approach does not match with turning movements from the upstream intersection).

Appendix D has been updated.

Staged construction of Nairn Drive has not been considered (i.e. when the school opens, it will only have access from the roundabout at Nairn Drive/Furnivall Parade).

The school will not have its full compliment of students at opening. Further, the roundabout can be expected to operate in an acceptable manner with significantly reduced regional traffic demands.

Demonstrate how school crossings are to be provided along Nairn Drive.

Outside of the scope of the school.

The two access points off the north-south road along the western boundary allows entering and exiting the car park at the same location. Please consider restricting the access point to allow only one-way traffic flow within the car park.

The PPK car park will operate as a normal car park as parents will walk their children ion to the school. There is no requirement to introduce one-way operation.

It is noted in the Transport Impact Assessment that a bus embayment is not required and the proposed on-street bays would be used when the need arises. Please ensure that a minimum width of 3m is adopted for the location of where a bus is likely to use the car embayment as means for parking.

Identified above

3.0 THE SITE AND SURROUNDING ROAD NETWORK

Baldivis is a new subdivision roughly bounded by Safety Bay Road to the north, Stakehill Road to the south, Mandurah Road to the east and the Kwinana Freeway to the east (the suburb does extend east of the Freeway). The suburb is located approximately 43km south of Perth CBD in the local government area of the City of Rockingham. Figure 1 shows the location of the proposed school (Google Maps).

The locality of Baldivis has been structure planned and local streets should be developed in accordance with the *Liveable Neighbourhood's* guidelines. All roads surrounding the school site are yet to be constructed and developed. Future local roads are discussed below.

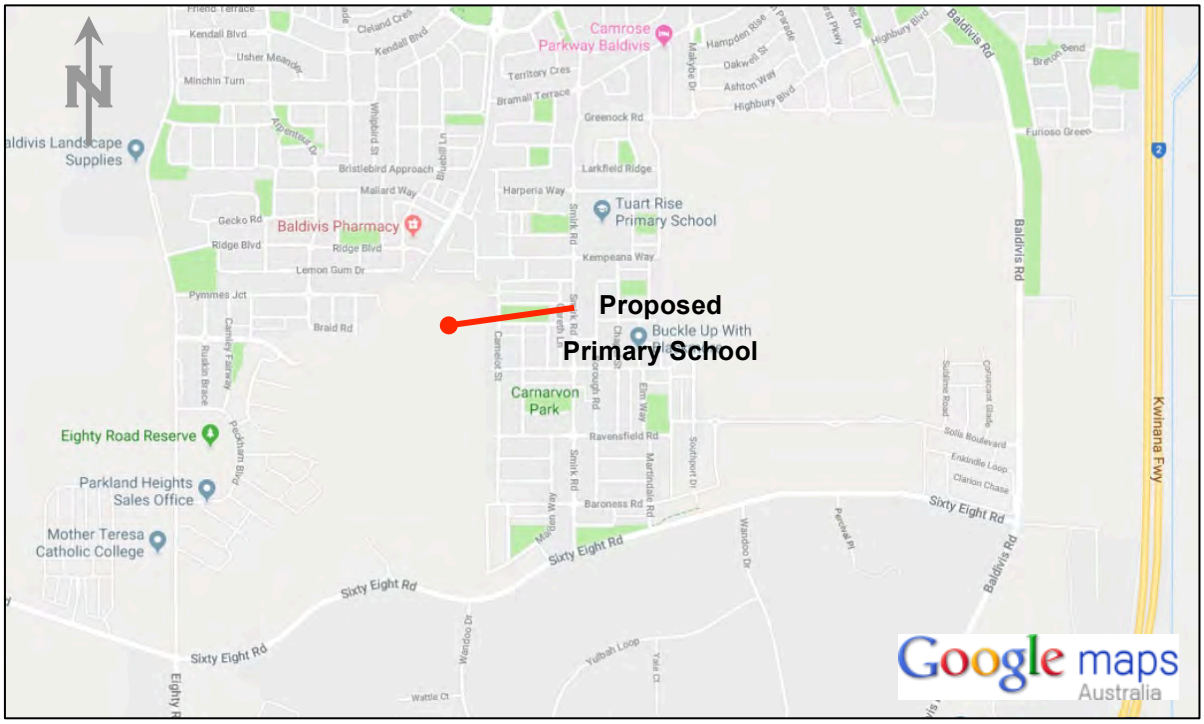


Figure 1 Site Location

Nairn Drive

Nairn Drive is classified as an integrator B in the Local Structure Plan (LSP) and is constructed as a four lane divided road. Its intersections with Furnival Parade and Baroness Road will be provided with roundabouts. The LSP forecasts 14,400 vehicles per day (vpd) north of Furnival Parade and 12,100vpd south of Baroness Avenue (refer Appendix A).

A traffic speed of 70kph is proposed on Nairn Drive with the road cross section currently constructed. It is understood that a 60kph speed zone will be provided adjacent to the commercial section south of Furnival Parade (between the two roundabouts) and a traffic signal controlled pedestrian crossing may be installed. It is expected that the limit would not be adhered to on this section of Nairn Drive and higher traffic speeds should be anticipated. The provision of signalled pedestrian crossing facilities will be beneficial but will require appropriate advance signing. Further it is doubted that MRWA will approve of such a crossing as the pedestrian crossing warrants are unlikely to be met.

Nairn Drive as a four-lane road would have capacity to pass 40.500vpd operating at Level of Service D (refer Appendix B).

Furnival Parade / Regency Avenue (Road 23)

Furnival Parade / Regency Avenue is classified as a neighbourhood connector type B road in the LSP (referred to as Road 23 in the civil design plans). Reference to the LSP indicates a forecast volume of 2,300vpd adjacent to Nairn Drive reducing to 1,700 adjacent to the school and 1,400vpd east of the Road 2 roundabout.

The construction plans provided by the civil engineer indicate (Road 23) will be constructed as a boulevard from Nain Drive to the proposed roundabout with Road 2. As a boulevard style road, Furnival Parade would be able to pass 15,000vpd operating at Level of Service D. However, as a neighbourhood connector type B a limit of 3,000vpd is set out under Liveable Neighbourhoods.

Regency Avenue is constructed within the Dales Estate a few hundred metres east of the school site. Present construction is a single 7.4 metre pavement within a 25 metre road reservation. It would have capacity to pass 13,500vpd at Level of Service D. As Furnival Parade, a limit of 3,000vpd is identified under Liveable Neighbourhoods.

Furnival Parade / Regency Avenue will be subject to the urban residential area 50kph posted speed limit, but is included within the 40kph school zone.

Road 1

Road 1 is classified as an access street B and provides a north-south access to the western boundary of the proposed school. It will also provide access to the rear of the commercial

centre fronting Nairn Drive. The LSP traffic report shows a forecast of 700vpd. The civil construction plans indicate a 6 metre pavement in an 18 metre road reservation.

The commercial zone between Road 1 and Nairn Drive is not constructed and no indication of end uses is known. It is unclear if access to the commercial area would be provided to/from Nairn Drive. If no access is provided to Nairn Drive, significant levels of traffic could be attracted to Road 1. This should be reviewed by the traffic report to support development of the commercial centre.

The primary school is expected to attract peak movements during the morning when many commercial uses would not be open. Assuming fast food style uses, which would have the largest traffic attraction, the peak attraction is unlikely to coincide with the use of the primary school. The commercial uses are not considered to present a traffic issue for the proposed school.

As a result of the City of Rockingham's request that Sidra analysis be undertaken for the school it has come to light that the intersection of Road 1 is located 35 metres from the Nairn Drive roundabout hold line. Liveable Neighbourhoods suggests a minimum separation of >40metres between intersections on neighbourhood connectors. However, of more concern is the likely high speed departure from the Nairn Drive dual lane roundabout and the potential for rear end crashes occurring with parents turning right to Road 1 to access the kindergarten and pre-primary car park. This is a mater to be considered by the City of Rockingham.

Road 2

Road 2 is classified as an access street B in the LSP and provides a north-south link to the eastern boundary of the proposed school. It is shown to carry 500vpd south of Furnival Parade reducing to 300vpd south of the school site. The civil construction plans indicate a 7.4 metre pavement in a 20 metre road reservation. It would have capacity to pass 13,500vpd at Level of Service D, but would be limited to 3,000vpd under Liveable Neighbourhoods.

Road 2 will be subject to the urban residential area 50kph posted speed limit, but is included within the 40kph school zone.

Baroness Road

Baroness Road lies to the south of the school site and provides an east-west link between Nairn Drive and existing residential development. It is classified as an access road type C/D in the LSP. To the east of Road 2 it has a forecast demand of 1,000vpd.

Between Road 2 and Nairn Drive it is shown as neighbourhood connector type B and has a forecast demand of 2,700vpd. It is unusual for a continuous east-west link to change its classification.

Civil construction plans are not available for Baroness Road, but it is shown to provide a roundabout connection to Nairn Drive and would be assumed to have a similar road reservation as Furnival Parade.

Sixty Eight Road

Sixty Eight Road lies to the south of the LSP area and provides an east-west connection between Mandurah Road and Baldivis Road. A roundabout is shown to be provided at its intersection with Nairn Drive. Land to the south of Sixty Eight Road is more rural in nature and the attraction to the school is expected to be low.

LSP

Figure 2 shows the approved Local Structure Plan clearly indicating the location of the proposed primary school.

The Proposed Primary School

The brief for Baldivis South Primary School identifies a requirement for a primary school to provide for 430 students. However, as Baldivis is a new and growing suburb a greater capacity is provided with the use of transportable classrooms. Therefore this traffic report considers the impact of providing for the maximum occupancy of the school.

Advice from the architect indicates that 8 transportable classrooms could be accommodated and could provide for 643 students as follows:

- 60 kindergarten
- 106 pre-primary
- 477 primary children

The architects' plan for the school is shown as Figure 3 and is used for the purpose of this report.

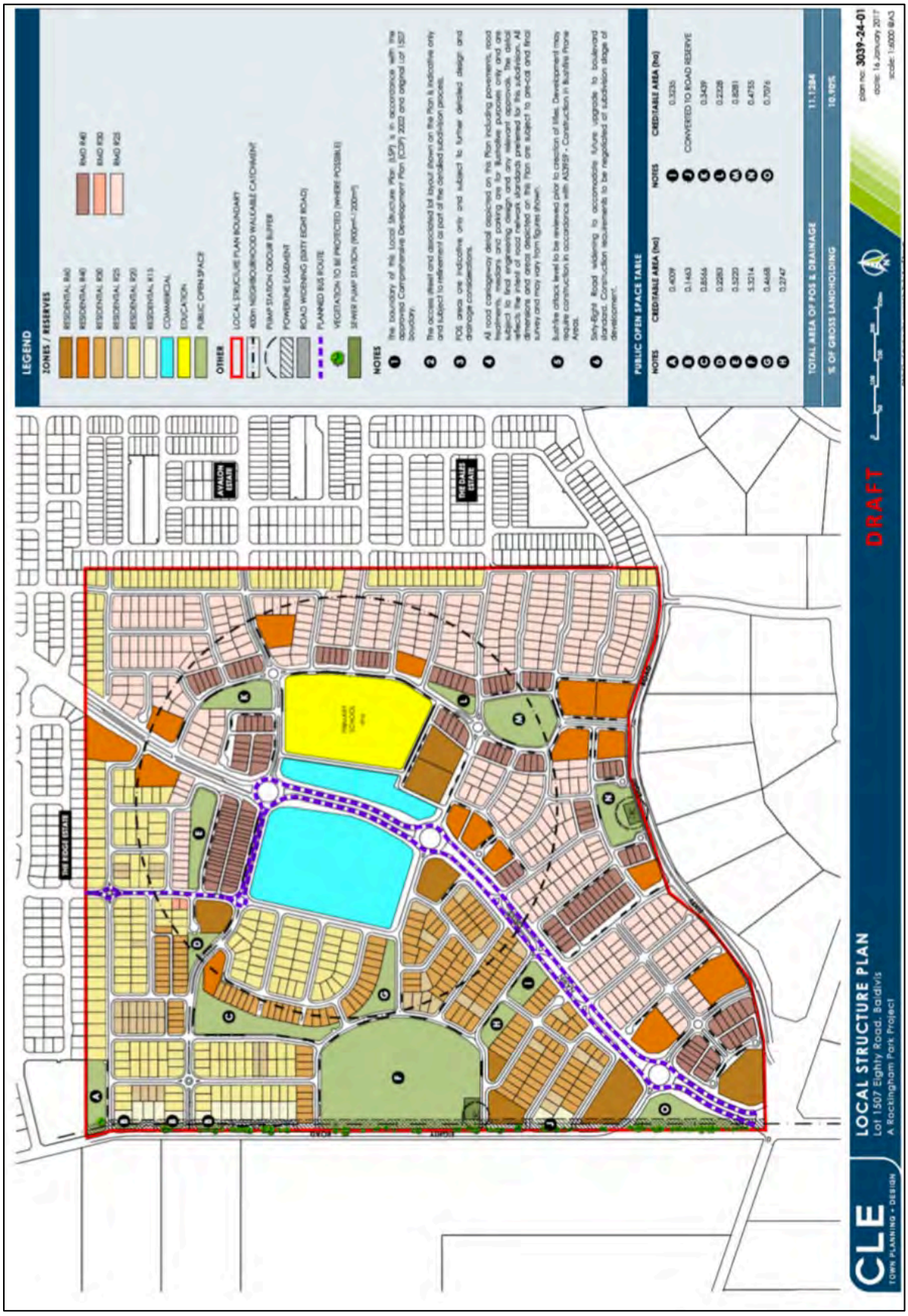


Figure 2 Local Structure Plan

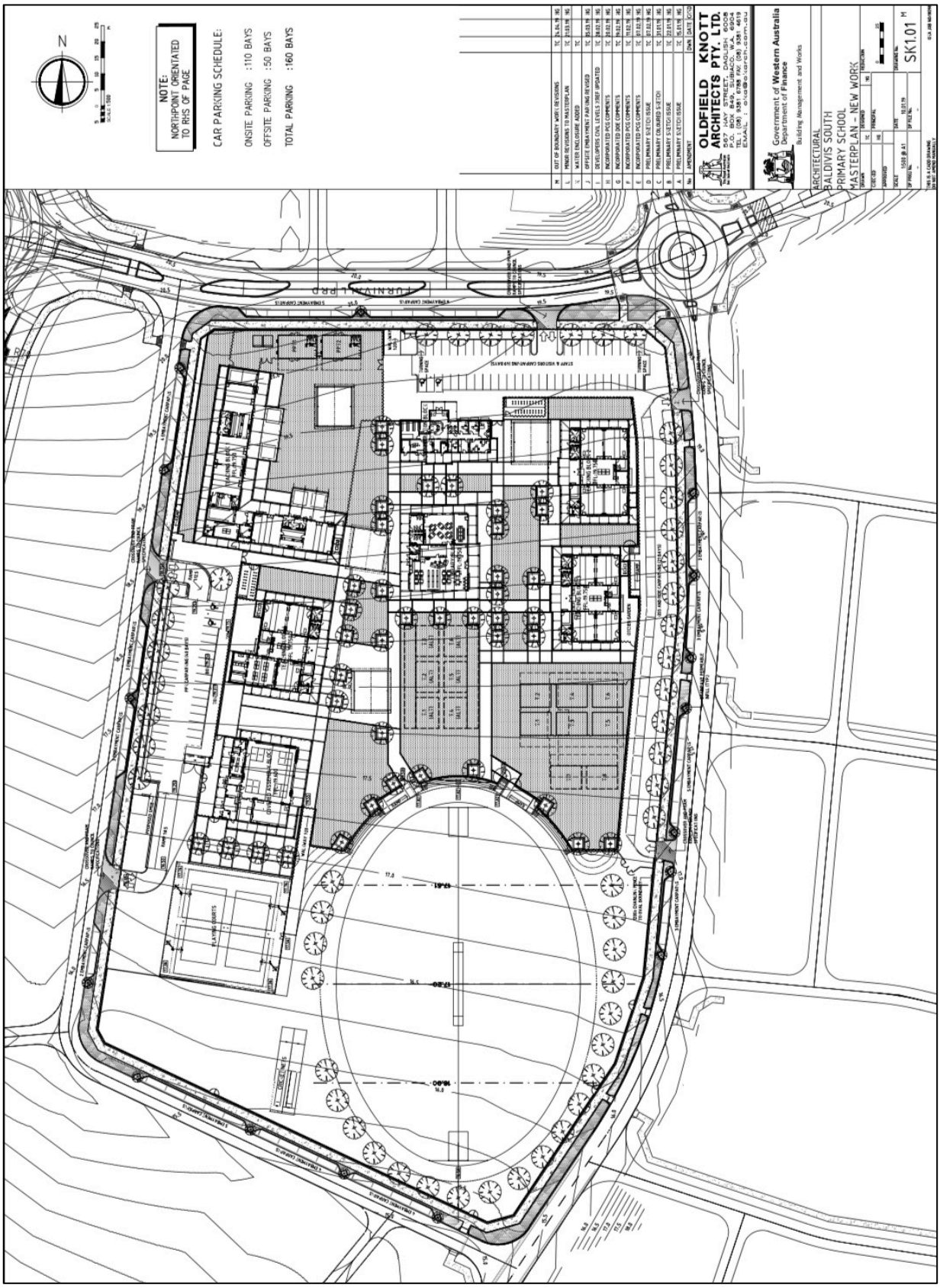


Figure 3 Proposed Primary School Layout (refer to Architect for detail)

4.0 TRAFFIC MOVEMENT AND MANAGEMENT

Baldivis South primary school is planned for a maximum capacity of 643 students. The student breakdown used in this traffic report is:

- 60 kindergarten
- 106 pre-primary
- 477 primary children

Daily Traffic Generation

Reference to the School's Brief identifies for new schools, a trip rate of 2.6 trips per student per day should be used (and includes staff trips). It can be expected that the primary school could be expected to attract up to (643 x 2.6) = 1,672 trips per day.

The school may attract up to 1,672 trips per day

The local structure plan has included the development of a primary school based on 400 students and a trip rate of 1.5 trips per student per day. Thus, the structure plan has (400 x 1.5) 600 primary school trips already using the local road network. It can be seen therefore that the proposed primary school will increase forecast traffic demands by (1,672 – 600) 1,072 vehicle movements per day.

For the purpose of providing a robust assessment of the surrounding road network, the forecast traffic associated with the proposed school is added to the structure plan traffic demands. Whilst this includes an amount of double counting, it will tend to assess higher traffic demands than expected.

Peak Traffic Generation

Peak period surveys have been undertaken of primary schools throughout the Metropolitan area to derive the typical morning peak period profile, the busiest period in terms of traffic movements. The surveys show that 38.5% of the daily flow occurs between 07:45 and 09:15. The peak attraction is equivalent to about 1 trip per child.

During the morning peak period, staff will arrive at the school and not leave until after the school has finished for the day. This indicates that between 07:45 and 09:15 approximately 55% of traffic arrives to the school and 45% departs. During this period the school can be expected to generate 643 vehicle movements.

Morning Peak Hour Traffic Generation

During the road network peak period, traditionally between 8am and 9am, the primary school can be expected to generate 85% of the peak demand (7:45 to 9:15) indicating a demand of 545 vehicle movements. Staff can be anticipated to have arrived by 8am and thus the split would be assumed 50% arrive and 50% leave, however, this will vary as some staff may arrive later.

At the request of the City of Rockingham a peak trip rate of 1 trip per child is used.

During the traditional morning peak period 643 vehicles movements are forecast

Distribution

The traffic attraction to the primary school will be from local residential development. The majority of student demand will be from the north as land south of Sixty Eight Road is more rural residential in nature and established. The following attraction is used for the purpose of this report.

- Nairn Drive North 30%
- Nairn Drive South 15%
- Furnival Parade (west) 20%
- Regency Avenue (east) 15%
- Baroness Road (east) 2%
- Road 2 (south) 8%
- Baroness Road (west) 10%

The forecast daily traffic movements associated with Baldivis South primary school are shown in Appendix C and the peak hour trips shown in Appendix D.

It is noted that the City of Rockingham considers that more traffic will be drawn from the east and north. However, there are two primary schools to the north of the subject site and east of Nairn Drive. The school attraction will therefore be less where other school catchments occur.

Impact to Structure Planning

Table 1 considers the derived daily traffic flows associated with the school (shown in Appendix C) and the expected daily flows based on the local structure plan (refer Appendix

A) to determine the forecast flow on local streets. Table 1 also compares the future traffic demand to the desirable flows set by *Liveable Neighbourhoods* (LN).

Table 1 Local Road Operation (Highest Expected Flow)

Street	LSP	School	Forecast	Max Flow
Road 23 west	2,300	944	3,244	3,000
Road 1 north	700	341	1,041	3,000
Road 1 south	300	60	360	3,000
Regency Avenue (east)	1,400	144	1,544	3,000
Road 2 North	500	794	1,294	3,000
Road 2 (south)	300	488	788	3,000
Furnivall Parade (west)	5,900	332	6,232	7,000
Baroness Road (west)	2,000	93	2,093	7,000
Baroness Road (east)	1,000	9	1,009	3,000
Nairn Drive North	16,900	505	17,405	40,000
Nairn Drive South	12,300	330	12,630	40,000

Table 1 demonstrates that the change in traffic attracted to the proposed school will not affect current structure planning for the local road network except Road 23 approaching Nairn Drive. The forecast demand of 3,244vpd is slightly over the Liveable Neighbourhoods threshold of 3,000vpd. However, given the school is double counting 400 students, then the actual increase will only be 40% of that shown in Table 1, or about 380vpd. On this basis Road 23 would carry about 2,680vpd and would continue to operate as intended within the LSP.

All roads will operate with flows appropriate to their classification.

Peak Hour Traffic Movements

The morning peak hour is the busiest traffic period for a primary school due to the requirement for children to arrive by a specific time. The afternoon peak is more spread out but does result in a higher intensification of parking as parents wait for their children. As a new residential suburb all roads have been designed cognisant of the future traffic demands and the needs of local developments. No formal analysis is required for intersections within a new subdivision, but a review of the accesses and critical intersections is undertaken.

During the morning peak hour some traffic can be expected to drop children off on the way to work, shopping or some other destination. There are no studies to accurately predict this occurrence and on this basis the peak impact is home based. Appendix D shows the expected peak hour (8am to 9am) traffic movements associated with the proposed primary school added to the base traffic demands taken from the Transcore LSP traffic report (2018).

At the request of the City of Rockingham reference to Austroads Table 4.1 and Table 5.5 that identify operational characteristics and where uninterrupted flow conditions exist cannot be made as these Tables are deemed superseded by the City by virtue of not being incorporated in the 2106 versions of Austroads. On this basis Sidra analysis has been provided.

It was identified in the previous traffic report that by reference to the Austroads tables all intersection were shown to operate in an appropriate manner with very good levels of service.

The following Sidra analysis is provided:

1. Nairn Drive / Furnivall Parade / Road 23
2. Nairn Drive / Baroness Road
3. Road 1 / Furnivall Parade (Road 23)
4. Road 1 / Road 2
5. Road 2 / Regency Avenue
6. Road 2 / Baroness Road
7. Western Access / Road 1 (PPK access)
8. Eastern Access / Road 2 (Primary school access)
9. Northern Access / Road 23 (staff car park)

Analysis of the access points is provided in the next section. Appendix E provides the Sidra output files.

1. Nairn Drive / Furnivall Parade / Road 23

Analysis of the Furnivall Parade / Nairn Drive roundabout is provided in Appendix E. The analysis is based on the Sidra traffic flows provided in the Transcore LSP traffic report from 2018. It is noted that the flows shown do not tie with the daily traffic forecast in the same report. The demands used in the Sidra analysis have therefore been factored up to reflect the forecast daily demand. Table 2 shows the Sidra results.

Table 2 Nairn Drive / Furnivall Parade SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Nairn Drive South	0.334	6.8	2.2	LOS A
Furnivall Parade East	0.464	7.8	2.7	LOS A
Nairn Drive North	0.296	5.9	1.9	LOS A
Furnivall Parade West	0.304	5.7	1.5	LOS A
PM Peak				
Nairn Drive South	0.323	7.4	2.0	LOS A
Furnivall Parade East	0.237	7.0	1.0	LOS A
Nairn Drive North	0.326	7.2	2.1	LOS A
Furnivall Parade West	0.315	5.2	1.5	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

2. Nairn Drive / Baroness Road

Analysis of the Nairn Drive / Baroness Road roundabout is provided in Appendix E. The analysis is based on the Sidra traffic flows provided in the Transcore LSP traffic report from 2018. The flows reflect the daily demand and are not altered. Table 3 shows the Sidra results.

Table 3 Nairn Drive / Baroness Road SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Nairn Drive South	0.257	5.8	1.6	LOS A
Baroness Road East	0.247	6.7	1.1	LOS A
Nairn Drive North	0.215	5.2	1.2	LOS A
Baroness Road West	0.150	5.7	0.7	LOS A
PM Peak				
Nairn Drive South	0.236	5.2	1.4	LOS A
Baroness Road East	0.138	7.9	0.6	LOS A
Nairn Drive North	0.263	5.4	1.6	LOS A
Baroness Road West	0.171	6.9	0.7	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

3. Road 1 / Furnivall Parade (Road 23)

Analysis of the Furnivall parade / Road 1 intersection is provided in Appendix E. The analysis is based on the Sidra traffic flows at Nairn Drive provided in the Transcore LSP traffic report from 2018.

The intersection has been modeled as shown in the approved civil design plans. It is noted that this intersection is considered to be too close to the Nairn Drive roundabout and in the opinion of Riley Consulting may lead to a future crash problem occurring. This is a matter for the City of Rockingham to address. Table 4 shows the Sidra results.

Table 4 Furnivall Parade / Road 1 SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Road 1	0.087	4.3	0.3	LOS A
Furnivall Parade East	0.112	0.2	0.0	LOS A
Furnivall Parade West	0.171	1.8	0.6	LOS A
PM Peak				
Road 1	0.027	5.0	0.1	LOS A
Furnivall Parade East	0.064	0.3	0.0	LOS A
Furnivall Parade West	0.075	0.8	0.2	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

4. Road 1 / Road 2

Analysis of the Road 1 / Road 2 intersection is based on 10% of the daily demand distributed 70% in the peak direction (Transcore 2031 forecasts). The forecast school traffic is then added. Table 5 shows the Sidra results.

Table 5 Road 1 / Road 2 SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Road 2 South	0.078	0.8	0.0	LOS A
Road 2 North	0.058	0.3	0.0	LOS A
Road 1	0.025	6.2	0.1	LOS A
PM Peak				
Road 2 South	0.018	0.9	0.0	LOS A
Road 2 North	0.022	0.7	0.0	LOS A
Road 1	0.015	5.6	0.1	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

5. Road 2 / Regency Avenue / Furnivall Parade

Analysis of the Regency Avenue Road 2 roundabout is based on 10% of the daily demand distributed 70% in the peak direction. The forecast school traffic is then added. Table 6 shows the Sidra results.

Table 6 Road 2 / Regency Avenue / Furnivall Parade SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Road 2	0.143	2.6	0.8	LOS A
Furnivall Parade East	0.067	5.0	0.3	LOS A
Furnivall Parade West	0.164	6.7	0.9	LOS A
PM Peak				
Road 2	0.008	2.8	0.0	LOS A
Furnivall Parade East	0.053	4.6	0.2	LOS A
Furnivall Parade West	0.084	5.5	0.4	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

6. Road 2 / Baroness Road

Analysis of the Baroness Road / Road 2 roundabout is based on 10% of the daily demand distributed 70% in the peak direction. The forecast school traffic is then added. Table 7 shows the Sidra results.

Table 7 Road 2 / Baroness Road SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Road 2 South	0.058	5.5	0.3	LOS A
Baroness Road East	0.085	5.0	0.4	LOS A
Road 2 North	0.067	8.1	0.3	LOS A
Baroness Road West	0.111	4.5	0.6	LOS A
PM Peak				
Road 2 South	0.047	5.0	0.2	LOS A
Baroness Road East	0.056	4.7	0.3	LOS A
Road 2 North	0.031	5.0	0.1	LOS A
Baroness Road West	0.095	4.5	0.5	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

As indicated in the previous traffic report all local intersection are shown to operate in an appropriate manner as would be expected in a new residential sub-division.

Afternoon Traffic Flows

The afternoon attraction to a school is more spread out as children often leave at different times and the peak movements do not coincide with the commuter peak period. Whilst the hourly flow of traffic is less, the demands for parking will be greater and parking bays will be well utilised.

It has been shown that in the morning peak period of school and road network activity key intersections are shown to operate well within capacity. As a result, minimal delays and excellent Levels of Service can be expected. With lower traffic demands, better Levels of Service would be anticipated in the afternoon.

5.0 ACCESS

Access to the school is provided from Road 2 (primary children) Furnival Parade (staff) and Road 1 (kindergarten and pre-primary).

Access to Road 2

Access to Road 2 is provided at two locations providing an entry access and an exit access. Entry to the car park is provided to the south appropriately located from adjacent side street in compliance with AS2890.1

Sidra analysis attached at Appendix F for both the Kiss and Ride entry and exit access intersections. Appendix F shows the accesses will operate in an acceptable manner with minimal delays. Table 8 shows the Sidra results.

Table 8 Primary School Kiss and Ride Car Park Access to Road 2 SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
South: Road 2	0.022	0.0	0.0	LOS A
North: Road 2 North	0.084	0.0	0.0	LOS A
West: School Primary Exit	0.188	3.5	0.8	LOS A
At School Entry				
South: Road 2 south	0.077	3.9	0.0	LOS A
North: Road 2 North	0.154	3.7	0.8	LOS A
PM Peak				
South: Road 2	0.005	0.0	0.0	LOS A
North: Road 2 North	0.022	0.0	0.0	LOS A
West: School Primary Exit	0.002	3.2	0.0	LOS A
At School Entry				
South: Road 2 south	0.006	0.5	0.0	LOS A
North: Road 2 North	0.023	0.1	0.0	LOS A

Figure 4 shows the access and visibility splays of 45 metres as per AS2890.1 requirement for roads operating at 50kph. During peak times of use a 40kph posted speed limit will apply to the frontage streets of the school.

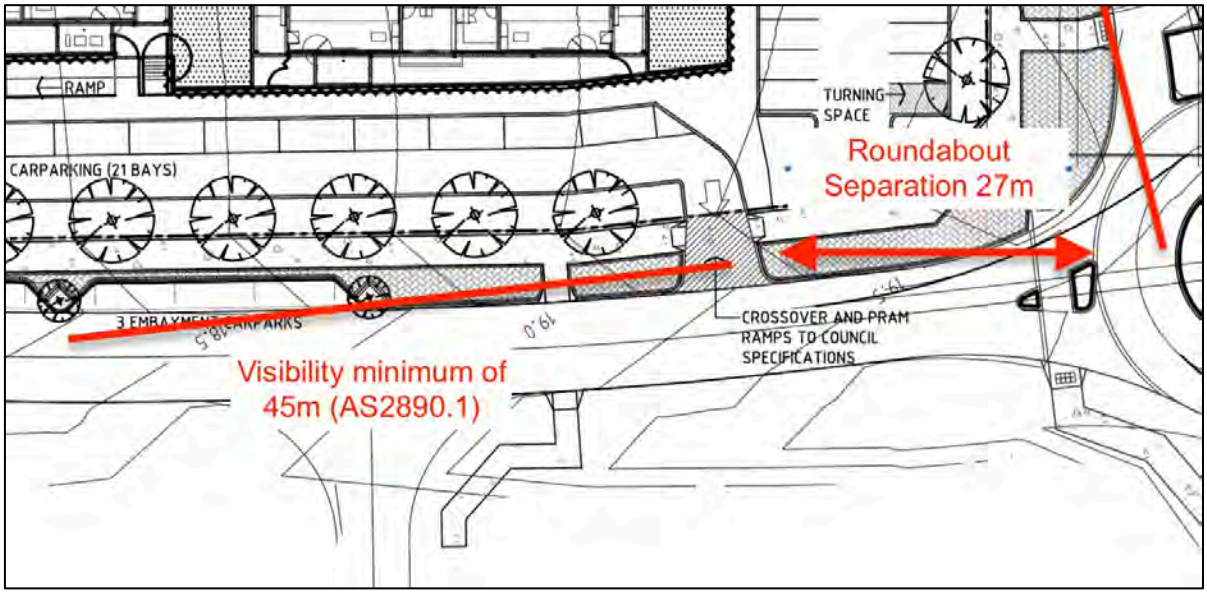


Figure 4 Access to Road 2

Access to Furnival Parade

Access to Furnival Parade will be provided for the staff and visitor car park. The access is located more than 25 metres from the Regency Avenue roundabout and accords with required standards. Figure 5 shows the access which will effectively operate as left-in / left-out. The required visibility of 45 metres as per AS2890.1 is shown to be provided. Visibility to the roundabout is acceptable, as vehicles will be required to slow to negotiate the roundabout.

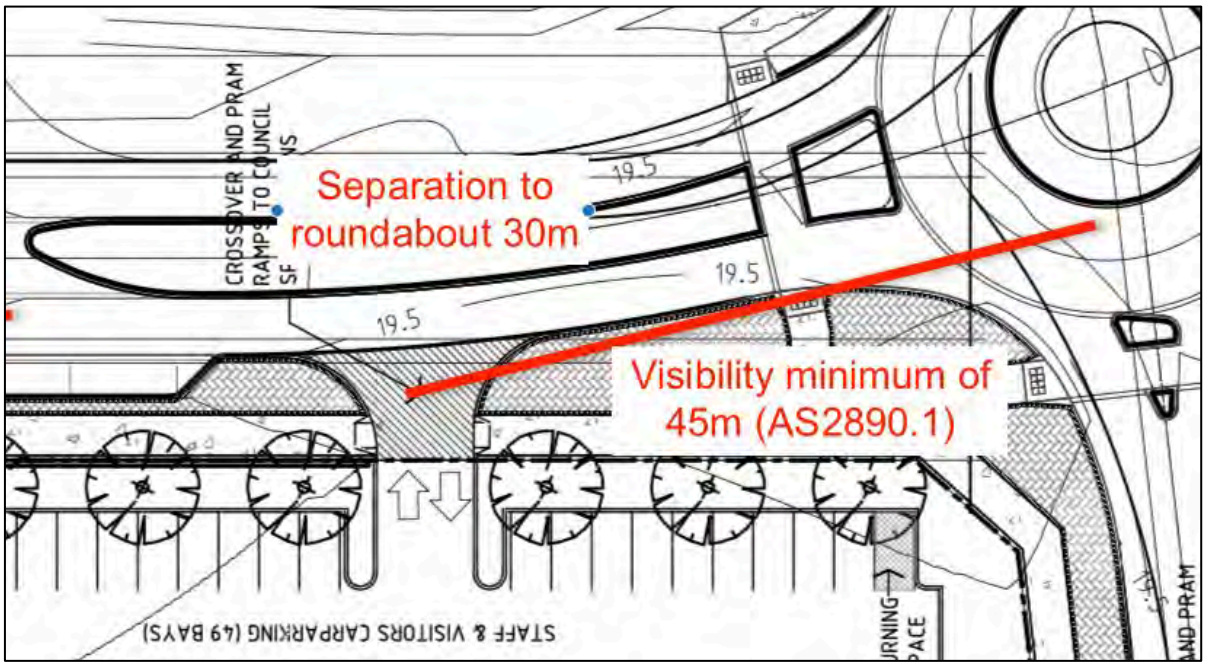


Figure 5 Access to Furnival Parade

Analysis of the staff car park access operation is provided using Sidra. Table 9 shows the Sidra results.

Table 9 Staff Car Park Access to Furnivall Parade

Approach	V/C	Delay	Q	LoS
AM Peak				
Car Park Access	0.001	3.3	3.3	LOS A
Furnivall Parade East	0.115	0.1	0.1	LOS A
Furnivall Parade West	0.126	1.2	1.2	LOS A
PM Peak				
Car Park Access	0.032	2.9	0.1	LOS A
Furnivall Parade East	0.040	0.0	0.0	LOS A
Furnivall Parade West	0.072	1.2	0.0	LOS A

The analysis attached at Appendix F confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

Access to Road 1

Access to Road 1 is provided for the kindergarten / pre primary classrooms. Figure 6 shows the locations of the proposed accesses. The accesses are appropriately located in accordance with current standards. Figure 6 shows the required visibility of 45 metres is achieved at both locations.

Appendix F shows Sidra analysis undertaken of a single access point providing for all traffic movements. As the car park will be used as a normal car park (as opposed to s drop off area) there is no reason to introduce one-way operation. Table 10 shows the Sidra results. Assuming all traffic uses just one point of access.

Table 10 PPK Car Park Access to Road 1 SIDRA

Approach	V/C	Delay	Q	LoS
AM Peak				
Road 1 South	0.029	1.3	0.1	LOS A
PPK Car Park Access	0.065	3.3	0.2	LOS A
Road 1 North	0.053	3.1	0.0	LOS A
PM Peak				
Road 1 South	0.020	0.1	0.0	LOS A
PPK Car Park Access	0.002	3.2	0.0	LOS A
Road 1 North	0.020	0.1	0.0	LOS A

The analysis confirms the findings of the previous traffic report in that all movements are shown to operate in an acceptable manner with minimal delays.

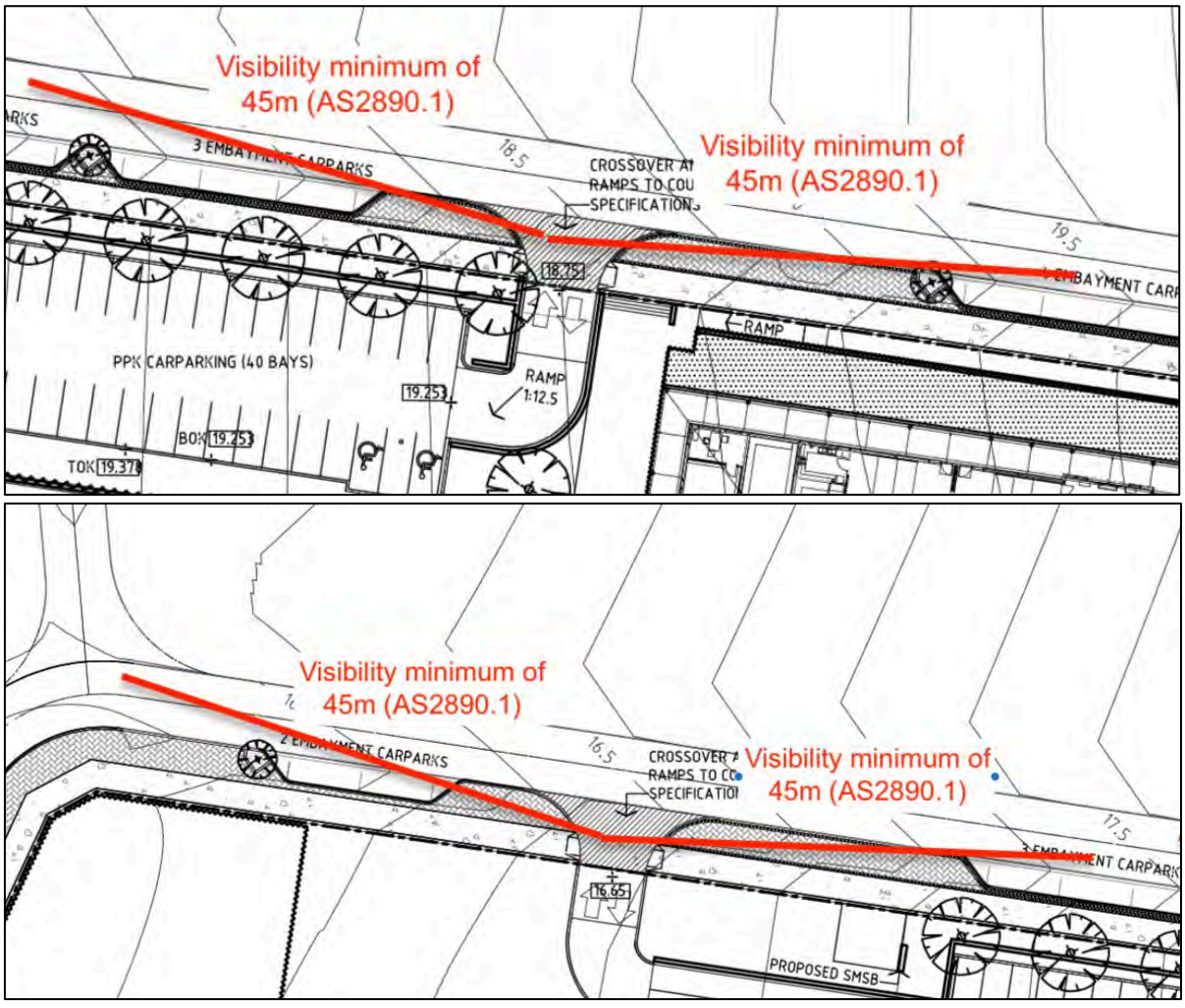


Figure 6 Access to Road 1

The level of visibility provided is based on AS2890.1 for 50kph posted streets. At peak time of school activity adjacent streets will be restricted to 40kph and 35 metres of visibility would be required. It can be seen that greater visibility than the minimum requirements will be provided during peak periods of school activity.

6.0 PARKING

The Primary Schools Brief sets out the following requirements for car parking for new schools:

- Kindergarten children: 8 bays as a compulsory minimum requirement plus 7 additional bays, equating to 15 drop-off / pick-up bays located in close proximity to the early childhood block. This is a non-varying provision to be provided on-site
- Primary and pre-primary children 14 pick-up / drop-off bays per 100 children.
- Staff, 10 bays per 100 children (minimum 46 staff bays including 3 visitor bays).
- 1 bus bay on street.
- Universal access bays are to be provided at a rate of 1 bay for every 30 on site.

Additional non-compulsory parking is also considered:

- 4 bays for canteen staff (can be used for pick-up drop off)
- Dental therapy (if provided) should be provided with 6 bays in close proximity

School Parking Needs

Parking is to be provided based on the Primary Schools Brief. The brief sets out the following requirement. The proposed school will provide for 106 pre-primary, 60 kindergarten children and 477 primary students. Overall the school will require:

60 Kindergarten	15 bays
106 pre primary children (106 / 100 x 14)	15 bays
477 primary children (477/100 x 14)	67 bays
Canteen	4 bays
Staff parking of (643/100 x 10)	64 bays
Total	**165 bays**

The architects' plan reproduced in Figure 7 indicates an on site supply of 110 bay comprising; kindergarten/pre-primary car park 40 bays, staff car park 49 bays, kiss and ride 21 bays.

110 bays are provided on-site

Additional on-street parking is provided on Road 1 with 10 bays, Furnival Parade with 11 bays, Road 2 with 14 bays and the southern access road with 13 bays. In total 48 parking embayments are provided on-street increasing the overall car parking supply for the school

to (110 + 48) 158 bays. Additional bays were proposed so that the recommended number of parking bays (165) was achieved) However, through discussion with the City of Rockingham bays have been removed to ensure visibility splays are no encroached[1].

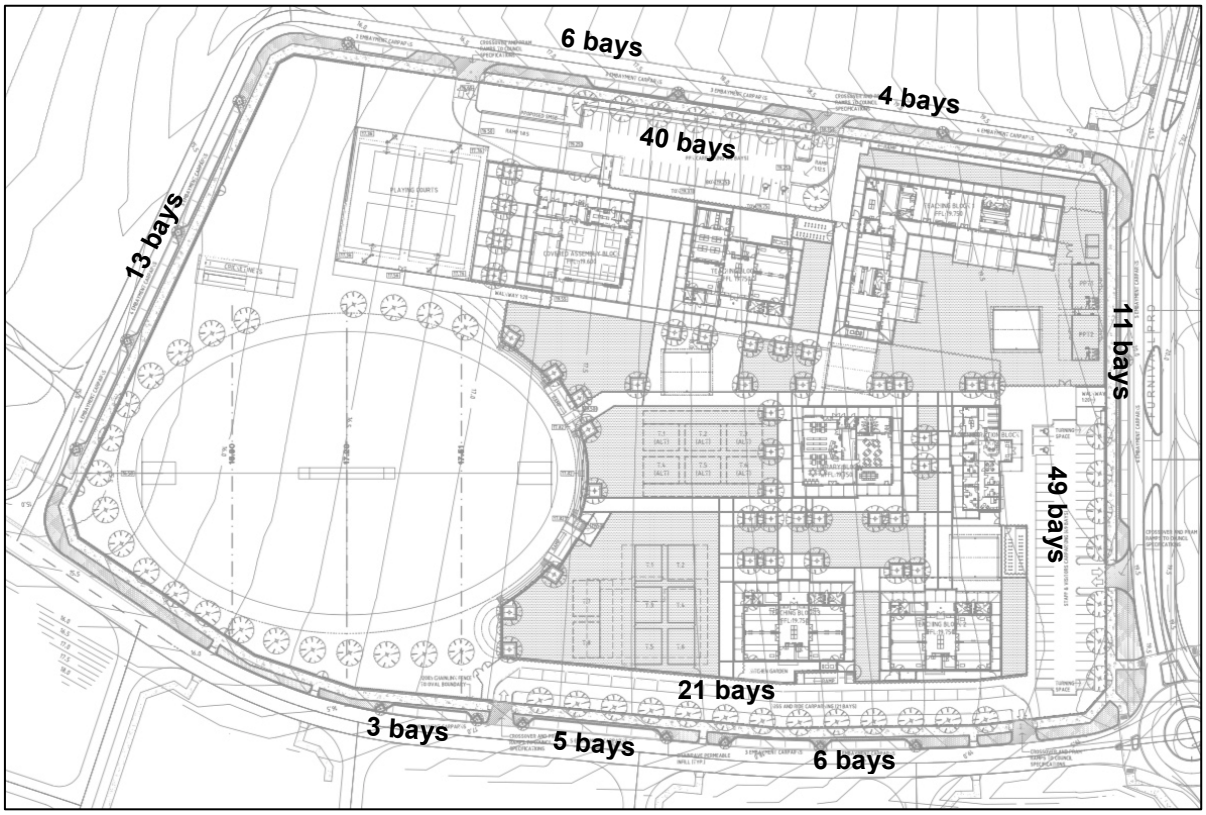


Figure 7 School Parking (refer to DA plan for layout)

The level of parking provided is short of the recommended parking numbers. However, the 21 drop off bays are the equivalent of 126 bays during peak periods of school activity.

Drop-off Parking Demand

During the morning peak period many parents drop-off their children and it is normal practice at primary schools that a waiting restriction be applied to some parking bays to cater for this demand. Such bays should be signed as "Drop-off only AM peak". Based on the expected traffic attraction of the proposed school it is estimated that during the morning peak period (07:45 to 09:15), up to 350 vehicles may arrive at the school and 312 will depart[2]. During the peak 5 minute period, a total of 51 vehicles could be expected to arrive to drop-off children.

[1] Minor encroachment of visibility is permitted when obstructions are temporary as experienced in Rockingham town centre.
[2] Note the difference is based on teacher arrivals and some parents staying longer.

The demand for time restricted bays can be derived by calculating the time to drop-off by the number of cars. Whilst there is no precise definition for a drop-off, previous primary school assessments have assumed a typical turnover of 2 vehicles every 5 minutes. Thus with a peak demand of 51 vehicles requiring to drop-off during the peak 5 minute period (51 vehicles / 2 cars per bay), 25 drop off bays would be required.

Baldivis South primary school will be provided with 21 kiss and ride bays, being 4 bays less than calculated. It is therefore recommended that the 6 on-street bays north of the kiss and ride entry be allocated drop off only AM peak.

It is recommended that the drop off / pick up parallel bays on Road 2 be provided to a width of 2.7 metres.

Afternoon Demands

During the afternoon peak period, an increase in the duration of parking demand can be expected as many parents arrive early and wait for their children to finish school. It is unrealistic to provide sufficient car parking for all parents to park in close proximity to the school during the afternoon pick up period. The primary schools brief sets out the parking requirements deemed necessary by State government for schools.

Cycle Parking (and Scooters)

It would be recommended that cycle and scooter[3] parking in highly visible areas be provided. The master plan indicates cycle racks provided close to Furnival Parade and Road 1 providing 21 racks at two locations. With each rack able to accommodate 2 bicycles, a total of 84 bicycles can be accommodated.

New South Wales planning documentation[4] has indicated that, as a guide, cycle parking should be provided based on the following:

- 1 rack or bay for every 25 to 35 staff (@65 staff = 3 racks)
- 1 rack or bay for every 10 primary children[5] (477 children = 48 racks)

Based on the NSW guide, 53 spaces for bicycles would be recommended. 84 spaces are to be provided.

[3] Not to be confused with motorcycles <50cc
[4] Adopted by the Department of Education
[5] The figure excludes kindy and pre-primary children

There are no guidelines in regard to scooter parking, however anecdotal evidence indicates a ratio of 1 scooter rack per 2 cycle racks. It is suggested to provide 25 scooter racks.

Bus Parking

Where ample road frontage is provided adjacent to a school, a dedicated bus embayment may be provided. However, it is not expected that Baldivis South primary school will have students arriving by bus and a dedicated bus embayment is considered unwarranted.

When buses are required to service the school for excursions, these vehicles can normally be expected outside of peak traffic periods when ample on-street parking would be available. Further, it is common that when a bus is required, school staff will use traffic cones to designate an appropriate place for bus parking. Six bays on Furnivall Parade will be constructed to a width of 2.7 metres to enable easy access for busses.

Advice from the City of Rockingham suggests that a bus bay in accordance with PTA standards should be provided. However, it is noted that the design requirements of PTA are for roads operating at speeds greater than 80kpkh and are design cognisant of the higher road speed. It is considered that a 2.7 metre wide bay in a residential area is more than sufficient.

7.0 ROAD SAFETY

Baldivis is an expanding residential suburb with many new homes expected in the locality in the coming years. Many of the roads surrounding the proposed school are yet to be constructed. However, it is to be expected that all roads will be provided in accordance with current standards and in accordance with City of Rockingham requirements.

Traffic Speeds

Speed is a critical issue on roads fronting schools. The higher the speed, the greater the severity of a crash and studies have shown that vehicle / child collisions at speeds greater than 40kph will frequently result in a fatality. All school sites are therefore protected by a mandatory 40kph speed limit on roads fronting, adjacent to and approaching the school. Figure 8 shows the recommended 40kph school speed zone.

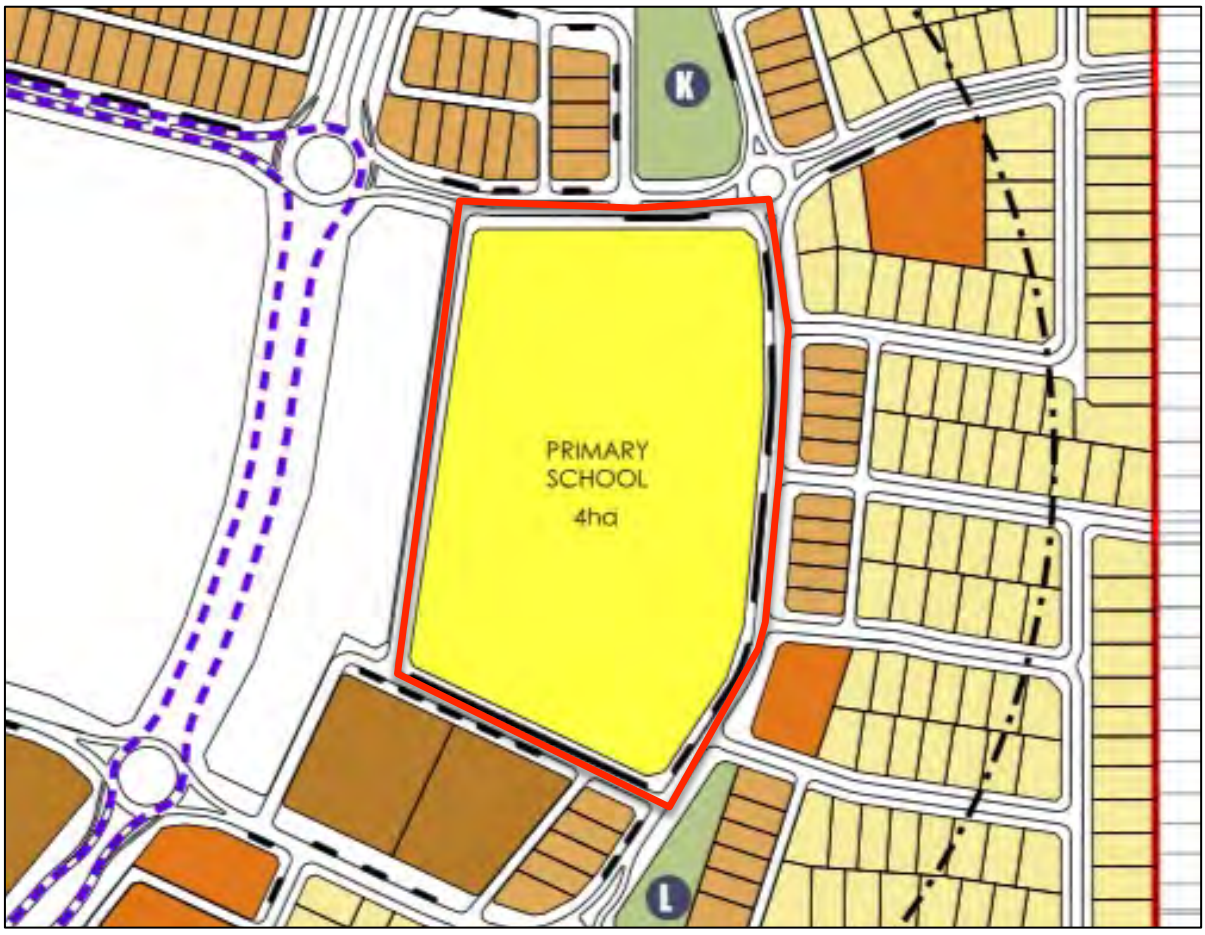


Figure 8 40kph Speed Zone (Subject to MRWA)

The LSP identifies the location of the school and roundabouts have been provided on Furnival Parade and Baroness Avenue to assist school movements. The roundabouts create

a slowing affect to through traffic and it is considered that the 40kph zone should operate effectively without supplementary calming devices.

Furnivall Parade / Road 1 intersection

As a result of the City of Rockingham requesting Sidra analysis of all accesses and intersections, it has been found that the separation of Road 1 to the roundabout on Nairn Drive is only 35 metres. It is considered that this intersection is too close to the Nairn Drive roundabout and may lead to rear end crashes occurring with parents turning right into Road 1. It is also noted that this intersection is within the Austroads functional intersection area of Nairn Drive / Furnivall Parade.

As this is an existing issue it is a matter for the City of Rockingham to address.

Internal Vehicle Movements

Internally to the school site, a slow speed environment is to be encouraged.

Access from Road 1 is provided at two locations for the kindergarten / pre-primary car park. Whilst both accesses are shown to operate in both directions, it may be better to operate these accesses as an “in access” and an “out access” if issues occur within the car park. This is not expected, however, the design provides flexibility to address possible issues.

Access to the staff and visitor car park located off Furnival Parade will operate as left-in / left-out. The separation of this car park from child orientated parking is considered appropriate and a safer outcome.

Access to the primary school kiss and ride area will operate as a one way with entry from the south and exit to the north.

Service Vehicles

The largest vehicle to access the school will be a garbage vehicle. The bin store is located to the western side of the school adjacent to the tennis courts and can be accessed from the kindergarten parking area. The garbage truck will enter the car park at the most convenient location subject to whether the vehicles load from the front or rear.

All service vehicles must enter and leave the school in forward gear. Reversing of vehicles on-site is to be minimised wherever possible. The time of garbage collection will require management to ensure there is no interaction with children.

8.0 PEDESTRIANS, CYCLISTS AND PUBLIC TRANSPORT

Baldivis South Primary School is well located to capture the potential walkability of the school for residents living to the east of Nairn Drive. It is doubtful that parents would walk from the west as Nairn Drive will be perceived as a high speed busy road.

Reference to the LSP shows that a good pedestrian and cycle network is planned for the local area. Figure 9 shows an extract of the LSP indicating the pedestrian and cycle paths proposed.

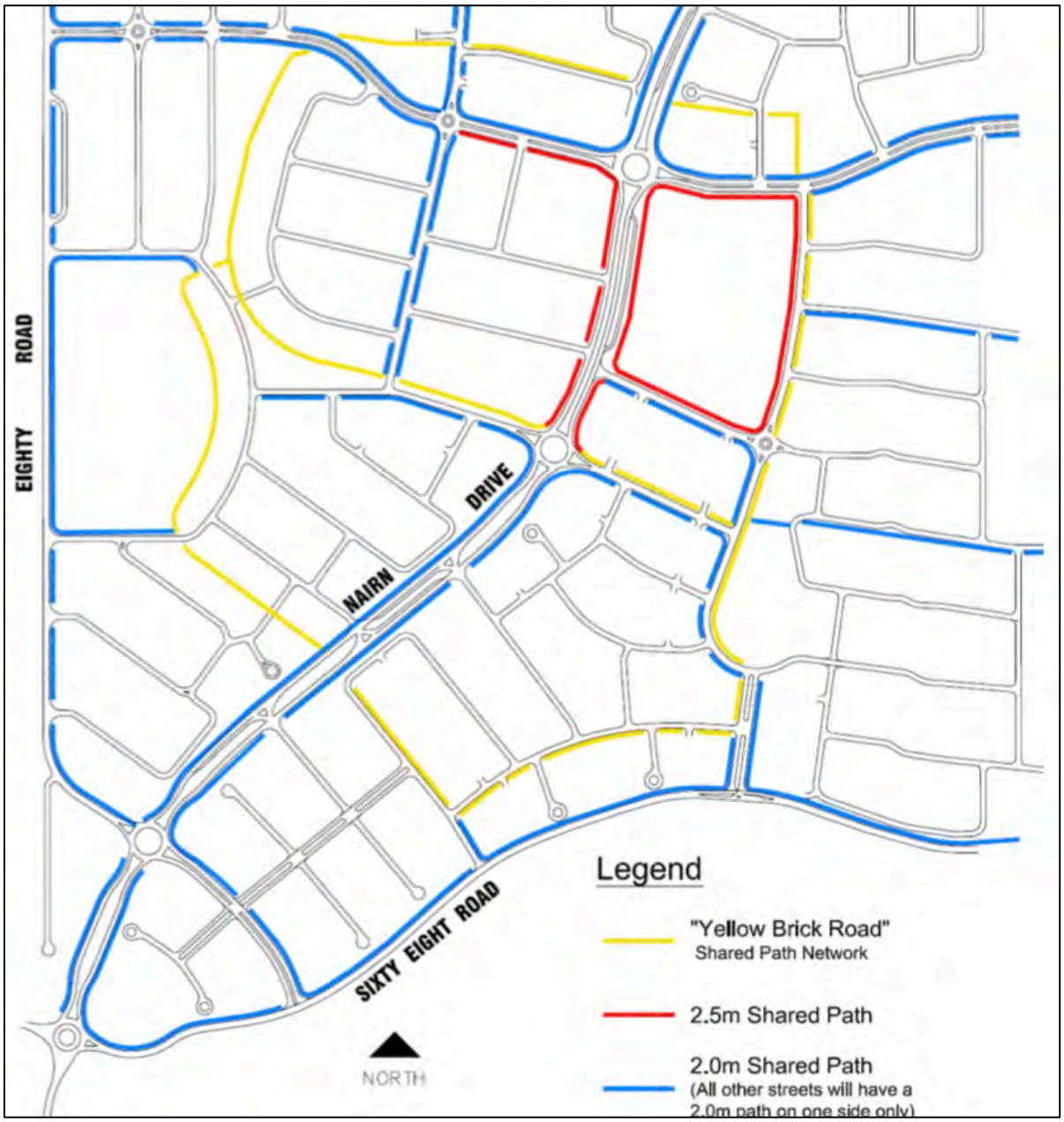


Figure 9 LSP Pedestrian and Cycle Paths

The LSP makes the following comments in regard to the proposed pedestrian and cycle network.

> *A highly permeable road network within the LSP area creates excellent opportunities for the provision of good pedestrian and cyclist facilities that maximise use of non-motorised transport modes.*
>
> *In accordance with current practice adopted by the City of Rockingham it is proposed to construct all paths to a minimum width of two metres so that they can all be designated as shared paths for pedestrians and cyclists. A 2.5m width is proposed in high pedestrian-traffic locations such as adjacent to the Primary School and bordering the village centre.*
>
> *Paths will be provided on at least one side of all roads. There would be paths on both sides of roads adjacent to the primary school site and on both sides on all the Integrator Arterial and Neighbourhood Connector roads. Laneway lots are to have footpath access to visitor parking bays provided in a nearby road reserve.*
>
> *The "yellow brick road" path network is a special initiative proposed in this LSP area. It will consist of shared paths located in wider, landscaped road verges and public open space, and is proposed to be equipped with additional facilities to encourage recreational use. This will be explained in greater detail in the LSP report and supporting documents.*
>
> *On-street cycle lanes will be included on the Integrator B and Neighbourhood Connector A roads.*

It can be seen that an appropriate footpath network is proposed in the local area and particularly adjacent to the proposed school where footpaths to both sides of each street are to be provided.

It is noted that a crossing of Nairn Drive is proposed. However, it is considered unlikely that parents will walk with children to the school when needing to cross a four-lane dual carriageway. It is considered that pedestrian crossing to Nairn Drive would be of limited assistance to the proposed primary school.

Whilst is it feasible for local children to cycle to the primary school, this is only likely to occur from home east of Nairn Drive. Appropriate footpaths and cycle facilities are to be provided.

Pedestrian Crossing Movements

At locations where pedestrian crossing movements are expected, visibility greater than 35 metres must be provided to traffic (3 seconds of travel). It is noted that Austroads 2016 identifies pedestrian sight distances of 55m and 83m should be provided. The Austroads visibility distances should be used by the estate developer in regard to the road construction. This is a matter outside the control of the school. Parked vehicles or any other temporary obstructions must not block the minimum forward visibility.

Baldivis is a newly developed suburb and all roads should be designed in accordance with current standards.

Under normal conditions pedestrians can accept an average gap of 6 seconds[6] to cross a standard 7.2 metre wide road. Where the average gap is below 6 seconds, a median island should be provided. All streets are predicted to carry low traffic demands and pedestrian crossing opportunity would not be compromised.

It is noted that medians are provided to Furnival Parade allowing pedestrians good opportunity to cross. Figure 10 shows the pedestrian crossing locations proposed by the estate developer (and currently approved by the City of Rockingham).

[6] This equates to a flow of about 6,000vpd

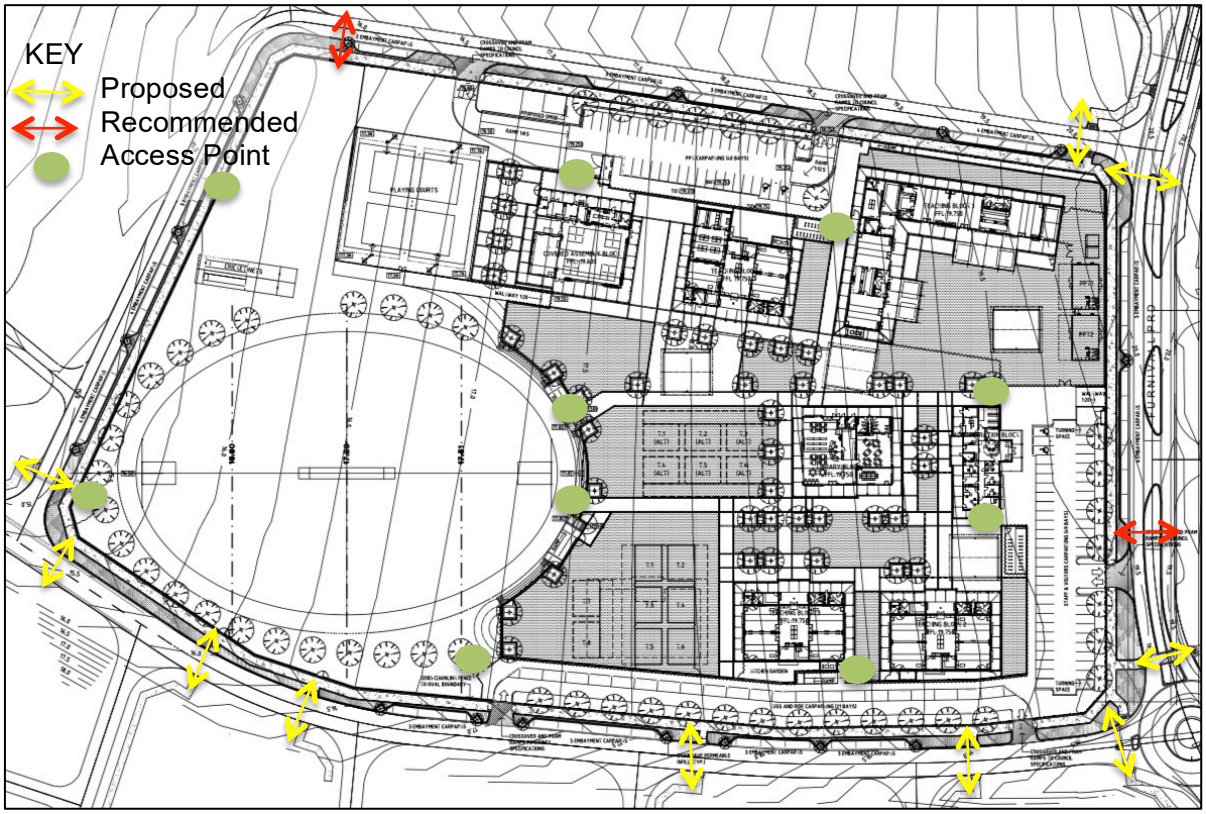


Figure 10 Pedestrian / Cycle Crossing Locations

Public Transport

The locality is a new and developing suburb and public transport access is limited. Reference to the LSP indicates a bus service is proposed to operate on Furnival Parade west of Nairn Drive, use Nairn Drive through the commercial precinct and use Baroness Avenue to access Sixty Eight Road. Figure 11 shows the proposed bus route, which is taken form the LSP traffic report. It is noted that the LSP planning document suggests the bus be retained on Nairn Drive. This would have no significant impact on school accessibility to public transport.

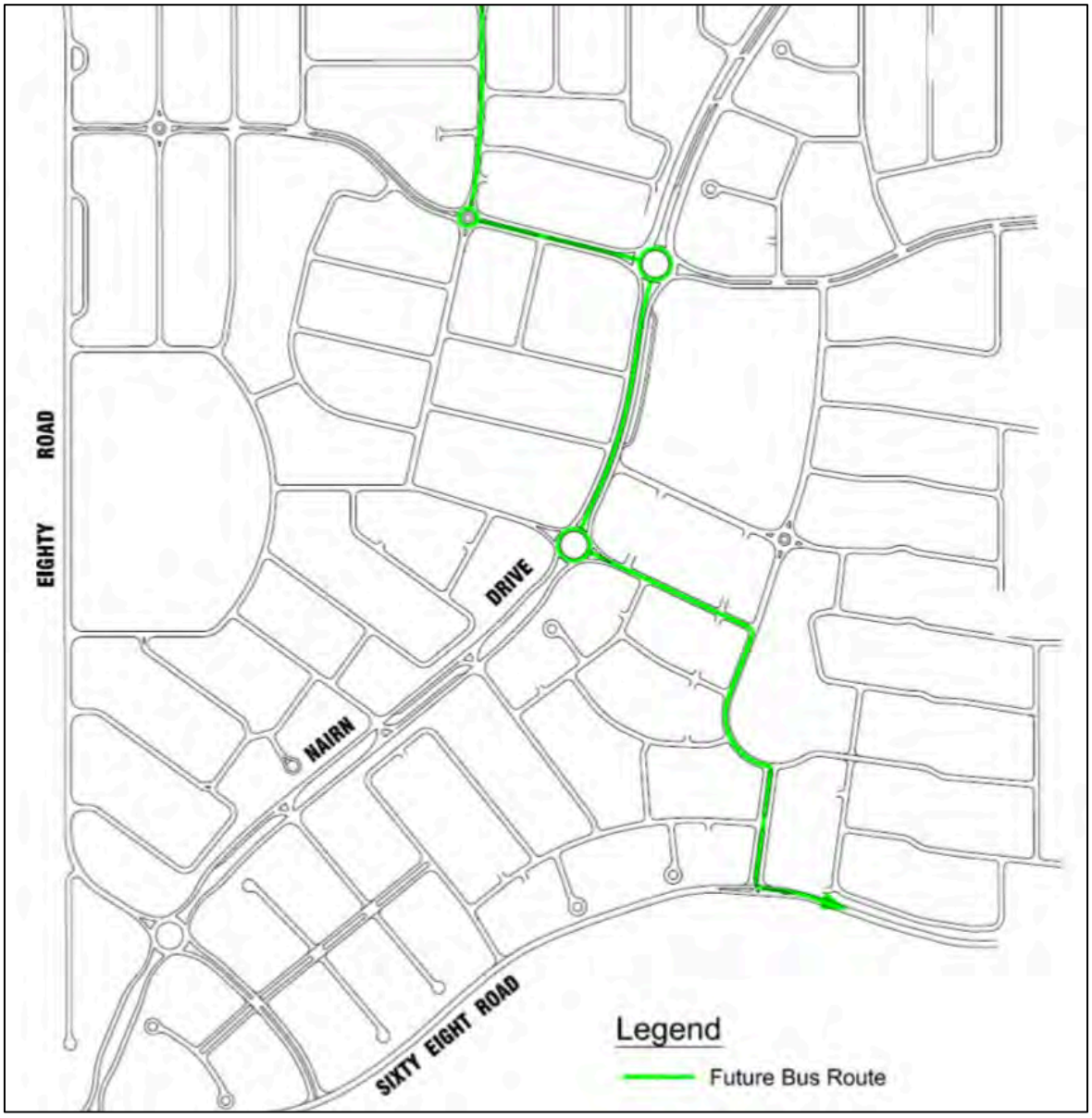
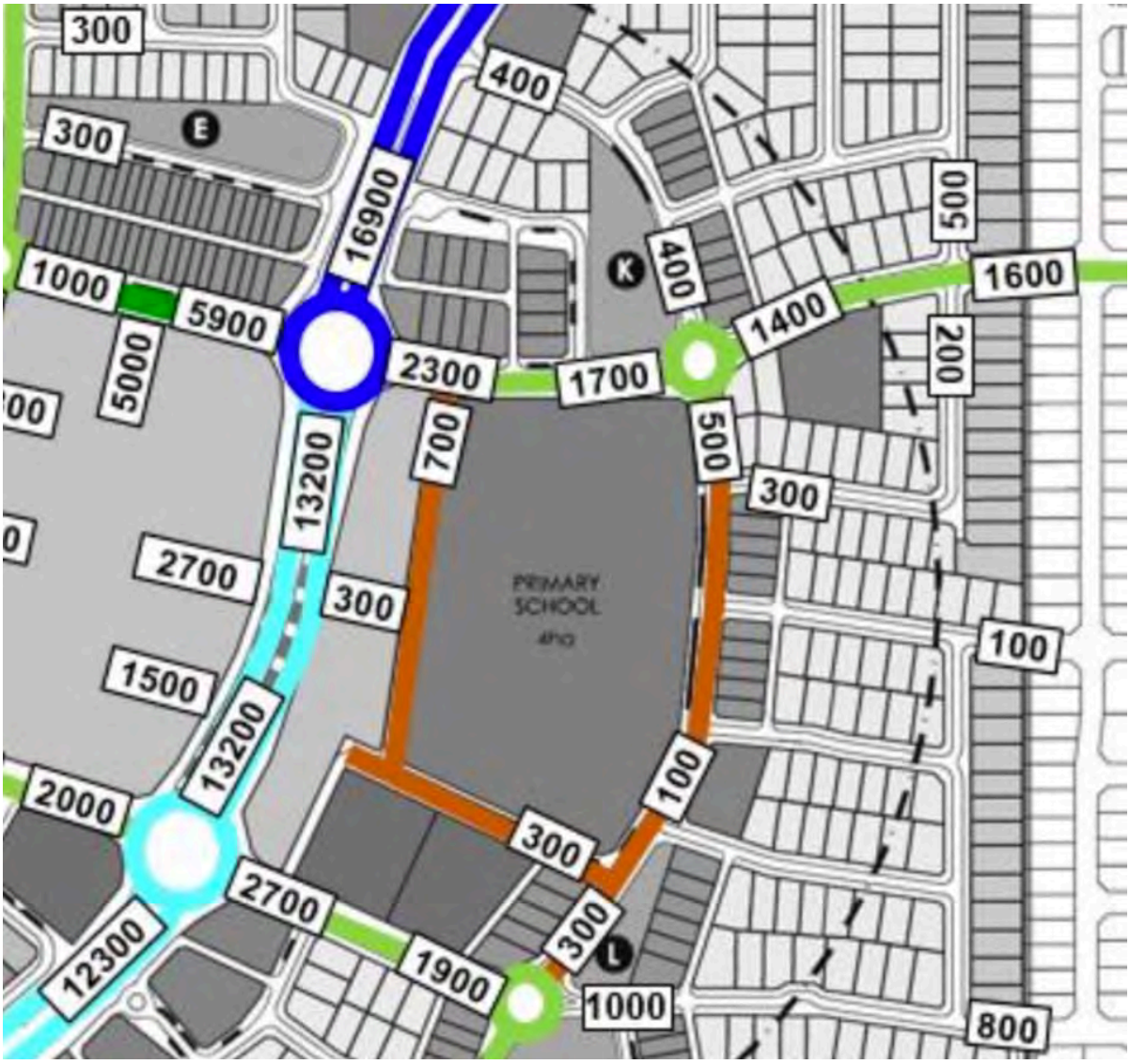


Figure 11 Proposed Bus Route

It can be expected that an hourly service would be provided throughout the day with additional services during peak periods to cater for commuters.

APPENDIX A STRUCTURE PLAN TRAFFIC FORECASTS



Parklands Heights Structure Plan Traffic report (Transcore)

APPENDIX B LEVELS OF SERVICE BY ROAD TYPE

LOS	Single Carriageway[1]	2-Lane Boulevard[2]	Dual Carriageway (4-Lanes)[3]	Dual Carriageway (4-lane Clearway)[3]
A	2,400vpd	2,600vpd	24,000vpd	27,000vpd
B	4,800vpd	5,300vpd	28,000vpd	31,500vpd
C	7,900vpd	8,700vpd	32,000vpd	36,000vpd
D	13,500vpd	15,000vpd	36,000vpd	40,500vpd
E	22,900vpd	25,200vpd[4]	40,000vpd	45,000vpd
F	>22,900vpd	>25,200vpd[4]	>40,000vpd	>45,000vpd

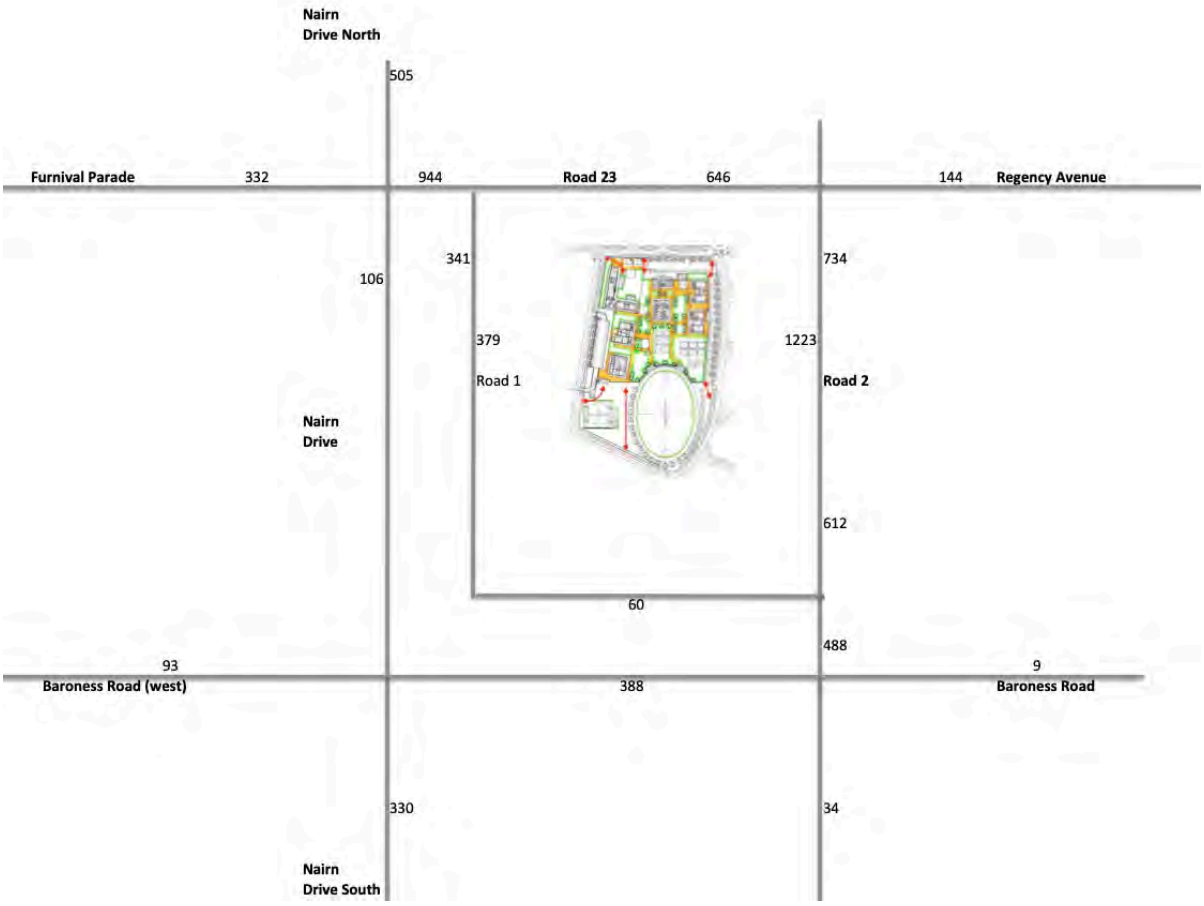
[1] Based on Table 3.9 Austroads - Guide to Traffic Engineering Practice Part 2

[2] Based on single carriageway +10% (supported by Table 3.1 Austroads - Guide to Traffic Engineering Practice Part 3) – Boulevard or division by medians.

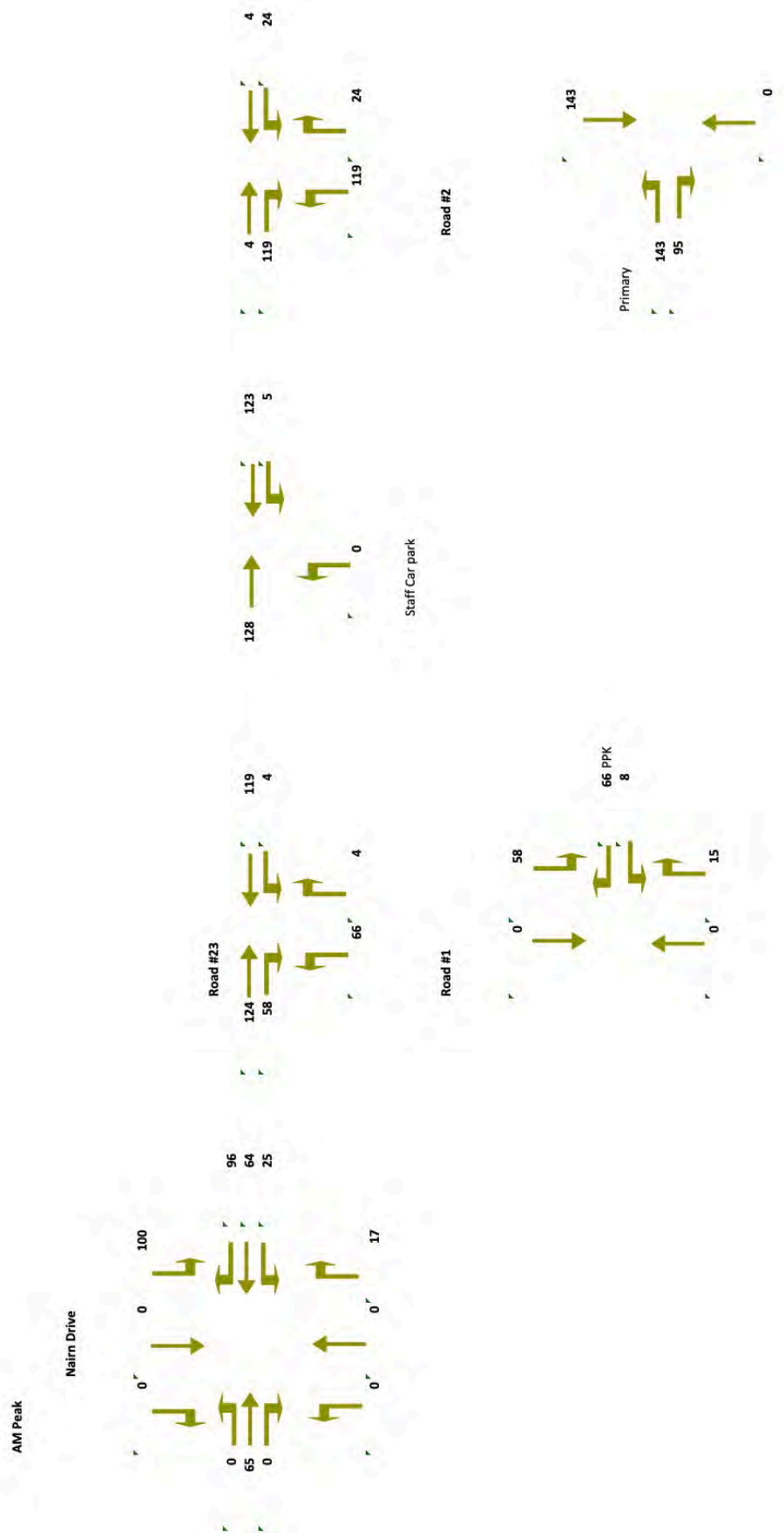
[3] Based on RRR Table 3.5 - mid-block service flow rates (SF.) for urban arterial roads with interrupted flow. Using 60/40 peak split.

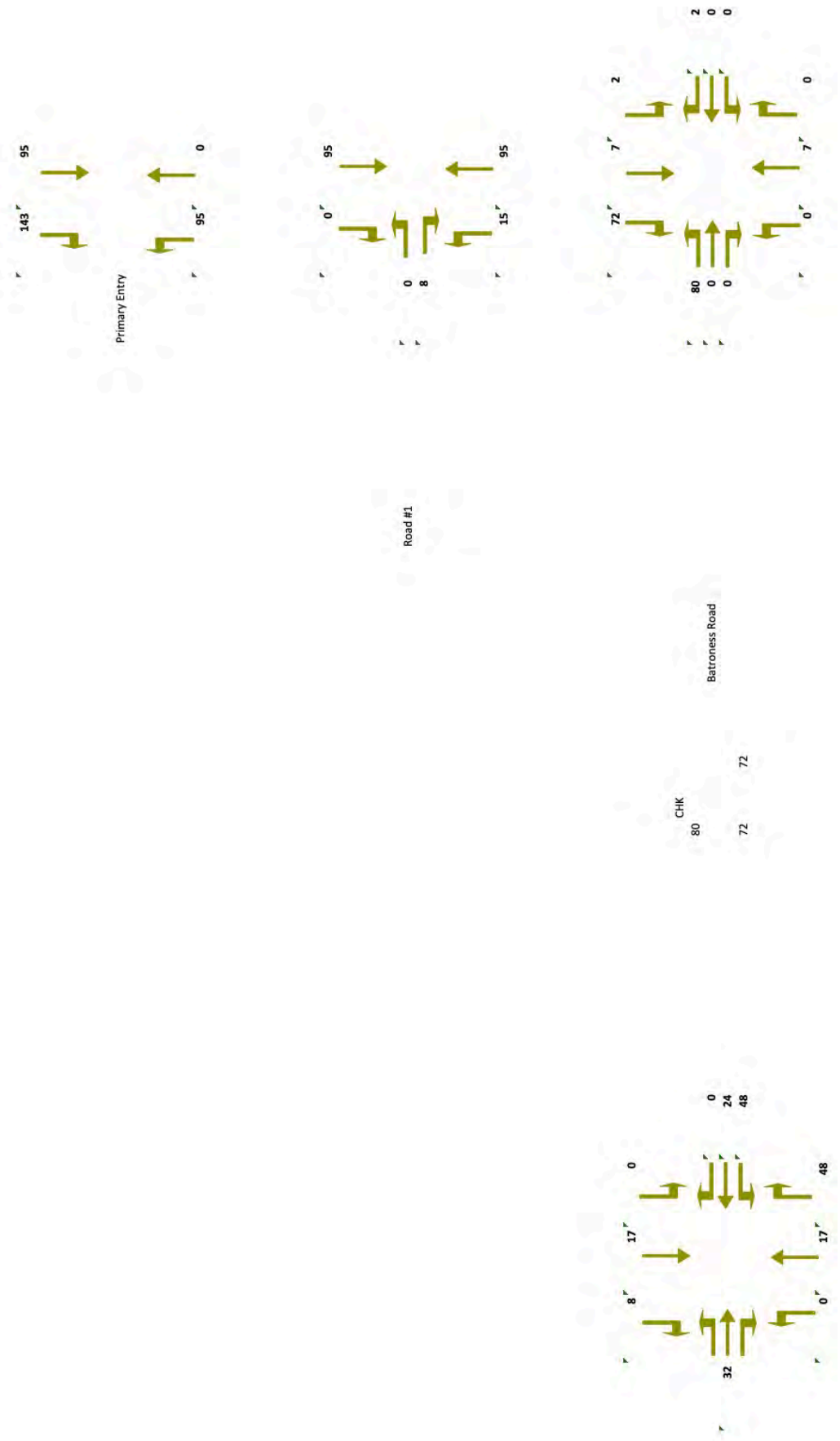
[4] Note James Street Guildford passes 28,000vpd.

APPENDIX C BALDIVIS SOUTH PRIMARY SCHOOL DAILY TRAFFIC DEMANDS



APPENDIX D MORNING PEAK HOUR TRAFFIC FLOWS





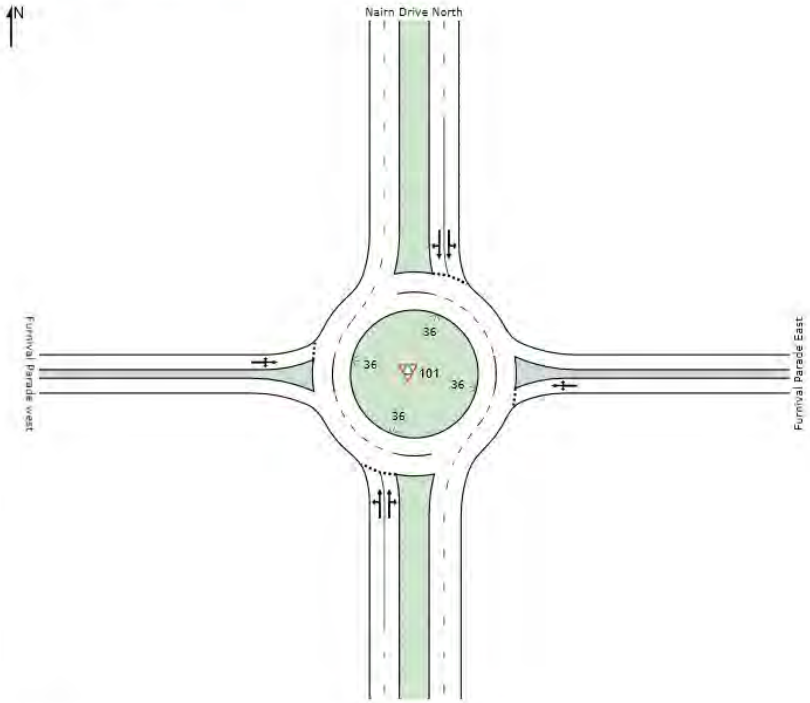
Demands of school +base flow derived from Transcore LSP traffic report.

APPENDIX E SIDRA INTERSECTION ANALYSIS

SITE LAYOUT

Site: 101 [Nairn Furnival AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Nairn Drive / Furnival Parade
Roundabout



MOVEMENT SUMMARY

Site: 101 [Nairn Furnival AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Nairn Drive / Furnival Parade
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: Nairn Drive South											
1	L2	1	3.0	0.334	6.2	LOS A	2.2	15.8	0.59	0.55	52.6
2	T1	678	3.0	0.334	6.5	LOS A	2.2	15.8	0.60	0.58	61.5
3	R2	37	3.0	0.334	13.1	LOS A	2.1	15.2	0.61	0.61	51.6
Approach		716	3.0	0.334	6.8	LOS A	2.2	15.8	0.60	0.58	61.2
East: Furnival Parade East											
4	L2	61	3.0	0.464	5.4	LOS A	2.7	19.4	0.70	0.88	52.1
5	T1	125	3.0	0.464	5.3	LOS A	2.7	19.4	0.70	0.88	45.6
6	R2	172	3.0	0.464	10.4	LOS A	2.7	19.4	0.70	0.88	54.5
Approach		358	3.0	0.464	7.8	LOS A	2.7	19.4	0.70	0.88	50.6
North: Nairn Drive North											
7	L2	115	3.0	0.296	5.0	LOS A	1.9	13.6	0.38	0.47	52.3
8	T1	578	3.0	0.296	5.3	LOS A	1.9	13.6	0.38	0.49	62.8
9	R2	86	3.0	0.296	11.7	LOS A	1.8	13.2	0.39	0.52	56.1
Approach		779	3.0	0.296	5.9	LOS A	1.9	13.6	0.38	0.49	60.9
West: Furnival Parade west											
10	L2	80	3.0	0.304	5.9	LOS A	1.5	10.5	0.71	0.70	52.3
11	T1	119	3.0	0.304	5.5	LOS A	1.5	10.5	0.71	0.70	32.7
12	R2	1	3.0	0.304	11.4	LOS A	1.5	10.5	0.71	0.70	53.6
Approach		200	3.0	0.304	5.7	LOS A	1.5	10.5	0.71	0.70	41.3
All Vehicles		2053	3.0	0.464	6.5	LOS A	2.7	19.4	0.55	0.61	57.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

Site: 101 [Nairn Furnival - PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Nairn Drive / Furnival Parade
Roundabout

Movement Performance - Vehicles

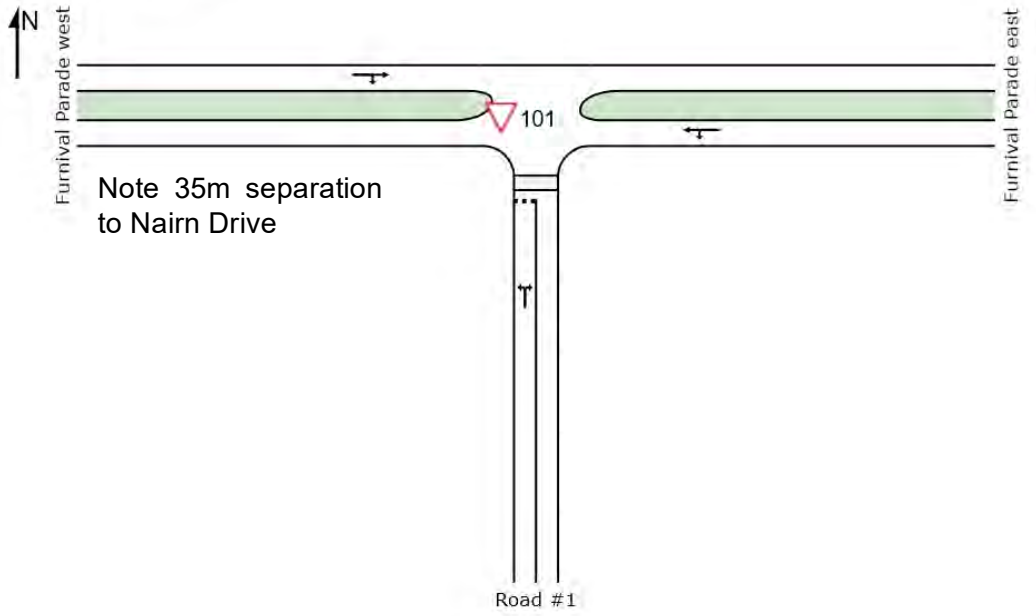
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Nairn Drive South											
1	L2	1	3.0	0.323	6.7	LOS A	2.0	14.3	0.60	0.60	52.6
2	T1	635	3.0	0.323	7.0	LOS A	2.0	14.3	0.61	0.62	61.5
3	R2	36	3.0	0.323	13.7	LOS A	1.9	13.7	0.61	0.66	51.4
Approach		672	3.0	0.323	7.4	LOS A	2.0	14.3	0.61	0.62	61.1
East: Furnival Parade East											
4	L2	19	3.0	0.237	4.9	LOS A	1.0	7.5	0.65	0.80	53.1
5	T1	77	3.0	0.237	4.8	LOS A	1.0	7.5	0.65	0.80	46.4
6	R2	69	3.0	0.237	9.9	LOS A	1.0	7.5	0.65	0.80	55.5
Approach		165	3.0	0.237	7.0	LOS A	1.0	7.5	0.65	0.80	50.6
North: Nairn Drive North											
7	L2	20	3.0	0.326	4.8	LOS A	2.1	15.1	0.28	0.42	53.1
8	T1	583	3.0	0.326	4.9	LOS A	2.1	15.1	0.28	0.45	63.2
9	R2	324	3.0	0.326	11.4	LOS A	2.1	14.8	0.30	0.59	54.4
Approach		927	3.0	0.326	7.2	LOS A	2.1	15.1	0.29	0.50	59.6
West: Furnival Parade west											
10	L2	171	3.0	0.315	5.3	LOS A	1.5	11.0	0.68	0.72	52.8
11	T1	54	3.0	0.315	4.9	LOS A	1.5	11.0	0.68	0.72	32.8
12	R2	1	3.0	0.315	10.8	LOS A	1.5	11.0	0.68	0.72	54.2
Approach		225	3.0	0.315	5.2	LOS A	1.5	11.0	0.68	0.72	48.5
All Vehicles		1989	3.0	0.326	7.0	LOS A	2.1	15.1	0.47	0.59	58.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

SITE LAYOUT

▽ **Site: 101 [Furnival 1]**

Baldivis Primary School Sidra
AM Peak Full Development 2031
Furnival Parade (Road #23) / Road #1
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ **Site: 101 [Furnival 1 AM]**

Baldivis Primary School Sidra
AM Peak Full Development 2031
Furnival Parade (Road #23) / Road #1
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: Road #1											
1	L2	99	0.0	0.087	4.1	LOS A	0.3	2.4	0.30	0.50	19.7
3	R2	12	0.0	0.087	5.9	LOS A	0.3	2.4	0.30	0.50	31.3
Approach		111	0.0	0.087	4.3	LOS A	0.3	2.4	0.30	0.50	20.9
East: Furnival Parade east											
4	L2	12	0.0	0.112	3.4	LOS A	0.0	0.0	0.00	0.02	40.3
5	T1	205	3.0	0.112	0.0	LOS A	0.0	0.0	0.00	0.02	39.5
Approach		217	2.8	0.112	0.2	NA	0.0	0.0	0.00	0.02	39.5
West: Furnival Parade west											
11	T1	211	3.0	0.171	0.9	LOS A	0.6	4.5	0.22	0.26	36.7
12	R2	91	0.0	0.171	3.9	LOS A	0.6	4.5	0.22	0.26	34.4
Approach		301	2.1	0.171	1.8	NA	0.6	4.5	0.22	0.26	36.1
All Vehicles		628	2.0	0.171	1.7	NA	0.6	4.5	0.16	0.22	33.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Furnival 1 PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Furnival Parade (Road #23) / Road #1
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

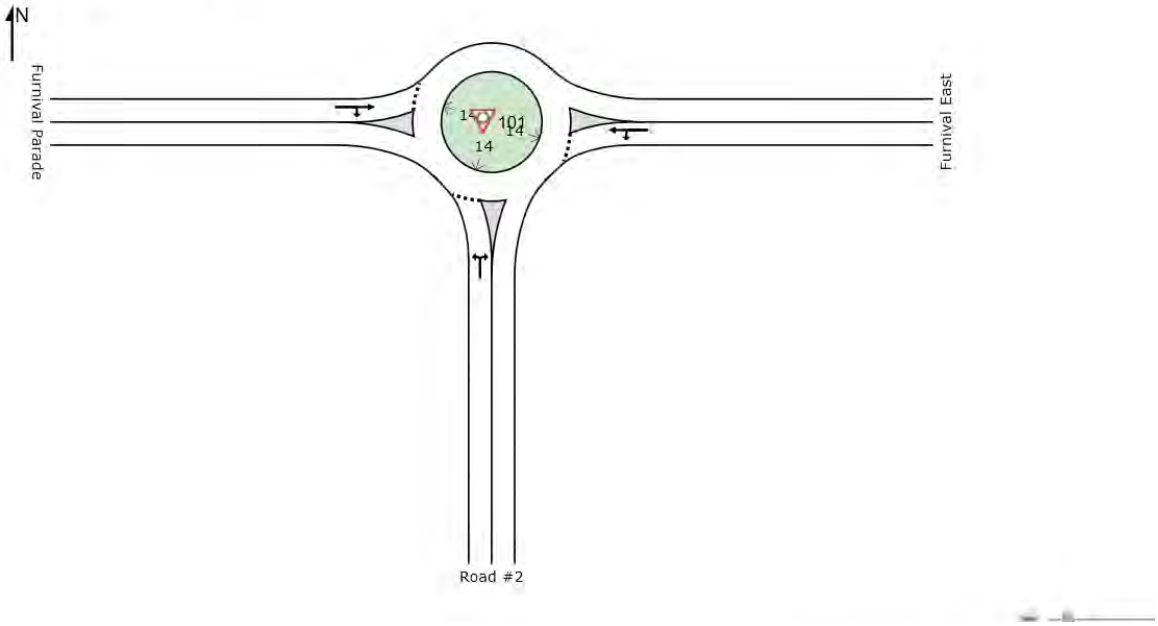
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #1											
1	L2	29	0.0	0.027	4.9	LOS A	0.1	0.7	0.21	0.51	23.5
3	R2	7	0.0	0.027	5.5	LOS A	0.1	0.7	0.21	0.51	34.1
Approach		37	0.0	0.027	5.0	LOS A	0.1	0.7	0.21	0.51	25.9
East: Furnival Parade east											
4	L2	7	0.0	0.064	4.6	LOS A	0.0	0.0	0.00	0.03	43.7
5	T1	117	3.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.03	48.8
Approach		124	2.8	0.064	0.3	NA	0.0	0.0	0.00	0.03	48.4
West: Furnival Parade west											
11	T1	109	3.0	0.075	0.1	LOS A	0.2	1.3	0.11	0.11	46.1
12	R2	29	0.0	0.075	3.5	LOS A	0.2	1.3	0.11	0.11	39.0
Approach		139	2.4	0.075	0.8	NA	0.2	1.3	0.11	0.11	44.8
All Vehicles		300	2.3	0.075	1.1	NA	0.2	1.3	0.08	0.13	42.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Furnival Road #2]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Furnival Parade (Road #23) / Road #2
Roundabout



MOVEMENT SUMMARY

Site: 101 [Furnival Road #2 AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Furnival Parade (Road #23) / Road #2
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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2											
1	L2	165	0.0	0.143	2.0	LOS A	0.8	5.5	0.19	0.48	43.1
3	R2	27	0.0	0.143	5.8	LOS A	0.8	5.5	0.19	0.48	54.7
Approach		193	0.0	0.143	2.6	LOS A	0.8	5.5	0.19	0.48	46.4
East: Furnival East											
4	L2	27	0.0	0.067	4.8	LOS A	0.3	2.3	0.29	0.48	49.3
5	T1	52	0.0	0.067	5.1	LOS A	0.3	2.3	0.29	0.48	52.2
Approach		79	0.0	0.067	5.0	LOS A	0.3	2.3	0.29	0.48	51.3
West: Furnival Parade											
11	T1	105	0.0	0.164	4.5	LOS A	0.9	6.3	0.13	0.56	50.9
12	R2	134	0.0	0.164	8.4	LOS A	0.9	6.3	0.13	0.56	34.3
Approach		239	0.0	0.164	6.7	LOS A	0.9	6.3	0.13	0.56	45.0
All Vehicles		511	0.0	0.164	4.9	LOS A	0.9	6.3	0.18	0.52	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 [Furnival Road #2 PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Furnival Parade (Road #23) / Road #2
Roundabout

Movement Performance - Vehicles

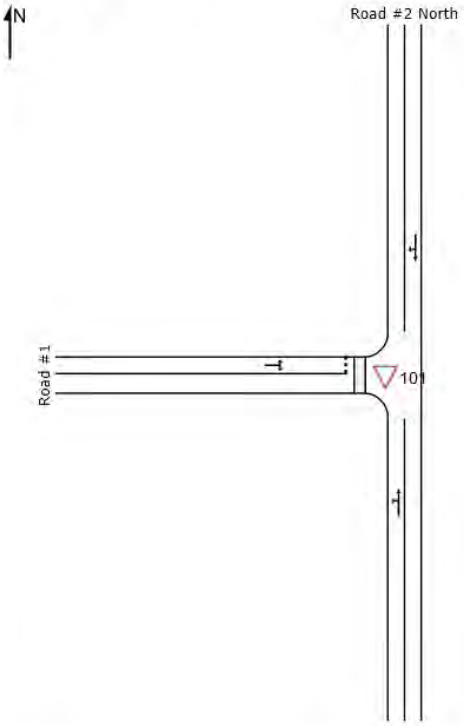
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2											
1	L2	8	0.0	0.008	2.1	LOS A	0.0	0.3	0.19	0.48	42.6
3	R2	2	0.0	0.008	5.9	LOS A	0.0	0.3	0.19	0.48	54.3
Approach		11	0.0	0.008	2.8	LOS A	0.0	0.3	0.19	0.48	46.9
East: Furnival East											
4	L2	2	0.0	0.053	4.4	LOS A	0.2	1.7	0.14	0.44	50.1
5	T1	67	0.0	0.053	4.6	LOS A	0.2	1.7	0.14	0.44	52.9
Approach		69	0.0	0.053	4.6	LOS A	0.2	1.7	0.14	0.44	52.9
West: Furnival Parade											
11	T1	99	0.0	0.084	4.4	LOS A	0.4	3.0	0.02	0.53	52.4
12	R2	40	0.0	0.084	8.3	LOS A	0.4	3.0	0.02	0.53	36.7
Approach		139	0.0	0.084	5.5	LOS A	0.4	3.0	0.02	0.53	50.2
All Vehicles		219	0.0	0.084	5.1	LOS A	0.4	3.0	0.07	0.50	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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: 101 [Road#2 / Rd #1 AM]**

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #2 / Road #1
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 101 [Road#2 / Rd #1 AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #2 / Road #1
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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2 south											
1	L2	21	0.0	0.078	5.5	LOS A	0.0	0.0	0.00	0.08	54.0
2	T1	128	0.0	0.078	0.0	LOS A	0.0	0.0	0.00	0.08	57.8
Approach		149	0.0	0.078	0.8	NA	0.0	0.0	0.00	0.08	57.2
North: Road #2 North											
8	T1	105	0.0	0.058	0.0	LOS A	0.0	0.3	0.03	0.03	58.9
9	R2	5	0.0	0.058	5.9	LOS A	0.0	0.3	0.03	0.03	52.1
Approach		111	0.0	0.058	0.3	NA	0.0	0.3	0.03	0.03	58.6
West: Road #1											
10	L2	11	0.0	0.025	5.9	LOS A	0.1	0.6	0.25	0.58	41.9
12	R2	19	0.0	0.025	6.3	LOS A	0.1	0.6	0.25	0.58	43.0
Approach		29	0.0	0.025	6.2	LOS A	0.1	0.6	0.25	0.58	42.7
All Vehicles		289	0.0	0.078	1.2	NA	0.1	0.6	0.04	0.11	55.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Road#2 / Rd #1 PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Road #2 / Road #1
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

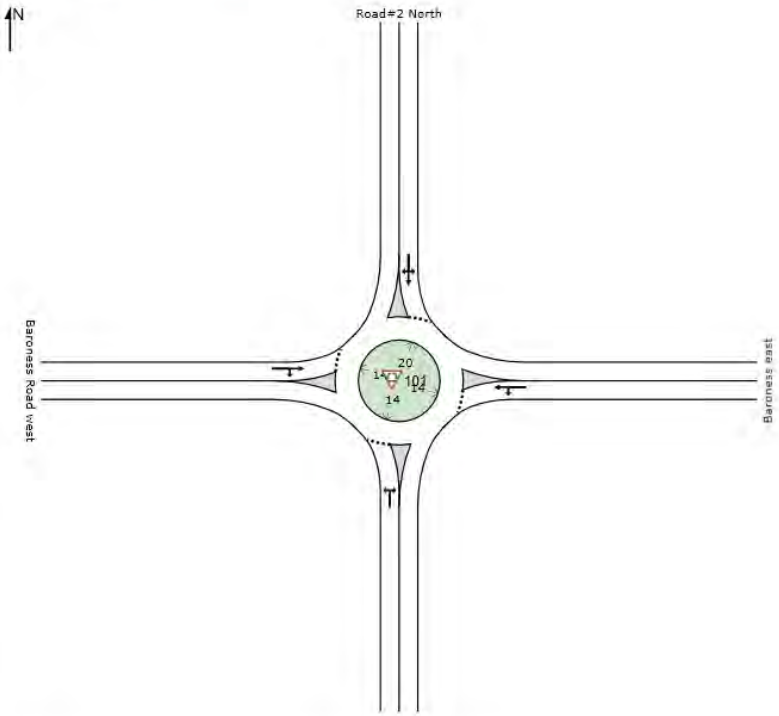
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2 south											
1	L2	5	0.0	0.018	5.5	LOS A	0.0	0.0	0.00	0.09	53.8
2	T1	28	0.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.09	57.6
Approach		34	0.0	0.018	0.9	NA	0.0	0.0	0.00	0.09	57.0
North: Road #2 North											
8	T1	37	0.0	0.022	0.0	LOS A	0.0	0.2	0.03	0.08	57.8
9	R2	5	0.0	0.022	5.6	LOS A	0.0	0.2	0.03	0.08	51.1
Approach		42	0.0	0.022	0.7	NA	0.0	0.2	0.03	0.08	56.9
West: Road #1											
10	L2	11	0.0	0.015	5.6	LOS A	0.1	0.4	0.09	0.56	42.8
12	R2	11	0.0	0.015	5.7	LOS A	0.1	0.4	0.09	0.56	43.8
Approach		21	0.0	0.015	5.6	LOS A	0.1	0.4	0.09	0.56	43.3
All Vehicles		97	0.0	0.022	1.8	NA	0.1	0.4	0.03	0.19	53.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Baroness / Road #2 AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Baroness / Road #2
Roundabout



MOVEMENT SUMMARY

Site: 101 [Baroness / Road #2 AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Baroness / Road #2
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: Road #2 south											
1	L2	42	0.0	0.058	5.1	LOS A	0.3	2.0	0.34	0.53	46.2
2	T1	18	0.0	0.058	5.3	LOS A	0.3	2.0	0.34	0.53	23.4
3	R2	5	0.0	0.058	9.3	LOS A	0.3	2.0	0.34	0.53	52.6
Approach		65	0.0	0.058	5.5	LOS A	0.3	2.0	0.34	0.53	38.9
East: Baroness east											
4	L2	1	0.0	0.085	4.7	LOS A	0.4	2.9	0.25	0.46	51.3
5	T1	98	0.0	0.085	4.9	LOS A	0.4	2.9	0.25	0.46	52.7
6	R2	4	0.0	0.085	8.7	LOS A	0.4	2.9	0.25	0.46	43.0
Approach		103	0.0	0.085	5.0	LOS A	0.4	2.9	0.25	0.46	52.3
North: Road#2 North											
7	L2	3	0.0	0.067	4.1	LOS A	0.3	2.3	0.18	0.60	48.2
8	T1	9	0.0	0.067	4.5	LOS A	0.3	2.3	0.18	0.60	42.7
9	R2	78	0.0	0.067	8.7	LOS A	0.3	2.3	0.18	0.60	42.2
Approach		91	0.0	0.067	8.1	LOS A	0.3	2.3	0.18	0.60	42.6
West: Baroness Road west											
10	L2	105	0.0	0.111	4.3	LOS A	0.6	4.2	0.13	0.48	44.9
11	T1	47	0.0	0.111	4.4	LOS A	0.6	4.2	0.13	0.48	54.2
12	R2	5	0.0	0.111	8.5	LOS A	0.6	4.2	0.13	0.48	50.1
Approach		158	0.0	0.111	4.5	LOS A	0.6	4.2	0.13	0.48	49.2
All Vehicles		417	0.0	0.111	5.5	LOS A	0.6	4.2	0.20	0.51	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

Site: 101 [Baroness / Road #2 AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Baroness / Road #2
Roundabout

Movement Performance - Vehicles

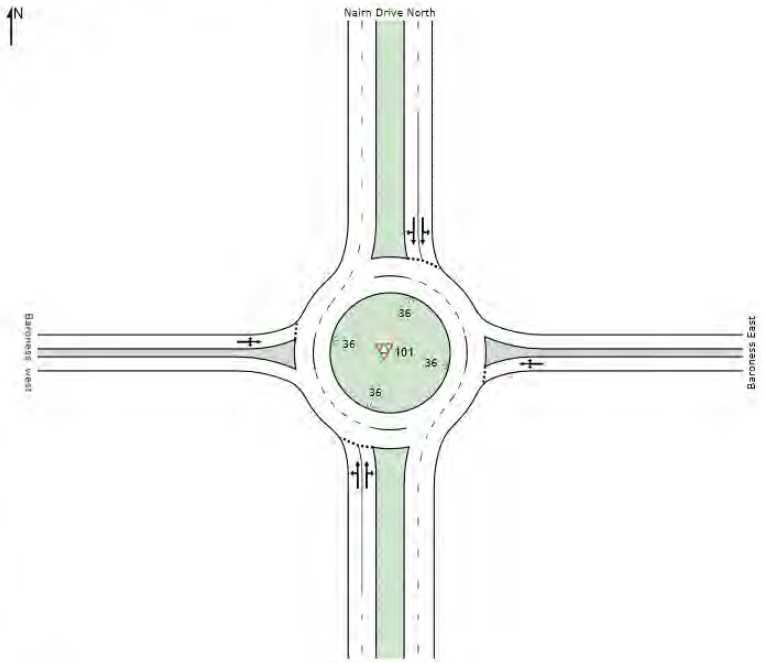
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2 south											
1	L2	42	0.0	0.058	5.1	LOS A	0.3	2.0	0.34	0.53	46.2
2	T1	18	0.0	0.058	5.3	LOS A	0.3	2.0	0.34	0.53	23.4
3	R2	5	0.0	0.058	9.3	LOS A	0.3	2.0	0.34	0.53	52.6
Approach		65	0.0	0.058	5.5	LOS A	0.3	2.0	0.34	0.53	38.9
East: Baroness east											
4	L2	1	0.0	0.085	4.7	LOS A	0.4	2.9	0.25	0.46	51.3
5	T1	98	0.0	0.085	4.9	LOS A	0.4	2.9	0.25	0.46	52.7
6	R2	4	0.0	0.085	8.7	LOS A	0.4	2.9	0.25	0.46	43.0
Approach		103	0.0	0.085	5.0	LOS A	0.4	2.9	0.25	0.46	52.3
North: Road#2 North											
7	L2	3	0.0	0.067	4.1	LOS A	0.3	2.3	0.18	0.60	48.2
8	T1	9	0.0	0.067	4.5	LOS A	0.3	2.3	0.18	0.60	42.7
9	R2	78	0.0	0.067	8.7	LOS A	0.3	2.3	0.18	0.60	42.2
Approach		91	0.0	0.067	8.1	LOS A	0.3	2.3	0.18	0.60	42.6
West: Baroness Road west											
10	L2	105	0.0	0.111	4.3	LOS A	0.6	4.2	0.13	0.48	44.9
11	T1	47	0.0	0.111	4.4	LOS A	0.6	4.2	0.13	0.48	54.2
12	R2	5	0.0	0.111	8.5	LOS A	0.6	4.2	0.13	0.48	50.1
Approach		158	0.0	0.111	4.5	LOS A	0.6	4.2	0.13	0.48	49.2
All Vehicles		417	0.0	0.111	5.5	LOS A	0.6	4.2	0.20	0.51	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

SITE LAYOUT

Site: 101 [Nairn Baroness AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Nairn Drive / Baroness Road
Roundabout



MOVEMENT SUMMARY

Site: 101 [Nairn Baroness AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Nairn Drive / Baroness Road
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: Nairn Drive South											
1	L2	3	3.0	0.257	5.1	LOS A	1.6	11.2	0.38	0.46	53.8
2	T1	602	3.0	0.257	5.3	LOS A	1.6	11.2	0.38	0.48	62.9
3	R2	58	3.0	0.257	11.8	LOS A	1.5	10.9	0.39	0.52	58.8
Approach		663	3.0	0.257	5.8	LOS A	1.6	11.2	0.38	0.48	62.6
East: Baroness East											
4	L2	63	3.0	0.247	4.4	LOS A	1.1	8.1	0.57	0.67	52.2
5	T1	59	3.0	0.247	4.0	LOS A	1.1	8.1	0.57	0.67	46.9
6	R2	96	3.0	0.247	9.9	LOS A	1.1	8.1	0.57	0.67	54.0
Approach		218	3.0	0.247	6.7	LOS A	1.1	8.1	0.57	0.67	51.4
North: Nairn Drive North											
7	L2	22	3.0	0.215	4.9	LOS A	1.2	8.6	0.30	0.43	56.1
8	T1	544	3.0	0.215	5.1	LOS A	1.2	8.6	0.30	0.44	63.7
9	R2	16	3.0	0.215	11.5	LOS A	1.2	8.4	0.31	0.45	57.2
Approach		582	3.0	0.215	5.2	LOS A	1.2	8.6	0.30	0.44	63.3
West: Baroness west											
10	L2	51	3.0	0.150	4.7	LOS A	0.7	4.7	0.60	0.64	52.2
11	T1	44	3.0	0.150	4.3	LOS A	0.7	4.7	0.60	0.64	47.7
12	R2	25	3.0	0.150	10.2	LOS A	0.7	4.7	0.60	0.64	53.5
Approach		120	3.0	0.150	5.7	LOS A	0.7	4.7	0.60	0.64	51.1
All Vehicles		1583	3.0	0.257	5.7	LOS A	1.6	11.2	0.40	0.51	60.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.

MOVEMENT SUMMARY

Site: 101 [Nairn Baroness PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Nairn Drive / Baroness Road
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: Nairn Drive South											
1	L2	8	3.0	0.236	4.9	LOS A	1.4	10.1	0.32	0.43	54.1
2	T1	613	3.0	0.236	5.1	LOS A	1.4	10.1	0.32	0.44	63.6
3	R2	17	3.0	0.236	11.5	LOS A	1.4	9.9	0.33	0.46	60.1
Approach		638	3.0	0.236	5.2	LOS A	1.4	10.1	0.32	0.44	63.4
East: Baroness East											
4	L2	6	3.0	0.138	4.6	LOS A	0.6	4.3	0.58	0.69	51.1
5	T1	36	3.0	0.138	4.2	LOS A	0.6	4.3	0.58	0.69	46.1
6	R2	72	3.0	0.138	10.1	LOS A	0.6	4.3	0.58	0.69	52.8
Approach		114	3.0	0.138	7.9	LOS A	0.6	4.3	0.58	0.69	50.4
North: Nairn Drive North											
7	L2	57	3.0	0.263	5.0	LOS A	1.6	11.6	0.35	0.45	55.7
8	T1	621	3.0	0.263	5.2	LOS A	1.6	11.6	0.36	0.46	63.4
9	R2	20	3.0	0.263	11.6	LOS A	1.6	11.4	0.37	0.47	56.9
Approach		698	3.0	0.263	5.4	LOS A	1.6	11.6	0.36	0.46	62.6
West: Baroness west											
10	L2	12	3.0	0.171	4.6	LOS A	0.7	5.4	0.58	0.66	51.3
11	T1	65	3.0	0.171	4.2	LOS A	0.7	5.4	0.58	0.66	46.7
12	R2	65	3.0	0.171	10.1	LOS A	0.7	5.4	0.58	0.66	52.5
Approach		142	3.0	0.171	6.9	LOS A	0.7	5.4	0.58	0.66	50.0
All Vehicles		1592	3.0	0.263	5.6	LOS A	1.6	11.6	0.38	0.49	60.9

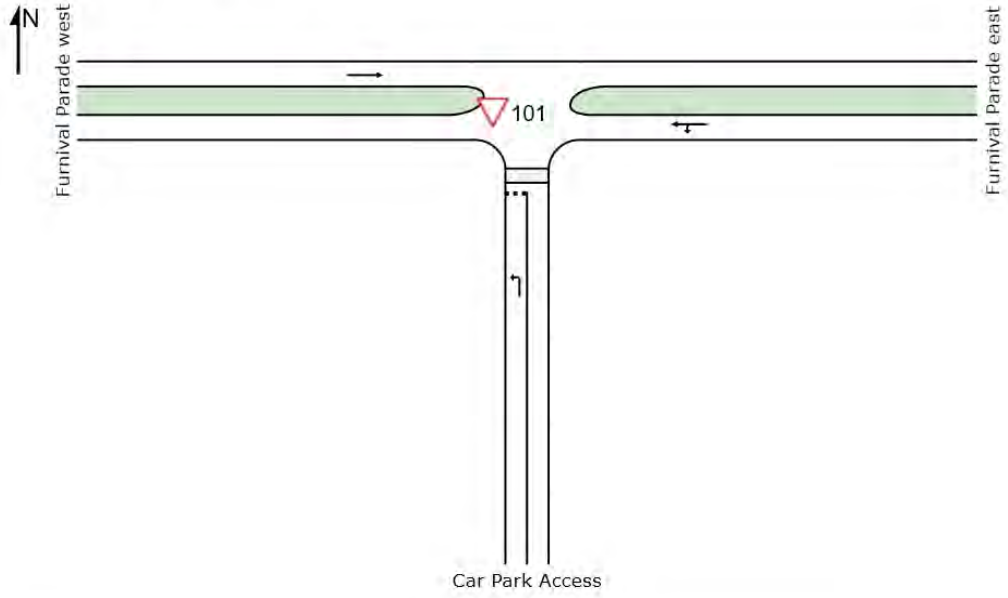
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.

APPENDIX F ACCESS SIDRA ANALYSIS

SITE LAYOUT

Site: 101 [Furnival 2 AM staff]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Furnival Parade (Road #23) / Staff Car Park
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Furnival 2 AM staff]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Furnival Parade (Road #23) / Staff Car Park
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: Car Park Access											
1	L2	1	0.0	0.001	3.3	LOS A	0.0	0.0	0.29	0.42	34.4
Approach		1	0.0	0.001	3.3	LOS A	0.0	0.0	0.29	0.42	34.4
East: Furnival Parade east											
4	L2	5	0.0	0.115	2.5	LOS A	0.0	0.0	0.00	0.01	33.7
5	T1	217	3.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.01	39.8
Approach		222	2.9	0.115	0.1	NA	0.0	0.0	0.00	0.01	39.7
West: Furnival Parade west											
11	T1	244	3.0	0.126	1.2	LOS A	0.0	0.0	0.00	0.23	44.3
Approach		244	3.0	0.126	1.2	NA	0.0	0.0	0.00	0.23	44.3
All Vehicles		467	3.0	0.126	0.6	NA	0.0	0.0	0.00	0.12	42.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Furnival 2 PM staff]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Furnival Parade (Road #23) / Staff Car Park
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

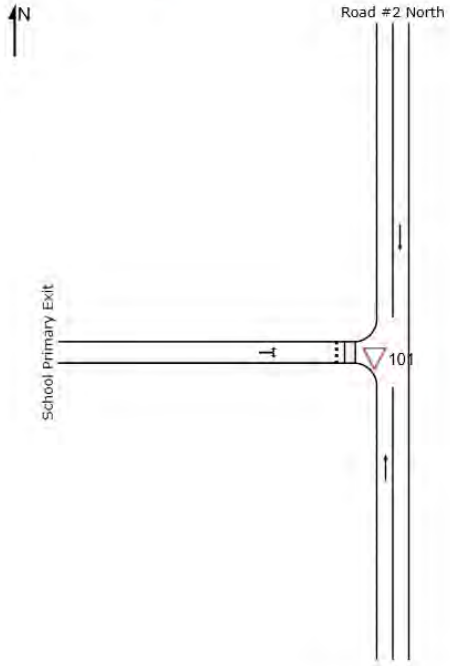
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Car Park Access											
1	L2	48	0.0	0.032	2.9	LOS A	0.1	0.9	0.16	0.43	35.3
Approach		48	0.0	0.032	2.9	LOS A	0.1	0.9	0.16	0.43	35.3
East: Furnival Parade east											
4	L2	1	0.0	0.040	2.5	LOS A	0.0	0.0	0.00	0.01	33.8
5	T1	76	3.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.01	39.9
Approach		77	3.0	0.040	0.0	NA	0.0	0.0	0.00	0.01	39.8
West: Furnival Parade west											
11	T1	139	3.0	0.072	1.2	LOS A	0.0	0.0	0.00	0.23	44.3
Approach		139	3.0	0.072	1.2	NA	0.0	0.0	0.00	0.23	44.3
All Vehicles		264	2.4	0.072	1.2	NA	0.1	0.9	0.03	0.20	41.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Road#2 Exit]**

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #2 School Exit
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ **Site: 101 [Road#2 Exit]**

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #2 School Exit
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: Road #2 south											
2	T1	42	0.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		42	0.0	0.022	0.0	NA	0.0	0.0	0.00	0.00	60.0
North: Road #2 North											
8	T1	212	0.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		212	0.0	0.110	0.0	NA	0.0	0.0	0.00	0.00	60.0
West: School Primary Exit											
10	L2	201	0.0	0.176	3.2	LOS A	0.8	5.3	0.11	0.52	21.6
12	R2	51	0.0	0.176	4.2	LOS A	0.8	5.3	0.11	0.52	38.8
Approach		252	0.0	0.176	3.4	LOS A	0.8	5.3	0.11	0.52	26.2
All Vehicles		505	0.0	0.176	1.7	NA	0.8	5.3	0.06	0.26	41.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Road#2 Exit PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Road #2 School Exit
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

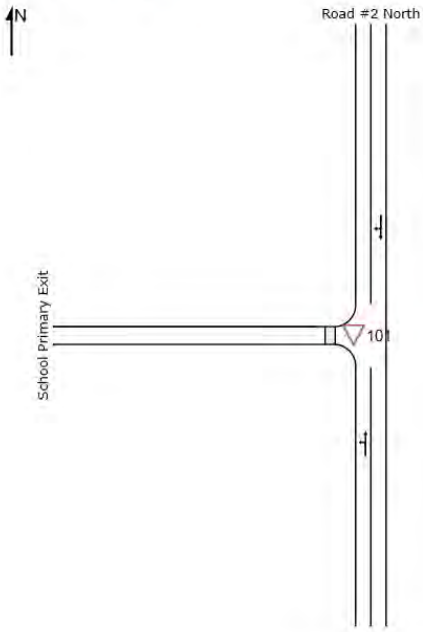
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2 south											
2	T1	11	0.0	0.005	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		11	0.0	0.005	0.0	NA	0.0	0.0	0.00	0.00	60.0
North: Road #2 North											
8	T1	42	0.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		42	0.0	0.022	0.0	NA	0.0	0.0	0.00	0.00	60.0
West: School Primary Exit											
10	L2	1	0.0	0.002	3.1	LOS A	0.0	0.0	0.05	0.54	21.7
12	R2	1	0.0	0.002	3.2	LOS A	0.0	0.0	0.05	0.54	39.2
Approach		2	0.0	0.002	3.2	LOS A	0.0	0.0	0.05	0.54	32.1
All Vehicles		55	0.0	0.022	0.1	NA	0.0	0.0	0.00	0.02	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Road#2 Entry]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #2 School Entry
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 101 [Road#2 Entry AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #2 School Entry
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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #2 south											
1	L2	100	0.0	0.077	5.5	LOS A	0.0	0.0	0.00	0.41	45.5
2	T1	42	0.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.41	49.1
Approach		142	0.0	0.077	3.9	NA	0.0	0.0	0.00	0.41	46.5
North: Road #2 North											
8	T1	111	0.0	0.154	0.4	LOS A	0.8	5.3	0.25	0.36	48.3
9	R2	151	0.0	0.154	6.2	LOS A	0.8	5.3	0.25	0.36	43.1
Approach		261	0.0	0.154	3.7	NA	0.8	5.3	0.25	0.36	45.1
All Vehicles		403	0.0	0.154	3.8	NA	0.8	5.3	0.16	0.38	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 [Road#2 Entry PM]

Baldivis Primary School Sidra.
PM Peak Full Development 2031
Road #2 School Entry
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: Road #2 south											
1	L2	1	0.0	0.006	5.5	LOS A	0.0	0.0	0.00	0.05	53.3
2	T1	11	0.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.05	58.3
Approach		12	0.0	0.006	0.5	NA	0.0	0.0	0.00	0.05	57.8
North: Road #2 North											
8	T1	42	0.0	0.023	0.0	LOS A	0.0	0.0	0.00	0.02	59.5
9	R2	1	0.0	0.023	5.8	LOS A	0.0	0.0	0.00	0.02	51.8
Approach		43	0.0	0.023	0.1	NA	0.0	0.0	0.00	0.02	59.3
All Vehicles		55	0.0	0.023	0.2	NA	0.0	0.0	0.00	0.02	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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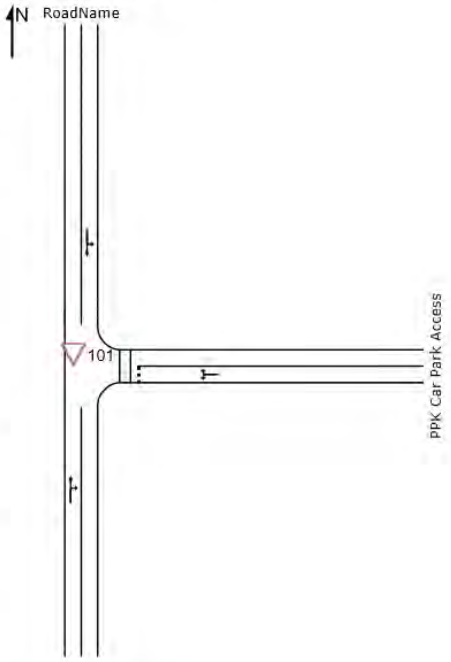
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

Site: 101 [Road #1 /PPK Car Park]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #1 / PPK Car PSingle Access
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Road #1 /PPK Car Park AM]

Baldivis Primary School Sidra
AM Peak Full Development 2031
Road #1 / PPK Car Park Single Access
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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Road #1 south											
2	T1	37	0.0	0.029	0.1	LOS A	0.1	0.6	0.12	0.15	37.3
3	R2	16	0.0	0.029	3.9	LOS A	0.1	0.6	0.12	0.15	34.1
Approach		53	0.0	0.029	1.3	NA	0.1	0.6	0.12	0.15	36.4
East: PPK Car Park Access											
4	L2	8	0.0	0.065	3.2	LOS A	0.2	1.5	0.17	0.53	41.6
6	R2	69	0.0	0.065	3.3	LOS A	0.2	1.5	0.17	0.53	25.9
Approach		78	0.0	0.065	3.3	LOS A	0.2	1.5	0.17	0.53	27.7
North: RoadName											
7	L2	61	0.0	0.053	4.9	LOS A	0.0	0.0	0.00	0.36	20.3
8	T1	37	0.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.36	49.4
Approach		98	0.0	0.053	3.1	NA	0.0	0.0	0.00	0.36	29.9
All Vehicles		228	0.0	0.065	2.7	NA	0.2	1.5	0.08	0.37	31.0

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SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D)

MOVEMENT SUMMARY

▽ Site: 101 [Road #1 /PPK Car Park PM]

Baldivis Primary School Sidra
PM Peak Full Development 2031
Road #1 / PPK Car Park Single Access
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: Road #1 south											
2	T1	37	0.0	0.020	0.0	LOS A	0.0	0.0	0.01	0.01	39.8
3	R2	1	0.0	0.020	3.7	LOS A	0.0	0.0	0.01	0.01	36.7
Approach		38	0.0	0.020	0.1	NA	0.0	0.0	0.01	0.01	39.7
East: PPK Car Park Access											
4	L2	1	0.0	0.002	3.2	LOS A	0.0	0.0	0.11	0.51	41.9
6	R2	1	0.0	0.002	3.1	LOS A	0.0	0.0	0.11	0.51	26.3
Approach		2	0.0	0.002	3.2	LOS A	0.0	0.0	0.11	0.51	34.2
North: RoadName											
7	L2	1	0.0	0.020	4.9	LOS A	0.0	0.0	0.00	0.02	23.1
8	T1	37	0.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.02	59.4
Approach		38	0.0	0.020	0.1	NA	0.0	0.0	0.00	0.02	58.2
All Vehicles		78	0.0	0.020	0.2	NA	0.0	0.0	0.01	0.03	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D)