muswellbrook shire council

ORDINARY COUNCIL MEETING ATTACHMENTS

29 OCTOBER 2019

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ITEM **SUBJECT** **PAGE NO**

10.1 DA 47/2019 - SCHOOL - EARLY EDUCATION CENTRE

DEVELOPMENT ASSESSMENT REPORT

Attached: Site Plan

REPORT TO THE GENERAL MANAGER

ADDRESS:	LOT: 1 DP: 1070178 111 Skellatar Stock Route MUSWELLBROOK
APPLICATION No:	47/2019
PROPOSAL:	Centre-based child care facility and the subdivision of one (1) Lot into two (2)
OWNER:	St James Primary School
APPLICANT:	Trustee Of The Roman Catholic Church For Diocese Of Maitland-Newcastle C/O-Kurt Daley 841 Hunter Street NEWCASTLE WEST NSW 2302
AUTHOR:	Mr A Kazi
DATE LODGED:	18/06/2019
AMENDED:	
ADD. INFO REC'D:	
DATE OF REPORT:	22 Oct 2019

SUMMARY

SUBMISSIONS: One (1)

RECOMMENDATION: Approval subject to conditions

1.0 SITE AND LOCALITY

The proposed development relates to Lot 1 DP 1070178. The address of the land is 111 Skellatar Stock Route, Muswellbrook.

The site is developed and is operated as St James Primary School by the Maitland-Newcastle Catholic Church. The school site has an area of approximately 7.14ha and the works proposed are on the vacant south western portion of the site.

Vehicle access to the site is available from an internal loop road that serves the School, with two egress points from Skellatar Stock Route.

The land is zoned R1 General Residential, has a minimum lot size of 600m^2 and a maximum building height of 13m.

A satellite image of subject site have been included below.

2.0 DESCRIPTION OF PROPOSAL

The proposal seeks development consent for the establishment of an early education centre facility and the subdivision of the land into two lots.

The early education centre would provide care and early learning facilities for children between the ages of 0-5 years with a capacity for 104 children.

The development comprises:

- 6 playrooms catering to various age groups (0-5 years of age)
- Administration and staff areas
- Commercial kitchen
- Amenities and nappy change rooms
- Cot rooms
- Bottle preparation room
- Laundry
- Arts and craft preparation rooms
- Storage rooms
- Covered and open outdoor landscaped play areas
- Building services
- Carparking and driveways
- Forecourt and entry landscaping

Referrals

The application was referred to Council's Building Section, Environmental Health Officer, Water and Waste, Roads and Drainage. Referrals responses are provided below:

Building Surveyor

A response to this referral was received on the 8 July 2019, raising no objection to the proposed development and recommending a number of standard conditions of consent be imposed on any development consent issued in relation to the development.

The comments provided have informed the development assessment and recommended conditions of consent.

Senior Environmental Health Officer

A response to this referral was received on the 8 July 2019 which raised no objection to the proposed development and noted the following:

- Construction of the commercial kitchen is to be in accordance with AS4674:2000.

- Contaminated land: The Targeted Environmental Site Assessment 111 Skellatar Stock Route, Muswellbrook NSW Ref: P1636_ undertaken by Valley Civilab Pty Ltd, concluded that there is "no indication of gross contamination has been identified which would constrain the development of the Site for its proposed residential A land use as an early education centre." As such, no remediation work is required.

Council's Environmental Health Officer recommended the imposition of conditions relating to installation and the operation of the kitchen which have informed the recommended conditions of consent.

Water and Waste Comment

Comments received raised no objection to the proposed development and advised of Council's requirements as follows:

Council's mains should be extended in order to service the new lot. If the services are to be traversed through adjacent properties, a 3m wide easement benefitting Council should be created for such extensions.

All extensions required for the development shall be designed by an approved consultant and constructed by an accredited contractor in accordance with Council's Technical Specifications and Standard Drawings .The developer has to bear the cost of all service extensions required for the development. Developer is responsible for getting the water service metered by Council and installation of appropriate backflow prevention devices by an accredited registered plumber.

Headworks Charges

Proposed development to provide care for 104 kids and is expected to create additional loading on water and sewage headworks . As such, the Developer is required to pay headworks charges as detailed below. Water and Waste will include these charges in the Notice of Requirements to be issued under Section 64 of LG Act 1993 and Sections 305 and 306 of Water Management Act 2000. Please note that the charges are based on 2019-20 Fees and Charges.

Service	*No*	*Loading/person*	*Expected Loading-ETs*	*HW charges per ET-$*	*Total Charge-$*
Water	*104*	*0.06 ET*	*6.24*	*$ 7052*	*$ 44004.48*
Sewer(0.95 Dis Factor)	*104*	*0.095ET*	*9.88*	*$ 7805*	*$ 77113.4*
Total					**$121,117.88**

Roads and Drainage Comment:

A final response was received on 18 October 2019 raising no objection to the proposed development.

3.0 ASSESSMENT

This report provides an assessment of the material presented in the Application against the relevant State and local planning legislation and policy.

Section 4.15 Matters for Consideration

Section 4.15(1)(a)(i) The provisions of any Environmental Planning Instrument (EPI)

The following EPIs, DCPs, Codes and Policies are relevant to this Application:

1. Muswellbrook Local Environmental Plan 2009 (MLEP 2009)

Land Use Zone and Permitted Land Use

The development site is zoned R1 General Residential under *Muswellbrook LEP 2009*.

The *Muswellbrook LEP 2009* land use table for the R1 General Residential zone identifies the following types of development as development permissible without consent, permissible with consent and prohibited.

> ***2 Permitted without consent***
> *Home occupations*
>
> ***3 Permitted with consent***
> *Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Educational establishments; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Hostels; Kiosks; Multi dwelling housing; Neighbourhood shops; Oyster aquaculture; Places of public worship; Pond-based aquaculture; Recreation areas; Residential flat buildings; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Sewage reticulation systems; Shop top housing; Tank-based aquaculture; Water recycling facilities; Water supply systems*
>
> ***4 Prohibited***
> *Any development not specified in item 2 or 3*

The proposed development meets the land use classification of an *early education and care facility.* The Muswellbrook LEP 2009 land use definition for an *early education and care facility is as follows:*

> ***early education and care facility*** *means a building or place used for the education and care of children, and includes any of the following:*
> *(a) a centre-based child care facility,*
> *(b) home-based child care,*
> *(c) school-based child care.*

In reviewing this land use definition Council Officers identified that the proposed development more aptly met the land use definition of a *centre-based child care facility* due to the specifics of the type of care proposed under the development application.

The relevant land use definition is as follows:

> ***centre-based child care facility*** *means:*
> *(a) a building or place used for the education and care of children that provides any one or more of the following:*
> *(i) long day care,*
> *(ii) occasional child care,*
> *(iii) out-of-school-hours care (including vacation care),*
> *(iv) preschool care, or*
> *(b) an approved family day care venue (within the meaning of the Children (Education and Care Services) National Law (NSW)),*
>
> *but does not include:*
> *(c) a building or place used for home-based child care or school-based child care, or*
> *(d) an office of a family day care service (within the meanings of the Children (Education and Care Services) National Law (NSW)), or*
> *(e) a babysitting, playgroup or child-minding service that is organised informally by the parents of the children concerned, or*
> *(f) a child-minding service that is provided in connection with a recreational or commercial facility (such as a gymnasium) to care for children while the children's parents are using the facility, or*
> *(g) a service that is concerned primarily with providing lessons or coaching in, or providing for participation in, a cultural, recreational, religious or sporting activity, or providing private tutoring, or*
> *(h) a child-minding service that is provided by or in a health services facility, but only if the service is established, registered or licensed as part of the institution operating in the facility.*

Development for the purpose of centre based child care facilities is permissible with consent in the R1 zone. Accordingly, the proposed development is viewed as a form of development permissible with consent pursuant to the land use table provisions of the Muswellbrook LEP 2009.

Objectives of the R1 General Residential Zone

Clause 2.3(2) of the Muswellbrook LEP 2009 requires the consent authority to consider the relevant land use zone objectives when determining a development application. The land use zone objectives for the R1 General Residential zone are as follows:

- *To provide for the housing needs of the community.*
- *To provide for a variety of housing types and densities.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To enable sensitive infill development of other housing types.*
- *To allow people to carry out a reasonable range of activities from their homes, where such activities do not adversely affect the living environment of neighbours.*
- *To promote the principles of ecological sustainable development including energy and water efficient subdivision and housing design.*
- *To minimise the impact of non-residential uses and ensure these are in character and compatible with surrounding development.*
- *To ensure that development is carried out in a way that is compatible with the flood risk of the area.*

The proposed development involves the non-residential development on a R1 zoned site currently used for non-residential purposes. The development is considered to be complimentary to the land use zone objectives as it would remain in character with the locality and would provide a service that supports the day to day needs of residents in the area.

<u>Relevant Clauses applicable under the Muswellbrook Local Environmental Plan 2009</u>

Part 1 Preliminary	
Part 2 Permitted or prohibited development	
2.3 Zone objectives and Land Use Table	The proposed development is considered to be compatible with the relevant land use objectives and thereby can be supported under the provisions of this Clause. **Complies**
Part 3 Exempt and complying development	
Part 4 Principal development standards	
4.1 Minimum subdivision lot size	The proposed development involves the subdivision of the land in two, so that the centre-based child care facility would be on a separate lot to the primary school. The lot containing the proposed centre-based child care facility would have an area of approximately 5,268m^2 and would be benefited by easements for access which burdens the lot that comprises the St James School. The lot comprising the St James School would have an area of approximately 66,132m^2. This clause of the Muswellbrook LEP 2009 requires lots created by the subdivision of land to comply with the relevant minimum lot size specified by the minimum lot size map. This map identifies that a minimum lot size of 600m^2 is applicable to the land subject to this development application. Given the proposed lots would have areas of 5,268m^2 and 66,132m^2 Council Officers are satisfied that the development would comply with the 600m^2 minimum lot size specified by this Clause. **Complies**
4.3 Height of buildings	The maximum building height for the land subject to

	this development application as identified by the height of buildings map is 13m. The proposed building does not exceed this height. **Complies**.
4.4 Floor space ratio	The Floor Space ratio map does not specify any maximum floor space ratio (FSR) for the land. **Not relevant.**
Part 7 Additional local provisions	
7.1 Terrestrial biodiversity	The land subject to this development application is not identified on the Muswellbrook LEP 2009 terrestrial biodiversity map. Accordingly, the provisions of this clause do not require further consideration. **Not relevant**
7.4 Subdivision in Zone R1 General Residential and Zone RU5 Village	The clause requires the consent authority to be satisfied that adequate arrangements have/can be made for the water and sewerage servicing of lots resulting from any subdivision in the zones to which this clause applies. Council Officers are satisfied that arrangements can be made for servicing of the proposed lots. Accordingly, Council Officers are satisfied that the development will comply with the requirements of this clause. **Complies**
7.6 Earthworks	This clause requires a consent authority to consider the following matters prior to granting consent to a development application involving earthworks. *a) the likely disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality,* *b) the effect of the proposed development on the likely future use or redevelopment of the land,* *c) the quality of the fill or of the soil to be excavated, or both,* *d) the effect of the proposed development on the existing and likely amenity of adjoining properties,* *e) the source of any fill material or the destination of any excavated material,* *f) the likelihood of disturbing relics,* *g) the proximity to and potential for adverse impacts on any watercourse, drinking water catchment or environmentally sensitive area.* Each of the matters specified above have been considered through the assessment of the development application and a sediment and erosion control plan has been prepared and submitted in relation to the proposal. Council Officers are satisfied that the proposed development would comply with the requirements of this clause where it is carried out in accordance with the provisions of this erosion and sediment control plan. **Complies**

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

Under Clause 7 of this SEPP a consent authority must not consent to the carrying out of any development on land unless:

(a) It has considered whether the land is contaminated, and

(b) If the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
(c) If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

Council does not have records that indicate that land has been subject to activities that may have caused contamination. Given the above and that the development application site is currently operated as an approved primary school, it is considered that the proposed development can be supported without the need for any further investigations into soil qualities or contamination.

Given the above it is considered unlikely that the land requires remediation under the SEPP for the proposed development to proceed.

3. <u>State Environmental Planning Policy No. 44 Koala Habitat</u>

Council Officers have inspected the site and have not identified any vegetation coverage which would identify the development as a potential or core koala habitat within the meaning of the SEPP. As the proposed development is unlikely to comprise a potential koala habitat Council Officers are satisfied that the proposed development can be supported without further consideration of the SEPP or the preparation of a detailed flora and fauna assessment in relation to the site and SEPP requirements.

4. <u>State Environmental Planning Policy No.64 – Advertising and Signage</u>

The proposed development involves the installation of business identification signage at a number of locations at the site. The signage proposed includes:

- A 2m by 1m business identification sign fixed to a wall within the garden bed at the principle entrance to the subject site. The sign would be illuminated with up lighting.
- A 2.9m by 2.9m business identification sign fixed to the eastern wall of the proposed building adjacent to the main entry. The sign would be illuminated with lighting.
- A 4.8m by 0.9m business identification sign fixed to a weatherboard wall at the western end of the southern elevation of the proposed building.
- A 0.9 by 1m business identification sign located in the garden bed along the driveway entry. The sign would be illuminated by up lighting.

Council Officers have reviewed the proposed advertisement signage against the SEPP Objectives and the requirements of Schedule 1 of the SEPP. The findings of this review can be summarised as follows:

SEPP 64: Schedule 1 Assessment Criteria	
Assessment Item	**Planning Comment**
1. Character of the area	The proposed advertisement signage is considered to be compatible with the character of the area and would not impact on significant views and vistas.
2. Special areas	The subject site is not identified as a special area. Therefore, this matter is not applicable to the subject development.
3. Views and vistas	The proposed signage will not obscure or compromise views, will not dominate the skyline. No external advertisers would be permitted to use the signage space of the subject site as is currently.

4. Streetscape, setting or landscape	As above.
5. Site and building	The proposed signage is considered to be compatible with the scale and proportion of the building on which it is located.
1. Associated devices and logos with advertisements and advertising structures	This matter is not applicable to the subject development.
7. Illumination	The proposed signage would be illuminated and thereby conditions of consent should be implemented to ensure any light emissions with the potential to impact the amenity of the locality are managed effectively.
8. Safety	The proposed signage is not considered a risk to public safety.

Council Officers are satisfied that the proposed development would comply with the relevant provisions of the SEPP provided all illuminated the signage is managed in accordance with the recommended conditions of consent.

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

The SEPP (Education Establishments and child care facilities) 2017 provides specific requirements for the assessment of development application related centre-based child care facilities.

Clause 22 of the SEPP prescribes referral and concurrence procedures for the assessment of development applications involving centre-based child care facilities where:

> *(a) The floor area of the premises does not comply with regulation 107 (indoor unencumbered space requirements) of the Education and Care Services National Regulations, or*
> *(b) the outdoor space requirements for the building or place do not comply with regulation 108 (outdoor unencumbered space requirements) of those Regulations.*

Planning comment: the proposed development has been reviewed against the criteria of Regulation 107 and 108. The proposed development exceeds the minimum unencumbered indoor and unencumbered outdoor space to children ratios prescribed by this Clause and therefore the development does not require referral to the NSW Department of Education for concurrence.

SEPP (Education Establishments and Child Care Facilities) 2017 Clause 22 assessment table:

Clause 22(1) requirement	Education and Care Services National Regulations Clause requirement	Planning consideration
22(1)(a) compliance with Education and Care Services National Regulations Clause 107	The approved provider of an education and care service must ensure that, for each child being educated and cared for by the service, the education and care service premises has at least 3.25m^2 of unencumbered indoor space	In accordance with the requirements of this clause the development requires a total unencumber indoor space of 338m^2 (104 x 3.25m^2). The information submitted with the development application indicates that the development has an unencumbered indoor area of 391m^2. **Complies**
22(1)(b) compliance with Education and Care Services National Regulations Clause 108	The approved provider of an education and care service must ensure that, for each child being educated and cared for by the service, the education and care service premises has at least 7sqm of unencumbered outdoor space.	In accordance with the requirements of this clause the development requires a total unencumber outdoor space of 728m^2 (104 x 7m^2). The information submitted with the development application indicates that a total unencumbered outdoor area of 1255m^2 would be provided. **Complies**

Clause 23 of the SEPP requires a consent authority to take into consideration to the provisions of the Child Care Centre Planning Guideline when determining a development application that relates to centre-based child care facilities.

Matters specified by these sections of the guideline have been considered and commented on in the table below.

Child Care Centre Planning Guideline Assessment table:

Child Care Planning Guideline Section	Section Provisions	Planning comment
Section 2 Child Care Centre Design Principles	Section 2 of the document specifies design quality principles for the consideration through the preparation and assessment of a development application for a centre-based child care facility.	Overall Council Officers are satisfied with the design quality of the proposed development and that the design of the proposed development would be generally in accordance with the principles outlined under this Section of the *Child Care Centre Planning Guideline.* **Complies**
Section 3.1 Site Selection and Location	This section specifies a range of objectives and criteria to be taken into consideration when selecting a location for the establishment of a centre based child care facility.	Council Officers have reviewed the matters specified by this section of the Guideline and raise no objection to the proposed siting of the child care centre. This position has been informed by the existing use of the site as a Primary School, the physical attributes of the land, its separation from sensitive noise receptors, the land use zoning of the site. Land attributes that may affect the suitability of the site have also been considered through the assessment of this development application. The land is not subject to any particular site constraints that would prevent Council from granting consent to the proposed development. **Complies**
3.2 Local character, streetscape and the public domain interface	This section specifies a range of objectives and criteria to be taken into consideration with the design of the proposed development in relation to the streetscape.	No objection is raised to the design quality of the proposed development or the manner which it would relate to the streetscape or existing development at the site. **Complies**
3.3 Building Orientation and envelope	This section specifies a range of objectives and criteria that seek to ensure that the design of a child care centre is sympathetic to established development in its surrounds, while ensuring that any facility is safe accessible and functional for its users.	The proposed development would be setback from the street and would not significantly impose on the existing context and setting. The design of the proposed building has also been prepared with consideration of providing safe and functional play areas as well as appropriate access. It will be necessary for detailed design plans to be provided to demonstrate that the development complies with the accessibility Building Code of Australia prior to the issue of a Construction Certificate. **Complies**
3.4 Landscaping	This section sets out the requirements for landscaping to be considered in the design of the proposed development.	A landscape plan has been submitted as part of the development application. This plan provides details of the location and type of landscaping to be installed at the site. Council is satisfied that the proposed landscaping arrangement would be consistent with the Guideline and Council's local development requirements established through the Muswellbrook DCP. **complies**
3.5 Visual and acoustic privacy	This section sets requirements surrounding the design and location of child care centres in a manner to minimise the impact of child care centres on the acoustic and visual privacy of neighbours and to protect the security and privacy of	The site is separated from any nearby residential properties and is unlikely to have any impact on neighbouring residents and would provide appropriate privacy for users of the facility. **complies**

	children attending the facility.	
3.6 Noise and air pollution	This section sets guidelines for the location of premises away from potential noise sources or the design of facilities to minimise noise impacts.	The site selected for development is currently occupied by a Primary School and is largely unaffected by potential noise sources. A referral to Council's Environmental Health Officer has not identified a requirement for an Acoustic Report. **Complies**
3.7 Hours of operation	This section seeks to minimise impacts on neighbours associated with extended operating hours.	The proposed operating hours of the premises are proposed to be 6:30 am to 6:30pm Monday to Friday. These operating hours are not anticipated to have any impact on residential receivers in the locality. **complies**
3.8 Traffic, parking and pedestrian circulation	This section aims to ensure the provision of parking to support the development. The development won't significantly impact on traffic arrangements.	The current rate of car parking and traffic flow for the School is considered to be acceptable. The Traffic Report provided is detailed and sufficient for this assessment component. The Traffic generated from this proposal would not adversely impact on the local and state road network. **Complies**
4.1 Indoor space requirements	References the minimum internal and external spaces per child provided under the Cl 107 of the SEPP (Education Establishments and Child Care Facilities) 2017. Recommends the inclusion of internal storage space for the facility at a rate of 0.3m (external) and 0.2 (internal) per child.	The proposed development would comply with the indoor and outdoor space requirements of Cl 107 of the SEPP (Education Establishments and Child Care Facilities) 2017. In relation to the internal and external storage space provisions of this clause it has been calculated that the following storage area would need to be provided to the proposed development. Internal 0.2m^3 x 104 = 20.8m^3 external 104 x 0.3m^3 = 31.2m^3 Total = 52m^3 The proposed plans indicate that total storage space of 171m^3 would be provided to the development. **Complies**
4.2 Laundry and hygiene facilities	This section requires the provision of laundry facilities to the development.	The proposed early education centre building includes laundry facilities. **Complies**
4.3 Toilet and hygiene facilities	Prescribes that bathrooms be provided to the facility and recommends the inclusion of lower basins and toilets at junior heights.	The proposed development includes a number of amenities. The rate of amenities provided would need to comply with the requirements of the Building Code of Australia and this be demonstrated prior to the issue of a Construction Certificate. **complies**
4.4 Ventilation and natural light	Requires the use of natural lighting in building design.	The proposal would be well ventilated with adequate natural light. The exterior treatment of the building's façade reflects the internal function of the spaces. Windows to the Western Elevation have been minimised to eliminate the hot afternoon summer sun penetrating the Playroom spaces. Window & door openings are generally concentrated to the walls between the Play Rooms and the covered north facing veranda, which connects to the Outdoor Play Space. **Complies**
4.5 Administration Space	Sets design principles for administration areas of a child care centre	Administrative space would be provided in accordance to *Regulation 111 of the Education and Care Services National Regulations*. The proposed plans indicate a logical location and design for all administrative areas. **Complies**

4.6 Nappy Change Facilities	Sets criteria for the provision of nappy change facilities in a child care centre.	The development will include a nappy change facility. **Complies**
4.7 Premises designed to facilitate supervision	Provides design guidelines for supervising children using the premises	The proposed classroom would include large windows and glass doors to support the supervision of students. The overall layout of the building establishes good spatial relationships between internal and external play spaces, and will assist with staff supervision whilst endeavouring to create efficiencies through shared support spaces and circulation. C**omplies**
4.8 Emergency and evacuation procedures	Provides guidelines for managing emergency situations and ensuring safe spaces and assembly points for emergencies	Appropriate student safety and evacuation procedures could be developed to ensure the safe operation of the premises in accordance with *Regulation 168 of the Education and Care Services National Regulations*. It is recommended that a condition be included on any consent to require the preparation of adequate emergency procedures be submitted to Council prior to the issue of an Occupation Certificate. **Complies/compliance to be administered via condition.**
4.9 Outdoor space requirements	Sets requirements and establishes design principles for outdoor space.	Outdoor space requirements of Regulation 107 have been met by the proposal. The Centre would be well landscaped and provides a fun environment for children to explore and experience. This is pursuant to *Regulation 113 of the Education and Care Services National Regulations*. The proposed development would have many shade areas. Existing tree shade is provided within the yard. This is pursuant to *Regulation 114 of the Education and Care Services National Regulations*. Some existing school fencing would be utilised for the proposal along the South and West sides. Fencing would be provided on the boundary with a landscaping buffer. A condition of consent should be implemented for fencing to not be climbable in accordance with the standard required by *Regulation 104 of the Education and Care Services National Regulations*. **Complies**
4.10 Natural environment	Establishment's principles for enhancing the operability of premises through the outdoor environment provided.	The proposed development would provide a suitable outdoor environment for play and supervision. Council has no concern or objection in relation to the outdoor space proposed. **Complies**
4.11 Shade	This section establishes natural and built shade provisions to support the use and operability of outdoor play areas.	Under the proposed development three shade sails would be provided in outdoor play areas. The proposed new classroom would also include a shaded veranda and three covered outdoor dining areas. No issue is raised with the amount of shade to be provided to the development. **Complies**
4.12 Fencing	Establishes fencing requirements for child care centres.	Fencing would be provided on the boundary with a landscaping buffer. The fencing would not be climbable which is to the standard required by *Regulation 104 of the Education and Care Services National Regulations*. **Complies**

4.13 Soil Assessment	Sets requirements for the consideration of the site suitability and potential site contamination.	No information suggests the land is likely to be subject to any soil contamination. Accordingly, Council is satisfied that the development may be permitted at this site from a soil perspective. **Complies**

Section 4.15(1)(a)(ii) the provisions of any draft EPI.

There are no draft EPIs relevant to the subject Application.

Section 4.15(1)(a)(iii) the provisions of any development control plan

Section 3 – Site Analysis
It is considered that the documentation provided with the Development Application satisfies the provisions of Section 3 of the Muswellbrook DCP.

Section 4 – Notification
In accordance with the provisions of Section 4 of the Muswellbrook DCP 2009, the Application was notified for a period of not less than fourteen days from 27 June 2019 to 18 July 2019. A notice was also placed in the local newspaper, the Hunter Valley News, at the commencement of the notification period.

One submission was received during the notification period. The issues raised in the submissions are addressed in this Report.

Section 5 - Subdivision

	Comments
5.3 General Requirements For Subdivision	
5.3.2 Special Considerations	The land subject is not identified as being affected by any development constraint that is identified by this section of the DCP to require further consideration. **Complies.**
5.3.3 Adoption of AUS-SPEC	Infrastructure required to support the subdivision is either already in place or will be constructed to support the establishment of the child care centre in accordance with the consent requirements. **Complies**
5.3.4 Buffers	The proposed development does not involve any land identified as a land use buffer by section 22 of the DCP. **Complies**
5.5 Residential Subdivision	
5.5.1 Local Street Design	The proposed development does not propose new roads. Accordingly, the guidelines for new road construction specified by this part do not present any issue to the proposed development. **Not Relevant**
5.5.2 Access Way Design *(i) Access ways are to be designed in accordance with AUSSPEC and AS2890.1.* *(ii) Access ways shall have a minimum sealed width of 3.0 metres.* *(iii) Access ways shall not serve more than three (3) lots.* *(iv) Access ways shall be nominated as reciprocal rights of way on the plan of subdivision.* *(v) Access ways shall have a maximum grade of 25% (1:4) at any point.* *(vi) The following standards apply to lots with battle axe handles: (Not Applicable)* *(vii) Access ways shall be sited away from noise and*	The proposed child care centre has been designed to share an access way with the St James Primary school lot. The accessway to service the development is already constructed. Council's Roads and Drainage Team did not raise any issue with the access, its compliance with relevant controls or use as part of the development. In view of these considerations Council Officers are satisfied that the proposed development would comply with this DCP requirement. **Complies**

visually sensitive components of existing and future dwellings. *(viii)Where possible access ways shall be located on the south side of existing and future dwellings.* *(ix) Access ways are to provide interest and variety and avoid lengthy straight sections.* *(x) Where the site is steep or fronts a local collector or higher order road (greater than 3,000 vehicles per day) or an area with high pedestrian traffic, access ways are to be designed so that vehicles can be driven both onto and off the property in a forward direction.* *(xi) Where vehicles would otherwise have to reverse more than 50 metres, a turning area is to be provided to enable the vehicles to enter and leave the site in a forward direction and reduce the need to reverse over long distances.* *(xii) Passing bays shall be provided every 30 metres in accordance with AS 2890.1*	
5.5.3 Pedestrians and Cyclists	The proposed subdivision does not involve the construction of any public roads or pedestrian or cycle ways in accordance with the requirements of this Clause. **Complies**
5.5.4 Utility Services	Each lot in the subdivision will be provided with appropriate services to support its use as either a child care facility or primary school. **complies**
5.5.5 Stormwater Management	A preliminary stormwater management plan was submitted with the proposed development which has been reviewed by Council Roads and Drainage Team. Council Officers are satisfied that stormwater associated with the proposed development can be managed in accordance with the requirements of the DCP. **Complies.**
5.5.6 Lot Size and Shape	The lot size and shape is considered to be suitable to support the proposed development and would be compatible with DCP requirements. **Complies**
5.5.7 Solar Access and Lot Orientation	The orientation and design of the proposed lots would comply with the requirements of this section. The proposed lots would be appropriately designed to take advantage of solar access and lighting opportunities. **Complies**
5.5.8 Heritage	The proposed development does not relate a heritage item or heritage conservation area accordingly this section does not prescribe any provisions relevant to the proposed development. **Not relevant**
5.5.9 Site Works	Conditions of consent are to be imposed on any development application to ensure the development is carried out in accordance with Council's standard requirements for the carrying out of works and the provisions of this part. **Complies**
5.5.10 Open Space	No new public open space is required to support this development application. **Complies**

Section 14 – Outdoor Signage

Council Officers are satisfied that the proposed signage would comply with Council's DCP requirements specified by this part. **Complies/compliance to be administered through conditions.**

Section 16 – Car Parking and Access

The proposed early education facility would employ up to 20 staff and cater to a maximum of 104 children. A total of 27 car parking spaces would be required to service the development.

The applicant has advised Council that there would be 31 off-street car parking spaces available in parking areas reserved for the proposed early education facility. This would include 1 emergency space and 1 accessible parking space. In view of the above Council officers are satisfied that the rate of off-street car parking available to service the development is compatible with the requirements of the MDCP 2009. **Complies**

Section 18 – Child Care Centres

Clause 26 of the SEPP (Education Establishments and Child Care Facilities) 2017specifies certain matters that DCP's cannot impose in relation to child care centres and identifies that DCP provisions that contrast with provisions of the Child Care Planning Guideline (subject to certain limitations) are not of relevance to the assessment of an application for a Child Care Centre.

The table below comments only on matters that are not suspended by Clause 26 of the SEPP.

DCP requirement	Planning Comment
18.1 Entry, Access, Safety and Security	
18.1.1 All-weather entry to be provided.	An all-weather entry point has been incorporated into the development design in accordance with this requirement**. Complies**
18.1.2 Access and mobility	It will be necessary for construction work to comply with the BCA and accessibility requirements. **Complies**
18.2 Air Quality	
18.2.1 Drop off and pick up of children	Car parking would be available to the development in accordance with the requirements of Section 16 of the DCP. The proposed parking arrangement is considered to be satisfactory and would not present an issue for the assessment of this application. **Complies**

Section 20 – Erosion and Sediment Control

The proposed development has included erosion and sediment control plans includes & details consistent with the requirements of the Muswellbrook DCP 2009. It is recommended that where approved a condition of consent is imposed to require the development to be carried out in accordance with the submitted sediment and erosion control plan.

Section 24 – Waste Management

Section 5.3 of the Statement of Environmental Effects includes details of the waste anticipated to be generated by the development and methods proposed of managing that waste. This waste management statement indicates that suitable arrangements will be made for operational waste from the development including the provision of waste reciprocals and enclosed bin storage areas. A total of eight (8) general and eight (8) recycling bins will be provided to the development and green waste collected managed and disposed on by ground maintenance contractors.

Construction waste will be managed by contractors employed to carry out the proposed works in accordance with Council's waste management requirements. Council Officers are satisfied that the methodology for managing waste proposed would be in accordance with the DCP requirements. **Complies**

Section 25 – Stormwater Management

A Stormwater Management Plan has been provided in accordance with the provisions of this Section of the DCP.

This Stormwater Management Plan has been reviewed by Council's Community Infrastructure Department's Roads and Drainage Division. Comments received through this referral suggest that the stormwater management plan meets Council's requirements and would be an adequate method for managing stormwater associated with the development. **Complies**

Section 94A Contributions Plan 2009
The capital investment value of the proposed development would be $2,895,187.45.

A Section 7.12 contribution would be applicable to the proposed development at a rate of 1% the total capital investment value. This contribution would equate to a total of $28,951.74 and would be payable prior to the issue of a Construction Certificate.

The applicant has requested Council waive this contribution as a development related to a registered charity. A decision of Council on whether to waive the Section 7.12 is not a Section 4.15 Assessment consideration and a report will be prepared for Council to consider the applicants request for an exemption.

Section 4.15(1)(a)(iiia) the provisions of any planning agreement

There are no planning agreements relevant to the subject Application.

Section 4.15(1)(a)(iv) the provisions of the regulations

Division 8A of the *Environmental Planning and Assessment Regulation 2000* applies to the development.

Section 4.15(1)(a)(v) the provisions of any coastal zone management plan

The Application does not relate to a coastal area.

Section 4.15(1)(b) the likely impacts of that development

Likely environmental impacts associated with the proposed development have been considered throughout the assessment of this development application and are commented on throughout this report. Some key potential environmental impacts related to the development have been summarised and commented on under the sub-headings below.

Context & Setting

The proposed development would not adversely impact the sites existing context and context and setting. The building design has been subject to detailed consideration against the Child Care Centre Planning Guideline and Council staff are satisfied that the proposed development would be consistent with that guideline and in accordance with the relevant design requirements.

Potential Impact on Adjacent Properties

The proposed development would be adequately separated from sensitive residential receptors so as not to negatively impact the enjoyment of neighbouring residential properties.

Access, Traffic and Transport

The proposed development is not expected to generate an unreasonable amount of additional traffic, while parking facilities available at the site are suitable to support the proposed development.

Social and Economic Impact on Locality

The proposal would expand the capacity in Muswellbrook of early education and day care services, supporting its economic viability and the level of service available in the locality.

Section 4.15(1)(c) the suitability of the site for the development

It is considered that the development is compatible with surrounding land uses and site characteristics, subject to consent conditions.

Section 4.15(1)(d) any submissions made

The proposed development was notified in accordance with the requirements of the Muswellbrook DCP between the 27 June 2019 and the 18 July 2019.

During the notification period one (1) submission was received in relation to the proposed development. Matters raised by the submission have been considered and commented on in the table below. The submission has been included as an attachment to the report.

Submitter	Concern	Planning Comment
Submitter 1	Parking of cars and buses outside the school area and the risks which occur where children seek to access these vehicles outside the school grounds. Concern were also raised about the width of the road, visibility and its ability to handle additional traffic	The St James School has internal bus pick up areas. This development application has been accompanied by a Traffic and Parking Assessment prepared by qualified traffic engineers in relation to the proposed development in relation to the traffic and parking situation. The conclusions and recommendations of this document suggest that the proposed development would comply with the relevant traffic and parking requirements. Council's Engineers from Council's Roads and Drainage Division have reviewed this document and have raised no issue with its findings or any objection to the development from a traffic perspective.

Section 4.15(1)(e) the public interest.

It is considered that the proposal is not contrary to the public interest.

5 CONCLUSION

The proposed development has been assessed against the relevant heads of consideration of Section 4.15 of the Environmental Planning and Assessment Act 1979. As outlined above it is considered that the proposed development would be in accordance with the relevant planning provisions. Accordingly, it is recommended the application be approved subject to conditions of consent.

RECOMMENDATION

It is recommended the application be approved subject to conditions of consent.

Signed by:

Hamish McTaggart
Senior Development Planner

Atef Kazi
Project Planner

IDENTIFICATION OF APPROVED PLANS

(1) Development in Accordance with Plans

The development being carried out in accordance with the development application and the Statement of Environmental Effects, drawings referenced below, and endorsed with Council's approval stamp, except where amended by the following conditions and as marked in red on the approved plans.

Drawing No.	Drawn by	Rev	Drawing Date	Received
A00	EJE Architecture	-	13 June 2019	21 June 2019
A01	EJE Architecture	3	18 October 2019	21 October 2019
A02	EJE Architecture	2	13 June 2019	21 June 2019
A03	EJE Architecture	2	13 June 2019	21 June 2019
A04	EJE Architecture	2	13 June 2019	21 June 2019
A05	EJE Architecture	2	13 June 2019	21 June 2019
A06	EJE Architecture	2	13 June 2019	21 June 2019
A07	EJE Architecture	2	13 June 2019	21 June 2019
A08	EJE Architecture	2	13 June 2019	21 June 2019
A09	EJE Architecture	2	13 June 2019	21 June 2019
A10	EJE Architecture	2	13 June 2019	21 June 2019
A11	EJE Architecture	0	13 June 2019	21 June 2019
A12	EJE Architecture	1	13 June 2019	21 June 2019
A14	EJE Architecture	0	13 June 2019	21 June 2019
L01	Terras Landscape Architects	D	14 May 2019	21 June 2019
L02	Terras Landscape Architects	D	14 May 2019	21 June 2019
L03	Terras Landscape Architects	D	14 May 2019	21 June 2019
L04	Terras Landscape Architects	D	14 May 2019	21 June 2019
L05	Terras Landscape Architects	D	14 May 2019	21 June 2019
L06	Terras Landscape Architects	D	14 May 2019	21 June 2019
L07	Terras Landscape Architects	D	14 May 2019	21 June 2019
L08	Terras Landscape Architects	D	14 May 2019	21 June 2019
L09	Terras Landscape Architects	D	14 May 2019	21 June 2019
L10	Terras Landscape Architects	D	14 May 2019	21 June 2019
L11	Terras Landscape Architects	D	14 May 2019	21 June 2019
L12	Terras Landscape Architects	D	14 May 2019	21 June 2019
C.100	Ambai Consultants	B	15 May 2019	21 June 2019
C.200	Ambai Consultants	B	15 May 2019	21 June 2019
C.300	Ambai Consultants	B	15 May 2019	21 June 2019
C.400	Ambai Consultants	B	15 May 2019	21 June 2019
Signage Location Mark-Up	EJE Architecture	2	13 August 2019	15 August 2019
Schedule of Signage	EJE Architecture	B	13 August 2019	15 August 2019
Signage Artwork	Unknown.	-	Undated.	15 August 2019

(2) Development in Accordance with Documentation

The development is to be carried out generally in accordance with the following documents.

Where there is a discrepancy between any of the documents referenced by this condition of consent and any other condition of this consent, the condition takes precedence over matters referenced by the documents below.

Title	Written by	Date
Statement of Environmental Effects	EJE Architecture	June 2019
Traffic Impact Assessment	Intersect Traffic	14 March 2019

OPERATIONAL CONDITIONS IMPOSED UNDER THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT AND REGULATIONS AND OTHER RELEVANT LEGISLATION

(3) **Building Code of Australia**

All building work must be carried out in accordance with the provisions of the Building Code of Australia.

(4) **Access to premises standard**

The building shall comply with the requirements of the *Commonwealth Disability (Access to Premise Standard) 2010.*

CONSTRUCTION CERTIFICATE REQUIREMENT

(5) **Construction Certificate Requirement**

No works shall commence on site until a Construction Certificate has been issued for either part or all of the works. If a certificate is issued for part of the works it must cover the works being undertaken onsite.

ANCILLARY MATTERS TO BE COMPLETED PRIOR TO THE ISSUE OF THE CONSTRUCTION CERTIFICATE

(6) **Muswellbrook Shire Water and Waste Division**

A ‘Notice of Requirements’ under the Water Management Act 2000 must be obtained, prior to any Construction Certificate application, detailing water and sewer extensions to be built and charges to be paid by the applicant. Any charges identified in the ‘Notice of Requirements’ as requiring payment at construction certificate stage are to be paid prior to release of a Construction Certificate.

Any Notice of Requirements will require the payment of water and sewer headworks contributions prior to the issue of a Compliance Certificate. Water and sewer headworks contributions applicable under Council’s current fees and charges for the development are specified the table below:

Headworks Contribution	**ET calculated per child (total ET for 104 additional child capacity centre)**	**Contribution per 1 ET**	**Total Contribution calculated for 104 child facility**

Water	0.06 (6.24)	$7,052	$44,004.48
sewer	0.095 (9.88)	$7,805	$77,113.4
Total			**$121,117.88**

The contributions payable are subject to annual adjustments in accordance with Council's Fees and Charges and the Consumer Price Index. The contributions paid in relation to this approval shall be the contributions applicable under Council's Fees and Charges at the time of any application for a Compliance Certificate.

Details demonstrating compliance with any requirements for works by Muswellbrook Shire Council Water & Waste Department are to be provided with the Construction Certificate application.

The final compliance certificate must be submitted to the Certifying Authority prior to release of the Subdivision or Occupation Certificate.

(7) Section 7.12 Contributions

Pursuant to section 4.17(1) of the Environmental Planning and Assessment Act 1979, and the Muswellbrook Shire Council Section 94A Development Contributions Plan 2010, a contribution of **$28,951.87** shall be paid to Muswellbrook Shire Council, being 1% of the cost of carrying out the development.

Documentary evidence demonstrating payment of the above contribution to Council is to be provided to the Principle Certifying Authority prior to the issue of a Construction Certificate.

(8) Fit-out to be in accordance with relevant legislation and standards

Prior to the issue of a Construction Certificate the applicant shall submit detailed design plans to the Principle Certifying Authority demonstrating that the fit out of the food handling areas would comply with the requirements of Food Act 2003, Food Regulation 2015 and Australian Standards relevant design construction and fit out of food premises (AS4674)

(9) Liquid Trade Waste Agreement

Unless otherwise agreed to by Council in writing prior to the issue of a Construction Certificate, an application for a Section 68 Approval for Sewage Works and a Commercial Liquid Trade Waste application is to be completed, signed by the property owner and submitted to Council for approval along with relevant documentation, including hydraulic plans, relating to the construction of the required liquid trade waste infrastructure at the site.

Documentary evidence is to be provided to the Principle Certifying Authority confirming that a Liquid Trade Waste application has been lodged with Council prior to the issue of a Construction Certificate.

CONDITIONS THAT MUST BE ADDRESSED PRIOR TO COMMENCEMENT

(10) Section 68 Local Government Act 1993 Approvals

Prior to the commencement of any water, sewage or stormwater works the person acting on this consent shall obtain approval under Section 68 of the Local Government Act 1993 for the carrying out of stormwater works.

Documentary evidence is to be provided to the Principle Certifying Authority demonstrating that these approvals have been obtained prior to the issue of a Construction Certificate.

The person acting with this consent shall ensure that mandatory stage inspections prescribed by the Section 68 Approval are carried out by Council Officers at the relevant stage of development.

(11) **Sediment and Erosion Control**

All required erosion and sedimentation techniques are to be properly installed prior to the commencement of any site works and maintained in a functional and effective condition throughout the construction activities until the site is stabilised.

(12) **Site Sign**

A sign must be erected in a prominent position on any work site on which work involved in the erection or demolition of a building is being carried out:

(a) stating that unauthorised entry to the work site is prohibited;

(b) showing the name of the principal contractor (or person in charge of the work site), and a telephone number at which that person may be contacted at any time for business purposes and outside working hours; and

(c) showing the name, address and telephone number of the Principal Certifying Authority for the work.

Any such sign must be maintained while to building work or demolition work is being carried out, but must be removed when the work has been completed.

This condition does not apply to building works being carried out inside an existing building.

(13) **Site Facilities**

(a) If the development involves building work or demolition work, the work site must be fully enclosed by a temporary security fence (or hoarding) before work commences.
(b) A minimum width of 1.2m must be provided between the work site and the edge of the roadway so as to facilitate the safe movement of pedestrians.
(c) Any such hoarding or fence is to be removed when the work has been completed.
(d) A garbage receptacle fitted with a tight fitting lid for the reception of all food scraps and papers from the work site must be provided prior to building work commencing and must be maintained and serviced for the duration of the work.
(e) Toilet facilities must be provided on the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the work site.
(f) Each toilet provided must:
  - be a standard flushing toilet, connected to a public sewer, or

- if connection to a public sewer is not available, to an on-site effluent disposal system approved by the council, or
- an approved temporary chemical closet.

(g) The provision of toilet facilities must be completed before any other work is commenced.

(h) A person having the benefit of this certificate who causes an excavation that extends below the level of the base of the footings of a building on an adjoining allotment of land must at their own expense and where necessary:
- protect and support the building from damage, and
- If necessary, underpin and support the building in accordance with the details prepared by a professional engineer.

(i) A person having the benefit of this certificate who causes the excavation must, at least 7 days before commencing this work, give notice of intention to do so to the owner of the adjoining allotment of land and provide particulars of the proposed work.

(j) Erosion and sediment controls must be provided in accordance with the details shown on the approved plans, prior to the disturbance of any soil on the work site.

(14) Damage to Public Infrastructure

The applicant shall bear the cost of all restoration works to Council property damaged during the course of this development. The applicant shall submit in writing and/or photographic record, of any existing damage to Council property before commencement of work.

Note: This documentation will be used to resolve any dispute over damage to infrastructure. If no documentation is received prior to commencement of work it will be assumed that the infrastructure was undamaged and the applicant will be required to restore all damaged infrastructure at their expense.

(15) Materials

In accordance with the provisions of the Muswellbrook Development Control Plan the external cladding of the building shall be constructed from non-reflective materials. Zincalume or reflective white sheet metal cladding is not be used without the prior written approval from Council.

CONDITIONS THAT MUST BE COMPLIED WITH DURING DEMOLITION AND BUILDING WORK

(16) Construction Hours

(a) Subject to this clause, building construction is to be carried out during the following hours:

  i. between Monday to Friday (inclusive)—7.00am to 6.00pm
  ii. on a Saturday—8.00am to 1.00pm

(b) Building construction must not be carried out on a Sunday or a public holidays.

(c) Demolition works and excavation works must only be carried out between

Monday to Friday (inclusive) between 8.00am and 5.00pm.

(d) The builder and excavator must display, on-site, their 24 hour contact telephone numbers, which are to be clearly visible and legible from any public place adjoining the site.

(17) **Out of Hours Work Permits**

Where it is necessary for works to occur outside those hours allowed by these conditions, approval for such will be subject to written permission on each occasion from Council. Such occurrence shall be limited to two occasions per calendar month and shall only be approved if public safety or convenience is at risk. Any further variation shall require the lodgement and favourable determination of a modification application pursuant to Section 4.55 of the Environmental Planning and Assessment Act 1979.

Failure to obtain a permission for work outside of the approved hours will result in fines being issued, or Council pursuing any action required (including legal proceedings) to have the out of hours work cease, without prior warning.

It is recommended that applications be lodged as early as possible to allow sufficient time for determination by Council and to avoid disruption or delay due to conflicting priorities.

(18) **Prohibition on Use of Pavements**

Building materials and equipment must be stored wholly within the work site, unless prior written approval has been obtained from council. Equipment must not be operated on the footpath or roadway, unless prior written approval has been obtained from council.

(19) **Mandatory Council inspections**

During the carrying out of building works the person acting with this consent shall ensure that all mandatory stage inspections specified by any approvals issued under Section 68 of the Local Government Act 1993 or Section 138 of the Roads Act 1993 are carried out by Council at the relevant stage of works specified by these approvals.

CONDITIONS WHICH MUST BE COMPLIED WITH PRIOR TO THE ISSUE OF THE OCCUPATION CERTIFICATE

(20) **Occupation**

The building is not to be used or occupied until a final inspection has been carried out and an occupation certificate has been obtained from the Principal Certifying Authority.

(21) **Final Compliance Certificate for Water Supply and Sewerage Works**

The final compliance certificate for water supply works is to be obtained from Muswellbrook Shire Council Water & Waste Department and a copy must be submitted to the Principal Certifying Authority prior to release of any Occupation Certificate.

(22) **Construction of Parking Areas**

Prior to the issue of an Occupation Certificate all parking areas, loading bays, driveways, internal access ways, vehicular ramps and turning areas shall be fully constructed, sealed, line marked, sign posted in accordance with the approved plans and AS.2890.1 2004 Parking Facilities and the relevant provisions of AS1428.1 and AS1428.4.

(23) **Installation of landscaping**

Prior to the issue of any Occupation Certificate landscaping is to be installed at the site in accordance with the approved Landscape Plan, the requirements of this consent or as otherwise directed by Council in writing.

(24) **Connection to Sewer**

Prior to the issue of an Occupation Certificate, the premises shall be connected to the sewer system in accordance with the Australian Standard 3500 and the requirements of any Section 68 Approval. A Trade Waste Agreement is to have been entered into between the owner of the land and Council and the required Trade Waste infrastructure installed to Council's satisfaction in accordance with the Trade Waste Agreement.

A works as executed plan on Council's approved form is to be submitted to Council within seven (7) days following the final drainage inspection and prior to any Occupation Certificate being issued.

(25) **Construction of Waste Storage Areas**

Prior to issue of any Occupation Certificate the bin storage area is to be constructed in accordance with the approved plans and requirements of this condition or as otherwise specified by Council in writing.

In addition to the design information included on the approved plans the bin storage area is to be constructed in accordance with the following:

- ➢ All internal walls of this enclosure are to have a smooth service and the enclosure is to coved flood/wall intersection.
- ➢ The floor is to be graded toward the centre of the enclosure to prevent the escape of waste.
- ➢ A tap is to be located in a close proximity to the waste storage area.

(26) **Education and care service policies and procedures**

Policies and procedures are to be prepared for the operation of the premises in accordance with the requirements of Section 168 of the Education and Care Services National Regulations.

Prior to the issue of an Occupation Certificate an emergency and evacuation policy and procedure are to be prepared in relation to the proposed facility in accordance with the requirements of Clauses 97 and 168 of the Education and Car Services National Regulations and industry best practice.

These documents are to be provided to the Principle Certifying Authority prior to or with any application for an Occupation Certificate and should be provided to Council for its information.

(27) **Food Shop Registration Requirement**

Prior to the issue of an Occupation Certificate, the food premises must be registered with Council's Environmental Health section accordance with the Food Safety Standards, prior to commencement of food business operations.

Upon completion of the work and prior to the issuing of an occupation certificate, the premises must be inspected by Council’s Environmental Health Officer to ascertain compliance with relevant construction requirements and Food Safety Standards. Prior to the issue of an Occupation Certificate documentary evidence is to be provided to the Principle Certifying Authority that the premises has been inspected by Council’s Environmental Health Officer and that this Officer was satisfied that premises fit out was achieved the relevant construction and food safety requirements.

CONDITIONS THAT MUST BE COMPLIED WITH AT ALL TIMES

(28) **Stormwater Disposal**

All stormwater from the development, including all hard standing areas and overflows from rainwater tanks, is to be collected and disposed of in accordance with the approved stormwater management plan and the requirements of any approval under Section 68 of the Local Government Act 1993.

(29) **Trade Waste**

At all times liquid trade waste from the premises shall be disposed of in accordance with the requirements of the trade waste agreement between the owner of the premises and Muswellbrook Shire Council.

(30) **Smoking**

The operator of the development shall ensure that it complies with the relevant requirements of the Smoke Free Environment Legislation.

(31) **Illumination of Signage**

Signs A, B and D marked on the approved signage location plan may be illuminated with up and/or down lighting.

All up and down lighting should be installed and managed so to minimise any light spill onto neighbouring properties.

The lighting of internally facing signs D and B shall be fitted with a timing device and the illumination of these signs is to cease every evening 8:00pm and is not to resume until 6:00am the following day.

(32) **Landscaping**

The landscaped area of the development is to be maintained at all times in accordance with the approved landscape plan or as otherwise approved by Council in writing.

(33) **Operating Hours**

Unless otherwise approved by Council in writing, the operating hours for the premises shall be limited to between 6:30am and 6:30pm Monday – Friday.

(34) **Maximum centre capacity**

Unless otherwise approved by Council in writing the maximum number of children permitted to attend the child care centre at any one time shall be 104.

CONDITIONS WHICH MUST BE COMPLIED WITH PRIOR TO THE ISSUE OF A SUBDIVISION CERTIFICATE

(35) **Restriction on the issue of a Subdivision Certificate**

Prior to the issue of a Subdivision Certificate all works associated with the construction of the centre-based child care facility shall be completed and a Final Occupation Certificate obtained for the operation of the premises.

Evidence that a Final Occupation Certificate has been obtained for the development should be provided to Council with any Subdivision Certificate application.

(36) **Location of Services**

Prior to the issue of a Subdivision Certificate the applicant shall provide Council with documentation from a registered surveyor certifying that all services required to support each lot in the subdivision or an appropriate easement to be registered on the title in favour of the benefited lot.

(37) **Easement for Vehicle Access**

The plan of subdivision accompanying any Subdivision Certificate is to include provisions for the registration of a right of way

The plan of subdivision accompanying any Subdivision Certificate shall include provisions for the registration of an easement for a right of carriage over the lot that incorporates the St James Primary School to the benefit of the lot containing the centre-based child care facility.

The easement is to be located over the entirety of the loop road vehicle access and the off-street car parking spaces located along this access and adjacent the centre-based child care centre facility. The easement shall provide the benefited lot with the right to use the affected portion of the burdened lot for access and parking.

(38) **Easement for Council Infrastructure**

Where Council water and sewerage infrastructure is located within the boundary of either lot related to the subdivision an easement 3m in width is to be registered over the burdened land to the benefit of Council. The terms of the easement are to permit the location of the relevant service on the land and are to restrict the carrying out of works within the easement without the consent of Council.

(39) **Compliance with the Building Code of Australia**

The boundary of the lot containing the centre-based child care facility must be setback a minimum of 3m from the wall elevation of St James Hall Building as set-out in the approved site plan dated 18 October 2019 to comply with the fire separation requirements of the Building Code of Australia.

Prior to the issue of a Subdivision Certificate, documentation prepared by a Registered Surveyor is to be submitted to Council demonstrating that the development and plan of subdivision complies with this requirement.

St Nicholas Early Education

St James' Primary School
MUSWELLBROOK

ARCHITECTURAL DRAWING SCHEDULE

A00	COVER SHEET
A01	SITE PLAN
A02	SITE ANALYSIS PLAN
A03	GROUND FLOOR PLAN
A04	ROOF PLAN
A05	NORTH & EAST ELEVATIONS
A06	SOUTH & WEST ELEVATIONS
A07	SECTION A-A & B-B
A08	SHADOW DIAGRAMS
A09	3D PERSPECTIVES
A10	3D PERSPECTIVES
A11	3D PERSPECTIVES
A12	SCHEDULE OF MATERIALS
A13	NOTIFICATION PLAN
A14	NOTIFICATION ELEVATIONS

ST NICHOLAS
EARLY EDUCATION CENTRE
ST JAMES PRIMARY SCHOOL,SKELLATAR STOCK ROUTE,MUSWELLBROOK, NSW 2333
LOT 1 - DP1070178

DA ISSUE

EJE ARCHITECTURE

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COMPLETION OF THE QUALITY ASSURANCE CHECKS IS VERIFICATION THAT THE DOCUMENT CONFORMS WITH THE REQUIREMENTS OF THE QUALITY PROJECT PLAN. WHERE THE QUALITY ASSURANCE CHECK IS INCOMPLETE THIS DOCUMENT IS PRELIMINARY FOR INFORMATION PURPOSES ONLY, OR SUCH PURPOSES AS STATED IN THE REVISION COLUMN.

FILE NAME: 12209 St Nicholas Childcare Muswellbrook DA [illegible] 12/06/2019

EJE architecture

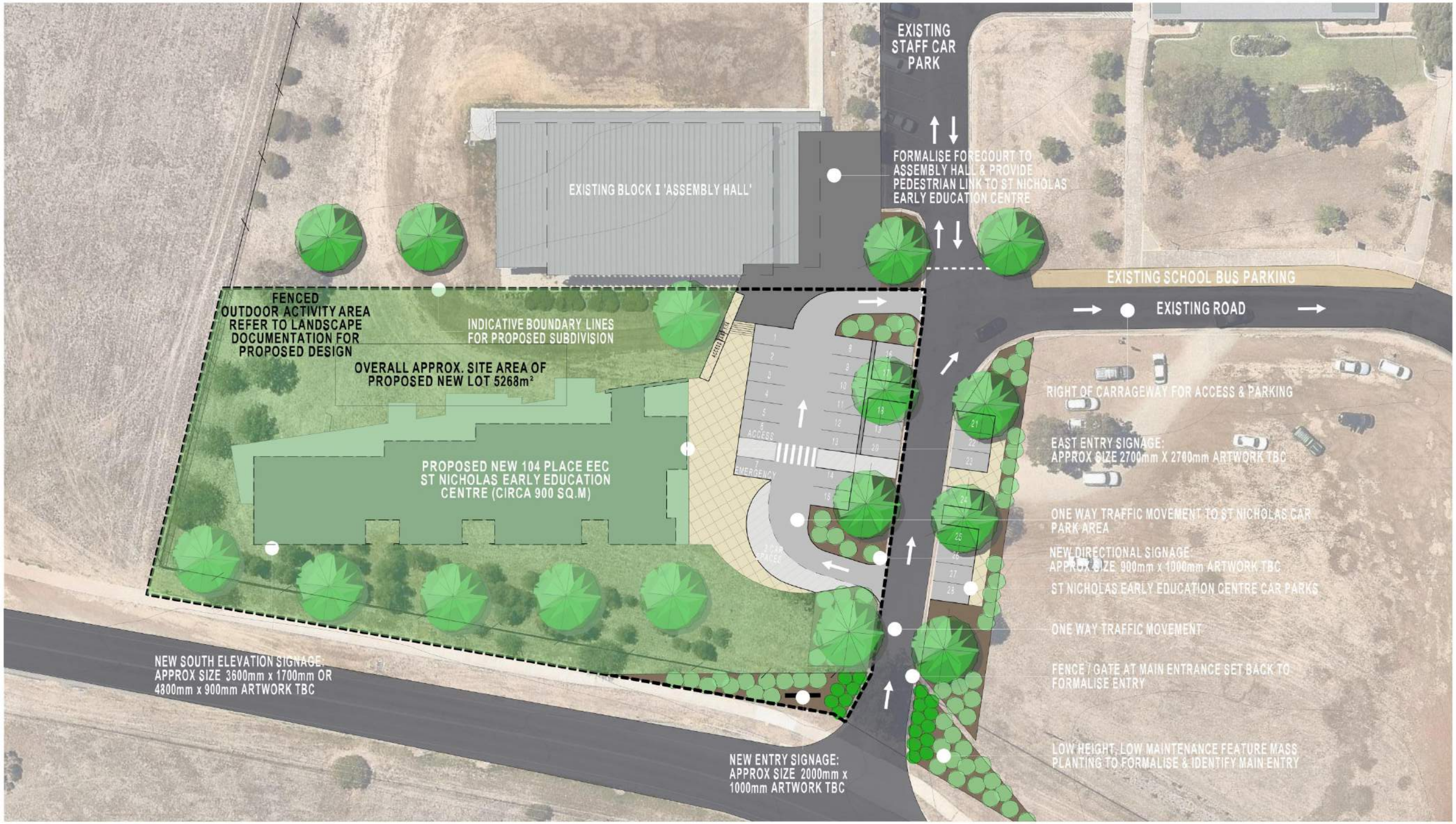
SUPERSEDED
21/10/2019

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
FRP	FIREPLACE
FS	FIXED SHELF
FT	FLOOR TILES
FW	FLOOR WASTE
G	GLASS
GA	GREASE ARRESTOR
GC	GARBAGE CHUTE
GD	GRATED DRAIN
GL	GLASS LOUVRES
GR	GRAB RAIL
GRD	GARAGE DOOR
GRV	GRAVEL
GP	GRATED PIT - REFER TO HYDRAULIC DOCUMENTATION
GT	GUTTER TRANSOM
GW	GLASS WINDOW
HA	HOME AUTOMATION CUPBOARD
HB	HAND BASIN
HD	HINGED DOOR
HDR	HAND DRYER
HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
▩	NEW ASPHALT



EJE ARCHITECTURE

ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
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P +61 2 4929 2353 | F +61 2 4926 2230 | E mail@eje.com.au | W www.eje.com.au

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N

St Nicholas Early Education

St James' Primary School
MUSWELLBROOK

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	11/01/2019	SKETCH DESIGN ISSUE	BdB	HN	
B	17/01/2019	SKETCH DESIGN PRESENTATION ISSUE	BdB	HN	
C	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SITE PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:250**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A01**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
FRP	FIREPLACE
FS	FIXED SHELF
FT	FLOOR TILES
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▨	EXISTING PREMISES
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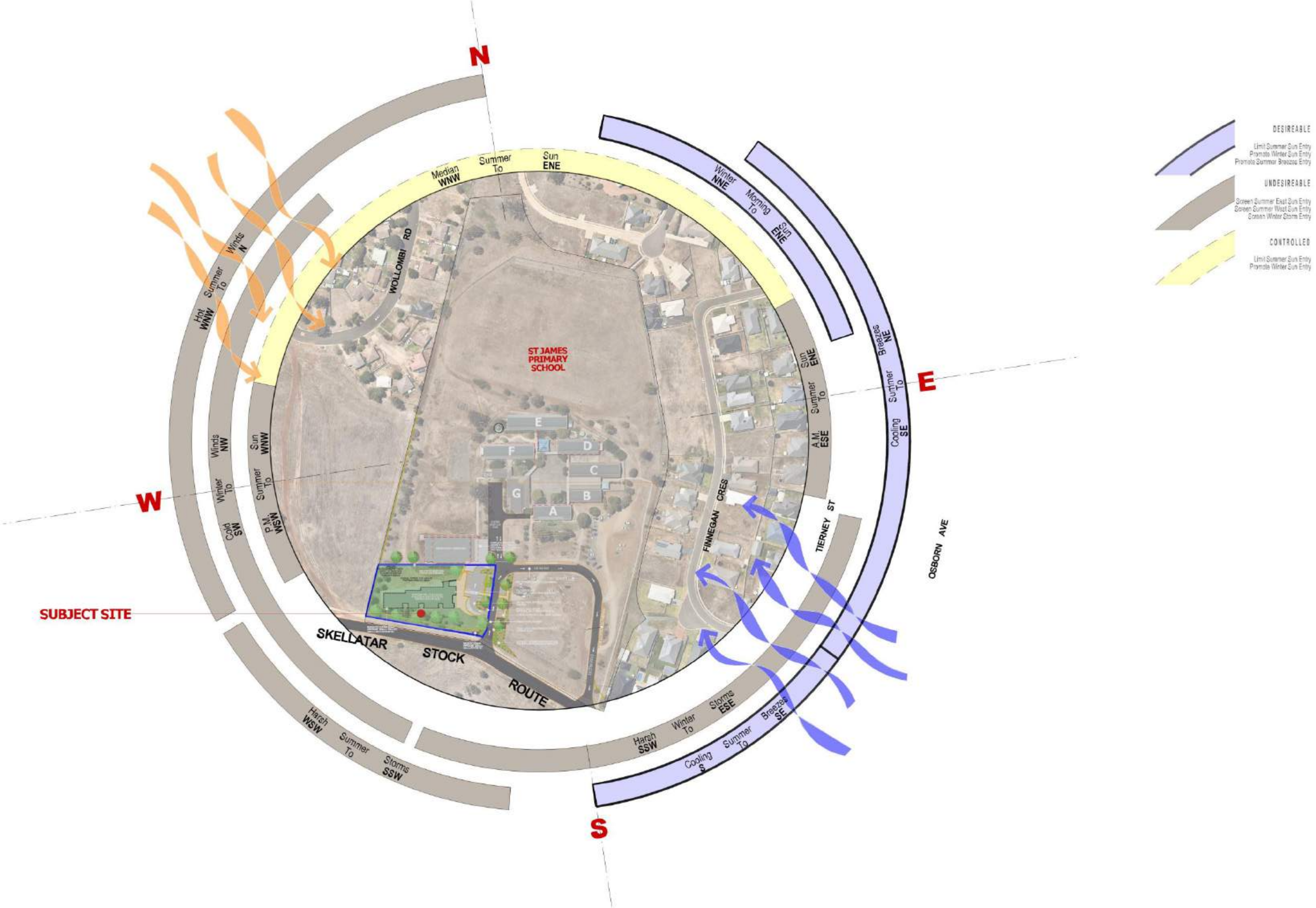

EJE ARCHITECTURE
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Nominated Architect - Bernard Collins
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REV	DATE	COMMENTS	DRN	CHKD	VRFD
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SITE ANALYSIS PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:1731.69**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A02**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
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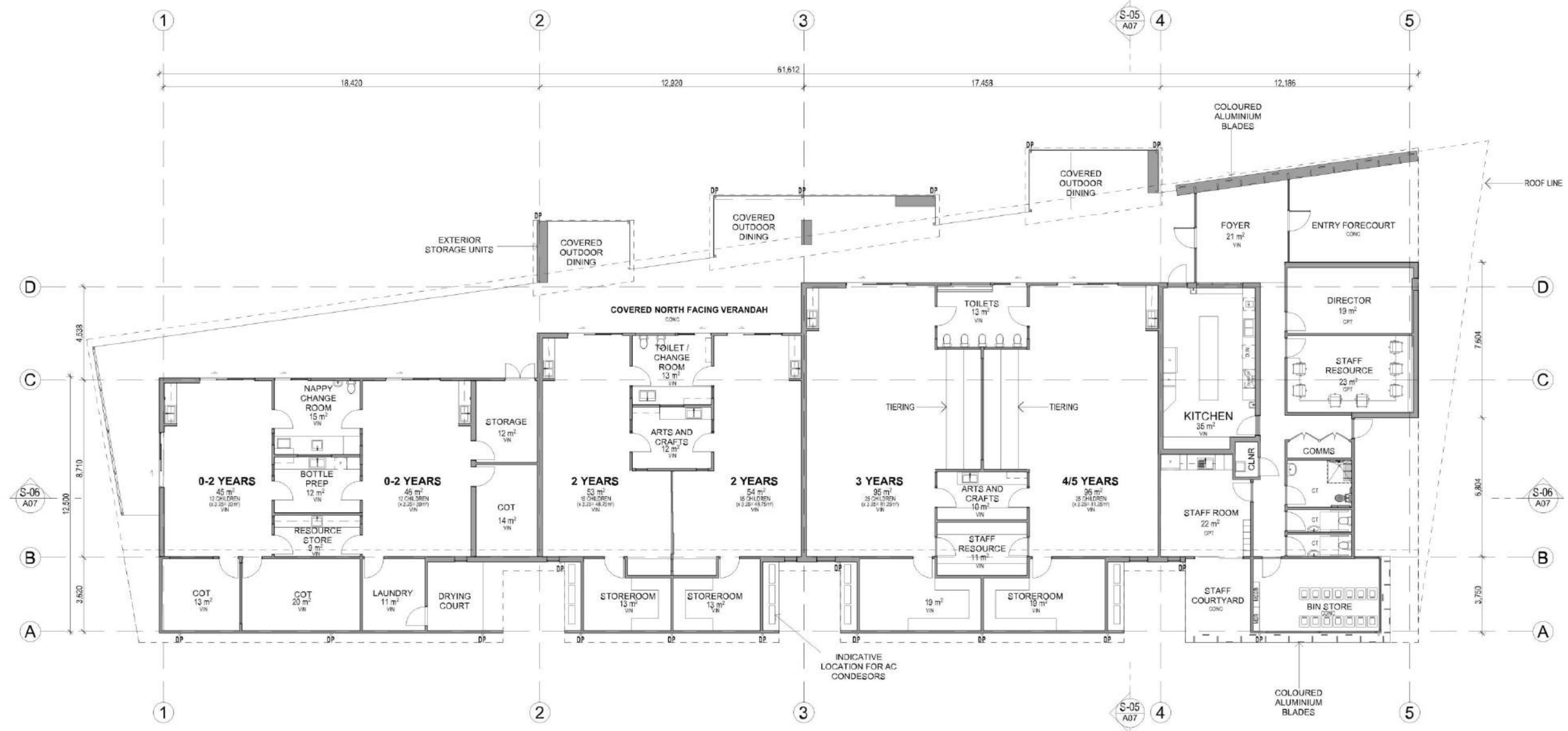
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
L1.05	LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05
▨	LINE MARKING
0.00	EXISTING RL
0.00	PROPOSED RL



EJE ARCHITECTURE
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Nominated Architect - Bernard Collins
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N

St Nicholas Early Education

St James' Primary School
MUSWELLBROOK

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	11/01/2019	SKETCH DESIGN ISSUE	BdB	HN	
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1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: GROUND FLOOR PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:100**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A03**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
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AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
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BTH	BATHTUB
CAP	CAPPING
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CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
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CL	CENTRE LINE
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CLS	CLOTHESLINE
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CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
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CRN	CORNICE
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CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
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EJ	EXPANSION JOINT
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FL	FLASHING
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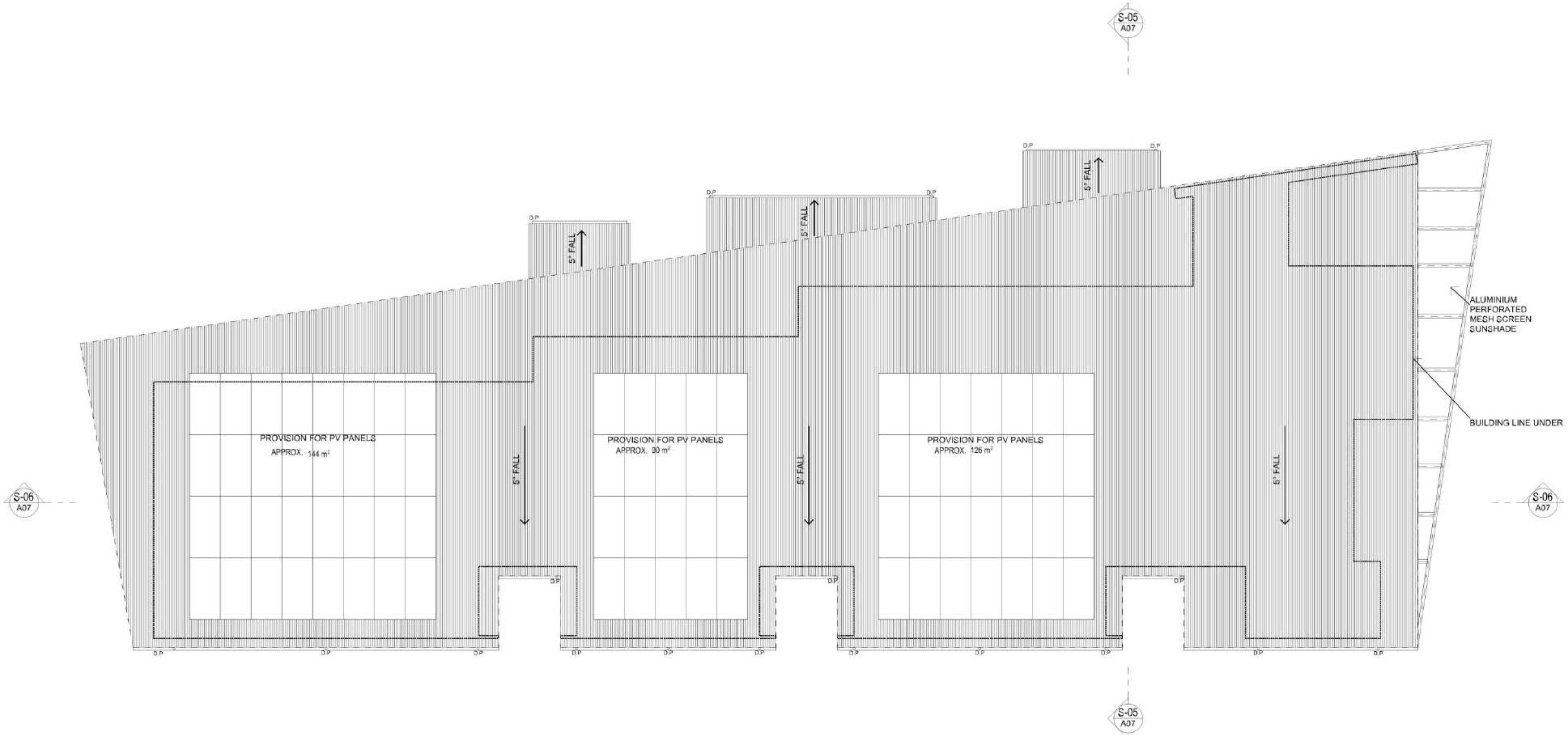

ROOF
1:100

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REV	DATE	COMMENTS
1	12/03/2019	PRELIMINARY DA ISSUE
2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
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PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: ROOF PLAN

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FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:100**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A04**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
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GW	GLASS WINDOW
HA	HOME AUTOMATION CUPBOARD
HB	HAND BASIN
HD	HINGED DOOR
HDR	HAND DRYER
HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

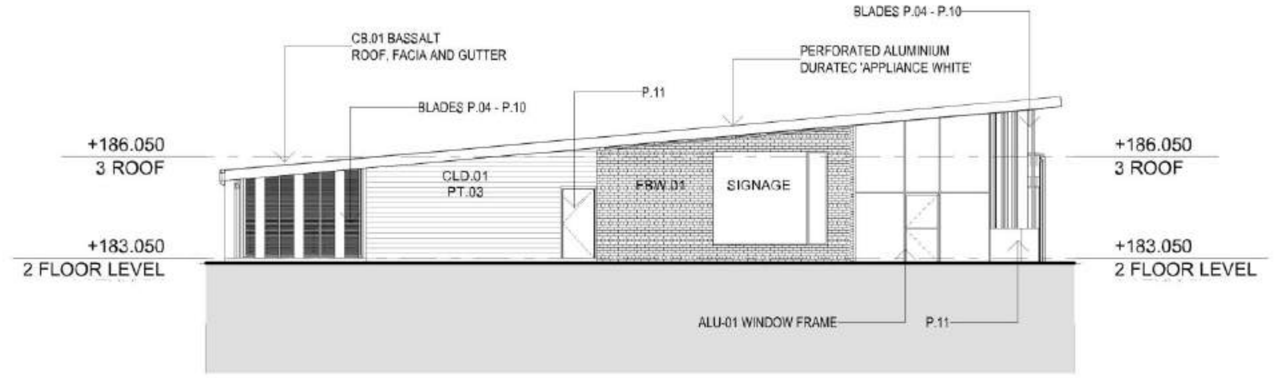
LEGEND

W1.06 WINDOW MARKER
eg. WINDOW / LEVEL 1 / WINDOW Nº 06

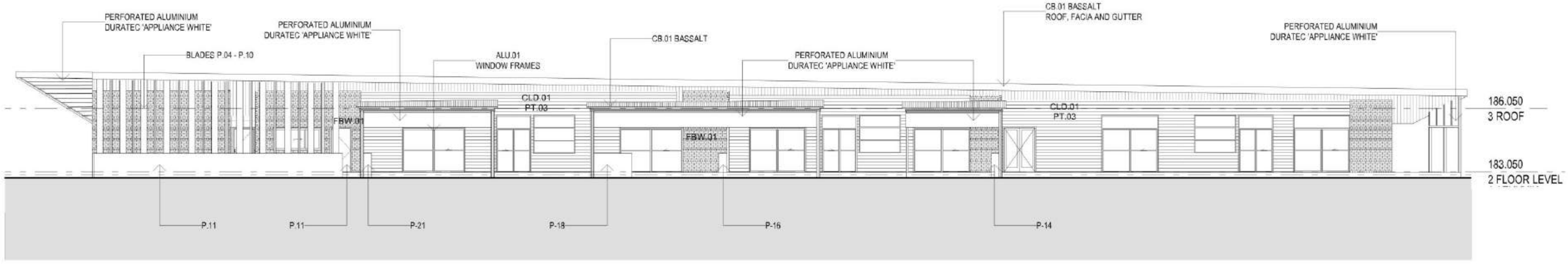
D1.06 DOOR MARKER
eg. DOOR / LEVEL 1 / DOOR Nº 06

LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
FBW.01	FACE BRICK -BOWRAL DRY PRESSED 'MURRARY' RAKED MOTAR JOINTS
FBW.02	FACE BRICK -PGH 'ALFRESCO' BRICK -CHOCCOLATTO FLUSH MOTAR JOINTS
TD-01	TIMBER DECKING -COMPOSITE TIMBER DECKING EQUAL TO BLUEGUM
PT-03	PAINT DULUX - PN1C8 PAVING STONE
PT-11	PAINT DULUX - PG1F7 WESTERN MYALL
PT.14	ST NICHOLAS BRAND -GREEN (PMS3395)
PT.16	ST NICHOLAS BRAND -BLUE (PMS REFLEX BLUE)
PT.18	ST NICHOLAS BRAND -PINK (PMS226)
PT.21	ST NICHOLAS BRAND -ORANGE (PMS1665)



E-04 EAST ELEVATION
1:100



E-03 NORTH ELEVATION
1:100

EJE ARCHITECTURE
ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2230 | E mail@eje.com.au | W www.eje.com.au

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St Nicholas Early Education

St James' Primary School
MUSWELLBROOK

REV	DATE	COMMENTS
1	12/03/2019	PRELIMINARY DA ISSUE
2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: NORTH & EAST ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:100**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A05**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
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CL	CENTRE LINE
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COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
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CRN	CORNICE
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CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
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LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05

LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
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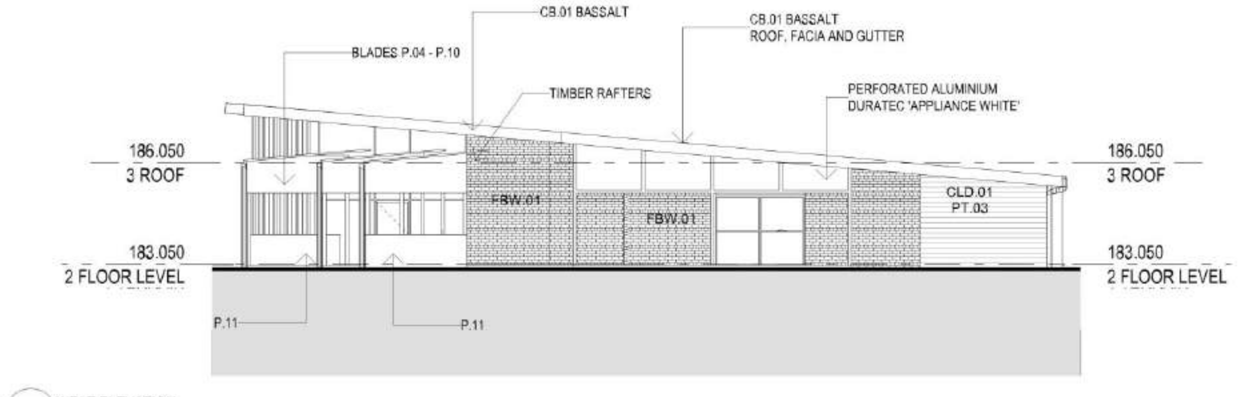

E-05 WEST ELEVATION
1:100

E05 SOUTH ELEVATION
1:100

EJE ARCHITECTURE
ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4439
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P +61 2 4929 2353 | F +61 2 4926 3230 | E mail@eje.com.au | W www.eje.com.au

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REV	DATE	COMMENTS
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DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT:
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE:
ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SOUTH & WEST ELEVATIONS

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FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:100**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A06**	**2**

architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
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AHD	AUSTRALIAN HEIGHT DATUM
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DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
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EF	EXHAUST FAN
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MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
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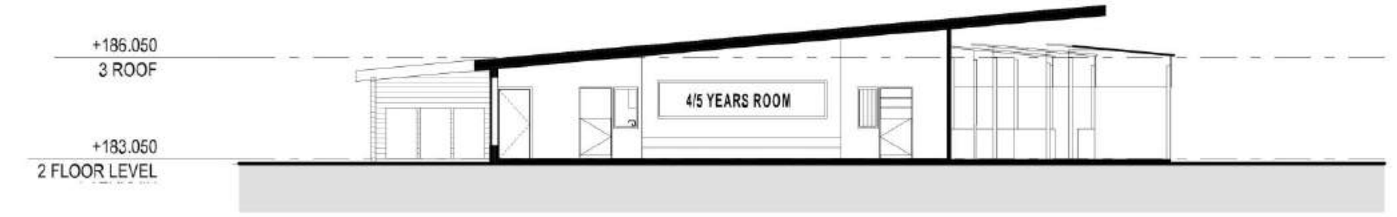
LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05



S-05 SECTION
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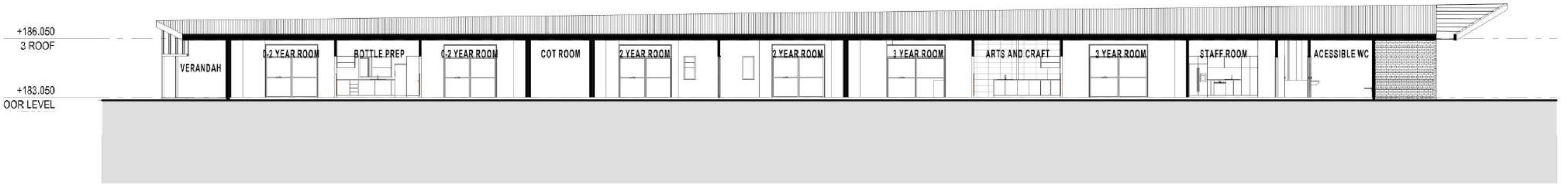

S-06 SECTION
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EJE ARCHITECTURE
ACN 002 912 842 | **ABN** 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2330 | E mail@eje.com.au | W www.eje.com.au

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DRN	CHKD	VRFD
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PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: SECTION A-A & B-B

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FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:100**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A07**	**2**

EJE architecture

ABBREVIATIONS

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ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
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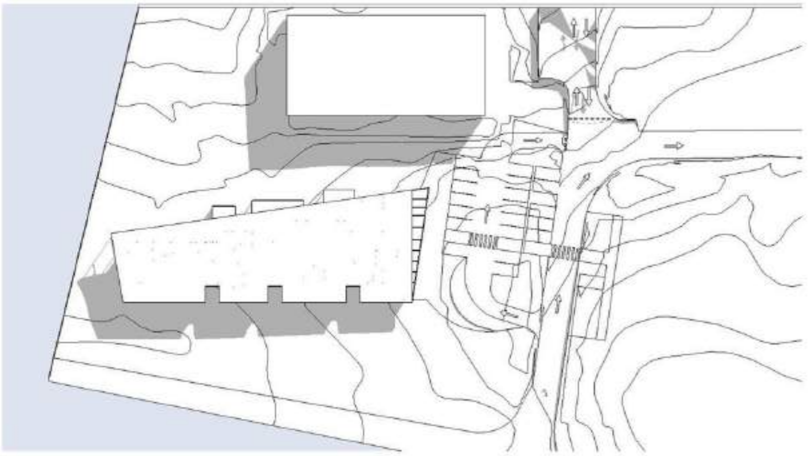

JUNE 21 - 9AM
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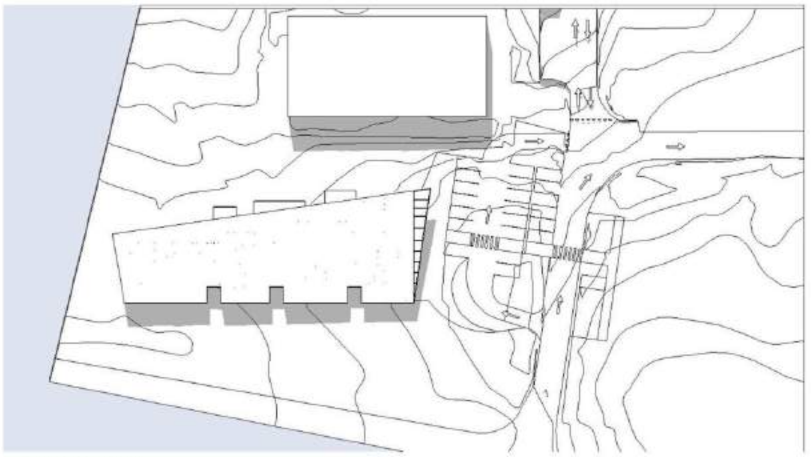

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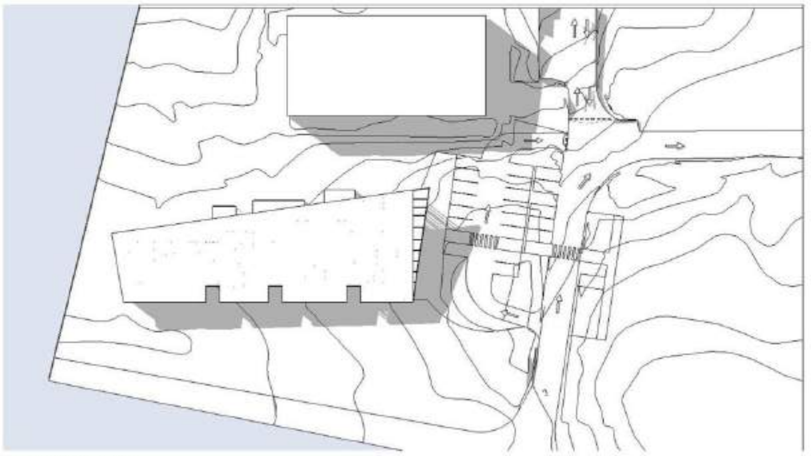

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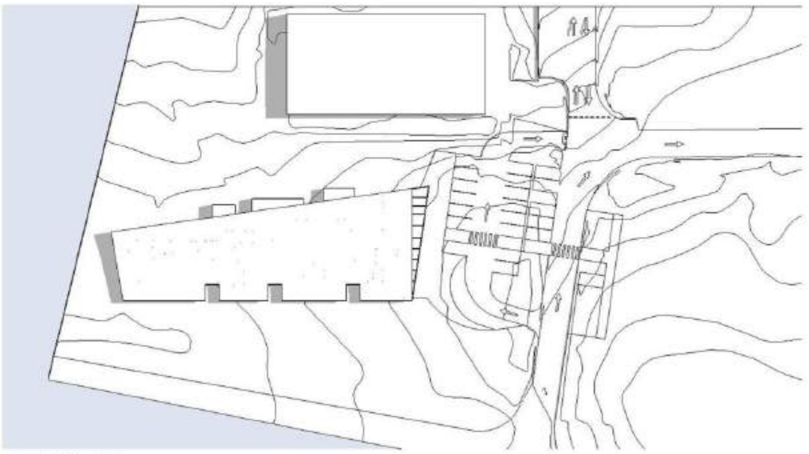

DEC 21 - 9AM
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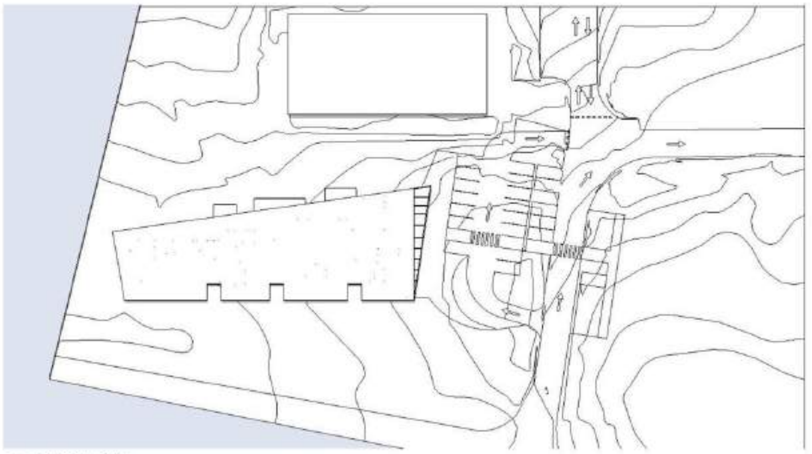

DEC 21 - 12PM
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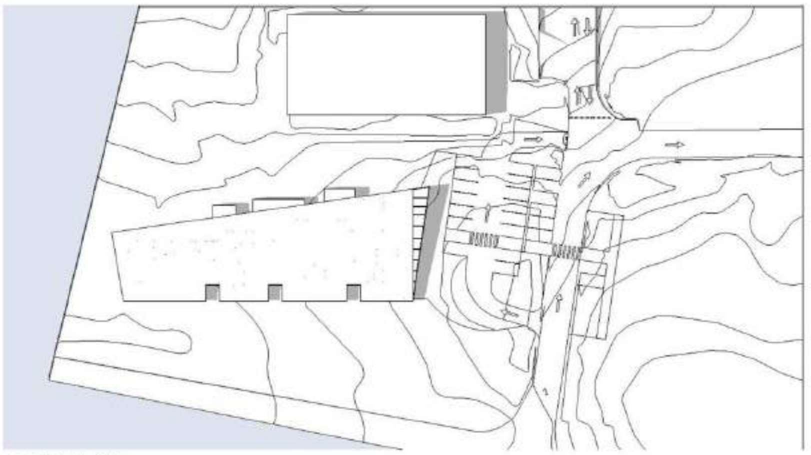

DEC 21 - 3PM
1:200

EJE ARCHITECTURE
ACN 002 912 842 | **ABN** 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
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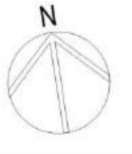

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2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	Jade

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: SHADOW DIAGRAMS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:200**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A08**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
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FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
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FS	FIXED SHELF
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HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
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LEGEND

W1.06	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 06
D1.06	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 06

EJE ARCHITECTURE

ACN 002 912 842 | **ABN** 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4439
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0 25mm 100mm 200mm ON ORIGINAL A1

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	17/01/2019	SKETCH DESIGN PRESENTATION ISSUE	BdB	HN	
B	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: 3D PERSPECTIVES

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FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A09**	**2**

EJE architecture

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LEGEND

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CLIENT:
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE:
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DRAWN:	DATE:	SCALES @A1:
BdB	13/06/2019	

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	DA	A10	2

EJE architecture

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REV	DATE	COMMENTS
0	04/08/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HR	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: 3D PERSPECTIVES

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FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A11**	**0**

EJE architecture

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LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
FBW.01	FACE BRICK -BOWRAL DRY PRESSED 'MURRARY' RAKED MOTAR JOINTS
FBW.02	FACE BRICK -PGH 'ALFRESCO' BRICK -CHOCCOLATTO FLUSH MOTAR JOINTS
TD-01	TIMBER DECKING -COMPOSITE TIMBER DECKING EQUAL TO BLUEGUM
PT-03	PAINT DULUX - PN1C8 PAVING STONE
PT-11	PAINT DULUX - PG1F7 WESTERN MYALL
PT.14	ST NICHOLAS BRAND -GREEN (PMS3395)
PT.16	ST NICHOLAS BRAND -BLUE (PMS REFLEX BLUE)
PT.18	ST NICHOLAS BRAND -PINK (PMS226)
PT.21	ST NICHOLAS BRAND -ORANGE (PMS1665)

E-03 NORTH ELEVATION COLOUR
1:100

PT-03 PT-11 PT.14 PT.16 PT.18 PT.21 TD-01 FBW.01 OPTION 1 FBW.02 OPTION 2 CLD.01

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PO BOX 756, NEWCASTLE
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SITE: ST JAMES PRIMARY SCHOOL,
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DRAWING: SCHEDULE OF MATERIALS

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AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
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COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
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CPT	CARPET
CR	CEMENT RENDER
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CRR	CURTAIN RAIL
CS	CLEANERS SINK
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DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
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ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
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HTR	HEATER
HWS	HOT WATER SYSTEM
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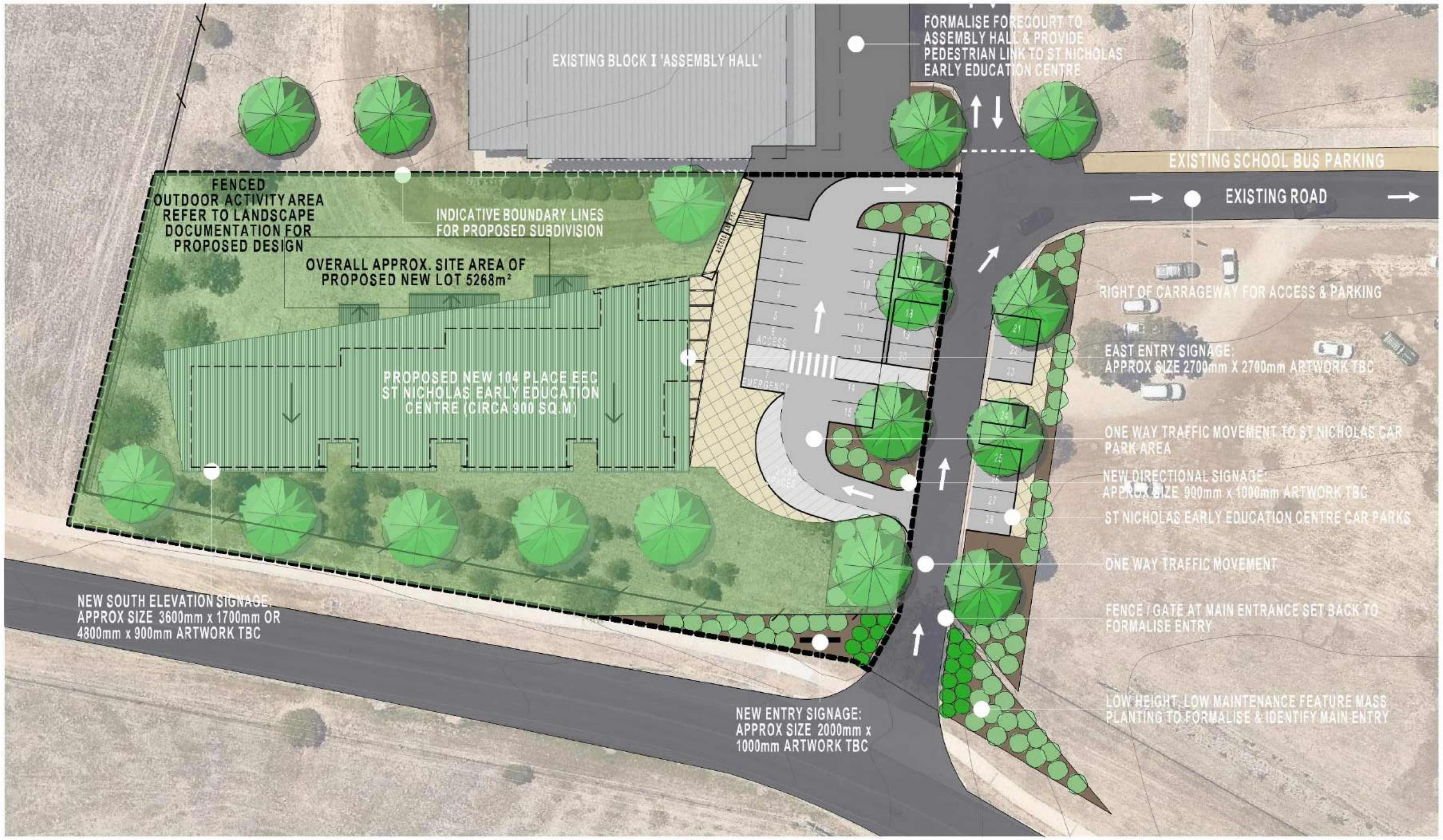
LEGEND

▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
▩	NEW ASPHALT



NOTIFICATION PLAN
1:500

EJE ARCHITECTURE
ACN 000 912 843 | ABN 82 644 649 843
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET, NEWCASTLE, NSW 2300
P +61 2 4929 2353 | F +61 2 4926 2062 | E mail@eje.com.au | W www.eje.com.au

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0 10mm 50mm 100mm ON ORIGINAL A3

REV	DATE	COMMENTS
0	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT : ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT : CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE : ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING : NOTIFICATION PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A3 :
BdB	13/06/2019	1:500

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	DA	A13	0

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
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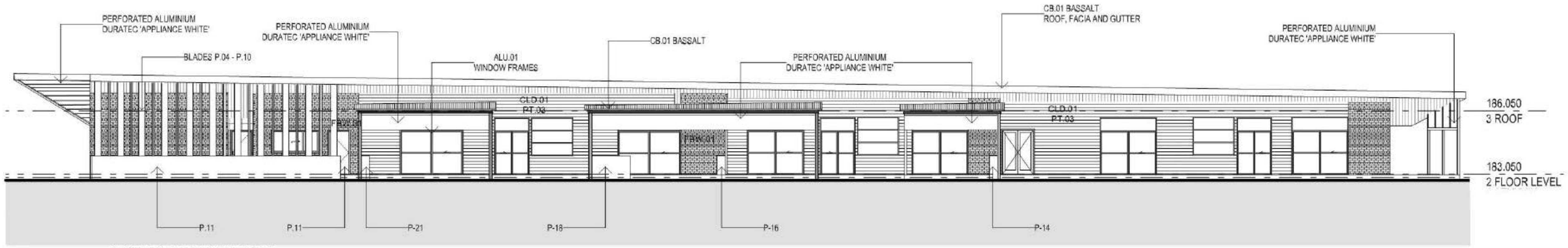
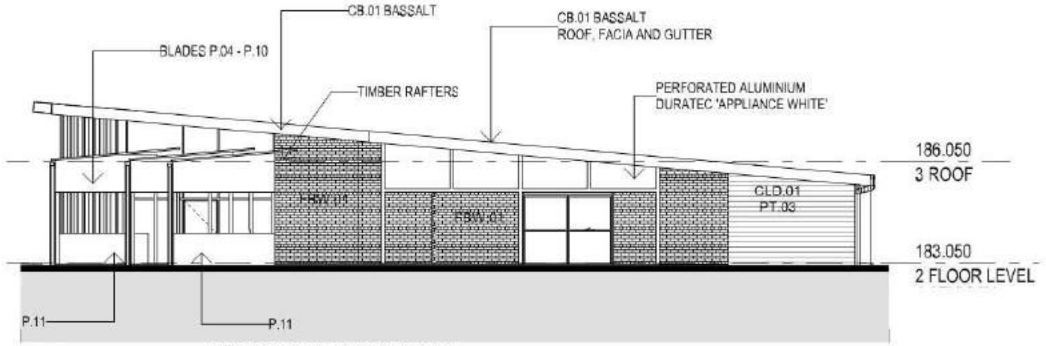
LEGEND

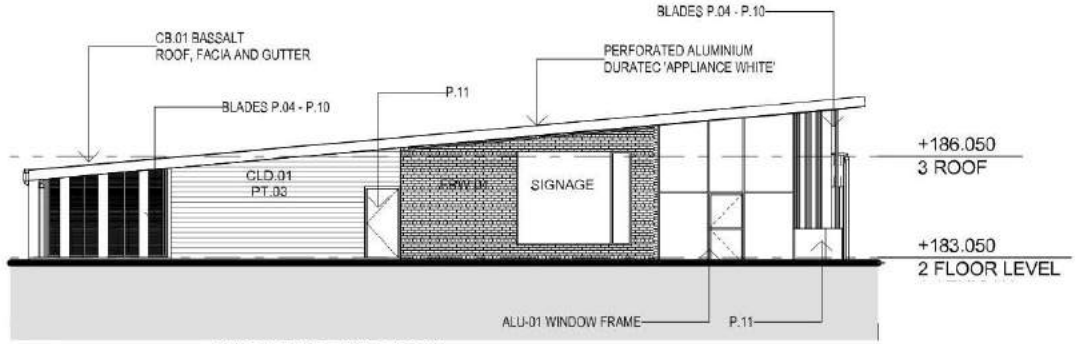
▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
▒	NEW ASPHALT



NORTH ELEVATION
1:200



WEST ELEVATION
1:200



EAST ELEVATION
1:200

SOUTH ELEVATION
1:200

EJE ARCHITECTURE

ACN 000 912 843 | ABN 82 644 649 840
Nominated Architect - Bernard Collins
NSW Architects Registration No 4408
A 412 KING STREET, NEWCASTLE, NSW 2300
P +61 2 4929 2353 | F +61 2 4926 2092 | E mail@eje.com.au | W www.eje.com.au

COMPLETION OF THE QUALITY ASSURANCE CHECKS IS VERIFICATION THAT THE DOCUMENT CONFORMS WITH THE REQUIREMENTS OF THE QUALITY PROJECT PLAN. WHERE THE QUALITY ASSURANCE CHECK IS INCOMPLETE THE DOCUMENT IS PRELIMINARY FOR INFORMATION PURPOSES ONLY, OR SUCH PURPOSES AS STATED IN THE REVISION COLUMN.

0 10mm 50mm 100mm ON ORIGINAL A3

REV	DATE	COMMENTS
0	04/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: NOTIFICATION ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A3 :
BdB	13/06/2019	1:200

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	DA	A14	0

EJE architecture

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LEGEND

▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
■	NEW ASPHALT

EJE ARCHITECTURE

ACN 002 912 843 | ABN 82 044 649 849
Nominated Architect - Bernard Collins
NSW Architects Registration No.4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2300 | E mail@eje.com.au | W www.eje.com.au

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N

St Nicholas EarlyEducation

St James' Primary School MUSWELLBROOK

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	11/01/2019	SKETCH DESIGN ISSUE	BdB	HN	
B	17/01/2019	SKETCH DESIGN PRESENTATION ISSUE	BdB	HN	
C	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	
3	18/10/2019	BOUNDARY ADJUSTMENT			

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: SITE PLAN

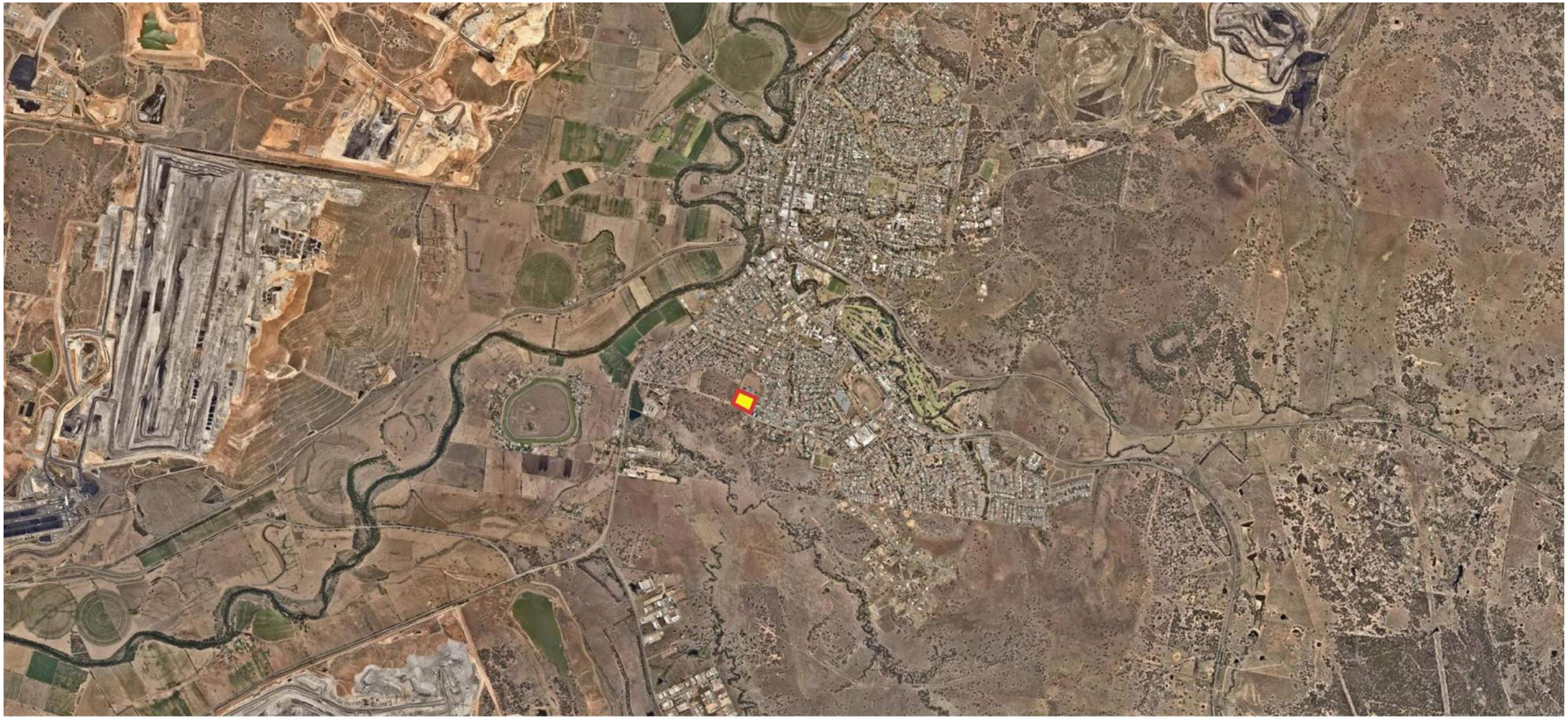
WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	13/06/2019	1:250

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	DA	A01	3

EJE architecture



landscape development application

Catholic Schools Office Diocese of Maitland-Newcastle
St. Nicholas Early education Centre
Skellatar Stock Rte, Muswellbrook NSW 2333

terras
landscape architects

masterplan | 01
landscape area

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
masterplan

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

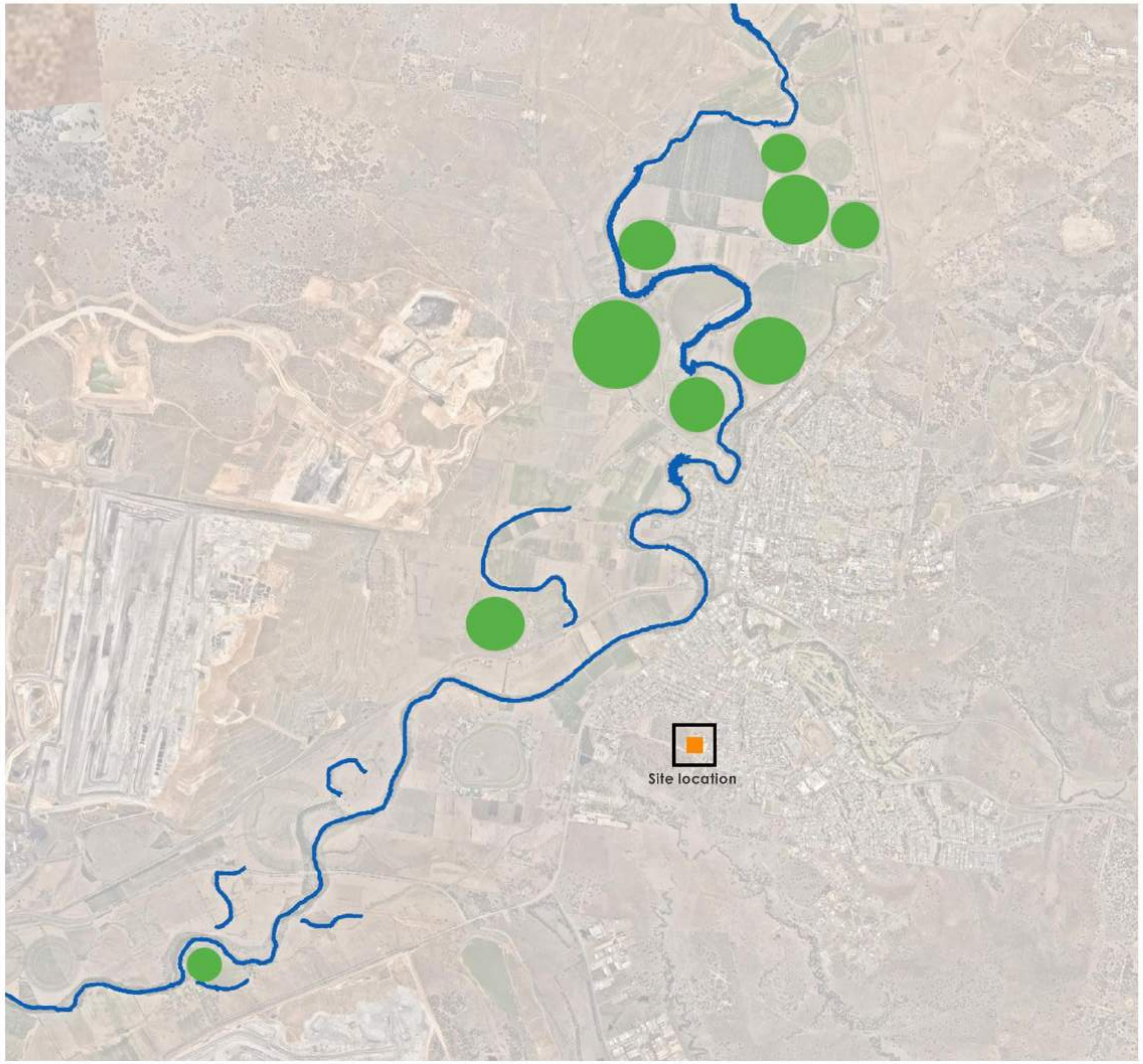
JOB NUMBER: **12399.5**
PHASE:
DWG No: **L01**
REV: **D**

terras
landscape architects

412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

concept evolution | 02

Site location



The hunter river and its watershed have influenced the use and settlement of the Muswellbrook area. The design is inspired from the meandering nature of the hunter river , ox bow lakes and agriculture fields in geometrical shapes along it.

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
Concept

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

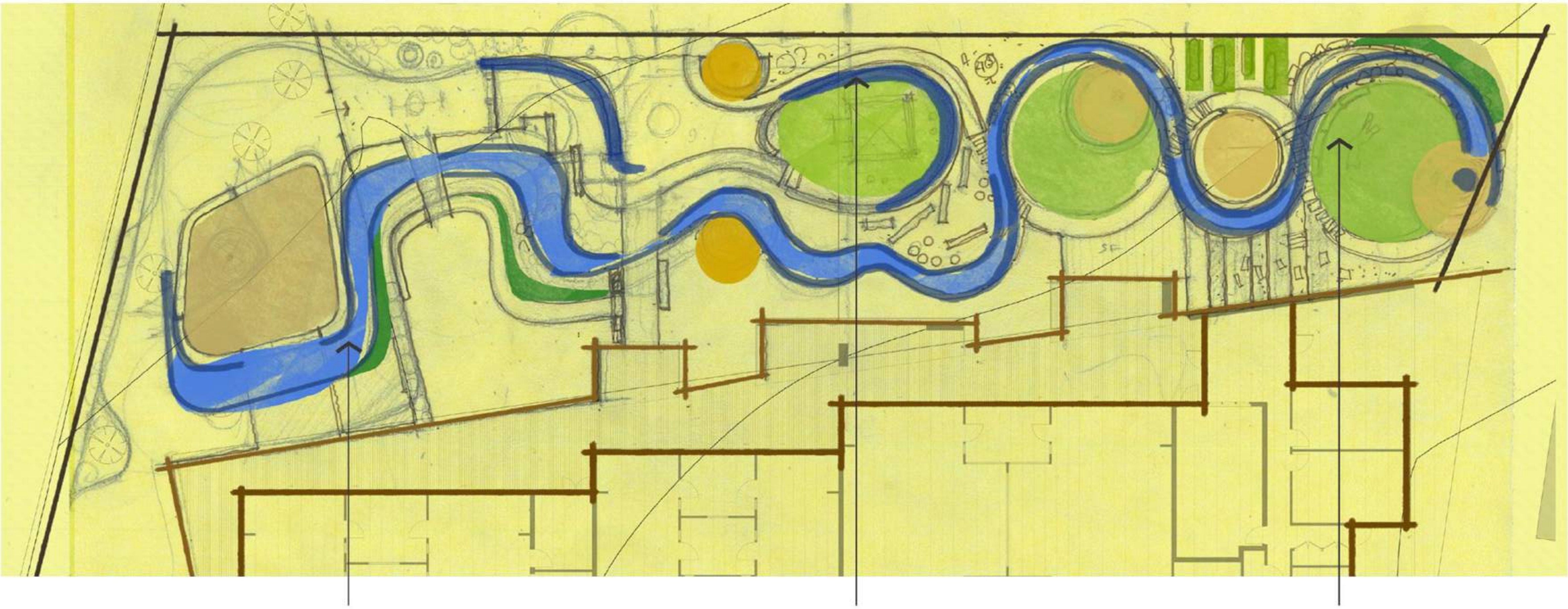
JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L02**	**D**

terras
landscape architects

412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

concept evolution | 03

landscape sketch



meandering nature
of the hunter river
as the spine of the play space
as gravel path, water fountain spill and
planting bed

Landscape features like seating and sand-
stone logs depicting the ox bow lakes
around the river

Geometrical agriculture fields
along hunter river inspired the
shape of the play areas

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
concept

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: **12399.5**
PHASE:
DWG No: **L03**
REV: **D**

terras
landscape architects
412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

landscape areas | 04

play space area

Palisade fence between play space of 0-2 and 2-3 year

Sandstone blocks as marker between play space of age group 2-3 and 4-5 year

Outdoor play spaces

0-2 year olds: 30 children
Total play space: 340m²
(210m² required)
Sandpit 38m²
(15-30m² recommended)

2-3 year olds: 40 children
Total play space: 440m²
(280m² required)
Sandpit 47m²
(30m² recommended)

4-5 year olds: 50 children
Total play space: 475m²
(350m² required)
Sandpit 38m²
(30-40m² recommended)

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
landscape areas

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: **12399.5**
PHASE:
DWG No: **L04**
REV: **D**

terras
landscape architects

412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

landscape plan | 05
play spaces

🟩 Synthetic Turf

🟩 Natural Turf

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:
JOB NUMBER: **12399.5**
PHASE:
DWG No: **L05**
REV: **D**

terras
landscape architects

412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

landscape plan | 06

0-2 years play space

Open synthetic turf area for free play.

Sandpit enclosed by sandstone logs, with timber log for balancing and play. covered with tensile shade.

Timber deck

Gravel bed

Natural path with sensory plants, balancing logs, mulch and stepping stones.

Palisade fence with planting

Soft fall area between building and sandpit

Natural turf area

Synthetic turf play area with shade trees and muscial play elements

Sand play area and deck

Music play elements

Natural path

🟩 Synthetic Turf

🟩 Natural Turf

D	14/05/2019	ISSUE TO CLIENT
REV	DATE	COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan: part 1

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

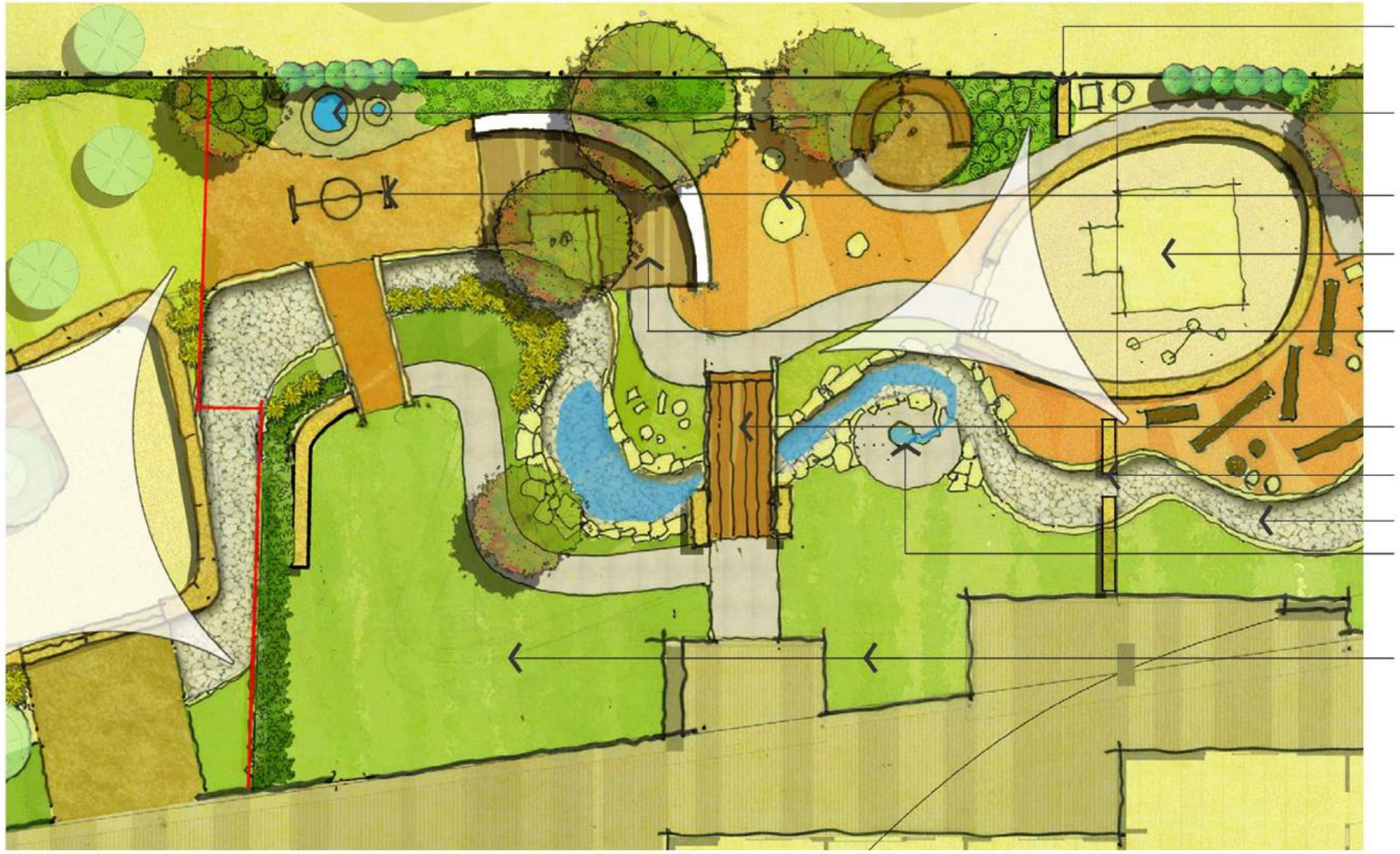
DRAWN: MA
DATE: 14/05/2019
SCALE:
JOB NUMBER: **12399.5**
PHASE:
DWG No: **L06**
REV: **D**

terras
landscape architects

412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

landscape plan | 07

2-3 years play space


Sandstone block as marker between play space for different age group

Shallow water fountain at focal point with sensory plants, balancing logs, mulch and stepping stones.

Soft fall area with active play equipment and music pods

Cubby house on sandbed with partial tensile cover

Outdoor classroom with deck, and circular seat with feature shade tree in centre

Timber bridge over gravel swale

Sandstone block as marker between play space for different age group

Gravel bed

Water fountain play spills to ephemeral creek, with water recirculated through filtration system.

Open natural turf area for free play

🟩 Synthetic Turf

🟩 Natural Turf


continuous gravel bed


water play


play equipment: play stage


gravel bed and timber bridge


Outdoor classroom

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan: part 2

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L07**	**D**

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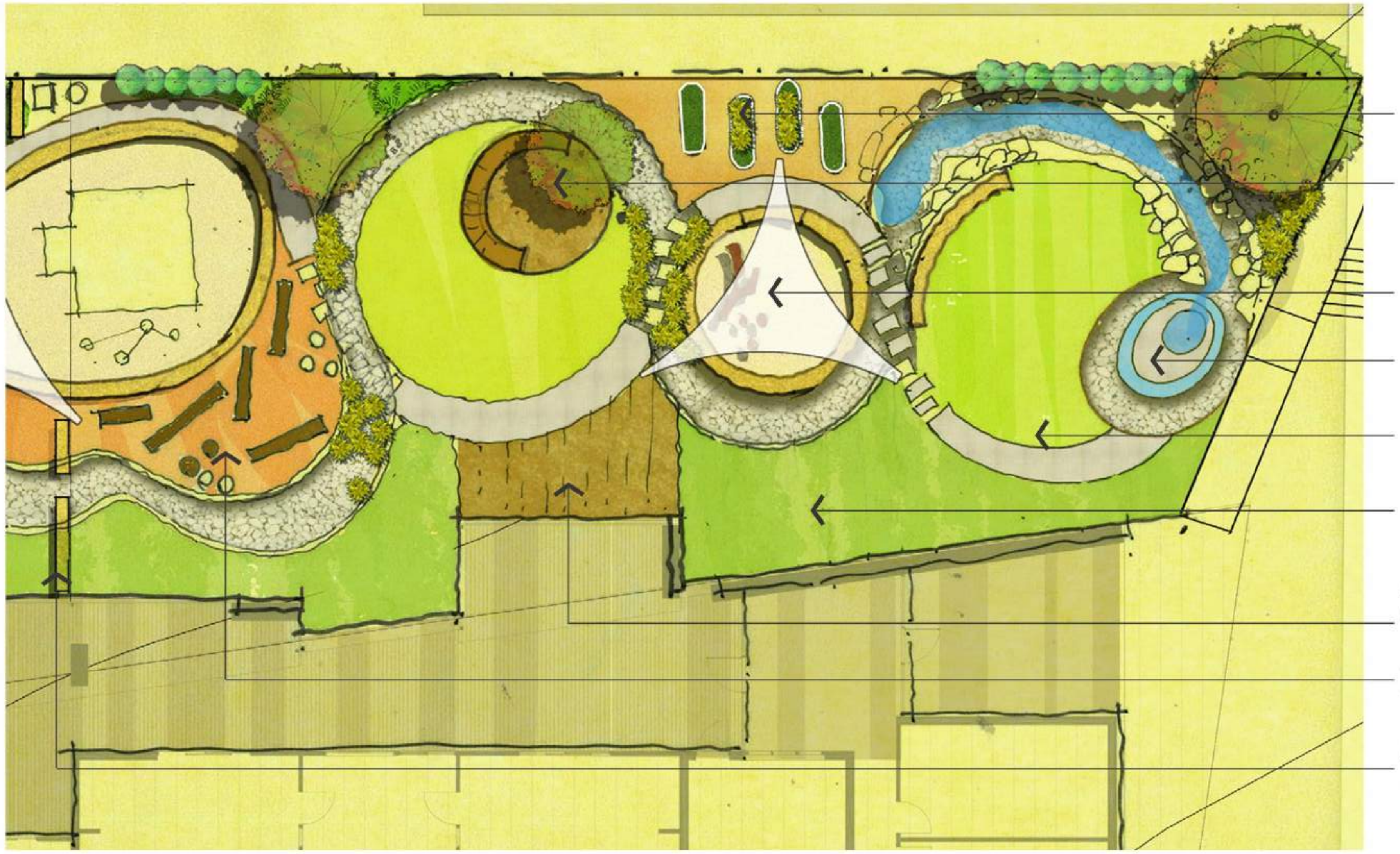
landscape plan | 08

4-5 years play space



Raised veggie gardens

Outdoor classroom with deck, and timber circular seat within synthetic turf circle

Sandpit enclosed by sandstone logs, with timber log for balancing and play. covered with tensile shade.

Water fountain play spills to ephemeral creek, with water recirculated through filtration system.

Open synthetic turf area for free play

Natural path with sensory plants, balancing logs, mulch and stepping stones.

Soft fall area between building and open turf

outdoor active play area with natural elemnts

Sandstone block as marker between play space for different age group

🟩 Synthetic Turf

🟩 Natural Turf

D	14/05/2019	ISSUE TO CLIENT
REV	DATE	COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan: part 3

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		L08	D

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Water fountain play

Outdoor active play

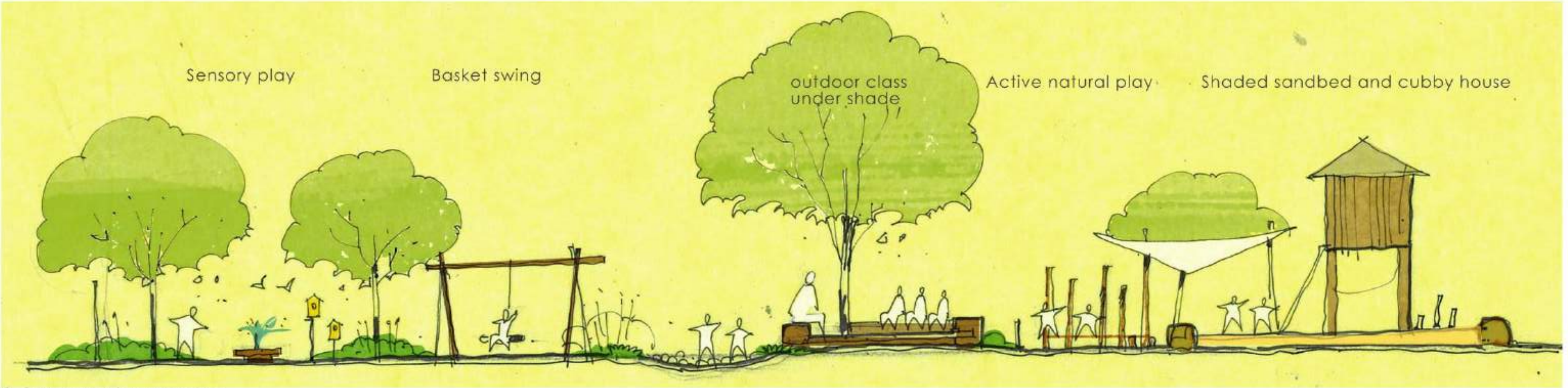
Outdoor active play

Veggie garden

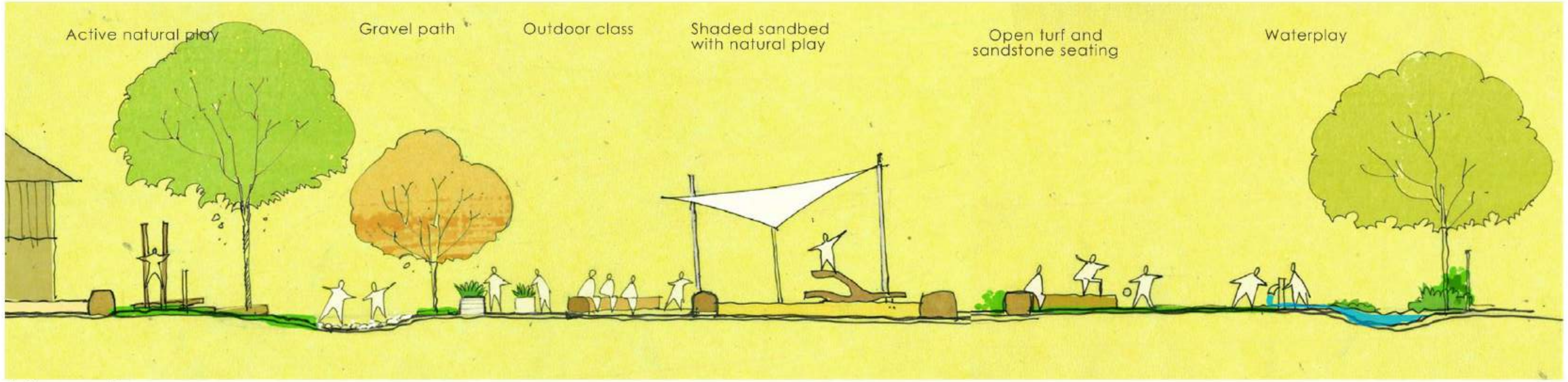
landscape areas | 09

creative play area

0-2 years play space



2-3 years play space



4-5 years play space

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
landscape areas

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: 12399.5
PHASE:
DWG No: L09
REV: D

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planting palette | 10
play space area


Melaleuca linariifolia


westringia fruticosa


Pennisetum alopecuroides


Lomandra longifolia 'Tanika'


Hibbertia scandens


Acer palmatum 'Sango Kaku'


Banksia spinulosa 'Birthday Candles'


Dypsis Lutescens


Dietes iridoides


Thymus x citriodorus


pistacia chinensis


Trachelospermum jasminoides


Gazania tomentosa


Dicksonia antarctica


Viola hederacea


nandina domestica pygmaea


Liriope muscari 'Variegata'


Dichondra repens


Lagerstroemia indica

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
planting palette

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L10**	**D**

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landscape layout | 11
site plan

Formalised forecourt to assembly hall

Play area

Ramp and Steps to access new building level

Medium Backhousia trees planted along the entry road to create an avenue.

Paved path to entrance

New parking with permeable surface

Hedge planting of Syzygium provides screening

Sandstone block as feature

Entry Gate to site

School Signage within feature mass planting

specimen tree with colourful foliage (Jacaranda)as entry feature

feature planting bed specimen trees

Retention basin with massplanting and fence around

Low height massplanting strip

Large trees to create avenue along fence

Existing tree

New tree

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
Site layout

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: **12399.5**
PHASE:
DWG No: **L11**
REV: **D**

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landscape layout | 12

planting palette: entry & parking area


Lophostemon confertus


Jacaranda Mimosifolia


Backhousia citridora


Strelitzia


Cycas revoluta


Aspidistra elatior


Dietes iridioides


Syzygium australe


Gardenia augusta florida


Lomandra longifolia


Myoporum parvifolium


Trachelospermum jasminoides

Plant schedule

No.	Botanical Name	Common Name	Height
Trees			
01	Jacaranda Mimosifolia	Jacaranda	15
02	*Lophostemon confertus*	Brush Box	12
03	*Backhousia citidora*	Lemon myrtle	15
Feature plants			
04	*Strelitzia reginae*	Bird of paradise	1
05	*Cycas revoluta*	Cycas	1
06	*Aspidistra elatior*	Cast iron plant	0.7
Shrubs			
07	*Syzygium 'Bronzed Aussie'*	Lily Pilly	3
08	*Dietes iridioides*	Dietes	0.6
09	*Gardenia augusta florida*	Gardenia	1
Grasses & Groundcover			
10	*Lomandra longifolia*	Mat rush	0.7
11	*Trachelospermum jasminoides*	Star jasmine	0.3
12	*Myoporum parvifolium*	Creeping boobialla	0.3

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
Planting palette: site

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:
JOB NUMBER: **12399.5**
PHASE:
DWG No: **L12**
REV: **D**

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STATEMENT OF ENVIRONMENTAL EFFECTS

ST NICHOLAS EARLY EDUCATION CENTRE MUSWELLBROOK

LOT 1 DP1070178
111 SKELLATAR STOCK ROUTE ROAD
MUSWELLBROOK NSW 2333

prepared for:
The Catholic Diocese of Maitland-Newcastle

Prepared by EJE Architecture
JUNE 2019
Issue: A
Ref: 12399-SEE_2019-06-03_Issue A.doc

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TABLE OF CONTENTS

1. PROPOSAL

This Statement of Environmental Effects has been prepared to accompany a development application for the following:

- Site Subdivision
- A new 104 place Early Education Centre
- Formalisation of the St James Primary School Main Vehicle Entry
- New car parking & landscaping for the early education centre.

The proposal is to be located on a new lot which is to be subdivided from the current St James Primary School site, and which will be owned by The Trustees of the Roman Catholic Church for the Diocese of Maitland - Newcastle.

The application is being lodged by the Catholic Diocese of Maitland-Newcastle, and the proposal has been prepared in accordance with the provisions of Muswellbrook Shire Council's Local Environmental Plan 2009 and Development Control Plan 2009.

Particular consideration has been given to the following sections of the Muswellbrook Development Control Plan 2009:

- Part 16: Car Parking & Access
- Part 18: Child Care Centres
- Part 21: Contaminated Land

Careful consideration has been given in determining the location, site layout, design and landscaping of the proposal to ensure that the current & future needs of the operator and user groups will be met, and that the development is of a high standard which is compatible with adjacent facilities and respectful of the surrounding environ of Muswellbrook.

2. LOCATION

The site for the proposed St Nicholas Early Education Centre is Lot 1 DP1070178111, upon which St James Primary School is established. The site is bounded on its Southern side by Skellatar Stock Route, Muswellbrook.

The proposal is to be sited in the South West corner of the current school site.
An adjustment to the site by way of a subdivision is proposed to create a separate lot for the early education centre. The new lot will be purchased by The Catholic Diocese of Maitland-Newcastle, and the school lot will remain in the ownership of the Parish of Muswellbrook.

The site currently has generous setbacks from Skellatar Stock Route, with the school buildings generally concentrated in the mid portion of the site, with playing fields to the North. The site does not contain items which hold heritage value.

An Assembly Hall building was established on the school site in 2011. It is located on the Western side of the main entry driveway, however maintains a significant setback to Skellatar Stock Route.

The proposed development will be located in the setback between the Assembly Hall and Skellatar Stock Route.

The proposed new development will be undertaken with the provision and benefit of a suitable geotechnical investigation prior to detailed project documentation, which will confirm soil class and inform the footing design. A preliminary contamination and geotechnical investigation has been undertaken to inform the early phases of the project design, and are included as part of this Development Application.

Refer ***Appendix A:*** *Preliminary Site Investigation (Contamination)*
Refer ***Appendix B:*** *Geotechnical Investigation*

A Site Survey has also been prepared to accompany this development application.

Refer ***Appendix C:*** *Site Survey*

3. DESCRIPTION OF THE PROPOSAL

The proposal is for a site subdivision and new Early Education Centre facility to be developed adjacent St James Primary School, located on Skellatar Stock Route, Muswellbrook.

The proposed works are compatible with, and will operate in conjunction with, St James Primary School.

The Catholic Diocese of Maitland-Newcastle has established, and currently operates, a number of St Nicholas Early Education Centres around the Hunter. To ensure the viability of the proposal, the necessary community needs assessments have been undertaken by St Nicholas Early Education. The assessment has identified that there is a demand for childcare within the Muswellbrook community, and that a centre of this scale will be feasible.

The subdivision of the school site will create a separate lot for the benefit of the Early Education Centre, the area of which will be approximately 5,248sq.m, and the title of which will contain any necessary easements, such as 'right of carriage'. The new lot will be purchased by the Catholic Diocese of Maitland-Newcastle.

Access to the new St Nicholas Early Education Centre will be via the existing main entry to the school. Adjustments to the existing internal driveway network are proposed which include formalisation of the main entry to the site and provision of car parking to serve the new child care centre.

The Early Education Centre portion of the proposal is for a new 104 place centre which is to incorporate the following:

- 6 x playrooms catering for various age groups (0-5 year ages)
- Administration & Staff areas (Entry, Foyer, Office, Staff Program Room, Staff Room & Amenities)
- Commercial Kitchen
- Amenities & Nappy Change Rooms
- Cot Rooms
- Bottle Preparation Rooms
- Laundry
- Arts & Craft Preparation Rooms
- Storage Rooms
- Covered & Open Outdoor Landscaped Play Areas
- Building Services
- Carparking & Driveways
- Forecourt & Entry Landscaping

The proposed upgrade of the main site entry will provide a much improved level of amenity to those visiting the school; and the proposed Early Education Centre development will be a valuable contributor to the 'place-making' of St James' Primary School.

The positioning of the Centre has been developed in response to its context, relationship to the St James Primary School, the overall site masterplan, the necessary setbacks, the positioning of vehicle access & parking, and in consideration of maintaining existing sight lines for vehicular traffic entering & exiting the site.

The general arrangement of the building & its external spaces responds to both its functional/operational requirements, and to its immediate surrounds. The overall layout of the building establishes good spatial relationships between internal and external play spaces, and will assist with staff supervision whilst endeavouring to create efficiencies through shared support spaces and circulation.

The overall plan layout of the facility affords the internal spaces an opportunity to connect; both physically & visually, to the spacious north oriented Outdoor Activity Area, further strengthening the levels of supervision across the facility.

The exterior treatment of the building's façade reflects the internal function of the spaces. Limited window openings are provided to the Southern Elevation, as internal spaces along this side of the building are for the purpose of Nursery Rooms & Resource/Storage Rooms – where natural light is not required.

Windows to the Western Elevation have also been minimised to eliminate the hot afternoon summer sun penetrating the Playroom spaces.
Window & door openings are generally concentrated to the walls between the Play Rooms and the covered north facing veranda, which connects to the Outdoor Play Space. Windows have been carefully positioned along the building's façade to suit the internal environment necessary for the various age groups. In some locations, the extent of window openings has been limited to enable control of natural light, especially into the 0-1 year age group Play Room, which is located at the Western most part of the building.

With the facility located in close proximity to St James Primary School, it is intended that a school transitioning program be established for the benefit of the Preschool Children who will later attend St James Primary School.
Accordingly the proposal includes landscaping and pathways to provide a connection between the facilities.

The architectural character & scale of the proposed Early Education Centre is appropriate to the surrounding area, however comprises a contemporary style providing the facility its own identity. The buildings footprint and the way in which its form is articulated are in response to the functional requirements of the facility.

Shadow Diagrams have been prepared for the benefit of the Development Application, which indicate that the proposal does not create overshadowing to any neighbouring properties.

Signage associated with the Early Education Centre will be concentrated to the building itself, as well as to the Main Site Entry. Way finding graphics will be incorporated and have been considered in respect of the building's design aesthetic and function. The signage will be provided in accordance with the St Nicholas branding guidelines.

The material palette of the building will incorporate various finishes which are listed below and further outlined on the Exterior Colours & Finishes Materials Selection Palette Drawing:

St Nicholas Early Education Centre – Proposed Exterior Materials & Finishes Palette
Horizontal Weatherboard Cladding with Paint Finish
Face Brickwork
Rendered brickwork with Paint Finish
Metal Roof Sheeting & Accessories – Colorbond Finish
Metal Sheet Cladding – Colorbond Finish
Feature Elements – Timber and/or Prefinished Aluminium
Aluminium Framed Glazed Doors & Windows – Powdercoat Finish

Refer ***Appendix D:*** *Exterior Colours & Finishes Materials Selection Palette Drawing*

Site landscaping considerations are inherent to St Nicholas Early Education Centres and have been essential to the overall design of the facility. Accordingly, a Landscape Plan has been included with this Development Application.

The Outdoor Activities Area is oriented to enjoy good solar access, with significant shaded areas proposed.
Appropriate landscape features (both hard & soft) will be included and will create an environment which encourages children to play in the knowledge that they are safe and secure within the grounds of the centre.

Refer ***Appendix F:*** *Architectural Drawings*
Refer ***Appendix E:*** *Landscape Design Drawings*
Refer ***Appendix O:*** *Preliminary BCA Report*

4. PLANS & POLICIES

Various plans and policies have been referenced in consideration of this development application.
Below is a summary of those which we deem relevant to the proposal:

4.1 State Environmental Planning Policies (SEPP)

SEPP Detail	Detail	Relevance & Implications
SEPP 55 Remediation of Land	This SEPP applies to land across NSW and states that the land must not be developed if it is unsuitable for a proposed use because of contamination.	Applicable Preliminary Site Investigations have indicated that the site is suitable for the proposed use. *Refer* ***Appendix A***: Targeted Environmental Site Assessment
SEPP 64 – Advertising & Signage	The SEPP aims to ensure that outdoor advertising is compatible with the desired amenity and visual character of an area, provides effective communication in suitable location, and is of high quality design & finish.	Applicable The proposed signage will be concentrated to the building and site entry and will be provided in accordance with St Nicholas Early Education guidelines. *Refer* ***Appendix F****: Architectural Drawings*
SEPP (Educational Establishments and Child Care Facilities) 2017	The SEPP aims to facilitate the delivery of educational establishments and early education and care facilities.	Applicable Part 3 of the SEPP contains a range of provisions relating to Early Education and Child Care Facilities, which have been considered in the development of the proposal.
SEPP Infrastructure 2007	The SEPP provides a consistent approach for infrastructure and the provision of services across NSW, and aims to support greater efficiency in the location of infrastructure and service facilities.	Applicable

4.2 Muswellbrook Local Environment Plan 2009 (LEP)

The proposed subdivision and early education centre development is consistent with the aims of the LEP.

- Land Use Zone:
    - The site is zoned R1 General Residential, and the proposed development is consistent with the objectives of the R1 zone. The proposed use is permissible with consent.

- Maps & Principal Development Standards:
    - The proposal is consistent with the development standards stated in the LEP including the maps, and in particular:

Development Standard	Minimum	Proposed
Clause 4.1: Lot Size	600 sq.m	5,248 sq.m
Clause 4.3: Max Building Height	13 metres	5 metres
Clause 4.4: Maximum Floor Space Ratio (FSR)	0.5:1 *(applies to a portion of the existing School Lot only)*	Circa 0.2:1

    - The site is not affected by a land acquisition reservation (Clause 5.1)
    - The site is not in a Heritage Conservation area (Clause 5.10)
    - The site is not identified as being within an Urban Release Zone (Part 6)
    - The site is not identified as being impacted by Terrestrial Biodiversity (Clause 7.1)
    - The proposed subdivision will include for connection to services as is require of land within in Zone R1 General Residential requires the land to be adequately serviced with water, sewer, or arrangements satisfactory to the consent authority (Clause 7.4)
    - The proposal seeks to meet the objectives of the LEP Earthworks (Clause 7.6).

*Refer **Appendix F:** Architectural Drawings*
*Refer **Appendix G:** Civil/Stormwater Design Plans*

4.3 Muswellbrook Development Control Plan (DCP)

4.3.1 Section 5: Subdivision

This application seeks approval for a subdivision of the St James Primary School site to create a separate lot for the early education centre. The proposed new lot will have an area of approximately 5,248sq.m.
The subdivision will include for the necessary services supply connections in accordance with authority/service provider requirements. The indicative boundary lines of the proposed subdivision are indicated on the architectural Site Plan drawing.

*Refer **Appendix F:** Architectural Drawings*

4.3.2 Section 6: Residential Development

Whilst the proposal is not residential in nature, it is to be located within a residential zone. Consideration has therefore been given to the objectives of the DCP in the siting and design of the development.

4.3.3 Section 13: Flood Prone Land

The Section 10.7 Planning Certificate states that the site is not subject to flood related controls.

4.3.4 Section 14: Outdoor Signage

The signage proposed with the development is consistent with the objectives of the DCP.

4.3.5 Section 15: Heritage Conservation

The site does not appear to be within a Heritage Conservation area.

4.3.6 Section 16: Car Parking and Access

Access & parking provision has been provided for within the development proposal in accordance with the DCP. The car park layout will enable safe drop off & collection of children from the Early Education Centre in a clearly lit and marked convenient location which caters for the safe movement of vehicles and pedestrians to and around both the school and early education facility.

The car park for the early education centre consists of a total of 28 car parking spaces, including 1 accessible car parking space and 1 emergency vehicle space, as well as 3-space set-down area.

*Refer **Appendix H:** Traffic & Parking Assessment*

4.3.7 Section 18: Child Care Centres

The proposed development is consistent with the objectives of the DCP, and *The National Quality Standards for Early Education & Care and School Age Care.*

4.3.8 Section 20: Erosion & Sediment Control

A Stormwater Management Plan has been prepared for the proposal and includes sedimentation and erosion control plans & details consistent with the objectives of the DCP.

*Refer **Appendix G:** Civil/Stormwater Design Plans*

Appropriate erosion & sediment control measures will be implemented throughout the construction period of this development, in accordance with Muswellbrook Shire Council's requirements. Ongoing stormwater, sediment/silt management systems, and water reuse initiatives will be installed to operate for the ongoing life of the development.

4.3.9 Section 21: Contaminate Land

Preliminary Site Investigations have indicated that the site is suitable for the proposed use, and further the Section 10.7 Planning Certificate does not highlight and formal contamination status of the land.

Refer **Appendix A:** *Targeted Environmental Site Assessment*

4.3.10 Section 25: Stormwater Management

A Stormwater Management Plan has been prepared for the proposal and is consistent with the objectives of the DCP.

*Refer **Appendix G:** Civil/Stormwater Design Plans*

5. OPERATION AND MANAGEMENT

5.1 General Operation

The St Nicholas Early Education Centre will operate as a long day care centre, generally open between the hours of 6.30am and 6.30pm on weekdays, and will incorporate all of the functional spaces necessary for a childcare centre of this type, in accordance with *The National Quality Standards for Early Education & Care and School Age Care.*

The proposed Centre will cater for 104 children over 6 rooms, with facilities to support approximately 20 education and care staff, including support personnel, administration & services staff.

The areas of the individual play rooms are indicated on the Architectural Floor Plans accompanying this application, and are listed in the table below. The area of the Play Rooms and Outdoor Activity Areas meet the requirements of the *National Quality Standard for Childhood Education & Care and School Age Care_Dec 2009,* as follows:

- Required indoor space per child - 3.25m² (of unencumbered space)
- Required outdoor space per child - 7.00m² (of unencumbered space)

ST NICHOLAS EARLY EDUCATION CENTRE MUSWELLBROOK						
Age Group	**Number of Rooms**	**Total Number of Children**	**Number of Children per Room**	**Minimum Room Size (sq.m area)**	**Actual Room Size (sq.m area)**	**Outdoor Activity Space (sq.m area)**
0-2 year olds	2	24	12 (x 2 rooms)	39sq.m *(x 2 rooms)*	45sq.m *(x 2 rooms)*	168sq.m (Minimum requirement)
2 year olds	2	30	15 (x 2 rooms)	48.75sq.m *(x 2 rooms)*	53sq.m *(x 2 rooms)*	385sq.m (Minimum requirement)
3 year olds	1	25	25	81.25sq.m	95sq.m	
4-5 year olds (Preschool)	1 (Preschool)	25	25	81.25sq.m	95sq.m	175sq.m (Minimum requirement)
Totals	**6 rooms**	**104 children**	**104 children**	**338sq.m**	**386sq.m**	**728sq.m** (Minimum requirement)

The support facilities in the proposed centre are provided in response to operational needs and in accordance with legislative requirements, and include:

- Nursery Rooms, Resource/Equipment Stores, Bottle Preparation, Toilet & Nappy Change Facilities, Domestic Laundry, Arts & Craft Preparation Rooms, Semi-Commercial Kitchen, Staff & Administration/Resource Areas, and Staff & Visitor Amenities.
- Secure Outdoor Activity Area incorporating 'soft fall' ground surface treatment, soft & hard landscape elements, sand pits, play equipment, storage, covered/shade areas.
- Entry forecourt, staff courtyard, drying court and bin enclosure.

Refer ***Appendix F:*** *Architectural Drawings*

The building will also contain the main administrative, staff and servicing activities associated with the facility.

A Commercial Kitchen, which will generally be used for the preparation and cooking of snacks and lunchtime meals for the children will be located near the entry to the building adjacent the staff & administration areas and in a position that is easily accessed for delivery of supplies – the majority of which will be by light commercial vehicles. The fitout of the Commercial Kitchen will be undertaken in accordance with the Food Premises code.

An emergency evacuation plan will be implemented prior to operation and in accordance with the early education licencing requirements.

5.2 Utility Services

Services including water supply, sewer, stormwater drainage, telephone, data and power are all available within reasonable proximity to the subject site. The proposed development will includes for the necessary supply connections to these services in accordance with authority/service provider requirements. Any necessary booster assemblies for fire safety systems will be designed by specialist consultants and incorporated in the development works.

Refer ***Appendix I:*** *Feasibility Study for the Installation of Hydraulic Services*
Refer ***Appendix L:*** *Preliminary Electrical Services Review*

5.3 Site Waste Minimisation & Management Plan

Waste disposal during the ongoing operation of the Early Education Centre will be managed by staff and, where necessary, private waste disposal contractors; and will be undertaken in accordance with Muswellbrook Shire Council's Waste Management requirements.

It is envisaged that the Centre will generate general waste & recycling that can be sorted and appropriately stored in domestic scale general waste and recyclable waste type bins for kerb side collection by Council, or an approved waste contractor.

A screened Bin Enclosure area is proposed as part of the Early Education Centre proposal and is positioned adjacent the Administrative/Servicing core of the facility, but is physically & visually separated from the Main Entry to the building. Access to the Bin Enclosure will be via a locked gate, and will be accessed by staff when required.
Based upon established St Nicholas Early Education Centres, it is envisaged that the volume of waste storage required for the proposed 104 place centre will be as listed in the table below. Should waste storage requirements be greater than that listed below, the proposed Bin Enclosure has the capacity for additional bin/skip storage.

Waste & Collection – Early Education Centre		
Waste Type	**Storage**	**Collection & Disposal**
General Waste	8x 'General Waste' Bins positioned within Bin Enclosure	Council General Waste Service
Recyclable Waste	8x 'Recycling' Bins positioned within Bin Enclosure	Council Recycling Service
Green Garden Waste	Green Waste generated by way of general grounds maintenance, including lawn mowing, pruning, etc, will be undertaken by appropriate Ground Maintenance Contractors who will collect and transport green waste to an approved green waste facility	

The green waste generated from the general grounds maintenance will be collected, transported and disposed at approved green waste facilities, by approved ground maintenance Contractors. Where possible green waste will be used on site as mulch for garden beds.

5.4 Trade Waste

The proposed development includes for a Kitchen that will enable on-site preparation of cooked meals for children. Appropriate equipment will be incorporated to enable food preparation & cooking provisions; and waste disposal for a long day care facility of this type.

Generally, the meals to be prepared and cooked on site will include breakfast, morning tea, lunch, afternoon tea and late snack.

6. LIGHTING IMPACTS

External lighting to the proposed Early Education Centre will be provided in accordance with Australian Standards, and will generally be provided to the car park and forecourt area to provide safe passage for vehicles and pedestrians outside of daylight hours.

Due to the developments generous setbacks to the boundary and in consideration of the centre's hours of operation, light spill from the facility is unlikely to pose a concern to neighbouring properties.

7. GEOTECHNICAL

A preliminary Geotechnical and Environmental Investigation have been undertaken at the site to determine any ground condition issues and implications for the proposed development.

The preliminary site investigations have indicated that the site is suitable for the proposed use.

Refer ***Appendix A****: Targeted Environmental Site Assessment*
Refer ***Appendix B:*** *Geotechnical Investigation*

8. MINING IMPACTS

It is understood that the site for the St Nicholas Early Education Centre proposal is not within a Mines Subsidence District, and is therefore unlikely to be impacted by any mining generated issues such as noise & dust.

9. BUSHFIRE

The site upon which the subject development is proposed is not identified as Bushfire Prone Land, as stated within the Section 10.7 Planning Certificate.

10. VEGETATION MANAGEMENT / FLORA & FAUNA

The site upon which the subject development is proposed is not identified as being impacted by any Vegetation, Flora or Fauna Management Plan.

11. LANDSCAPE PLAN

A Landscape Design has been prepared to accompany this development application.

Refer ***Appendix E:*** *Landscape Design.*

12. ACOUSTIC ASSESSMENT

It is understood that there are no significant noise sources in the vicinity of the site that will impact upon the site development.

13. ACCESS REPORT

The proposal has been designed to incorporate equitable accessibility for all users, in accordance with legislative requirements and AS1428.

Refer ***Appendix J:*** *Access Report*

14. ENERGY EFFICIENCY

For the purpose of reducing both energy consumption and operating costs, the proposed development will implement energy saving/efficient initiatives, in accordance with BCA Section J requirements.

14.1 Orientation and Solar Access

The layout of the proposed Early Education Centre is arranged with the Outdoor Activity area positioned to the Northern side of the building to enable sunlight to penetrate the play spaces.

The northern light will be captured by the Centre and distributed into the Play Rooms through generous glazed windows and doors which are to be incorporated; however the generous veranda roof will eliminate hot summer sun penetrating the spaces.

Ancillary areas such as Nursery Rooms and Resource/Store Rooms have small windows to enable control of natural light into these spaces.

14.2 Natural Ventilation

The proposed Early Education Centre would have a mixture of natural and mechanical ventilation. Natural ventilation can be utilised where possible, with mechanical used to supplement its effects as required.

14.3 Insulation

Walls & ceilings and roofs are to be insulated to help control heat gain in summer and heat loss in winter. Appropriate glazing will be used to further control heat gain and heat loss.

14.4 Artificial Lighting

All lighting in the proposed facilities will be selected for energy efficiency. Tube type sky-lights will be installed, where deemed necessary, to increase natural light into the internal spaces. The inclusion of generous glazing and tube lights will allow natural light to be shared between spaces and will limit the need to use artificial lighting.

15. SOCIAL IMPACT

The development of the proposed Early Education Centre will be positioned adjacent St James Primary School in Muswellbrook, and it is therefore anticipated that it will assist in the future growth of the school.

The development will benefit the community in a positive way by providing a long day care childcare facility, as well as providing employment, by way of creating new employment positions.

The overall development will be a community focussed facility. It will satisfy a community need, and have a positive effect on social and economic factors within the region.

16. CRIME PREVENTION / SAFER BY DESIGN

Crime prevention has been a factor for consideration in the design of the proposed development, with CPTED principles being integrated.

The overall layout of the centre has been carefully developed to ensure that most external areas are visible to users, in an effort to minimise alcoves and hiding places from which crimes can potentially be conducted.
The layout of the Early Education Centre is such that it is arranged along a veranda that orients to the Outdoor Activity Area. Windows and access is focussed toward the outdoor space providing informal surveillance when the facility is in use.
A mix of solid & palisade fencing will be incorporated to the perimeter of the Outdoor Activity Area to provide visual privacy, as is a necessary security measure for a development of this type. The fencing will have an overall height of approx. 1.8m and will provide security for children.

The car park and pathways which are generally positioned to the East of the Early Education Centre will be appropriately lit to provide safe passage for vehicles and pedestrians outside of daylight hours.

Consideration will be given to the integration of an overall Site Security Surveillance & Monitoring System prior to the development works commencing. An Electronic Access Control System will be included at the main entrance to the Early Education Centre for access monitoring for the benefit & safety of children, staff & visitors to the Centre.

17. SECTION 10.7 PLANNING CERTIFICATE

A Section 10.7 Planning Certificate has been considered in respect of the proposed development.

Refer ***Appendix K:*** *Section 10.7 Planning Certificate*

18. DEVELOPMENT CONTRIBUTIONS

Section 94A (Section 7.12) Development Contribution Plan 2010 makes provision for Council to grant full or partial exemptions to levies where developments are undertaken for charitable purposes or by a registered charity.

Accordingly exemptions are sought for the proposed development in respect of s94A & s64 developer contributions.

Refer **Appendix M:** Submission Seeking Exemption for s94A (Section 7.12)
Refer **Appendix N:** Submission Seeking Exemption for s64

19. CONCLUSION

The proposal outlined in this report has been the subject of careful design consideration and has no significant environmental impacts on its surrounds.

The Early Education Centre proposal fulfils a significant community need, evidenced by the demand for childcare places within the local Muswellbrook community, and is reasonable and appropriate when considered under the relevant heads for consideration and is worthy of favourable consideration by Council.

APPENDIX A

Targeted Environmental Site Assessment

11/01/2019

VALLEY/CIVILAB
Geotechnical & Environmental Services

Targeted Environmental Site Assessment

111 Skellatar Stock Route, Muswellbrook NSW

Ref: P1636_LR001-V1
Written by: Jake Duck (Environmental Scientist)
Reviewed by: Malcolm Adrien (Environmental Services Manager)
Approved by: Karl Dawes (General Manager)
Email: office@vclab.com.au
Client: The Catholic Diocese of Maitland-Newcastle

SUSTAINABLE
CERTIFICATION
✓ ISO 9001
✓ AS/NZS 4801
✓ ISO 14001

VALLEY/CIVILAB
Geotechnical & Environmental Services

VC Ref: P1636_LR001-V1
Environmental Site Assessment
111 Skellatar Stock Route, Muswellbrook NSW

Prepared for:

The Catholic Diocese of Maitland-Newcastle
C/- EJE Architecture
412 King Street
Newcastle NSW 2300
Ph: 02 4929 2353
Email: hnyquist@eje.com.au
Web: www.eje.com.au

Prepared by:

Valley Civilab Pty Ltd
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3/62 Sandringham Avenue
PO Box 3127
Thornton NSW 2322
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Email: office@vclab.com.au
Web: www.valleycivilab.com.au

Project Details

Site Address:	111 Skellatar Stock Route, Muswellbrook NSW	
Project Type:	Targeted Environmental Site Assessment	
Project No.	**Report Type**	**Report No.**
P1636_LR001-V1	Letter Report	1

We confirm that the following report has been produced for The Catholic Diocese of Maitland-Newcastle based on the described methods and conditions within.

For and on behalf of **Valley Civilab Pty Ltd**,

Malcolm Adrien
Environmental Services Manager

Karl Dawes
General Manager

Jake Duck
Environmental Scientist.

Executive Summary

The following report details the environmental investigation undertaken by Valley Civilab Pty Ltd under the request of The Catholic Diocese of Maitland-Newcastle. The investigation was undertaken on the 6th December 2018 and consisted of a desktop study, a site inspection and limited soil sampling.

The site currently consists of St James Primary School surrounded by undisturbed grassed fields. The client has provided plans for the intended development of an Early Education Centre immediately adjacent to the primary school.

With use of a VC supplied drill rig, a total of ten (10) soil samples (plus one (1) duplicate sample for QA/QC purposes) were collected from five (5) boreholes using split capture measures, drilled to approximately 1.5m and sent to external lab SGS to be chemically analysed for a range of contaminants to determine site suitability in comparison to guidelines relevant with the proposed land use.

Results of the laboratory analysis indicate the material meets the most sensitive land use criteria presented in the NEPM for HIL-A/HSL-A Residential land use which is applicable to this intended development of an early childhood centre. No visual sources or signs of gross contamination were identified during site inspection or intrusive investigation thus, no further investigation or sampling is considered necessary.

Desktop review of available information and site inspection including a limited soil investigation have allowed assessment of potential health and environmental issues relating to the site. Key findings were:

1) Potential contamination sources at the site are limited based on area land use;
2) Visible signs of gross contamination were not observed during site inspection and intrusive works;
3) Contamination in shallow soils was not identified at any of the sampling locations;
4) Contamination in deep soils was not identified at any of the sampling locations.

In summary, based on the desktop study and limited intrusive sampling conducted on the Site, no indication of gross contamination has been identified which would constrain the development of the Site for its proposed residential A land use as an early education centre.

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Annex List:

Annex A – Figures

Annex B – Bore logs

Annex C – Tabulated Soil Results

Annex D – Laboratory Reports

Annex E – Photographic Log

1 Introduction

1.1 Background

Valley Civilab were engaged by The Catholic Diocese of Maitland-Newcastle to complete a Targeted Environmental Site Assessment (TESA) for contamination purposes to assess the intended development Site for suitability for proposed expansion at 111 Skellatar Stock Route, Muswellbrook NSW (here-in referred to as the site). It is understood this contamination assessment is required to facililate proposed developement which is a new Early Education Centre consisting of a single-story building, outdoor play areas and carparking on the Site of the existing St James Primary School at Muswellbrook.

A Site Locality Plan is presented as *Figure 1* of *Annex A*.

1.2 Objectives and Scope of Work

The main objectives from a contaminated lands perspective consisted of:

a) A site inspection to confirm site conditions with regard to potential contamination;

b) Intrusive assessment of the soil profile at five locations including:

   1) Review of DBYD service plans and utilisation of an accredited service locator to select borehole locations;

   2) Advancement of five boreholes (BH1 to BH5) to a maximum depth of 1.5m BGL and collection of two soil samples (per location);

   3) Analysis of two samples from each location (a total of 11 including duplicate sample for QA/QC purposes) for TRH, BTEX, PAH, 8 heavy metals, OCP, OPP and PCB with assessment against NEPM Tier 1 Trigger Values appropriate for the site.

2 Site works

2.1 Site Inspection

A Valley Civilab environmental scientist experienced in contaminated site assessments visited the Site 6th December 2018. Site inspection identified a sampling area of an undeveloped sporting field with undisturbed grass coverage alongside a pre-existing assembly hall belonging to St James Primary School located immediately to the north east.

2.2 Soil Sampling and Contaminants of Concern

An experienced Valley Civilab environmental scientist visited the site on 6th of December 2018 to execute the agreed scope of works.

Collection of a total of ten (10) soil samples (plus one (1) duplicate sample for QA/QC purposes) from five (5) boreholes, drilled to approximately 1.5m using a VC supplied drill rig for determining its suitability for the proposed land use. Samples were analysed for the presence of the following analytes:

- Benzene, Toluene, Ethyl Benzene & Xylene (BTEX);
- Total Recoverable Hydrocarbons (TRH);

- Polycyclic Aromatic Hydrocarbons (PAH);
- Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg);
- Organochlorine Pesticides (OCP) & Organophosphorus Pesticides (OPP);
- Polychlorinated Biphenyls (PCB).

A site features plan including sampling locations and borelogs is presented as *Figure 2* of *Annex A* and *Annex B*, respectively.

3 Quality Assurance / Quality Control

Quality assurance measures for sampling within this assessment were adopted to provide confidence in the analytical results to support determinations on material categorization and to facilitate satisfaction of project specific objectives. Adopted measures included complimentary regimes of field and laboratory-based quality assurance techniques and quality control sampling/analysis. Quality assurance measures, results and implications for data quality associated with this assessment are broadly defined within the following categories:

1. sample collection, storage transport and analysis;
2. laboratory quality control procedures and results; and
3. the occurrence of apparently unusual and anomalous results.

Quality Assurance comprised of the following;

- Collection of a duplicate sample at a rate of 1 per 20 samples.
- One rinsate solution per day.

Soil sampling was completed by suitably qualified scientists experienced in contaminated site assessments. Samples were collected using split capture measures. All field equipment was decontaminated between sampling locations using a triple rinse procedure by washing with an approximately 5% solution of DECON 90 phosphate free detergent, followed by tap water and finally rinsed with deionized water between sampling locations. Disposable nitrile gloves were worn during sampling and changed between locations. Samples were stored in jars provided by the NATA accredited laboratory sub-contracted to complete analysis (SGS) and were specific to targeted analytes. Samples were labelled with unique identifiers referencing the sampling location, depth and date of sampling. Samples were photographed on the materials from which they were collected and then stored on ice. Samples were transported under chain of custody to the laboratory and then analysed according to NATA accredited test methods.

Assessment of laboratory quality control is presented within the laboratory reports presented as ***Annex D***.

The results of the Rinsate sample analysis were all found be to be below the laboratory Limit of Reporting for all analytes, indicating field decontamination procedures were adequate.

Results of the RPD analysis between primary and duplicate samples were all within allowable limits.

The analytical data is considered sufficiently complete, representative, comparable, accurate and precise to serve as an adequate basis for interpretation for the purposes of this project.

4 Results

4.1 Assessment Criteria

Analytical data was screened against relevant Tier 1 Trigger Values as defined or referenced within the NEPM 2013 Schedule B1 for Residential A land use. Specifically:

1) Health Investigation Levels for Residential A land use (HIL-A) for heavy metals, PAHs, OCP, OPP and PCBs were derived from *Table 1A (1)*;
2) Health Screening Levels were derived from *CRC Care Technical Report 10 – Health screening levels for petroleum hydrocarbons in soil and groundwater – Summary* (Friebel and Nadebaum 2011) for sand-based soils in Residential land use (HSL-A) for TRH, BTEX and Naphthalene. These include criteria for considering potential vapour intrusion defined in *Table B3* and criteria for direct contact defined in *Table B4;*
3) Management Limits from Table 1B (7) for TPH fractions F1-F4 in soil for Residential land use;
4) Ecological investigation levels (EILs) for inorganics to assess risks to ecological receptors from Table 1B(4 and 5); and
5) Ecological screening levels (ESLs) for TPH fractions F1-F4, BTEX and Benzo(a)Pyrene in fine soil for Residential A land use from Table 1B(6).

HIL and HSL assessment criteria address potential health risks to receptors associated with potential contamination.

As the proposed development consists of a child care facility, the most sensitive land use criteria provided in the NEPM has been adopted.

4.2 Targeted Sampling Results and Interpretation

A tabulated assessment of analytical results against assessment criteria is presented in Tables 1-3 within ***Annex C*** with laboratory reports presented in ***Annex D***.

Results of the laboratory analysis returned concentrations below the Limit of Reporting (LOR) for TRH, BTEX, PAH, OCP, OPP and PCB. Concentrations of Cadmium and Mercury were below the LOR and remaining heavy metal results were below the HIL-A criteria.

The results of the analysis indicate the soils sampled for the targeted assessment area meet the HIL-A criteria for residential A in which is the most sensitive land use criteria provided in the NEPM.

5 Discussion & Conclusion

Valley Civilab were engaged by The Catholic Diocese of Maitland-Newcastle to complete a Targeted Environmental Site Assessment (TESA) for contamination to assess the intended development Site for suitability for proposed expansion at 111 Skellatar Stock Route, Muswellbrook NSW (here-in referred to as the site).

Desktop review of available information and site inspection including a limited soil investigation have allowed assessment of potential health and environmental issues relating to the site. Key findings were:

5) Potential contamination sources at the site are limited based on area land use;
6) Visible signs of gross contamination were not observed during site inspection and intrusive works;
7) Contamination in shallow soils was not identified at any of the sampling locations;
8) Contamination in deep soils was not identified at any of the sampling locations.

In summary, based on the desktop study and limited intrusive sampling conducted on the Site, no indication of gross contamination has been identified which would constrain the development of the Site for its proposed residential A land use as an early education centre.

Limitations

Valley Civilab considers that the objectives of the original scope as presented in quote (of the investigation have been achieved.

The analytical data and recommendations within the above report are subjected to the specific sampling and testing that was undertaken at the time of the current investigation. It should be noted that underlying site soil conditions can vary significantly across a site and the environment can change overtime. If conditions encountered during intrusive works are different to those contained in this report Valley Civilab Pty Ltd should be contacted immediately for site reassessment.

If you have any further questions about this report, please contact the undersigned.

For and on behalf of

Valley Civilab Pty Ltd

Malcolm Adrien
Environmental Services Manager

Karl Dawes
General Manager

Jake Duck
Environmental Scientist.

ANNEX A

Figures

Environmental Site Assessment
111 Skellatar Stock Route, Muswellbrook NSW
VC Ref: P1636-18-R-001-V1

Note:
(1) The scale bar is approximate.
(2) Base layer sourced from Sixmaps,Muswellbrook, NSW. Accessed 5th December 2018.

Figure 1 - Site Locality Plan

LEGEND
☐ Site boundary

Scale (m)
0 50 100

N
W E
S

VALLEY CIVILAB

Environmental Site Assessment
111 Skellatar Stock Route, Muswellbrook NSW
VC Ref: P1636-18-R-001-V1

Note:
(1) The scale bar is approximate.
(2) Base layer sourced from Sixmaps, Muswellbrook, NSW. Accessed 5th December 2018. Overlay image sourced from EJE Architecture Drawing no. SKA202.

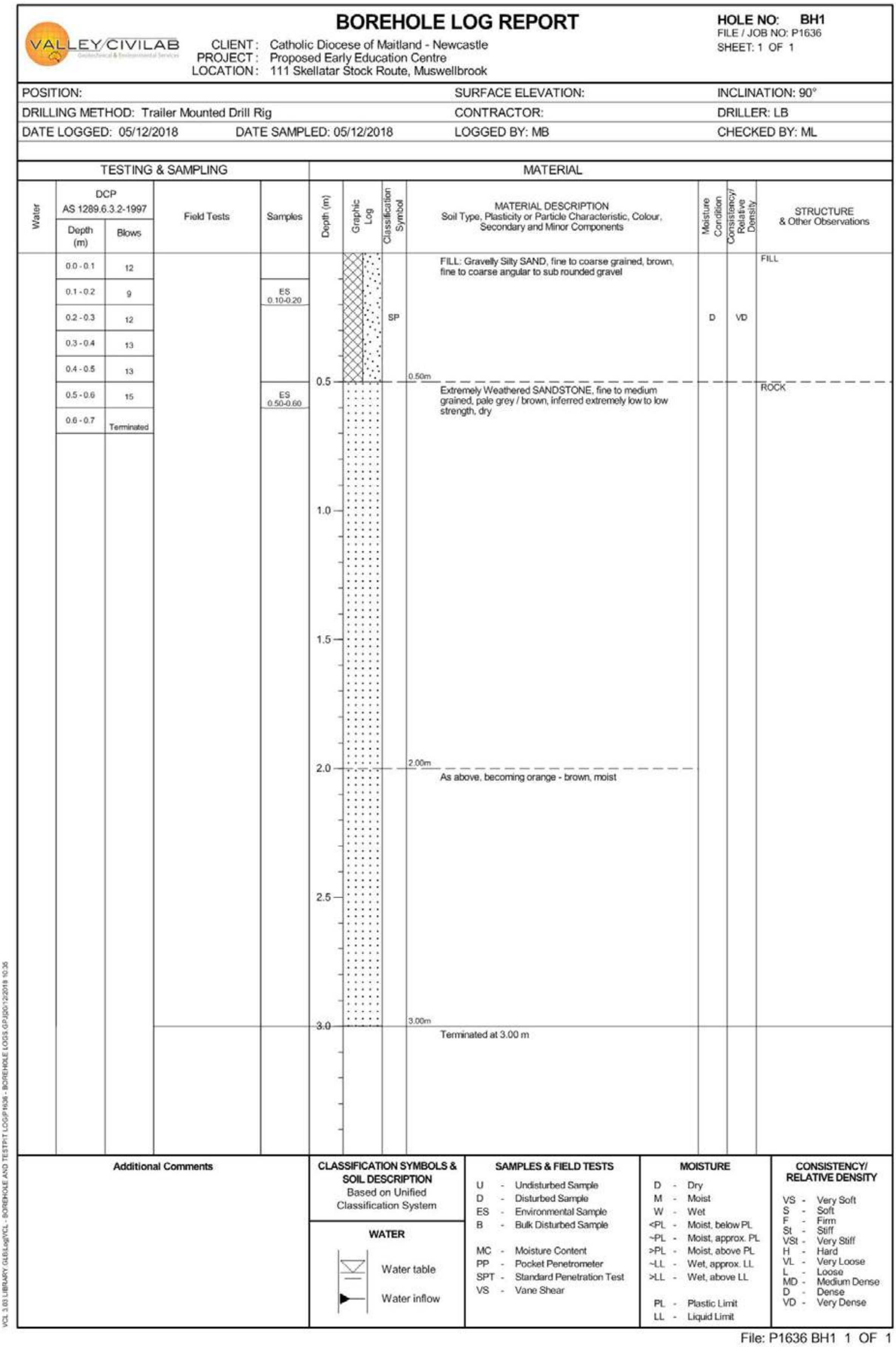
Figure 2 - Site Features Plan

Scale (m)
0 10 20 30

N
W E
S

ANNEX B

Borelogs



BOREHOLE LOG REPORT

VALLEY/CIVILAB

CLIENT : Catholic Diocese of Maitland - Newcastle
PROJECT : Proposed Early Education Centre
LOCATION : 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH1
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP AS 1289.6.3.2-1997 Blows	Field Tests	Samples
	0.0 - 0.1	12		
	0.1 - 0.2	9		ES 0.10-0.20
	0.2 - 0.3	12		
	0.3 - 0.4	13		
	0.4 - 0.5	13		
	0.5 - 0.6	15		ES 0.50-0.60
	0.6 - 0.7	Terminated		

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	SP	FILL: Gravelly Silty SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	VD	FILL
0.50m		Extremely Weathered SANDSTONE, fine to medium grained, pale grey / brown, inferred extremely low to low strength, dry			ROCK
2.00m		As above, becoming orange - brown, moist			
3.00m		Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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File: P1636 BH1 1 OF 1

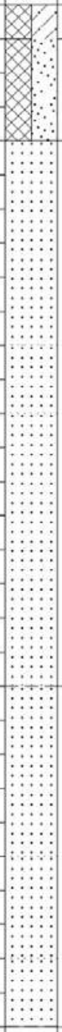
VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH2
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML



TESTING & SAMPLING					MATERIAL					
Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP AS 1289.6.3.2-1997 Blows	Field Tests	Samples	Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	0.0 - 0.1	7				SM	FILL: Silty SAND, fine to medium grained, brown			FILL
	0.1 - 0.2	11		ES 0.10-0.20		SP	0.10m FILL: Gravelly Silty SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	D to VD	
	0.2 - 0.3	8								
	0.3 - 0.4	12								
	0.4 - 0.5	6/40mm Refusal					0.40m Extremely Weathered SANDSTONE, fine to medium grained, pale grey / brown, inferred extremely low to low strength, dry			ROCK
				ES 0.50-0.60	0.5					
				U 0.60-0.90						
					1.0		1.00m As above, becoming pale grey			
							1.20m As above, becoming brown			
					1.5					
					2.0		2.00m As above, becoming grey / mottled orange, minimal silt and clay content, inferred extremely low strength, moist			
					2.5		2.50m As above, becoming inferred extremely low to low strength, dry			
							2.80m As above, becoming pale grey / brown			
					3.0		3.00m Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
▽ Water table
► Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
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H - Hard
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L - Loose
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D - Dense
VD - Very Dense

File: P1636 BH2 1 OF 1

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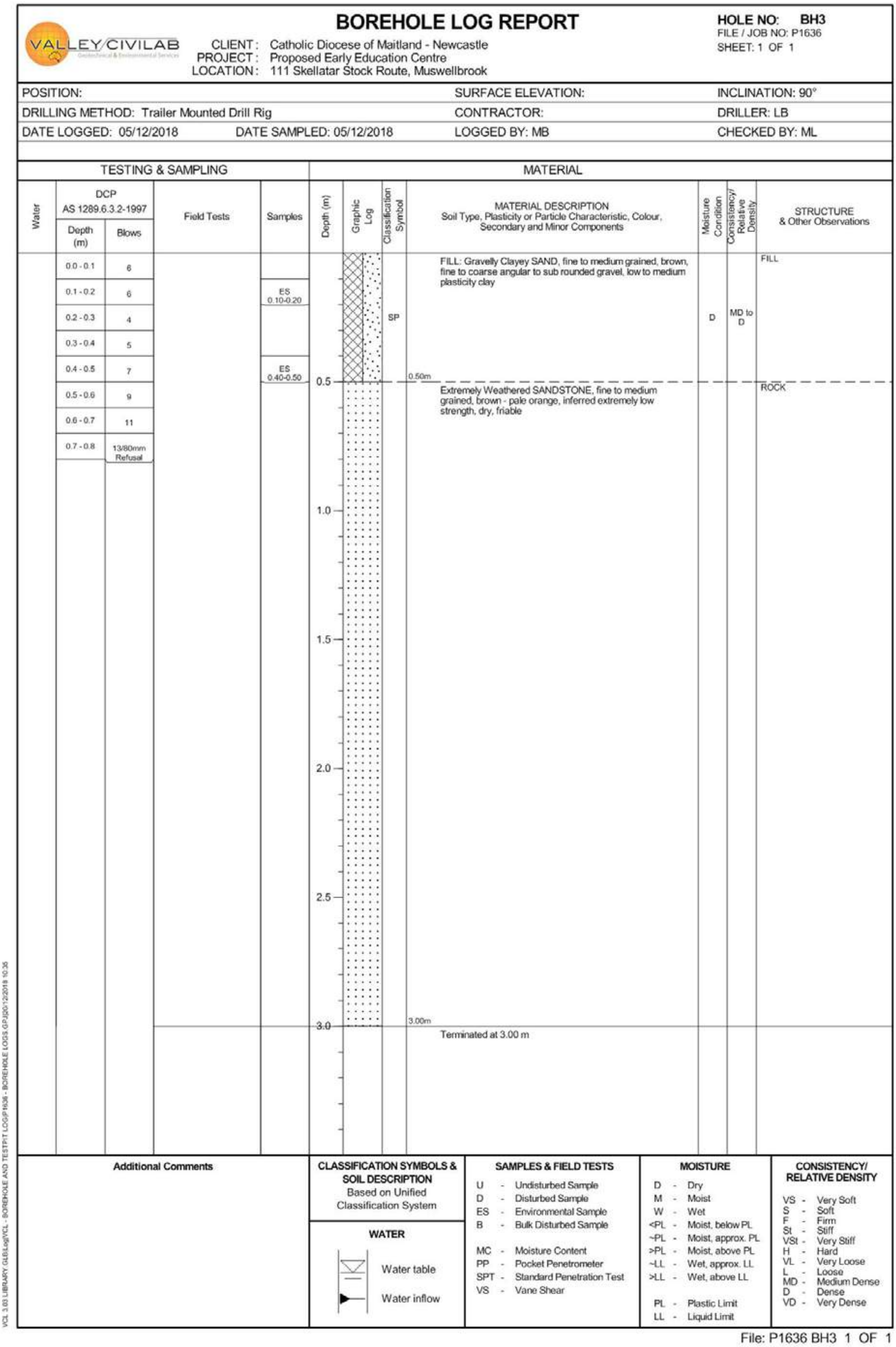

BOREHOLE LOG REPORT

VALLEY/CIVILAB

HOLE NO: BH3
FILE / JOB NO: P1636
SHEET: 1 OF 1

CLIENT : Catholic Diocese of Maitland - Newcastle
PROJECT : Proposed Early Education Centre
LOCATION : 111 Skellatar Stock Route, Muswellbrook

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP AS 1289.6.3.2-1997 Blows	Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	0.0 - 0.1	6					SP	FILL: Gravelly Clayey SAND, fine to medium grained, brown, fine to coarse angular to sub rounded gravel, low to medium plasticity clay	D	MD to D	FILL
	0.1 - 0.2	6		ES 0.10-0.20							
	0.2 - 0.3	4									
	0.3 - 0.4	5									
	0.4 - 0.5	7		ES 0.40-0.50	0.5			0.50m			
	0.5 - 0.6	9						Extremely Weathered SANDSTONE, fine to medium grained, brown - pale orange, inferred extremely low strength, dry, friable			ROCK
	0.6 - 0.7	11									
	0.7 - 0.8	13/80mm Refusal									
					1.0						
					1.5						
					2.0						
					2.5						
					3.0			3.00m Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

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L - Loose
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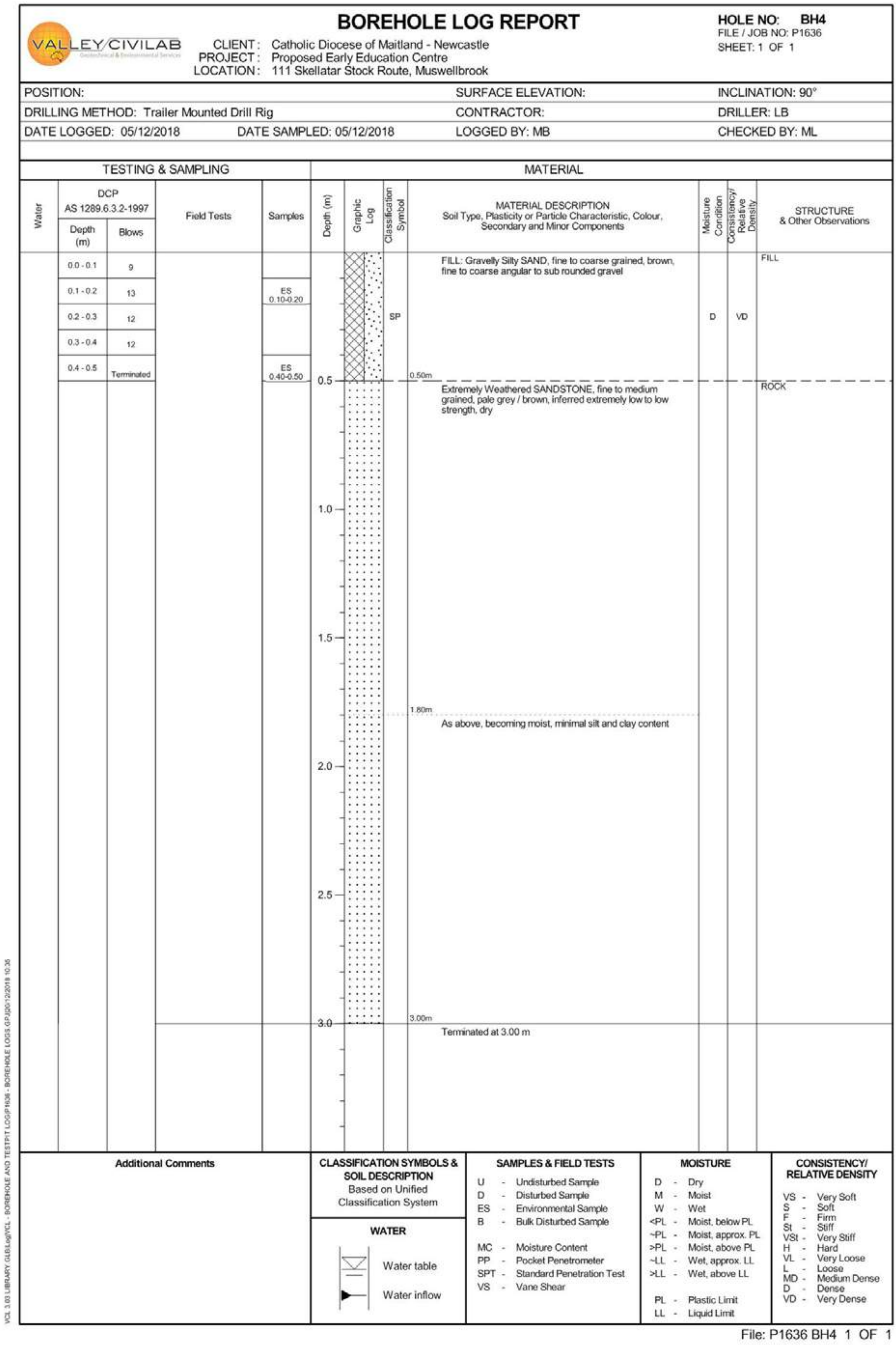
File: P1636 BH3 1 OF 1



VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH4
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

Water	DCP AS 1289.6.3.2-1997 Depth (m)	Blows	Field Tests	Samples
	0.0 - 0.1	9		
	0.1 - 0.2	13		ES 0.10-0.20
	0.2 - 0.3	12		
	0.3 - 0.4	12		
	0.4 - 0.5	Terminated		ES 0.40-0.50

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
0.0	SP	FILL: Gravelly Silty SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	VD	FILL
0.50m		Extremely Weathered SANDSTONE, fine to medium grained, pale grey / brown, inferred extremely low to low strength, dry			ROCK
1.80m		As above, becoming moist, minimal silt and clay content			
3.00m		Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
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MOISTURE
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~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

VCL 3.03 LIBRARY GLB.Log VCL - BOREHOLE AND TESTPIT LOG P1636 - BOREHOLE LOGS.GPJ 20/12/2018 10:35

File: P1636 BH4 1 OF 1

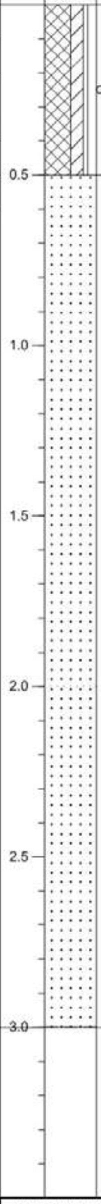
VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH5
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML



TESTING & SAMPLING					MATERIAL					
Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP AS 1289.6.3.2-1997 Blows	Field Tests	Samples	Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	0.0 - 0.1	2					FILL: Sandy CLAY, medium to high plasticity, brown, fine to medium grained sand			FILL
	0.1 - 0.2	2		ES (dup) 0.10-0.20					St	
	0.2 - 0.3	4		U 0.20-0.40		CI-CH		<PL		
	0.3 - 0.4	6								
	0.4 - 0.5	9							VSt	
	0.5 - 0.6	8		ES 0.50-0.60	0.50m		Extremely Weathered SANDSTONE, fine to medium grained, brown - pale orange, inferred extremely low to very low strength, dry, friable			ROCK
	0.6 - 0.7	9								
	0.7 - 0.8	15								
	0.8 - 0.9	7/50mm Refusal								
					2.00m		As above, becoming moist, minimal silt and clay content			
					3.00m		Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
▽ Water table
► Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
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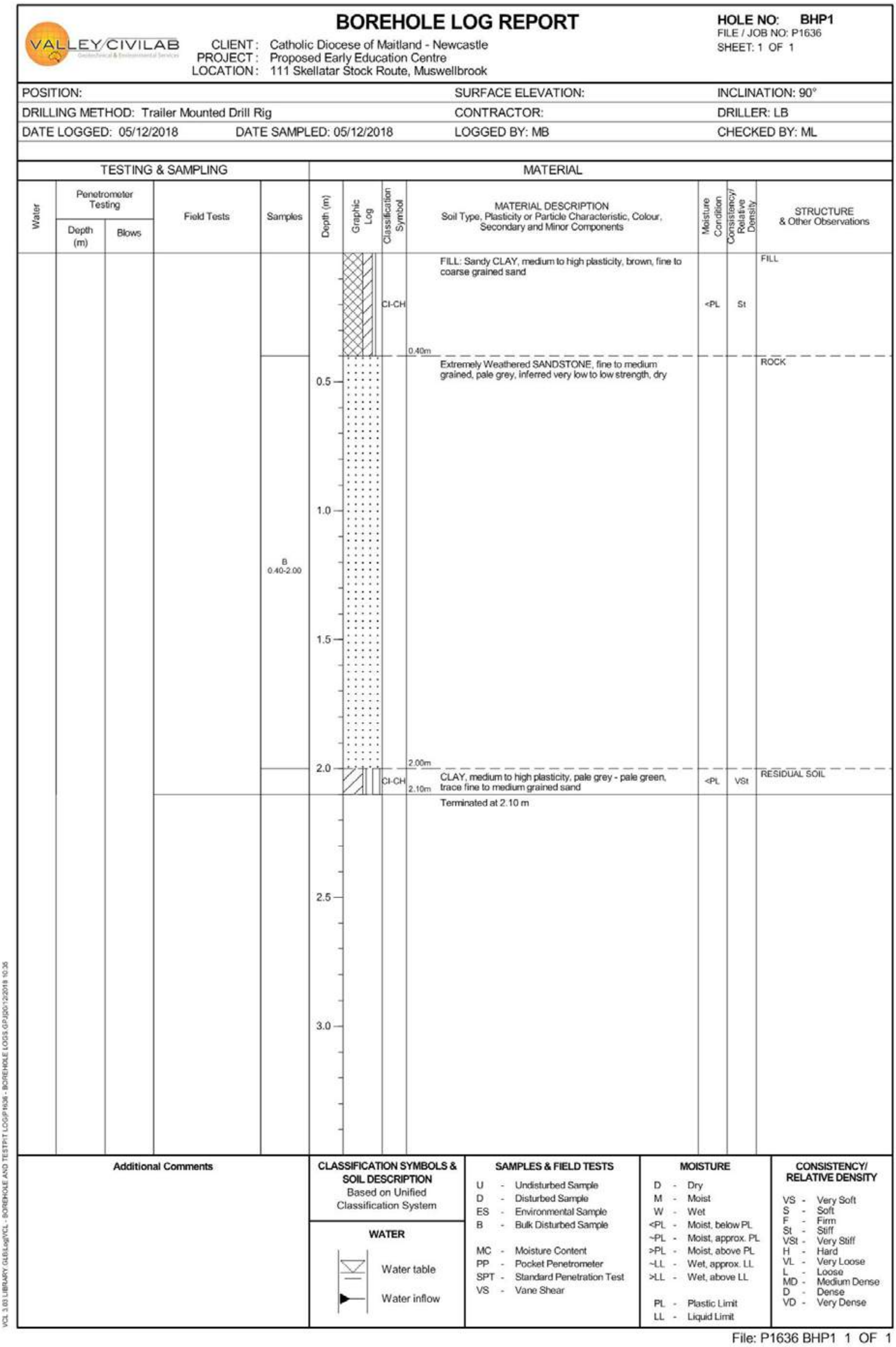
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

File: P1636 BH5 1 OF 1

VCL 3.03 LIBRARY GLB/Log/VCL - BOREHOLE AND TESTPIT LOG/P1636 - BOREHOLE LOGS.GPJ[20/12/2018 10:35



VALLEY/CIVILAB

BOREHOLE LOG REPORT

HOLE NO: BHP1
FILE / JOB NO: P1636
SHEET: 1 OF 1

CLIENT : Catholic Diocese of Maitland - Newcastle
PROJECT : Proposed Early Education Centre
LOCATION : 111 Skellatar Stock Route, Muswellbrook

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	Penetrometer Testing Depth (m)	Penetrometer Testing Blows	Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
					0.40m		CI-CH	FILL: Sandy CLAY, medium to high plasticity, brown, fine to coarse grained sand	<PL	St	FILL
				B 0.40-2.00	0.5 1.0 1.5 2.00m			Extremely Weathered SANDSTONE, fine to medium grained, pale grey, inferred very low to low strength, dry			ROCK
					2.0 2.10m		CI-CH	CLAY, medium to high plasticity, pale grey - pale green, trace fine to medium grained sand	<PL	VSt	RESIDUAL SOIL
					2.5 3.0			Terminated at 2.10 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
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MD - Medium Dense
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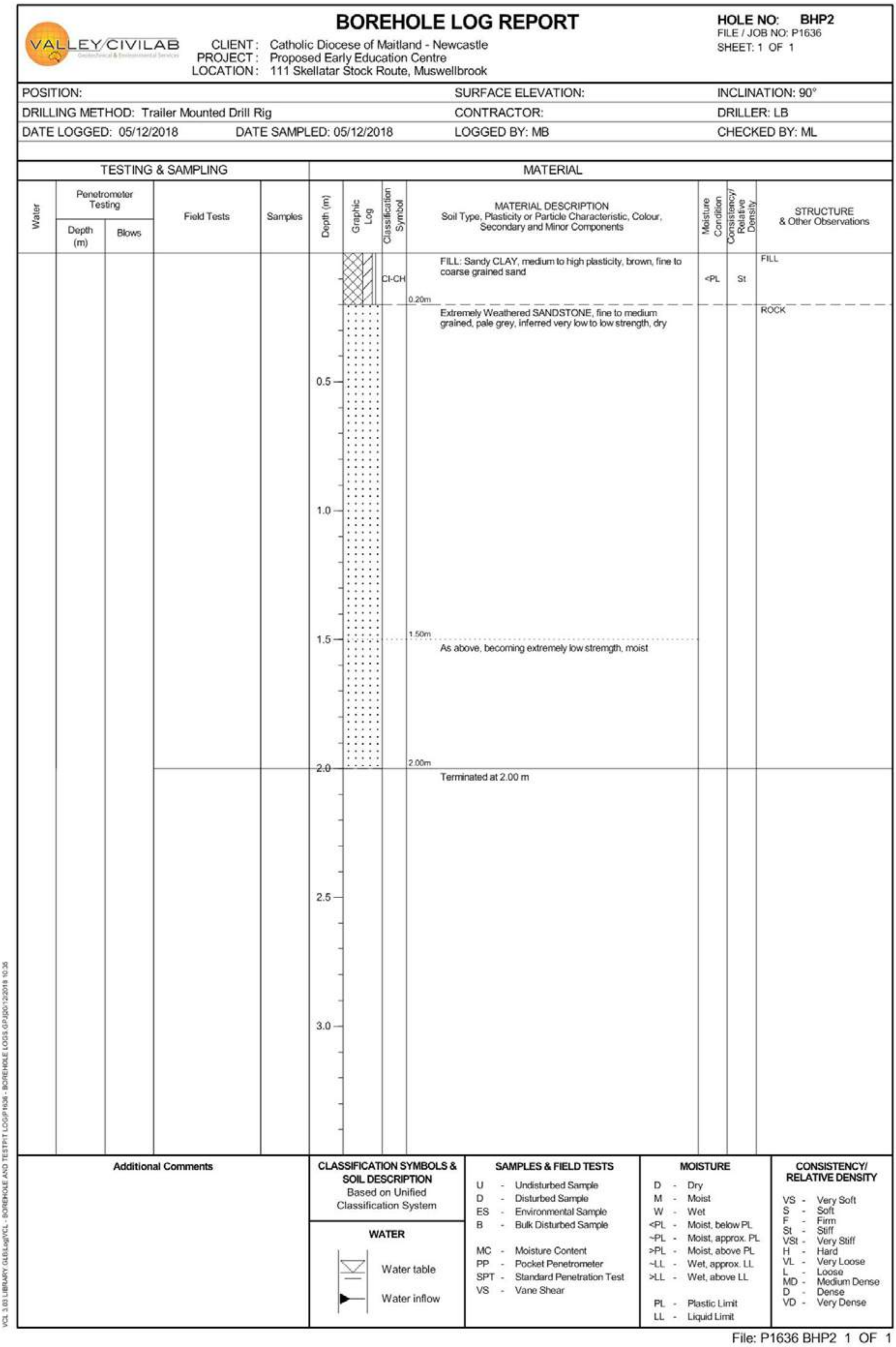
VD - Very Dense

VCL 3.03 LIBRARY GLB Log VCL - BOREHOLE AND TESTPIT LOG P1636 - BOREHOLE LOGS.GPJ 20/12/2018 10:35

File: P1636 BHP1 1 OF 1



BOREHOLE LOG REPORT

VALLEY/CIVILAB

CLIENT : Catholic Diocese of Maitland - Newcastle
PROJECT : Proposed Early Education Centre
LOCATION : 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BHP2
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:		SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig		CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018	DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	Penetrometer Testing Depth (m)	Penetrometer Testing Blows	Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
						▨	CI-CH	FILL: Sandy CLAY, medium to high plasticity, brown, fine to coarse grained sand	<PL	St	FILL
					0.20m	⁙		Extremely Weathered SANDSTONE, fine to medium grained, pale grey, inferred very low to low strength, dry			ROCK
					1.50m	⁙		As above, becoming extremely low stremgth, moist			
					2.00m			Terminated at 2.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
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<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
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>LL - Wet, above LL

PL - Plastic Limit
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CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
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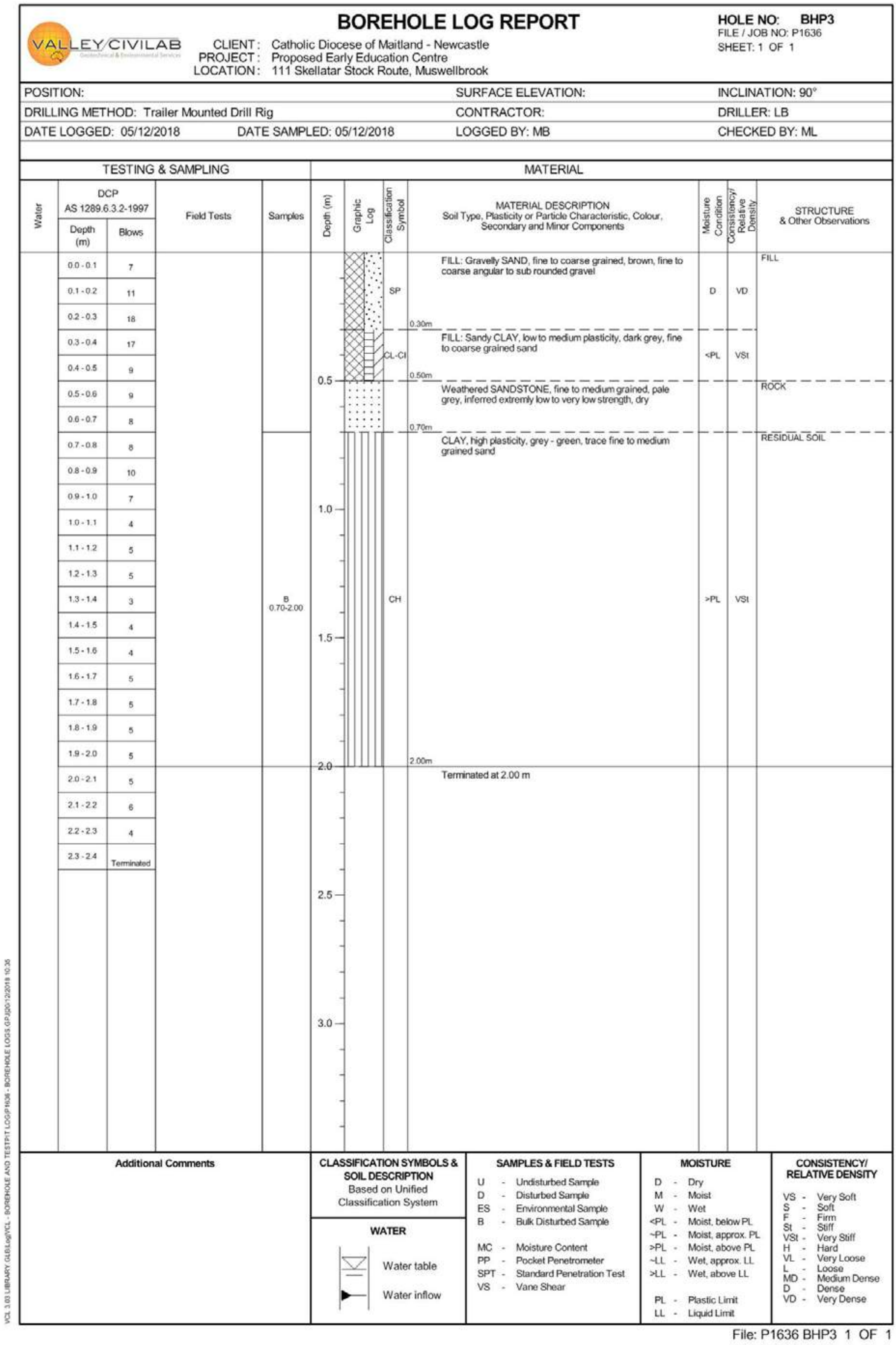
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

File: P1636 BHP2 1 OF 1

VCL 3.03 LIBRARY GLB Log VCL - BOREHOLE AND TESTPIT LOG P1636 - BOREHOLE LOGS.GPJ 20/12/2018 10:35



BOREHOLE LOG REPORT

VALLEY/CIVILAB Geotechnical & Environmental Services

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BHP3
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

DCP AS 1289.6.3.2-1997 Depth (m)	Blows
0.0 - 0.1	7
0.1 - 0.2	11
0.2 - 0.3	18
0.3 - 0.4	17
0.4 - 0.5	9
0.5 - 0.6	9
0.6 - 0.7	8
0.7 - 0.8	8
0.8 - 0.9	10
0.9 - 1.0	7
1.0 - 1.1	4
1.1 - 1.2	5
1.2 - 1.3	5
1.3 - 1.4	3
1.4 - 1.5	4
1.5 - 1.6	4
1.6 - 1.7	5
1.7 - 1.8	5
1.8 - 1.9	5
1.9 - 2.0	5
2.0 - 2.1	5
2.1 - 2.2	6
2.2 - 2.3	4
2.3 - 2.4	Terminated

Water: – Field Tests: – Samples: B 0.70-2.00

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
0.00 - 0.30m	SP	FILL: Gravelly SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	VD	FILL
0.30m - 0.50m	CL-CI	FILL: Sandy CLAY, low to medium plasticity, dark grey, fine to coarse grained sand	<PL	VSt	
0.50m - 0.70m		Weathered SANDSTONE, fine to medium grained, pale grey, inferred extremly low to very low strength, dry			ROCK
0.70m - 2.00m	CH	CLAY, high plasticity, grey - green, trace fine to medium grained sand	>PL	VSt	RESIDUAL SOIL
2.00m		Terminated at 2.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

File: P1636 BHP3 1 OF 1

VCL 3.03 LIBRARY GLB.Log/VCL - BOREHOLE AND TESTPIT LOG/P1636 - BOREHOLE LOGS.GPJ 20/12/2018 10:35

ANNEX C

Tabulated Soil Results

Table 4: Rinsate Results.

		Metals								**TRH NEPM (2013)**							**BTEX**					
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Napthalene	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C34-C40 Fraction	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene Total
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Reporting		2	0.4	5	5	5	0.05	5	5	0.5	20	20	50	50	100	100	0.1	0.1	0.1	0.1	0.2	0.3
EILs (NEPM 2013)		100				1100				170												
ESLs - Fine (NEPM 2013)												180		120	1300	5600	50	70	85			45
HIL A (NEPM 2013)		100	20	100	6000	300	10	400	7400													
HSL A - Soil Vapour Sand 0 - <1m (CRC Care 2011)										3	44		110				0.5	57	160			40
HSL A - Soil Vapour Clay 0 - <1m (CRC Care 2011)										5	50		280				0.7	NL	480			110
Management Limits - Fine Soil (NEPM 2013)											*800*		*1,000*		*3,500*	*10,000*						
HSL A - Direct Contact (CRC Care 2011)										**1,400**	**4,400**		**3,300**		**4,500**	**6,300**	**100**	**4,500**	**14,000**			**12,000**
Sample ID	**Sampled Date**																					
BH1_0.1-0.2	5/12/2018	6	0.15	14	7.8	8	0.025	11	22	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH1_0.5-0.6	5/12/2018	5	0.15	8.9	4.3	5	0.025	7.1	12	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH2_0.1-0.2	5/12/2018	5	0.15	17	13	15	0.025	10	40	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH2_0.5-0.6	5/12/2018	4	0.15	18	9	7	0.025	12	12	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH3_0.1-0.2	5/12/2018	6	0.15	17	22	17	0.025	1	48	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH3_0.4-0.5	5/12/2018	9	0.15	16	5.7	7	0.025	17	14	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH4_0.1-0.2	5/12/2018	6	0.15	14	9	10	0.025	8.9	29	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH4_0.4-0.5	5/12/2018	8	0.15	9.7	6	9	0.025	12	21	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH5_0.1-0.2	5/12/2018	6	0.15	14	7.6	10	0.025	7.6	25	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
BH5_0.5-0.6	5/12/2018	7	0.15	5.9	3.9	8	0.025	4.9	17	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
Statistical Summary																						
Number of Results		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Minimum Detect		4	0.15	5.9	3.9	5	0.025	1	12	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
Maximum Detect		9	0.15	18	22	17	0.025	17	48	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
Average Concentration		6.2	0.15	13.45	8.83	9.6	0.025	9.15	24	0.05	12.5	12.5	12.5	12.5	45	60	0.05	0.05	0.05	0.05	0.01	0.15
Number of Guideline Exceedances		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

Where analytes are reported below the LOR these values are reported at half LOR to facilitate statistical assessment. Where this has occurred values have been underlined.

Table 4: Rinsate Results.

Environmental Site Assessment
111 Skellatar Stock Route, Muswellbrook NSW
VC Ref: P1636_LR001-V1

VALLEY CIVILAB
Geotechnical & Environmental Services

	PAH					OCP											OPP	PCB
	Benzo(a)pyrene TEQ (lower bound)	Benzo(a)pyrene TEQ (medium bound)	Benzo(a)pyrene TEQ (upper bound)	Naphthalene	Total PAH	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	Chlordanes - Total	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Methoxychlor	Chlorpyrifos	Total PCB*
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Reporting	0.5	0.5	0.5	0.5	0.5	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.1
HIL A (NEPM 2013)	3	3	3		300	240	240	240	6	50	6	270	270	10	6	300	160	1
HSL A - Direct Contact (CRC Care 2011)				**1,400**														

Sample ID	Sampled Date																		
BH1_0.1-0.2	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH1_0.5-0.6	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH2_0.1-0.2	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH2_0.5-0.6	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH3_0.1-0.2	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH3_0.4-0.5	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH4_0.1-0.2	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH4_0.4-0.5	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH5_0.1-0.2	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
BH5_0.5-0.6	5/12/2018	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5

Statistical Summary																		
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Minimum Detect	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
Maximum Detect	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
Average Concentration	0.1	0.15	0.1	0.05	0.4	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.05	0.05	0.1	0.5
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note:

(1) Where analytes are reported below the LOR these values are reported at half LOR to facilitate statistical assessment. Where this has occurred values have been underlined.

(2) The NEPM presents a cumulative HIL for DDD, DDE and DDT (240 mg/kg). Concentrations for each of these compounds are presented separately above and conservatively assessed against the HIL.

(3) The NEPM presents a cumulative HIL for Aldrin and Dieldrin (6 mg/kg). Concentrations for each of these compounds are presented separately above and conservatively assessed against the HIL.

(4) The NEPM presents onee HIL for Endosulfan (270 mg/kg). Concentrations for Endosulfan I and Endosulfan II are presented separately above and conservatively assessed against the HIL.

Table 4: Rinsate Results.

	LOR	Unit	Primary Sample	QA Sample	RPD
			BH5_0.1-0.2	DUP1	
TRH					
TRH C6-C10 Fraction	25	mg/kg	12.5	12.5	0.0
TRH C6-C10 less BTEX	25	mg/kg	12.5	12.5	0.0
TRH >C10-C16 Fraction	25	mg/kg	12.5	12.5	0.0
TRH >C10-C16 Fraction less N	25	mg/kg	12.5	12.5	0.0
TRH >C16-C34 Fraction	90	mg/kg	45	45	0.0
TRH >C34-C40 Fraction	120	mg/kg	60	60	0.0
Naphthalene	0.1	mg/kg	0.05	0.05	0.0
BTEX					
Benzene	0.1	mg/kg	0.05	0.05	0.0
Toluene	0.1	mg/kg	0.05	0.05	0.0
Ethylbenzene	0.1	mg/kg	0.05	0.05	0.0
m&p-Xylenes	0.2	mg/kg	0.1	0.1	0.0
o-Xylene	0.1	mg/kg	0.05	0.05	0.0
Xylenes - Total	0.3	mg/kg	0.15	0.15	0.0
Metals					
Arsenic	1	mg/kg	**6**	**5**	18.2
Cadmium	0.3	mg/kg	0.15	0.15	0.0
Chromium	0.5	mg/kg	**14**	**14**	0.0
Copper	0.5	mg/kg	**7.6**	**7.8**	-2.6
Lead	1	mg/kg	**10**	**10**	0.0
Nickel	0.5	mg/kg	**7.6**	**8.0**	-5.1
Zinc	2	mg/kg	**25**	**25**	0.0
Mercury	0.05	mg/kg	0.025	0.025	0.0
PAH					
Acenaphthene	0.1	mg/kg	0.05	0.05	0.0
Acenaphthylene	0.1	mg/kg	0.05	0.05	0.0
Anthracene	0.1	mg/kg	0.05	0.05	0.0
Benz(a)anthracene	0.1	mg/kg	0.05	0.05	0.0
Benzo(a)pyrene	0.1	mg/kg	0.05	0.05	0.0
Benzo(a)pyrene TEQ (lower bound)	0.2	mg/kg	0.1	0.1	0.0
Benzo(a)pyrene TEQ (medium bound)	0.3	mg/kg	0.15	0.15	0.0
Benzo(a)pyrene TEQ (upper bound)	0.2	mg/kg	0.1	0.1	0.0
Benzo(b&j)fluoranthene	0.1	mg/kg	0.05	0.05	0.0
Benzo(g.h.i)perylene	0.1	mg/kg	0.05	0.05	0.0
Benzo(k)fluoranthene	0.1	mg/kg	0.05	0.05	0.0
Chrysene	0.1	mg/kg	0.05	0.05	0.0
Dibenz(a.h)anthracene	0.1	mg/kg	0.05	0.05	0.0
Fluoranthene	0.1	mg/kg	0.05	0.05	0.0
Fluorene	0.1	mg/kg	0.05	0.05	0.0
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	0.05	0.05	0.0
Naphthalene	0.1	mg/kg	0.05	0.05	0.0
Phenanthrene	0.1	mg/kg	0.05	0.05	0.0
Pyrene	0.1	mg/kg	0.05	0.05	0.0
Total PAH	0.8	mg/kg	0.4	0.4	0.0

Notes

RPD = Relative Percentage Difference.

RPD assessment criteria were adopted in general accordance with NEPM Schedule B3 Section 3.5 (NEPC 2013). RPDs where both primary and duplicate results were < 2.5 times the LOR were not considered. RPDs where primary and/or duplicate results were >2.5 times the LOR were assessed based on a threshold of +/- 30%. Exceedence of this trheshold triggered consideration of associated data quality.

Where analytes are reported below the LOR these values are reported at half LOR to facilitate statistical assessment. Where this has occurred values have been underlined.

Table 4: Rinsate Results.

	LOR	RIN
Unit of Measure	ug/L	ug/L
Arsenic	1	<1
Cadmium	0.1	<0.1
Copper	1	<1
Chromium	1	<1
Nickel	1	<1
Lead	1	<1
Zinc	5	<5
Mercury	0.0001	<0.0001

ANNEX D

Laboratory Reports

SGS

ANALYTICAL REPORT

ilac-MRA

NATA

Accreditation No. 2562

CLIENT DETAILS

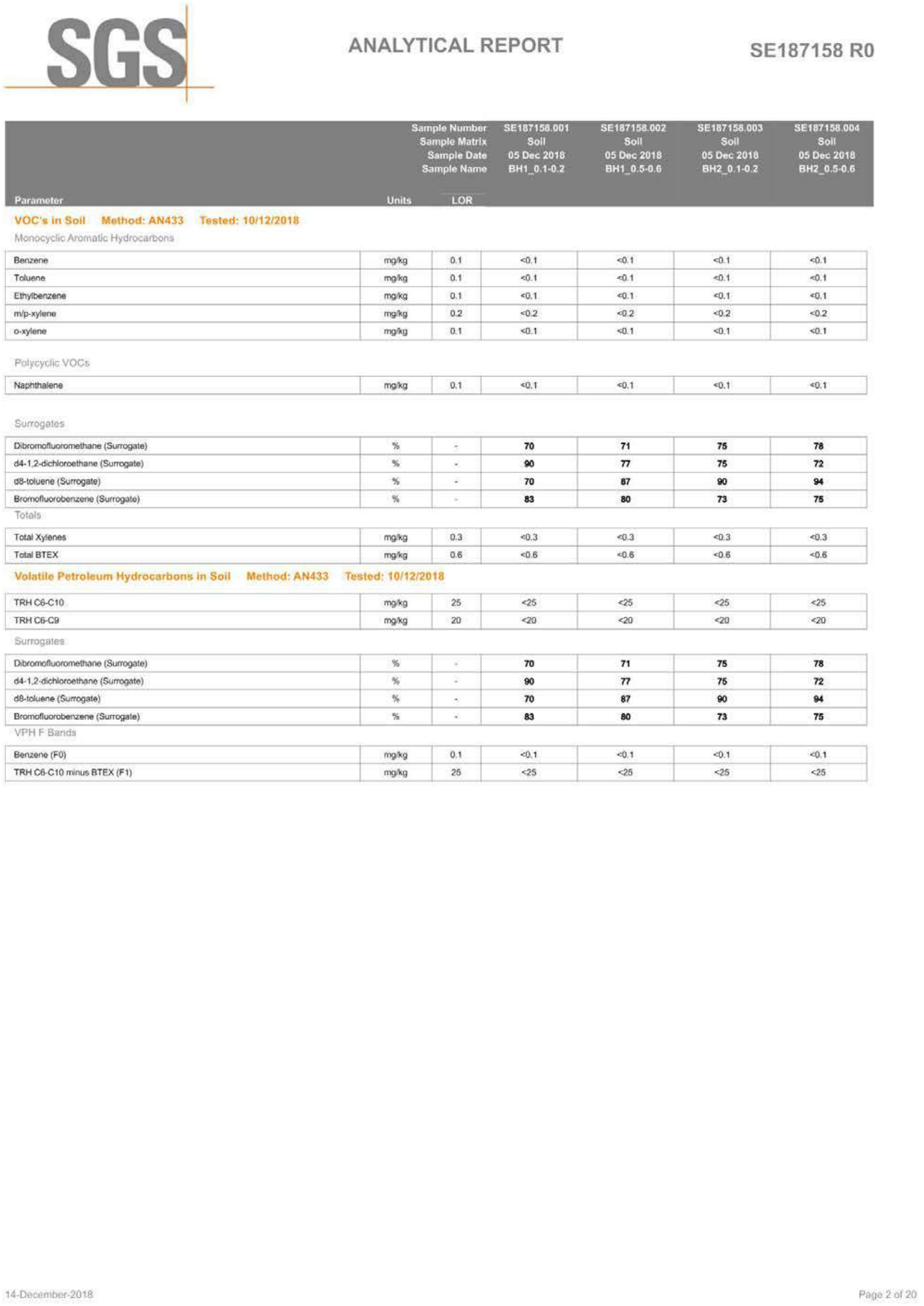
		LABORATORY DETAILS	
Contact	Jake Duck	Manager	Huong Crawford
Client	VALLEY CIVILAB PTY LTD	Laboratory	SGS Alexandria Environmental
Address	PO BOX 3127 THORNTON NSW 2322	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	61 2 4966 1844	Telephone	+61 2 8594 0400
Facsimile	(Not specified)	Facsimile	+61 2 8594 0499
Email	jake.duck@vclab.com.au	Email	au.environmental.sydney@sgs.com
Project	**P1636 - Muswellbrook**	SGS Reference	**SE187158 R0**
Order Number	**VC:03751**	Date Received	07 Dec 2018
Samples	12	Date Reported	14 Dec 2018

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Akheeqar Beniameen Chemist	Bennet Lo Senior Organic Chemist/Metals Chemis	Dong Liang Metals/Inorganics Team Leader
Huong Crawford Production Manager	Kamrul Ahsan Senior Chemist	Ly Kim Ha Organic Section Head



ANALYTICAL REPORT

SE187158 R0

		Sample Number	SE187158.001	SE187158.002	SE187158.003	SE187158.004
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH1_0.1-0.2	BH1_0.5-0.6	BH2_0.1-0.2	BH2_0.5-0.6
Parameter	Units	LOR				

VOC's in Soil Method: AN433 Tested: 10/12/2018

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Polycyclic VOCs

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Surrogates

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Dibromofluoromethane (Surrogate)	%	-	**70**	**71**	**75**	**78**
d4-1,2-dichloroethane (Surrogate)	%	-	**90**	**77**	**75**	**72**
d8-toluene (Surrogate)	%	-	**70**	**87**	**90**	**94**
Bromofluorobenzene (Surrogate)	%	-	**83**	**80**	**73**	**75**

Totals

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20

Surrogates

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Dibromofluoromethane (Surrogate)	%	-	**70**	**71**	**75**	**78**
d4-1,2-dichloroethane (Surrogate)	%	-	**90**	**77**	**75**	**72**
d8-toluene (Surrogate)	%	-	**70**	**87**	**90**	**94**
Bromofluorobenzene (Surrogate)	%	-	**83**	**80**	**73**	**75**

VPH F Bands

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

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ANALYTICAL REPORT

SE187158 R0

		Sample Number	SE187158.001	SE187158.002	SE187158.003	SE187158.004
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH1_0.1-0.2	BH1_0.5-0.6	BH2_0.1-0.2	BH2_0.5-0.6
Parameter	Units	LOR				
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 10/12/2018						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	**79**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 10/12/2018						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**88**	**90**	**94**	**94**
2-fluorobiphenyl (Surrogate)	%	-	**94**	**96**	**96**	**96**
d14-p-terphenyl (Surrogate)	%	-	**96**	**100**	**98**	**102**
OC Pesticides in Soil Method: AN420 Tested: 10/12/2018						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE187158.001 Soil 05 Dec 2018 BH1_0.1-0.2	SE187158.002 Soil 05 Dec 2018 BH1_0.5-0.6	SE187158.003 Soil 05 Dec 2018 BH2_0.1-0.2	SE187158.004 Soil 05 Dec 2018 BH2_0.5-0.6

OC Pesticides in Soil Method: AN420 Tested: 10/12/2018 (continued)

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1

Surrogates

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	117	119	120	121

OP Pesticides in Soil Method: AN420 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7

Surrogates

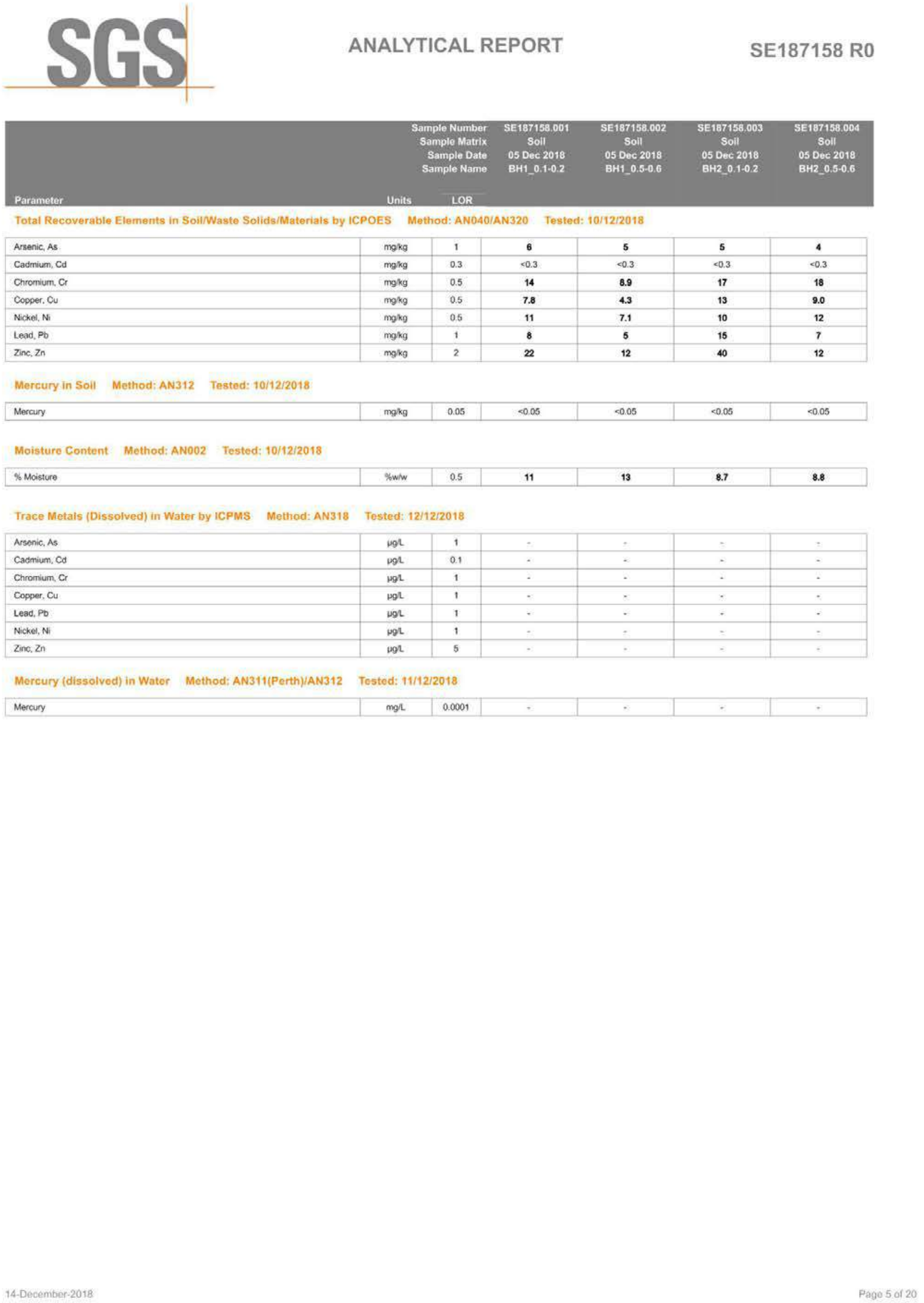
Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
2-fluorobiphenyl (Surrogate)	%	-	94	96	96	96
d14-p-terphenyl (Surrogate)	%	-	96	100	98	102

PCBs in Soil Method: AN420 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

Surrogates

Parameter	Units	LOR	SE187158.001	SE187158.002	SE187158.003	SE187158.004
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	117	119	120	121



SGS

ANALYTICAL REPORT

SE187158 R0

		Sample Number	SE187158.001	SE187158.002	SE187158.003	SE187158.004
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH1_0.1-0.2	BH1_0.5-0.6	BH2_0.1-0.2	BH2_0.5-0.6
Parameter	Units	LOR				

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 10/12/2018

Arsenic, As	mg/kg	1	**6**	**5**	**5**	**4**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**14**	**8.9**	**17**	**18**
Copper, Cu	mg/kg	0.5	**7.8**	**4.3**	**13**	**9.0**
Nickel, Ni	mg/kg	0.5	**11**	**7.1**	**10**	**12**
Lead, Pb	mg/kg	1	**8**	**5**	**15**	**7**
Zinc, Zn	mg/kg	2	**22**	**12**	**40**	**12**

Mercury in Soil Method: AN312 Tested: 10/12/2018

Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05

Moisture Content Method: AN002 Tested: 10/12/2018

% Moisture	%w/w	0.5	**11**	**13**	**8.7**	**8.8**

Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 12/12/2018

Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-

Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 11/12/2018

Mercury	mg/L	0.0001	-	-	-	-

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		Sample Number	SE187158.005	SE187158.006	SE187158.007	SE187158.008
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH3_0.1-0.2	BH3_0.4-0.5	BH4_0.1-0.2	BH4_0.4-0.5
Parameter	Units	LOR				
VOC's in Soil Method: AN433 Tested: 10/12/2018						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**78**	**78**	**77**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-	**70**	**72**	**72**	**73**
d8-toluene (Surrogate)	%	-	**87**	**92**	**86**	**88**
Bromofluorobenzene (Surrogate)	%	-	**76**	**73**	**73**	**72**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 10/12/2018						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**78**	**78**	**77**	**85**
d4-1,2-dichloroethane (Surrogate)	%	-	**70**	**72**	**72**	**73**
d8-toluene (Surrogate)	%	-	**87**	**92**	**86**	**88**
Bromofluorobenzene (Surrogate)	%	-	**76**	**73**	**73**	**72**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

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SE187158 R0

		Sample Number	SE187158.005	SE187158.006	SE187158.007	SE187158.008
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH3_0.1-0.2	BH3_0.4-0.5	BH4_0.1-0.2	BH4_0.4-0.5
Parameter	Units	LOR				
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 10/12/2018						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 10/12/2018						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**100**	**100**	**96**	**96**
2-fluorobiphenyl (Surrogate)	%	-	**102**	**102**	**98**	**98**
d14-p-terphenyl (Surrogate)	%	-	**106**	**106**	**102**	**104**
OC Pesticides in Soil Method: AN420 Tested: 10/12/2018						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

		Sample Number	SE187158.005	SE187158.006	SE187158.007	SE187158.008
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH3_0.1-0.2	BH3_0.4-0.5	BH4_0.1-0.2	BH4_0.4-0.5
Parameter	Units	LOR				
OC Pesticides in Soil Method: AN420 Tested: 10/12/2018 (continued)						
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**120**	**121**	**115**	**120**
OP Pesticides in Soil Method: AN420 Tested: 10/12/2018						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**102**	**102**	**98**	**98**
d14-p-terphenyl (Surrogate)	%	-	**106**	**106**	**102**	**104**
PCBs in Soil Method: AN420 Tested: 10/12/2018						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**120**	**121**	**115**	**120**

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		Sample Number	SE187158.005	SE187158.006	SE187158.007	SE187158.008
		Sample Matrix	Soil	Soil	Soil	Soil
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH3_0.1-0.2	BH3_0.4-0.5	BH4_0.1-0.2	BH4_0.4-0.5
Parameter	Units	LOR				

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 10/12/2018

Arsenic, As	mg/kg	1	**6**	**9**	**6**	**8**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**17**	**16**	**14**	**9.7**
Copper, Cu	mg/kg	0.5	**22**	**5.7**	**9.0**	**6.0**
Nickel, Ni	mg/kg	0.5	**11**	**17**	**8.9**	**12**
Lead, Pb	mg/kg	1	**17**	**7**	**10**	**9**
Zinc, Zn	mg/kg	2	**48**	**14**	**29**	**21**

Mercury in Soil Method: AN312 Tested: 10/12/2018

Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05

Moisture Content Method: AN002 Tested: 10/12/2018

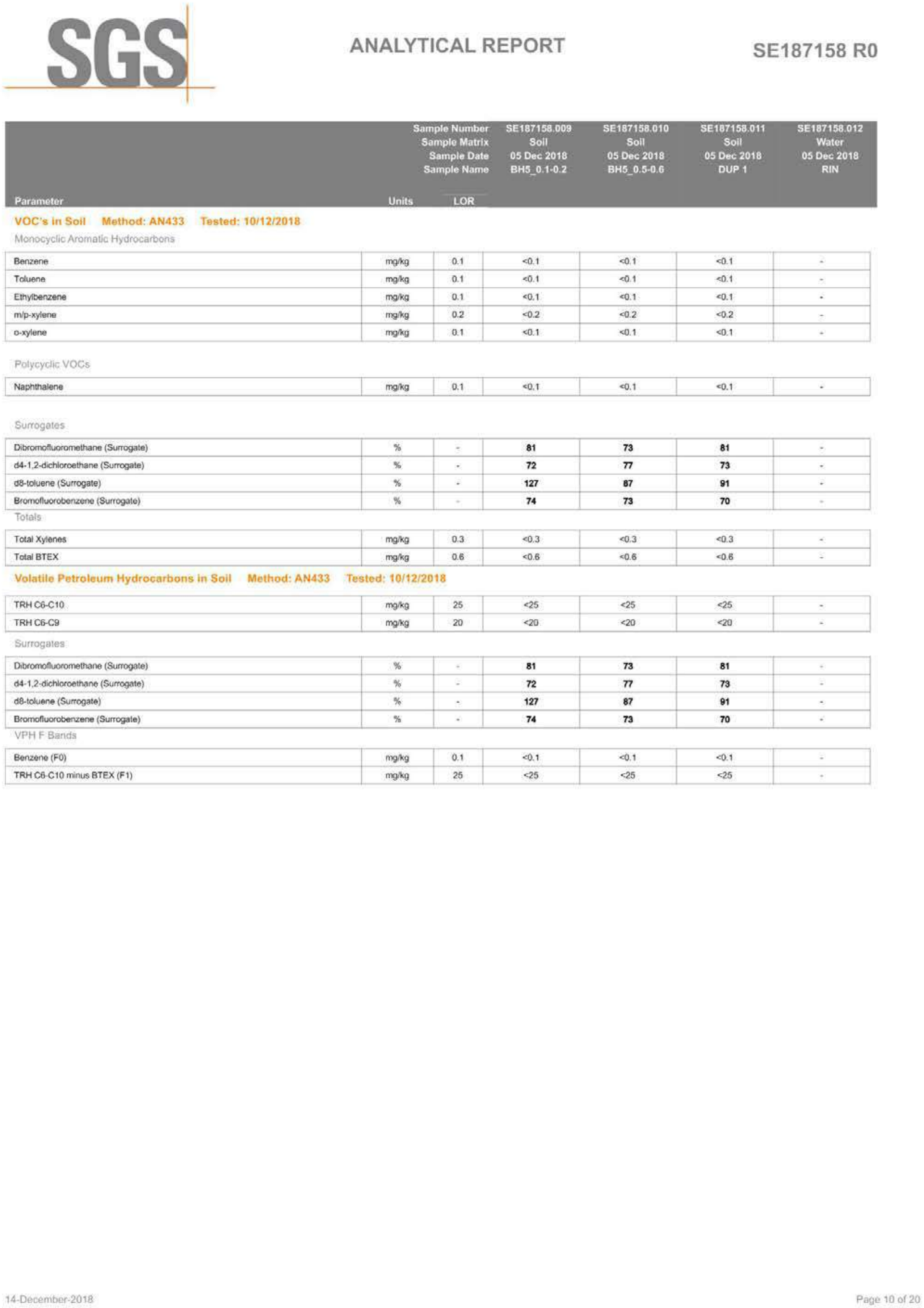
% Moisture	%w/w	0.5	**8.9**	**16**	**5.7**	**11**

Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 12/12/2018

Arsenic, As	μg/L	1	-	-	-	-
Cadmium, Cd	μg/L	0.1	-	-	-	-
Chromium, Cr	μg/L	1	-	-	-	-
Copper, Cu	μg/L	1	-	-	-	-
Lead, Pb	μg/L	1	-	-	-	-
Nickel, Ni	μg/L	1	-	-	-	-
Zinc, Zn	μg/L	5	-	-	-	-

Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 11/12/2018

Mercury	mg/L	0.0001	-	-	-	-



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SE187158 R0

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Sample Matrix			Soil	Soil	Soil	Water
Sample Date			05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
Sample Name			BH5_0.1-0.2	BH5_0.5-0.6	DUP 1	RIN

VOC's in Soil Method: AN433 Tested: 10/12/2018

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	-
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	-
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	-

Polycyclic VOCs

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-

Surrogates

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Dibromofluoromethane (Surrogate)	%	-	**81**	**73**	**81**	-
d4-1,2-dichloroethane (Surrogate)	%	-	**72**	**77**	**73**	-
d8-toluene (Surrogate)	%	-	**127**	**87**	**91**	-
Bromofluorobenzene (Surrogate)	%	-	**74**	**73**	**70**	-

Totals

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	-
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	-

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
TRH C6-C10	mg/kg	25	<25	<25	<25	-
TRH C6-C9	mg/kg	20	<20	<20	<20	-

Surrogates

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Dibromofluoromethane (Surrogate)	%	-	**81**	**73**	**81**	-
d4-1,2-dichloroethane (Surrogate)	%	-	**72**	**77**	**73**	-
d8-toluene (Surrogate)	%	-	**127**	**87**	**91**	-
Bromofluorobenzene (Surrogate)	%	-	**74**	**73**	**70**	-

VPH F Bands

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	-

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SE187158 R0

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
		Sample Matrix	Soil	Soil	Soil	Water
		Sample Date	05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
		Sample Name	BH5_0.1-0.2	BH5_0.5-0.6	DUP 1	RIN

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
TRH C10-C14	mg/kg	20	<20	<20	<20	-
TRH C15-C28	mg/kg	45	<45	<45	<45	-
TRH C29-C36	mg/kg	45	<45	<45	<45	-
TRH C37-C40	mg/kg	100	<100	<100	<100	-
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	-
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	-

TRH F Bands

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
TRH >C10-C16	mg/kg	25	<25	<25	<25	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	-
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	-
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	-

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	-
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	-

Surrogates

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
d5-nitrobenzene (Surrogate)	%	-	**106**	**92**	**102**	-
2-fluorobiphenyl (Surrogate)	%	-	**106**	**94**	**102**	-
d14-p-terphenyl (Surrogate)	%	-	**110**	**98**	**106**	-

OC Pesticides in Soil Method: AN420 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	-
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE187158.009 Soil 05 Dec 2018 BH5_0.1-0.2	SE187158.010 Soil 05 Dec 2018 BH5_0.5-0.6	SE187158.011 Soil 05 Dec 2018 DUP 1	SE187158.012 Water 05 Dec 2018 RIN

OC Pesticides in Soil Method: AN420 Tested: 14/12/2018 (continued)

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	-
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	-
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	-

Surrogates

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**115**	**119**	**115**	-

OP Pesticides in Soil Method: AN420 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	-
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	-
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	-

Surrogates

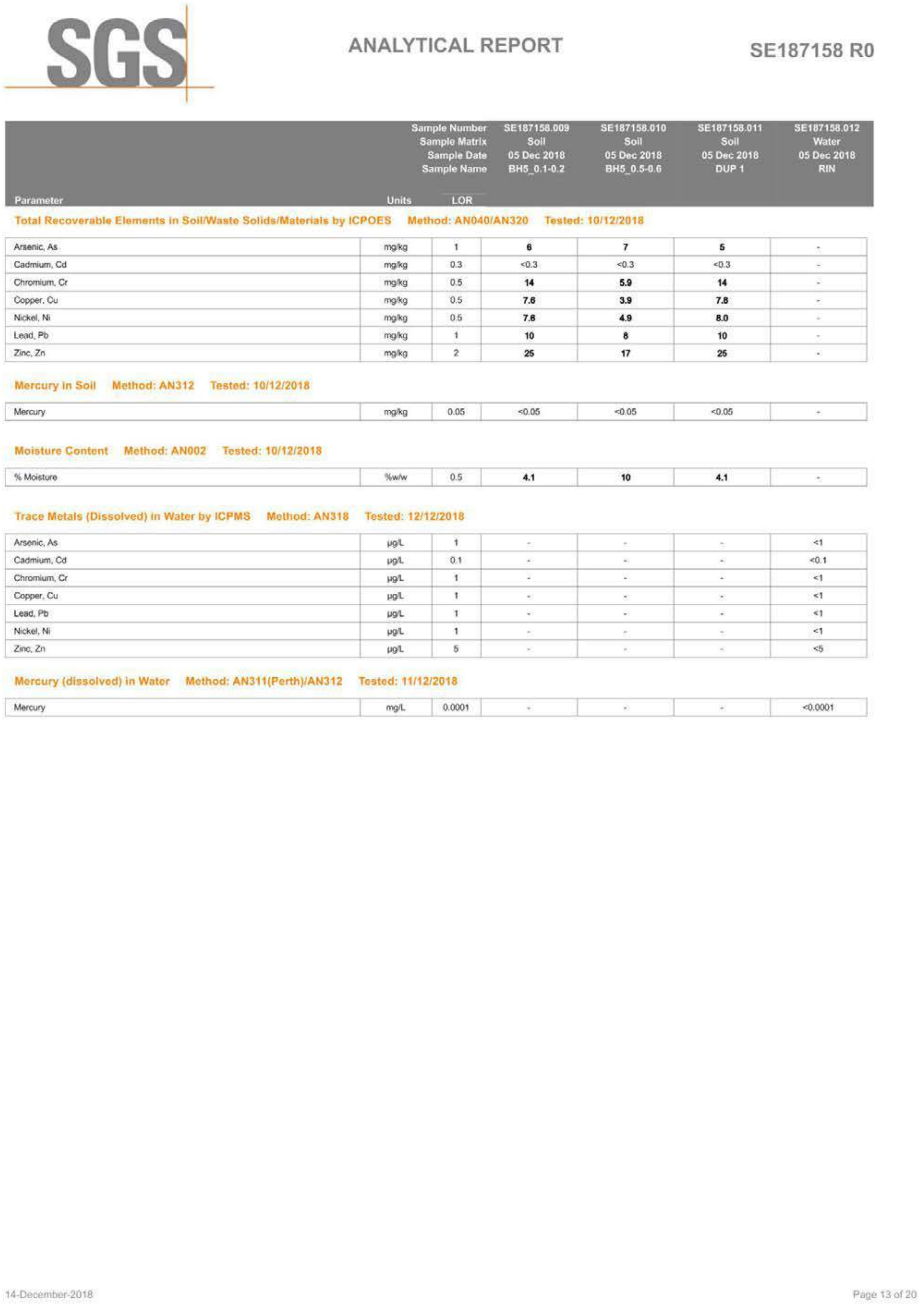
Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
2-fluorobiphenyl (Surrogate)	%	-	**106**	**94**	**102**	-
d14-p-terphenyl (Surrogate)	%	-	**110**	**98**	**106**	-

PCBs in Soil Method: AN420 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	-

Surrogates

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**115**	**119**	**115**	-



ANALYTICAL REPORT

SE187158 R0

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Sample Number			SE187158.009	SE187158.010	SE187158.011	SE187158.012
Sample Matrix			Soil	Soil	Soil	Water
Sample Date			05 Dec 2018	05 Dec 2018	05 Dec 2018	05 Dec 2018
Sample Name			BH5_0.1-0.2	BH5_0.5-0.6	DUP 1	RIN

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Arsenic, As	mg/kg	1	**6**	**7**	**5**	-
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	-
Chromium, Cr	mg/kg	0.5	**14**	**5.9**	**14**	-
Copper, Cu	mg/kg	0.5	**7.6**	**3.9**	**7.8**	-
Nickel, Ni	mg/kg	0.5	**7.6**	**4.9**	**8.0**	-
Lead, Pb	mg/kg	1	**10**	**8**	**10**	-
Zinc, Zn	mg/kg	2	**25**	**17**	**25**	-

Mercury in Soil Method: AN312 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	-

Moisture Content Method: AN002 Tested: 10/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
% Moisture	%w/w	0.5	**4.1**	**10**	**4.1**	-

Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 12/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Arsenic, As	µg/L	1	-	-	-	<1
Cadmium, Cd	µg/L	0.1	-	-	-	<0.1
Chromium, Cr	µg/L	1	-	-	-	<1
Copper, Cu	µg/L	1	-	-	-	<1
Lead, Pb	µg/L	1	-	-	-	<1
Nickel, Ni	µg/L	1	-	-	-	<1
Zinc, Zn	µg/L	5	-	-	-	<5

Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 11/12/2018

Parameter	Units	LOR	SE187158.009	SE187158.010	SE187158.011	SE187158.012
Mercury	mg/L	0.0001	-	-	-	<0.0001

SGS

QC SUMMARY

SE187158 R0

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury (dissolved) in Water **Method: ME-(AU)-[ENV]AN311(Perth)/AN312**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Mercury	LB163162	mg/L	0.0001	<0.0001	97%

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB163198	mg/kg	0.05	<0.05	0%	100%	89%

Moisture Content **Method: ME-(AU)-[ENV]AN002**

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB163196	%w/w	0.5	4 - 14%

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Hexachlorobenzene (HCB)	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Alpha BHC	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Lindane	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Heptachlor	LB163195	mg/kg	0.1	<0.1	0%	118%	118%
Aldrin	LB163195	mg/kg	0.1	<0.1	0%	115%	121%
Beta BHC	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Delta BHC	LB163195	mg/kg	0.1	<0.1	0%	112%	113%
Heptachlor epoxide	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDE	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Endosulfan	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Gamma Chlordane	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Chlordane	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
trans-Nonachlor	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDE	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Dieldrin	LB163195	mg/kg	0.2	<0.2	0%	118%	123%
Endrin	LB163195	mg/kg	0.2	<0.2	0%	106%	117%
o,p'-DDD	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDT	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Beta Endosulfan	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
p,p'-DDD	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDT	LB163195	mg/kg	0.1	<0.1	0%	107%	96%
Endosulfan sulphate	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Aldehyde	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Methoxychlor	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Ketone	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Isodrin	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Mirex	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Total CLP OC Pesticides	LB163195	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB163195	%	-	104%	2%	106%	119%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorvos	LB163195	mg/kg	0.5	<0.5	0%	94%	98%
Dimethoate	LB163195	mg/kg	0.5	<0.5	0%	NA	NA
Diazinon (Dimpylate)	LB163195	mg/kg	0.5	<0.5	0%	109%	105%
Fenitrothion	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Malathion	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB163195	mg/kg	0.2	<0.2	0%	104%	97%
Parathion-ethyl (Parathion)	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Bromophos Ethyl	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Methidathion	LB163195	mg/kg	0.5	<0.5	0%	NA	NA
Ethion	LB163195	mg/kg	0.2	<0.2	0%	105%	111%
Azinphos-methyl (Guthion)	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Total OP Pesticides*	LB163195	mg/kg	1.7	<1.7	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB163195	%	-	98%	4%	94%	104%
d14-p-terphenyl (Surrogate)	LB163195	%	-	100%	6%	96%	106%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB163195	mg/kg	0.1	<0.1	0%	110%	117%
2-methylnaphthalene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB163195	mg/kg	0.1	<0.1	0%	109%	119%
Acenaphthene	LB163195	mg/kg	0.1	<0.1	0%	114%	122%
Fluorene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB163195	mg/kg	0.1	<0.1	0%	113%	121%
Anthracene	LB163195	mg/kg	0.1	<0.1	0%	111%	116%
Fluoranthene	LB163195	mg/kg	0.1	<0.1	0%	105%	109%
Pyrene	LB163195	mg/kg	0.1	<0.1	0%	114%	120%
Benzo(a)anthracene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Chrysene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b&j)fluoranthene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(k)fluoranthene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(a)pyrene	LB163195	mg/kg	0.1	<0.1	0%	114%	121%
Indeno(1,2,3-cd)pyrene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(ah)anthracene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB163195	mg/kg	0.1	<0.1	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=0	LB163195	TEQ (mg/kg)	0.2	<0.2	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR	LB163195	TEQ (mg/kg)	0.3	<0.3	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	LB163195	TEQ (mg/kg)	0.2	<0.2	0%	NA	NA
Total PAH (18)	LB163195	mg/kg	0.8	<0.8	0%	NA	NA
Total PAH (NEPM/WHO 16)	LB163195	mg/kg	0.8	<0.8			

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB163195	%	-	90%	0 - 4%	88%	102%
2-fluorobiphenyl (Surrogate)	LB163195	%	-	98%	4%	94%	104%
d14-p-terphenyl (Surrogate)	LB163195	%	-	100%	2 - 6%	96%	106%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PCBs in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arochlor 1016	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1221	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1232	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1242	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1248	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1254	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1260	LB163195	mg/kg	0.2	<0.2	0%	102%	116%
Arochlor 1262	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1268	LB163195	mg/kg	0.2	<0.2	0%	NA	NA
Total PCBs (Arochlors)	LB163195	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB163195	%	-	104%	2%	111%	118%

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: ME-(AU)-[ENV]AN040/AN320

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB163197	mg/kg	1	<1	5%	100%	88%
Cadmium, Cd	LB163197	mg/kg	0.3	<0.3	0%	99%	97%
Chromium, Cr	LB163197	mg/kg	0.5	<0.5	12%	101%	95%
Copper, Cu	LB163197	mg/kg	0.5	<0.5	7%	86%	100%
Nickel, Ni	LB163197	mg/kg	0.5	<0.5	0%	90%	144%
Lead, Pb	LB163197	mg/kg	1	<1	5%	86%	92%
Zinc, Zn	LB163197	mg/kg	2	<2	5%	93%	93%

Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB163266	µg/L	1	<1	1%	88%	95%
Cadmium, Cd	LB163266	µg/L	0.1	<0.1	0%	98%	99%
Chromium, Cr	LB163266	µg/L	1	<1	0%	103%	101%
Copper, Cu	LB163266	µg/L	1	<1	0%	105%	
Lead, Pb	LB163266	µg/L	1	<1	0%	97%	84%
Nickel, Ni	LB163266	µg/L	1	<1	0%	100%	95%
Zinc, Zn	LB163266	µg/L	5	<5	0%	94%	40%

SGS

QC SUMMARY

SE187158 R0

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
TRH C10-C14	LB163195	mg/kg	20	<20	0 - 5%	98%	NA
TRH C15-C28	LB163195	mg/kg	45	<45	0 - 10%	100%	NA
TRH C29-C36	LB163195	mg/kg	45	<45	0 - 21%	88%	NA
TRH C37-C40	LB163195	mg/kg	100	<100	0 - 49%	NA	NA
TRH C10-C36 Total	LB163195	mg/kg	110	<110	0 - 1%	NA	NA
TRH C10-C40 Total (F bands)	LB163195	mg/kg	210	<210	0 - 6%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
TRH >C10-C16	LB163195	mg/kg	25	<25	0 - 33%	95%	NA
TRH >C10-C16 - Naphthalene (F2)	LB163195	mg/kg	25	<25	0 - 33%	NA	NA
TRH >C16-C34 (F3)	LB163195	mg/kg	90	<90	0 - 2%	98%	NA
TRH >C34-C40 (F4)	LB163195	mg/kg	120	<120	0 - 42%	90%	NA

VOC's in Soil Method: ME-(AU)-[ENV]AN433

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Benzene	LB163194	mg/kg	0.1	<0.1	0%	106%
Toluene	LB163194	mg/kg	0.1	<0.1	0%	111%
Ethylbenzene	LB163194	mg/kg	0.1	<0.1	0%	110%
m/p-xylene	LB163194	mg/kg	0.2	<0.2	0%	108%
o-xylene	LB163194	mg/kg	0.1	<0.1	0%	107%

Polycyclic VOCs

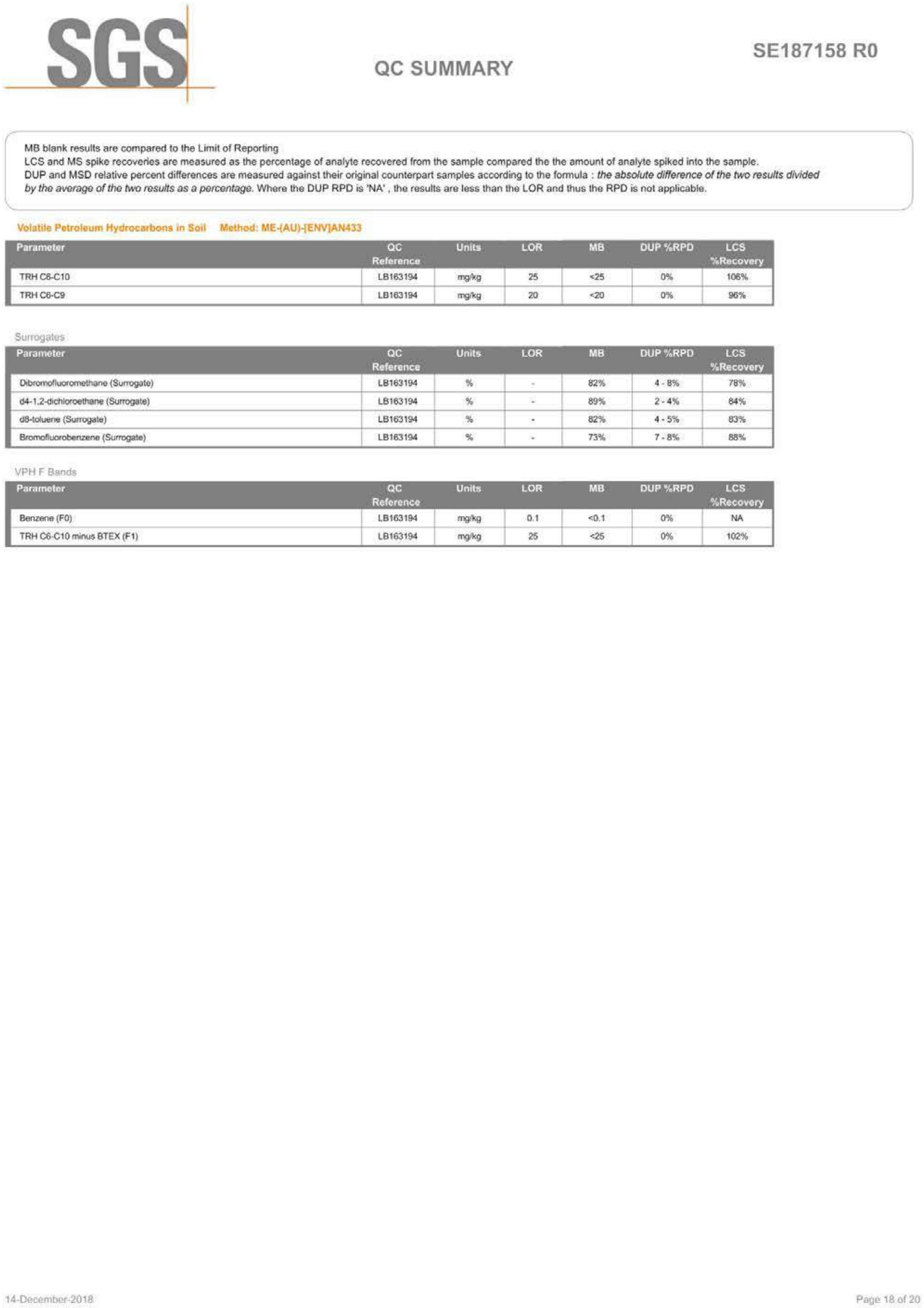
Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Naphthalene	LB163194	mg/kg	0.1	<0.1	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB163194	%	-	82%	4 - 8%	78%
d4-1,2-dichloroethane (Surrogate)	LB163194	%	-	89%	2 - 4%	84%
d8-toluene (Surrogate)	LB163194	%	-	82%	4 - 5%	83%
Bromofluorobenzene (Surrogate)	LB163194	%	-	73%	7 - 8%	88%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Xylenes	LB163194	mg/kg	0.3	<0.3	0%	NA
Total BTEX	LB163194	mg/kg	0.6	<0.6	0%	NA



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QC SUMMARY

SE187158 R0

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydrocarbons in Soil   Method: ME-(AU)-[ENV]AN433

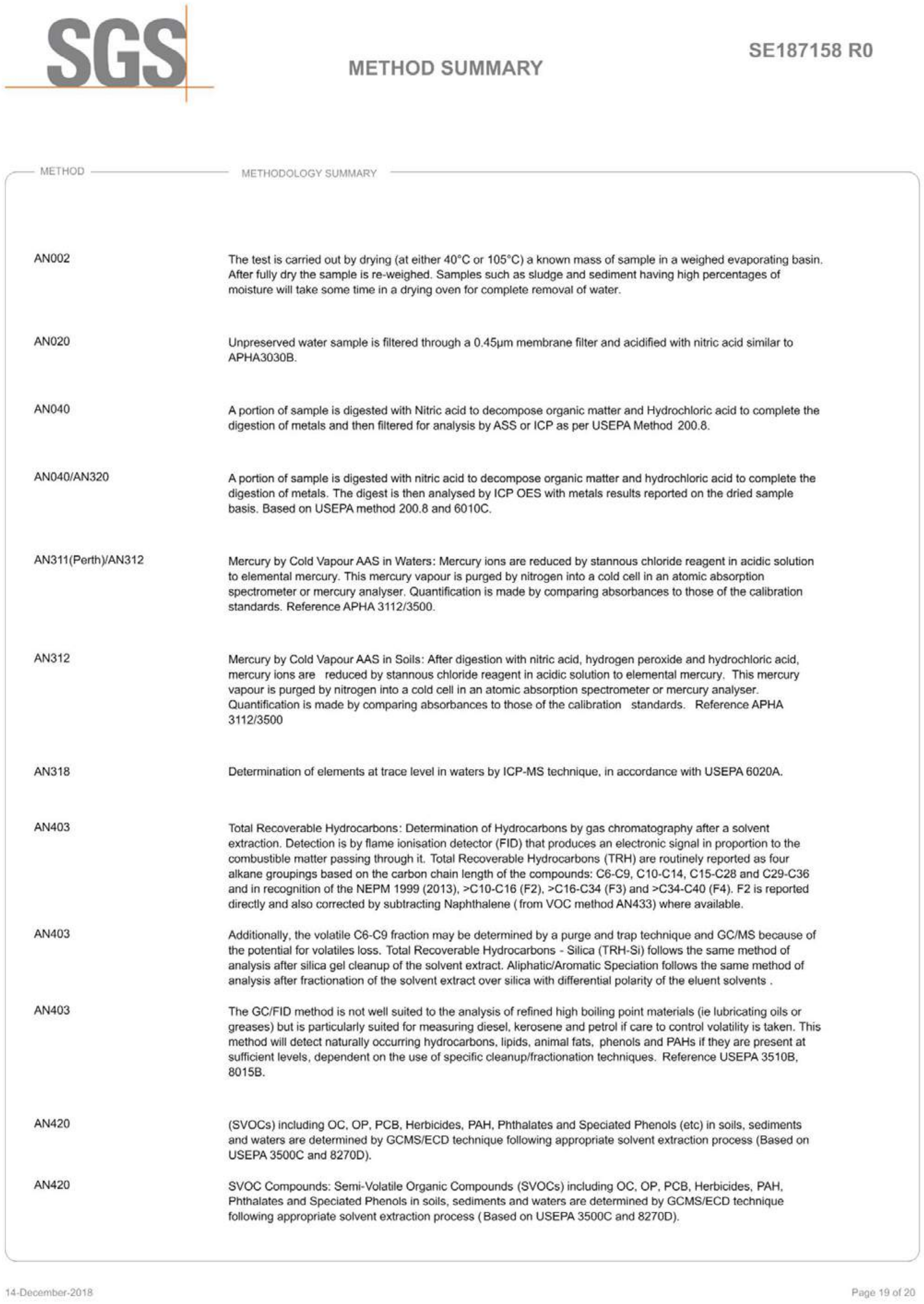
Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C6-C10	LB163194	mg/kg	25	<25	0%	106%
TRH C6-C9	LB163194	mg/kg	20	<20	0%	96%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB163194	%	-	82%	4 - 8%	78%
d4-1,2-dichloroethane (Surrogate)	LB163194	%	-	89%	2 - 4%	84%
d8-toluene (Surrogate)	LB163194	%	-	82%	4 - 5%	83%
Bromofluorobenzene (Surrogate)	LB163194	%	-	73%	7 - 8%	88%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Benzene (F0)	LB163194	mg/kg	0.1	<0.1	0%	NA
TRH C6-C10 minus BTEX (F1)	LB163194	mg/kg	25	<25	0%	102%



SGS

METHOD SUMMARY

SE187158 R0

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

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METHOD	METHODOLOGY SUMMARY
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
		QFL	QC result is below the lower tolerance
**	Indicative data, theoretical holding time exceeded.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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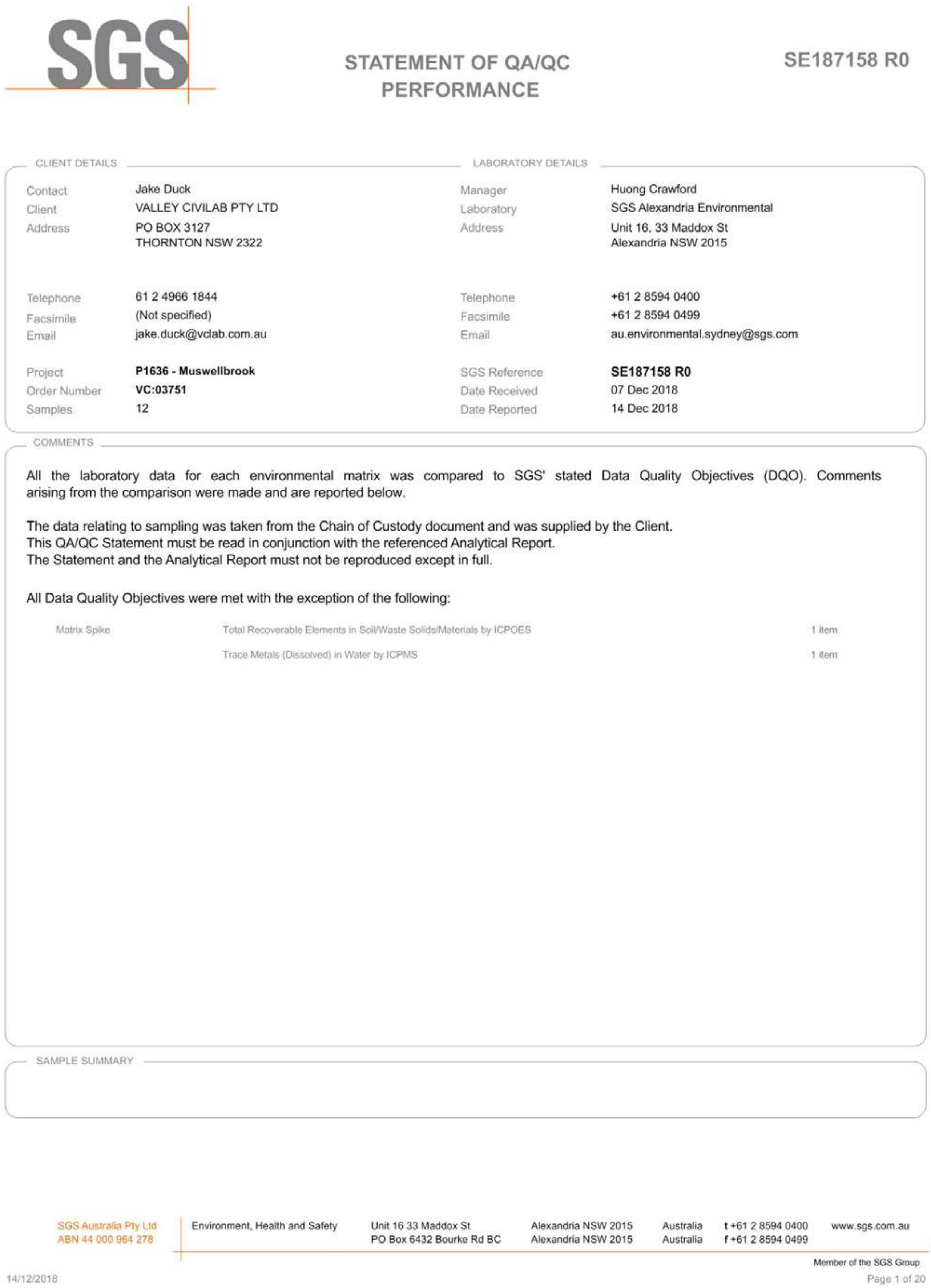

SGS

STATEMENT OF QA/QC PERFORMANCE

SE187158 R0

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Jake Duck	Manager	Huong Crawford
Client	VALLEY CIVILAB PTY LTD	Laboratory	SGS Alexandria Environmental
Address	PO BOX 3127 THORNTON NSW 2322	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
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Facsimile	(Not specified)	Facsimile	+61 2 8594 0499
Email	jake.duck@vclab.com.au	Email	au.environmental.sydney@sgs.com
Project	**P1636 - Muswellbrook**	SGS Reference	**SE187158 R0**
Order Number	**VC:03751**	Date Received	07 Dec 2018
Samples	12	Date Reported	14 Dec 2018

COMMENTS

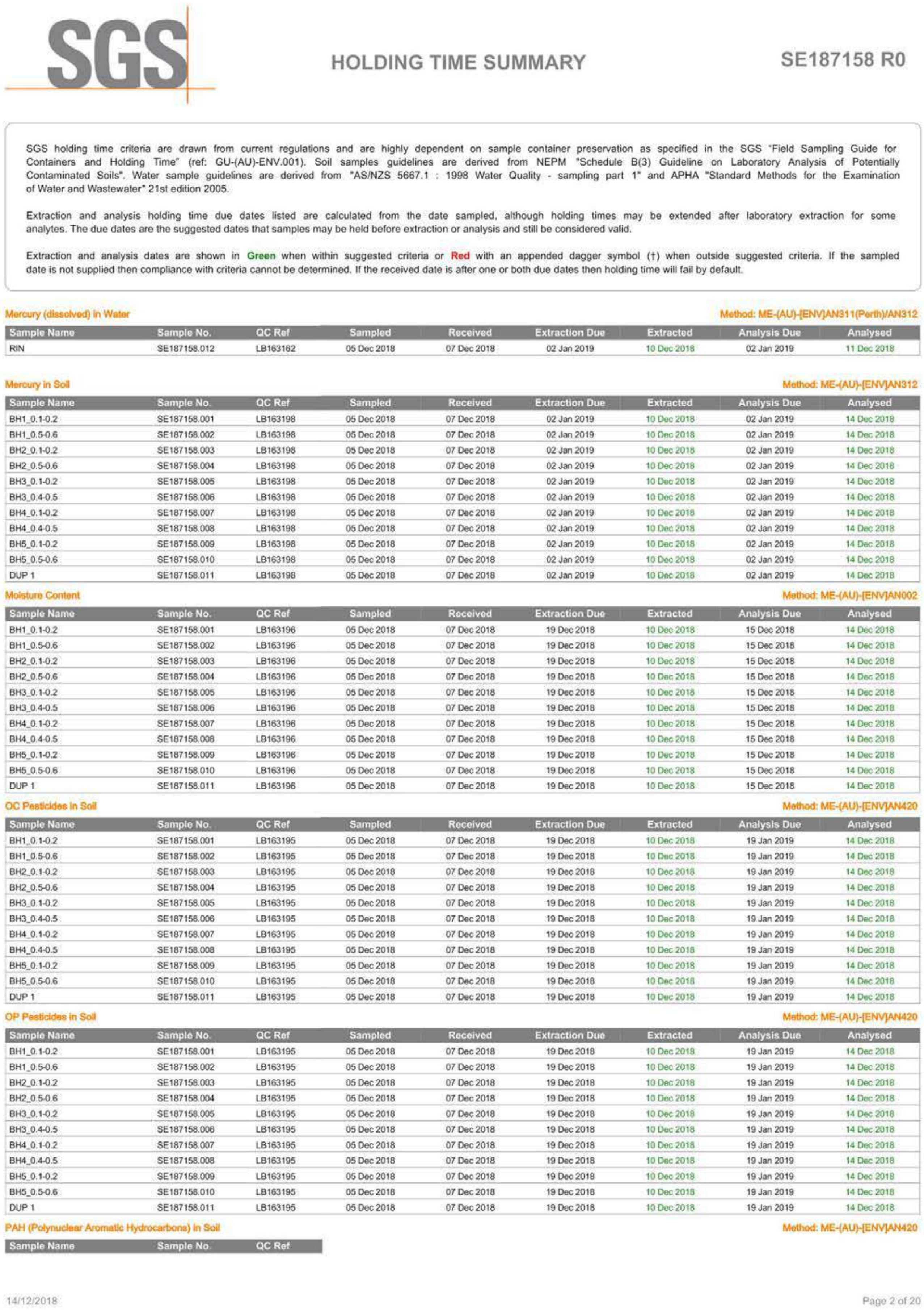
All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	Trace Metals (Dissolved) in Water by ICPMS	1 item

SAMPLE SUMMARY



HOLDING TIME SUMMARY

SE187158 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in Green when within suggested criteria or Red with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RIN	SE187158.012	LB163162	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	11 Dec 2018

Mercury in Soil Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163198	05 Dec 2018	07 Dec 2018	02 Jan 2019	10 Dec 2018	02 Jan 2019	14 Dec 2018

Moisture Content Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018
DUP 1	SE187158.011	LB163196	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	15 Dec 2018	14 Dec 2018

OC Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in Green when within suggested criteria or Red with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

PCBs in Soil Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018
DUP 1	SE187158.011	LB163197	05 Dec 2018	07 Dec 2018	03 Jun 2019	10 Dec 2018	03 Jun 2019	14 Dec 2018

Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RIN	SE187158.012	LB163266	05 Dec 2018	07 Dec 2018	03 Jun 2019	11 Dec 2018	03 Jun 2019	11 Dec 2018

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163195	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

VOC's in Soil Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref

SGS

HOLDING TIME SUMMARY

SE187158 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

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Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

VOC's in Soil (continued) **Method: ME-(AU)-[ENV]AN433**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

Volatile Petroleum Hydrocarbons in Soil **Method: ME-(AU)-[ENV]AN433**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE187158.001	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH1_0.5-0.6	SE187158.002	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.1-0.2	SE187158.003	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH2_0.5-0.6	SE187158.004	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.1-0.2	SE187158.005	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH3_0.4-0.5	SE187158.006	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.1-0.2	SE187158.007	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH4_0.4-0.5	SE187158.008	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.1-0.2	SE187158.009	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
BH5_0.5-0.6	SE187158.010	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018
DUP 1	SE187158.011	LB163194	05 Dec 2018	07 Dec 2018	19 Dec 2018	10 Dec 2018	19 Jan 2019	14 Dec 2018

SURROGATES

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in Green when within suggested criteria or Red with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	117
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	119
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	120
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	121
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	120
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	121
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	115
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	120
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	115
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	119
	DUP 1	SE187158.011	%	60 - 130%	115

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	94
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	96
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	96
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	96
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	102
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	102
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	98
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	98
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	106
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	94
	DUP 1	SE187158.011	%	60 - 130%	102
d14-p-terphenyl (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	96
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	100
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	98
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	102
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	106
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	108
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	102
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	104
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	110
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	98
	DUP 1	SE187158.011	%	60 - 130%	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1_0.1-0.2	SE187158.001	%	70 - 130%	94
	BH1_0.5-0.6	SE187158.002	%	70 - 130%	96
	BH2_0.1-0.2	SE187158.003	%	70 - 130%	96
	BH2_0.5-0.6	SE187158.004	%	70 - 130%	96
	BH3_0.1-0.2	SE187158.005	%	70 - 130%	102
	BH3_0.4-0.5	SE187158.006	%	70 - 130%	102
	BH4_0.1-0.2	SE187158.007	%	70 - 130%	98
	BH4_0.4-0.5	SE187158.008	%	70 - 130%	98
	BH5_0.1-0.2	SE187158.009	%	70 - 130%	106
	BH5_0.5-0.6	SE187158.010	%	70 - 130%	94
	DUP 1	SE187158.011	%	70 - 130%	102
d14-p-terphenyl (Surrogate)	BH1_0.1-0.2	SE187158.001	%	70 - 130%	96
	BH1_0.5-0.6	SE187158.002	%	70 - 130%	100
	BH2_0.1-0.2	SE187158.003	%	70 - 130%	98
	BH2_0.5-0.6	SE187158.004	%	70 - 130%	102
	BH3_0.1-0.2	SE187158.005	%	70 - 130%	106
	BH3_0.4-0.5	SE187158.006	%	70 - 130%	106
	BH4_0.1-0.2	SE187158.007	%	70 - 130%	102
	BH4_0.4-0.5	SE187158.008	%	70 - 130%	104
	BH5_0.1-0.2	SE187158.009	%	70 - 130%	110
	BH5_0.5-0.6	SE187158.010	%	70 - 130%	98
	DUP 1	SE187158.011	%	70 - 130%	106
d5-nitrobenzene (Surrogate)	BH1_0.1-0.2	SE187158.001	%	70 - 130%	88

SURROGATES

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in Green when within suggested criteria or Red with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH1_0.5-0.6	SE187158.002	%	70 - 130%	90
	BH2_0.1-0.2	SE187158.003	%	70 - 130%	94
	BH2_0.5-0.6	SE187158.004	%	70 - 130%	94
	BH3_0.1-0.2	SE187158.005	%	70 - 130%	100
	BH3_0.4-0.5	SE187158.006	%	70 - 130%	100
	BH4_0.1-0.2	SE187158.007	%	70 - 130%	96
	BH4_0.4-0.5	SE187158.008	%	70 - 130%	96
	BH5_0.1-0.2	SE187158.009	%	70 - 130%	106
	BH5_0.5-0.6	SE187158.010	%	70 - 130%	92
	DUP 1	SE187158.011	%	70 - 130%	102

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	117
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	119
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	120
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	121
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	120
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	121
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	115
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	120
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	115
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	119
	DUP 1	SE187158.011	%	60 - 130%	115

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	83
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	80
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	73
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	75
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	76
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	73
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	73
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	72
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	74
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	73
	DUP 1	SE187158.011	%	60 - 130%	70
d4-1,2-dichloroethane (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	90
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	77
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	75
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	72
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	70
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	72
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	72
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	73
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	72
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	77
	DUP 1	SE187158.011	%	60 - 130%	73
d8-toluene (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	70
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	87
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	90
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	94
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	87
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	92
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	86
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	88
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	127
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	87
	DUP 1	SE187158.011	%	60 - 130%	91
Dibromofluoromethane (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	70
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	71

SURROGATES

SE187158 R0

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH2_0.1-0.2	SE187158.003	%	60 - 130%	75
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	78
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	78
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	78
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	77
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	85
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	81
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	73
	DUP 1	SE187158.011	%	60 - 130%	81

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	83
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	80
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	73
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	75
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	76
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	73
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	73
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	72
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	74
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	73
	DUP 1	SE187158.011	%	60 - 130%	70
d4-1,2-dichloroethane (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	90
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	77
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	75
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	72
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	70
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	72
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	72
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	73
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	72
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	77
	DUP 1	SE187158.011	%	60 - 130%	73
d8-toluene (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	70
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	87
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	90
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	94
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	87
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	92
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	86
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	88
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	127
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	87
	DUP 1	SE187158.011	%	60 - 130%	91
Dibromofluoromethane (Surrogate)	BH1_0.1-0.2	SE187158.001	%	60 - 130%	70
	BH1_0.5-0.6	SE187158.002	%	60 - 130%	71
	BH2_0.1-0.2	SE187158.003	%	60 - 130%	75
	BH2_0.5-0.6	SE187158.004	%	60 - 130%	78
	BH3_0.1-0.2	SE187158.005	%	60 - 130%	78
	BH3_0.4-0.5	SE187158.006	%	60 - 130%	78
	BH4_0.1-0.2	SE187158.007	%	60 - 130%	77
	BH4_0.4-0.5	SE187158.008	%	60 - 130%	85
	BH5_0.1-0.2	SE187158.009	%	60 - 130%	81
	BH5_0.5-0.6	SE187158.010	%	60 - 130%	73
	DUP 1	SE187158.011	%	60 - 130%	81

METHOD BLANKS

SE187158 R0

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB163162.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB163198.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB163195.001	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Alpha BHC	mg/kg	0.1	<0.1
	Lindane	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1	<0.1
	Methoxychlor	mg/kg	0.1	<0.1
	Endrin Ketone	mg/kg	0.1	<0.1
	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	104

OP Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB163195.001	Dichlorvos	mg/kg	0.5	<0.5
	Dimethoate	mg/kg	0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Fenitrothion	mg/kg	0.2	<0.2
	Malathion	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Methidathion	mg/kg	0.5	<0.5
	Ethion	mg/kg	0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Surrogates	2-fluorobiphenyl (Surrogate)	%	-	98
	d14-p-terphenyl (Surrogate)	%	-	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB163195.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) **Method: ME-(AU)-[ENV]AN420**

Sample Number		Parameter	Units	LOR	Result
LB163195.001		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	90
		2-fluorobiphenyl (Surrogate)	%	-	98
		d14-p-terphenyl (Surrogate)	%	-	100

PCBs in Soil **Method: ME-(AU)-[ENV]AN420**

Sample Number		Parameter	Units	LOR	Result
LB163195.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	104

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES **Method: ME-(AU)-[ENV]AN040/AN320**

Sample Number		Parameter	Units	LOR	Result
LB163197.001		Arsenic, As	mg/kg	1	<1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2

Trace Metals (Dissolved) in Water by ICPMS **Method: ME-(AU)-[ENV]AN318**

Sample Number		Parameter	Units	LOR	Result
LB163266.001		Arsenic, As	µg/L	1	<1
		Cadmium, Cd	µg/L	0.1	<0.1
		Chromium, Cr	µg/L	1	<1
		Copper, Cu	µg/L	1	<1
		Lead, Pb	µg/L	1	<1
		Nickel, Ni	µg/L	1	<1
		Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN403**

Sample Number		Parameter	Units	LOR	Result
LB163195.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result
LB163194.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued) **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result
LB163194.001	Surrogates	Dibromofluoromethane (Surrogate)	%	-	82
		d4-1,2-dichloroethane (Surrogate)	%	-	89
		d8-toluene (Surrogate)	%	-	82
		Bromofluorobenzene (Surrogate)	%	-	73
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result
LB163194.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	82
		d4-1,2-dichloroethane (Surrogate)	%	-	89
		d8-toluene (Surrogate)	%	-	82

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.010	LB163198.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content **Method: ME-(AU)-[ENV]AN002**

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187124.003	LB163196.022	% Moisture	%w/w	0.5	15.4704944178	3.4941912421	37	14
SE187158.004	LB163196.011	% Moisture	%w/w	0.5	8.8	8.5	42	4

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN420**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.002	LB163195.034		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.18	0.18	30	2

OP Pesticides in Soil **Method: ME-(AU)-[ENV]AN420**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.002	LB163195.034		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6

PAH (Polynuclear Aromatic Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN420**

Original	Duplicate	Parameter	Units	LOR

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187124.005	LB163195.035		Naphthalene	mg/kg	0.1	0.01	0.01	200	0
			2-methylnaphthalene	mg/kg	0.1	0.01	0.02	200	0
			1-methylnaphthalene	mg/kg	0.1	0.01	0.01	200	0
			Acenaphthylene	mg/kg	0.1	0.01	0.01	200	0
			Acenaphthene	mg/kg	0.1	0	0.01	200	0
			Fluorene	mg/kg	0.1	0.01	0.01	200	0
			Phenanthrene	mg/kg	0.1	0.02	0.03	200	0
			Anthracene	mg/kg	0.1	0.01	0.01	200	0
			Fluoranthene	mg/kg	0.1	0.04	0.07	200	0
			Pyrene	mg/kg	0.1	0.06	0.09	163	0
			Benzo(a)anthracene	mg/kg	0.1	0.07	0.08	163	0
			Chrysene	mg/kg	0.1	0.06	0.07	184	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.07	0.09	155	0
			Benzo(k)fluoranthene	mg/kg	0.1	0.07	0.08	163	0
			Benzo(a)pyrene	mg/kg	0.1	0.02	0.02	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.02	0.02	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	0	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.02	0.02	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	0	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	0.242	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.121	0.121	175	0
			Total PAH (18)	mg/kg	0.8	0	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.47	0.47	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.49	0.51	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.54	0.55	30	2
SE187158.002	LB163195.034		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	4
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.002	LB163195.034	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.002	LB163195.034		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	2

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.010	LB163197.014		Arsenic, As	mg/kg	1	7	7	44	5
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	5.9	6.7	38	12
			Copper, Cu	mg/kg	0.5	3.9	4.2	42	7
			Nickel, Ni	mg/kg	0.5	4.9	4.9	40	0
			Lead, Pb	mg/kg	1	8	8	43	5
			Zinc, Zn	mg/kg	2	17	18	41	5

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187222.003	LB163266.014		Arsenic, As	µg/L	1	11.108	11.205	24	1
			Cadmium, Cd	µg/L	0.1	0.003	0.007	200	0
			Chromium, Cr	µg/L	1	0.529	0.534	200	0
			Copper, Cu	µg/L	1	0.032	0.041	200	0
			Lead, Pb	µg/L	1	0.068	0.076	200	0
			Nickel, Ni	µg/L	1	0.533	0.503	200	0
			Zinc, Zn	µg/L	5	1.028	0.846	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187124.005	LB163195.035		TRH C10-C14	mg/kg	20	5	21	184	5
			TRH C15-C28	mg/kg	45	3135	2846	32	10
			TRH C29-C36	mg/kg	45	1375	1704	33	21
			TRH C37-C40	mg/kg	100	329	545	53	49
			TRH C10-C36 Total	mg/kg	110	4510	4571	32	1
			TRH C10-C40 Total (F bands)	mg/kg	210	4759	5051	34	6
		TRH F Bands	TRH >C10-C16	mg/kg	25	13	35	134	33
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	0	35	173	33
			TRH >C16-C34 (F3)	mg/kg	90	4083	3984	32	2
			TRH >C34-C40 (F4)	mg/kg	120	676	1032	44	42
SE187158.002	LB163195.034		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187124.003	LB163194.029	Monocyclic Aromatic	Benzene	mg/kg	0.1	0	0	200	0
			Toluene	mg/kg	0.1	0	0	200	0
			Ethylbenzene	mg/kg	0.1	0.01	0	200	0
			m/p-xylene	mg/kg	0.2	0.02	0	200	0
			o-xylene	mg/kg	0.1	0	0	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	0.03	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.68	3.52	50	4
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.83	3.9	50	2
			d8-toluene (Surrogate)	mg/kg	-	4.21	4.38	50	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.52	3.82	50	8
		Totals	Total Xylenes	mg/kg	0.3	0.02	0	200	0
			Total BTEX	mg/kg	0.6	0.03	0	200	0
SE187158.004	LB163194.015	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0

DUPLICATES

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued) **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187158.004	LB163194.015	Monocyclic Aromatic	Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.6	50	8
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.6	3.8	50	4
			d8-toluene (Surrogate)	mg/kg	-	4.7	4.5	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	3.5	50	7
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE187124.003	LB163194.029		TRH C6-C10	mg/kg	25	0.85	1.08	200	0
			TRH C6-C9	mg/kg	20	0.7	0.92	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.68	3.52	30	4
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.83	3.9	30	2
			d8-toluene (Surrogate)	mg/kg	-	4.21	4.38	30	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.52	3.82	30	8
		VPH F Bands	Benzene (F0)	mg/kg	0.1	0	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	0.82	1.08	200	0
SE187158.004	LB163194.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.6	30	8
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.6	3.8	30	4
			d8-toluene (Surrogate)	mg/kg	-	4.7	4.5	30	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	3.5	30	7
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

LABORATORY CONTROL SAMPLES

SE187158 R0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163198.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100

OC Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163195.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	118
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	115
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	112
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	118
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	107
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	40 - 130	106

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163195.002		Dichlorvos	mg/kg	0.5	1.9	2	60 - 140	94
		Diazinon (Dimpylate)	mg/kg	0.5	2.2	2	60 - 140	109
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	2	60 - 140	104
		Ethion	mg/kg	0.2	2.1	2	60 - 140	105
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163195.002		Naphthalene	mg/kg	0.1	4.4	4	60 - 140	110
		Acenaphthylene	mg/kg	0.1	4.4	4	60 - 140	109
		Acenaphthene	mg/kg	0.1	4.6	4	60 - 140	114
		Phenanthrene	mg/kg	0.1	4.5	4	60 - 140	113
		Anthracene	mg/kg	0.1	4.4	4	60 - 140	111
		Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	105
		Pyrene	mg/kg	0.1	4.5	4	60 - 140	114
		Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	114
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96

PCBs in Soil Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163195.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	102

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163197.002	Arsenic, As	mg/kg	1	340	336.32	79 - 120	100
	Cadmium, Cd	mg/kg	0.3	410	416.6	69 - 131	99
	Chromium, Cr	mg/kg	0.5	35	35.2	80 - 120	101
	Copper, Cu	mg/kg	0.5	320	370.46	80 - 120	86
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	90
	Lead, Pb	mg/kg	1	92	107.87	79 - 120	86
	Zinc, Zn	mg/kg	2	280	301.27	80 - 121	93

Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163266.002	Arsenic, As	µg/L	1	18	20	80 - 120	88
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	98
	Chromium, Cr	µg/L	1	21	20	80 - 120	103
	Copper, Cu	µg/L	1	21	20	80 - 120	105
	Lead, Pb	µg/L	1	19	20	80 - 120	97
	Nickel, Ni	µg/L	1	20	20	80 - 120	100
	Zinc, Zn	µg/L	5	19	20	80 - 120	94

SGS

LABORATORY CONTROL SAMPLES

SE187158 R0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163195.002		TRH C10-C14	mg/kg	20	39	40	60 - 140	98
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	100
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	88
	TRH F Bands	TRH >C10-C16	mg/kg	25	38	40	60 - 140	95
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	98
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	90

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163194.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.1	2.9	60 - 140	106
		Toluene	mg/kg	0.1	3.2	2.9	60 - 140	111
		Ethylbenzene	mg/kg	0.1	3.2	2.9	60 - 140	110
		m/p-xylene	mg/kg	0.2	6.3	5.8	60 - 140	108
		o-xylene	mg/kg	0.1	3.1	2.9	60 - 140	107
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	5	60 - 140	78
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
		d8-toluene (Surrogate)	mg/kg	-	4.1	5	60 - 140	83
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	5	60 - 140	88

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB163194.002		TRH C6-C10	mg/kg	25	26	24.65	60 - 140	106
		TRH C6-C9	mg/kg	20	22	23.2	60 - 140	96
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	5	60 - 140	78
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
		d8-toluene (Surrogate)	mg/kg	-	4.1	5	60 - 140	83
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	5	60 - 140	88
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	102

MATRIX SPIKES

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163198.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	89

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163195.033		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	118
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	121
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	113
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	123
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	117
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	96
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.18	0.18	-	119

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163195.033		Dichlorvos	mg/kg	0.5	2.0	<0.5	2	98
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.1	<0.5	2	105
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	<0.2	2	97
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.2	<0.2	2	111
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.3	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	104
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163195.033	Naphthalene	mg/kg	0.1	4.7	<0.1	4	117
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.8	<0.1	4	119
		Acenaphthene	mg/kg	0.1	4.9	<0.1	4	122
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.8	<0.1	4	121

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) **Method: ME-(AU)-[ENV]AN420**

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163195.033		Anthracene	mg/kg	0.1	4.6	<0.1	4	116
			Fluoranthene	mg/kg	0.1	4.4	<0.1	4	109
			Pyrene	mg/kg	0.1	4.8	<0.1	4	120
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.8	<0.1	4	121
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	4.8	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	5.0	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	4.9	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	38	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.4	-	102
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	104
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	106

PCBs in Soil **Method: ME-(AU)-[ENV]AN420**

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163195.033		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.5	<0.2	0.4	116
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	118

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES **Method: ME-(AU)-[ENV]AN040/AN320**

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187158.001	LB163197.004	Arsenic, As	mg/kg	1	50	6	50	88
		Cadmium, Cd	mg/kg	0.3	48	<0.3	50	97
		Chromium, Cr	mg/kg	0.5	61	14	50	95
		Copper, Cu	mg/kg	0.5	58	7.8	50	100
		Nickel, Ni	mg/kg	0.5	82	11	50	144 ④
		Lead, Pb	mg/kg	1	54	8	50	92
		Zinc, Zn	mg/kg	2	69	22	50	93

Trace Metals (Dissolved) in Water by ICPMS **Method: ME-(AU)-[ENV]AN318**

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE187133.001	LB163266.004	Arsenic, As	µg/L	1	20	<1	20	95
		Cadmium, Cd	µg/L	0.1	20	0.1	20	99
		Chromium, Cr	µg/L	1	21	1	20	101
		Lead, Pb	µg/L	1	130	110	20	84
		Nickel, Ni	µg/L	1	27	8	20	95
		Zinc, Zn	µg/L	5	710	710	20	40 ⑤

MATRIX SPIKE DUPLICATES

SE187158 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Duplicate
SE187158.001	LB163195.033		TRH C10-C14	mg/kg	20	44
			TRH C15-C28	mg/kg	45	47
			TRH C29-C36	mg/kg	45	59
			TRH C37-C40	mg/kg	100	<100
			TRH C10-C36 Total	mg/kg	110	150
			TRH C10-C40 Total (F bands)	mg/kg	210	<210
		TRH F Bands	TRH >C10-C16	mg/kg	25	45
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	45
			TRH >C16-C34 (F3)	mg/kg	90	<90
			TRH >C34-C40 (F4)	mg/kg	120	<120

FOOTNOTES

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

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SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 1 of 1

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Email Results: malcolm.adrien@vclab.com.au; jake.duck@vclab.com.au; monica.esposito@vclab.com.au

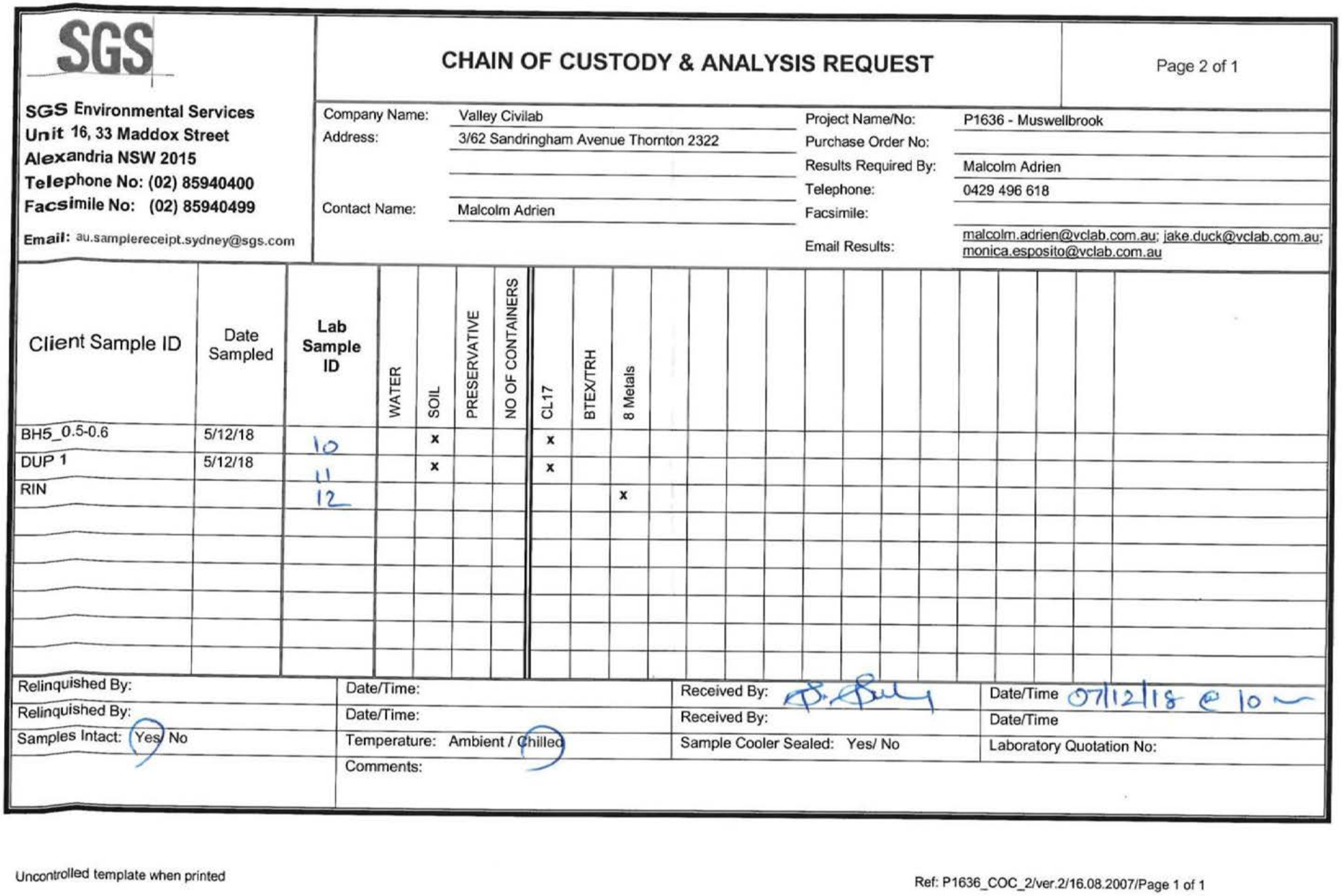
Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL17
BH1_0.1-0.2	5/12/18	1		x			x
BH1_0.5-0.6	5/12/18	2		x			x
BH2_0.1-0.2	5/12/18	3		x			x
BH2_0.5-0.6	5/12/18	4		x			x
BH3_0.1-0.2	5/12/18	5		x			x
BH3_0.4-0.5	5/12/18	6		x			x
BH4_0.1-0.2	5/12/18	7		x			x
BH4_0.4-0.5	5/12/18	8		x			x
BH5_0.1-0.2	5/12/18	9		x			x

SGS EHS Alexandria Laboratory
SE187158 COC
Received: 07 – Dec – 2018

Relinquished By:	Date/Time:	Received By:	Date/Time 07/12/18 @ 10~
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: [✓ Yes]/ No	Temperature: Ambient / [✓ Chilled]	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

Uncontrolled template when printed

Ref: P1636_COC_1/ver.2/16.08.2007/Page 1 of 1



SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 2 of 1

Company Name: Valley Civilab
Address: 3/62 Sandringham Avenue Thornton 2322
Contact Name: Malcolm Adrien

Project Name/No: P1636 - Muswellbrook
Purchase Order No:
Results Required By: Malcolm Adrien
Telephone: 0429 496 618
Facsimile:
Email Results: malcolm.adrien@vclab.com.au; jake.duck@vclab.com.au; monica.esposito@vclab.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL17	BTEX/TRH	8 Metals
BH5_0.5-0.6	5/12/18	10		x			x		
DUP 1	5/12/18	11		x			x		
RIN		12							x

Relinquished By:
Date/Time:
Received By:
Date/Time 07/12/18 @ 10

Relinquished By:
Date/Time:
Received By:
Date/Time

Samples Intact: [✓ Yes] No
Temperature: Ambient / [✓ Chilled]
Sample Cooler Sealed: Yes/ No
Laboratory Quotation No:

Comments:

Uncontrolled template when printed

Ref: P1636_COC_2/ver.2/16.08.2007/Page 1 of 1

ANNEX E

Photographic Log

Photograph 1: Proposed development location.

Photograph 2: Proposed development looking west showing existing meeting hall.

Photograph 3: Existing development looking North.

APPENDIX B

Geotechnical Investigation

21/12/2018

VALLEY CIVILAB
Geotechnical & Environmental Services

Geotechnical Investigation

111 Skellatar Stock Route, Muswellbrook

Ref: P1636-R-001-Rev0
Written by: Matthew Bobby (Graduate Geotechnical Engineer)
Reviewed by: Matthew Lay (Senior Geotechnical Engineer)
Approved by: Karl Dawes (General Manager)
Email: office@vclab.com.au
Client: Catholic Diocese of Maitland - Newcastle

SUSTAINABLE CERTIFICATION
✓ ISO 9001
✓ AS/NZS 4801
✓ ISO 14001

Prepared for:

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Project Details

Site Address:	111 Skellatar Stock Route, Muswellbrook	
Project Type:	Site Classification and Pavement Investigation and Design	
Project No.	**Report Type**	**Report No.**
P1636	R	001

Report Register

Revision Number	Reported By	Reviewed By	Date
Rev0	MB	ML	21/12/2018

We confirm that the following report has been produced for the Catholic Diocese of Maitland-Newcastle, based on the described methods and conditions within.

For and on behalf of **Valley Civilab Pty Ltd**,

Nathan Roberts
Geotechnical Engineering Manager

Karl Dawes
General Manager

Executive Summary

The following report details the geotechnical investigation undertaken by Valley Civilab Pty Ltd under the request of the Catholic Diocese of Maitland-Newcastle. The investigation was undertaken on the 6th of December and consisted of a desktop study, a visual site assessment and intrusive excavations and testing.

The desktop study indicated that the site lies within an area of no known occurrences of acid sulfate soils.

The desktop study also indicated that the site does not lie within a mine subsidence district.

The site was an undeveloped sporting field with dry grass covering.

The subsurface profile generally consisted of cut fill material overlying extremely weathered sandstone.

A site classification was undertaken based on the laboratory results and the exposed subsurface profile. The site classification indicated a Class P – H2 site with characteristic surface movement of 60 - 75mm.

The site would be suitable for the use of both shallow and deep footings. Refer to **Section 7.5** for footing details and recommended allowable bearing capacity.

A detailed pavement investigation and design was undertaken in accordance with Muswellbrook Shire Council engineering guidelines, Austroads Design Guide 2017 and APRG21 “A Guide to the Design of New Pavements for Light Traffic”, 2006. Based on the results of the laboratory testing a soaked subgrade CBR of 2.0% was adopted for the purpose of the pavement design. For flexible pavement design a traffic loading of 5×10^4 DESA’s was adopted for a 25 year design life based on Muswellbrook Shire Council engineering guidelines. For rigid pavement design a traffic loading of 5×10^4 DESA’s was adopted for a 40 year design life based on Muswellbrook Shire Council engineering guidelines. Flexible and rigid pavement design options were determined for the proposed paved area and a summary of the recommended thickness designs can be seen below in Table 1.

Table 1 - Summary of flexible and rigid pavement designs

Flexible pavement option	Rigid pavement option
30 mm of Asphalt wearing course	125 mm of Concrete basecourse
150 mm of granular basecourse	150 mm of granular sub-base
270 mm of granular sub-base	300 mm of select subgrade fill
300 mm of select subgrade fill	

Refer to **Section 8** for the detailed pavement design including material and compaction requirements.

Table of Contents

Annex List:

Annex A – Borehole Location Plan

Annex B – Borehole & DCP Log Report

Annex C – Valley Civilab Pty Ltd Laboratory Test Reports

Annex D – BTF 18-2011- CSIRO - Foundation Maintenance and Footing Performance - A Homeowner's Guide

1 Introduction

At the request of the Catholic Diocese of Maitland-Newcastle, Valley Civilab Pty Ltd (VC) have carried out a limited geotechnical investigation for the purpose of a site classification and pavement investigation and design at 111 Skellatar Stock Route, Muswellbrook. It is understood that the proposed development is to consist of the construction of a one storey building and new paved carpark areas for a new early education centre. The investigation works were undertaken in accordance with VC services agreement Q2018_625, dated 19th of November.

The purpose of the investigation was to provide recommendations on the following:

- surface and sub-surface conditions;
- geotechnical laboratory testing results;
- site classification to AS 2870-2011;
- alternative footing types and foundation design parameters;
- recommendations for flexible and rigid pavement thickness design.

2 Site Description

The site was located at 111 Skellatar Stock Route, Muswellbrook. The site was bordered by Skellatar Stock Route to the south, St James Primary school to the north, an access road to the east and a vacant rural paddock to the west. Access to the site was unrestricted via Skellatar Stock Route, therefore the investigation was undertaken using trailer mounted drill rig.

At the time of investigation, the site was an undeveloped sporting field with an existing assembly hall just off the northern site boundary.

Existing vegetation consisted of short dry grass with medium sized bushes lining the northern development site boundary and medium sized trees around the western and southern boundaries.

Topographically the site towards the north at between 2° and 5°.

3 Preliminary Site Investigation

3.1 Geological and Soil Landscape Setting

Reference to the 1:250,000 Singleton Geological Map indicates that the site is underlain by the Branxton Formation consisting of mudstone, sandstone and conglomerate.

Reference to the 1:100,000 Singleton Soil Landscape Map indicates that the site is located within the Roxburgh Landscape. The landscape is characterized by undulating low hills and undulating hills. yellow podzolic soils (Dy3.11, Dy2.41) occur on upper to midslopes with red solodic soils (Dr2.43) on more rounded hills. Lithosols (Um5.21) occur on crests. Brown podzolic soils (Db2.21) occur on slopes on conglomerate with associated flat pavements. Yellow soloths (Dy3.41) have been recorded in some gullies. The vegetation in the landscape is comprised of open woodland, with extension clearing for grazing.

3.2 Acid Sulfate Soils Risk Maps

Reference to the NSW Office of Environment and Heritage's online database 'ESPADE' indicates that the site lies in an area of no known occurences of acid sulfate soils.

3.3 Mine Subsidence

Reference to Subsidence Advisory NSW Mine District Maps indicates that the site does not lie with a Mine Subsidence District.

4 Methodology

Fieldwork was undertaken on the 5th of December 2018 and consisted of:

- underground utility service clearances using a Telstra accredited locator;
- a visual assessment of the existing surface of the site and surrounding area;
- locating borehole locations by approximate measurements from existing site features;
- the drilling of eight (8) boreholes (BH1 – BH5, BHP1 – BHP3) to depths of up to 3.0m;
- the driving of six (6) Dynamic Cone Penetrometer (DCP) probes at BH locations (BH1 – BH5, BHP3) to depths of up to 2.4m;
- recovery of two (2) undisturbed soil sample for laboratory testing;
- recovery of two (2) disturbed soil sample for laboratory testing.

Laboratory testing consisted of:

- two (2) Shrink Swell Index tests;
- two (2) California Bearing Ratio tests.

5 Subsurface Conditions

The subsurface soil conditions encountered at the site have been summarised into the following units:

UNIT 1 – FILL:

- Gravelly Silty SAND, brown, very dense
- Silty SAND, brown, dense
- Gravelly Clayey SAND, brown, dense
- Sandy CLAY, brown, stiff to very stiff

UNIT 2 – ROCK:

- Extremely Weathered SANDSTONE, pale grey/brown, sometimes brown-orange, inferred extremely low to low strength
- Extremely Weathered SANDSTONE, grey/mottled orange, inferred extremely low strength

UNIT 3 – RESIDUAL (INFERRED CLAY SEAM):

- Sandy CLAY, pale grey – pale green, very stiff
- CLAY, grey – green, very stiff

A summary of the soil unit depths encountered in each borehole are presented below in **Table 5.1**.

Table 5.1 - Summary of the soil unit depths encountered

Borehole	Depth (m)	Depth (m)		
		UNIT 1	UNIT 2	UNIT 3
BH1	3.0	0.0-0.5	0.5-3.0	-
BH2	3.0	0.0-0.4	0.4-3.0	-
BH3	3.0	0.0-0.5	0.5-3.0	-
BH4	3.0	0.0-0.5	0.5-3.0	-
BH5	3.0	0.0-0.5	0.5-3.0	-
BHP1	2.1	0.0-0.4	0.4-2.0	2.0-2.1
BHP2	2.0	0.0-0.2	0.2-2.0	-
BHP3	2.0	0.0-0.5	0.5-0.7*	0.7-2.0

*Possible cobble floater

Groundwater was not encountered at the site. Surface water was not encountered at the site.

Refer to **Annex A** for the borehole location plan and **Annex B** for detailed borehole logs.

6 Laboratory Test Results

Two (2) undisturbed samples and two (2) disturbed samples were recovered from the boreholes. The samples were transported to Valley Civilab's NATA accredited soil testing laboratory for analysis.

The laboratory test results are summarised below in **Table 6.1** and **Table 6.2** below.

Table 6.1 - Shrink Swell Index test results

Borehole	Depth (m)	Soil description	Iss (%)
BH2	0.6 – 0.9	Extremely Weathered SANDSTONE	3.2
BH5	0.2 – 0.4	FILL: Sandy CLAY	1.1

Table 6.2 – California Bearing Ratio test results

Borehole	Depth (m)	FMC (%)	OMC (%)	MDD (t/m^3)	CBR (%)	Swell (%)
BHP1	0.4 – 2.0	12.7	20.6	1.636	5.0	2.0
BHP3	0.7 – 2.0	24.1	27.6	1.484	2.0	5.0

Laboratory test results from the soil sample can be found in **Annex C.**

7 Site Classification

7.1 Background Information

Site classification is based off the characteristic surface movements encountered at the site due to the moisture variations within the soil profile. Characteristic surface movements are estimated in accordance with AS2870-2011 "Residential Slabs & Footings". Surface movement calculation take into consideration the depth of the soil profile layers, the soil reactivity and the soil suction depth.

The site classification based on characteristic surface movements are summarised below in **Table 7.1**.

Table 7.1 - Summary of AS2870-2011 characteristic surface movement & site classification

Characteristic surface movement (y_s) (mm)	Site classification AS2870-2011	Underlying soil / geology
0	Class A	SAND or ROCK site (non-reactive)
0 – 20mm	Class S	CLAY (slightly reactive)
20 – 40mm	Class M	CLAY (moderately reactive)
40 – 60mm	Class H1	CLAY (highly reactive)
60 – 75mm	Class H2	CLAY (highly reactive)
> 75mm	Class E	CLAY (extremely reactive)

Sites subjected to deep-seated moisture change are modified with the addition of "-D". As defined by AS2870-2011 other sites should be classified as a Class P (Problem) site. These sites include sites with:

- inadequate bearing capacity;
- expected excessive foundation settlement due to loading on the foundation;
- significant moisture variations;
- mine subsidence risk;
- slope stability risk;
- erosion issues;
- greater than 0.8m of fill for sand sites and greater than 0.4m for other sites (in general).

7.2 Site Classification

The proposed development should be designed in accordance with AS2870-2011 "Residential Slabs and Footings". Based on the visual inspection, dynamic cone penetrometer tests and soil profile shown above in **Section 5**, the site classification is summarised below in **Table 7.2**.

Table 7.2 - Site classification & characteristic surface movement (y_s)

Site classification	Site reactivity	Characteristic surface movement (y_s)
Class P	Class H2	60 – 75mm

The site was classified as a Class P due to abnormal deep-seated moisture issues and water movement due to a suspected leaking pipe infiltrating up to 20L/min and the presence of a large cut fill layer. Based on the laboratory analysis of the insitu extremely weathered sandstone, a site reactivity of Class H2 has been assigned to the Class P site.

Classification of the site has not taken into account the effects of abnormal moisture conditions. If the site undergoes any earthworks operations, the site shall be reclassified in accordance with AS2870-2011.

7.3 Abnormal Moisture Effects

Abnormal moisture conditions in the foundation can be caused by the following:

- leaking water services;
- prolonged periods of draught or heavy rainfall;
- trenches or other man made water courses;
- poor roof plumbing or obstruction to the roof plumbing system;
- poor rainfall runoff control;
- corroded gutters or downpipes.

Abnormal moisture conditions specified above can cause adverse effects to the development's foundation such as:

- erosion significantly effecting the lateral and founding support of the structure's footing system;
- saturation of the founding material which can cause a significant decrease in the strength of the founding material;
- shrinkage creating subsidence of the founding material and causing additional stresses within the building structure;
- swelling which creates an upward force in the footings which causes additional stresses within the building structure.

7.4 Effects from Trees

The existence of trees within or adjacent to the building footprint can cause significant soil movement due to the following:

- roots growing within the foundation and causing an upward force on footings;
- roots drawing in and absorbing the moisture below a footing system causing subsidence due to shrinkage of the soil volume.

The site should take into account the tree score effect in accordance with and designed to AS2870-2011. The site was found to have a "low" tree score effect and has been taken into consideration.

7.5 Footing Recommendations

The site is suitable for the use of both shallow and deep footing systems dependant on the development and structural bearing pressure required. Refer to **Section 7.5.1** and **Section 7.5.2** below for bearing pressure parameters.

7.5.1 Shallow Footings

A maximum allowable bearing capacity of 150kPa is recommended at the site for shallow level footings founded within extremely weathered sandstone, below fill soils or other deleterious material.

If weathered rock is exposed at the base of the excavation of footings it is recommended that the rest of the footing system be piered / taken to bedrock to reduce the risk of differential settlement.

The footing systems must be designed by a structural engineer in accordance with engineering principles and AS 2870 - 2011 "Residential Slabs and Footings" for no less than the minimum requirements for the site classification and soil reactivity given as per **Section 7.2** above.

7.5.2 Deep Footings

The site is suitable for bored or screw piers with an approximate allowable end bearing pressures and shaft adhesion estimated below in **Table 7.3**.

Table 7.3 - Summary of allowable end bearing pressures and shaft adhesion for piers

Soil strata	Typical depth encountered (m)	Allowable shaft adhesion (kPa)	Allowable end bearing pressure (kPa)
Extremely Weathered SANDSTONE	0.5 – 1.0	5	150
Extremely Weathered SANDSTONE	>1.0	10	300

Notes:

(1) AS2159 requires that the contribution of the pile shaft from ground surface to 1.5 times the piles diameter or 1m (whichever greater) shall be ignored;

(2) Assumes minimum embedment depth of 1 x pile diameter into the founding stratum and a total pile depth of at least 5 x pile diameters;

(3) The depth of the founding stratum may vary across the building area;

(4) Assumes a clean socket with roughness category of R2 or better as defined by Walker and Pells (1998);

(5) Allowable bearing capacities are based on a limiting settlement of 1% of the pile diameter and shaft adhesion values include a FOS of 2.5;

(6) It should also be considered that for piles designed to resist uplift (tension) loads we recommend a shaft adhesion value of 50% of the tabulated value to be adopted.

The bearing pressures presented above have been correlated from Dynamic Cone Penetration (DCP) tests and should be considered as estimates only. Bearing pressures of all exposed foundation areas should be confirmed at the time of earthworks and prior to concrete pour by a qualified Geotechnical Engineer.

7.6 Footing Construction

All footings should be excavated, cleaned and inspected by a qualified Geotechnical Engineer. Concrete should be poured with minimal delay. If delays in pouring mass concrete footings is anticipated, a concrete blinding layer should be provided to protect the foundation material.

Should softening of exposed foundation occur, the effected material should be over excavated and backfilled to design footing level by engineered fill or mass concrete.

7.7 Ongoing Footing Maintenance

Foundations including effective site drainage are required to be maintained over the life of the development to ensure footing performance. Refer to **Annex D** for the following:

- BTF 18-2011- CSIRO - Foundation Maintenance and Footing Performance – A Homeowner's Guide.

8 Pavement Thickness Design

8.1 Standards and Specifications Adopted for Design

Pavement design was completed in accordance with:

- Muswellbrook Shire Council Engineering Guidelines;
- APRG21 "A Guide to the Design of New Pavements for Light Traffic", 2006;
- Austroads Design Guide 2017.

Adopted design CBR:

Based on laboratory test results as described in **Section 6,** sub-grade soaked CBR values adopted were as follows:

- 2.0% for natural clay subgrades.

Due to the lower CBR and high swell percentage in the CBR tests, a select fill layer of 300mm is required for both the flexible and rigid pavement.

Adopted Traffic Loadings:

As per Austroads Design Guide 2017 the following traffic loadings were adopted for design:

Flexible Pavements:

- Local Road – Primary or Secondary 5 x 10^4 Design ESA's.

Rigid Pavements:

- Local Road – Primary or Secondary 5 x 10^4 Design ESA's.

Adopted Design Life:

As per Muswellbrook Shire Council Engineering Guidelines the following design life is was adopted for design:

Flexible Pavements:

- 25 year design life

Rigid Pavements:

- 40 year design life

Recommended Pavement Material Specifications to be adopted for construction are as follows:

Lightly loaded pavements:

- <1 x 10^6 ESA traffic: ARRB SR 41 / APRG21

Contractor should also confirm Council material specification requirements and seek written approval of proposed materials or mix design prior to supplying the proposed material.

8.2 Flexible Pavement Thickness Design

The recommended flexible pavement thickness, pavement material and compaction specification are presented in **Table 8.1** and **Table 8.2** below.

Table 8.1 – Summary of flexible pavement minimum thickness design

Pavement	Depth (mm)
AC10 Wearing course (to Council spec)	30
Primer seal	(10)
Base course (DGB20 or equivalent)	100
Subbase (DGS40 or equivalent)	200
Select Fill Subgrade (min CBR 15%, max CBR swell 1.5%)	300
Total thickness (mm)	630
Subgrade CBR	2.0%

*a construction tolerance of 10mm should be allowed for above the minimum thickness

Table 8.2 – Flexible pavement compaction criteria

Pavement	Compaction criteria
AC10 wearing course (to Council spec)	NA
Primer seal	NA
Base course (DGB20 or equivalent)	98% Modified (AS 1289.5.2.1)
Subbase (DGS40 or equivalent)	95% Modified (AS 1289.5.2.1)
Select Fill Subgrade (min CBR 15%, max CBR swell 1.5%)	100% Standard (AS 1289.5.1.1)
Subgrade	100% Standard (AS 1289.5.1.1)

8.3 Rigid Pavement Thickness Design

The recommended rigid pavement thickness, pavement material and compaction specifications are presented in **Table 8.3** and **Table 8.4** below.

Table 8.3 – Summary of rigid pavement minimum thickness design

Pavement	Depth (mm)
Base course (32 MPa concrete with SL62 reinforcement)	125
Subbase (crushed rock subbase min soaked CBR 80%, max PI = 6%, or equivalent)	150
Select Fill Subgrade (min CBR 15%, max CBR swell 1.5%)	300
Total thickness (mm)	575
Subgrade CBR	2.0%

A construction tolerance of 10mm should be allowed for above the minimum thickness.

Table 8.4 – Rigid pavement compaction criteria

Pavement	Compaction Criteria
Base course (32 MPa concrete with SL62 reinforcement)	NA
Subbase (crushed rock subbase min soaked CBR 80%, max PI = 6%, or equivalent)	98% Modified (AS 1289.5.2.1)
Select Fill Subgrade (min CBR 15%, max CBR swell 1.5%)	100% Standard (AS 1289.5.1.1)
Subgrade	100% Standard (AS 1289.5.1.1)

8.4 Pavement Drainage and Pavement Interfaces

The pavement thickness is dependent on the provision of adequate surface and subsurface drainage as specified by a qualified civil or pavement engineer. It is recommended that an intra pavement subsoil drain be installed at the interfaces between pavement types.

Where new pavement construction abuts existing pavement, care shall be taken to create a clean vertical construction joint along with a benched transition zone. The transition zone should be across a 0.5m distance and benched to tie in with existing profiles.

It is recommended that all construction joints should be located outside of wheel paths, and where practical should be located in the centre of the lanes or along edge lines.

It should be noted that when variable pavements are abutted then the potential for localised failure is greater. Care should be exercised in the placement and compaction of the subgrade and pavements in this area to maximise the performance of the pavement.

Consideration should also be given to sealing any cracks that may develop between existing and new pavements, benching to tie in pavements. The use of a strain relieving membrane at the interface may be appropriate in some cases.

8.5 Recommendations During Construction

Following excavation, site visits should be made by an experienced geotechnical engineer to inspect exposed subgrade and pavement conditions.

9 Earthworks

Any earthworks conducted at the site should be controlled in accordance with AS3798-2007 and guided by the sections below.

9.1 Site Preparation

It is recommended that the following be undertaken where controlled filling is to be undertaken:

- remove all topsoil, root effected zones, material assessed as unsuitable and other deleterious zones (noting the stripped soil is not considered suitable as engineered fill but may be considered for landscaping purposes);
- exposed suitable foundation areas should then be ripped 300mm and re-compacted to 100% standard maximum dry density (SMDD) at ±2% of optimum moisture content (OMC);
- the foundation area should then be proof rolled under the supervision of an experienced geotechnical consultant and any soft spots / heaving areas identified. If identified these areas should be over excavated under the direction of the geotechnical consultant and replaced with engineered fill.

9.2 Controlled Fill

Any earthworks conducted at the site should be controlled in accordance with AS3798-2007. Based on the soil profile shown above in **Section 5**, visual observations and in-situ Dynamic Cone Penetrometer (DCP) testing, the material encountered at the site is deemed suitable for controlled fill. If the sub-surface conditions encountered at the site during construction differ from those discussed in **Section 5** VC should be consulted to determine if the material is suitable for controlled fill. Similarly, any won material imported from external sites should consult VC to determine if the fill is suitable for controlled fill.

9.2.1 Compaction Criteria

Fill material should be compacted in near-horizontal uniform layers with a maximum compacted thickness of 300mm. It is important to ensure layers are placed in such a way that provides adequate drainage and prevent ponding during construction. The thickness of fill placed during construction should take into account the compaction equipment available.

The moisture of the fill material should be controlled within a specified range of OMC in order to achieve the compaction criteria. In general, soils should be compacted within a moisture range of ±2% of OMC.

For commercial developments the following compaction criteria applies:

- cohesive soils – 98% Minimum Density Ratio (standard compactive effort);
- non-cohesive soils – 75% Minimum Density Index.

A suitably qualified geotechnical professional must be consulted to determine that the specified compaction has been achieved.

9.3 Excavations Conditions

Excavations within the fill, natural soils and extremely low to very low strength rock that was encountered during the investigations is thought to be achievable with conventional earthmoving equipment such excavators, backhoes and dozers. Very low to low strength rock may also require ripper tynes attached to excavator arms or dozers for effective excavation. Rock of low strength or greater may possibly require a 12 tonne excavator (or greater) with rock ripper or hydraulic rock hammer, depending on the degree of strength and fracturing in the rock. Excavations in rock would require minimising vibration to neighbouring residences and structures, else other methods may be required (for example pre-drilling the rock, rock sawing using diamond wire saw equipment, grinding or engaging a rock breaking and removal specialist).

Bored piers could be drilled using a 12 tonne excavator or greater with an attached auger. It is recommended that the bottom of bored pier holes should be cleaned out with the excavator fitted with a bucket attachment.

Excavations should be conducted in accordance with The Safe Work Australia "Excavation Work" Code of Practice March 2015.

https://www.safeworkaustralia.gov.au/system/files/documents/1705/mcop-excavation-work-v3.pdf

Excavations can seriously affect the stability of adjacent buildings. Careful consideration must be taken in order to prevent the collapse of partial collapse of adjacent structures.

Construction material and equipment should not be placed within the zone of influence of an excavation unless a suitably qualified geotechnical engineer has designed ground support structures to withstand these loads. The zone of influence is dependent on the material encountered at the site and is the area in which possible failures can occur.

Refer to council development guidelines before conducting any excavation works.

9.4 Batter Slopes

9.4.1 Temporary Batter Slopes

Temporary excavations in natural material or extremely low to very low strength rock may be near vertical provided that:

- the depth does not exceed 1.5m;
- they are open for no more than 24hrs;
- no surcharge loading is applied to the surface within 2.5m of the excavation;
- no one enters the excavation e.g. workers.

All other temporary batter slopes during construction should not exceed 1H:1V in soils and 1H:4V in rock and benched, planned and managed in accordance with Safe Work Australia Excavation Work Code of Practice March 2015.

9.4.2 Permanent Batter Slopes

Recommended permanent batter slopes in general are as follows:

- 2H:1V in cohesive soils (e.g. clays) or extremely to very low weathered rock else retained by an engineered retaining wall;
- 3H:1V in non-cohesive soils (e.g. sands) else retained by an engineered retaining wall;
- 1H:1V in low strength rock or greater (permanent rock batters may be steepened to near vertical – subject to inspection by a qualified geotechnical engineer).

9.5 Retaining Walls

In general, design of retaining walls requires determination of the earth pressure coefficient. This depends on the nature of the wall such that:

- where walls are not propped and some rotation of the wall away from the support soil is permissible, the active earth pressure coefficient (K_a) may be taken as 0.35 for fill and residual soil or 0.3 for extremely low to low strength rock;
- where the walls can move towards the support soil either during or after construction, passive earth pressures would apply. A Passive Earth Pressure coefficient (K_p) may be taken as 2.5 for: fill, residual soil or extremely low to low strength rock;

- where the walls cannot move towards or away from the support soil then the design should be undertaken using an at rest coefficient (K_o) of 0.5.

Parameters shown assume horizontal and free draining granular backfill behind the retaining wall.

For retaining walls surcharge loads from uphill structures should be considered and it is recommended that a minimum surcharge of 5kPa be adopted for this purpose. Retaining walls in excess of 1m high should be designed by a qualified structural engineer, with adequate subsurface and surface drainage provided behind the retaining wall.

10 Report Limitations

The geotechnical data and recommendations within the above report are subjected to the specific sampling and testing that was undertaken at the time of the current investigation. It should be noted that underlying site soil conditions can vary significantly across a site and the environment can change overtime. If conditions encountered during construction are different to those contained in this report Valley Civilab Pty Ltd should be contacted immediately for site reassessment.

If you have any further questions about this report, please contact the undersigned.

For and on behalf of

Valley Civilab Pty Ltd

Reported by:	Reviewed by:
Matt Bobby Graduate Geotechnical Engineer Bachelor of Engineering (Civil)	**Matthew Lay** Senior Geotechnical Engineer Bachelor of Engineering (Civil)

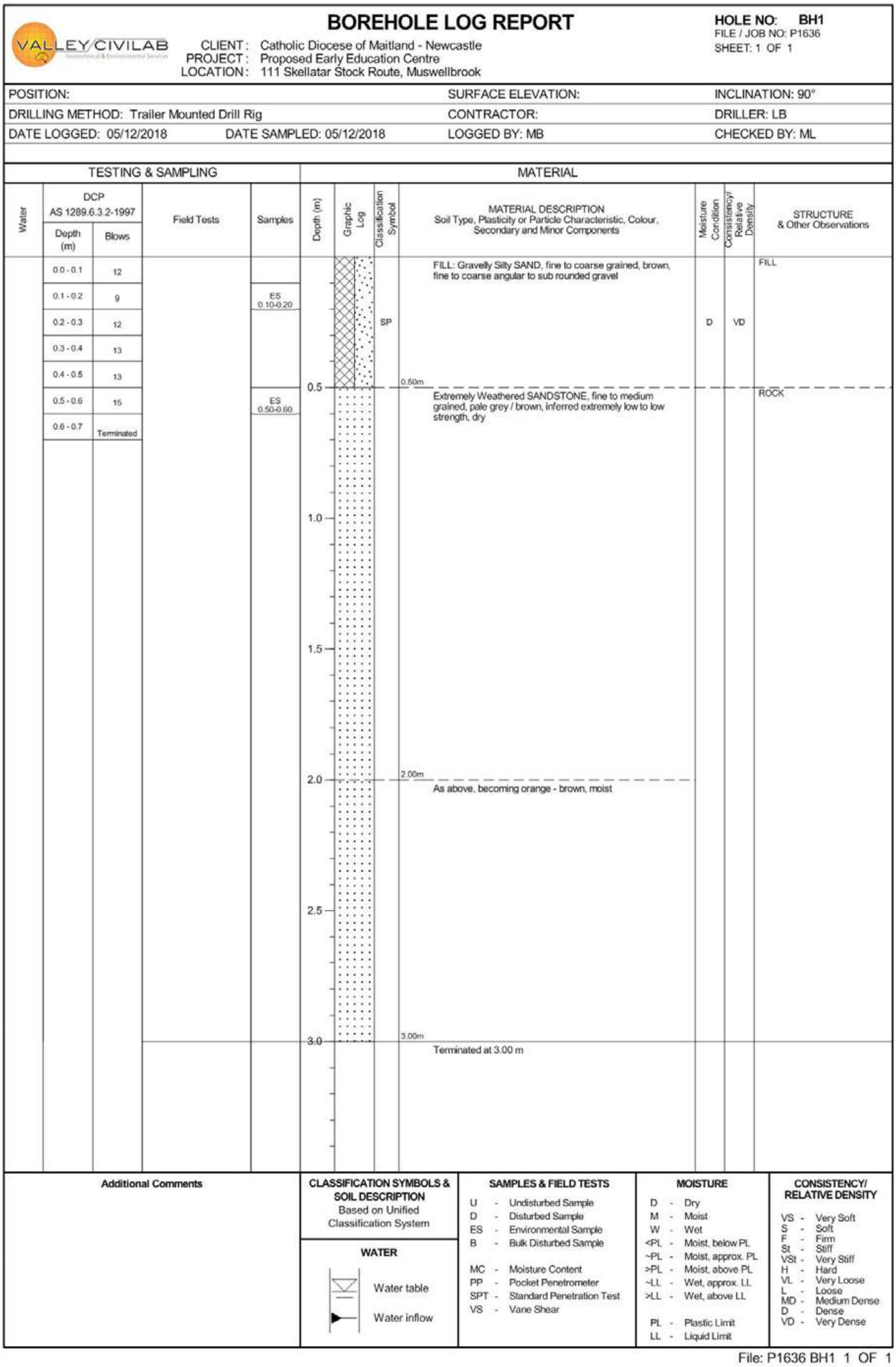
VALLEY CIVILAB
Geotechnical & Environmental Services

Annex A

Figure 1 – Plan of the development at 111 Skellatar Stock Route, Muswellbrook showing the approximate location of the Geotechnical boreholes.

VALLEY CIVILAB
Geotechnical & Environmental Services

Annex B



VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH1
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP AS 1289.6.3.2-1997 Blows	Field Tests	Samples
	0.0 - 0.1	12		
	0.1 - 0.2	9		ES 0.10-0.20
	0.2 - 0.3	12		
	0.3 - 0.4	13		
	0.4 - 0.5	13		
	0.5 - 0.6	15		ES 0.50-0.60
	0.6 - 0.7	Terminated		

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
0.0	SP	FILL: Gravelly Silty SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	VD	FILL
0.50m		Extremely Weathered SANDSTONE, fine to medium grained, pale grey / brown, inferred extremely low to low strength, dry			ROCK
2.00m		As above, becoming orange - brown, moist			
3.00m		Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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File: P1636 BH1 1 OF 1

BOREHOLE LOG REPORT

VALLEY CIVILAB
Geotechnical & Environmental Services

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH2
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	DCP AS 1289.6.3.2-1997 Depth (m)	Blows	Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	0.0 - 0.1	7					SM	FILL: Silty SAND, fine to medium grained, brown			FILL
	0.1 - 0.2	11		ES 0.10-0.20	0.10m		SP	FILL: Gravelly Silty SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	D to VD	
	0.2 - 0.3	8									
	0.3 - 0.4	12									
	0.4 - 0.5	6/40mm Refusal			0.40m			Extremely Weathered SANDSTONE, fine to medium grained, pale grey / brown, inferred extremely low to low strength, dry			ROCK
				ES 0.50-0.60	0.5						
				U 0.60-0.90							
					1.0 (1.00m)			As above, becoming pale grey			
					1.20m			As above, becoming brown			
					1.5						
					2.0 (2.00m)			As above, becoming grey / mottled orange, minimal silt and clay content, inferred extremely low strength, moist			
					2.5 (2.50m)			As above, becoming inferred extremely low to low strength, dry			
					2.80m			As above, becoming pale grey / brown			
					3.0 (3.00m)			Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
▽ Water table
▶ Water inflow

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MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

File: P1636 BH2 1 OF 1

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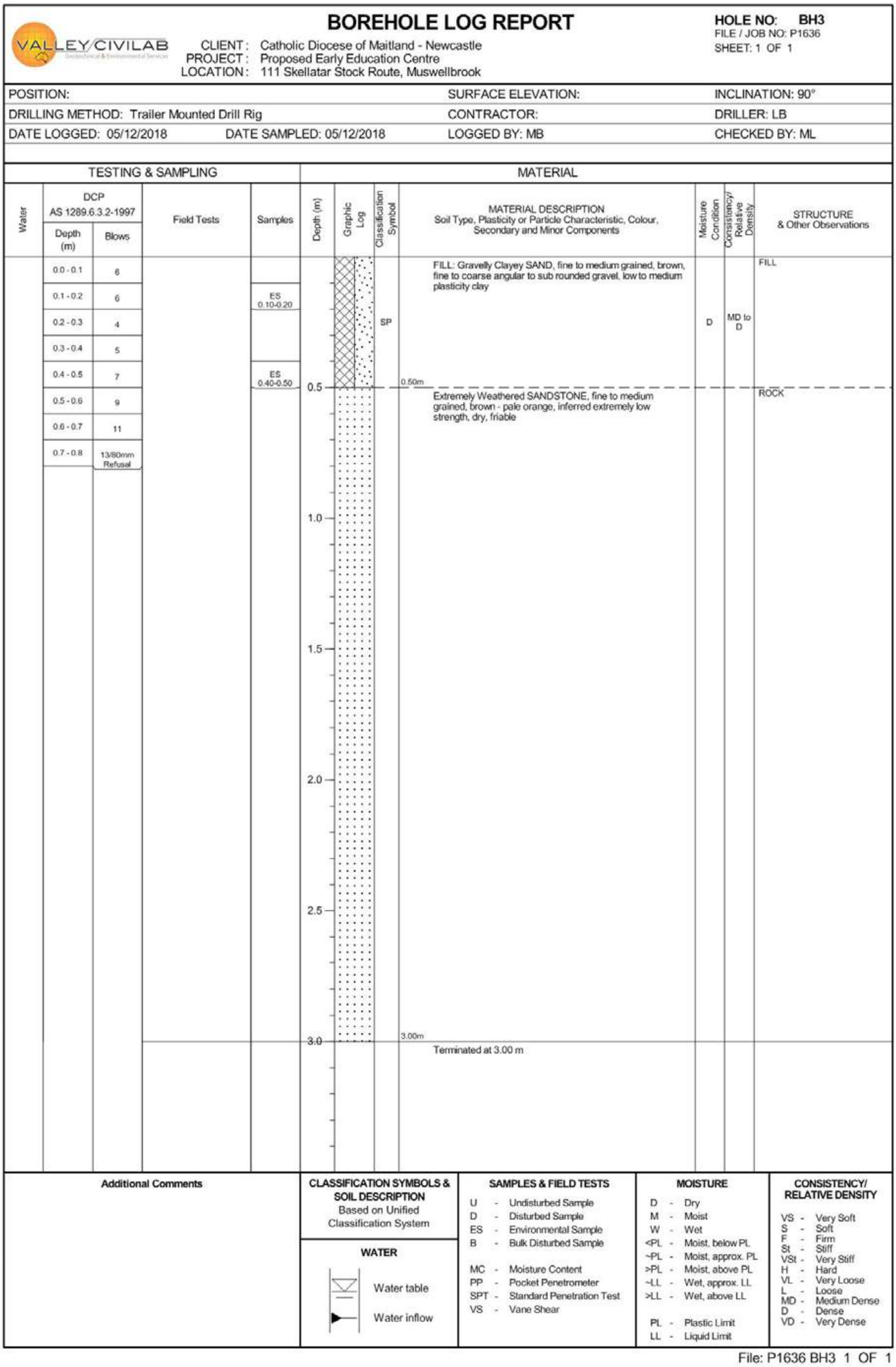

VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH3
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP Blows	Field Tests	Samples
	0.0 - 0.1	6		
	0.1 - 0.2	6		ES 0.10-0.20
	0.2 - 0.3	4		
	0.3 - 0.4	5		
	0.4 - 0.5	7		ES 0.40-0.50
	0.5 - 0.6	9		
	0.6 - 0.7	11		
	0.7 - 0.8	13/80mm Refusal		

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
0.0 – 0.50m	SP	FILL: Gravelly Clayey SAND, fine to medium grained, brown, fine to coarse angular to sub rounded gravel, low to medium plasticity clay	D	MD to D	FILL
0.50m – 3.00m		Extremely Weathered SANDSTONE, fine to medium grained, brown - pale orange, inferred extremely low strength, dry, friable			ROCK
3.00m		Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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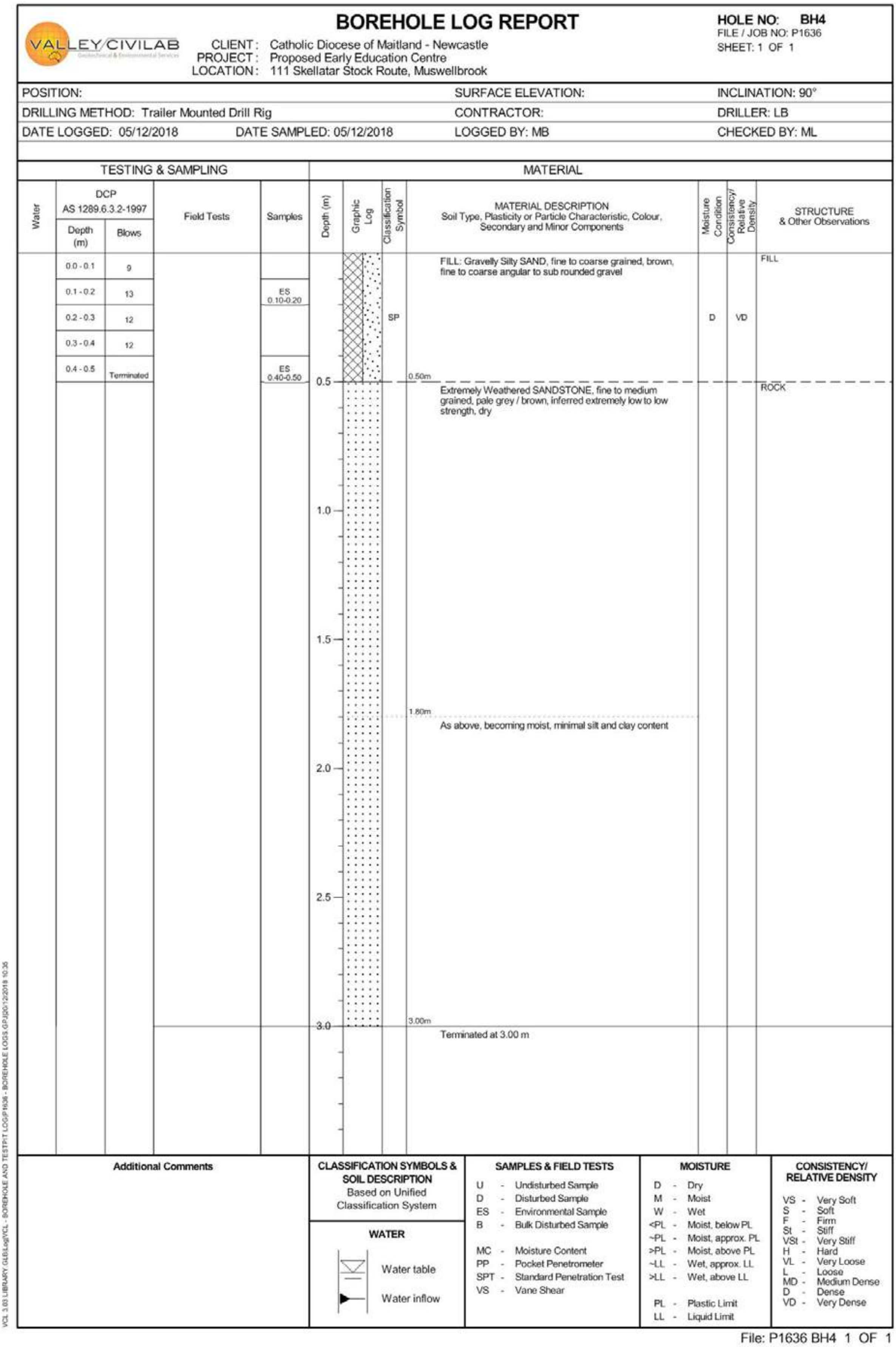

BOREHOLE LOG REPORT

VALLEY/CIVILAB
Geotechnical & Environmental Services

CLIENT : Catholic Diocese of Maitland - Newcastle
PROJECT : Proposed Early Education Centre
LOCATION : 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH4
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	DCP AS 1289.6.3.2-1997		Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	Depth (m)	Blows									
	0.0 - 0.1	9						FILL: Gravelly Silty SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel			FILL
	0.1 - 0.2	13		ES 0.10-0.20							
	0.2 - 0.3	12					SP		D	VD	
	0.3 - 0.4	12									
	0.4 - 0.5	Terminated		ES 0.40-0.50	0.5			0.50m Extremely Weathered SANDSTONE, fine to medium grained, pale grey / brown, inferred extremely low to low strength, dry			ROCK
					1.0						
					1.5						
								1.80m As above, becoming moist, minimal silt and clay content			
					2.0						
					2.5						
					3.0			3.00m Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER

SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE

D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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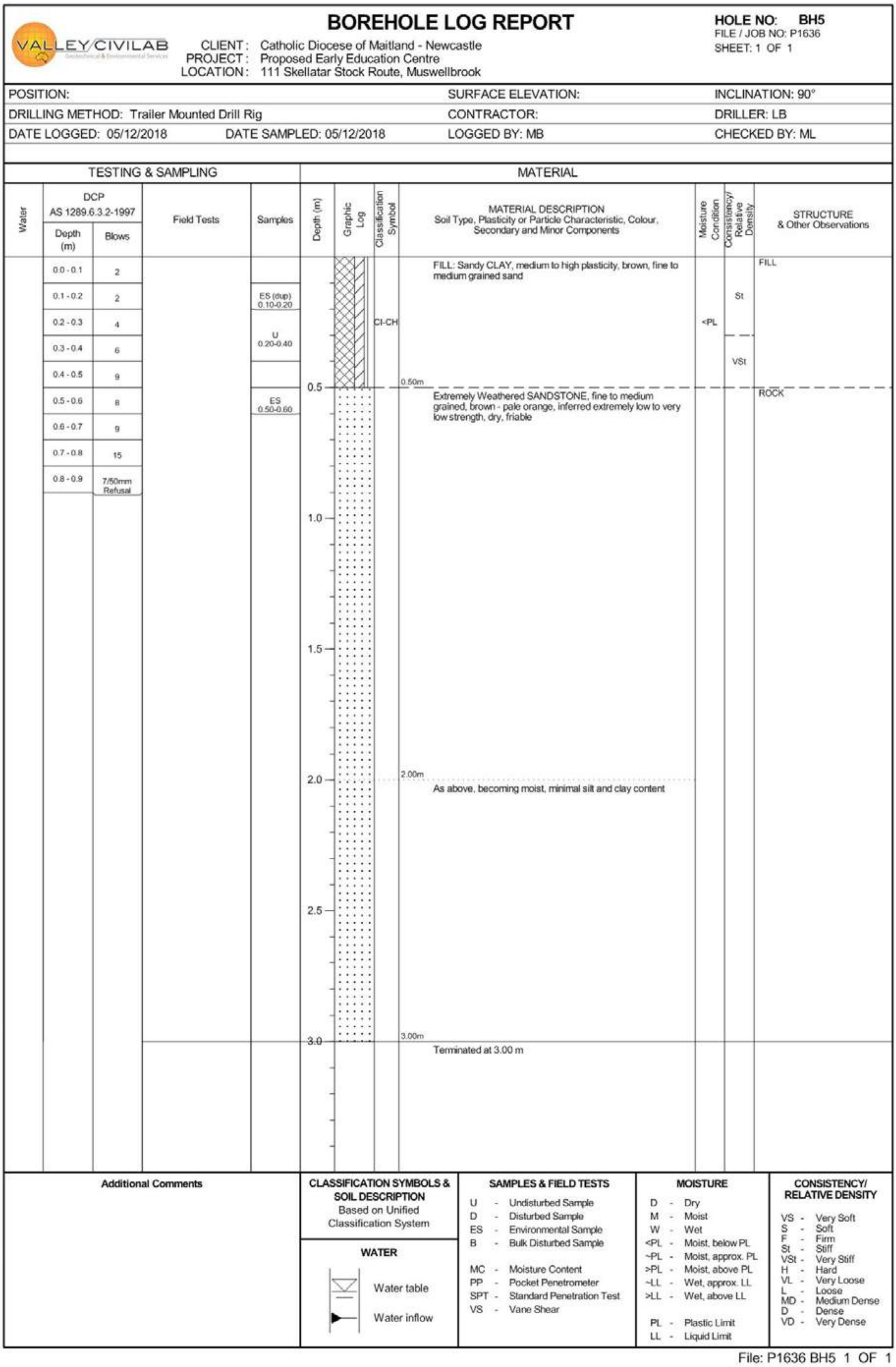

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BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BH5
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

DCP AS 1289.6.3.2-1997 Depth (m)	Blows	Samples
0.0 - 0.1	2	
0.1 - 0.2	2	ES (dup) 0.10-0.20
0.2 - 0.3	4	U 0.20-0.40
0.3 - 0.4	6	
0.4 - 0.5	9	
0.5 - 0.6	8	ES 0.50-0.60
0.6 - 0.7	9	
0.7 - 0.8	15	
0.8 - 0.9	7/50mm Refusal	

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
0.0	CI-CH	FILL: Sandy CLAY, medium to high plasticity, brown, fine to medium grained sand	<PL	St VSt	FILL
0.50m		Extremely Weathered SANDSTONE, fine to medium grained, brown - pale orange, inferred extremely low to very low strength, dry, friable			ROCK
2.00m		As above, becoming moist, minimal silt and clay content			
3.00m		Terminated at 3.00 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
Water table
Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE
D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

File: P1636 BH5 1 OF 1

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VALLEY/CIVILAB

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BHP1
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	Penetrometer Testing Depth (m)	Penetrometer Testing Blows	Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
							CI-CH	FILL: Sandy CLAY, medium to high plasticity, brown, fine to coarse grained sand	<PL	St	FILL
				B 0.40-2.00	0.40m 0.5 1.0 1.5			Extremely Weathered SANDSTONE, fine to medium grained, pale grey, inferred very low to low strength, dry			ROCK
					2.00m 2.0		CI-CH	CLAY, medium to high plasticity, pale grey - pale green, trace fine to medium grained sand	<PL	VSt	RESIDUAL SOIL
					2.10m 2.5 3.0			Terminated at 2.10 m			

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER

▽ Water table
► Water inflow

SAMPLES & FIELD TESTS

U - Undisturbed Sample
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ES - Environmental Sample
B - Bulk Disturbed Sample

MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE

D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY

VS - Very Soft
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F - Firm
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H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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File: P1636 BHP1 1 OF 1

VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BHP2
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING					MATERIAL						
Water	Penetrometer Testing		Field Tests	Samples	Depth (m)	Graphic Log	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
	Depth (m)	Blows									
							CI-CH	FILL: Sandy CLAY, medium to high plasticity, brown, fine to coarse grained sand	<PL	St	FILL
					0.20m			Extremely Weathered SANDSTONE, fine to medium grained, pale grey, inferred very low to low strength, dry			ROCK
					0.5						
					1.0						
					1.5 1.50m			As above, becoming extremely low stremgth, moist			
					2.0 2.00m			Terminated at 2.00 m			
					2.5						
					3.0						

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER

- Water table
- Water inflow

SAMPLES & FIELD TESTS

U - Undisturbed Sample
D - Disturbed Sample
ES - Environmental Sample
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MC - Moisture Content
PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

MOISTURE

D - Dry
M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY

VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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File: P1636 BHP2 1 OF 1

VALLEY/CIVILAB
Geotechnical & Environmental Services

BOREHOLE LOG REPORT

CLIENT: Catholic Diocese of Maitland - Newcastle
PROJECT: Proposed Early Education Centre
LOCATION: 111 Skellatar Stock Route, Muswellbrook

HOLE NO: BHP3
FILE / JOB NO: P1636
SHEET: 1 OF 1

POSITION:	SURFACE ELEVATION:	INCLINATION: 90°
DRILLING METHOD: Trailer Mounted Drill Rig	CONTRACTOR:	DRILLER: LB
DATE LOGGED: 05/12/2018 DATE SAMPLED: 05/12/2018	LOGGED BY: MB	CHECKED BY: ML

TESTING & SAMPLING

Water	DCP AS 1289.6.3.2-1997 Depth (m)	DCP AS 1289.6.3.2-1997 Blows	Field Tests	Samples
	0.0 - 0.1	7		
	0.1 - 0.2	11		
	0.2 - 0.3	18		
	0.3 - 0.4	17		
	0.4 - 0.5	9		
	0.5 - 0.6	9		
	0.6 - 0.7	8		
	0.7 - 0.8	8		B 0.70-2.00
	0.8 - 0.9	10		
	0.9 - 1.0	7		
	1.0 - 1.1	4		
	1.1 - 1.2	5		
	1.2 - 1.3	5		
	1.3 - 1.4	3		
	1.4 - 1.5	4		
	1.5 - 1.6	4		
	1.6 - 1.7	5		
	1.7 - 1.8	5		
	1.8 - 1.9	5		
	1.9 - 2.0	5		
	2.0 - 2.1	5		
	2.1 - 2.2	6		
	2.2 - 2.3	4		
	2.3 - 2.4	Terminated		

MATERIAL

Depth (m)	Classification Symbol	MATERIAL DESCRIPTION Soil Type, Plasticity or Particle Characteristic, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	STRUCTURE & Other Observations
0.00m	SP	FILL: Gravelly SAND, fine to coarse grained, brown, fine to coarse angular to sub rounded gravel	D	VD	FILL
0.30m	CL-CI	FILL: Sandy CLAY, low to medium plasticity, dark grey, fine to coarse grained sand	<PL	VSt	
0.50m		Weathered SANDSTONE, fine to medium grained, pale grey, inferred extremly low to very low strength, dry			ROCK
0.70m	CH	CLAY, high plasticity, grey - green, trace fine to medium grained sand	>PL	VSt	RESIDUAL SOIL
2.00m		Terminated at 2.00 m			

Depth (m) scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0

Additional Comments

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

WATER
▽ Water table
► Water inflow

SAMPLES & FIELD TESTS
U - Undisturbed Sample
D - Disturbed Sample
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PP - Pocket Penetrometer
SPT - Standard Penetration Test
VS - Vane Shear

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M - Moist
W - Wet
<PL - Moist, below PL
~PL - Moist, approx. PL
>PL - Moist, above PL
~LL - Wet, approx. LL
>LL - Wet, above LL

PL - Plastic Limit
LL - Liquid Limit

CONSISTENCY/ RELATIVE DENSITY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

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File: P1636 BHP3 1 OF 1

VALLEY CIVILAB
Geotechnical & Environmental Services

Annex C

VALLEY CIVILAB
Geotechnical & Environmental Services

Shrink Swell Index Report

Client :	**Catholic Diocese of Maitland / Newcastle**	Report Number:	**P1636 - 1/1**
Address :	**PO Box 756, Newcastle, NSW, 2300**	Report Date :	**11/12/2018**
Project Name :	**Geotechnical & Environmental Investigation - Muswellbroo**	Order Number :	
Project Number :	**P1636**	Test Method :	**AS1289.7.1.1**
Location:	**111 Skellatar Stock Route , Muswellbrook**	**Page 1 of 1**	

Sample Number :	S18-5844	S18-5845		
Test Number :	-	-		
Sampling Method :	M141 VC Push Tube (Non-NAT	M141 VC Push Tube (Non-NAT		
Sampled By :	Lonnie Broekman	Lonnie Broekman		
Date Sampled :	7/12/2018	7/12/2018		
Date Tested :	5/12/2018	5/12/2018		
Material Type :	-	-		
Material Source :	-	-		
Sample Location :	Proposed early learning centre Sample Taken @ BH-2 0.6-0.9m	Proposed early learning centre Sample Taken @ BH-5 0.2-0.4m		
Inert Material Estimate (%) :	15	20		
PP before (kPa) :	600	600		
PP after (kPa) :	150	200		
Shrinkage Moisture Content (%) :	16.6	15.3		
Shrinkage (%) :	**1.9**	**1.4**		
Swell Moisture Content Before (%) :	17.5	14.6		
Swell Moisture Content After (%) :	30.2	22.8		
Swell (%) :	**7.7**	**1.2**		
Unit Weight (t/m³) :	-	-		
Shrink Swell Index Iss (%) :	**3.2**	**1.1**		
Visual Classification :	Refer To Borelogs	Refer To Borelogs		
Cracking :	Nil	Nil		
Crumbling :	Nil	Nil		
Remarks :				

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WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

APPROVED SIGNATORY

Lonnie Broekman - Technician
NATA Accreditation Number
14975

Document Code RF161-6

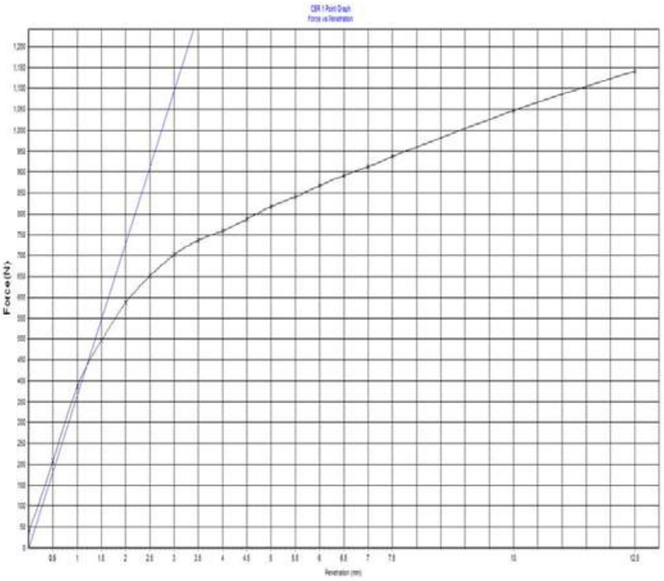
VALLEY CIVILAB
Geotechnical & Environmental Services

California Bearing Ratio Report (1 Point)

Client :	**Catholic Diocese of Maitland / Newcastle**	Report Number:	**P1636 - 2/1**
Address :	**PO Box 756, Newcastle, NSW, 2300**	Report Date :	**20/12/2018**
Project Number :	**P1636**	Order Number :	
Project Name :	**Geotechnical & Environmental Investigation - Muswellbro**	Test Method :	**AS1289.6.1.1**
Location:	**111 Skellatar Stock Route , Muswellbrook**	**Page 1 of 2**	

Sample Number :	S18-5809	SAMPLE LOCATION
Date Sampled :	5/12/2018	St Nicholas Early education centre
Date Tested :	17/12/2018	111 shellator stock route
Sampled By :	Lonnie Broekman	Muswellbrook
Sampling Method :	AS1289.1.2.1	BHP1 : 0.4-2.0
Material Source :	200mm flight augar	Lot Number :
Material Type :	existing	Test Number :
Remarks :		

Moisture Method :	AS1289.2.1.1
Maximum Dry Density (t/m³) :	1.636
Optimum Moisture Content (%) :	20.6
Compactive Effort :	Standard
Nominated Percentage of MDD :	100
Nominated Percentage of OMC :	100
Achieved Percentage of MDD :	100
Achieved Percentage of OMC :	98.0
Dry Density Before Soak (t/m³) :	1.643
Dry Density After Soak (t/m³) :	1.61
Moisture Content Before Soak (%) :	20.1
Moisture Content After Soak (%) :	23.6
Density Ratio After Soak (%) :	98
Field Moisture Content (%) :	12.7
Top Moisture Content - After Penetration (%) :	27.1
Total Moisture Content - After Penetration (%) :	23.1
Soak Condition :	Soaked
Soak Period (days) :	4
Swell (%) :	2.0



CBR Surcharge (kg) :	4.5	CBR 2.5mm (%) :	5
Oversize (%) :		CBR 5.0mm (%) :	**4**
Oversize Material Replaced (%) :		**CBR Value (%) :**	**5**

Site Selection :	
Soil Description :	

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APPROVED SIGNATORY

JWyatt

James Wyatt - Technician - Quarry Materials
NATA Accreditation Number :
14975

Document Code RF39-10

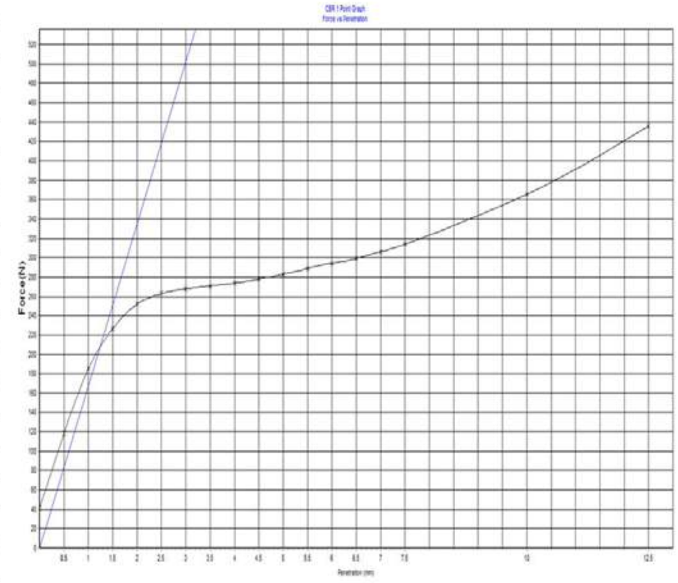
VALLEY/CIVILAB
Geotechnical & Environmental Services

California Bearing Ratio Report (1 Point)

Client :	**Catholic Diocese of Maitland / Newcastle**	Report Number:	**P1636 - 2/1**
Address :	**PO Box 756, Newcastle, NSW, 2300**	Report Date :	**20/12/2018**
Project Number :	**P1636**	Order Number :	
Project Name :	**Geotechnical & Environmental Investigation - Muswellbro**	Test Method :	**AS1289.6.1.1**
Location:	**111 Skellatar Stock Route , Muswellbrook**		**Page 2 of 2**

Sample Number :	S18-5810	SAMPLE LOCATION
Date Sampled :	5/12/2018	St Nicholas Early education centre
Date Tested :	17/12/2018	111 shellator stock route
Sampled By :	Lonnie Broekman	Muswellbrook
Sampling Method :	AS1289.1.2.1	BHP3 : 0.7 - 2.0
Material Source :	200mm flight augar	Lot Number :
Material Type :	existing	Test Number :
Remarks :		

Moisture Method :	AS1289.2.1.1
Maximum Dry Density (t/m³) :	1.484
Optimum Moisture Content (%) :	27.6
Compactive Effort :	Standard
Nominated Percentage of MDD :	100
Nominated Percentage of OMC :	100
Achieved Percentage of MDD :	100
Achieved Percentage of OMC :	100.0
Dry Density Before Soak (t/m³) :	1.487
Dry Density After Soak (t/m³) :	1.419
Moisture Content Before Soak (%) :	27.6
Moisture Content After Soak (%) :	32.5
Density Ratio After Soak (%) :	96
Field Moisture Content (%) :	24.1
Top Moisture Content - After Penetration (%) :	47.1
Total Moisture Content - After Penetration (%) :	27.6
Soak Condition :	Soaked
Soak Period (days) :	4
Swell (%) :	5.0



CBR Surcharge (kg) :	4.5	CBR 2.5mm (%) :	2
Oversize (%) :	0	CBR 5.0mm (%) :	**1.5**
Oversize Material Replaced (%) :		**CBR Value (%) :**	**2**

Site Selection :	
Soil Description :	sandy GRAVEL

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James Wyatt - Technician - Quarry Materials
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Document Code RF39-10

VALLEY CIVILAB
Geotechnical & Environmental Services

Annex D

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

PUBLISHING
BTF 18-2011
replaces
Information
Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870-2011, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume, particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.

In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes

Notes

1. Where controlled fill has been used, the site may be classified A to E according to the type of fill used.
2. Filled sites. Class P is used for sites which include soft fills, such as clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soil subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.
3. Where deep-seated moisture changes exist on sites at depths of 3 m or greater, further classification is needed for Classes M to E (M-D, H1-D, H2-D and E-D).

Tree root growth

Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation

Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay

Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Trees can cause shrinkage and damage

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Movement caused by tree roots

In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself

Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures

Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures

Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation causes a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures

Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem. Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870-2011.

AS 2870-2011 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/Cure

Plumbing

Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage

In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

Protection of the building perimeter

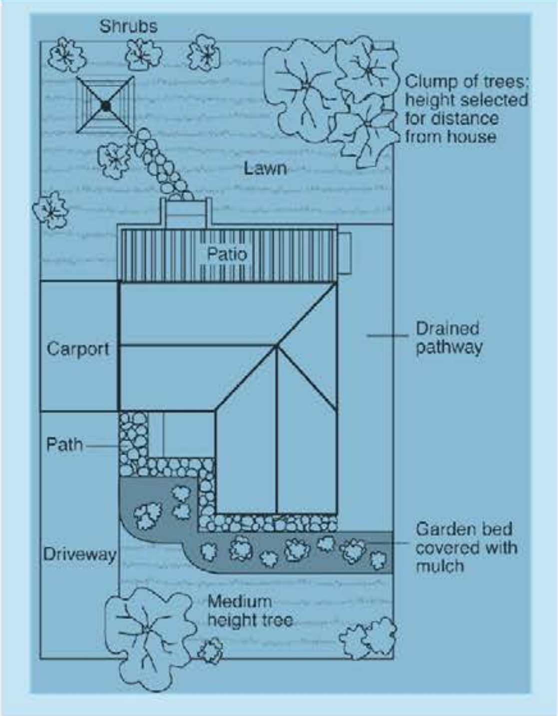
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving should

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired.	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted.	15–25 mm but also depends on number of cracks	4

Gardens for a reactive site



extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

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APPENDIX C

Site Survey


PHOTO # 1
SOUTHERN ELEVATION OF SCHOOL HALL


PHOTO # 2
WESTERN ELEVATION OF SCHOOL HALL


PHOTO # 3
EASTERN ELEVATION OF SCHOOL HALL

SERVICES SHOWN ON THIS PLAN WERE LOCATED BY JON MCCORKINDALE FROM MR MAC GROUP ON MONDAY 10th DECEMBER 2018.
CL SITE RECORD DOCUMENT # 2454
DBYD CONFIRMATION # 15390053

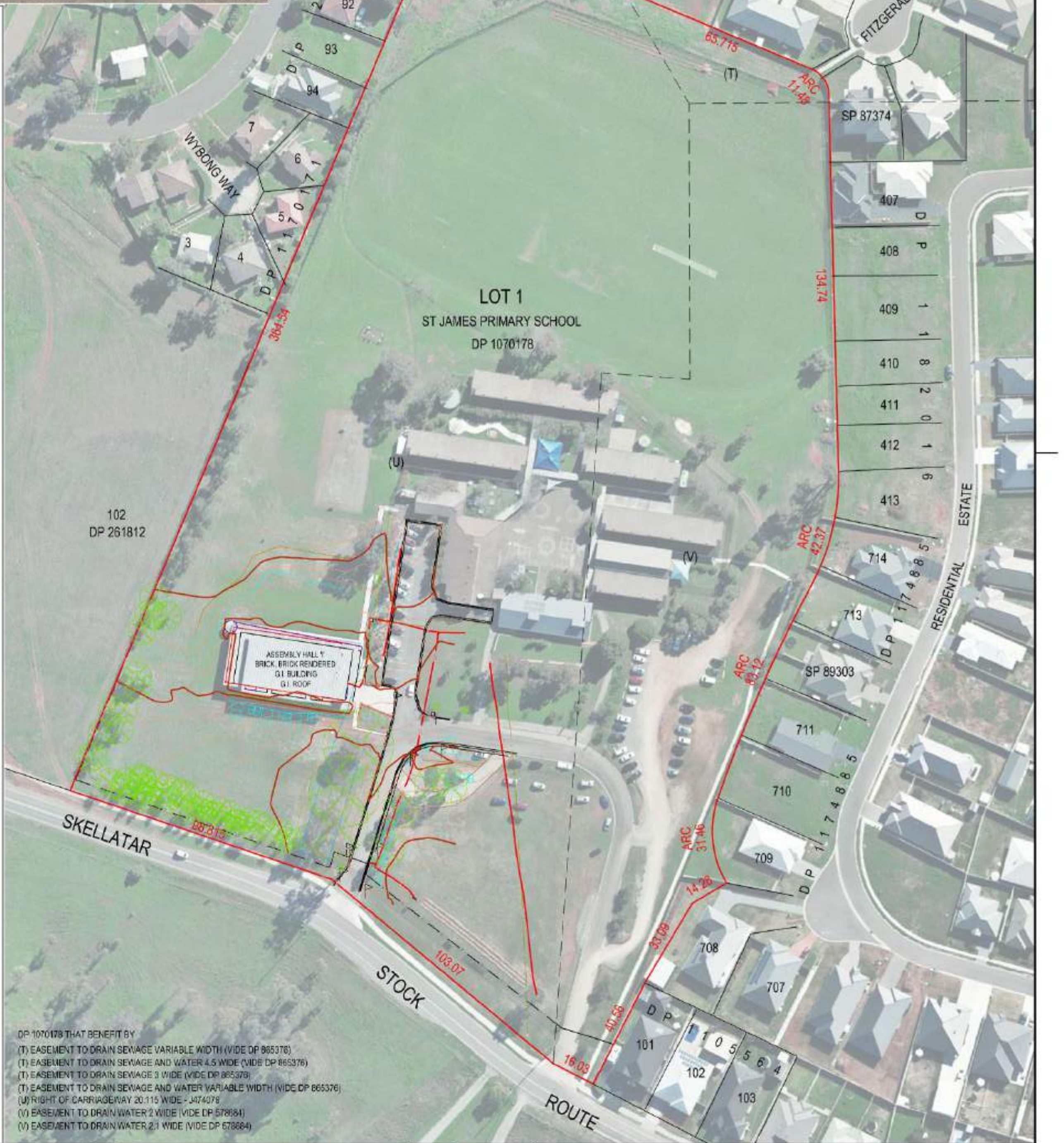
ALL SERVICE LOCATIONS ARE AN INDICATION ONLY. ALL ASSETS WITHIN THE WORK AREA MUST BE POTHOLED TO CONFIRM DEPTH AND LOCATION FOLLOWING THE DUTY OF CARE PROCEDURES PRIOR TO USING MACHINERY. CONTACT MUST BE MADE TO THE DIAL BEFORE YOU DIG CERTIFIED LOCATOR FOR ANY DISCREPANCIES AFTER POTHOLING.

LEGEND

- UNDERGROUND WATER PIPE
- FIRE WATER PIPE
- 225Ø DRAINAGE PIPE
- HIGH VOLTAGE ELECTRICITY
- LOW VOLTAGE ELECTRICITY
- UNDERGROUND COMMUNICATIONS
- BOTTOM OF BANK
- TOP OF BANK
- FENCE
- SEWER IP
- ELECTRICITY MANHOLE
- COMMUNICATIONS MANHOLE
- GREASE TRAP
- STOP VALVE
- HYDRANT
- LIGHT POST
- WATER TAP
- SIGN
- DRAINAGE GRATE
- TREES

CONTOUR INTERVAL 0.25m

DIAGRAM
SCALE 1 : 400



DP 1070178 THAT BENEFIT BY
(T) EASEMENT TO DRAIN SEWAGE VARIABLE WIDTH (VIDE DP 865376)
(T) EASEMENT TO DRAIN SEWAGE AND WATER 4.5 WIDE (VIDE DP 865376)
(T) EASEMENT TO DRAIN SEWAGE 3 WIDE (VIDE DP 865376)
(T) EASEMENT TO DRAIN SEWAGE AND WATER VARIABLE WIDTH (VIDE DP 865376)
(U) RIGHT OF CARRIAGEWAY 20.115 WIDE - J474078
(V) EASEMENT TO DRAIN WATER 2 WIDE (VIDE DP 578684)
(V) EASEMENT TO DRAIN WATER 2.1 WIDE (VIDE DP 578684)

ORIGINAL SIZE A1

FYFE

HEAD OFFICE
Level 1, 124 South Terrace
Adelaide SA 5000
GPO Box 2450
Adelaide SA 5001
www.fyfe.com.au

PROJECT OFFICE
54 Brook Street
Muswellbrook, NSW 2333
PO Box 404
Telephone 61 2 6543 3600

PLAN DETAILS
COUNCIL : MUSWELLBROOK SHIRE COUNCIL
LAND DESCRIPTION: Folio Identifier 1/1070178
PARISH : Brougham COUNTY : Durham

0 25 50 75 100
SCALE 1: 1,000 @ A1

LEVEL DATUM : 185.740
SCIMS MARK : PM 37379
CO-ORD DATUM : AHD
DATA FILE/S : 90595-1-1.DWG
SURVEYOR: SPW / KBE

NO.	REVISION	STAFF	CHECK	DATE
0	PREPARED DETAIL	KGH	JAH	12/12/18

ST NICHOLAS EARLY EDUCATION CENTRE
DETAIL SURVEY
ST JAMES PRIMARY SCHOOL
STOCK ROUTE ROAD
MUSWELLBROOK

DRAWING 90595--DETAIL SURVEY 20181211(JAH)

INSTRUCTION : 90595-1
DATE 14/12/2018
SHEET 1 OF 1
REV. 0

APPENDIX D

Exterior Colours & Finishes Materials Selection Palette Drawing

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
FRP	FIREPLACE
FS	FIXED SHELF
FT	FLOOR TILES
FW	FLOOR WASTE
G	GLASS
GA	GREASE ARRESTOR
GC	GARBAGE CHUTE
GD	GRATED DRAIN
GL	GLASS LOUVRES
GR	GRAB RAIL
GRD	GARAGE DOOR
GRV	GRAVEL
GP	GRATED PIT - REFER TO HYDRAULIC DOCUMENTATION
GT	GUTTER TRANSOM
GW	GLASS WINDOW
HA	HOME AUTOMATION CUPBOARD
HB	HAND BASIN
HD	HINGED DOOR
HDR	HAND DRYER
HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

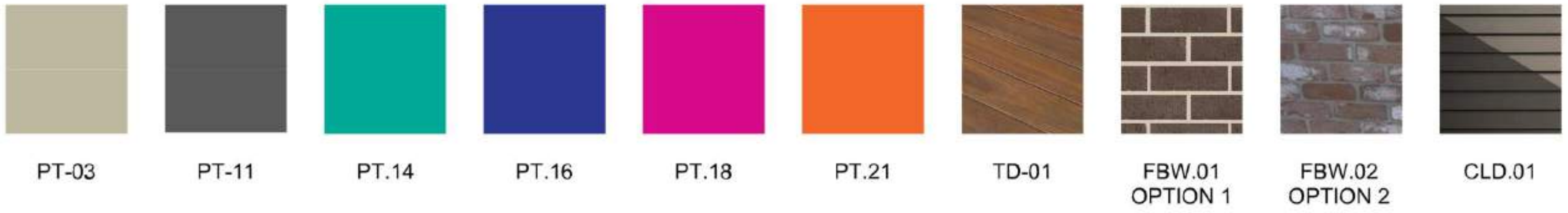
W1.06 WINDOW MARKER
eg. WINDOW / LEVEL 1 / WINDOW Nº 06

D1.06 DOOR MARKER
eg. DOOR / LEVEL 1 / DOOR Nº 06

LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
FBW.01	FACE BRICK -BOWRAL DRY PRESSED 'MURRARY' RAKED MOTAR JOINTS
FBW.02	FACE BRICK -PGH 'ALFRESCO' BRICK -CHOCCOLATTO FLUSH MOTAR JOINTS
TD-01	TIMBER DECKING -COMPOSITE TIMBER DECKING EQUAL TO BLUEGUM
PT-03	PAINT DULUX - PN1C8 PAVING STONE
PT-11	PAINT DULUX - PG1F7 WESTERN MYALL
PT.14	ST NICHOLAS BRAND -GREEN (PMS3395)
PT.16	ST NICHOLAS BRAND -BLUE (PMS REFLEX BLUE)
PT.18	ST NICHOLAS BRAND -PINK (PMS226)
PT.21	ST NICHOLAS BRAND -ORANGE (PMS1665)

E-03 NORTH ELEVATION COLOUR
1:100



EJE ARCHITECTURE
ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2230 | E mail@eje.com.au | W www.eje.com.au

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0 | 20mm | 100mm | 200mm ON ORIGINAL A1

REV	DATE	COMMENTS
1	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SCHEDULE OF MATERIALS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

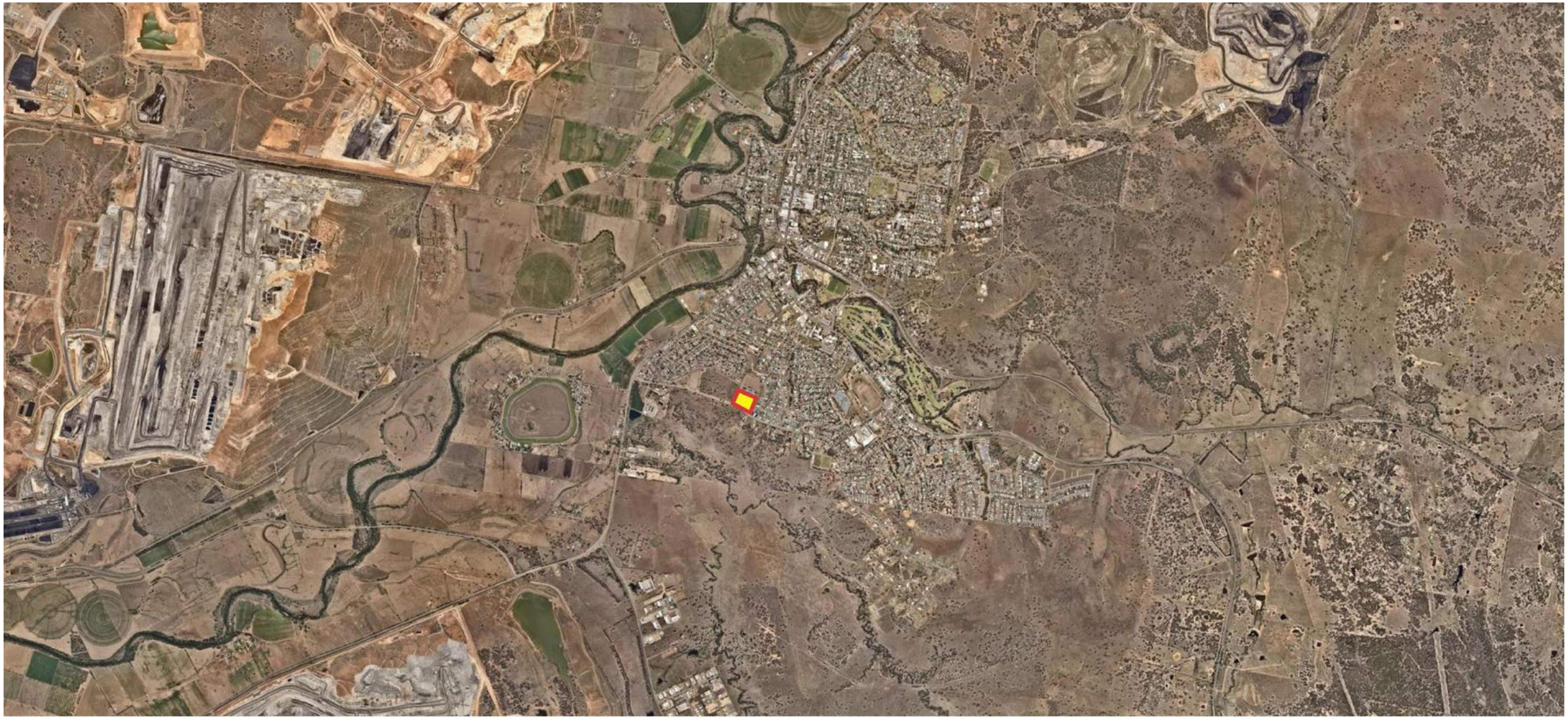
DRAWN : **BdB**
DATE : **13/06/2019**
SCALES @A1 :

PROJECT No : **12399**
PHASE : **DA**
DRAWING No : **A12**
REV : **1**

EJE architecture

APPENDIX E

Landscape Design



landscape development application

Catholic Schools Office Diocese of Maitland-Newcastle
St. Nicholas Early education Centre
Skellatar Stock Rte, Muswellbrook NSW 2333

terras
landscape architects

masterplan | 01
landscape area

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
masterplan

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

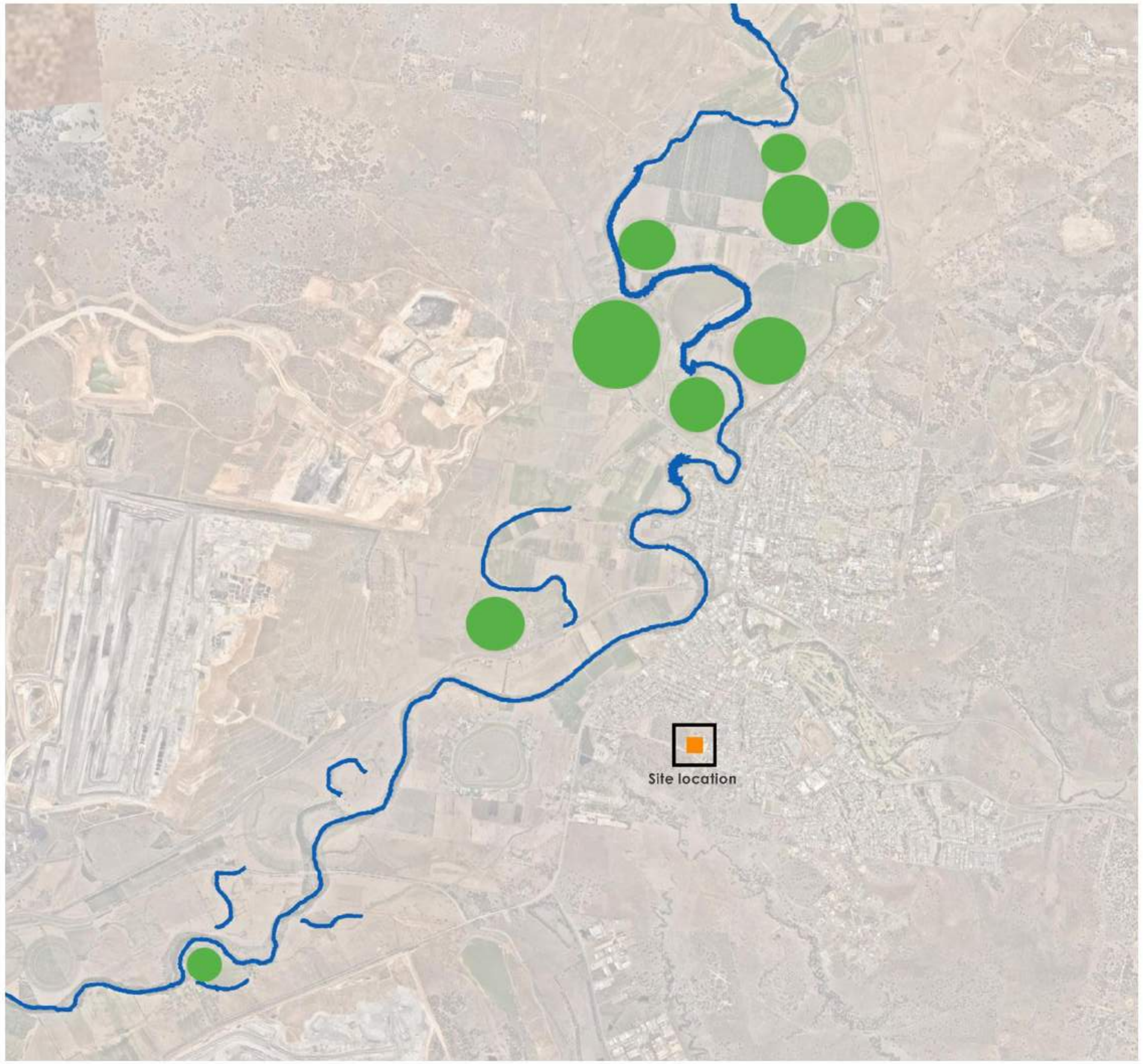
DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L01**	**D**

terras
landscape architects
412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

concept evolution | 02

Site location



The hunter river and its watershed have influenced the use and settlement of the Muswellbrook area. The design is inspired from the meandering nature of the hunter river , ox bow lakes and agriculture fields in geometrical shapes along it.

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
Concept

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: **12399.5**
PHASE:
DWG No: **L02**
REV: **D**

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landscape architects
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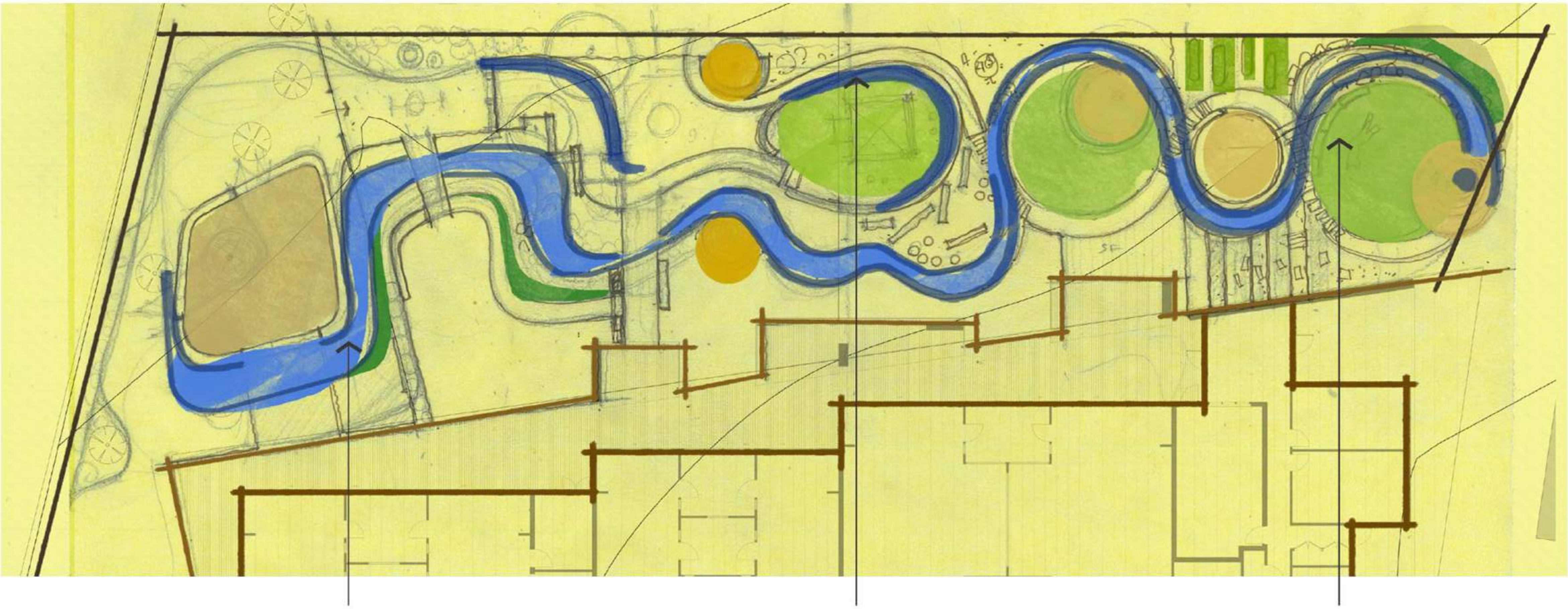
concept evolution | 03
landscape sketch



meandering nature
of the hunter river
as the spine of the play space
as gravel path, water fountain spill and
planting bed

Landscape features like seating and sand-
stone logs depicting the ox bow lakes
around the river

Geometrical agriculture fields
along hunter river inspired the
shape of the play areas

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
concept

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:
JOB NUMBER: **12399.5**
PHASE:
DWG No: **L03**
REV: **D**

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landscape areas | 04

play space area

Palisade fence between play space of 0-2 and 2-3 year

Sandstone blocks as marker between play space of age group 2-3 and 4-5 year

Outdoor play spaces

0-2 year olds: 30 children
Total play space: 340m²
(210m² required)
Sandpit 38m²
(15-30m² recommended)

2-3 year olds: 40 children
Total play space: 440m²
(280m² required)
Sandpit 47m²
(30m² recommended)

4-5 year olds: 50 children
Total play space: 475m²
(350m² required)
Sandpit 38m²
(30-40m² recommended)

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
landscape areas

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: **12399.5**
PHASE:
DWG No: **L04**
REV: **D**

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landscape plan | 05

play spaces

🟩 Synthetic Turf

🟩 Natural Turf

Synthetic turf play area within dense planting

Shaded sandbed and deck area

Fencing between 0-2 and 2-3 year group

Softfall area with basket swing

gravel bed as the spine of the play space as path, water fountain spill and planting bed

Sandstone block as mark between 2-3 year & 4-5 year

Open synthetic turf play area and timber deck outdoor classroom

Water play

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:

JOB NUMBER: **12399.5**
PHASE:
DWG No: **L05**
REV: **D**

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landscape architects

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landscape plan | 06
0-2 years play space

Open synthetic turf area for free play.

Sandpit enclosed by sandstone logs, with timber log for balancing and play. covered with tensile shade.

Timber deck

Gravel bed

Natural path with sensory plants, balancing logs, mulch and stepping stones.

Palisade fence with planting

Soft fall area between building and sandpit

Natural turf area

Synthetic turf play area with shade trees and muscial play elements

Sand play area and deck

Music play elements

Natural path

🟩 Synthetic Turf

🟩 Natural Turf

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan: part 1

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L06**	**D**

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landscape architects
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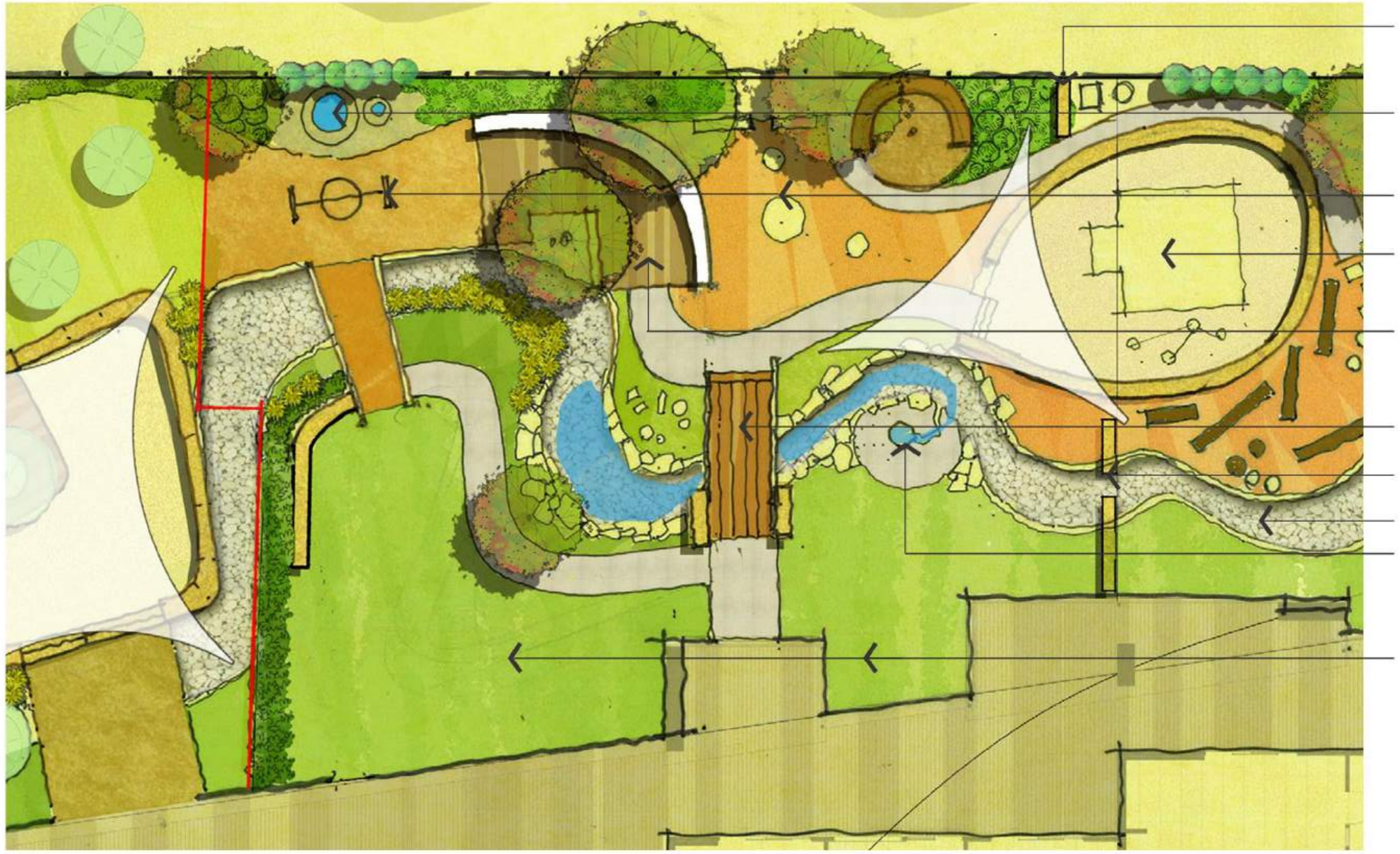
landscape plan | 07

2-3 years play space



Sandstone block as marker between play space for different age group

Shallow water fountain at focal point with sensory plants, balancing logs, mulch and stepping stones.

Soft fall area with active play equipment and music pods

Cubby house on sandbed with partial tensile cover

Outdoor classroom with deck, and circular seat with feature shade tree in centre

Timber bridge over gravel swale

Sandstone block as marker between play space for different age group

Gravel bed

Water fountain play spills to ephemeral creek, with water recirculated through filtration system.

Open natural turf area for free play

🟩 Synthetic Turf

🟩 Natural Turf

continuous gravel bed

water play

play equipment: play stage

gravel bed and timber bridge

Outdoor classroom

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan: part 2

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		L07	D

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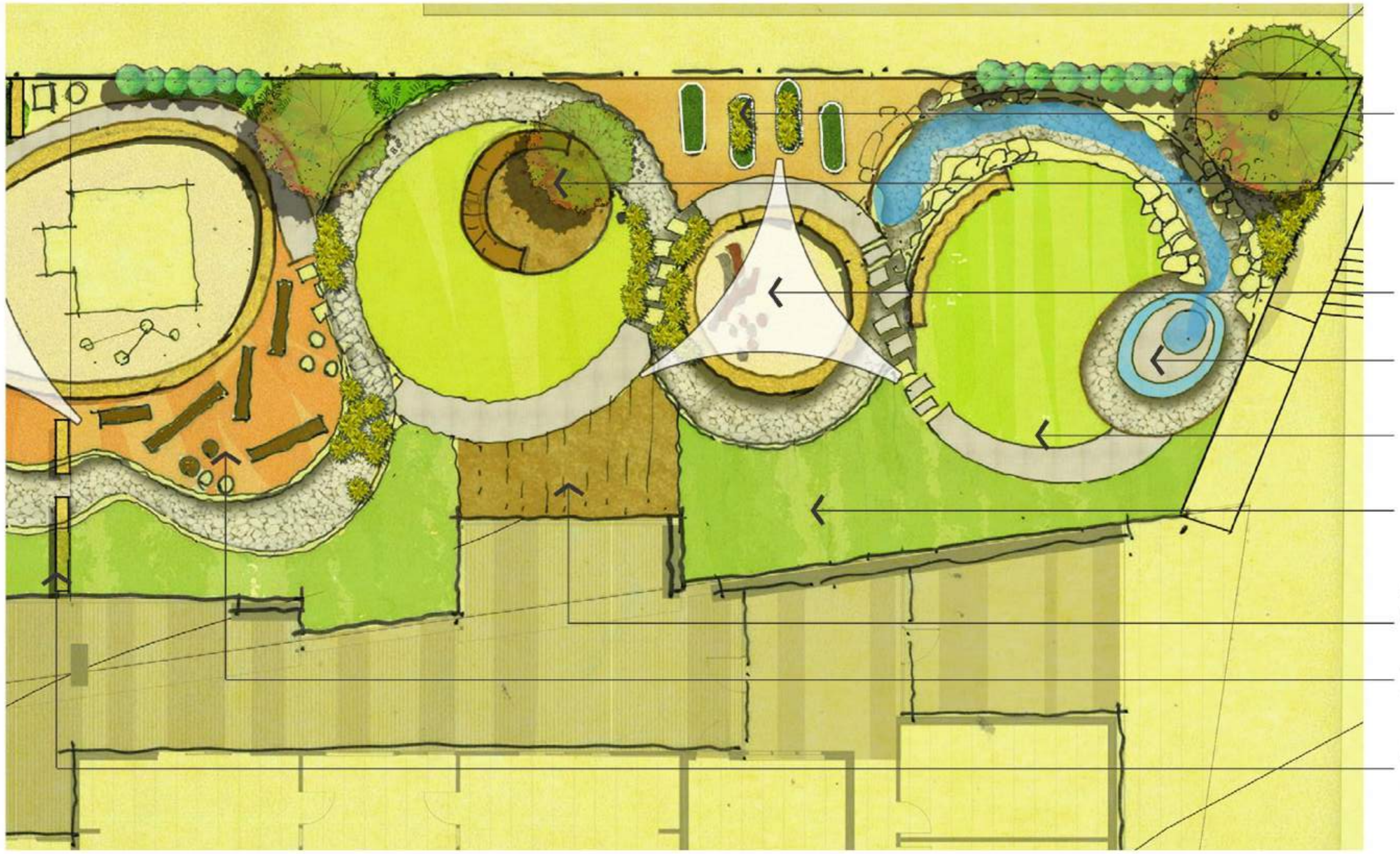
landscape plan | 08

4-5 years play space



Raised veggie gardens

Outdoor classroom with deck, and timber circular seat within synthetic turf circle

Sandpit enclosed by sandstone logs, with timber log for balancing and play. covered with tensile shade.

Water fountain play spills to ephemeral creek, with water recirculated through filtration system.

Open synthetic turf area for free play

Natural path with sensory plants, balancing logs, mulch and stepping stones.

Soft fall area between building and open turf

outdoor active play area with natural elemnts

Sandstone block as marker between play space for different age group

🟩 Synthetic Turf

🟩 Natural Turf

Water fountain play

Outdoor active play

Outdoor active play

Veggie garden

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
landscape plan: part 3

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L08**	**D**

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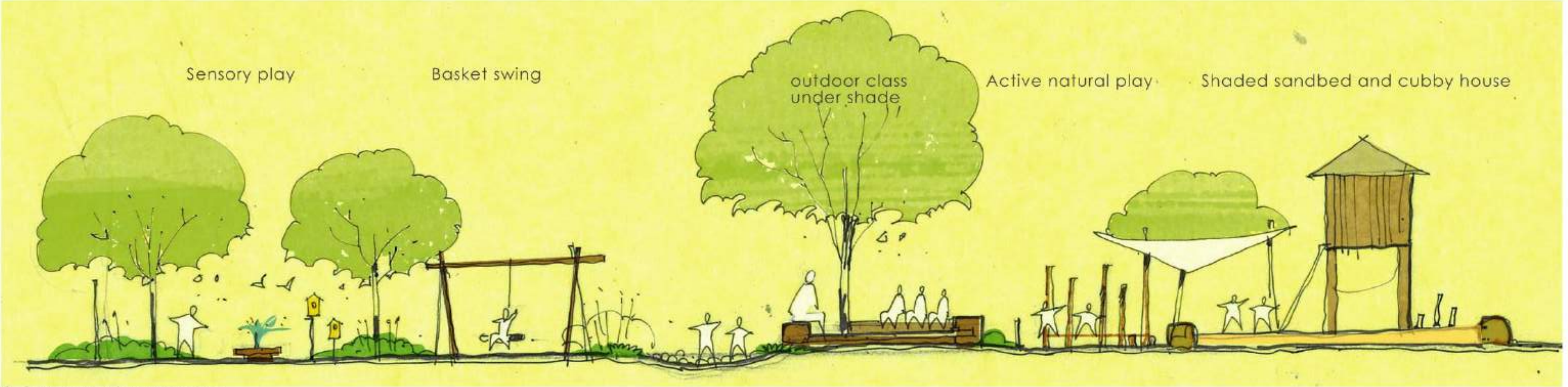
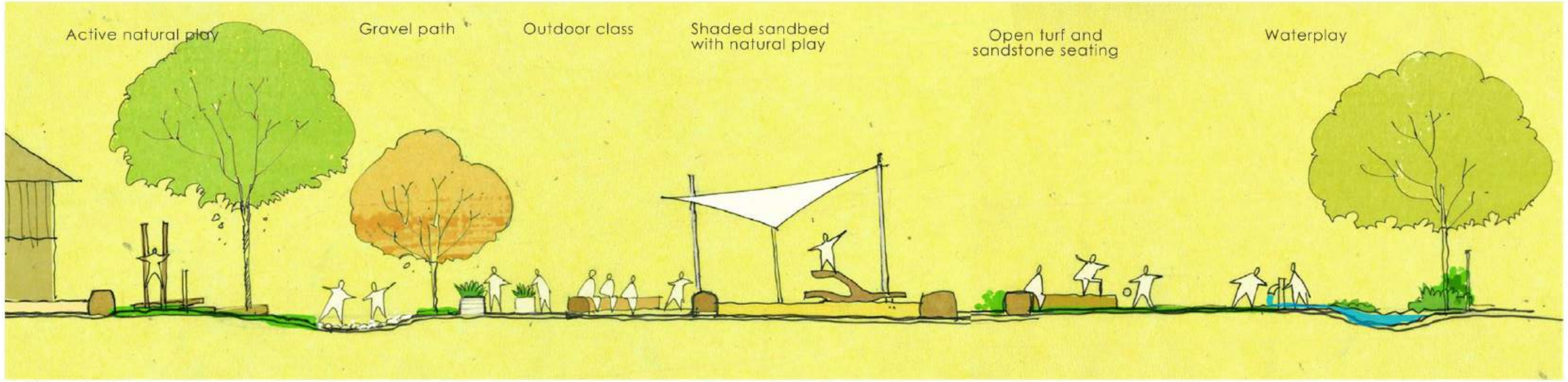
landscape areas | 09

creative play area

0-2 years play space



2-3 years play space



4-5 years play space

D	14/05/2019	ISSUE TO CLIENT
REV	DATE	COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
landscape areas

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L09**	**D**

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landscape architects

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planting palette | 10

play space area

Melaleuca linariifolia

westringia fruticosa

Pennisetum alopecuroides

Lomandra longifolia 'Tanika'

Hibbertia scandens

Acer palmatum 'Sango Kaku'

Banksia spinulosa 'Birthday Candles'

Dypsis Lutescens

Dietes iridoides

Thymus x citriodorus

pistacia chinensis

Trachelospermum jasminoides

Gazania tomentosa

Dicksonia antarctica

Viola hederacea

nandina domestica pygmaea

Liriope muscari 'Variegata'

Dichondra repens

Lagerstroemia indica

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
planting palette

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:
MA	14/05/2019	

JOB NUMBER:	PHASE:	DWG No:	REV:
12399.5		**L10**	**D**

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landscape architects
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landscape layout
site plan
11

D 14/05/2019 ISSUE TO CLIENT
REV DATE COMMENTS

PROJECT:
St Nicholas early education centre

DRAWING:
Site layout

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN: MA
DATE: 14/05/2019
SCALE:
JOB NUMBER: 12399.5
PHASE:
DWG No: L11
REV: D

terras
landscape architects
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TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

landscape layout | 12

planting palette: entry & parking area


Lophostemon confertus


Jacaranda Mimosifolia


Backhousia citridora


Strelitzia


Cycas revoluta


Aspidistra elatior


Dietes iridioides


Syzygium australe


Gardenia augusta florida


Lomandra longifolia


Myoporum parvifolium


Trachelospermum jasminoides

Plant schedule

Trees

No.	Botanical Name	Common Name	Height
01	Jacaranda Mimosifolia	Jacaranda	15
02	*Lophostemon confertus*	Brush Box	12
03	*Backhousia citidora*	Lemon myrtle	15
Feature plants			
04	*Strelitzia reginae*	Bird of paradise	1
05	*Cycas revoluta*	Cycas	1
06	*Aspidistra elatior*	Cast iron plant	0.7
Shrubs			
07	*Syzygium 'Bronzed Aussie'*	Lily Pilly	3
08	*Dietes iridioides*	Dietes	0.6
09	*Gardenia augusta florida*	Gardenia	1
Grasses & Groundcover			
10	*Lomandra longifolia*	Mat rush	0.7
11	*Trachelospermum jasminoides*	Star jasmine	0.3
12	*Myoporum parvifolium*	Creeping boobialla	0.3

REV	DATE	COMMENTS
D	14/05/2019	ISSUE TO CLIENT

PROJECT:
St Nicholas early education centre

DRAWING:
Planting palette: site

SITE:
Skellatar Stock Rte, Muswellbrook

CLIENT:
Catholic Schools Office Diocese of Maitland-Newcastle

DRAWN:	DATE:	SCALE:		
MA	14/05/2019			
JOB NUMBER:	PHASE:	DWG No:	REV:	
12399.5		**L12**	**D**	

terras
landscape architects
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TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

APPENDIX F

Architectural Drawings

St Nicholas EarlyEducation

St James' Primary School
MUSWELLBROOK

ARCHITECTURAL DRAWING SCHEDULE

A00	COVER SHEET
A01	SITE PLAN
A02	SITE ANALYSIS PLAN
A03	GROUND FLOOR PLAN
A04	ROOF PLAN
A05	NORTH & EAST ELEVATIONS
A06	SOUTH & WEST ELEVATIONS
A07	SECTION A-A & B-B
A08	SHADOW DIAGRAMS
A09	3D PERSPECTIVES
A10	3D PERSPECTIVES
A11	3D PERSPECTIVES
A12	SCHEDULE OF MATERIALS
A13	NOTIFICATION PLAN
A14	NOTIFICATION ELEVATIONS

ST NICHOLAS
EARLY EDUCATION CENTRE

ST JAMES PRIMARY SCHOOL,SKELLATAR STOCK ROUTE,MUSWELLBROOK, NSW 2333
LOT 1 - DP1070178

DA ISSUE

EJE ARCHITECTURE

ACN 002 912 843 | **ABN** 82 644 649 983
Nominated Architect - Bernard Collins | NSW Architects Registration No.4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | **F** +61 2 4926 2330 | **E** mail@eje.com.au | **W** www.eje.com.au

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FILE NAME: 12309 St Nicholas Childcare Muswellbrook DA [illegible] 12/06/2019

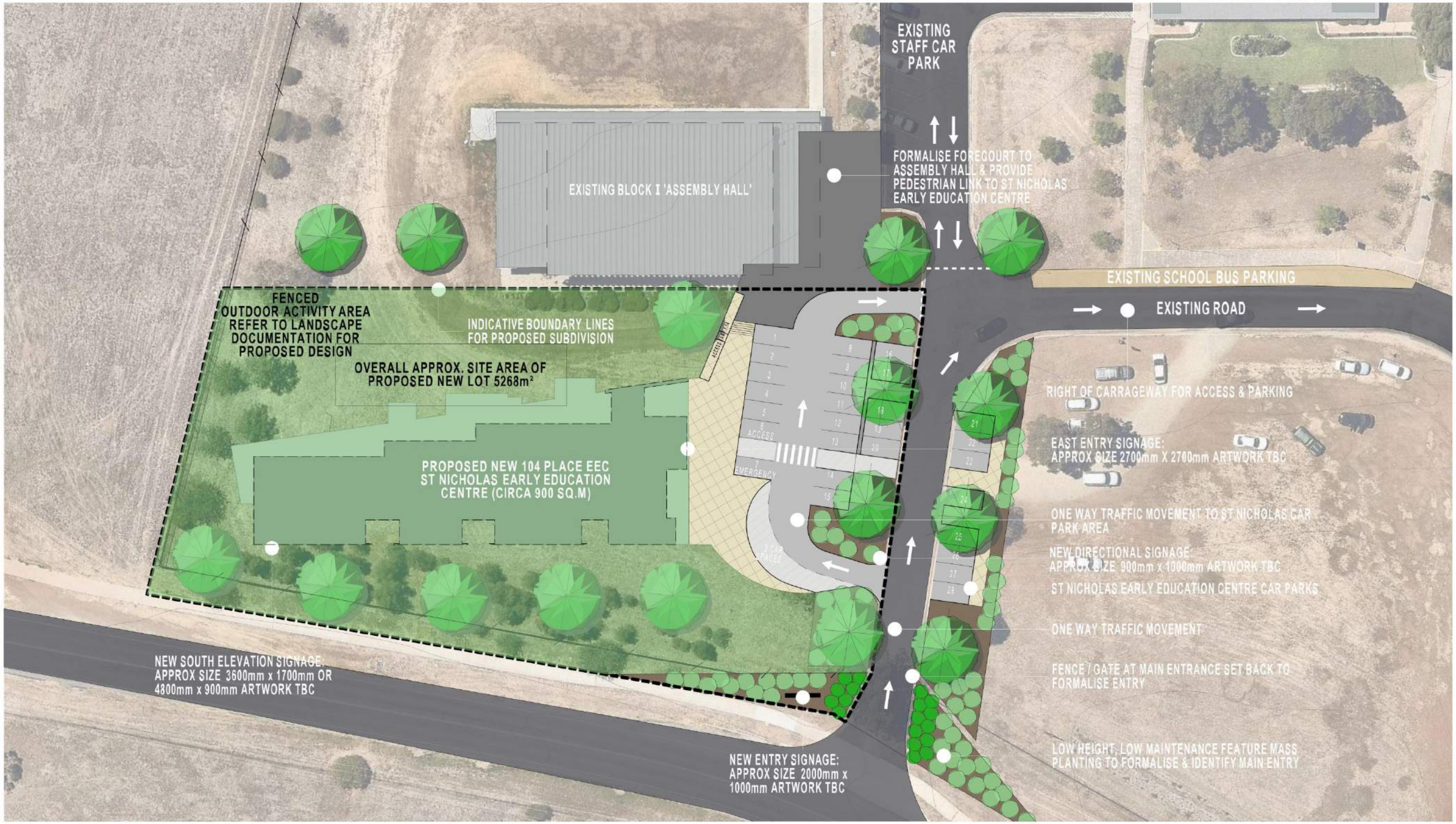
EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
FRP	FIREPLACE
FS	FIXED SHELF
FT	FLOOR TILES
FW	FLOOR WASTE
G	GLASS
GA	GREASE ARRESTOR
GC	GARBAGE CHUTE
GD	GRATED DRAIN
GL	GLASS LOUVRES
GR	GRAB RAIL
GRD	GARAGE DOOR
GRV	GRAVEL
GP	GRATED PIT - REFER TO HYDRAULIC DOCUMENTATION
GT	GUTTER TRANSOM
GW	GLASS WINDOW
HA	HOME AUTOMATION CUPBOARD
HB	HAND BASIN
HD	HINGED DOOR
HDR	HAND DRYER
HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
▒	NEW ASPHALT



EJE ARCHITECTURE
ACN 002 912 843 | ABN 82 644 649 849
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
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COMPLETION OF THE QUALITY ASSURANCE CHECKS IS VERIFICATION THAT THE DOCUMENT CONFORMS WITH THE REQUIREMENTS OF THE QUALITY PROJECT PLAN. WHERE THE QUALITY ASSURANCE CHECK IS INCOMPLETE THIS DOCUMENT IS PRELIMINARY FOR INFORMATION PURPOSES ONLY, OR SUCH PURPOSES AS STATED IN THE REVISION COLUMN.

0 20mm 100mm ON ORIGINAL A1

N

St Nicholas Early Education

St James' Primary School
MUSWELLBROOK

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	11/01/2019	SKETCH DESIGN ISSUE	BdB	HN	
B	17/01/2019	SKETCH DESIGN PRESENTATION ISSUE	BdB	HN	
C	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SITE PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	13/06/2019	1:250

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	DA	A01	2

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
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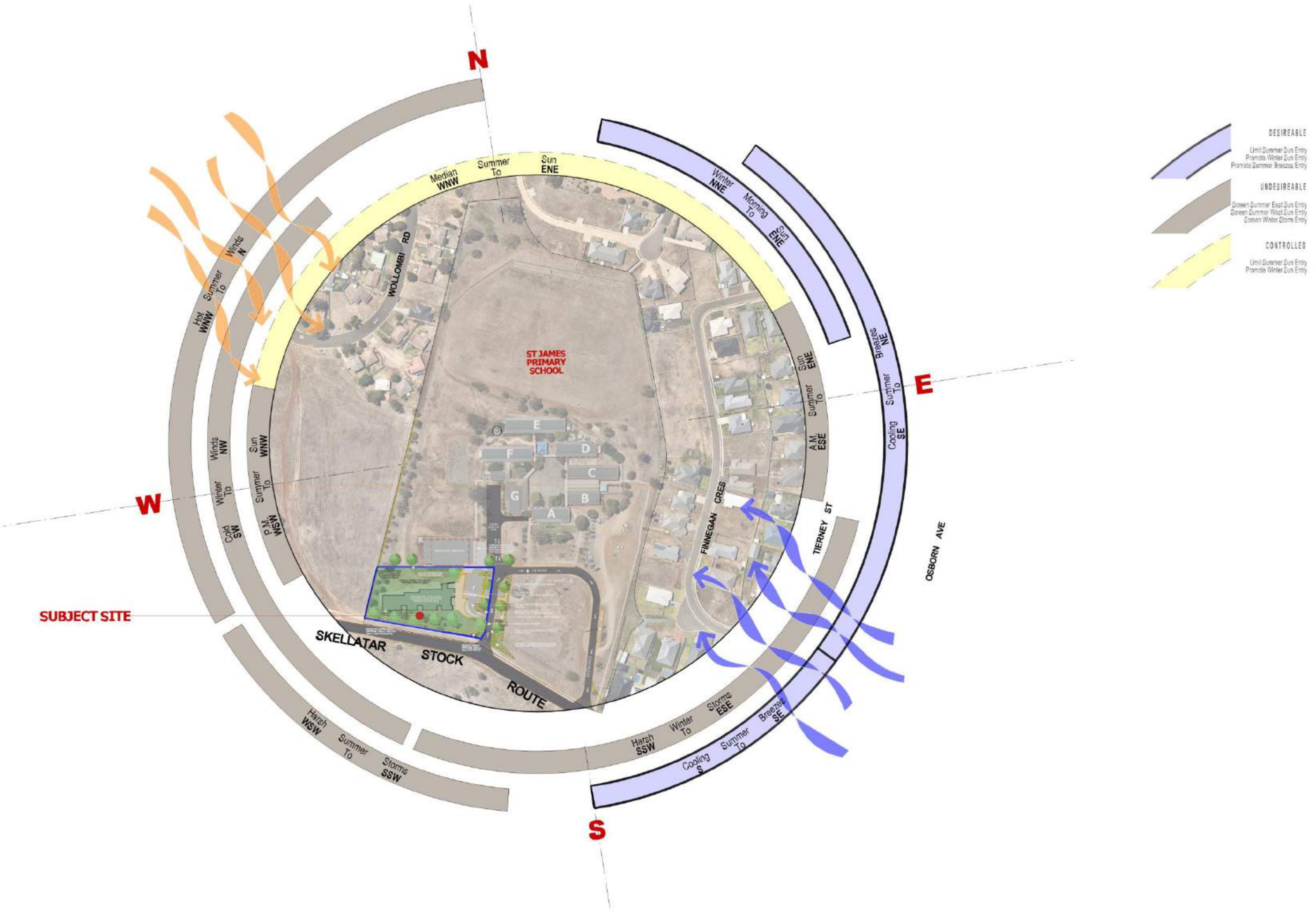
LEGEND

▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
▩	NEW ASPHALT



EJE ARCHITECTURE
ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4439
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P +61 2 4929 2353 | F +61 2 4926 3069 | E mail@eje.com.au | W www.eje.com.au

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REV	DATE	COMMENTS
1	12/03/2019	PRELIMINARY DA ISSUE
2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SITE ANALYSIS PLAN

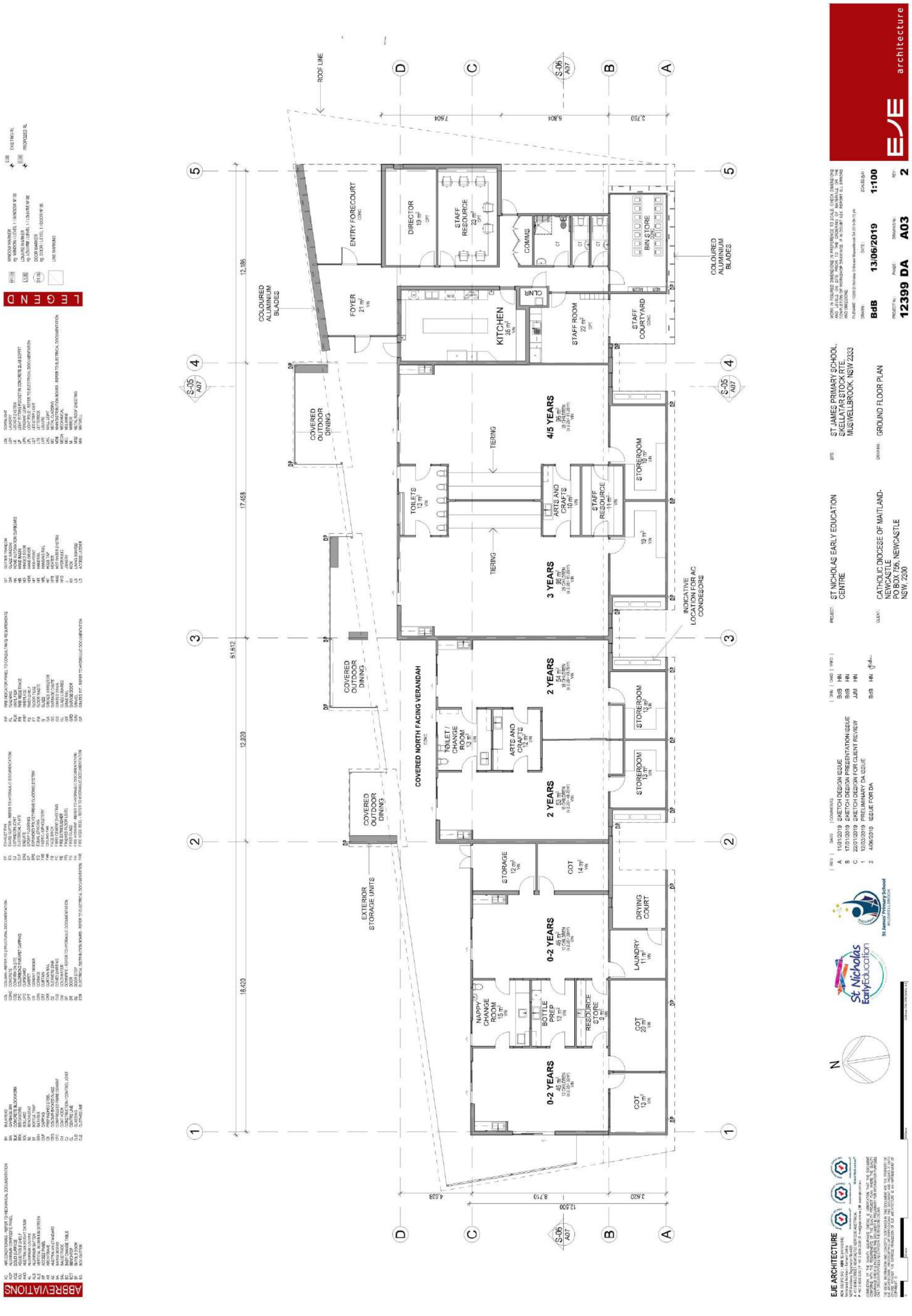
WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:1731.69**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A02**	**2**

EJE architecture



REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	11/01/2019	SKETCH DESIGN ISSUE	BdB	HN	
B	17/01/2019	SKETCH DESIGN PRESENTATION ISSUE	BdB	HN	
C	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: GROUND FLOOR PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

DRAWN: BdB
DATE: 13/06/2019
SCALE@A1: 1:100
PROJECT No: 12399
PHASE: DA
DRAWING No: A03
REV: 2

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
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ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
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CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
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LB	LINING BOARDS
LD	ACCESS LADDER
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LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
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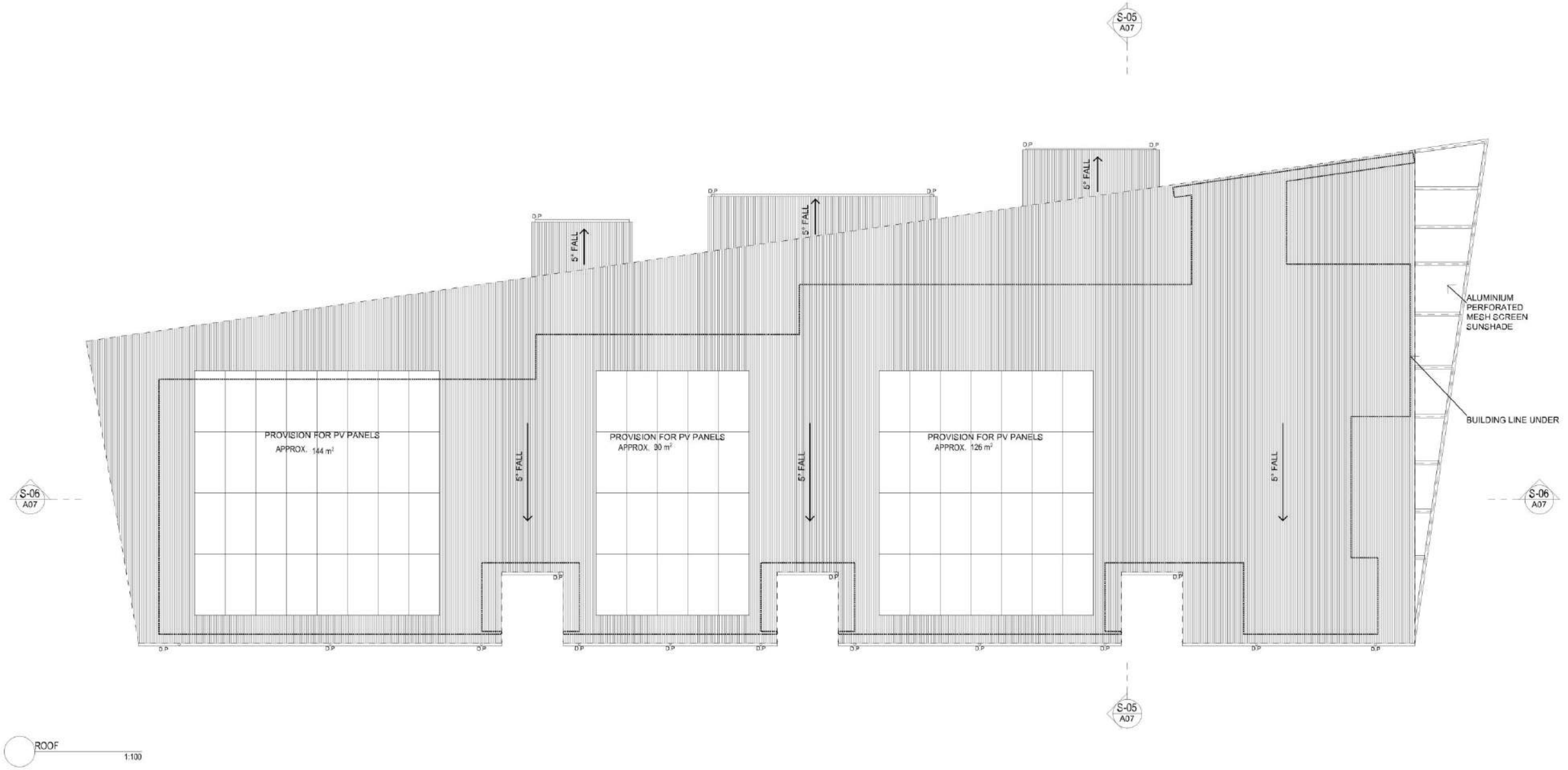
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
L1.05	LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05
▨	LINE MARKING
0.00	EXISTING RL
0.00	PROPOSED RL



ROOF
1:100

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REV	DATE	COMMENTS
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2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
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PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: ROOF PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:100**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A04**	**2**

EJE architecture

ABBREVIATIONS

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ACP	ALUMINIUM COMPOSITE PANEL
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ADJ	ADJUSTABLE SHELF
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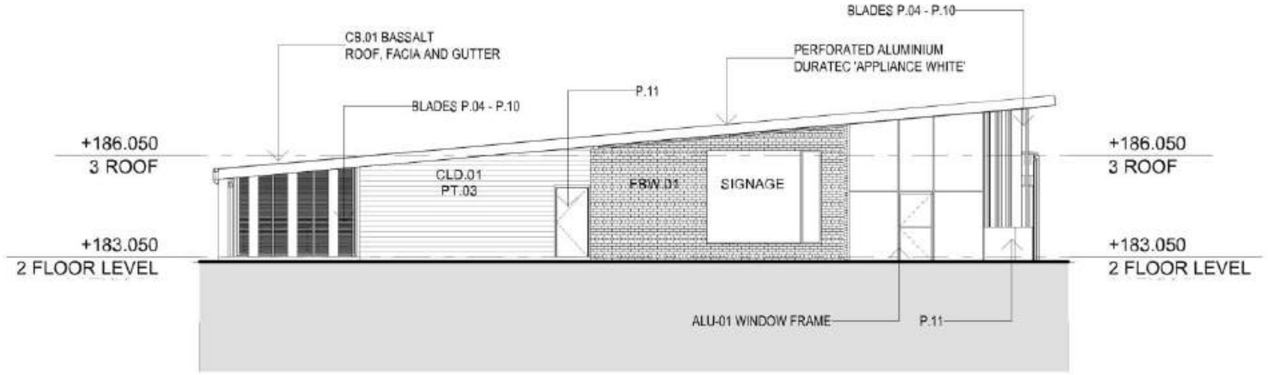
LEGEND

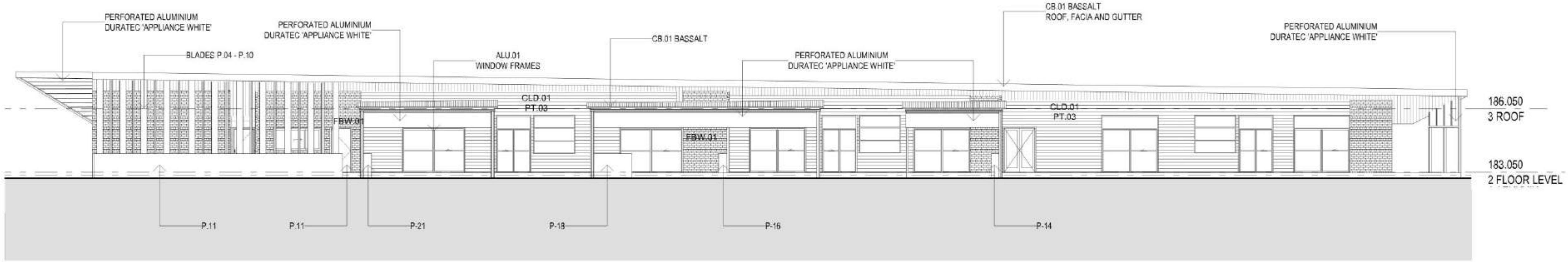
W1.06	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 06
D1.06	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 06

LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
FBW.01	FACE BRICK -BOWRAL DRY PRESSED 'MURRARY' RAKED MOTAR JOINTS
FBW.02	FACE BRICK -PGH 'ALFRESCO' BRICK -CHOCCOLATTO FLUSH MOTAR JOINTS
TD-01	TIMBER DECKING -COMPOSITE TIMBER DECKING EQUAL TO BLUEGUM
PT-03	PAINT DULUX - PN1C8 PAVING STONE
PT-11	PAINT DULUX - PG1F7 WESTERN MYALL
PT.14	ST NICHOLAS BRAND -GREEN (PMS3395)
PT.16	ST NICHOLAS BRAND -BLUE (PMS REFLEX BLUE)
PT.18	ST NICHOLAS BRAND -PINK (PMS226)
PT.21	ST NICHOLAS BRAND -ORANGE (PMS1665)



E-04 EAST ELEVATION
1:100



E-03 NORTH ELEVATION
1:100

EJE ARCHITECTURE
ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4433
A 413 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 3290 | E mail@eje.com.au | W www.eje.com.au

COMPLETION OF THE QUALITY ASSURANCE CHECKS & VERIFICATION THAT THE DOCUMENT CONFORMS WITH THE REQUIREMENTS OF THE QUALITY PROJECT PLAN. WHERE THE QUALITY ASSURANCE CHECK IS INCOMPLETE THIS DOCUMENT IS PRELIMINARY FOR INFORMATION PURPOSES ONLY, OR SUCH PURPOSES AS STATED IN THE REVISION COLUMN.

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0 20mm 100mm 200mm ON ORIGINAL A1

St Nicholas EarlyEducation

St James' Primary School
MUSWELLBROOK

REV	DATE	COMMENTS
1	12/03/2019	PRELIMINARY DA ISSUE
2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: NORTH & EAST ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:100**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A05**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
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FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
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FT	FLOOR TILES
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GR	GRAB RAIL
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HRL	HANGING RAIL
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HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
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LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
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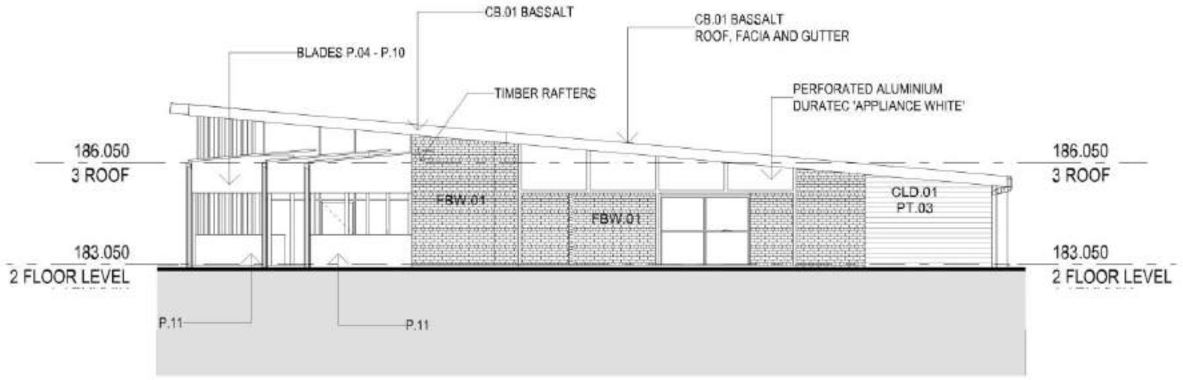
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05

LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
FBW.01	FACE BRICK -BOWRAL DRY PRESSED 'MURRARY' RAKED MOTAR JOINTS
FBW.02	FACE BRICK -PGH 'ALFRESCO' BRICK -CHOCCOLATTO FLUSH MOTAR JOINTS
TD-01	TIMBER DECKING -COMPOSITE TIMBER DECKING EQUAL TO BLUEGUM
PT-03	PAINT DULUX - PN1C8 PAVING STONE
PT-11	PAINT DULUX - PG1F7 WESTERN MYALL
PT.14	ST NICHOLAS BRAND -GREEN (PMS3395)
PT.16	ST NICHOLAS BRAND -BLUE (PMS REFLEX BLUE)
PT.18	ST NICHOLAS BRAND -PINK (PMS226)
PT.21	ST NICHOLAS BRAND -ORANGE (PMS1665)



E-05 WEST ELEVATION
1:100

E05 SOUTH ELEVATION
1:100

EJE ARCHITECTURE
ACN 002 912 842 | ABN 82 644 649 842
Nominated Architect - Bernard Collins
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St Nicholas Early Education

St James' Primary School
MUSWELLBROOK

REV	DATE	COMMENTS
1	12/03/2019	PRELIMINARY DA ISSUE
2	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT:
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE:
ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SOUTH & WEST ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	**1:100**

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A06**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
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BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
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CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
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MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05

S-05 SECTION
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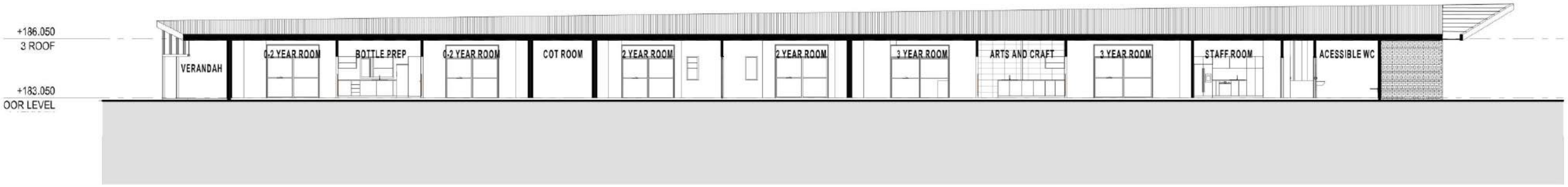

S-06 SECTION
1:100

EJE ARCHITECTURE

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Nominated Architect - Bernard Collins
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COMPLETION OF THE QUALITY ASSURANCE CHECKS IS VERIFICATION THAT THE DOCUMENT CONFORMS WITH THE REQUIREMENTS OF THE QUALITY PROJECT PLAN. WHERE THE QUALITY ASSURANCE CHECK IS INCOMPLETE THIS DOCUMENT IS PRELIMINARY FOR INFORMATION PURPOSES ONLY, OR SUCH PURPOSES AS STATED IN THE REVISION COLUMN.

0 20mm 100mm 200mm ON ORIGINAL A1

REV	DATE	COMMENTS	DRN	CHKD	VRFD
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: SECTION A-A & B-B

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:100**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A07**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
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DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
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MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
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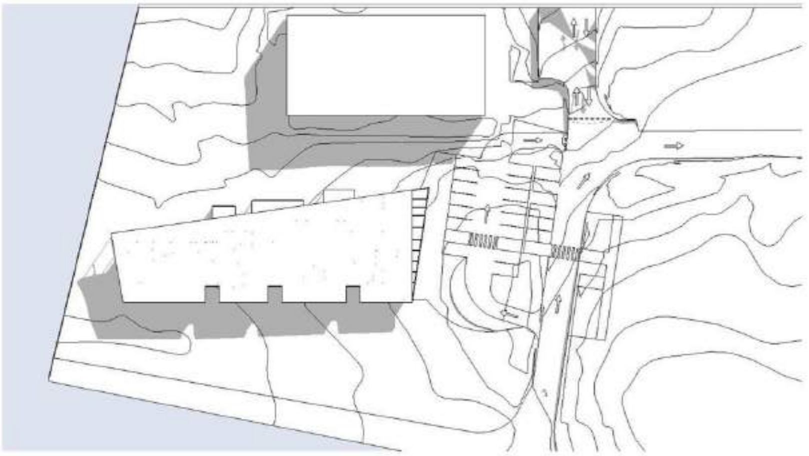

JUNE 21 - 9AM
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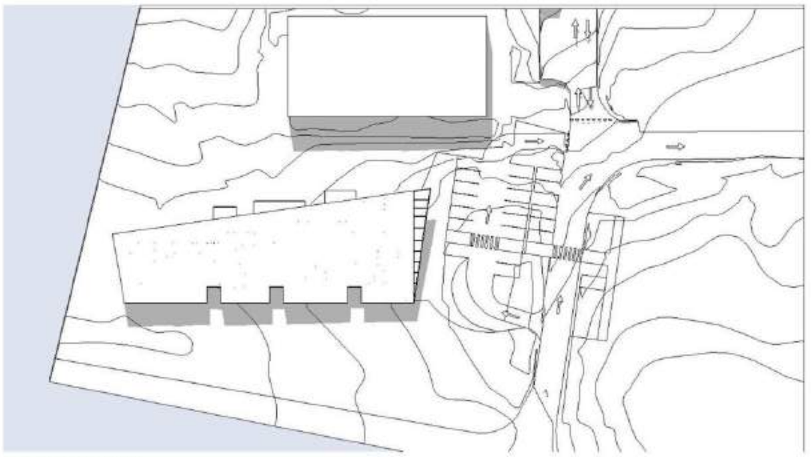

JUNE 21 - 12PM
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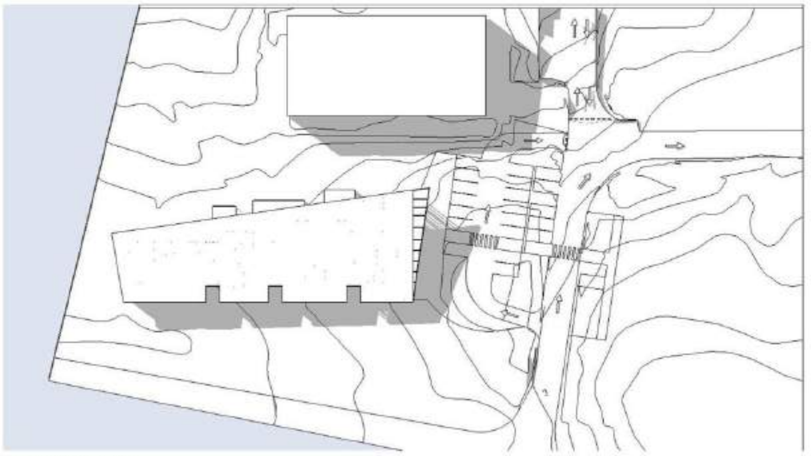

JUNE 21 - 3PM
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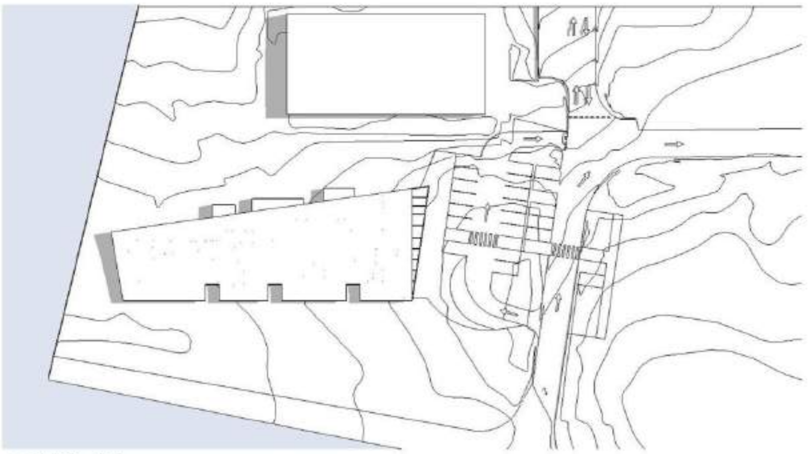

DEC 21 - 9AM
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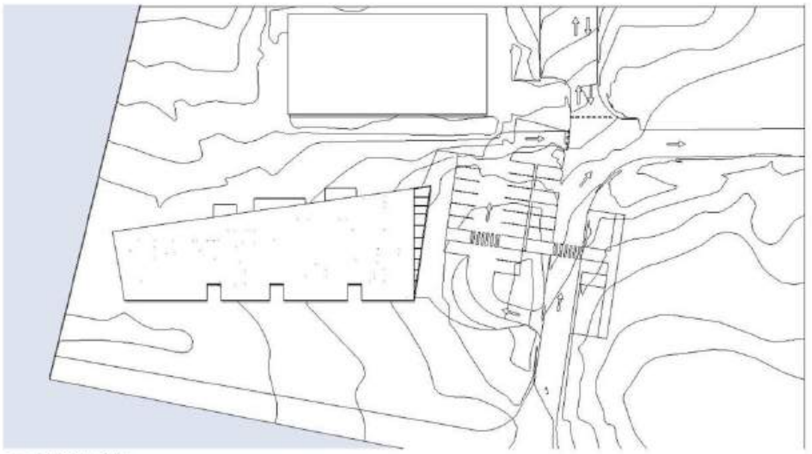
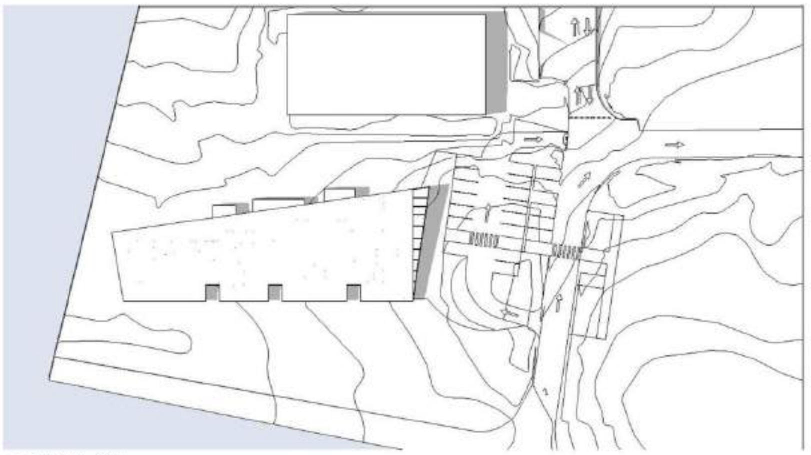


DEC 21 - 12PM
1:200



DEC 21 - 3PM
1:200

EJE ARCHITECTURE
ACN 002 912 843 | ABN 82 644 649 849
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2230 | E mail@eje.com.au | W www.eje.com.au

Global-Mark.com.au

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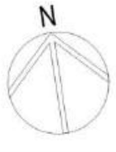

REV	DATE	COMMENTS	DRN	CHKD	VRFD
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT:
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE:
ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: SHADOW DIAGRAMS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

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DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	**1:200**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A08**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
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CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
FRP	FIREPLACE
FS	FIXED SHELF
FT	FLOOR TILES
FW	FLOOR WASTE
G	GLASS
GA	GREASE ARRESTOR
GC	GARBAGE CHUTE
GD	GRATED DRAIN
GL	GLASS LOUVRES
GR	GRAB RAIL
GRD	GARAGE DOOR
GRV	GRAVEL
GP	GRATED PIT - REFER TO HYDRAULIC DOCUMENTATION
GT	GUTTER TRANSOM
GW	GLASS WINDOW
HA	HOME AUTOMATION CUPBOARD
HB	HAND BASIN
HD	HINGED DOOR
HDR	HAND DRYER
HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.06	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 06
D1.06	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 06

EJE ARCHITECTURE
ACN 002 912 842 | **ABN** 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 413 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2230 | E mail@eje.com.au | W www.eje.com.au

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0 20mm 100mm 200mm ON ORIGINAL A1

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	17/01/2019	SKETCH DESIGN PRESENTATION ISSUE	BdB	HN	
B	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: 3D PERSPECTIVES

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME: 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN:	DATE:	SCALES @A1:
BdB	**13/06/2019**	

PROJECT No:	PHASE:	DRAWING No:	REV:
12399	**DA**	**A09**	**2**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
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CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
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CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
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EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
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FC	FIBRE CEMENT SHEETING
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FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
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MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.05	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 05
D1.05	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 05

EJE ARCHITECTURE
ACN 002 912 843 | ABN 82 644 649 849
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 412 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2290 | E mail@eje.com.au | W www.eje.com.au

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REV	DATE	COMMENTS	DRN	CHKD	VRFD
B	22/01/2019	SKETCH DESIGN FOR CLIENT REVIEW	JJM	HN	
1	12/03/2019	PRELIMINARY DA ISSUE			
2	4/06/2019	ISSUE FOR DA	BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT:
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE:
ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING: 3D PERSPECTIVES

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	13/06/2019	

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	DA	A10	2

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
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BIN	GARBAGE BIN
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BRK	BRICKWORK
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BTH	BATHTUB
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CBG	COLOUR-BACKED GLASS
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CLS	CLOTHESLINE
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CPT	CARPET
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CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
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FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
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HDR	HAND DRYER
HP	HIGH POINT
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HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
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LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
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MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

W1.05 WINDOW MARKER
eg. WINDOW / LEVEL 1 / WINDOW Nº 05

D1.05 DOOR MARKER
eg. DOOR / LEVEL 1 / DOOR Nº 05

EJE ARCHITECTURE
ACN 002 912 842 | **ABN** 82 644 649 842
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
A 413 KING STREET NEWCASTLE NSW 2300 AUSTRALIA
P +61 2 4929 2353 | F +61 2 4926 2230 | E mail@eje.com.au | W www.eje.com.au

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0 25mm 100mm 200mm ON ORIGINAL A1

REV	DATE	COMMENTS	DRN	CHKD	VRFD
0	04/06/2019	ISSUE FOR DA	BdB	HR	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: 3D PERSPECTIVES

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A11**	**0**

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
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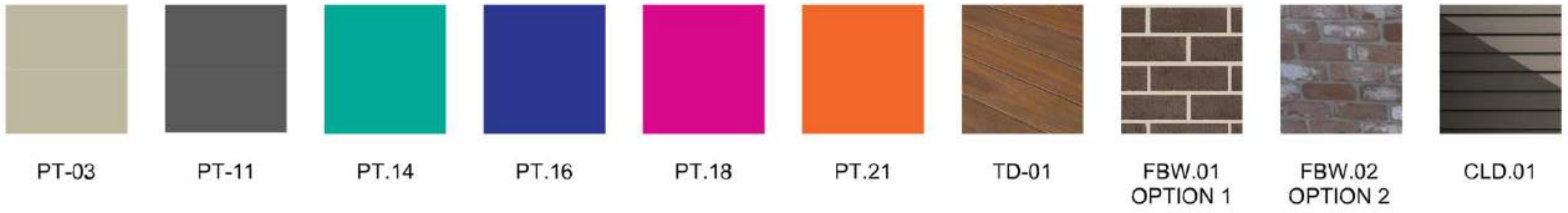
LEGEND

W1.06	WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW Nº 06
D1.06	DOOR MARKER eg. DOOR / LEVEL 1 / DOOR Nº 06

LEGEND

CLD.01	FIBRECEMENT WEATHERBOARDS -HORIZONTAL PAINTED
FBW.01	FACE BRICK -BOWRAL DRY PRESSED 'MURRARY' RAKED MOTAR JOINTS
FBW.02	FACE BRICK -PGH 'ALFRESCO' BRICK -CHOCCOLATTO FLUSH MOTAR JOINTS
TD-01	TIMBER DECKING -COMPOSITE TIMBER DECKING EQUAL TO BLUEGUM
PT-03	PAINT DULUX - PN1C8 PAVING STONE
PT-11	PAINT DULUX - PG1F7 WESTERN MYALL
PT.14	ST NICHOLAS BRAND -GREEN (PMS3395)
PT.16	ST NICHOLAS BRAND -BLUE (PMS REFLEX BLUE)
PT.18	ST NICHOLAS BRAND -PINK (PMS226)
PT.21	ST NICHOLAS BRAND -ORANGE (PMS1665)

E-03 NORTH ELEVATION COLOUR
1:100



EJE ARCHITECTURE
ACN 002 912 842 | **ABN** 82 644 649 842
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0 | 20mm | 100mm | 200mm ON ORIGINAL A1

REV	DATE	COMMENTS
1	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

DRAWING: SCHEDULE OF MATERIALS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A1 :
BdB	**13/06/2019**	

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A12**	**1**

EJE architecture

ABBREVIATIONS

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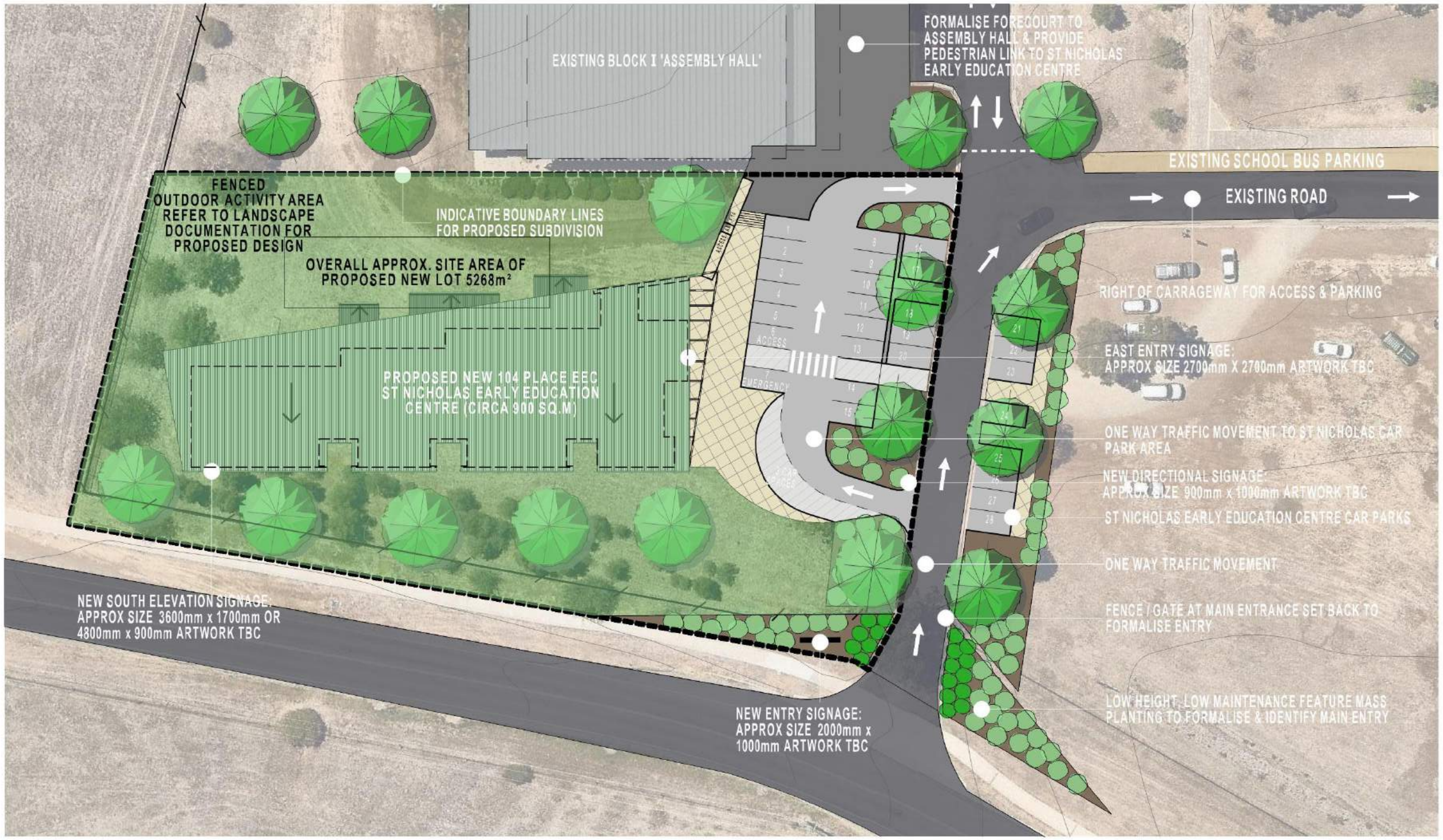
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
ENS	ENSUITE
EP	EPOXY FLOORING
EPS	EXPANDED POLYSTYRENE CLADDING SYSTEM
EQ	EQUAL SPACING
FAB	FABRIC / UPHOLSTERY
FAN	CEILING FAN
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FE	FIRE EXTINGUISHER
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
FH	FIRE HYDRANT - REFER TO HYDRAULIC DOCUMENTATION
FHR	FIRE HOSE REEL - REFER TO HYDRAULIC DOCUMENTATION
FIP	FIRE INDICATOR PANEL TO CONSULTANTS REQUIREMENTS
FL	FLASHING
FLM	VINYL FILM
FR	FIRE RESISTANCE
FRP	FIREPLACE
FS	FIXED SHELF
FT	FLOOR TILED
FW	FLOOR WASTE
G	GLASS
GA	GREASE ARRESTOR
GC	GARBAGE CHUTE
GD	GRATED DRAIN
GL	GLASS LOUVRES
GR	GRAB RAIL
GRD	GARAGE DOOR
GRV	GRAVEL
GP	GRATED PIT - REFER TO HYDRAULIC DOCUMENTATION
GT	GUTTER TRANSOM
GW	GLASS WINDOW
HA	HOME AUTOMATION CUPBOARD
HB	HAND BASIN
HD	HINGED DOOR
HDR	HAND DRYER
HP	HIGH POINT
HR	HANDRAIL
HRL	HANGING RAIL
HT	HOSE TAP
HTR	HEATER
HWS	HOT WATER SYSTEM
HYD	HYDRAULIC
J	JOINERY
KK	KICK
LB	LINING BOARDS
LD	ACCESS LADDER
LDL	DOWNLIGHT
LDY	LAUNDRY
LK	LOCKER SYSTEM
LP	LIGHT FITTING POCKET IN CONCRETE SLAB SOFFIT
LPN	PENDANT LIGHT
LPL	LIGHT POLE - REFER TO ELECTRICAL DOCUMENTATION
LST	LED STRIP LIGHT
LTB	LETTERBOX
LVR	LOUVRE
LWL	WALL LIGHT
MC	METAL CLADDING
MDB	MAIN DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
MECH	MECHANICAL
MEL	MELAMINE
MI	MIRROR
MRS	METAL ROOF SHEETING
MW	MATWELL

LEGEND

▨	EXISTING PREMISES
▦	NEW LANDSCAPED AREAS
▩	NEW ASPHALT



NOTIFICATION PLAN

1:500

EJE ARCHITECTURE
ACN 003 912 845 | **ABN** 82 644 649 840
Nominated Architect - Bernard Collins
NSW Architects Registration No 4438
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REV	DATE	COMMENTS
0	4/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT : ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT : CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE : ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
MUSWELLBROOK, NSW 2333

DRAWING : NOTIFICATION PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A3 :
BdB	13/06/2019	1:500

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	DA	A13	0

EJE architecture

ABBREVIATIONS

AC	AIR CONDITIONING - REFER TO MECHANICAL DOCUMENTATION
ACP	ALUMINIUM COMPOSITE PANEL
ACS	SOLID SURFACE
ADJ	ADJUSTABLE SHELF
AHD	AUSTRALIAN HEIGHT DATUM
AL	ALUMINIUM LOUVRE
ALB	ALUMINIUM BATTEN
ALS	VERTICAL ALUMINIUM SCREEN
AP	ACCESS PANEL
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BA	BARGE BOARD
BAL	BALUSTRADE
BC	BABY CHANGE TABLE
BCT	BENCHTOP
BF	BI-FOLD DOOR
BG	BOX GUTTER
BH	BULKHEAD
BIN	GARBAGE BIN
BLK	CONCRETE BLOCKWORK
BRK	BRICKWORK
BOL	BOLLARD
BS	BENCH SEAT
BT	BOTTLE TRAP
BTH	BATHTUB
CAP	CAPPING
CB	PREFINISHED STEEL
CBG	COLOUR-BACKED GLASS
CFC	COMPRESSED FIBRE CEMENT
CH	COAT HOOK
CJ	CONSTRUCTION / CONTROL JOINT
CL	CENTRE LINE
CLD	CLADDING
CLS	CLOTHESLINE
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CPC	COLORBOND PARAPET CAPPING
CPD	CUPBOARD
CPT	CARPET
CR	CEMENT RENDER
CRN	CORNICE
CRT	CURTAIN
CRR	CURTAIN RAIL
CS	CLEANERS SINK
CVS	COVED SKIRTING
CW	COLD WATER
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
DR	DOOR
DS	DOOR STOP
EDB	ELECTRICAL DISTRIBUTION BOARD - REFER TO ELECTRICAL DOCUMENTATION
EF	EXHAUST FAN
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ELP	ELECTRICAL PLATE
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▨	EXISTING PREMISES
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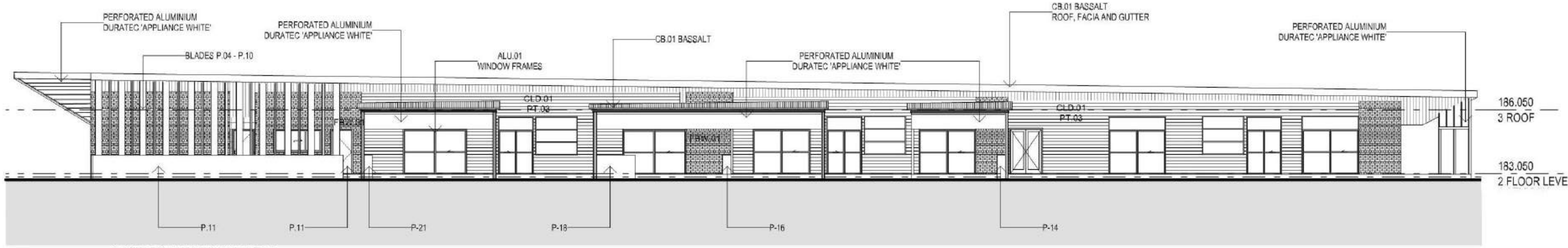

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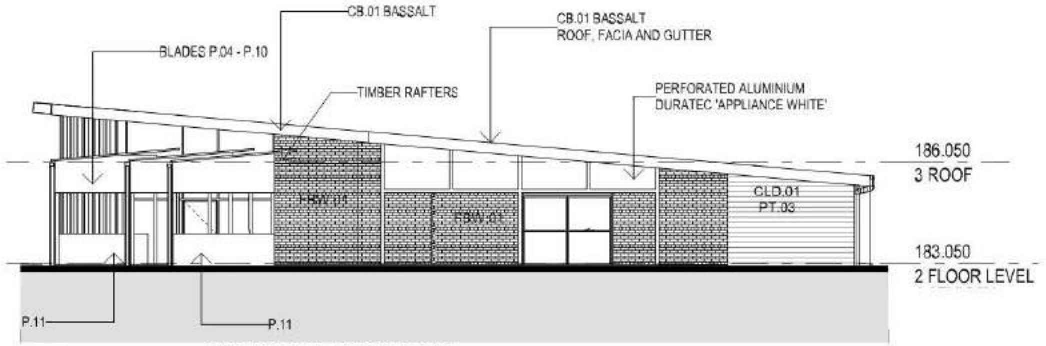

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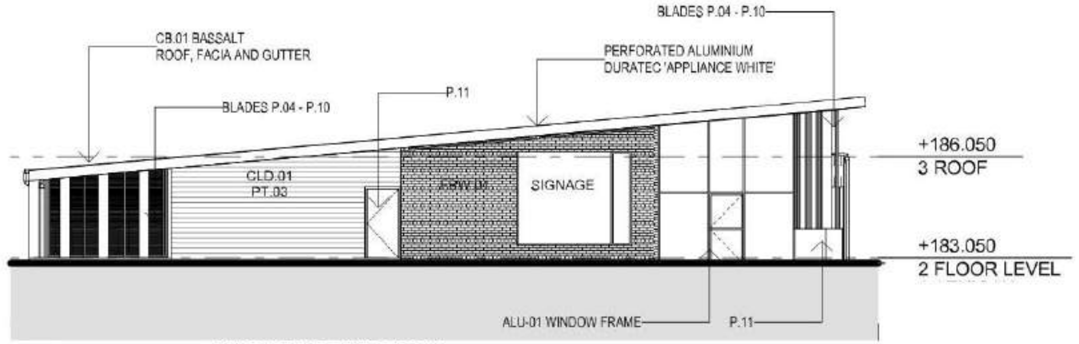

EAST ELEVATION
1:200

SOUTH ELEVATION
1:200

EJE ARCHITECTURE
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REV	DATE	COMMENTS
0	04/06/2019	ISSUE FOR DA

DRN	CHKD	VRFD
BdB	HN	

PROJECT: ST NICHOLAS EARLY EDUCATION CENTRE

CLIENT: CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE
PO BOX 756, NEWCASTLE
NSW, 2300

SITE: ST JAMES PRIMARY SCHOOL,
SKELLATAR STOCK RTE,
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DRAWING: NOTIFICATION ELEVATIONS

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FILENAME : 12399 St Nicholas Childcare Muswellbrook DA 2019-06-12.pln

DRAWN :	DATE :	SCALES @A3 :
BdB	**13/06/2019**	**1:200**

PROJECT No :	PHASE :	DRAWING No :	REV :
12399	**DA**	**A14**	**0**

EJE architecture

APPENDIX G

Stormwater Management Plan

ST NICHOLAS EARLY EDUCATION CENTRE
SKELLATAR STOCK ROUTE, MUSWELLBROOK NSW
STORMWATER INFRASTRUCTURE WORKS

DRAWING No.	DESCRIPTION
C1.00	GENERAL NOTES
C2.00	STORMWATER MANAGEMENT PLAN
C3.00	STORMWATER MANAGEMENT DETAILS
C4.00	SEDIMENTATION & EROSION CONTROL PLAN AND DETAILS

GENERAL NOTES

1. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS, SERVICES AND STRUCTURES ON SITE PRIOR TO COMMENCEMENT OF WORK.
2. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
3. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR. LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
4. ALL PROPOSED AND EXISTING SERVICE TRENCHES UNDER PROPOSED EXTERNAL VEHICULAR PAVEMENTS AND BUILDING SLAB ON GROUND SHALL BE BEDDED, BACKFILLED AND COMPACTED WITH 5% BY MASS CEMENT STABILISED FINE CRUSHED ROCK (DGS20) COMPACTED EQUIVALENT TO AT LEAST 98% OF STANDARD MAXIMUM DRY DENSITY.
   PLACE AND COMPACT MATERIALS IN LAYERS NOT EXCEEDING 150mm LOOSE THICKNESS. THE BACKFILL SHALL EXTEND FROM BEDDING LEVEL TO PROPOSED PAVEMENT SUBGRADE LEVEL.
5. ON COMPLETION OF PROPOSED WORKS ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, PAVEMENTS, GRAVEL AND GRASSED / LANDSCAPED AREAS. (U.N.O.)
6. CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS.
7. MAKE GOOD CONNECTION TO EXISTING SERVICES.
8. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
9. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER THESE SERVICES. HAND EXCAVATE IN THESE AREAS.
10. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS.
11. NOT APPLICABLE
12. NOT APPLICABLE
13. ALL WORK SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS.

   ALL PROPOSED FINISHED SURFACE LEVELS AND CONTOURS REPRESENT THE FINISHED SURFACE LEVEL ON TOP OF THE PROPOSED FINISHED SURFACE TREATMENT SUCH AS PAVEMENTS AND LANDSCAPING. THE CONTRACTOR SHALL ENSURE THAT THE EARTHWORKS ARE CONSTRUCTED TO SUIT AND ACCOMMODATE THE FINAL THICKNESS OF THE PROPOSED FINISHED SURFACE TREATMENTS. THE CONTRACTOR SHALL ENSURE THAT THE FINISHED SURFACE OF ABUTTING FINISHED SURFACE TREATMENTS MAKE A SMOOTH MATCH SO THAT FINISHED SURFACES ARE FREE DRAINING WITH NO PONDING.

STORMWATER MANAGEMENT NOTES

0.1. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS, SERVICES AND STRUCTURES ON SITE PRIOR TO COMMENCEMENT OF WORK.

ALL WORKS SHALL BE IN ACCORDANCE WITH AS3500.3.

ALL PITS ARE TO BE PREFABRICATED PRECAST COMCRETE PITSBY 'CI & D', 'ROCLA' OR AN APPROVED EQUIVALENT.

0.2. ALL WORK SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS AND THE SPECIFICATION.

0.3. ON COMPLETION OF PROPOSED WORKS ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED & LANDSCAPE AREAS AND ROAD PAVEMENTS. (U.N.O.)

0.4. CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS.

0.5. MAKE SMOOTH TRANSITION TO EXISTING SERVICES AND MAKE GOOD.

0.6. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.

0.7. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER THESE SERVICES. HAND EXCAVATE IN THESE AREAS.

0.8. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, STRUCTURAL, HYDRAULIC, AND OTHER SERVICES DRAWINGS AND SPECIFICATIONS.

0.9. ALL 300 DIA. DRAINAGE PIPES AND LARGER SHALL BE CLASS "2" APPROVED SPIGOT AND SOCKET RCP PIPES WITH RUBBER RING JOINTS. (U.N.O.) ALL DRAINAGE PIPES UP TO AND INCLUDING 225 DIA SHALL BE SEWER GRADE uPVC WITH SOLVENT WELD JOINTS. (U.N.O.)

0.10 EQUIVALENT STRENGTH FRC PIPES MAY BE USED.

0.11. ALL PIPE JUNCTIONS, BENDS AND TAPERS UP TO AND INCLUDING 450 DIA SHALL BE VIA PURPOSE MADE FITTINGS.

0.12. MINIMUM GRADE TO STORMWATER LINES TO BE 1%. (U.N.O.)

0.13. CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.

0.14. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.

0.15. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75mm THICK SAND BED. IN ALL CASES BACKFILL THE TRENCH WITH SAND TO 200mm ABOVE THE PIPE. WHERE THE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL COMPACTED IN 150mm LAYERS TO 98% STANDARD MAX. DRY DENSITY.

0.16. BEDDING SHALL BE (U.N.O.) TYPE H1, IN ACCORDANCE WITH CURRENT RELEVANT S.A.A. CODES.

0.17. WHERE STORMWATER LINES PASS UNDER FLOOR SLABS SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.

0.18. PROVIDE 3.0m LENGTH OF 100 DIA. SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK, AT UPSTREAM END OF EACH PIT.

0.19. SEALED ROOF DRAINAGES SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LOCAL AUTHORTY REQUIREMENTS. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL ELEMENTS ASSOCIATED WIH WATER REUSE TANKS, INLCUDING BUT NOT LIMITED TOO, FIRST FLUSH DEVICES, APPROPRIATE VERMIN AND AND MOSIQUITO MESHING, ETC, REQUIRED TO COMPLETE THE SYSTEM.

THE DRAINAGE SYSTEM SHALL BE SEALED FROM GUTTER LEVEL TO RAINWATER TANK.

0.20. PROVIDE 100 DIA AG DRAINS IN FILTER SOCKS TO ALL LANDSCAPE AREA, PLANTER BEDS, STORMWATER PIPE TRENCHES, RETAINGING WALLS, ROAD EDGES AND SWALE BASIS. ALL AG DRAINS SHALL BE BEDDED IN A FREE DRAINING SINGLE SIZE COURSE AGGREGATE AND CONNECTED INTO THE STORMWATER SYSTEM.

0.21. ALL DOWNPIPES SHOWN ARE NIMOINAL LOCATIONS ONLY. REFER TO ARCHITECTS AND HYDRAULIC ENGINEERS DRAWINGS FOR EXACT LOACTIONS AND SIZES.

STORMWATER DRAINAGE STRUCTURE SCHEDULE

STRUCTURE TYPE	NOMINAL INTERNAL SIZE OF ACCESS OPENING CHAMBER AND COVER/GRATE AND FRAME TYPE	STRUCTURE NUMBER
SURFACE INLET PIT	600x600 WITH CLASS 'A' GALVANISED MILD STEEL GRATE HINGED TO FRAME	(P1) (P2) (P3) (P9) (P10)
SURFACE INLET PIT	600x600 WITH CLASS 'D' GALVANISED MILD STEEL GRATE HINGED TO FRAME	(P4)
SURFACE INLET PIT	900x900 WITH CLASS 'D' GALVANISED MILD STEEL GRATE HINGED TO FRAME	(P5)
JUNCTION PIT	600x600 WITH CLASS 'B' SEALED BOLT DOWN SOLID LID WITH SUITABLE LIFTING LUGS.	(P6) (P7)
SURFACE INLET PIT	900x900 WITH CLASS 'B' GALVANISED MILD STEEL GRATE HINGED TO FRAME	(P8)
RAIN WATER RE-USE TANK	22500L MINIMUM RE-USE VOLUME ABOVE GROUND RAINWATER REUSE TANK	(RWT1) (RWT1)
RETENTION TANK WITH SAND FILTER	600x600 WITH CLASS 'C' GALV. MILD STEEL(MS) GRATE,	(OSD1)

STORMWATER QUALITY STRUCTURE SCHEDULE

STRUCTURE TYPE	DESCRIPTION	STRUCTURE NUMBER	MAINTENANCE SCHEDULE	REPLACEMENT SCHEDULE
SEDIEMENT AND TRASH PIT	LYSAGHT MAXIMESH RH3030 SCREEN WITH 400mm MINIMUM DEEP SEDIMENT TRAP	(P5)	6 MONTHLY, AFTER LARGE EVENTS	
FIRST FLUSH DEVICE	PROPRIETARY FIRST FLUSH DEVICE	(FF1)	MONTHLY, AFTER LARGE EVENTS	N/A

NOTE:
1. MAINTENANCE AND REPLACEMENT SCHEDULES ARE A GUIDE ONLY AND ARE DEPENDENT UPON SITE CONDITIONS AND WEATHER EVENTS. ADDITIONAL MAINTENANCE SHOULD BE CARRIED OUT AFTER SIGNIFICANT RAIN EVENTS.

2. ALTERNATE STORMWATER QUALITY STRUCTURES MAYBE SUBMITTED FOR APPROVAL. ALL ALTERNATE PROPOSALS SHALL BE SUBMITTED WITH CLARIFYING DOCUMENTATION TO DEMONSTRATE THEIR ADHERENCE TO THE REQUIRED POLLUTION REDUCTION TARGETS. ALL COST ASSOCIATE WITH THE APPROVAL OF THE ALTERNATE SYSTEM SHALL BE BOURNE BY THE CONTRACTOR.

A MAINTENANCE SCHEDULE AS PART OF THE INSTALLED STORMWATER QUALITY SYSTEMS SHALL BE PROVIDED PRIOR TO INSTALLATION OF THE DEVICE FOR APPROVAL BY THE CLIENT. PROVIDE ALL LEGISLATIVE REQUIRED SIGNAGE.

DEMOLITION NOTES

1. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM SITE ALL EXISTING PAVEMENT, KERBS, FENCES, TREES AND VEGETATION COMPLETE INCLUDING ROOTS, STORMWATER DRAINAGE, SERVICES, STRUCTURES AND FEATURES LOCATED IN THE VICINITY OF THE PROPOSED WORKS AND MADE REDUNDANT BY THESE WORKS.

RAINWATER REUSE TANK

T1. RAINWATER TANKS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL COUNCIL AUTHORITY REQUIREMENTS, LOCAL WATER AUTHORITY REGULATIONS, AS3500 AND MPMSAA ' RANINWATER DESIGN AND INSTALLATION HANDBOOK'.

T2. THE TANK WATER SHALL BE CONNECTED TO AT LEAST THE ITEMS NOTED ABOVE AND AS SHOWN ON THE HYDRAULIC ENGINEERS DRAWINGS.

T3. THE TANK SHALL BE PROVIDED WITH ALLOWANCE FOR A SLUDGE ZONE AT THE BASE AND AN AIR ZONE AT THE TOP. VOLUMES NOMINATED ARE FOR OPERATIONAL REUSE VOLUMES UNLESS STATED OTHERWISE.

T4. MAINS BACK UP SHALL BE PROVIDED TO ALL REUSE TANKS. REFER TO HYDRAULIC ENGINEERS DRAWINGS FOR DETAILS.

T5. PROVIDE ALL SIGNAGE AND MARKING AS REQUIRED BY LEGISLATION TO ALL WATER STORAGE AND RE-USE COMPONENTS.

Issue	Description	Date
A	DEVELOPEMENT APPLICATION ISSUE	15.05.19

DO NOT SCALE

Client
CDoMN

Architect
EJE architecture

ambai CONSULTANTS
STRUCTURAL ACN 161 259 114 ABN 74 491 837 093
CIVIL 29 Victoria Street New Lambton NSW 2305
ENGINEERS ambai_admin@optusnet.com.au

Project
ST NICHOLAS EARLY EDUCATION CENTRE
SKELLATAR STOCK ROUTE
MUSWELBROOK NSW

Drawing Title
GENERAL NOTES

Drawn	Engineer	Scale	Sheet	
MA	RK	AS NOTED	A1	
Checked	Project No.		Dwg. No.	Issue
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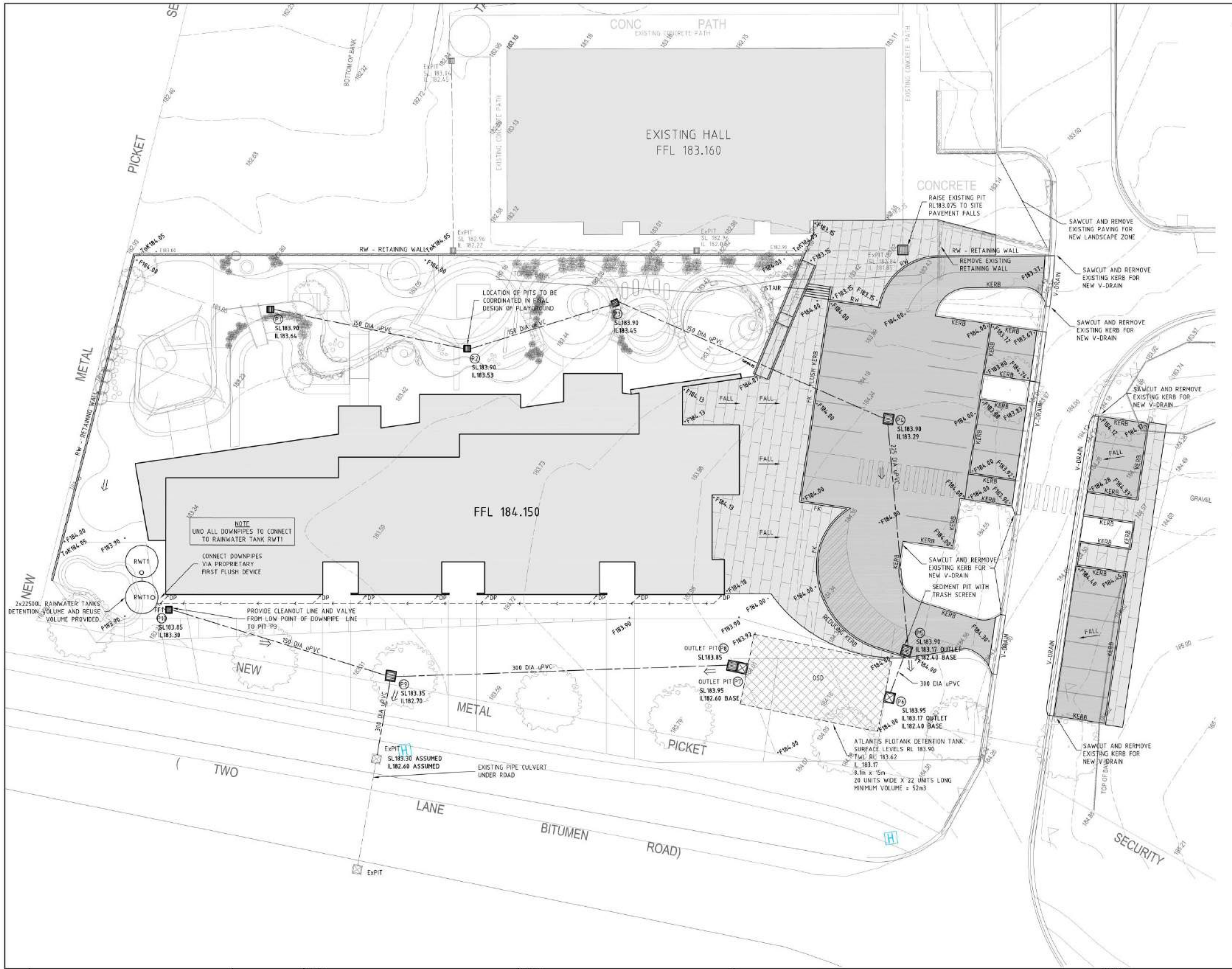


STORMWATER MANAGEMENT PLAN

SCALE 1:200

NOTE:

1. REFER DRAWING C1.00 FOR GENERAL AND CONSTRUCTION NOTES.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE STORMWATER MANAGEMENT REPORT.

STORMWATER METHODOLOGY

1. THE CONSIDERED SITE IS BOUNDED BY THE BOUNDARY RUNNING ALONG SKELLATAR STOCK ROUTE TO THE SOUTH, THE EXISTING INTERNAL ROAD TO THE EAST, THE EXISTING HALL BUILDING TO THE NORTH AND THE BOUNDARY TO THE WEST. THE TOTAL SITE AREA IS 5300m2. THE SMALL AREA OF CARPARK TO THE EAST OF INTERNAL ROAD HAS BEEN ADDED AS ADDITIONAL IMPERVIOUS AREA WITHIN THE PROPOSED SITE.

   TWO SITE DISCHARGE CONTROLS ARE PROPOSED.
   1. RAIN WATER TANKS ACTING AS BOTH ON SITE RETENTION FOR REUSE AND ON SITE DETENTION WITH CONTROLLED DISCHARGE.
   2. INGROUND ON SITE DETENTION TANK WITH CONTROLLED DISCHARGE.

2. A DRAINS SOFTWARE MODEL WAS UNDERTAKEN TO MODEL THE STORMWATER REQUIREMENTS WITH POST SITE DISCHARGE CONTROLLED TO REPLICATE THE PRE DEVELOPED SITE DISCHARGE FOR A RANGE OF STORMS FROM 50% AEP TO 1% AEP.

   AS THE PIT CATCHMENTS ARE SMALL THE MODEL WAS SIMPLIFIED TO THREE CATCHMENTS BEING ROOF AREA, PLAYGROUND+PAVEMENTS+LANDSCAPE AREA AND A LANDSCAPE AREA AT THE SOUTHERN SIDE OF BUILDING DIRECTLY DISCHARGING PIT 9.

   ROOF AREA:
   THE ROOF AREA IS 1226m2. IT IS PROPOSED TO DISCHARGE THE ROOF WATER THROUGH A SEALED CHARGED DOWNPIPE SYSTEM TO 2x22500 LITRE RAINWATER REUSE TANKS. THE TANKS SHALL HAVE A REUSE VOLUME OF 12000L.

   THE REMAINING VOLUME OF 33000L IS AN ON SITE DETENTION WITH OUTFLOW CONTROLLED BY A HIGH LEVEL AND A LOW LEVEL ORIFICE.

   LANDSCAPE +PAVEMENT AREAS:
   THE LANDSCAPE AND PAVEMENT AREAS 4074m2 AND 61% IMPERVIOUS. DISCHARGE IS TO BE CONTROLLED THROUGH AN INGROUND ON SITE DETENTION TANK WITH A VOLUME OF 52m3. DISCHARGE IS CONTROLLED THROUGH A HIGH LEVEL AND LOW LEVEL ORIFICE AT THE OUTLET PIT.

CIVIL LEGEND

FFL 184.15	NOMINAL FINISHED FLOOR LEVEL
— — — —	GROUND STORMWATER DRAINAGE LINE
–>– – – –>– –	DOWNPIPE LINE, CHARGED AND FULLY SEALED
DP○– – – – – –	CHARGED DOWNPIPE LINE CONNECTED TO RWT1 LOCATION INDICATIVE REFER ARCHITECTS DRAWINGS FOR LOCATIONS
IP ○	INSPECTION POINT TO DRAINAGE LINE
IR ○	INTERMEDIATE RISER TO SUBSOIL DRAINAGE LINE
▤ P1	GRATED INLET PIT
☒ P1	JUNCTION PIT
RWT1	4000L RAINWATER UNDER DECK REUSE TANK CONNECTED TO ROOF DRAINAGE SYSTEM CONNECT OVERFLOW TO STORMWATER SYSTEM
FF1	PROPRIETARY FIRST FLUSH DEVICE
.F15.00	PROPOSED FINISHED SURFACE LEVEL
.SL15.23	PROPOSED PIT FINISH GRATE LEVEL
.IL15.23	PROPOSED PIT FINISH INVERT LEVEL
.ToK15.15	PROPOSED TOP OF KERB LEVEL
.ToW15.15	PROPOSED TOP OF WALL
.E15.64	ASSUMED EXISTING SURFACE LEVEL
.EINV14.82	ASSUMED EXISTING GUTTER INVERT LEVEL
.IL13.94	ASSUMED EXISTING PIT/PIPE INVERT LEVEL
KERB	KERB
⇛	DENOTES DIRECTION OF OVERLAND FLOW PATH
▢	NEW BUILDING
■	NEW DRIVE/CARPARK HARDSTAND CONNECTED TO OSD
▥	NEW DRIVE/CARPARK HARDSTAND DIRECT DISCHARGE TO STREET DRAINAGE SYSTEM
OSD	ATLANTIS FLO TANK DETENTION TAK MINIMUM VOLUME OF 52m3

B	DEVELOPEMENT APPLICATION ISSUE	15.05.19
A	COORDINATION ISSUE	11.04.19
Issue	Description	Date
		DO NOT SCALE

Client
CDoMN

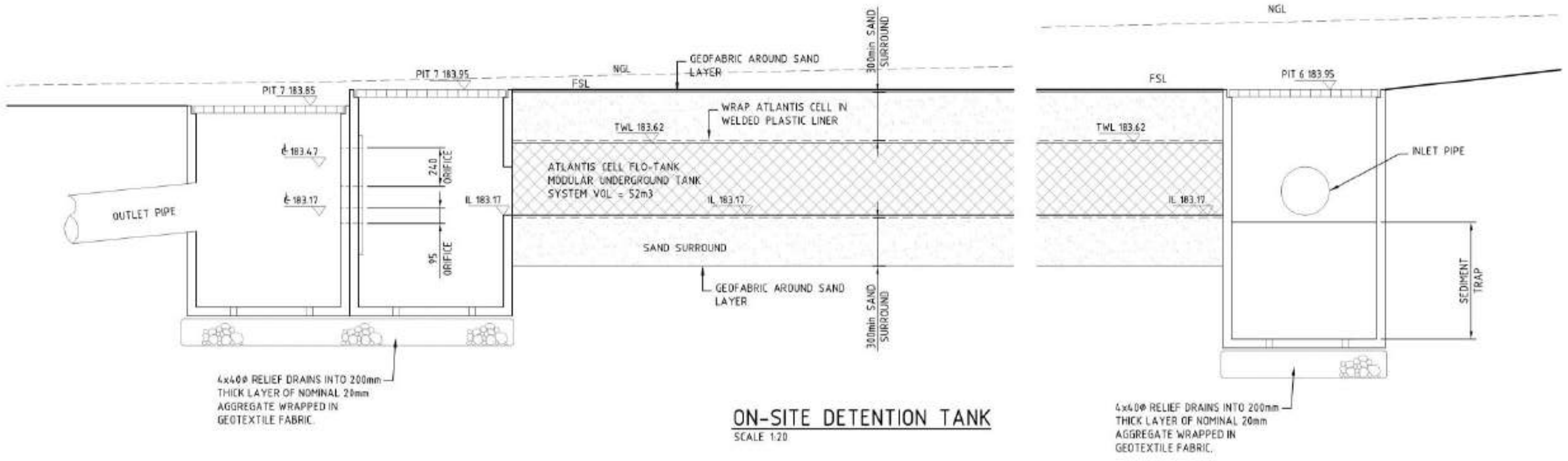
Architect
EJE architecture

ambai CONSULTANTS
STRUCTURAL ACN 161 259 114 ABN 74 491 837 093
CIVIL 29 Victoria Street New Lambton NSW 2305
ENGINEERS ambai_admin@optusnet.com.au

Project
ST NICHOLAS EARLY
EDUCATION CENTRE
SKELLATAR STOCK ROUTE
MUSWELBROOK NSW

Drawing Title
STORMWATER MANAGEMENT PLAN

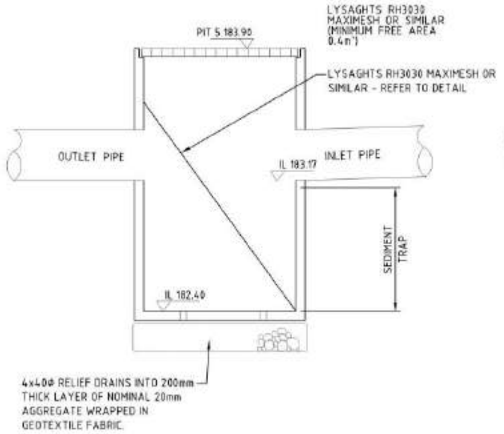
Drawn	Engineer	Scale	Sheet	
MA	RK	AS NOTED	A1	
Checked	Project No.		Dwg. No.	Issue
RK	1738		C2.00	B



4x40Ø RELIEF DRAINS INTO 200mm THICK LAYER OF NOMINAL 20mm AGGREGATE WRAPPED IN GEOTEXTILE FABRIC.

4x40Ø RELIEF DRAINS INTO 200mm THICK LAYER OF NOMINAL 20mm AGGREGATE WRAPPED IN GEOTEXTILE FABRIC.

ON-SITE DETENTION TANK
SCALE 1:20

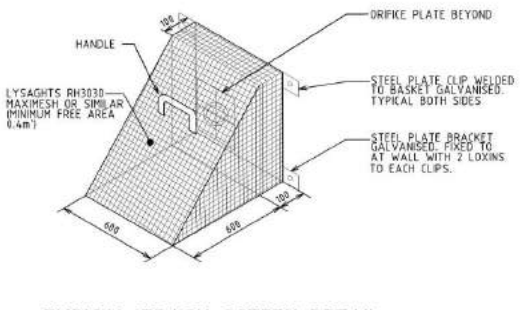


LYSAGHTS RH3030 MAXIMESH OR SIMILAR (MINIMUM FREE AREA 0.4m²)

LYSAGHTS RH3030 MAXIMESH OR SIMILAR - REFER TO DETAIL

4x40Ø RELIEF DRAINS INTO 200mm THICK LAYER OF NOMINAL 20mm AGGREGATE WRAPPED IN GEOTEXTILE FABRIC.

PIT P5 DETAIL
SCALE 1:20



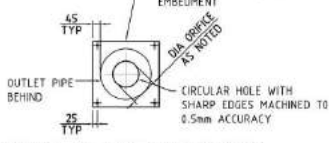
ORIFICE PLATE BEYOND

STEEL PLATE CLIP WELDED TO BASKET GALVANISED. TYPICAL BOTH SIDES

STEEL PLATE BRACKET GALVANISED. FIXED TO AT WALL WITH 2 LOXINS TO EACH CLIPS.

LYSAGHTS RH3030 MAXIMESH OR SIMILAR (MINIMUM FREE AREA 0.4m²)

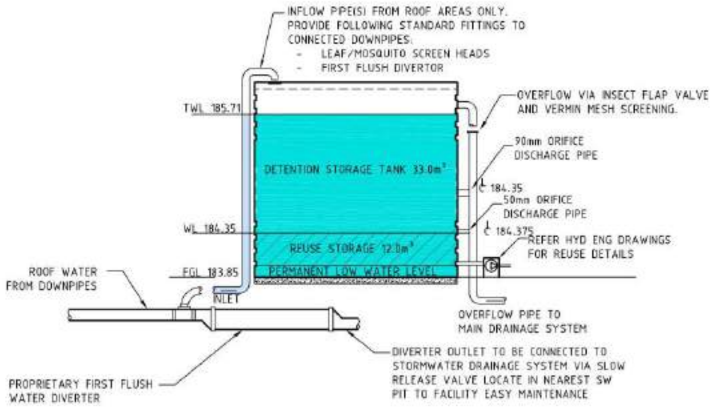
TYPICAL TRASH SCREEN DETAIL
SCALE NTS



3mm THICK STAINLESS STEEL PLATE, GRADE 316, 4-M16 MASONRY ANCHORS, 130 MIN EMBEDMENT

CIRCULAR HOLE WITH SHARP EDGES MACHINED TO 0.5mm ACCURACY

ORIFICE PLATE ELEVATION
SCALE 1:20



INFLOW PIPE(S) FROM ROOF AREAS ONLY. PROVIDE FOLLOWING STANDARD FITTINGS TO CONNECTED DOWNPIPES:
- LEAF/MOSQUITO SCREEN HEADS
- FIRST FLUSH DIVERTOR

OVERFLOW VIA INSECT FLAP VALVE AND VERMIN MESH SCREENING.

90mm ORIFICE DISCHARGE PIPE

50mm ORIFICE DISCHARGE PIPE

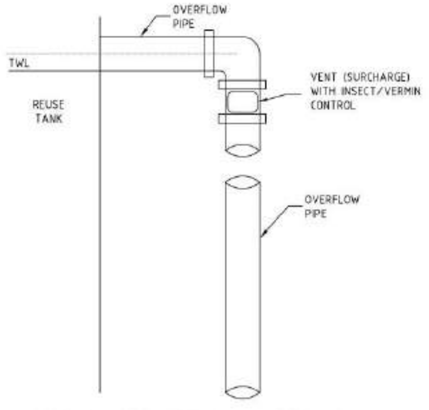
REFER HYD ENG DRAWINGS FOR REUSE DETAILS

OVERFLOW PIPE TO MAIN DRAINAGE SYSTEM

DIVERTER OUTLET TO BE CONNECTED TO STORMWATER DRAINAGE SYSTEM VIA SLOW RELEASE VALVE LOCATE IN NEAREST SW PIT TO FACILITY EASY MAINTENANCE

PROPRIETARY FIRST FLUSH WATER DIVERTER

RAINWATER RE-USE & DETENTION TANK
SCALE NTS



RAINWATER TANK OVERFLOW
SCALE 1:10

Issue	Description	Date
A	DEVELOPEMENT APPLICATION ISSUE	15.05.19

DO NOT SCALE

Client
CDoMN

Architect
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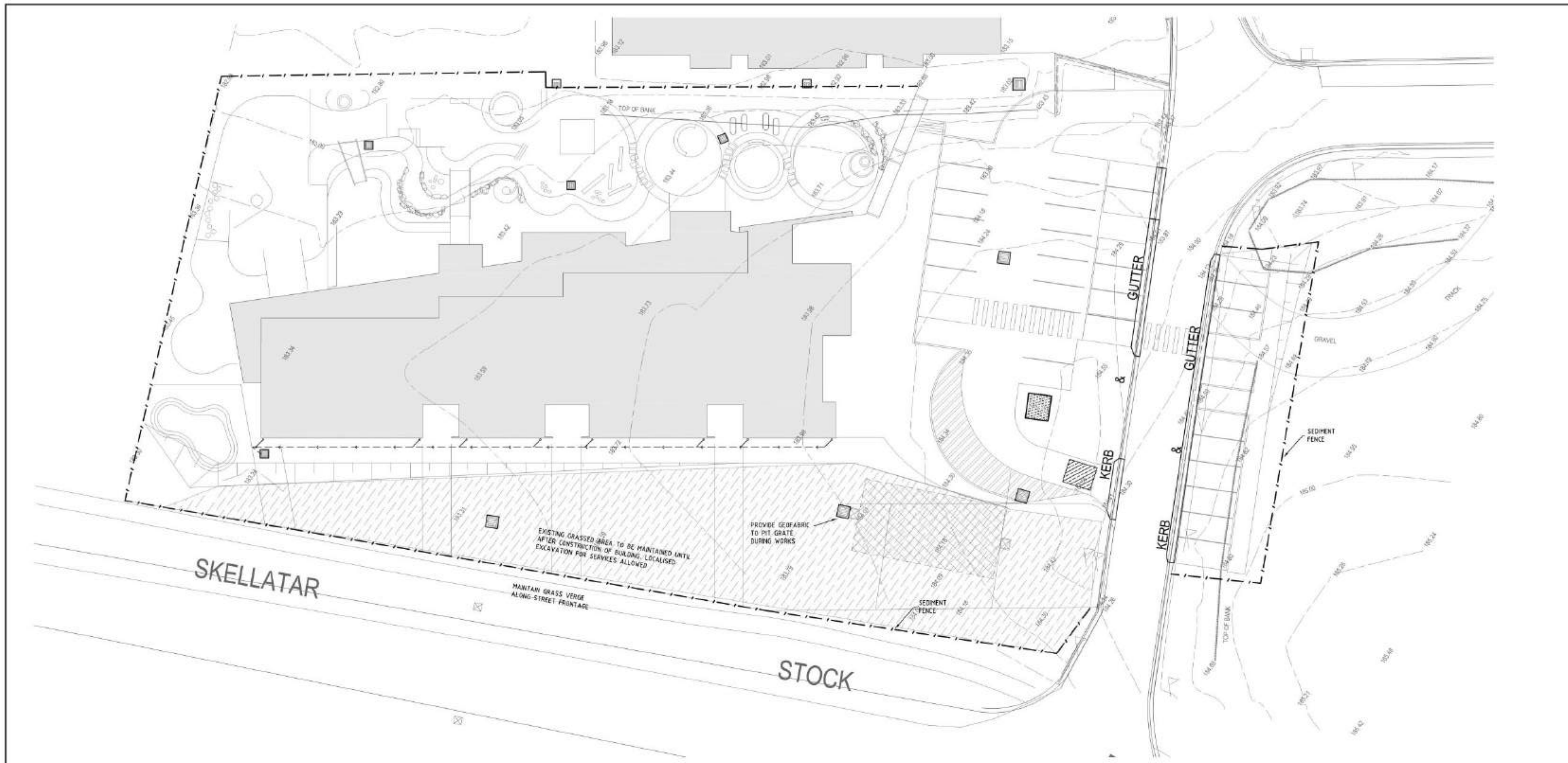
Project
ST NICHOLAS EARLY EDUCATION CENTRE
SKELLATAR STOCK ROUTE
MUSWELBROOK NSW

Drawing Title
STORMWATER MANAGEMENT TYPICAL DETAILS

Drawn	Engineer	Scale	Sheet	
MA	RK	AS NOTED	A1	
Checked	Project No.		Dwg. No.	Issue
RK	1738		C3.00	A



SEDIMENTATION AND EROSION CONTROL PLAN

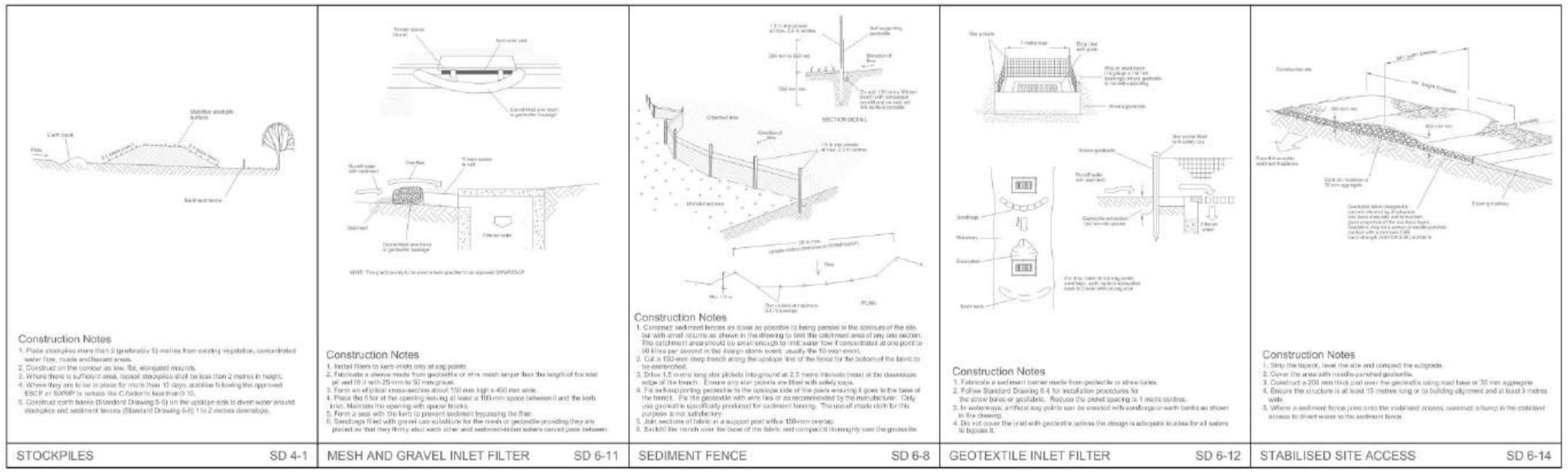
SCALE 1:250

NOTES

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH NEWCASTLE CITY COUNCIL TECHNICAL MANUALS AND NSW MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION VOL 1 (BLUE BOOK)

CIVIL LEGEND

▨	STABILISED SITE ACCESS
▨	EXISTING GRASSED AREA TO BE MAINTAINED UNTIL AFTER CONSTRUCTION OF BUILDING. LOCALISED EXCAVATION FOR SERVICES ALLOWED
⬭	PROPOSED STOCKPILE LOCATION
▤	GEOFABRIC SEDIMENT TRAP
—·—·—	SITE & SEDIMENT CONTROL FENCE



Issue	Description	Date
A	DEVELOPEMENT APPLICATION ISSUE	15.05.19

DO NOT SCALE

Client
CDoMN

Architect
EJE architecture

ambai CONSULTANTS
STRUCTURAL ACN 161 259 114 ABN 74 491 837 093
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ENGINEERS ambai_admin@optusnet.com.au

Project
ST NICHOLAS EARLY
EDUCATION CENTRE
SKELLATAR STOCK ROUTE
MUSWELBROOK NSW

Drawing Title
SEDIMENTATION & EROSION CONTROL PLAN & DETAILS

Drawn	Engineer	Scale	Sheet	
MA	RK	AS NOTED	A1	
Checked	**Project No.**		**Dwg. No.**	**Issue**
RK	1738		C4.00	A

APPENDIX H

Traffic & Parking Assessment

Intersect Traffic

TRAFFIC & PARKING ASSESSMENT

ST NICHOLAS EARLY LEARNING CENTRE

LOT 1 DP1070178
111 SKELLATAR STOCK ROUTE, MUSWELLBROOK

PREPARED FOR: CATHOLIC DIOCESE OF
MAITLAND - NEWCASTLE

MARCH 2019

18/181

TRAFFIC & PARKING ASSESSMENT
CATHOLIC DIOCESE OF MAITLAND - NEWCASTLE

ST. NICHOLAS EARLY LEARNING CENTRE
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111 SKELLATAR STOCK ROUTE, MUSWELLBROOK

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QUALITY ASSURANCE

This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

Issue	Date	Description	By
A	05/02/19	Draft	DD
B	06/02/19	Edit	JG
C	26/02/19	Final Proof/Amended Plans	JG
D	14/03/19	Approved	JG

This document has been authorised by

Date 14th March 2019

Disclaimer

This report has been prepared based on the information supplied by the client and investigation undertaken by Intersect Traffic Pty Ltd & other consultants. Recommendations are based on Intersect Traffic's professional judgement only and whilst every effort has been taken to provide accurate advice, Council and any other regulatory authorities may not concur with the recommendations expressed within this report. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Intersect Traffic Pty Ltd. Intersect Traffic makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

Confidentiality Statement

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ATTACHMENTS

FIGURES

PHOTOGRAPHS

TABLES

1.0 INTRODUCTION

Intersect Traffic Pty Ltd (Intersect Traffic) was engaged by the Catholic Diocese of Maitland – Newcastle to prepare a Traffic and Parking Assessment Report for a proposed child care centre at Lot 1 DP 1070178 111 Skellatar Stock Route, Muswellbrook. The centre will provide 104 places for children aged 5 years and under and will operate as a Long Day Care Facility between the hours of 6.30 am and 6.30 pm. The development site is located within a currently grassed area within the St James Catholic Primary School site near the front of the site. Thirty-one (31) on-site car parking spaces including an accessible space, an emergency vehicle space as well as a three (3) car space drop off / pick up area are proposed in an at grade car park in front of the centre accessed off the existing school access road off Skellatar Stock Route. The development concept plans are shown in ***Attachment A***.

This report is required to support a development application to Muswellbrook Council and presents the findings of the traffic and parking assessment including the following:

1. An outline of the existing situation in the vicinity of the site;
2. An assessment of the traffic impacts of the proposed development including the predicted traffic generation and its impact on existing road and intersection capacities;
3. Reviews parking, public transport, pedestrian and cycle way requirements for the proposed development, including assessment against Council, Australian Standards and the NSW Roads and Maritime Services (RMS) standards and requirements; and
4. Presentation of conclusions and recommendations.

2.0 SITE DESCRIPTION

The subject site is shown in ***Figure 1*** below. It is located on the northern side of the Skellatar Stock Route, Muswellbrook approximately 1 km east of Sydney Street (Denman Road). The site currently contains the St James Catholic Primary School which is to remain with the proposed early learning centre (ELC) located on an unused part of the site and provided to compliment the current education services provided by the school. The site is approximately 2.1 km's south of the Muswellbrook CBD area.

The location of the ELC is in the south-east corner of the site immediately south of the existing school Assembly Hall. The property is titled and addressed as Lot 1 DP 10701, 111 Skellatar Stock Route, Muswellbrook and has an area of approximately 7.15 ha's.

The site is currently zoned R1 – General Residential pursuant to the Muswellbrook LEP (2009). The site has frontage to Skellatar Stock Route and has two existing vehicular accesses operating as separate entry and exit driveways approximately 90 metres apart. These accesses currently service a large on-site car parking area, kiss and ride area and on-site bus parking area. The current site development and accesses are shown in ***Photographs 1 & 2*** below.

Figure 1 – Site Location

Photograph 1 – Development site and entry access

Photograph 2 – Development site and exit access

3.0 EXISTING ROAD NETWORK

3.1 New England Highway / Maitland Street

Maitland Street being part of the New England Highway is a classified road and part of the state highway network (SH9). It is the major arterial road in the region and is under the care and control of the NSW RMS. It connects the New England and Upper Hunter Valley areas to Newcastle and represents a major transport route for many commodities.

In the vicinity of the site it is a four-lane two-way sealed road with a central vegetated median strip and adjacent parking lanes. Lane widths are between 3.2 and 3.5 metres and kerb and gutter and longitudinal drainage are located along its edges. A 50 km/h speed limit generally applies along its length within Muswellbrook. At the time of inspection Maitland Street near Rutherford Street was observed to be in good condition. ***Photograph 3*** shows Maitland Street (New England Highway) near the Rutherford Street signalised intersection.

Photograph 3 – Maitland Street (NEH) near Rutherford Street intersection.

3.2 Denman Road / Sydney Street

Denman Road / Sydney Street near the site is a sub-arterial road providing access between Muswellbrook and Denman connecting the New England Highway with the Golden Highway. It is a classified state road (MR209) under the care and control of NSW RMS.

Near the site it is a two-lane two-way sealed rural road with a total sealed carriageway width of approximately 11 metres with additional lanes provided at key intersections such as at Skellatar Stock Route. A 60 km/h speed limit applies to this section of road and at the time of inspection Denman Road / Sydney Street was observed to be in good condition. ***Photograph 4*** below shows Denman Road / Sydney Street near the give way-controlled T-intersection with the Skellatar Stock Route. Note at this intersection right turn and left turn deceleration lanes are provided for vehicles turning into the Skellatar Stock Route (CHR/AUL type rural intersection).

Photograph 4 – Denman Road / Sydney Street near Skellatar Stock Route.

3.3 Skellatar Stock Route / Iron Bark Road / Rutherford Street

These roads all likely to be used by some traffic generated by the proposed ELC near the site represent the local collector road network collecting and distributing traffic from the adjoining residential areas to the arterial and sub-arterial road networks at the New England Highway / Maitland Street and Denman Road / Sydney Street. These roads are two-lane two-way urban streets with Skellatar Stock Route west of the site having sealed shoulders and grassed verges while east of the site the collector road network has kerb and gutter. Skellatar Stock route has a pavement width of approximately 8.5 to 9.5 metres wide, Ironbark Road has a pavement width of 10.5 metres wide and Rutherford Street is a dual carriageway street with a vegetated central median and carriageway widths each being 6 metres wide. As local roads all these roads are under the care and control of Muswellbrook City Council.

A 50 km/h speed limit applies to this section of the road network except near the site and St James Catholic Primary School where the variable school speed zoning applies (down to 40 km/h during the AM and PM set down and pick up times). At the time of inspection all these roads were observed to be in good condition as shown in ***Photographs 5, 6 and 7*** below.

Photograph 5 – Skellatar Stock Route near the site.

Photograph 6 – Ironbark Road east of the site.

Photograph 7 – Rutherford Street north of Ironbark Road.

4.0 ROAD NETWORK IMPROVEMENTS

There are no proposed road network improvements to be undertaken in the area that would increase the capacity of the local and state road network. Future maintenance works may be undertaken by Muswellbrook Council and NSW RMS on the local and state road network in accordance with their future maintenance programs.

5.0 TRAFFIC VOLUMES

Northern Transport Planning and Engineering (NTPE) has previously carried out manual peak hour traffic counts at the Denman Road / Sydney Street / Skellatar Stock Route intersection for NSW RMS on Friday 2nd March 2018 during the PM peak traffic period (3 pm to 4 pm). This peak would coincide with the Primary School peak and would also represent the start of the ELC peak period therefore is considered the critical peak traffic period for assessment. These counts have been obtained by Intersect Traffic and are provided within ***Attachment B***. NTPE also on behalf of Intersect Traffic undertook manual intersection counts at the Ironbark Road / Rutherford Street intersection on Wednesday 18th December 2018 during the AM and PM peak periods (8 am – 9 am and 4.15 pm – 5.15 pm) which again would coincide with the peak traffic generation periods for the ELC. These counts have also been provided within ***Attachment B.***

This data has been used in this assessment to assess both two-way mid-block road capacity and intersection capacity. The two-way mid-block existing traffic volumes on the road network have been determined at a point on each leg of the intersection just prior to the intersection and the current traffic volumes shown in ***Table 1*** below as 2019 traffic volumes. Future traffic volumes for a 10-year assessment period i.e. 2029 have been determined from the 2019 traffic volumes by using a 2% per annum background traffic growth which is considered relevant for the level of development in the area. These calculated 2029 traffic volumes without the subject development traffic are also shown in ***Table 1*** below. Note as no AM data was collected at the Denman Road / Sydney Street / Skellatar Stock Route intersection AM data has been estimated based on the percentage difference in AM and PM counts found at the Ironbark Road / Rutherford Street intersection.

Table 1 – Existing and future road network traffic volumes.

Road	Section	2019		2029	
		AM (vtph)	PM (vtph)	AM (vtph)	PM (vtph)
Denman Road	south of Skellatar Stock Route	520	737	634	898
Sydney Street	north of Skellatar Stock Route	300	430	366	524
Skellatar Stock Route	east of Denman Road	220	309	268	377
Ironbark Road	north of Rutherford Street	270	363	329	442
Ironbark Road	south of Rutherford Street	171	249	208	304
Rutherford Street	east of Ironbark Road	301	460	367	561

This traffic data has been adopted in this assessment.

6.0 ROAD CAPACITY

The capacity of urban roads is generally determined by the capacity of intersections. However, Tables 4.3 and 4.4 of the RMS' '*Guide to Traffic Generating Developments'* provides some guidance on mid-block capacities for urban roads and likely levels of service. These tables are reproduced below. As traffic volumes on the local and state road network are less than 60 km/h all roads have been assessed as urban roads.

Table 4.3
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

Table 4.4
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Source: - RTA's Guide to Traffic Generating Developments (2002).

Assuming an acceptable LoS on the local and state road network as being a LoS C the following road capacity determination can be made from the above tables.

The local and state road network has one lane per direction and a LoS D would occur once traffic volumes exceed 900 vtph therefore the one-way mid-block capacity of these roads would be 900 vtph and the two-way mid-block capacity would therefore be 1,800 vtph. This road capacity is considered relevant for Denman Road / Sydney Street as a sub-arterial road and for Rutherford Street which provides access to a major retail shopping centre as well as other retail and recreational facilities.

However, in regard to a local road network which contains many residential dwellings it is considered that the environmental road capacity thresholds provided within Table 4.6 of the '*RTA's Guide to Traffic Generating Developments'* (reproduced below) is of more relevance when considering the local road networks capacity to cater for additional traffic. Adopting these road capacity thresholds will ensure residential amenity for residences on these roads remain at an acceptable level.

As Skellatar Stock Route and Ironbark Road are functioning as collector roads in the road network this table would indicate that a maximum peak hour volume of 500 vtph would be relevant for these roads to meet the environmental performance standards set by NSW RMS.

The road capacities adopted in this assessment for the state and local road network impacted by this development are shown below in ***Table 2***.

Table 2 - Adopted Road Capacities

Street	Two Way Mid-Block Road Capacity
Denman Road	1,800 vtph
Sydney Street	1,800 vtph
Skellatar Stock Route	500 vtph
Ironbark Road	500 vtph
Rutherford Street	1,800 vtph

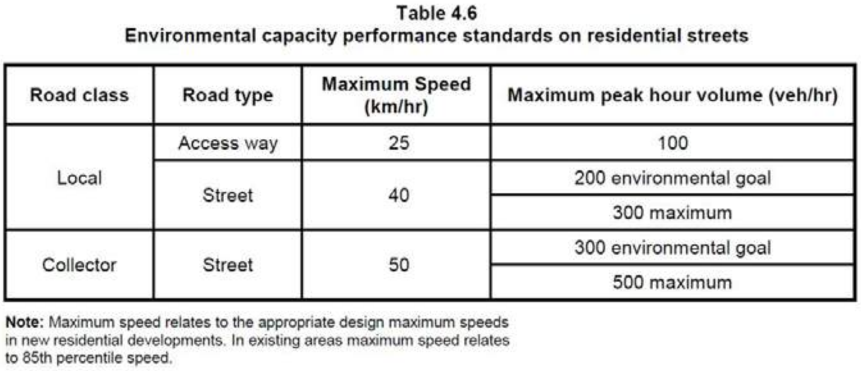


Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Source: - RTA's Guide to Traffic Generating Developments (2002).

From the traffic volume data provided in ***Section 5*** above, for this assessment it can be concluded that as existing peak traffic volumes for the local and state road network are currently below the capacity thresholds determined above (***Table 2***) there is existing spare capacity within the state and local road network to cater for additional traffic generated by this development.

7.0 ALTERNATE TRANSPORT MODES

7.1 Public Transport

Osborn's Coaches runs a Muswellbrook Town Bus Service which provides a public transport service for residential areas near the site but does not actually pass the site. The nearest location the bus service gets to the site is in Wollombi Road north of the site and at the Ironbark Road / Rutherford Street intersection 1 km south-east of the site. As the pedestrian connection from Wollombi Road to the site is still over 650 metres long the public transport service is not considered convenient to the site. An extract from the Osborne's Coaches route map for the Muswellbrook Town Service near the site is shown below in ***Figure 2.*** The site is however serviced by a number of existing school bus routes with an on-site bus parking area provided for drop off and pick up of school children.

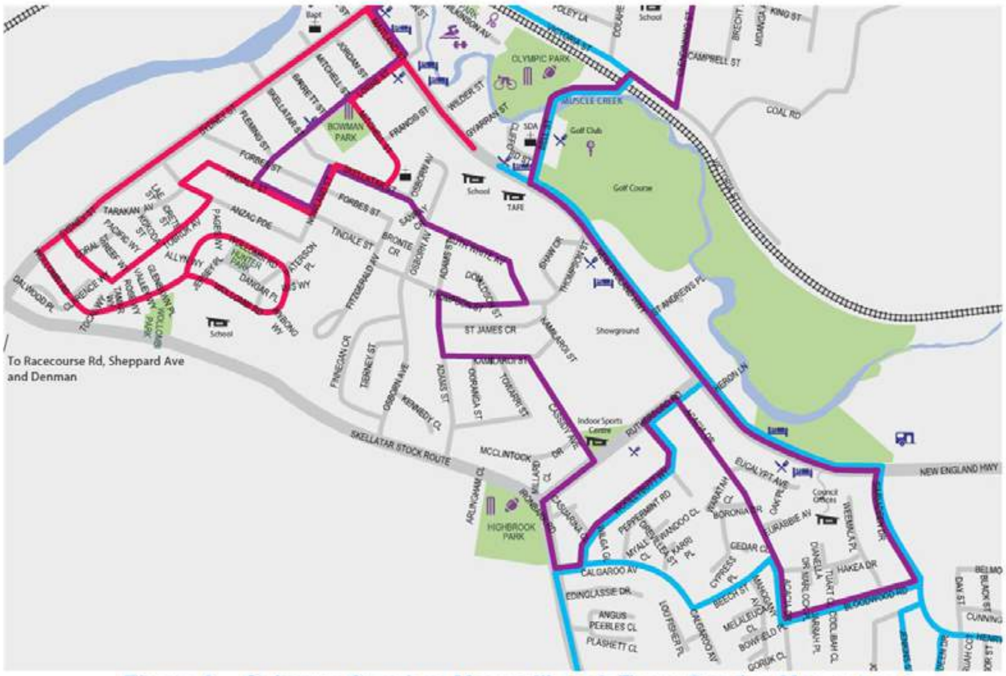


Figure 2 – Osborne Coaches Muswellbrook Town Service Map extract.

7.2 Pedestrians & Bicycles

A 2-metre-wide shared concrete pathway runs along Skellatar Stock Route past the site and connects to the residential areas to the north-west and east of the site. It runs from Wollombi Road in the north-east to Adams Street west of the site. The pathway near the ELC site is shown below in ***Photograph 8***. Beyond this there is little in the way of concrete footpaths in the adjoining residential areas though 1.2-metre-wide footpaths on Rutherford Street provide pedestrian facilities to the shopping centre located off Rutherford Street.

The only other bicycle lanes noted near the site were on-road cycle markings within the road shoulder on Denman Road and Sydney Street through the Skellatar Stock Route intersection.

Photograph 8 – Existing shared pedestrian / bicycle path near site.

8.0 DEVELOPMENT PROPOSAL

The development proposal is to construct a child care centre (St Nicholas Early Learning Centre) within the grounds of the St James Catholic Primary School on the Skellatar Stock Route, Muswellbrook. The centre will provide 104 places for children aged 5 years and under and will operate as a Long Day Care facility between the hours of 6.30 am and 6.30 pm. Thirty-one (31) on-site car parking spaces including an accessible space and an emergency vehicle space as well as a three (3) car space drop off / pick up area are proposed in an at grade car park in front of the centre accessed off the existing school access road off Skellatar Stock Route. The development concept plans are shown in ***Attachment A***. Note the proposed car parking will be accessed off the existing school access road which operates as a one-way flow system from the entry access near the ELC site to the exit access approximately 90 metres north of the entry access.

Specifically, the proposal also includes the following:

- Construction of a 104 place Early Learning Centre (900 m^2);
- Construction of an outdoor activity area (730 m^2);
- Fencing as required;
- Thirty-one space at-grade car park including 3 space set down and pick up parallel parking area; and
- Landscaping and drainage to Muswellbrook Council requirements.

9.0 TRAFFIC GENERATION

The NSW RMS' '*RTA's Guide to Traffic Generating Developments'* provides specific advice on the traffic generation potential of various land uses.

In regard to Child Care Centres the following advice is provided within Table 3.6 of the guide.

Table 3.6
Traffic generation rates

Centre Type	**Peak Vehicle Trips / Child**		
	7.00-9.00am	**2.30-4.00pm**	**4.00-6.00pm**
Pre-school	1.4	0.8	-
Long-day care	0.8	0.3	0.7
Before/after care	0.5	0.2	0.7

Source: - RTA's Guide to Traffic Generating Developments (2002).

Using these rates and assuming each vehicle trip involves an inbound and outbound trip, the traffic generating potential of the proposed 84 place child care centre can be calculated as follows:

AM Peak Hour

Traffic Generation = 0.8 vehicle trips per child x 104 children
= **84 vtph**. (rounded up)

PM Peak Hour

Traffic Generation = 0.7 vehicle trips per child x 104 children
= **73 vtph**. (rounded up)

10.0 TRIP DISTRIBUTION

Before considering the traffic impacts of the development, the traffic generated by the development needs to be distributed onto the local road network. In this regard assumptions need to be made in relation to origins and destinations of trips and the nature of the trips to and from the site. In determining the trip distribution, it is considered that because of the location of the site it is likely that the majority of the children attending the centre will live within the residential areas of Muswellbrook.

The assumptions used in distributing the traffic distribution are listed below.

AM peaks & PM peaks

- 50% of trips will arrive / depart via Skellatar Stock Route to the east;
- 50% of trips will arrive / depart via Skellatar Stock Route to the west;
- At Denman Road / Sydney Street 10 % of traffic will have an origin destination to the south and 90 % of traffic will have an origin / destination to the north;
- 50 % of trips arriving / departing to the east will be generated from the residential areas to the north of the site and will use either Osborn Avenue or Adams Street for access to and from Skellatar Stock Route;

- At the Ironbark Road / Rutherford Street intersection 50 % of traffic will have an origin / destination to the east via Rutherford Street and 50 % of traffic will have an origin / destination to the south via Ironbark Drive;
- In the AM 50% of the trips will be inbound and 50% of trips will be outbound; and
- In the PM 50% of the trips will be inbound and 50% of the trips outbound.

The resulting trip distribution onto the road network is therefore likely to be as shown below in ***Figure 3.***

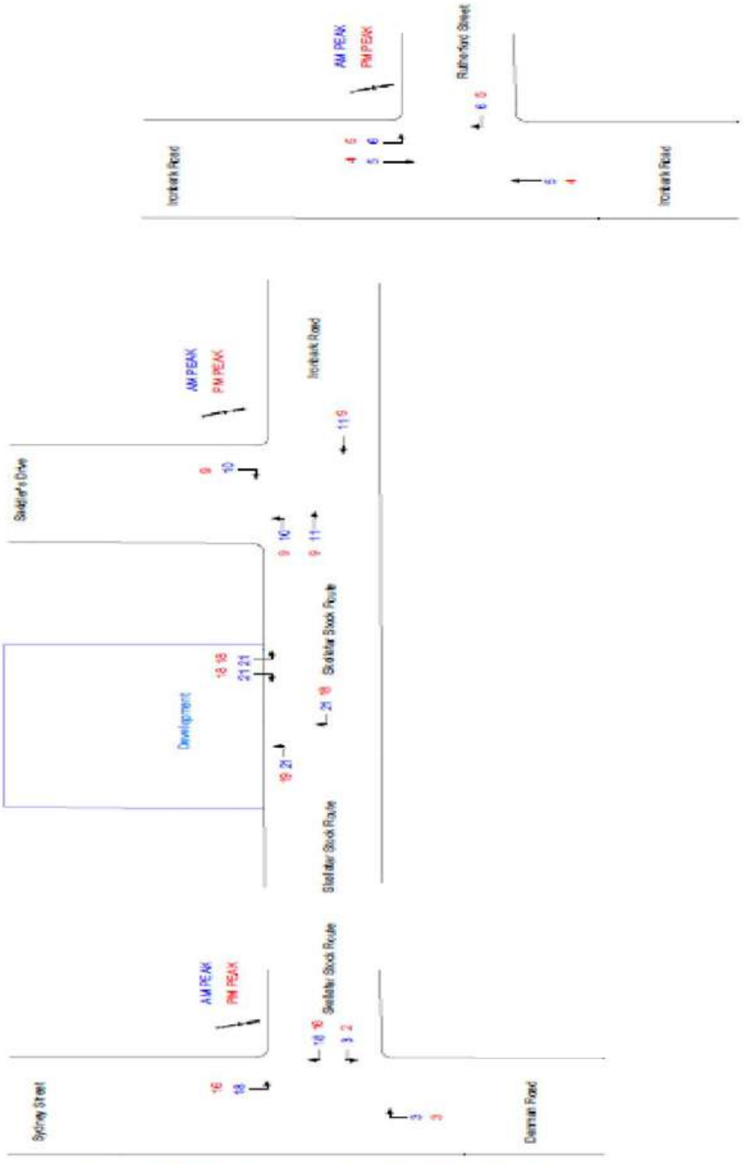


Figure 3 – Development Traffic Distribution

11.0 TRAFFIC IMPACTS OF DEVELOPMENT

The traffic impacts that the development will have on the local road network include:

- The impact of the additional traffic generated by the development on the capacity of the road network;
- The road safety issues associated with the proposed access to the development; and
- The parking demand generated by the development.

11.1 Road Network Two-way Mid-Block Capacity

It has previously been shown in ***Section 6*** of this report that the local road network is currently operating within its technical and environmental two-way mid-block capacity as relevant.

The child care centre is likely to generate the following additional traffic (maximum) on the local road network based on the trip distributions shown in ***Figure 3***;

- Skellatar Stock Route – 42 vtph in the AM peak and 37 vtph in the PM peak;
- Sydney Street – 36 vtph in the AM peak and 32 vtph in the PM peak;
- Denman Road — 6 vtph in the AM peak and 5 vtph in the PM peak; and
- Ironbark Rd - north of Rutherford St -22 vtph in the AM peak and 18 vtph in the PM peak.
- Ironbark Rd – south of Rutherford St – 10 vtph in the AM and 8 vtph in the PM peak periods.
- Rutherford St – east of Ironbark Rd – 12 vtph in the AM peak and 10 vtph in the PM peak.

The addition of this traffic onto the 2019 traffic volumes determined in ***Section 5*** will not result in the capacity thresholds for the local road network determined in ***Section 6*** to be reached. Even with the 2029 traffic volumes these road capacity thresholds are not reached. This is demonstrated in ***Table 3*** below.

Table 3 - Road Capacity Assessment

		Capacity	2019		2029		Development traffic	
Road	**Section**	**vtph**	**AM (vtph)**	**PM (vtph)**	**AM (vtph)**	**PM (vtph)**	**AM**	**PM**
Denman Road	south of Skellatar Stock Route	1800	526	742	640	903	6	5
Sydney Street	north of Skellatar Stock Route	1800	336	462	402	556	36	32
Skellatar Stock Route	east of Denman Road	500	262	346	310	414	42	37
Ironbark Road	north of Rutherford Street	500	292	381	351	460	22	18
Ironbark Road	south of Rutherford Street	500	181	257	218	312	10	8
Rutherford Street	east of Ironbark Road	1800	313	470	379	571	12	10

The post development traffic flows through to 2029 do not reach the determined road capacities and as such the local and state road network has sufficient spare capacity to cater for the proposed development.

Overall it is reasonable to conclude that the local and state road network around the site has sufficient spare two-way mid-block capacity to cater for this development without adversely impacting on the level of service experienced by motorists nor the residential amenity of adjoining residences.

11.2 Intersection Capacity

In terms of intersection capacity, the addition of up to only 42 vtph onto an existing major intersection (Denman Road / Skellatar Stock Route / Sydney Street) would normally have little impact on the operation of the intersection and would not result in a loss of LoS for motorists using the intersection. Further the other impacted intersections on the local road network such as the Ironbark Road / Rutherford Street give way controlled T-intersection are currently operating with traffic volumes below the thresholds contained in the following table sourced from Austroads *Guide to Traffic Management Part 6 Interchanges, Intersections and Crossings (2009)* for which the Guide states '*When the volumes at an intersection are less than those shown, a detailed analysis to demonstrate that adequate capacity is available is unlikely to be necessary*.' Post development the traffic volumes will remain below these thresholds through to beyond 2029.

Major road type[1]	Major road flow (vph)[2]	Minor road flow (vph)[3]
Two-lane	400	250
	500	200
	650	100
Four-lane	1000	100
	1500	50
	2000	25

Notes:

1. Major road is through road (i.e. has priority).
2. Major road flow includes all major road traffic with priority over minor road traffic.
3. Minor road design volumes include through and turning volumes.

Source: - Austroads Guide to Traffic Management Part 6 Interchanges, Intersections and Crossings (2009)

It would therefore be reasonable to conclude without further intersection analysis that the proposed development would not adversely impact on the operation of adjoining intersections on the local road network.

To demonstrate this however both the Denman Road / Skellatar Stock Route / Sydney Street give way controlled CHR/AUL T-intersection and the Ironbark Road / Rutherford Street give way-controlled T-intersection have been modelled for post development conditions through to 2029 with the SIDRA INTERSECTION 8 intersection model. This software package predicts likely delays, queue lengths and thus LoS that will occur at intersections. Assessment is then based on the LoS requirements of the RMS shown below. Assumptions made in this modelling are:

- Current intersection layouts were modelled i.e. no upgrading;
- Traffic volumes used in the modelling were as collected by NTPE as described in ***Section 5*** of this report;
- 2029 future traffic is predicted using a 2 % per annum background traffic growth rate; and
- Traffic generated by the development is distributed onto the local road network as per ***Figure3*** above.

The results of the modelling for both the AM and PM peak hour traffic periods for these intersections for the 'all vehicles' case is shown below in ***Tables 4 & 5*** with the worst movement LoS shown for both give way-controlled intersections**.** The Sidra Movement Summary Tables for the modelling are provided in ***Attachment C.***

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Source: - RMS Guide to Traffic Generating Developments (2002)

Table 4 – Denman Road / Skellatar Stock Route / Sydney Street intersection – Sidra Results.

Model Scenario	Degree of Saturation (v/c)	Average Delay (s)	LoS	95% back of Queue Length (cars)
2019 AM + development	0.148	2.9	A	0.5
2019 PM + development	0.220	3.3	B	0.8
2029 AM + development	0.176	3.0	A	0.6
2029 PM + development	0.322	3.7	B	1.3

Table 5 – Ironbark Road / Rutherford Street intersection – Sidra Results.

Model Scenario	Degree of Saturation (v/c)	Average Delay (s)	LoS	95% back of Queue Length (cars)
2019 AM + development	0.137	4.7	A	0.5
2019 PM + development	0.236	5.0	A	1.0
2029 AM + development	0.169	4.8	A	0.6
2029 PM + development	0.291	5.2	A	1.2

The modelling shows that both intersections would continue to operate satisfactorily post development through to beyond 2029. Average delays, LoS and 95 % back of queue lengths for all intersection movements remain well within the acceptable criteria for intersection performance determined by NSW RMS. It would also be reasonable to conclude that if the development does not adversely impact on these two intersections as demonstrated above then it will not adversely impact on other intersections within the wider local and state road network.

This confirms the previous conclusion that the proposed development will not adversely impact on the operation of the local and state road network.

11.3 Access

The on-site car park for this development will be accessed via the existing separate entry and exit driveways to the St James Catholic Primary School which are approximately 7 metres and 6.5 metres wide respectively. On completion of this development these accesses will service up to 100 on-site car parks.

In assessing the accesses compliance with Australian Standard *AS2890.1-2004 Parking facilities – Part 1 - Off-street car parking* the following is noted*:*

- Vehicular sight distance from the access has been observed to be suitable to meet the requirements as shown in Figure 3.2 of the Standard. i.e. minimum 45 metres for a 50 km/h speed zone;
- Pedestrian sight lines as required in Figure 3.2 of the Standard have been achieved with appropriate design of landscaping and fencing around the access;
- The access supports on-site car parking for up to 100 vehicles for Class 3 parking accessed from a local road. Table 3.1 of the Standard thus requires a minimum Class 1 access facility to be constructed. Table 3.2 of the Standard then designates a Class 1 access facility as a combined entry / exit 3.0 metres to 5.5 metres wide. The existing access is considered to be a Category 3 access as described in Table 3.2 of the Standard therefore is more than compliant with the access requirements of the Standard.

Under the Muswellbrook Council DCP (2009) in *Section 18 Child Care Centres* the ELC should provide;

- Three (3) set down spaces as child places are in excess of 24 places;
- Provide suitable accessible parking within 50 metres of the ELC.
- Provide at least one accessible space and one emergency space on-site.

Having reviewed the concept development plans it is concluded that the proposal is compliant with the Muswellbrook Council DCP requirements for the set down of children at Child Care Centres.

Overall it is concluded that the proposed car park access and egress is safe and suitable to service the car park as it complies with Muswellbrook Council and Australian Standard *AS2890.1-2004 Parking facilities – Part 1 - Off-street car parking.*

11.4 Off-Street Parking

On-site parking and manoeuvrability should comply with Australian Standard *AS2890.1-2004 Parking facilities – Off-street car parking* and *Section 16 – Parking and Access* within the Muswellbrook Council's DCP (2009). The DCP states that the following car parking is required for Child Care Centres:

1 space per staff plus 1 space per 15 children (if 3 set down spaces are provided).

Based on the DCP advice and noting staff numbers are likely to be up to 20 staff the on-site parking requirement for the child care centre can be calculated as 27 spaces plus 3 set down spaces. The plans for the proposal show the provision of 28 on-site car parks, including 1 accessible parking space and 1 emergency space as well as a 3-space set-down area. Therefore, in respect of the DCP requirements it is concluded that the proposal is compliant with the DCP by providing a total of 31 on-site car parks including the 3-space set down bay.

The current plans do not show dimensions however the car park design appears to comply with Australian Standard *AS2890.1-2004 Parking facilities Part 1 – Off street car parking* for user class 3 parking. This will need to be confirmed at Construction Certificate stage and can be conditioned on the consent.

Overall it is concluded that the proposed child care centre is compliant with Australian Standard *AS2890.1-2004 Parking facilities Part 1 – Off street car parking* and Muswellbrook Council's DCP requirements for on-site car parking.

It is however recommended that all car parking spaces accessed directly from the existing school access road be set aside for staff to ensure parents will have available for use, in dropping off and picking up children, the most convenient parking available.

11.5 Servicing

In terms of the provision of a service bay it should be noted that as a child care centre:

1. Most consumables are purchased by staff and transported to the site within private light vehicles;
2. Waste collection will be via the normal school contract waste collection with collection kerbside from the internal school access road during non-peak periods, therefore waste collection vehicles will not be entering the main car parking area of the proposal; and
3. Other deliveries to the site will be infrequent (once or twice a week) using small rigid vehicles (SRV) that could utilise any of the available car parking bays during non-peak parking demand periods i.e. 9 am to 2 pm.

Therefore, on assessment it is concluded that the child care centre does not need to provide separate on-site servicing and delivery bays and the proposed servicing arrangements are considered satisfactory.

12.0 PEDESTRIAN FACILITIES

The proposed development will not generate any significant external pedestrian traffic. While some children may be walked to the centre from nearby dwellings the majority of children are transported to the centre by private vehicles and parents then tend to be heading off to or coming home from work. Therefore, no nexus exists for the provision of additional external pedestrian infrastructure particularly noting the existing infrastructure in the area is more than adequate for the development.

However internal pedestrian linkages are important within the site and pedestrian footpaths and linkages have been provided from the internal car park directing parents to the entrance to the building. A suitable marked foot crossing of the car park at the entrance to the building is also provided to ensure safe crossing of the car park by pedestrians at an appropriate location.

13.0 ALTERNATE TRANSPORT MODE FACILITIES

The proposed development is not expected to generate an increased demand for public transport therefore will not generate a need to improve the public transport services to the site. It is concluded that no changes to the existing public transport services is required as a result of this development and no additional infrastructure would be required.

The development will not generate any significant additional bicycle traffic therefore no nexus for the provision of additional cycle ways in the vicinity of the site is necessary as a result of the development noting the existing infrastructure in the area is more than adequate for the development.

14.0 CONCLUSIONS

This traffic and parking assessment for a proposed 104 place child care centre at Lot 1 DP 1070178 111 Skellatar Stock Route has determined the following:

- Current traffic volumes on the local and state road network are below the technical and environmental mid-block capacities of the roads and as such there is spare capacity within the road network to cater for development in the area;
- It is expected that the additional traffic generated by the development will be up to 84 vtph in the AM peak and 73 vtph in the PM peak;
- The local road network has sufficient spare two-way mid-block capacity to cater for the additional development traffic without adversely impacting on current level of service (LoS) experienced by motorists on the road network or the residential amenity for adjoining residences;
- SIDRA INTERSECTION modelling demonstrated that the proposed development will not have an adverse impact on the operation / capacity of any of the local and state road network intersections near the site therefore the proposal will not adversely impact on the local and state road network;
- The proposed car park access is safe and suitable to service the car park as it complies with Muswellbrook Council's DCP (2009) and Australian Standard *AS2890.1-2004 Parking facilities – Part 1 - Off-street car parking;*
- A review of the plans indicates that the car parking layout can comply with the requirements of both Muswellbrook Council's DCP (2009) and *Australian Standard AS2890.1-2004 Parking Facilities – Off-street car parking* ensuring sufficient parking supply that is both safe and convenient for parents and children;
- It is recommended that all car parking spaces accessed directly from the existing school access road be set aside for staff to ensure parents will have available for use, in dropping off and picking up children, the most convenient parking available.
- Servicing of the site will be infrequent (once or twice a week) by vehicles only up to a small rigid vehicle (SRV) that could utilise the on-site car parking spaces during non-peak parking demand periods;
- Waste collection is proposed via the normal School contractor with kerb side collection from the internal school access road during non-peak periods. This ensures waste collection vehicles will not enter the main part of the car park for the site;
- The proposed development will not generate any significant external pedestrian traffic demand. Therefore, no nexus exists for the provision of additional external pedestrian infrastructure noting the existing infrastructure in the area is more than adequate for the development;
- The proposed development is not expected to generate an increased demand for public transport therefore will not require any changes to existing public transport services as a result of this development and no additional infrastructure will be required; and
- The development will not generate any significant additional bicycle traffic therefore no nexus for the provision of additional cycle ways in the vicinity of the site exists as a result of the development noting the existing infrastructure in the area is more than adequate for the development.

15.0 RECOMMENDATION

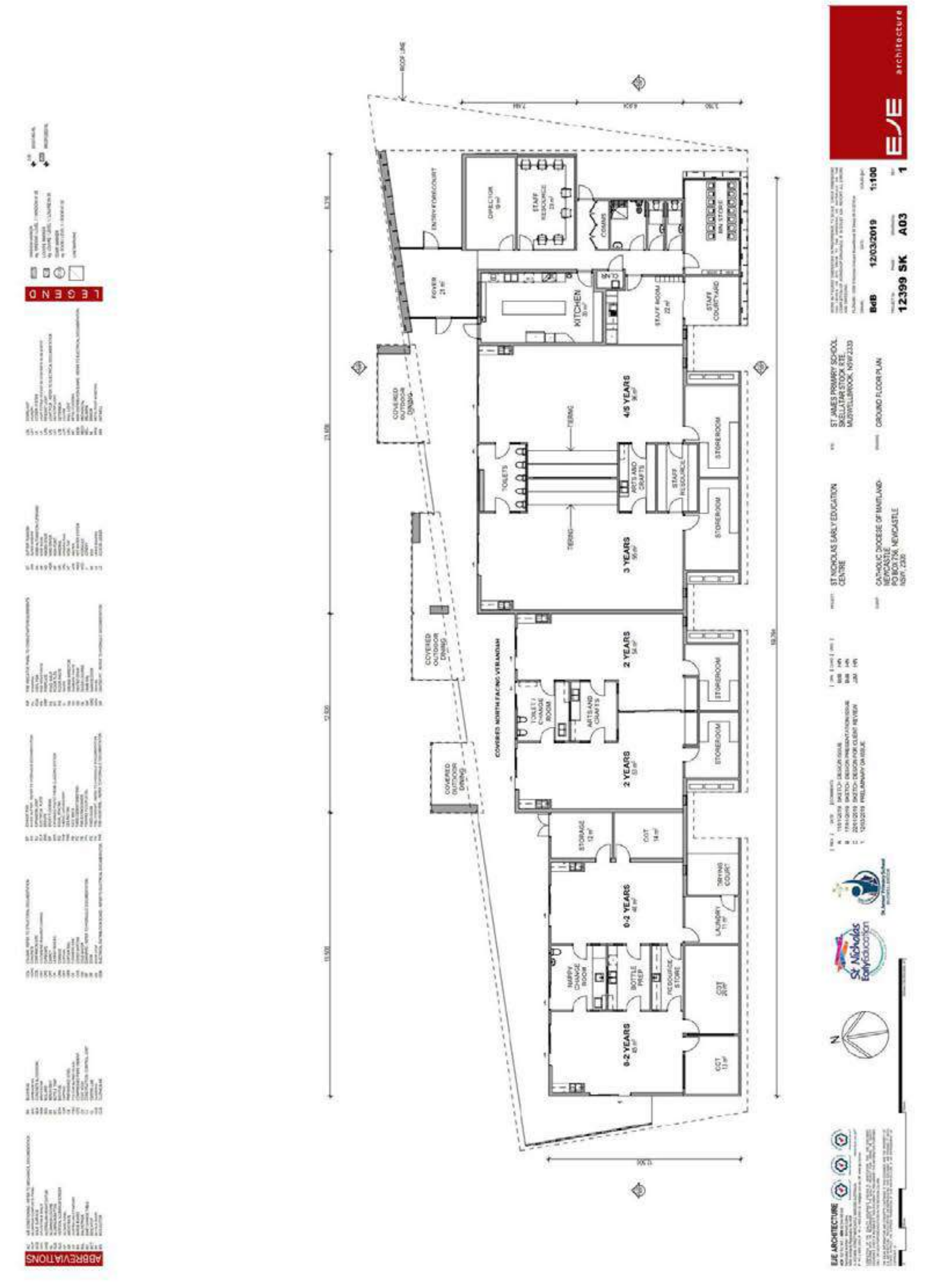
Having carried out this traffic and parking assessment for a proposed 104 place child care centre at Lot 1 DP 1070178 111 Skellatar Stock Route, Muswellbrook it is recommended that the proposal can be supported from a traffic and parking impact perspective as it will not adversely impact on the local and state road network and complies with all relevant Muswellbrook Council, Australian Standard and NSW Roads and Maritime Services requirements.

JR Garry BE (Civil), Masters of Traffic
Director
Intersect Traffic Pty Ltd

ATTACHMENT A

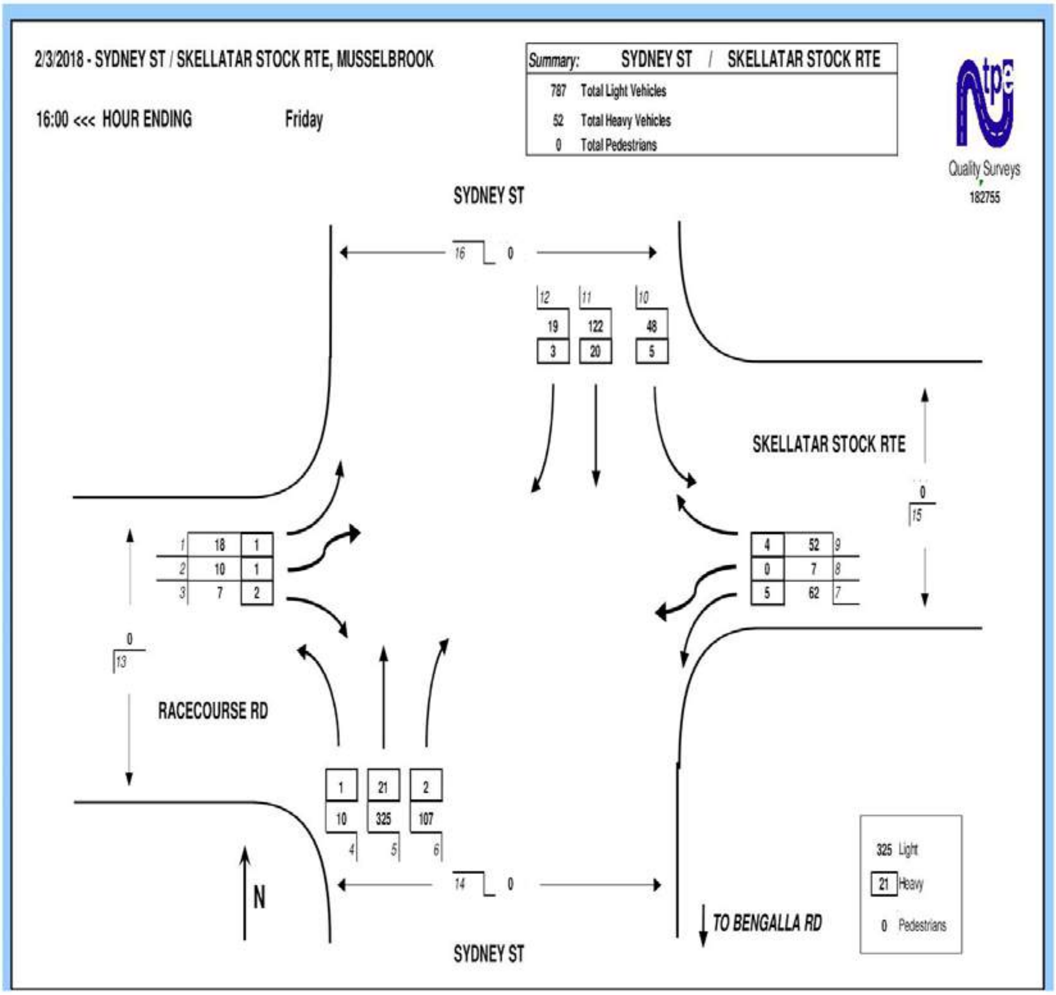
Development Plans

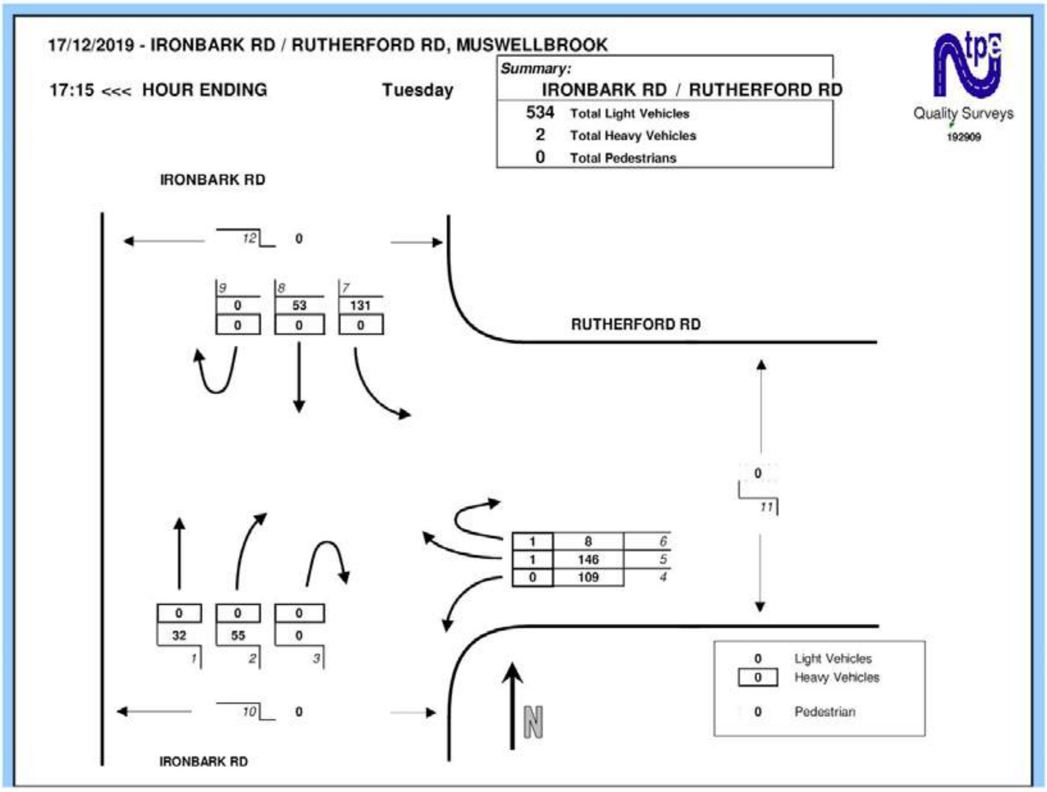

ABBREVIATIONS
LEGEND
EXISTING STAFF CAR PARK
FORMALISE FORECOURT TO ASSEMBLY HALL & PROVIDE PEDESTRIAN LINK TO ST NICHOLAS EARLY EDUCATION CENTRE
EXISTING BLOCK 1 'ASSEMBLY HALL'
EXISTING SCHOOL BUS PARKING
EXISTING ROAD
EXISTING ROAD
INDICATIVE BOUNDARY LINES FOR FUTURE SUBDIVISION
SECURE OUTDOOR ACTIVITY AREA (Design yet to be undertaken) (CIRCA 730 SQ.M)
PROPOSED NEW 104 PLACE EEC ST NICHOLAS EARLY EDUCATION CENTRE (CIRCA 900 SQ.M)
ONE WAY TRAFFIC MOVEMENT TO ST NICHOLAS CAR PARK AREA
ST NICHOLAS EARLY EDUCATION CENTRE CAR PARKS
ONE WAY TRAFFIC MOVEMENT
FENCE / GATE AT MAIN ENTRANCE SET BACK TO FORMALISE ENTRY
LOW HEIGHT, LOW MAINTENANCE FEATURE MASS PLANTING TO FORMALISE & IDENTIFY MAIN ENTRY
NEW SITE ENTRY SIGNAGE: 'ST JAMES PRIMARY SCHOOL' 'ST NICHOLAS EARLY EDUCATION CENTRE'
EJE ARCHITECTURE
N
St Nicholas Early Education
St James Primary School
A 11/01/2019 SKETCH DESIGN ISSUE BdB HN
B 17/01/2019 SKETCH DESIGN PRESENTATION ISSUE BdB HN
C 22/01/2019 SKETCH DESIGN FOR CLIENT REVIEW JJM HN
1 12/03/2019 PRELIMINARY DA ISSUE
ST NICHOLAS EARLY EDUCATION CENTRE
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE PO BOX 756, NEWCASTLE NSW, 2300
ST JAMES PRIMARY SCHOOL, SKELLATAR STOCK RTE, MUSWELLBROOK, NSW 2333
SITE PLAN
BdB
12/03/2019
1:250
12399 SK
A01
1
EJE architecture

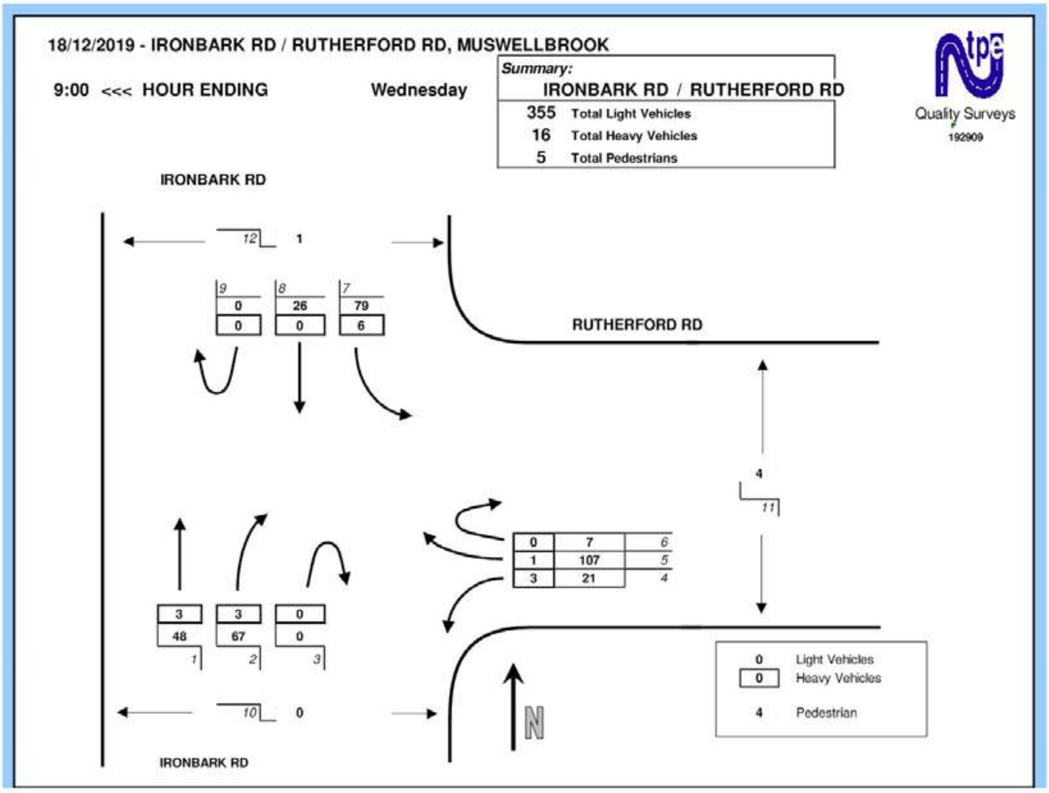

ABBREVIATIONS
LEGEND
ENTRY FORECOURT
DIRECTOR
STAFF RESOURCE
COMMS
BIN STORE
FOYER
KITCHEN
STAFF ROOM
STAFF COURTYARD
COVERED OUTDOOR DINING
4/5 YEARS
TOILETS
ARTS AND CRAFTS
STAFF RESOURCE
STOREROOM
3 YEARS
COVERED NORTH FACING VERANDAH
2 YEARS
TOILET / CHANGE ROOM
ARTS AND CRAFTS
STORAGE
COT
DRYING COURT
LAUNDRY
0-2 YEARS
NAPPY CHANGE ROOM
BOTTLE PREP
RESOURCE STORE
COT
0-2 YEARS
COT
ROOF LINE
TIERING
ST JAMES PRIMARY SCHOOL SKELLATAR STOCK RTE, MUSWELLBROOK, NSW 2333
GROUND FLOOR PLAN
ST NICHOLAS EARLY EDUCATION CENTRE
CATHOLIC DIOCESE OF MAITLAND-NEWCASTLE PO BOX 756, NEWCASTLE NSW 2300
BdB
12/03/2019
1:100
12399 SK
A03
1
EJE architecture
EJE ARCHITECTURE
St Nicholas Early Education

ATTACHMENT B

Traffic Count Sheets

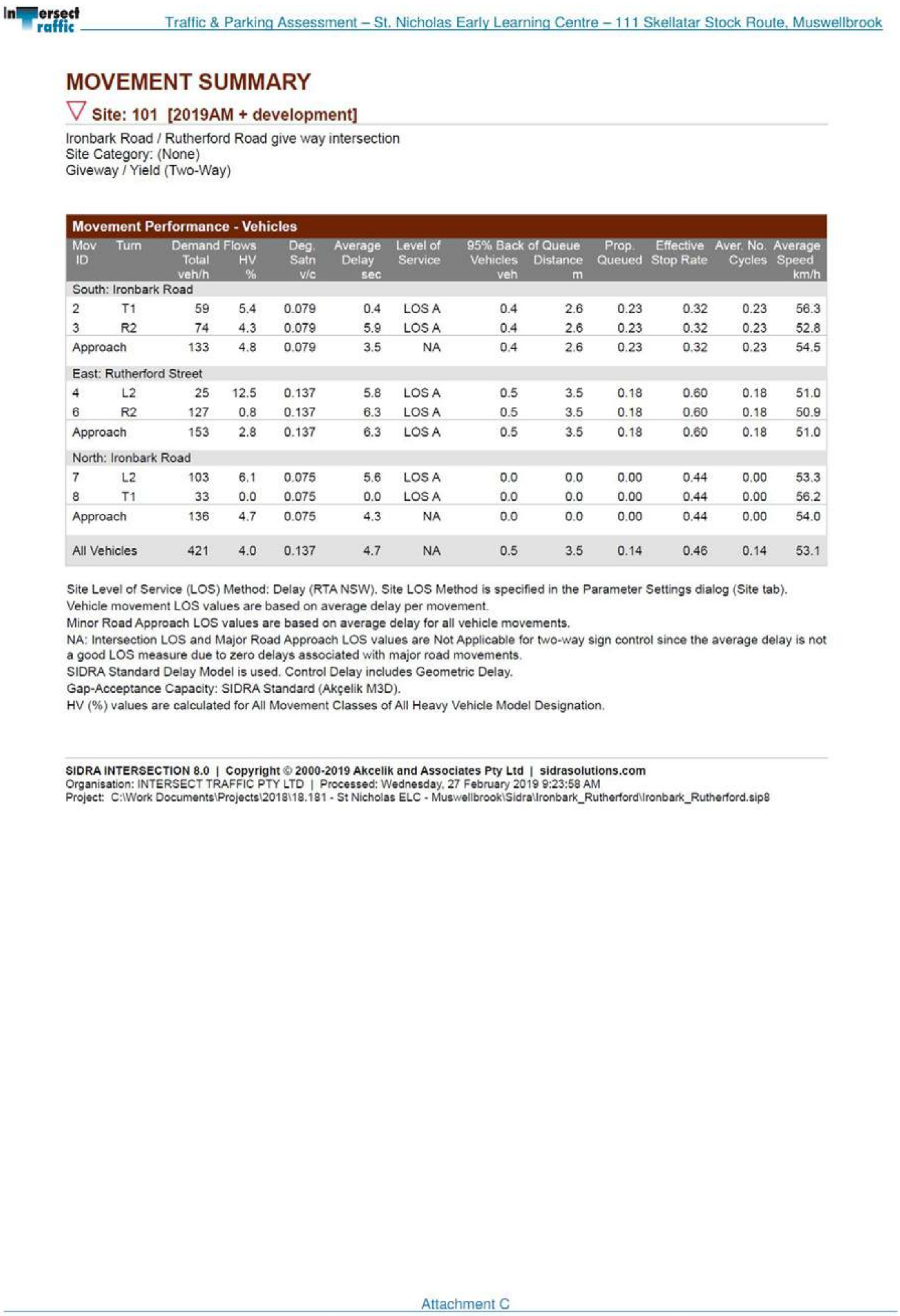

2/3/2018 - SYDNEY ST / SKELLATAR STOCK RTE, MUSSELBROOK
16:00 <<< HOUR ENDING
Friday
Summary: SYDNEY ST / SKELLATAR STOCK RTE
787 Total Light Vehicles
52 Total Heavy Vehicles
0 Total Pedestrians
Quality Surveys
182755
SYDNEY ST
16
0
12
19
3
11
122
20
10
48
5
SKELLATAR STOCK RTE
0
15
4
52
9
0
7
8
5
62
7
1
18
1
2
10
1
3
7
2
0
13
RACECOURSE RD
1
21
2
10
325
107
4
5
6
14
0
N
TO BENGALLA RD
SYDNEY ST
325 Light
21 Heavy
0 Pedestrians


17/12/2019 - IRONBARK RD / RUTHERFORD RD, MUSWELLBROOK
17:15 <<< HOUR ENDING
Tuesday
Summary:
IRONBARK RD / RUTHERFORD RD
534 Total Light Vehicles
2 Total Heavy Vehicles
0 Total Pedestrians
tpe Quality Surveys
192909
IRONBARK RD
12 0
9 0 0
8 53 0
7 131 0
RUTHERFORD RD
0 11
1 8 6
1 146 5
0 109 4
0 32 1
0 55 2
0 0 3
10 0
N
0 Light Vehicles
0 Heavy Vehicles
0 Pedestrian
IRONBARK RD


18/12/2019 - IRONBARK RD / RUTHERFORD RD, MUSWELLBROOK
9:00 <<< HOUR ENDING
Wednesday
Summary:
IRONBARK RD / RUTHERFORD RD
355 Total Light Vehicles
16 Total Heavy Vehicles
5 Total Pedestrians
tpe
Quality Surveys
192909
IRONBARK RD
12
1
9
0
0
8
26
0
7
79
6
RUTHERFORD RD
4
11
0
7
6
1
107
5
3
21
4
3
48
1
3
67
2
0
0
3
10
0
N
0 Light Vehicles
0 Heavy Vehicles
4 Pedestrian
IRONBARK RD

ATTACHMENT C

Sidra Summary Tables



MOVEMENT SUMMARY

▽ Site: 101 [2019AM + development]

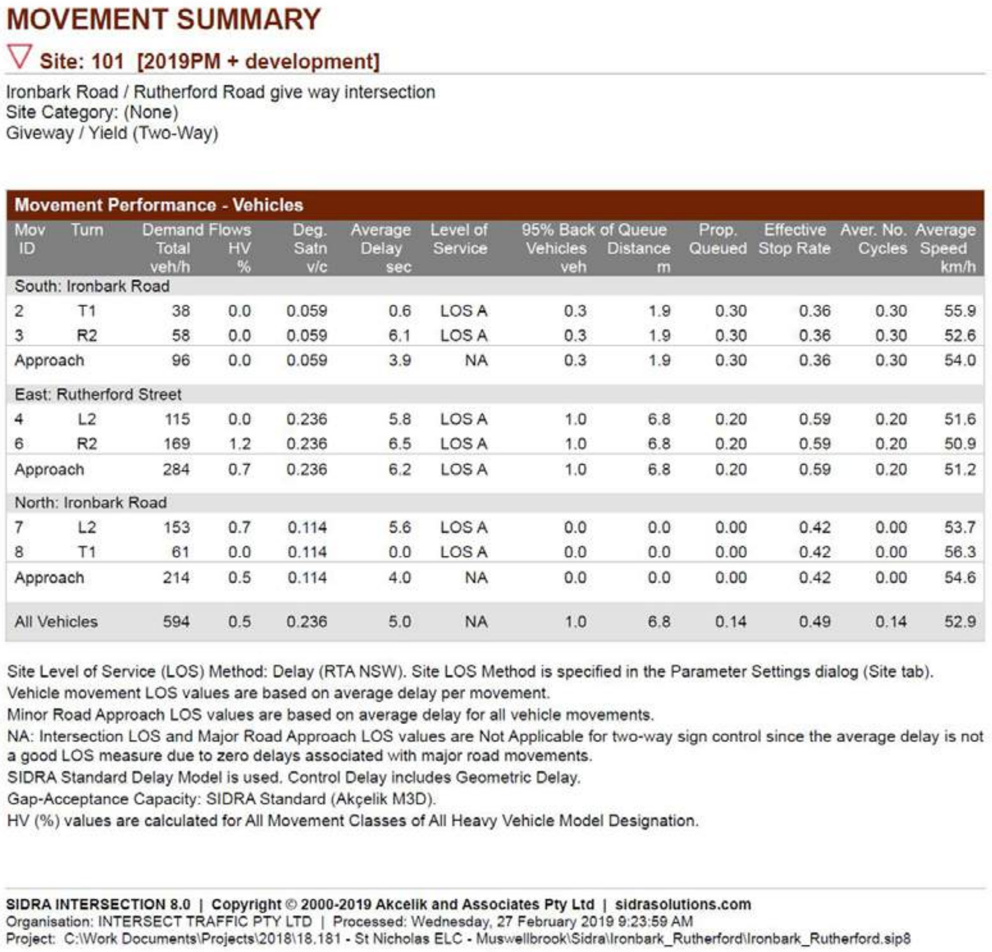
Ironbark Road / Rutherford Road give way intersection
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Ironbark Road												
2	T1	59	5.4	0.079	0.4	LOS A	0.4	2.6	0.23	0.32	0.23	56.3
3	R2	74	4.3	0.079	5.9	LOS A	0.4	2.6	0.23	0.32	0.23	52.8
Approach		133	4.8	0.079	3.5	NA	0.4	2.6	0.23	0.32	0.23	54.5
East: Rutherford Street												
4	L2	25	12.5	0.137	5.8	LOS A	0.5	3.5	0.18	0.60	0.18	51.0
6	R2	127	0.8	0.137	6.3	LOS A	0.5	3.5	0.18	0.60	0.18	50.9
Approach		153	2.8	0.137	6.3	LOS A	0.5	3.5	0.18	0.60	0.18	51.0
North: Ironbark Road												
7	L2	103	6.1	0.075	5.6	LOS A	0.0	0.0	0.00	0.44	0.00	53.3
8	T1	33	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	56.2
Approach		136	4.7	0.075	4.3	NA	0.0	0.0	0.00	0.44	0.00	54.0
All Vehicles		421	4.0	0.137	4.7	NA	0.5	3.5	0.14	0.46	0.14	53.1

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.
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.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Wednesday, 27 February 2019 9:23:58 AM
Project: C:\Work Documents\Projects\2018\18.181 - St Nicholas ELC - Muswellbrook\Sidra\Ironbark_Rutherford\Ironbark_Rutherford.sip8



MOVEMENT SUMMARY

▽ Site: 101 [2019PM + development]

Ironbark Road / Rutherford Road give way intersection
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Ironbark Road												
2	T1	38	0.0	0.059	0.6	LOS A	0.3	1.9	0.30	0.36	0.30	55.9
3	R2	58	0.0	0.059	6.1	LOS A	0.3	1.9	0.30	0.36	0.30	52.6
Approach		96	0.0	0.059	3.9	NA	0.3	1.9	0.30	0.36	0.30	54.0
East: Rutherford Street												
4	L2	115	0.0	0.236	5.8	LOS A	1.0	6.8	0.20	0.59	0.20	51.6
6	R2	169	1.2	0.236	6.5	LOS A	1.0	6.8	0.20	0.59	0.20	50.9
Approach		284	0.7	0.236	6.2	LOS A	1.0	6.8	0.20	0.59	0.20	51.2
North: Ironbark Road												
7	L2	153	0.7	0.114	5.6	LOS A	0.0	0.0	0.00	0.42	0.00	53.7
8	T1	61	0.0	0.114	0.0	LOS A	0.0	0.0	0.00	0.42	0.00	56.3
Approach		214	0.5	0.114	4.0	NA	0.0	0.0	0.00	0.42	0.00	54.6
All Vehicles		594	0.5	0.236	5.0	NA	1.0	6.8	0.14	0.49	0.14	52.9

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.

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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Wednesday, 27 February 2019 9:23:59 AM
Project: C:\Work Documents\Projects\2018\18.181 - St Nicholas ELC - Muswellbrook\Sidra\Ironbark_Rutherford\Ironbark_Rutherford.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2029AM + development]

Ironbark Road / Rutherford Road give way intersection
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Ironbark Road												
2	T1	69	4.5	0.096	0.4	LOS A	0.4	3.2	0.26	0.33	0.26	56.2
3	R2	88	3.6	0.096	6.0	LOS A	0.4	3.2	0.26	0.33	0.26	52.8
Approach		158	4.0	0.096	3.6	NA	0.4	3.2	0.26	0.33	0.26	54.4
East: Rutherford Street												
4	L2	31	10.3	0.169	5.8	LOS A	0.6	4.4	0.20	0.61	0.20	50.9
6	R2	152	0.7	0.169	6.6	LOS A	0.6	4.4	0.20	0.61	0.20	50.8
Approach		182	2.3	0.169	6.4	LOS A	0.6	4.4	0.20	0.61	0.20	50.8
North: Ironbark Road												
7	L2	123	5.1	0.088	5.6	LOS A	0.0	0.0	0.00	0.45	0.00	53.3
8	T1	38	0.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	56.1
Approach		161	3.9	0.088	4.3	NA	0.0	0.0	0.00	0.45	0.00	54.0
All Vehicles		501	3.4	0.169	4.8	NA	0.6	4.4	0.16	0.47	0.16	53.0

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.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Wednesday, 27 February 2019 9:23:58 AM
Project: C:\Work Documents\Projects\2018\18.181 - St Nicholas ELC - Muswellbrook\Sidra\Ironbark_Rutherford\Ironbark_Rutherford.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2029PM + development]

Ironbark Road / Rutherford Road give way intersection
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Ironbark Road												
2	T1	44	0.0	0.072	0.7	LOS A	0.3	2.4	0.34	0.37	0.34	55.7
3	R2	69	0.0	0.072	6.3	LOS A	0.3	2.4	0.34	0.37	0.34	52.4
Approach		114	0.0	0.072	4.1	NA	0.3	2.4	0.34	0.37	0.34	53.8
East: Rutherford Street												
4	L2	138	0.0	0.291	5.8	LOS A	1.2	8.8	0.23	0.60	0.23	51.4
6	R2	202	1.0	0.291	6.8	LOS A	1.2	8.8	0.23	0.60	0.23	50.8
Approach		340	0.6	0.291	6.4	LOS A	1.2	8.8	0.23	0.60	0.23	51.0
North: Ironbark Road												
7	L2	182	0.6	0.136	5.6	LOS A	0.0	0.0	0.00	0.42	0.00	53.7
8	T1	73	0.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.42	0.00	56.3
Approach		255	0.4	0.136	4.0	NA	0.0	0.0	0.00	0.42	0.00	54.6
All Vehicles		708	0.4	0.291	5.2	NA	1.2	8.8	0.16	0.50	0.16	52.8

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.
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Wednesday, 27 February 2019 9:24:00 AM
Project: C:\Work Documents\Projects\2018\18.181 - St Nicholas ELC - Muswellbrook\Sidra\Ironbark_Rutherford\Ironbark_Rutherford.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2019AM + dev]

Denman Road / Sydney Street / Skellatar Stock Route CHR/AUL
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Denman Road												
2	T1	275	6.1	0.148	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	95	3.3	0.081	6.4	LOS A	0.3	2.4	0.31	0.58	0.31	52.4
Approach		369	5.4	0.148	1.6	NA	0.3	2.4	0.08	0.15	0.08	57.8
East: Skellatar Stock Route												
4	L2	59	7.1	0.052	6.2	LOS A	0.2	1.4	0.23	0.56	0.23	52.6
6	R2	62	5.1	0.122	10.8	LOS A	0.5	3.3	0.57	0.80	0.57	49.4
Approach		121	6.1	0.122	8.5	LOS A	0.5	3.3	0.41	0.68	0.41	50.9
North: Sydney Street												
7	L2	60	7.0	0.034	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.3
8	T1	124	14.4	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		184	12.0	0.070	1.8	NA	0.0	0.0	0.00	0.19	0.00	57.6
All Vehicles		675	7.3	0.148	2.9	NA	0.5	3.3	0.12	0.26	0.12	56.4

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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HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Wednesday, 27 February 2019 9:19:15 AM
Project: C:\Work Documents\Projects\2018\18.181 - St Nicholas ELC - Muswellbrook\Sidra\Denman_Skellatar\Denman_Skellatar.sip8

MOVEMENT SUMMARY

▽ Site: 101 [2019PM + development]

Denman Road / Sydney Street / Skellatar Stock Route CHR/AUL
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Denman Road												
2	T1	383	6.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	132	2.4	0.120	6.7	LOS A	0.5	3.5	0.37	0.62	0.37	52.2
Approach		515	5.1	0.205	1.7	NA	0.5	3.5	0.10	0.16	0.10	57.8
East: Skellatar Stock Route												
4	L2	81	6.5	0.075	6.4	LOS A	0.3	2.0	0.29	0.58	0.29	52.5
6	R2	79	5.3	0.220	15.0	LOS B	0.8	6.1	0.72	0.89	0.76	46.7
Approach		160	5.9	0.220	10.7	LOS A	0.8	6.1	0.50	0.73	0.52	49.5
North: Sydney Street												
7	L2	76	6.9	0.043	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.3
8	T1	176	13.8	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		252	11.7	0.098	1.7	NA	0.0	0.0	0.00	0.17	0.00	57.8
All Vehicles		926	7.0	0.220	3.3	NA	0.8	6.1	0.14	0.26	0.14	56.1

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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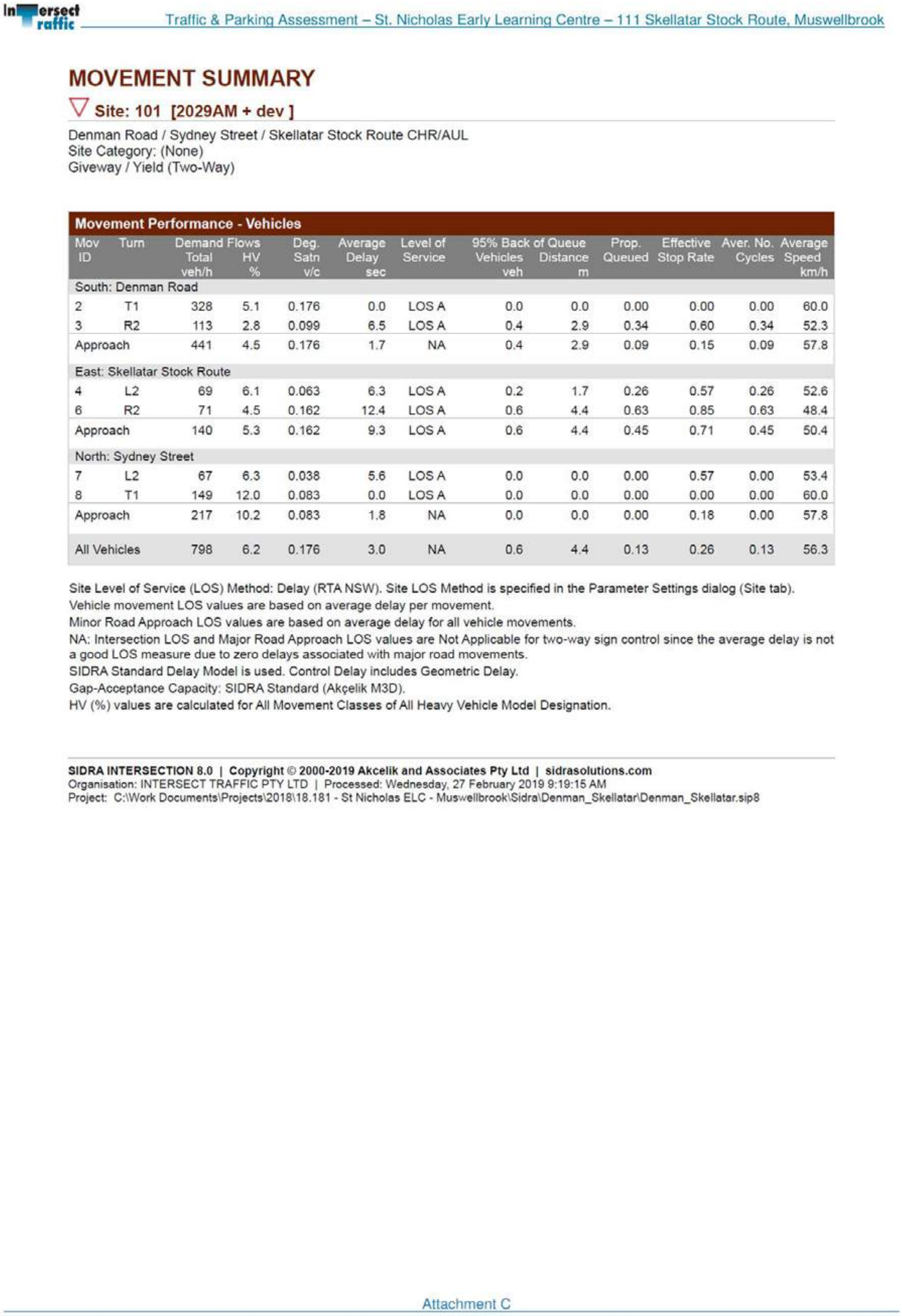

MOVEMENT SUMMARY

▽ Site: 101 [2029AM + dev]

Denman Road / Sydney Street / Skellatar Stock Route CHR/AUL
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Denman Road												
2	T1	328	5.1	0.176	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	113	2.8	0.099	6.5	LOS A	0.4	2.9	0.34	0.60	0.34	52.3
Approach		441	4.5	0.176	1.7	NA	0.4	2.9	0.09	0.15	0.09	57.8
East: Skellatar Stock Route												
4	L2	69	6.1	0.063	6.3	LOS A	0.2	1.7	0.26	0.57	0.26	52.6
6	R2	71	4.5	0.162	12.4	LOS A	0.6	4.4	0.63	0.85	0.63	48.4
Approach		140	5.3	0.162	9.3	LOS A	0.6	4.4	0.45	0.71	0.45	50.4
North: Sydney Street												
7	L2	67	6.3	0.038	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	149	12.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		217	10.2	0.083	1.8	NA	0.0	0.0	0.00	0.18	0.00	57.8
All Vehicles		798	6.2	0.176	3.0	NA	0.6	4.4	0.13	0.26	0.13	56.3

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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Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Wednesday, 27 February 2019 9:19:15 AM
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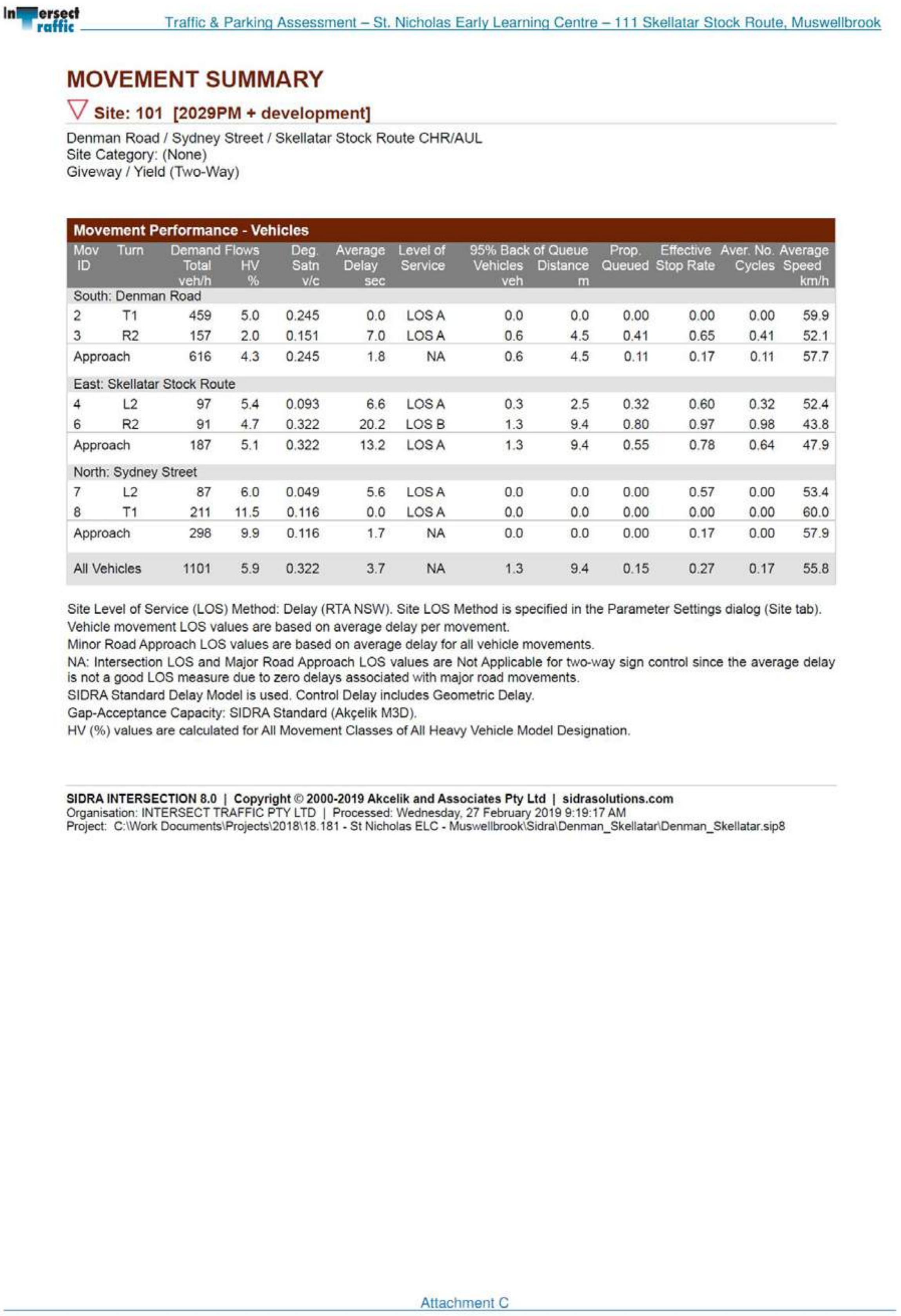

MOVEMENT SUMMARY

▽ Site: 101 [2029PM + development]

Denman Road / Sydney Street / Skellatar Stock Route CHR/AUL
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows 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	Aver. No. Cycles	Average Speed km/h
South: Denman Road												
2	T1	459	5.0	0.245	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	157	2.0	0.151	7.0	LOS A	0.6	4.5	0.41	0.65	0.41	52.1
Approach		616	4.3	0.245	1.8	NA	0.6	4.5	0.11	0.17	0.11	57.7
East: Skellatar Stock Route												
4	L2	97	5.4	0.093	6.6	LOS A	0.3	2.5	0.32	0.60	0.32	52.4
6	R2	91	4.7	0.322	20.2	LOS B	1.3	9.4	0.80	0.97	0.98	43.8
Approach		187	5.1	0.322	13.2	LOS A	1.3	9.4	0.55	0.78	0.64	47.9
North: Sydney Street												
7	L2	87	6.0	0.049	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	53.4
8	T1	211	11.5	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		298	9.9	0.116	1.7	NA	0.0	0.0	0.00	0.17	0.00	57.9
All Vehicles		1101	5.9	0.322	3.7	NA	1.3	9.4	0.15	0.27	0.17	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.
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APPENDIX I

Feasibility Study for the Installation of Hydraulic Services

McCALLUM PFCA
PLUMBING & FIRE CONSULTANTS AUSTRALIA

PO Box 96 Charlestown NSW 2290
PHONE: 02 4946 2633
FACSIMILE: 02 4027 5665
EMAIL: admin@pfca.net.au
Suite 5 / 35 Smith Street Charlestown

FEASIBILITY STUDY

FOR THE INSTALLATION OF

HYDRAULIC SERVICES

ST NICHOLAS EARLY EDUCATION

AT

Skellatar Stock Route, Muswellbrook

FOR

THE DIOCESE OF MAITLAND-NEWCASTLE

Revision	Author	Date
0	C. Baillie	23.01.2019
1	C. Baillie	12.03.2019

McCallum Hydraulics Pty Ltd trading as McCallum Plumbing & Fire Consultants Australia ACN 098 124 620 ABN 58 098 124 620

McCALLUM PFCA
PLUMBING & FIRE CONSULTANTS AUSTRALIA

Contents

Appendices

INTRODUCTION

McCallum PFCA have been engaged by the Catholic Diocese of Maitland to review the existing hydraulic services infrastructure for the proposed St Nicholas Early Educatin Centre at Skellatar Stock Route, Muswellbrook.

The building is to be located on the same lot as St James Primary School and will be supplied from the existing services on site.

Muswellbrook Shire Council (Water and Sewer) were contacted in order to obtain information on current authorities' infrastructure available to the property. Our findings, suggestions and recommendations follow.

DOMESTIC POTABLE WATER SUPPLY

Drawings obtained from Muswellbrook Shire Council indicate that an existing 100mm property service is located on site.

The existing boundary water meter is located at the main entry on the southern boundary of the site. The meter is a 40mm meter and appears to be supplied by an existing 100mm diameter service. The meter number is 13E002892.

Our initial review of the water supply suggests that the supply pipeline and meter will be of sufficient size to service the proposed preschool internal fitout.

The boundary water meter is fitted with testable backflow prevention valves in accordance with Australian Standard and Muswellbrook Shire Council requirements.

The installation will be required to comply with AS/NZS 3500.1.2 – Australian Standard for Water supply.

HOT WATER SUPPLY

Hot water generation plant is to be designed for the Preschool.

There are two options for hot water generation in the building.

1) Individual Gas Units – Individual instantaneous gas hot water units can be located near to each group of fixtures for operation only when taps are opened. Therefore gas efficiencies will be maximised by only having units operational when hot water is demanded.
2) Reticulated Central Storage – If instantaneous gas hot water units prove to be impractical, a centralised gas fired plant could be introduced to a suitable area non-accessible to children. Hot water would be supplied throughout the building via a hot water ring main reticulating through the building.

Note: If a gas supply to the site is not considered economical, then a central storage option could also be electric models.

Warm water at a temperature of 38°C will be provided to all fixtures in areas designated for child usage. This can be achieved by the use of thermostatic mixing valves.

Hot water at a temperature of 50 degrees Celsius would be made available to all other areas by the installation and use of tempering valves being supplied by a 60 degrees Celsius circulating hot water ring main.

All hot and warm water pipework is to be insulated to both maintain water temperature and minimize energy usage and costs as per section J requirement of the BCA.

The installation is to comply with AS/NZS 3500.1.2 – Australian Standard for Water Supply, AS/NZS 3500.4.2 – Australian Standard for Hot Water.

BACKFLOW PREVENTION

Backflow prevention devices shall be installed on all water supply systems.

All building backflow prevention devices shall be specified, installed and commissioned in accordance with AS/NZS 3500.1.2 – Australian Standards for Water Supply.

FIRE HOSE REEL SYSTEM

A Fire Hose Reel system will be required for the Preschool due to it exceeding 500m² in area. (Based on survey plan and 'google' measurements. Internal measurements will need to be confirmed in a future stage)

Fire Hose Reels will be required to be installed to provide coverage to all areas of the building in accordance with the requirements of the Building Code of Australia.

Fire Hose Reel pipework will be designed for a minimum flow rate of 0.33 litres/second at 220Kpa +/- 10%.

Fire Hose Reels with 36 metre long hoses which are able to issue a 4 metre long spray from the nozzle are to be installed in order to gain the required coverage. The reels will be located within four metres of a designated exit.

The fire hose reel system will be required to be compliant with the Building Code of Australia, AS/NZS 3500.1.2 – Australian Standard for Water Supply, AS 2441 – Installation of Fire Hose Reels.

Based on the Pressure Statement received and preliminary calculations, fire hose reels will have adequate supply and pressure for the proposed development.

The system will require certification of the design of the system to the relevant standards. The installation contractor is to supply certification of the compliance with the design and the systems performance under test.

FIRE HYDRANT SUPPLY

Preliminary calculations indicate the Preschool has a floor area greater than 500m². Fire hydrant system coverage will be required in order to achieve compliance.

Due to the building being a class 9 building greater than 500m² a system flow rate of 10 litres/second at a minimum residual working pressure of 250Kpa for fire hydrants will be required.

We were able to locate an existing fire hydrant system on the site during our visit. The building is unable to obtain compliant coverage from existing located on site and will require the addition of new hydrants.

The sites existing hydrant service will need to be modified and extended to provide new hydrants at the St Nicholas development. The extension will require approximately 60m of 100mm (I.D) pipework to position 2 x double pillar fire hydrants for complete coverage to the new development. We have performed calculations based on the Statement of Available Pressure received from council and can confirm that a residual pressure of 300kPa at 10L/sec should be achievable.

All hydrants are to be fitted with Storz couplings as per NSW Fire Brigade requirements.

The system will need to comply with the Building Code of Australia, AS/NZS 3500.1.2 Australian Standard for Water Supply, AS2419.1 Australian Standard for Fire Hydrant design, installation and commissioning.

Certification will be necessary for the design of the system to the relevant standards. The installation contractor is to supply certification of compliance with the design and the system performance under test.

SANITARY DRAINAGE

The drawing obtained from Muswellbrook Shire Council and archival drawings indicate that the sites existing sewer connection point is located at the north west end of the school adjacent Block E.

Existing sewer connection levels will need to be confirmed by a plumber to ensure the new development can achieve fall to the existing connection point.

In the event that compliant fall to the existing sewer connection point is not achievable, a sewer pump station can be utilised to pump all sanitary drainage to the connection point. Sizing of the sewer pump station will need to be undertake if this option is necessary.

The installation will need to comply with AS/NZS 3500.2.2 – Australian Standard for Sanitary Drainage and the requirements of the Hunter Water Corporation.

NATURAL GAS SUPPLY

The site currently uses gas for heating within the Hall only and is supplied by a bottle system.

If gas is determined to be required, a bottle gas system will need to be designed and adequate space allowed for within this development.

The entire installation is to be compliant with AS-5601-2010 Australian Standard for Gas Installations.

ROOFWATER DRAINAGE SYSTEM

Sizing and calculation of the roof water drainage apparatus will not be able to be completed until a roof design is available.

McCALLUM PFCA
PLUMBING & FIRE CONSULTANTS AUSTRALIA

EXECUTIVE SUMMARY

A summary of our findings based on the information obtained from the relevant services authorities is as follows.

Domestic Potable Water Supply – Water supply mains are available and are sufficient to supply the sites potable water needs. The site currently connects to Skellatar Stock Route.

Hot Water Supply – Gas hot water will be supplied to the Preschool by either instantaneous units or a central ring main system.

Fire Hose Reels – Fire Hose Reels will be necessary within the building due to the floor area exceeding 500m². (Measurements to be confirmed using scaled detailed drawings in a future stage). Supply and pressures have been confirmed as being adequate.

Fire Hydrants – Fire Hydrants will be necessary as the building exceeds 500m². (Measurements to be confirmed using scaled detailed drawings in a future stage) Street fire hydrants cannot be utilised. Supply and pressures have been confirmed as being adequate.

Sanitary Drainage – The site is currently connected to one sewer connection point at the north west corner of the site. A plumbing contractor will need to confirm the existing levels to determine if a sewer pump station is required.

Natural Gas Supply – Natural gas is not available to the site. The site is currently serviced by gas bottles which supply heaters within the Hall only.

Rainwater Harvest – Rainwater harvesting and roofwater apparatus will be confirmed on receipt of a roofwater plan.

We trust the information provided in this report adequately addresses both the existing hydraulic services within the existing site and the measures required in order to achieve current BCA and Australian Standard compliance. The installation of new hydraulic systems has been addressed in order to quantify the probable scope of works required to achieve satisfactory functioning of hydraulic services for the proposed project.

Please call Callum Baillie should you require either additional clarification or information on any of the items raised in this report.

Sincerely,

Callum Baillie (Hydraulic Design)

MSC Infrastructure - St James Primary School - 111 Skellatar Stock Route Muswellbrook

muswellbrook shire council

N

50 m

Scale =
1908.899999999999
8-Jan-2019

DISCLAIMER: No responsibility is taken for any errors or ommisions that may be contained within this map and associated data. No guarantee is given as to the accuracy of the information contained within this map. This is not a Department of Planning certified copy of the maps accompanying the Muswellbrook LEP 2009 and is for indicative purposes only. Muswellbrook Shire Council takes no responsibility for reliance upon the information contained on this map.

To determine the zoning attributes applying to a property, a Section 149 certificate must be obtained or certified copies of the LEP maps can be obtained from the following website. www.legislation.nsw.gov.au

APPENDIX J

Access Report

lindsay perry access

Disability Access Report

St Nicholas Early Education Centre

St James Primary School
Skellatar Stock Route
MUSWELLBROOK NSW

For: Catholic Diocese of Maitland –
Newcastle
Ref: LP_18219

www.lpaccess.com.au

Executive Summary

Development application documentation for the proposed childcare centre located at St James Primary School Muswellbrook, has been reviewed against the requirements of the Building Code of Australia 2016 and The Disability Discrimination Act 1992 with regard to access for persons with a disability. The requirements of the Disability Standards for Access to Premises (Buildings) and the Access Code for Buildings have also been addressed.

We consider that the drawings presented for assessment, for the purposes of a development application, generally comply with The Building Code of Australia 2016 and the intent of the Disability Discrimination Act 1992, subject to the recommendations made in this report being implemented during the construction process.

The following table summarises compliance status.

Item No.	Description	Compliance Status
Access and Approach		
3.1	Street Boundary to Entrance	Compliant
3.2	Carparking to Entrance	Compliant
3.3	Pathways	Capable of compliance
3.4	Accessible Carparking	Capable of compliance
3.5	Pedestrian Crossings	Capable of compliance
3.6	Entrance	Capable of compliance
Interior		
4.1	Extent of Access Generally	Compliant
4.2	Circulation Areas	Compliant
4.3	Doorways	Compliant
4.4	Exempt Areas	Compliant
4.5	Floor Finishes	To be addressed during detailed design
4.6	Visual Indication to Glazing	To be addressed during detailed design
4.7	Signage	To be addressed during detailed design
4.8	Slip Resistance	To be addressed during detailed design
4.9	Luminance Contrast	Recommendation only
Sanitary Facilities		
5.1	Distribution	Compliant
5.2	Accessible Toilets	Capable of compliance
5.3	Accessible Showers	Capable of compliance
5.4	Ambulant Toilet Cubicles	Capable of compliance

Construction is to be in accordance with the recommendations made in this access report to ensure compliance. Where construction differs from the drawings, further assessment will be required to ascertain compliance.

This report is limited to items within drawings listed in this report only. Future alterations and additions to the building will render the recommendations in this report null and void as we cannot guarantee continued compliance where changes to the building fabric are made. A high level of maintenance is recommended to ensure continued compliance with access legislation.

All dimensions quoted throughout this report and within Australian Standards are CLEAR dimensions, not structural. This needs to be considered in the preparation of the construction certificate documentation to account for wall linings and the like.

Best practice options, as noted in the report, are not mandatory but will minimise the risk of a complaint made under the DDA.

The recommendations throughout this report reflect the professional opinion and interpretation of Lindsay Perry. This may differ from that of other consultants. We aim to provide practical, performance-based advice based on project specifics that will maximize access for persons with a disability to the built environment.

Lindsay Perry is a qualified Access Advisor, being an accredited within Australia (ACAA No. 136) and at the international level (GAATES No. BE-02-106-18). Lindsay Perry Access Pty Ltd carries public liability insurance, professional indemnity insurance and workers compensation insurance.

Perry

LINDSAY PERRY
B.Arch, M.Dis.Stud.

Internationally Certified Access Consultant GAATES ICAC BE-02-106-18
ACAA Accredited Access Consultant No. 136 |
Registered Architect NSW 7021
Livable Housing Assessor 20047 | Changing Places Assessor CP005

Revision Summary

Date	Description	Revision
30 Jan. 2019	draft Disability Access Report	0
14 March 2019	Disability Access Report	1

1. Project Background

This Access Report considers the proposed childcare centre located at St James Primary School Muswellbrook, against the requirements of the Building Code of Australia 2016 (BCA), Disability (Access to Premises) Standards 2010 and The Disability Discrimination Act 1992 (DDA), with regard to access for persons with a disability.

The proposed childcare centre is provided over a single level and accommodates one hundred and four (104) children within six (6) areas. The childcare areas are arranged along a north facing verandah with direct access to outdoor play areas. Ancillary areas are provided along the southern side of the building. An entry forecourt is provided at the eastern end of the building facilitating access form the carparking and street footpath areas.

Documentation prepared by EJE Architecture has been reviewed as follows:

SK A00	Cover Sheet
SK A01 1	Site Plan
SK A03 1	Ground Floor Plan
SK A13 1	3D Perspectives
SK A14 1	3D Perspectives

It is estimated that one in five people in Australia have a long-term disability (Australian Bureau of Statistics – 2003). This includes physical disability, intellectual disability, and sensory impairments such as vision and hearing. It does not include those with a short-term (temporary) disability or the continuing aging population.

Lindsay Perry Access have adopted a best practice, performance-based approach to access. Assessment is based on project specifics and takes into account various factors such as site topography, heritage and existing site conditions.

2. Legislation

The requirements of BCA 2016 have been adopted in the preparation of this access report.
Access assessment has been made against Access Legislation including:

- The Commonwealth Disability Discrimination Act 1992 (DDA)
- Disability (Access to Premises (Buildings)) Standards 2010
- Access Code for Buildings 2010
- The Building Code of Australia 2016 (BCA) Section D3 – Access for People with Disabilities
- The Building Code of Australia 2016 (BCA) Section D2 (in part) – thresholds and slip resistant
- The Building Code of Australia 2016 (BCA) Section E3.6 – Lifts
- Australian Standards AS1428.1(2009) Amendment 1, AS1428.2(1992), AS1428.4(2009) – Design for Access and Mobility
- Australian Standard AS2890.6 (2009) – Parking Facilities – Off street carparking For People with Disabilities.

The accessibility of the proposed development has been considered in regard to the relevant access legislation. A summary of the requirements of relevant legislation follows.

- The **DDA** requires independent, equitable, dignified access to all parts of the building for all building users regardless of disability. The DDA makes it unlawful to discriminate against a person on the grounds of disability. The DDA is a complaint-based law and is administered by the Human Rights and Equal Opportunities Commission

- The **DDA Premises Standards** include an **Access Code** written in the same style as the Building Code of Australia. That is, the Access Code has a number of Performance Requirements that are expressed in broad terms and references to a number of technical Deemed-to-Satisfy Provisions. The Deemed-to-Satisfy provisions refer in many cases to technical details in Australian Standards such as AS1428.1, the primary Australian Standard relating to building access for people with a disability.

- The **BCA 2016** for Class 9b Childcare buildings requires access for people with disabilities to and within all areas usually used by the occupants.

- **AS1428 – Design for Access and Mobility** requires the inclusion of a continuous accessible path of travel from the street footpaths and carparking areas to the entry and facilities within the building. It also includes requirements for doorways, stairs, toilets, etc.

  Part 1 (2009) of this standard contains access requirements that are mandatory for the provision of access for persons with a disability and is referred by the BCA. Amendment 1 of this document was released in 2010.

  Part 2 (1992) provides enhanced and best practice requirements. While AS1428.2 is not mandatory, the inclusion of its requirements such as accessible reception counters reduce the risk of a complaint made under the DDA. AS1428.2 is referenced by the Human Rights and Equal Opportunities Commission Advisory Notes for Access to Premises that accompanies the DDA.

  Requirements for tactile indicators are included in Part 4.1 (2009) of this standard.

  Part 5 (2010) provides requirements for Communication for people who are deaf or hearing impaired but is not referenced by the BCA.

- **AS2890.6** applies to the carparking areas generally.

3. Access and Approach

The approach to the building needs to be considered when considering access for persons with a disability. The BCA has three requirements for the approach to the building for persons with a disability.

An accessible path of travel is required to the building entrance from the allotment boundary at the main points of pedestrian entry, from accessible carparking areas and from any adjacent and associated accessible building.

In this instance, the approach to the building has been considered as follows:

- from the allotment boundary at the pedestrian entrance along the existing roadway;
- from the carparking area to the entrance.

3.1 Approach from Street Boundary

The BCA requires that a continuous accessible path of travel be provided from the allotment boundary at the main points of pedestrian entry to the main entrance.

Compliance Summary:

Compliant

A formed pedestrian pathway is provided to the entrance from the footpaths along the existing roadway to the east of the building.

3.2 Approach from Accessible Carparking

The BCA requires that a continuous accessible path of travel be provided from the accessible carparking areas to the main entrance.

The location of accessible carparking areas is not indicated in the site plan. However, the contours suggest that the area between carparking areas and the main entrance is conducive to an accessible path of travel. Requirements for the accessible path of travel are included in Section 3.4 of this report and should be addressed during construction to facilitate access for persons with a disability and ensure compliance.

Compliance Summary:

Compliant

A formed pedestrian pathway is provided to the entrance from the carparking areas.

3.3 Pathways Generally

An accessible path of travel is required from the accessible carparking areas to the main entrance of each building / tenancy and from the allotment boundary to the main entrances. The accessible path of travel refers to a pathway which is grade restricted and provides wheelchair access as per the requirements of AS1428.

Compliance Summary:

Capable of compliance

Recommendations:
For compliance with AS1428.1, the following access requirements apply and should be addressed during preparation of the construction certificate documentation to ensure compliance.

a. The minimum unobstructed width of all pathways is to be 1000mm (AS1428.1, Clause 6.3). A width of 1200mm is preferred for compliance with AS1428.2.

b. All pathways are to be constructed with no lip or step at joints between abutting surfaces (a construction tolerance of 3mm is allowable, or 5mm for bevelling edges).

c. The maximum allowable crossfall of pathways is to be 1:40.

d. The ground abutting the sides of the pathways should follow the grade of the pathway and extend horizontally for 600mm. We note that this is not required where there is a kerb or handrail provided to the side of the pathway.

e. Pathways to have passing bays complying with AS1428.1 at maximum 20m intervals where a direct line of site is not available. They are required within 2m of the end of the pathway where it is not possible to continue travelling along the pathway.

   A passing space shall have a minimum width of 1800 for a minimum length of 2000mm. Refer to AS1428.1, Clause 6.4.

3.4 Accessible Carparking

Where in excess of five carparking spaces are provided on the site, there is a requirement for the provision of accessible carparking.

An accessible carparking space is provided within the carparking area in close proximity to the building entrance. Configuration is on keeping with accessibility requirements.

Compliance Summary:
Capable of compliance

Recommendations:
Access requirements for the accessible carparking are as follows and should be addressed during preparation of the construction certificate documentation to ensure compliance.

a. Accessible carparking to be a minimum of 2400mm wide with a shared area to one side of the space 2400mm wide. Circulation space can be shared between adjacent accessible carparks. For a single space, a total width of 4800mm is required.

b. Provide a bollard to the shared circulation space as illustrated in AS2890.6, Figure 2.2.

c. The maximum allowable crossfall of accessible carparking area to be, 1:33 (for outdoor spaces). This crossfall applies both parallel and perpendicular to the angle of parking.

d. For covered carparking, the clear height of the accessible carparking space to be 2500mm as illustrated in AS2890.6, Figure 2.7.

e. Designated accessible carparking is to be identified using the International Symbol for Access (ISA) –ground and vertical signage is required. Signage is to comply with AS1428.1.

3.5 Pedestrian Crossings

There are marked pedestrian crossings on the site, providing the accessible link between the allotment boundary and the building entrance.

Compliance Summary:

Capable of compliance

Recommendations:

Where kerb ramps are to be provided at the roadway to provide an accessible path of travel for persons with a disability, kerb rampa to offer compliance with AS1428.1 (2009) and be aligned across the roadway.

Where the pedestrian crossing is at the same level as the roadway, provide tactile indicators to both sides of the roadway to alert persons with a vision impairment of the hazard. Tactile indicators to be 600-800mm deep across the width pedestrian crossing. Tactile indicators to be detectable, durable, non-slip and have a minimum 30% luminance contrast to the background colour.

3.6 Entrance

In a building required to be accessible, an accessway must be provided through the principal pedestrian entrance, and not less than 50% of all pedestrian entrances including the principal pedestrian entrance. In a building with a total floor area more than 500 sqm a pedestrian entrance which is not accessible must not be located more than 50m from an accessible pedestrian entrance.

A single swinging doorway provides entry to the building.

Compliance Summary:

Capable of compliance

Recommendations:

The following access requirements apply to the entrance and should be addressed during preparation of the construction certificate documentation to ensure compliance.

a. Entrance to comply with AS1428.1(2009), Clause 13 as part of the accessible path of travel.

b. Door are to have a minimum clear opening width of 850mm to comply AS1428.1(2009), Clause 13.2 as part of the accessible path of travel.

c. Door threshold to be level to provide seamless entry as part of the accessible path of travel. Maximum allowable construction tolerance is 3mm for compliance with AS1428.1(2009), 5mm where beveled edges are provided between surfaces – refer to Figure 6.

d. For glass doors, provide decals to assist persons with a vision impairment. Decals to be solid and have a minimum 30% luminance contrast to the background colour and be not less than 75mm high located within the height range of 900-1100mm above the finished floor level. Decals are to be solid. AS1428.1, Clause 6.6.

e. For a best practice approach to access, and to assist people with a vision impairment locate the entrance, consider providing features with a minimum 30% luminance contrast to the background surface such as an entry mat or awning.

4 Interior

The building is required to be accessible to people with disabilities. BCA requires access to and within ALL areas used by the occupants. Within a childcare centre, staff are required to have a degree of mobility due to the nature of the duties performed as a part of their position descriptions.

Position descriptions for childcare workers commonly list the following attributes:

- Strong interpersonal communication skills;
- Instructional skills;
- Physical stamina (in the context of meeting the demands of the physical energy exerted by the children).

Physical activities listed within position descriptions for childcare workers often include the following:

- Sitting on the floor;
- Bending;
- Walking;
- Ability to distinguish colour; Lifting children up to 15kg.

With regard to staff only ancillary area, we note that BCA Clause D3.4 Exemptions could be argued. It states the following:

> *The following areas are not required to be accessible:*
> *a) An area where access would be inappropriate because of the particular purpose for which the area is used.*

b) An area that would pose a health or safety risk for people with a disability.
c) Any path of travel providing access only to an area exempted by (a) or (b).

Given the typical position description for a childcare worker and the physical activities expected, it would be highly unlikely for a staff member to have a non-ambulant disability. Therefore, we consider that access for people with disabilities is not required to the following rooms: store rooms; cot rooms; nappy change rooms; laundry; kitchen; bin store; staff resource rooms; arts and craft room.

4.1 Extent of Access Generally – BCA

Accessibility provisions of the BCA have generally been met. Access is provided to and within the childcare centre.

Compliance Summary:

Compliant

4.2 Circulation Areas

BCA (Clause D3.3) requires the provision of turning spaces and passing areas to corridors to enable wheelchair circulation throughout a building.

Turning spaces 1540mm wide by 2070mm longare required within 2m of the end of corridors to enable a wheelchair to turn through 90°. Passing areas 1800mm wide by 2000mm are required long every 20m along a corridor unless there is a clear line of sight.

Compliance Summary:

Compliant

4.3 Doorways Generally

AS1428 has requirements for doorways within the accessible path of travel to enable independent access for people using a wheelchair.

Compliance Summary:

Compliant – performance-based approach due to nature of the building as a childcare centre.

Recommendations:

Access requirements for doorways within the accessible path of travel are as follows and should be addressed during preparation of the construction certificate documentation to ensure compliance

a. Doorways within the accessible path of travel to have a minimum clear opening width of 850mm (AS1428.1(2009), Clause 13.2). We recommend the use of a 920 leaf door as a minimum to achieve adequate clear width.

b. All doorways within the accessible path of travel to have complying circulation areas as illustrated in AS1428.1(2009), Figure 31. Circulation areas to have a maximum crossfall of 1:40.

c. Doorways to have minimum 30% luminance contrast as described in AS1428.1(2009), Clause 13.1.

Door handles and related hardware shall be able to be unlocked and opened with one hand per AS1428.1 (2009), Clause 13.5.1. The handles shall enable a person who cannot grip to operate the door without their hand slipping from the handle. We recommend the use of lever handles.

d. Doorways to have operational forces per AS1428.1 (2009), Clause 13.5.2. A maximum allowable force of 20N is required to operate the door.

4.4 Exempt Areas

BCA Clause D3.4 does not require access for people with disabilities to areas that would be inappropriate due to the particular use of the area or would pose a health and safety risk. This includes the path of travel to these areas.

4.5 Floor Finishes

All floor finishes are to be flush to provide an accessible path of travel throughout the different areas of the building. Maximum allowable construction tolerance is 3mm (5mm for bevelled edges) as part of the accessible path of travel. Refer to AS1428.1(2009), Clause 7.2 for further details. This should be implemented during construction to ensure compliance.

Compliance Summary:

To be addressed during detailed design stages.

4.6 Visual Indication to Glazing

Provide decals to all full height glazing that can be mistaken for a doorway to assist persons with a vision impairment. Decals to be solid and have a minimum 30% luminance contrast to the background colour and be not less than 75mm high located within the height range of 900-1100mm above the finished floor level. Decals are to be solid. AS1428.1, Clause 6.6.

Compliance Summary:

To be addressed during detailed design stage.

4.7 Signage

Signage to identify sanitary facilities, hearing augmentation and required exits are to be provided in accordance with BCA Clause D3.6. This includes provision of the International Symbol for Access or International Symbol for Deafness as appropriate. Signage to comply with AS1428.1 (2009), Clause 8.

Compliance Summary:

To be addressed during detailed design stage.

Recommendations:

Signage to include information in Braille and tactile signage formats as outlined within BCA Specification D3.6.

a. Braille and tactile components of the sign to be located not less than 1200mm and not higher than 1600mm affl.

b. Signage identifying rooms with accessible features or facilities nominated in Clause D3.6 to be located at the latch side of the doorway with the leading edge of the sign 50-300mm from the architrave. Where this is not possible, the sign can be located on the door. This is to allow use of the Braille without obstructing pedestrian traffic through the doorway.

c. For signage identifying an exit, "exit" and the level must be stated on the sign. It must be located at the latch side of the doorway with the leading edge of the sign 50-300mm from the architrave. Where this is not possible, the sign can be located on the door.

4.8 Slip Resistance

The BCA defines the following slip resistance requirements for stairs and ramps:

Application	Surface Conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or Landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4

Compliance Summary:

To be addressed during detailed design stage.

4.9 Luminance Contrast (Best-practice recommendation)

Luminance contrast assists people with a vision impairment to navigate the built environment. Mandatory items that require luminance contrast are tactile indicators, accessible toilet seats and doorways as outlined in other sections of this report. The following can also be provided as a best practice measure to ensure ease of use:

- Minimum 30% luminance contrast between floors and walls;
- Minimum 30% luminance contrast between the ground surface and obstructions such as columns, bollards and street furniture;
- Minimum 30% luminance contrast between the floor and the entrance mat (this allows people with vision impairment to locate the entrance;
- Minimum 30% luminance contrast between walls and handrails.

This is not a mandatory requirement and will not affect compliance.

5 Sanitary Facilities

The BCA / Access Code for Buildings (Clause F2.4) require the provision of sanitary facilities catering for persons with a disability.

5.1 Distribution of Accessible Sanitary Facilities

The following is required to satisfy BCA requirements:

- A unisex accessible toilet at each level. Where more than one bank of toilets is provided at any level, at least 50% of those banks will have an accessible toilet facility.

- A unisex accessible shower is required where showers are required by F2.3. In this regard, BCA only requires accessible showers within hospitals, early childhood centres, theatres and sporting venues. Showers are not r*equired* within commercial, retail or industrial premises. If ***required by Clause F2.3***, where one or more showers are provided, 1 accessible shower for every 10 or part thereof must be provided.

  To minimize the risk of a complaint made under the DDA, we recommend that where showers are provided for general use, an accessible shower should be provided.

- At each bank of toilets where there is one or more toilets in additional to an unisex accessible sanitary compartment at the bank of toilets, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS1428.1 must be provided for use by males and females

Compliance Summary:

Compliant

5.2 Unisex Accessible Toilet

A unisex accessible toilet is provided within the building. Room dimensions and arrangement of fixtures is considered capable of compliance.

Compliance Summary:

Capable of compliance

Recommendations:

Access requirements for the accessible toilet facilities are as follows and should be addressed during preparation of the construction certificate documentation to ensure compliance. For compliance with AS1428.1(2009), the minimum room dimensions of the accessible toilet are to be 1900x2300mm plus additional area for the handbasin. These are **CLEAR** dimensions. Provision for wall linings needs to be considered.

a. Accessible toilet facilities to be unisex facilities for compliance with the BCA.

b. Unisex accessible facilities to comply with AS1428.1(2009), Clause 15 including set-out of fittings and fixtures, circulation areas and doorways.

Crucial dimensions for the toilet are 450mm from centreline of pan to side wall, 800mm from front of pan to rear wall and a seat height of 470mm. A minimum clear dimension of 1400mm is required from the toilet pan to any other fixture (see figure 43).

For the basin, a minimum dimension of 425mm is required from the centreline of the basin to the side wall and height of basin to be between 800 and 830mm.

Grabrails to be provided at the side and rear of the toilet in compliance with AS1428.1 at a height of 800mm.

c. Taps to have lever handles, sensor plates or similar controls. For lever taps, a minimum 50mm clearance to be provided to adjacent surfaces.

d. Toilet seat shall be of the full round type, be securely fixed in position when in use and have fixings that create lateral stability. They should be load rated to 150kg, have a minimum 30% luminance contrast to the background colour (eg pan, wall or floor) and remain in the upright position when fully raised.

e. Provide a backrest to accessible toilets to comply with AS1428.1, Clause 15.2.4.

f. Accessible toilet to be identified using the International Symbol for Access. Pictograms / lettering to have a minimum 30% luminance contrast to the background colour. Signage is to comply with AS1428.1, Clause 8 and include information in tactile and Braille formats (as required by the BCA).

g. Doorways to have a minimum clear opening width of 850mm to comply AS1428.1(2009), Clause 13.2 as part of the accessible path of travel. Adequate circulation area at the latch side of the doorway is required to allow independent access to the facility – for details refer to AS1428.1, Figure 31.

h. Door hardware to be located within the accessible height range of 900-1100mm above the finished floor level. The use of lever handles is encouraged to assist persons with a manual disability such as arthritis.

i. Controls such as light switches within the accessible toilet facilities to be in the accessible height range of 900-1100mm above the finished floor level to comply with AS1428.1(2009), Clause 14. Controls should be located not less than 500mm to a corner.

5.3 Unisex Accessible Shower Facility

A shower is provided within the accessible toilet compartment and appears to offer compliance with the BCA.

Compliance Summary:

Capable of compliance

Recommendations:

Showers are to comply with AS 1428.1, Clause 15.5 and include accessible features such as grabrails, adjustable height shower rose and fixtures within an accessible height range.

Floor waste to be positioned 550mm and 580mm from enclosing shower walls as illustrated in AS1428.1 (2009), Figure 47a.

The minimum dimension of an accessible shower to be 1160 x 1000mm. A folding seat, at a height of 470mm is to be provided. All taps to be located within the height range of 900-1100mm above the finished floor level.

Circulation space in front of the shower is to be provided as illustrated in AS1428.1, Figure 47.

5.4 Cubicles for People with an Ambulant Disability

Ambulant cubicles are indicated in conjunction with the accessible facility offering BCA compliance.

Compliance Summary:

Capable of compliance

Recommendations:

Options for the configuration of the ambulant cubicles are illustrated in AS1428.1, Figure 53.

The following should be addressed during preparation of the construction certificate documentation to ensure compliance.

a. Provide an ambulant cubicle within each bank of male and female toilets in compliance with AS1428.1, Clause 16.

b. Minimum width of ambulant cubicles to be 900-920mm.

c. Provide grabrails to ambulant cubicles to comply with AS1428.1, Clause 17 and Figure 53A.

d. Doors to have a minimum opening width of 700mm and comply with AS1428.1, Figure 53B.

e. Provide signage to the ambulant cubicles to comply with AS1428.1, Clause 16.4.

lpa lindsay perry access

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APPENDIX K

Section 10.7 Planning Certificate

PLANNING CERTIFICATE UNDER SECTION 10.7 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Enquiries	Planning
Contact	02 6549 3700
Receipt no.	1082777
Your reference	APPLICATION

Date: 16 August 2018

Assessment: 99143

Cert No: 22495

The Trustees of The Roman Catholic
Church Diocese of Maitland-Newcastle
841 Hunter Street
NEWCASTLE WEST NSW 2302

Owner (as recorded by Council)

St James Primary School

Property Description:
111 SKELLATAR STOCK ROUTE
MUSWELLBROOK 2333
LOT: 1 DP: 1070178

Land to which the certificate relates

The land to which this certificate relates, being the lot or lots described on the application form, is shown in the Council's records as being situated at the street address described above. The information contained in this certificate relates only to the lot or lots described on this certificate. Separate planning certificates can be obtained upon application for other lots, those certificates may contain different information than is contained in this certificate.

CERTIFICATE UNDER SECTION 10.7(2) ENVIRONMENTAL PLANNING & ASSESSMENT ACT

LOCAL ENVIRONMENTAL PLANS

PLANNING INSTRUMENT	Muswellbrook Local Environmental Plan 2009
LAND USE ZONING	R1 General Residential

PERMITTED WITHOUT CONSENT

Home occupations

PERMITTED WITH CONSENT

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Child care centres; Community facilities; Dual occupancies; Dwelling houses; Educational establishments; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Hostels; Kiosks; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Residential flat buildings; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Sewage reticulation systems; Shop top housing; Water recycling facilities; Water supply systems.

PROHIBITED

Any development not specified above.

muswellbrook
shire council

Date: 16 August 2018

Cert No: 22495

MINIMUM LAND DIMENSIONS FOR THE ERECTION OF A DWELLING

Under the provisions of the Muswellbrook Local Environmental Plan 2009, the minimum subdivision lot size IS NOT TO BE LESS than 600m2.

WHETHER THE LAND INCLUDES OR COMPRISES CRITICAL HABITAT

The subject land has not been declared as critical habitat.

WHETHER THE LAND IS IN A CONSERVATION AREA

The subject land is not known to be in a conservation area.

WHETHER AN ITEM OF ENVIRONMENTAL HERITAGE IS SITUATED ON THE LAND

The land is NOT affected by any known or listed heritage item.

STATE ENVIRONMENTAL PLANNING POLICIES (EXEMPT & COMPLYING DEVELOPMENT CODES 2008)

CERTIFICATE UNDER SECTION 10.7(2) IDENTIFYING THE INFORMATION SET OUT IN CLAUSE 3 OF SCHEDULE 4 OF THE ENVIRONMENTAL PLANNING & ASSESSMENT REGULATIONS

Part 3 General Housing Code

YES. Complying development specified in the General Housing Code may be carried out on this land in certain circumstances pursuant to Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Part 3A Rural Housing Code

Not applicable to the land to which this certificate relates.

Part 4 Housing Alterations Code

YES. Complying development specified in the Housing Alterations Code may be carried out on this land in certain circumstances pursuant to Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Part 4A General Development Code

YES. Complying development specified in the General Development Code may be carried out on this land in certain circumstances pursuant to Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Part 5 Commercial and Industrial Alterations Code

Not applicable to the land to which this certificate relates.

Part 5A Commercial and Industrial (New Buildings and Additions) Code

Not applicable to the land to which this certificate relates.

Part 6 Subdivision Code

YES. Complying development specified in the Subdivision Code may be carried out on this land in certain circumstances pursuant to Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Part 7 Demolition Code

YES. Complying development specified in the Demolition Code may be carried out on this land in certain circumstances pursuant to Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Part 8 Fire Safety Code

YES. Complying development specified in the Fire Safety Code may be carried out on this land in certain circumstances pursuant to Clause 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

STATE ENVIRONMENTAL PLANNING POLICIES

The following State Environmental Planning Policies apply to land within the Muswellbrook Shire LGA:-

No. 21. Caravan Parks - Ensures that where caravan parks or camping grounds are permitted under an environmental planning instrument, movable dwellings, as defined in the Local Government Act 1993, are also permitted. The policy ensures that development consent is required for new caravan parks and camping grounds and for additional long-term sites in existing caravan parks.

No. 30. Intensive Agriculture - Requires development consent for cattle feedlots having a capacity of 50 or more cattle or piggeries having a capacity of 200 or more pigs. The policy sets out information and public notification requirements to ensure there are effective planning control over this export-driven rural industry. The policy does not alter if, and where, such development is permitted, or the functions of the consent authority.

No. 33. Hazardous and Offensive Development - Provides new definitions for 'hazardous industry', 'hazardous storage establishment', 'offensive industry' and 'offensive storage establishment'. The definitions apply to all planning instruments, existing and future. The new definitions enable decisions to approve or refuse a development to be based on the merit of proposal. The consent authority must careful consider the specifics the case, the location and the way in which the proposed activity is to be carried out. The policy also requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy. For example, any application to carry out a potentially hazardous or potentially offensive development is to be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a preliminary hazard analysis (PHA).

No. 36. Manufactured Home Estates - Helps establish well-designed and properly serviced manufactured home estates (MHEs) in suitable locations. Affordability and security of tenure for residents are important aspects. To enable the immediate development of estates, the policy allows MHEs to be located on certain land where caravan parks are permitted. There are however, criteria that a proposal must satisfy before the local council can approved development.

No. 44. Koala Habitat Protection - Encourages the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.

Cert No: 22495

No. 55. Remediation of Land - Introduces state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected, and requires councils to be notified of all remediation proposals.

No. 62. Sustainable Aquaculture - The policy implements the regional strategies already developed by creating a simple approach to identity and categorise aquaculture development on the basis of its potential environmental impact. The SEPP also identifies aquaculture development as a designated development only where there are potential environmental risks.

No. 64. Advertising and Signage - Aims to improve the amenity of urban and natural settings by managing the impact of outdoor advertising. The policy responds to growing concerns from the community, the advertising industry and local government that existing controls and guidelines were not effective. SEPP No. 64 offers the comprehensive provisions and consistent approach needed. SEPP 64 – Advertising and Signage: Explanatory Information should be read in conjunction with the policy.

No. 65. Design Quality of Residential Flat Development - Raises the design quality of residential flat development across the state through the application of a series of design principles. The policy provides for the establishment of Design Review Panels to provide independent expert advice to councils on the merit of residential flat development. The accompanying regulation requires the involvement of a qualified designer throughout the design, approval and construction stages.

SEPP (Housing for Seniors or People with a Disability) 2004 - Encourage the development of high quality accommodation for our ageing population and for people who have disabilities - housing that is in keeping with the local neighbourhood

SEPP (Building Sustainability Index: BASIX) 2004 - This SEPP operates in conjunction with Environmental Planning and Assessment Amendment (Building Sustainability Index: BASIX) Regulation 2004 to ensure the effective introduction of BASIX in NSW. The SEPP ensures consistency in the implementation of BASIX throughout the State by overriding competing provisions in other environmental planning instruments and development control plans, and specifying that SEPP 1 does not apply in relation to any development standard arising under BASIX.

SEPP (Infrastructure) 2007 - Provides a consistent planning regime for infrastructure and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.

SEPP (Mining, Petroleum Production and Extractive Industries) 2007 - This Policy aims to provide for the proper management and development of mineral, petroleum and extractive material resources for the social and economic welfare of the State. The Policy establishes appropriate planning controls to encourage ecologically sustainable development.

SEPP (Miscellaneous Consent Provisions) 2007 - Provides for the erection of temporary structures and the use of places of public entertainment while protecting public safety and local amenity. The SEPP supports the transfer of the regulation of places of public entertainment and temporary structures (such as tents, marquees and booths) from the Local Government Act 1993 to the Environmental Planning and Assessment Act 1979.

SEPP (Rural Lands) 2008 - The aim of this policy is to facilitate the orderly and economic use and development of rural lands for rural and related purposes.

SEPP (Exempt and Complying Development Codes) 2008 – This policy streamlines assessment processes for development that complies with specified development standards. The policy provides exempt codes that have State-wide application, identifying, in the General Exempt Development Code, types of development that are of minimal environmental impact that may be carried out without the need for development consent.

SEPP (Affordable Rental Housing) 2009 – The aims of this policy are to provide a consistent planning regime for the provision of affordable rental housing; facilitate the effective delivery of new affordable rental housing by providing incentives by way of expanding zoning permissibility, floor space ratio bonuses and non-discretionary development standards; facilitate the retention and mitigate the loss of existing affordable rental housing; employ a balanced approach between obligations for retaining and mitigating the loss of existing affordable rental housing, and incentives for the development of new affordable rental housing; facilitate an expanding role for not-for-profit-providers of affordable rental housing; support local business centres by providing affordable rental housing for workers close to places of work; and facilitate the development of housing for the homeless and other disadvantaged people who may require support services, including group homes and supportive accommodation.

SEPP (State and Regional Development) 2011 – The aims of this policy are to identify development that is State significant development; identify development that is State significant infrastructure and critical State significant infrastructure; and confer functions on joint regional planning panels to determine development applications.

Further details regarding these State Environmental Planning Policies and the circumstances in which they may apply to the subject and can be found on the Department of Planning's website.

REGIONAL PLANNING INSTRUMENTS

Hunter Regional Plan 2036
Upper Hunter Strategic Land Use Regional 2012

DEVELOPMENT CONTROL PLANS

This land is affected by the following Development Control Plans:
Muswellbrook Shire Development Control Plan 2009

COASTAL PROTECTION

The land IS NOT affected by the operations of Sections 38 and 39 of the *Coastal Protection Act* 1979.

MINE SUBSIDENCE

The land IS NOT WITHIN a Mine Subsidence District proclaimed under section 15 of the Mine Subsidence Compensation Act, 1961.

ROAD WIDENING AND ROAD REALIGNMENT

The subject land IS NOT affected by any road widening or road realignment under:
(a) Division 2 of Part 3 of the Roads Act 1993, or
(b) Any environmental planning instrument, or
(c) Any resolution of the council.

COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

The land IS NOT affected by a policy adopted by the council, or adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council: that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Development on the land or part of the land IS NOT subject to flood related development controls.

LAND RESERVED FOR ACQUISITION

There are NOT any environmental planning instruments; deemed environmental planning instruments or draft environmental planning instruments applying to the land that provide for the acquisition of the land by a public authority, as referred to in section 27 of the Environmental Planning and Assessment Act 1979.

CONTRIBUTIONS PLANS

The Muswellbrook Section 94 Contributions Plan 2001 and Muswellbrook Section 94A Contributions Plan 2009 apply to all land within the Muswellbrook Shire Local Government Area.

BIODIVERSITY CERTIFIED LAND

The land IS NOT biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995)

BIOBANKING AGREEMENTS

The land IS NOT affected by a biobanking agreement under Part 7A of the *Threatened Species Conservation Act 1995*.

MATTERS RELATING TO THE MANAGEMENT OF CONTAMINATED LAND

(a) The land to which this certificate relates is NOT within land declared to be significantly contaminated land under the Contaminated Land Management Act 2008 at the date when the certificate is issued.

(b) The land to which this certificate relates is NOT subject to a management order under the Contaminated Land Management Act 2008 at the date when the certificate is issued.

(c) The land to which this certificate relates is NOT the subject of approved voluntary management proposal the subject of the Environment Protection Authority's agreement under the Contaminated Land Management Act 2008 at the date when the certificate is issued.

(d) The land to which this certificate relates is NOT the subject to an ongoing maintenance order under the Contaminated Land Management Act 2008 at the date when the certificate is issued.

(e) The land to which this certificate relates has NOT been the subject of a site audit statement provided to Muswellbrook Shire Council.

BUSH FIRE PRONE LAND

The land IS NOT bushfire prone land.

PROPERTY VEGETATION PLANS

Council has NOT been notified of the existence of such a plan or if the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies.

ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Council has NOT been notified of any order made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

DIRECTIONS UNDER PART 3A

There is NOT a direction by the Minister in force under section 75P (2) (c1) of the Act in relation to prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act.

SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

There is NOT a current site compatibility certificate (of which the council is aware), issued under clause 25 of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 in respect of proposed development on the land.

SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

There is NOT a valid site compatibility certificate (of which the council is aware), issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007 in respect of proposed development on the land.

SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

There is NOT a current site compatibility certificate for affordable rental housing (of which the council is aware), issued under clause 37 of State Environmental Planning Policy (Affordable Rental Housing) 2007 in respect of proposed development on the land.

PAPER SUBDIVISION INFORMATION

There is NOT an adopted development plan or subdivision order that applies to the land.

SITE VERIFICATION CERTIFICATE

There is NOT a current site verification certificate (of which the council is aware), issued under clause 17C of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007, in relation to the land.

LOOSE-FILL ASBESTOS INSULATION

There are NO residential premises located on this land that are listed on the register that are required to be maintained under Division 1A of Part 8 of the *Home Building Act 1989*.

Date: 16 August 2018

Cert No: 22495

The accuracy and currency of the details provided by agencies external to Council have not been verified by Muswellbrook Shire Council and should be verified by the applicant.

For further information, please contact
Planning & Regulatory Services.

F Plesman
General Manager

Per:

APPENDIX L

Preliminary Electrical Services Review

ELECTRICAL SERVICES REVIEW

FOR

ST NICHOLAS EARLY EDUCATION CENTRE, MUSWELLBROOK

Prepared by:
Electrical Projects Australia
368 Maitland Road
PO Box 365
MAYFIELD NSW 2304
Phone: 02 4967 5999
Facsimile: 02 4967 5933
Email: mail@electricalprojectsaustralia.com.au

Project Title: St Nicholas Early Education Centre, Muswellbrook
Project Number: 18405

Revision History

Rev No.	Date	Description	By	Checked	Approved
A	22.01.19	PRELIMINARY ISSUE	CH	MS	PM
B	30.01.19	FINAL ISSUE	CH	MS	PM

TABLE OF CONTENTS

1.1 GENERAL

This report describes the existing electrical services and possible alterations required at the existing St James Primary School at Muswellbrook, and an assessment of the required electrical services for the proposed child care development.

The report is based on our site inspection on the 21st January 2019, and review of information provided on the proposed site development.

1.2 EXISTING SUPPLY TO SITE

The site is currently fed from a service pole (AK93058) located at the exit gate side of the site on Skellatar Stock Route. This service pole routes an aerial supply from across the street.

The supply to site is an underground to overhead (UGOH) connection down the pole and underground cables to the site Main Switchboard (MSB), which is located within a room on the side of the Administration Building.

The service protection is by way of fuses mounted atop the service pole, and not contained within the MSB. It is unknown what rating these fuses are without them being verified by a Level 2 ASP contractor, but our opinion would be that they would be no higher than 200A fuses as there is only a single bundled overhead service to the service pole.

1.3 EXISTING CONDITION OF THE INSTALLATION

The MSB is approximately 38 years old, and is a custom style meter panel, and it would be considered to be in fair condition for its age and would not comply with current regulations.

Our intention would be to alter this to become the School Main Distribution Board and relocate metering to the front of the site to meet the current standards. The current standards require all site MSB's to have a Service Protective Device (SPD) and be located at the front of the premises.

As for the underground cables, most of these are not visible, but from what we could see, and or experience with these types of installations, as that there wouldn't expect to be any issues with these cables.

1.4 FUTURE SPARE CAPACITY

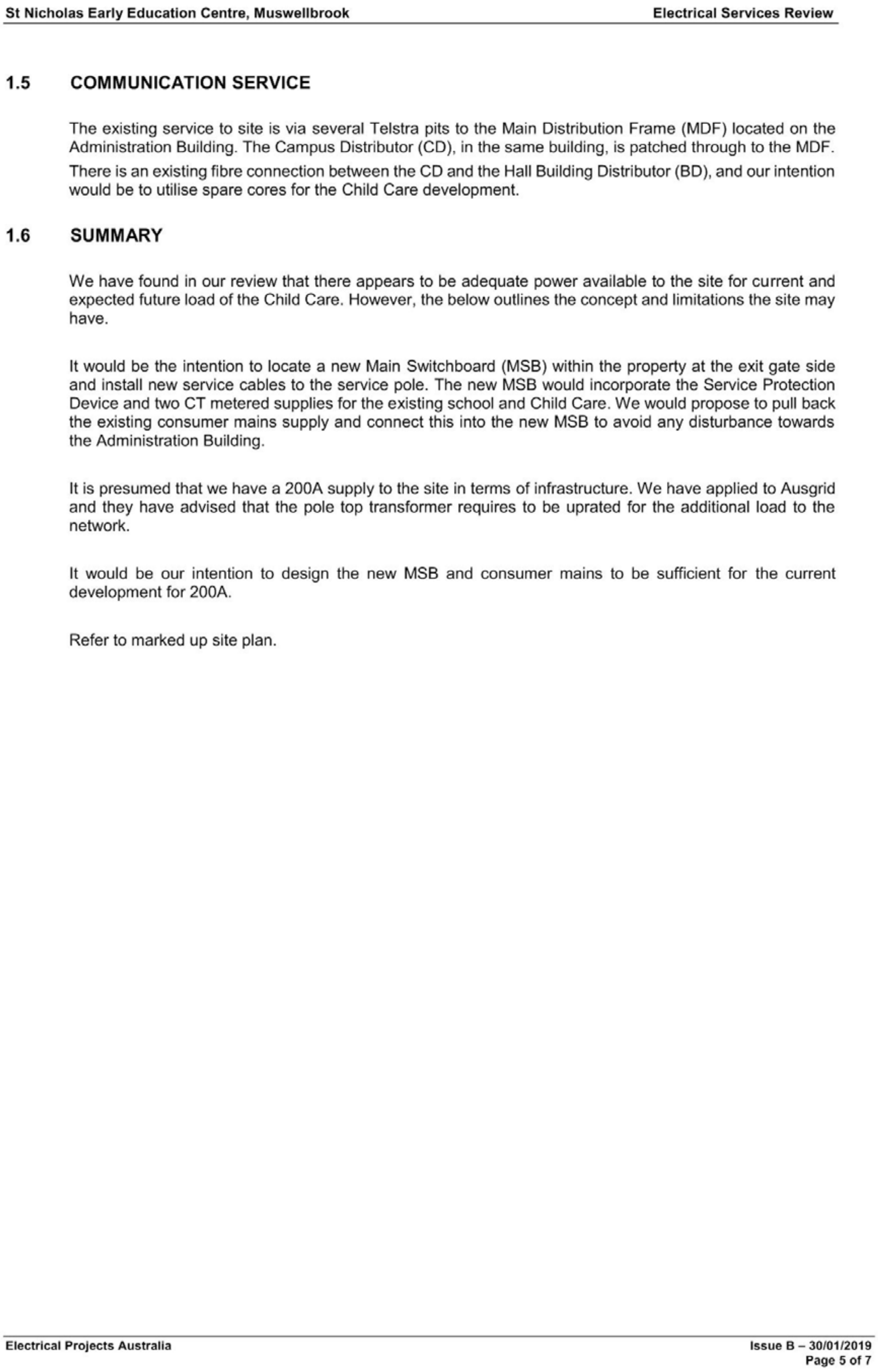
We have completed a preliminary review on the existing power demand for the site and for the future development.

Table 1 below shows the current measured (based from power bills) and future potential electrical load requirements, based on maximum demand calculations we have carried out for the site. The existing infrastructure capacity is shown as 200A, but this is only our estimate as we didn't have access to the service fuses as they are atop the service pole, but this is our best estimate based on previous experience.

Table 1 – Estimated power using AS3000:2018

	3 Phase Amps	3 Phase Amps
Existing Capacity - Estimated		200A
Existing Measured Demand from power bill	77A	190A
Expected Future Load – Child Care	113A	

Based on these assessments, it appears that there would be sufficient power supply to the site for the addition of the Child Care based on the energy bills provided. We have not considered any future developments or additional air conditioning that may be installed into existing portions of the school.



1.5 COMMUNICATION SERVICE

The existing service to site is via several Telstra pits to the Main Distribution Frame (MDF) located on the Administration Building. The Campus Distributor (CD), in the same building, is patched through to the MDF.

There is an existing fibre connection between the CD and the Hall Building Distributor (BD), and our intention would be to utilise spare cores for the Child Care development.

1.6 SUMMARY

We have found in our review that there appears to be adequate power available to the site for current and expected future load of the Child Care. However, the below outlines the concept and limitations the site may have.

It would be the intention to locate a new Main Switchboard (MSB) within the property at the exit gate side and install new service cables to the service pole. The new MSB would incorporate the Service Protection Device and two CT metered supplies for the existing school and Child Care. We would propose to pull back the existing consumer mains supply and connect this into the new MSB to avoid any disturbance towards the Administration Building.

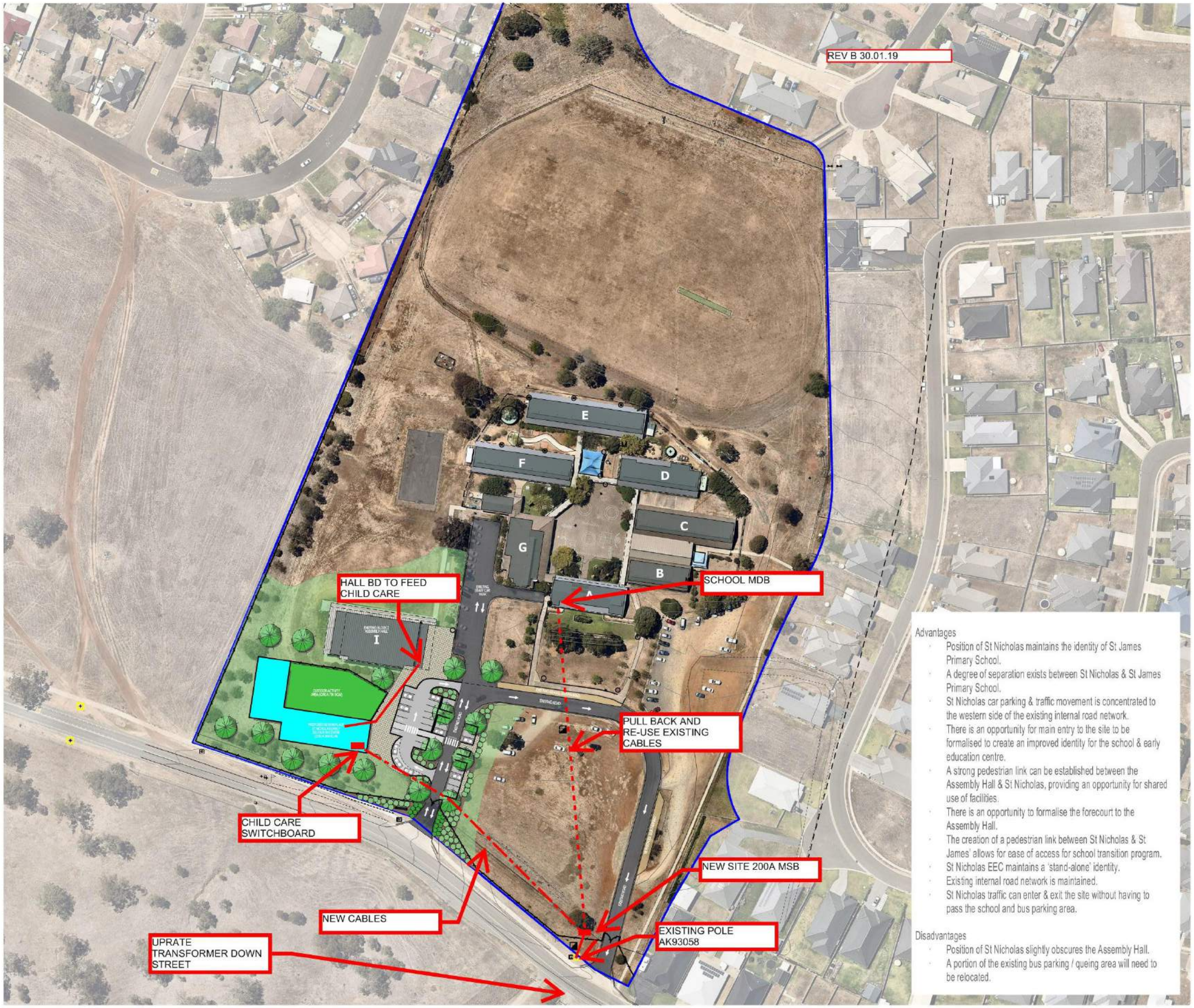
It is presumed that we have a 200A supply to the site in terms of infrastructure. We have applied to Ausgrid and they have advised that the pole top transformer requires to be uprated for the additional load to the network.

It would be our intention to design the new MSB and consumer mains to be sufficient for the current development for 200A.

Refer to marked up site plan.

Figure 1 - Existing Service Pole that supplies the Site
(Service Fuses can be seen atop the pole)

Figure 2 – Existing Main Switchboard (MSB)



Advantages

- Position of St Nicholas maintains the identity of St James Primary School.
- A degree of separation exists between St Nicholas & St James Primary School.
- St Nicholas car parking & traffic movement is concentrated to the western side of the existing internal road network.
- There is an opportunity for main entry to the site to be formalised to create an improved identity for the school & early education centre.
- A strong pedestrian link can be established between the Assembly Hall & St Nicholas, providing an opportunity for shared use of facilities.
- There is an opportunity to formalise the forecourt to the Assembly Hall.
- The creation of a pedestrian link between St Nicholas & St James' allows for ease of access for school transition program.
- St Nicholas EEC maintains a 'stand-alone' identity.
- Existing internal road network is maintained.
- St Nicholas traffic can enter & exit the site without having to pass the school and bus parking area.

Disadvantages

- Position of St Nicholas slightly obscures the Assembly Hall.
- A portion of the existing bus parking / queing area will need to be relocated.

N

St Nicholas EarlyEducation

St James' Primary School
MUSWELLBROOK

OPTION 02: OVERALL SITE PLAN

PROPOSED ST NICHOLAS EARLY EDUCATION CENTRE
ST JAMES PRIMARY SCHOOL
SKELLATAR STOCK ROUTE
MUSWELLBROOK, NSW 2333

PROJECT NO: **12399**
SHEET NO: **SK A201**
SCALE: **1:1500@A3**
REV: **B**
ISSUE DATE: **25/09/2018**

EJE architecture

APPENDIX M

Submission Seeking Exemption for s94A (Section 7.12)

Strategy Hunter
www.strategyhunter.com.au

Submission seeking exemption from a Section 94A (Section 7.12) contribution for the proposed St Nicholas Early Education Centre at Lot 1 DP 1070178 111 Skellatar Stock Route Muswellbrook

Background

Proposed Development

104 place Child Care Centre (Early Education Centre)

Applicant

Trustees of the Roman Catholic Church for the Diocese of Maitland-Newcastle, 841 Hunter St, Newcastle West NSW 2300 (PO Box 756 Newcastle 2300)

Location

Lot 1 DP 1070178 111 Skellatar Stock Route Muswellbrook

Council advice:

The minutes of the Prelodgement meeting of 7 February 2019 in relation to the above proposed development note Council officers' advice that "*...Section 7.11 (sic) Development Contributions may be applicable to the proposed development pursuant to Council's Section 94A Contribution Pln. This Plan requires the payment of contributions at a rate of 1% of the capital investment value of all development for developments exceeding a CIV of $200,000...*"

The proposed Centre has a value of greater than $200,000. Under the provisions of the Section 94A Plan a levy of 1% of the development cost applies to developments of this value.

However, Clause 1.5 of the Muswellbrook Section 94A Plan states that:

"Council may consider exempting other categories of developments, or components of developments from the requirement for a levy, but only by resolution of Council. There are no additional exemptions at the time of commencement of this plan.
For such claims to be considered, a development application will need to include a comprehensive submission presenting a case and a justified request for exemption. Consideration will be given to requests for exemption for the following types of development:
- *works undertaken for charitable purposes or by a registered charity;*
- *places of worship, public hospitals, police and fire stations;*
- *childcare facilities;*
- *libraries;*
- *other community or educational facilities.".*

Response

Criterion 1: *Are the works to be undertaken for charitable purposes or by a registered charity*?

The applicant is the Trustees of the Catholic Diocese of Maitland-Newcastle, which is a registered Charity (Charity ABN 62089182027)

The Diocese operates a range of community services agencies. For example, CatholicCare Social Services Hunter-Manning is a direct mission and outreach agency of the Catholic Diocese of Maitland-Newcastle and offers assistance and support to all families and individuals, regardless of age, gender or religion.

CatholicCare offers a variety of services include counselling, foster care, mental health support, youth services and crisis accommodation, disability support and accommodation, marriage education, family relationship services and more.

The operator of the proposed early education centre is St Nicholas Early Education which is an operating unit of the Catholic Diocese of Maitland-Newcastle. It operates a number of early childhood education centres across the region. St Nicholas Early Education is a registered charity (Charity ABN 91728324316).

St Nicholas Early Education operates as a not for profit service which delivers services to children, such as early childhood services.

In conclusion, the applicant and the operator of the proposed early education centre meet the first discretionary exemption criterion of Clause 1.5 of the Section 94A Plan, i.e. the works and operations are for a charitable purpose and are being undertaken by a registered charity.

Criterion 2: Is the development being carried out a child care facility

St Nicholas Early Education provides high quality care and education for children aged eight weeks to five years. Children attending St Nicholas are placed in an age appropriate group to provide an environment conducive to their needs and safety, whilst providing them with personalised care to enable them to develop and excel. The Centre will comply with the National Quality Framework for Child Care, and licenced as a child care centre with the appropriate NSW Government authority (currently the NSW Early Childhood Education Directorate).

The centres are staffed by a dedicated team of qualified early childhood professionals. St Nicholas complies with all national regulations and licensing requirements, and is Child Care Benefit and Child Care Rebate approved, seeing parents and carers able to access Government support.

Working within the ethos of equality and encouraging inclusion of children from all cultural and socio-economic backgrounds, St Nicholas Early Education operates 51 weeks of the year, closing only between Christmas and New Year.

Furthermore, unlike a for-profit child care centre, St Nicholas operates with a primary ethos of community service, ie a charitable purpose.

For example, St Nicholas early education centres go beyond their regulatory requirements through an active referral program to CatholicCare and other relevant agencies to provide support for sole parents, children requiring early intervention and other cases where assistance is required. St Nicholas maintains a close relationship with these agencies to ensure that support is as seamless as possible and that a high standard of case management is maintained. This level of support is not provided by single focus for profit child care centres.

In summary, St Nicholas Early Education sets itself apart from for-profit childcare providers through the following aspects of its strategic plan:

- Encourage and support parents in their responsibility for the growth of their children;
- Actively recognise children and families are central to the future of our communities;
- Ensure families are supported and assisted in order to strengthen our communities;
- Commit our centres to fostering partnership between parents and educators in the development of their children;
- Commit our centres to creating communities of respect for each other, the wider society and the earth;
- Reach out to and support vulnerable children and their families;
- Utilise the skills of CatholicCare to provide support to families and early intervention programs;
- Utilise indigenous, trainee and other workforce participation programs;
- Develop a long term strategy to increase vulnerable children's access to early education in partnership with CatholicCare;
- Identify opportunities to provide new initiatives to children and families in low socio economic status communities;
- Introduce early intervention and parenting programs in partnership with CatholicCare, and
- Advocate for and elevate the importance of early learning for all children.

In conclusion, the proposed Early Education Centre not only meets the second exemption criteria of Clause 1.5 of the Section 94A Plan in that is is a child care centre, it also delivers a higher level of service than many other child care providers.

Additional considerations

The proposed Early Education Centre progresses a number of the objectives and strategies of the Muswellbrook Shire Council 2017-2027 Community Strategic Plan.

Goal 8 of the Strategic Plan is titled "*Retention and expansion of quality and affordable child care services*" and calls for increased access to early childhood education, child care facilities and associated early childhood services.

The Diocese's commitment to the St Nicholas Early Education Centre helps ensure that residents will have the services they need.

The proposed Centre will also assist in the achievement of Goal 5: "*Continue to improve the affordability, liveability and amenity of the Shire's communities*", and Goal 7: "*Build social inclusion and improve the delivery of social services*" by improving the access to services both directly, and through referral facilitated by the Centre's staff in conjunction with parents.

Furthermore, the provision of an Early Education Centre will facilitate the participation of women in higher education and the workforce, progressing the Strategic Plan Goal 3 "*Facilitate greater access to higher education and participation in the knowledge and creativity economy*".

In conclusion, the Centre progresses a number of the goals of the Muswellbrook Shire Community Strategic Plan.

It is noted that it is common for Councils to provide exemptions from development contributions for not for profit community facilities such as child care centres. Examples include Sydney City Council which provides for the exemptions for child care centres operated by not for profit or charitable organisations, for any child care centre in the case of the (Baulkham) Hill Shire Council, or non profit community facilities in the case of Shoalhaven Shire Council and Shellharbour City Council. Similar exemptions have been granted to the Diocese for St Nicholas Centres within the City of Maitland.

Summary

St Nicholas Early Education Centre is a not for profit service operated by a registered charity. The charity delivers early childhood education (child care) in a manner that provides a higher level of social support than would a for profit centre. These are matters listed as types of development for consideration for exemption under the Muswellbrook Section 94A (Section 7.12) Contributions Plan.

Furthermore, the proposed Centre progresses a number of Council's expressed in the Muswellbrook Shire Council Community Strategic Plan 2017-2027.

As a result, it is considered that the St Nicholas Early Education Centre readily meets the criteria for exemption from a contribution under the Muswellbrook Section 94A Contributions Plan.

David Crofts
Strategy Hunter Consultants
1 March 2019

Disclaimer

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APPENDIX N

Submission Seeking Exemption for s64

Strategy Hunter
www.strategyhunter.com.au

Submission seeking exemption from a Section 64 contribution for the proposed St Nicholas Early Education Centre at Lot 1 DP 1070178
111 Skellatar Stock Route Muswellbrook

Background

Proposed Development

104 place Child Care Centre (Early Education Centre)

Applicant

Trustees of the Roman Catholic Church for the Diocese of Maitland-Newcastle, 841 Hunter St, Newcastle West NSW 2300 (PO Box 756 Newcastle 2300)

Location

Lot 1 DP 1070178 111 Skellatar Stock Route Muswellbrook

Council advice:

The minutes of the Prelodgement meeting of 7 February 2019 in relation to the above proposed development note Council officers' advice that "*...as part of any Notice of Arrangement the developer would be required to pay Section 64 headworks contributions for sewer and water services ...*"

The amount of contribution quoted in the minutes is $122,721.04.

However, Section 3 Administration of the Muswellbrook Shire Council Development Servicing Plans for Water Supply and Sewerage 2012 (March 2015) states:

"Exemptions

Council and Crown Developments for essential services/education, health, community services and law and order will be exempted from developer charges."

By way of precedent and in relation to policy consistency, it is noted that the Muswellbrook Section 94A Contributions Plan also states:

"Council may consider exempting other categories of developments, or components of developments from the requirement for a levy, but only by resolution of Council. There are no additional exemptions at the time of commencement of this plan.

For such claims to be considered, a development application will need to include a comprehensive submission presenting a case and a justified request for exemption. Consideration will be given to requests for exemption for the following types of development:

- *works undertaken for charitable purposes or by a registered charity;*
- *places of worship, public hospitals, police and fire stations;*
- *childcare facilities;*
- *libraries;*
- *other community or educational facilities.".*

Response

Criterion: *Are the works to be undertaken by the Council or are Crown Developments for essential services/education, health, community services and law and order will be exempted from developer charges.*

While the works are not being undertaken by the Council or Crown, the proposed development is delivering a service that is frequently delivered by public authorities, and will be delivered in a manner than is similar to that of a public authority, i.e. with a not for profit community service focus for the benefit of the wider public.

St Nicholas Early Education operates as a not for profit service which delivers services to children, such as early childhood services.

The applicant is the Trustees of the Catholic Diocese of Maitland-Newcastle, which is a registered Charity (Charity ABN 62089182027)

The Diocese operates a range of community services agencies. For example, CatholicCare Social Services Hunter-Manning is a direct mission and outreach agency of the Catholic Diocese of Maitland-Newcastle and offers assistance and support to all families and individuals, regardless of age, gender or religion.

CatholicCare offers a variety of services include counselling, foster care, mental health support, youth services and crisis accommodation, disability support and accommodation, marriage education, family relationship services and more.

The operator of the proposed early education centre is St Nicholas Early Education which is an operating unit of the Catholic Diocese of Maitland-Newcastle. It operates a number of early childhood education centres across the region. St Nicholas Early Education is a registered charity (Charity ABN 91728324316).

In conclusion, the applicant and the operator of the proposed early education centre while not Council or a public authority (the Crown) will deliver services in a manner and with an ethos similar to that of Council or public authority, and for the purposes of this exemption is worthy of being considered as such.

Criterion: Is the development being carried out an essential community service?

The Muswellbrook Shire Council 2017-2027 Community Strategic Plan clearly regards child care as an essential community service. Of the 25 goals of the Strategic Plan, one is devoted exclusively to increased access to child care.

Goal 8 of the Strategic Plan is titled "*Retention and expansion of quality and affordable child care services*" and calls for increased access to early childhood education, child care facilities and associated early childhood services.

The Diocese's commitment to the St Nicholas Early Education Centre helps ensure that residents will have this essential service.

The proposed Centre will also assist in the achievement of Goal 5: "*Continue to improve the affordability, liveability and amenity of the Shire's communities*", and Goal 7: "*Build social inclusion and improve the delivery of social services*" by improving the access to services both directly, and through referral facilitated by the Centre's staff in conjunction with parents.

Furthermore, unlike a for-profit child care centre, St Nicholas operates with a primary ethos of community service.

For example, St Nicholas early education centres go beyond their regulatory requirements through an active referral program to CatholicCare and other relevant agencies to provide support for sole parents, children requiring early intervention and other cases where assistance is required. St Nicholas maintains a close relationship with these agencies to ensure that support is as seamless as possible and that a high standard of case management is maintained. This level of support is not provided by single focus for profit child care centres.

In summary, St Nicholas Early Education undertakes to:

- Encourage and support parents in their responsibility for the growth of their children;
- Actively recognise children and families are central to the future of our communities;
- Ensure families are supported and assisted in order to strengthen our communities;
- Commit our centres to fostering partnership between parents and educators in the development of their children;
- Commit our centres to creating communities of respect for each other, the wider society and the earth;
- Reach out to and support vulnerable children and their families;
- Utilise the skills of CatholicCare to provide support to families and early intervention programs;
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- Introduce early intervention and parenting programs in partnership with CatholicCare, and
- Advocate for and elevate the importance of early learning for all children.

In conclusion, the proposed Early Education Centre provides an essential community service consistent with the policy framework of Council and the Crown.

Summary

The St Nicholas Early Education Centre will deliver an essential community service with characteristics almost identical that delivered by a public authority (the Crown).

As a result, it is considered that the St Nicholas Early Education Centre should be considered for exemption under Section 3 of the for exemption from a "Section 64" contribution in accordance with *Section 3 Administration of the Muswellbrook Shire Council Development Servicing Plans for Water Supply and Sewerage 2012 (March 2015).*

David Crofts
Strategy Hunter Consultants
1 March 2019

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APPENDIX O

Preliminary BCA Report

NewCert

BCA 2019 REVIEW FOR DA SUBMISSION

ST NICHOLAS EARLY EDUCATION CENTRE
Skellatar Stock Rte Muswellbrook

Prepared for:	EJE Architecture
Project No.:	18-153
Date:	14 May 2019
Issue:	1

a 9/16 Huntingdale Drive, Thornton NSW 2322 p 02 4966 1127 f 02 4027 5005
Building Certification BCA Consultancy & Reporting Building Due Diligence Audits
abn 39 147 076 506
www.newcert.com.au

NewCert

Table of Contents

Report Revision History

Issue	Date	Prepared by	Accreditation #	Signed
1	14.05.19	Ewen Jubb	BPB 0344	Ewen Jubb

1.0 Introduction and Documentation

1.1 Introduction

This report contains a review concerning the capability of the design to meet the requirements of BCA 2019. Areas of the design are still being refined so that resolution will be possible prior to the issue of a Construction Certificate.

The proposal is for a childcare centre with associated carpark and landscaping.

1.2 Documentation

This report is based on the review of the following documents:

- Building Code of Australia 2019
- Guide to the Building Code of Australia 2019
- Environmental Planning & Assessment Act 1979
- Environmental Planning & Assessment Regulation 2000
- Architectural drawings prepared by EJE Architecture as follows:

Project No: 12399

Drawing No.	Revision
A01	2
A02	2
A03	2
A04	2
A05	2
A06	2
A07	2
A08	2
A11	2
A12	2
A13	2
A14	2

2.0 Building Characteristics

BCA Classification:	Class 9b – early childhood centre
Rise in Storeys:	1
Floor Area & Volume (approx.)	870m^2 & 3,000m3
Type of Construction:	Type C
Climate zone:	6
Conditioned spaces:	Whole building

3.0 BCA Section C – Fire resistance

i. The building is Type C construction.

ii. The building is more than 3m from fire source features. No FRL's are required to building elements

iii. If the Comms cupboard is in the path of travel to the exit the cupboard requires under D2.7:

  (a) Non-combustible framing + plasterboard lining or
  (b) Timber framing + 13mm fire rated plaster plasterboard lining.
  (c) Inside face of doorway lined with metal cladding
  (d) Smoke seals to all 4 sides of door.

4.0 BCA Section D – Access and Egress

i. There are sufficient doors that can be used as exits. Egress can comply i.e. compliance with BCA D1.4, D1.5 & D1.6. Exit doors to be nominated.

ii. Discharge from exits into the play areas will need to lead to the street under D1.10.

iii. Disability (Access to Premises – Buildings) Standards 2010, Part D3 & AS1428.1-2009

  a. Access is required to and within all areas normally used by the occupants.
  b. The referenced plans are capable of compliance. Details confirming full compliance will be required prior to issue of the CC.

iv. The external stair must comply with D2.13 for goings and riser dimensions and slip resistance to D2.14.

v. Disabled access is required from the allotment boundary and from any accessible car space, and between buildings, through the principal pedestrian entrance to all internal areas of the building normally used by the occupants.

  - The external stair must comply with clause 11 of AS1428.1-2009, incl. handrails both sides with 300mm extensions with compliant terminations, solid risers, 50-75mm contrasting nose strip, tactile indicators at top and bottom landings.
  - Ramps must comply with clause 10 of AS1428.1-2009. Where a barrier is required for falls greater than 1m a separate handrail may be required.
  - Doorways must have a clear width of 850mm (i.e. 920mm leaf doors minimum).
  - Door handles must be D-type lever handles located between 900-1100mm height (refer Figure 35(A) of AS1428.1-2009)
  - Circulation space around doorways must comply with clause 13 of AS1428.1-2009

- The clear width of accessways must be minimum 1000mm.
- Doorways must have a minimum luminance contrast of 30% provided between door and jamb/wall – minimum width 50mm.
- Ground surfaces must comply with cl. 7 of AS1428.1-2009.
- Provide min. 75mm vision strip to all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening.

5.0 BCA Section E – Services and Equipment

i. Services and equipment relevant to the building must be provided. Details confirming full compliance will be required prior to issue of the CC.
    a. Emergency lighting
    b. Exit signage
    c. Fire hose reels
    d. Hydrant coverage
    e. Portable fire extinguishers
    f. Auto shutdown of air-handling systems (where applicable)

6.0 BCA Section F – Health and Amenity

i. 8 child pans will accommodate 120 children.

ii. Adult facilities will accommodate 20 males and 30 females.

iii. An accessible and 2 ambulant facilities have been provided.

iv. A shower is provided.

v. A laundry is provided.

vi. A kitchen is provided with separate hand washing facilities. The kitchen must also:
  - be protected by a door or gate with child proof latches to prevent unsupervised access to the facilities by children younger than 5 years old; and
  - have the ability to facilitate supervision of children from the facilities if the early childhood centre accommodates children younger than 2 years old; and

vii. 0-2 year rooms require:
- a bench type baby bath, which is within 1 m of the nappy change bench; and
- a nappy changing bench which
  - is within 1m of separate adult hand washing facilities and bench type baby bath; and
  - must be not less than 0.9 m^2 in area and at a height of not less than 850 mm, but not more than 900 mm above the finished floor level; and
  - must have a space not less than 800 mm high, 500 mm wide and 800 mm deep for the storage of steps; and
  - is positioned to permit a staff member changing a nappy to have visibility of the play area at all times.

viii. Natural lighting to the playrooms is capable of complying.

ix. Artificial light and mechanical ventilation must comply.

7.0 BCA Section G – Ancillary Provisions

i. The outdoor play space must comply with clause G1.3. Ensure gates open in towards the play spaces.

8.0 BCA Section J – Energy Efficiency

i. Climate zone 6.
ii. BCA 2016 for Section J can apply until May 2020.
iii. Details confirming full compliance will be required prior to issue of the CC.

9.0 Conclusion

We have assessed the referenced architectural documentation with respect to the Building Code of Australia 2016. The design is at a point where the inherent BCA philosophies have been checked and development consent can be sought. The finer details with respect to BCA 2019 compliance can be finalised prior to the issue of a Construction Certificate.

Signed: Ewen Jubb

Ewen Jubb B. Build, Grad Dip B.Surv, MAIBS
Accredited Certifier – BPB0344 Grade A2
NewCert Pty Ltd

Date: 14 May 2019

Issue: 1

The General Manager
Muswellbrook Shire Council
PO Box 122
Muswellbrook 2333

Re: The proposed development of an Early Education Centre in the grounds of St James' Catholic School, Muswellbrook.

I ask council to only allow this Early Education Centre to go ahead on the condition that the school allows for additional pick up and drop off points within the school grounds.

Skellatar Stock Route is a narrow road with two curves and a rise in the road resulting in a blind curve when traveling from a southerly direction.

The area, outside the school, does not allow for parking. As a result the buses and cars are parked illegally on the footpaths encouraging children to run across the road to their parents.

This road was not designed to carry the greatly increased amount of traffic, which has resulted from the size of the school, its use as a bypass of the town centre and as a gateway to the Coles Centre.

There has already been one death, outside the school, due to cars travelling north and misjudging the curve and the car wheels going into ruts, just off the tared area, caused by buses and cars, which are forced to park on the verges of this narrow road.

The area, inside the school grounds, could be used for buses to park and for a 'drop and kiss' area during morning and afternoon busy periods.

I attach a sheet to show how this could be done in order to reduce congestion outside the school grounds as well as reduce the chance of further deaths on this traffic black spot.

Yours sincerely

[redacted]


BUS → LANE
BUS LANE →
CAR LANE
CAR LANE
CAR LANE
DROP o KISS LANE
EXISTING ROAD
FORMALISE FO
ASSEMBLY HA
PEDESTRIAN L
EARLY EDUCA
NEW ENTRY SIGNAGE:
APPROX SIZE 2000mm x
1000mm ARTWORK TBC
FENCED
OUTDOOR ACTIVITY AREA
REFER TO LANDSCAPE
DOCUMENTATION FOR
PROPOSED DESIGN
OVERALL APPROX. SITE AREA OF
PROPOSED NEW LOT 5268m²
INDICATIVE BOUNDARY LINES
FOR PROPOSED SUBDIVISION
NEW SOUTH ELEVATION SIGNAGE:
APPROX SIZE 3600mm x 1700mm OR
4800mm x 900mm ARTWORK TBC
NOTIFICATION PLAN
1:500
LEGEND
ABBREVIATIONS
EJE ARCHITECTURE
ST NICHOLAS EARLY EDUCATION
CENTRE
CATHOLIC DIOCESE OF MAITLAND-
NEWCASTLE
PO BOX 780 NEWCASTLE
NSW 2300
ST JAMES PRIMARY SCHOOL
SKELLATAR STOCK RTE
MUSWELLBROOK, NSW 2333
NOTIFICATION PLAN
BdB
13/06/2019
1:500
12399
DA
A13
0
E/E
architecture

Strategy Hunter
www.strategyhunter.com.au

Submission seeking exemption from a Section 94A (Section 7.12) contribution for the proposed St Nicholas Early Education Centre at Lot 1 DP 1070178
111 Skellatar Stock Route Muswellbrook

Background

Proposed Development

104 place Child Care Centre (Early Education Centre)

Applicant

Trustees of the Roman Catholic Church for the Diocese of Maitland-Newcastle, 841 Hunter St, Newcastle West NSW 2300 (PO Box 756 Newcastle 2300)

Location

Lot 1 DP 1070178 111 Skellatar Stock Route Muswellbrook

Council advice:

The minutes of the Prelodgement meeting of 7 February 2019 in relation to the above proposed development note Council officers' advice that "*...Section 7.11 (sic) Development Contributions may be applicable to the proposed development pursuant to Council's Section 94A Contribution Pln. This Plan requires the payment of contributions at a rate of 1% of the capital investment value of all development for developments exceeding a CIV of $200,000...*"

The proposed Centre has a value of greater than $200,000. Under the provisions of the Section 94A Plan a levy of 1% of the development cost applies to developments of this value.

However, Clause 1.5 of the Muswellbrook Section 94A Plan states that:

"Council may consider exempting other categories of developments, or components of developments from the requirement for a levy, but only by resolution of Council. There are no additional exemptions at the time of commencement of this plan.
For such claims to be considered, a development application will need to include a comprehensive submission presenting a case and a justified request for exemption. Consideration will be given to requests for exemption for the following types of development:
- *works undertaken for charitable purposes or by a registered charity;*
- *places of worship, public hospitals, police and fire stations;*
- *childcare facilities;*
- *libraries;*
- *other community or educational facilities.".*

Response

Criterion 1: *Are the works to be undertaken for charitable purposes or by a registered charity*?

The applicant is the Trustees of the Catholic Diocese of Maitland-Newcastle, which is a registered Charity (Charity ABN 62089182027)

The Diocese operates a range of community services agencies. For example, CatholicCare Social Services Hunter-Manning is a direct mission and outreach agency of the Catholic Diocese of Maitland-Newcastle and offers assistance and support to all families and individuals, regardless of age, gender or religion.

CatholicCare offers a variety of services include counselling, foster care, mental health support, youth services and crisis accommodation, disability support and accommodation, marriage education, family relationship services and more.

The operator of the proposed early education centre is St Nicholas Early Education which is an operating unit of the Catholic Diocese of Maitland-Newcastle. It operates a number of early childhood education centres across the region. St Nicholas Early Education is a registered charity (Charity ABN 91728324316).

St Nicholas Early Education operates as a not for profit service which delivers services to children, such as early childhood services.

In conclusion, the applicant and the operator of the proposed early education centre meet the first discretionary exemption criterion of Clause 1.5 of the Section 94A Plan, i.e. the works and operations are for a charitable purpose and are being undertaken by a registered charity.

Criterion 2: Is the development being carried out a child care facility

St Nicholas Early Education provides high quality care and education for children aged eight weeks to five years. Children attending St Nicholas are placed in an age appropriate group to provide an environment conducive to their needs and safety, whilst providing them with personalised care to enable them to develop and excel. The Centre will comply with the National Quality Framework for Child Care, and licenced as a child care centre with the appropriate NSW Government authority (currently the NSW Early Childhood Education Directorate).

The centres are staffed by a dedicated team of qualified early childhood professionals. St Nicholas complies with all national regulations and licensing requirements, and is Child Care Benefit and Child Care Rebate approved, seeing parents and carers able to access Government support.

Working within the ethos of equality and encouraging inclusion of children from all cultural and socio-economic backgrounds, St Nicholas Early Education operates 51 weeks of the year, closing only between Christmas and New Year.

Furthermore, unlike a for-profit child care centre, St Nicholas operates with a primary ethos of community service, ie a charitable purpose.

For example, St Nicholas early education centres go beyond their regulatory requirements through an active referral program to CatholicCare and other relevant agencies to provide support for sole parents, children requiring early intervention and other cases where assistance is required. St Nicholas maintains a close relationship with these agencies to ensure that support is as seamless as possible and that a high standard of case management is maintained. This level of support is not provided by single focus for profit child care centres.

In summary, St Nicholas Early Education sets itself apart from for-profit childcare providers through the following aspects of its strategic plan:

- Encourage and support parents in their responsibility for the growth of their children;
- Actively recognise children and families are central to the future of our communities;
- Ensure families are supported and assisted in order to strengthen our communities;
- Commit our centres to fostering partnership between parents and educators in the development of their children;
- Commit our centres to creating communities of respect for each other, the wider society and the earth;
- Reach out to and support vulnerable children and their families;
- Utilise the skills of CatholicCare to provide support to families and early intervention programs;
- Utilise indigenous, trainee and other workforce participation programs;
- Develop a long term strategy to increase vulnerable children's access to early education in partnership with CatholicCare;
- Identify opportunities to provide new initiatives to children and families in low socio economic status communities;
- Introduce early intervention and parenting programs in partnership with CatholicCare, and
- Advocate for and elevate the importance of early learning for all children.

In conclusion, the proposed Early Education Centre not only meets the second exemption criteria of Clause 1.5 of the Section 94A Plan in that is is a child care centre, it also delivers a higher level of service than many other child care providers.

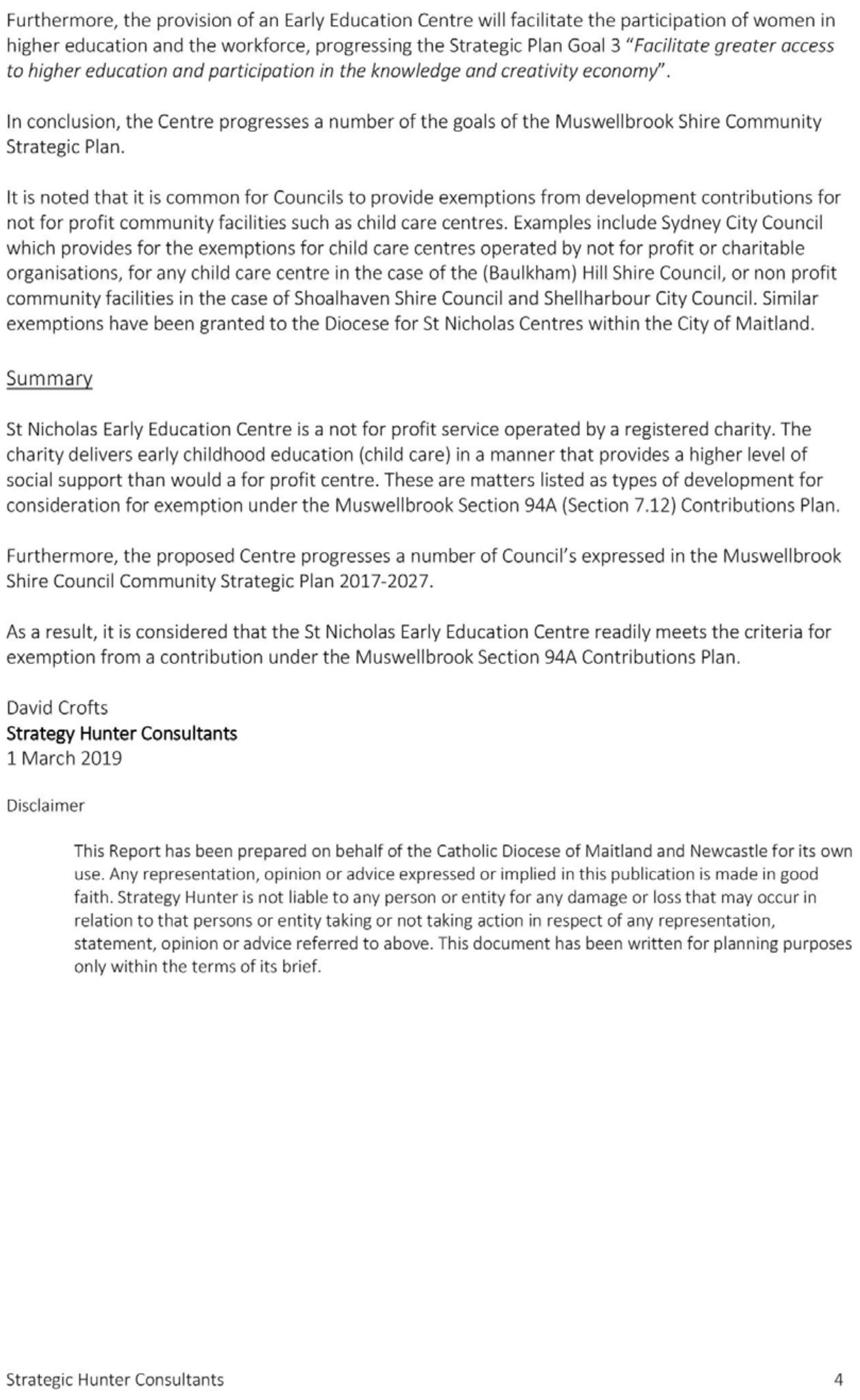
Additional considerations

The proposed Early Education Centre progresses a number of the objectives and strategies of the Muswellbrook Shire Council 2017-2027 Community Strategic Plan.

Goal 8 of the Strategic Plan is titled "*Retention and expansion of quality and affordable child care services*" and calls for increased access to early childhood education, child care facilities and associated early childhood services.

The Diocese's commitment to the St Nicholas Early Education Centre helps ensure that residents will have the services they need.

The proposed Centre will also assist in the achievement of Goal 5: "*Continue to improve the affordability, liveability and amenity of the Shire's communities*", and Goal 7: "*Build social inclusion and improve the delivery of social services*" by improving the access to services both directly, and through referral facilitated by the Centre's staff in conjunction with parents.



Furthermore, the provision of an Early Education Centre will facilitate the participation of women in higher education and the workforce, progressing the Strategic Plan Goal 3 "*Facilitate greater access to higher education and participation in the knowledge and creativity economy*".

In conclusion, the Centre progresses a number of the goals of the Muswellbrook Shire Community Strategic Plan.

It is noted that it is common for Councils to provide exemptions from development contributions for not for profit community facilities such as child care centres. Examples include Sydney City Council which provides for the exemptions for child care centres operated by not for profit or charitable organisations, for any child care centre in the case of the (Baulkham) Hill Shire Council, or non profit community facilities in the case of Shoalhaven Shire Council and Shellharbour City Council. Similar exemptions have been granted to the Diocese for St Nicholas Centres within the City of Maitland.

Summary

St Nicholas Early Education Centre is a not for profit service operated by a registered charity. The charity delivers early childhood education (child care) in a manner that provides a higher level of social support than would a for profit centre. These are matters listed as types of development for consideration for exemption under the Muswellbrook Section 94A (Section 7.12) Contributions Plan.

Furthermore, the proposed Centre progresses a number of Council's expressed in the Muswellbrook Shire Council Community Strategic Plan 2017-2027.

As a result, it is considered that the St Nicholas Early Education Centre readily meets the criteria for exemption from a contribution under the Muswellbrook Section 94A Contributions Plan.

David Crofts
Strategy Hunter Consultants
1 March 2019

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Trustees of the Roman Catholic Church for the Diocese of Maitland-Newcastle, 841 Hunter St, Newcastle West NSW 2300 (PO Box 756 Newcastle 2300)

Location

Lot 1 DP 1070178 111 Skellatar Stock Route Muswellbrook

Council advice:

The minutes of the Prelodgement meeting of 7 February 2019 in relation to the above proposed development note Council officers' advice that "*...as part of any Notice of Arrangement the developer would be required to pay Section 64 headworks contributions for sewer and water services ...*"

The amount of contribution quoted in the minutes is $122,721.04.

However, Section 3 Administration of the Muswellbrook Shire Council Development Servicing Plans for Water Supply and Sewerage 2012 (March 2015) states:

"Exemptions

Council and Crown Developments for essential services/education, health, community services and law and order will be exempted from developer charges."

By way of precedent and in relation to policy consistency, it is noted that the Muswellbrook Section 94A Contributions Plan also states:

"Council may consider exempting other categories of developments, or components of developments from the requirement for a levy, but only by resolution of Council. There are no additional exemptions at the time of commencement of this plan.

For such claims to be considered, a development application will need to include a comprehensive submission presenting a case and a justified request for exemption. Consideration will be given to requests for exemption for the following types of development:

- *works undertaken for charitable purposes or by a registered charity;*
- *places of worship, public hospitals, police and fire stations;*
- *childcare facilities;*
- *libraries;*
- *other community or educational facilities.".*

Response

Criterion: *Are the works to be undertaken by the Council or are Crown Developments for essential services/education, health, community services and law and order will be exempted from developer charges.*

While the works are not being undertaken by the Council or Crown, the proposed development is delivering a service that is frequently delivered by public authorities, and will be delivered in a manner than is similar to that of a public authority, i.e. with a not for profit community service focus for the benefit of the wider public.

St Nicholas Early Education operates as a not for profit service which delivers services to children, such as early childhood services.

The applicant is the Trustees of the Catholic Diocese of Maitland-Newcastle, which is a registered Charity (Charity ABN 62089182027)

The Diocese operates a range of community services agencies. For example, CatholicCare Social Services Hunter-Manning is a direct mission and outreach agency of the Catholic Diocese of Maitland-Newcastle and offers assistance and support to all families and individuals, regardless of age, gender or religion.

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The operator of the proposed early education centre is St Nicholas Early Education which is an operating unit of the Catholic Diocese of Maitland-Newcastle. It operates a number of early childhood education centres across the region. St Nicholas Early Education is a registered charity (Charity ABN 91728324316).

In conclusion, the applicant and the operator of the proposed early education centre while not Council or a public authority (the Crown) will deliver services in a manner and with an ethos similar to that of Council or public authority, and for the purposes of this exemption is worthy of being considered as such.

Criterion: Is the development being carried out an essential community service?

The Muswellbrook Shire Council 2017-2027 Community Strategic Plan clearly regards child care as an essential community service. Of the 25 goals of the Strategic Plan, one is devoted exclusively to increased access to child care.

Goal 8 of the Strategic Plan is titled "*Retention and expansion of quality and affordable child care services*" and calls for increased access to early childhood education, child care facilities and associated early childhood services.

The Diocese's commitment to the St Nicholas Early Education Centre helps ensure that residents will have this essential service.

The proposed Centre will also assist in the achievement of Goal 5: "*Continue to improve the affordability, liveability and amenity of the Shire's communities*", and Goal 7: "*Build social inclusion and improve the delivery of social services*" by improving the access to services both directly, and through referral facilitated by the Centre's staff in conjunction with parents.

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In conclusion, the proposed Early Education Centre provides an essential community service consistent with the policy framework of Council and the Crown.

Summary

The St Nicholas Early Education Centre will deliver an essential community service with characteristics almost identical that delivered by a public authority (the Crown).

As a result, it is considered that the St Nicholas Early Education Centre should be considered for exemption under Section 3 of the for exemption from a "Section 64" contribution in accordance with *Section 3 Administration of the Muswellbrook Shire Council Development Servicing Plans for Water Supply and Sewerage 2012 (March 2015).*

David Crofts
Strategy Hunter Consultants
1 March 2019

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