

Environmental Assessment Report

Urangan State High School

120 Robert Street, Hervey Bay Q 4655



Document History

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PART A – INTRODUCTION

1 Infrastructure Proposal

Department of Education (DoE) has made an Infrastructure Proposal to the Minister for State Development, Infrastructure, Local Government and Planning in accordance with Chapter 2 Part 5 of the *Planning Act 2016* (PA 2016).

The purpose of this designation is to enable the delivery of a Multi-purpose Hall and other associated ancillary works, and future provision for a new Performing Arts Centre and additional car parking areas at Urangan State High School (SHS) located at 120 Robert Street, Hervey Bay QLD 4655 and described as Lot 50 on SP104331.

With reference to Schedule 5, Part 2 of the *Planning Regulation 2017*, the proposed Infrastructure Designation is for the following infrastructure:

- 3 *community and cultural facilities, including community centres, galleries, libraries and meeting halls*
- 6 *educational facilities*
- 15 *sporting facilities*

A plan of the designation area and proposal plans are provided in **Appendix 1**. Supporting technical assessments are provided as follows:

- **Appendix 2** - Landscape Plan
- **Appendix 3** – Traffic Statement
- **Appendix 4** – Stormwater Management Plan
- **Appendix 5** – Environmental Assessment
- **Appendix 6** – Geotechnical Assessment
- **Appendix 7** – Acoustic Assessment
- **Appendix 8** – State Interest Mapping
- **Appendix 9** – Contaminated Land Register and Environmental Management Register Search
- **Appendix 10** – Property Information

QBuild’s Town Planning Unit has prepared this Environmental Assessment Report (EAR) to provide information about the Infrastructure Proposal, enabling assessment and consultation in accordance with the requirements under the PA 2016.

Relevant extracts from the PA 2016 are provided in **Appendix 11** and a flowchart of the designation process is detailed in **Appendix 12**.

The relevant matters about the Infrastructure Proposal are set out in the following table and addressed further in this EAR.

Matter	Proposal details	
The site description including the location of the	Real property description:	Lot 50 on SP104331
	Property address:	120 Robert Street, Hervey Bay Q 4655
	Registered owner:	Department of Education
	Tenure:	Freehold

premises proposed to be designated	Site area:	13.28 Hectares
	Property materials at Appendix 10	
Any existing uses on the premises proposed to be designated	<p>The site contains the existing Urangan State High School. The school was established in 1992 and provides for secondary students in years 7 to 12.</p> <p>Existing school buildings are predominantly single storey with some two storey buildings located to the west and rear of the site. The school oval and courts are located to the south of the site.</p>	
Existing uses on adjoining sites	<p>The school has frontages to Emerald Park Way to the north and Roberts Street to the west.</p> <p>The site is in a low density residential area and the surrounding area is predominately comprised of detached houses.</p> <p>The Sandy Strait State School is located to the south of the site.</p>	
The type of infrastructure	<p>3 community and cultural facilities, including community centres, galleries, libraries and meeting halls</p> <p>6 educational facilities</p> <p>15 sporting facilities</p>	
Information about the nature, scale and intensity of the infrastructure and each use proposed	Proposal Plans at Appendix 1	
The intended outcomes of the proposed uses on the site	<p>The proposal forms part of DoE's <i>School Halls and Performing Arts Program</i> and will seek to deliver the following works at the subject site:</p> <ul style="list-style-type: none"> • Construct a new one-storey high (11.8m) Multi-purpose Hall which includes: <ul style="list-style-type: none"> ○ Foyer, covered entry, external courtyard and kiosk/ kitchen area ○ Two (2) courts and associated equipment/ storage areas ○ One (1) Stage ○ One (1) Kinesiology Gym and one (1) Kinesiology Theory room ○ Staff work room ○ Amenities spaces • Courtyard areas to the northern and eastern sides of the Multi-purpose Hall. • Other building considerations including covered link access from the new building to the spine of the school and associated landscaping <p>Further to the above, the proposal also seeks to make future provision subject to funding for:</p> <ul style="list-style-type: none"> • Construct a new Performing Arts Centre (12m) • Future internal road and car park area with capacity for 17 spaces to the southern side of the Multi-purpose Hall 	
A list of the applicable state interests as identified by the infrastructure entity and a statement about how they	State Planning Policy (SPP) Report at Appendix 8	
	<p>BIODIVERSITY</p> <ul style="list-style-type: none"> • MSES - Regulated vegetation (category R) 	<p>The northern boundary of the site is mapped as MSES – Regulated vegetation (Category R).</p> <p>Development is not proposed in the mapped area. Notwithstanding, an Environmental Assessment has been</p>

relate to the infrastructure proposal		undertaken as documented in Appendix 5 and notes the proposal development footprint areas does not adversely impact on the state interest.
	WATER QUALITY <ul style="list-style-type: none"> Water resource catchment 	<p>The site is within the water resource catchment area and reference should be made with the SPP, including the SPP Code: Water Quality.</p> <p>A stormwater management plan has been prepared for the site and included in Appendix 4.</p> <p>Details on how the proposed development manages stormwater impacts are discussed in Part F – Environmental Assessment.</p>
	STRATEGIC AIRPORTS AND AVIATION FACILITIES <ul style="list-style-type: none"> Obstacle limitation surface area Lighting area buffer 6km Wildlife hazard buffer zone 	<p>The proposed development will not be of a height or be an attractor of wildlife that could reasonably obstruct the safe movement of aircraft on ongoing efficiency of nearby airport facilities.</p>
A statement about any relevant regional plans and state development areas that are applicable to the site and how they are relevant to the infrastructure proposal	<p>The relevant regional plan is the Wide Bay Burnett Regional Plan.</p> <p>The site is in the Urban Footprint land use category.</p> <p>The site is not included in a State development area or Priority development area.</p>	
A proposed consultation strategy for the proposed designation	Refer to Part G – Consultation	
Any other matter	Nil	

PART B – LEGISLATIVE CONTEXT

2 The Planning Act 2016

A list of infrastructure is set out in Schedule 5 of the *Planning Regulation 2017* (PR 2017).

The PA 2016 prescribes the way in which an Infrastructure Designation can be undertaken. Chapter 2, Part 5 prescribes that a Minister, before designating land for infrastructure, must be satisfied that:

- the infrastructure will satisfy statutory requirements, or budgetary commitments, for the supply of the infrastructure; or
- there is or will be a need for the efficient and timely supply of the infrastructure.

To make a designation the Minister must also be satisfied that adequate environmental assessment, including adequate consultation, has been carried out in relation to the development that is the subject of the designation.

One way in which the requirements for adequate environmental assessment and public consultation may be met is for the assessment of the proposal to be carried out in accordance with the guidelines made by the chief executive under the PA 2016, section 36(3). The applicable guideline is the *Minister's Guidelines and Rules* (September 2020), Chapter 7—Guidelines for the process for environmental assessment and consultation for making or amending a Ministerial designation.

The effect of a Ministerial designation is described in s 44(6)(b) of the PA 2016. Development in relation to infrastructure under a designation is—

- to the extent the development is building work under the Building Act —the category of development stated for the building work under a regulation; or
- otherwise—accepted development.

PART C – SITE INFORMATION

3 Subject Site

3.1 Property Details and Ownership

Property snapshot	
Street address	120 Robert Street, Hervey Bay Q 4655
Real property description	Lot 50 on SP104331
Site area	13.28 hectares
Local Government Authority	Fraser Coast Regional Council
Current land use	Education Establishment

With reference to *Figure 1*, the site is located within the Fraser Coast Regional Council (FCRC) local government area and consists of a single allotments with a total area of 13.28 hectares.

The site has frontage to Emerald Park Way to the north and Roberts Street to the west.

Existing school buildings are predominantly single storey with some two storey buildings located to the west and rear of the site. The school oval and courts and are located to the south of the site.

Property information concerning the subject site is included in **Appendix 10**.

3.2 Surrounding Land Uses

The site is located in a low density residential area and the surrounding area is predominately comprised of detached houses. The Sandy Strait State School is located to the south of the site.

3.3 Easements and Encumbrances

There are no easements or encumbrances benefiting or burdening the land.

A copy of the property details is included in **Appendix 10**.

3.4 Topography

The levels within the development site range from approximately RL14m towards the site frontage to Roberts Street and fall towards the school ovals and south eastern at approximately RL11.8m.

Figure 1 – Aerial



Legend



Site Boundary

Source: DSDILGP SARA

4 Infrastructure Characteristics

The below provides a description of the existing infrastructure characteristics relating to the subject site. Further discussion on potential impacts and mitigation measures from the proposed development are discussed in further detail in Part F – Environmental Assessment.

4.1 Transport Network

4.1.1 Existing Road Network

The site has multiple street frontages including to Roberts Street and Emerald Park Way.

Roberts Street runs along the western boundary of the site and is the primary frontage to the school. Roberts Street is identified as a 'Minor Road' under the jurisdiction of the FCRC. The road has kerb and channel on both sides and pedestrian paths. On-street parking is also available on both sides of the road.

Emerald Park Way runs along the northern frontage of the school. Emerald Park Way is classified as a 'Minor Road' under the jurisdiction of FCRC. The road has kerb and channel on the southern (school) side with pedestrian paths on both sides of the road. On-street parking is available on both sides of the road.

4.1.2 Existing Public Transport Network

The school is connected to the existing public transport network, with one (1) Translink bus stop located within a 400m walking catchment of the site. However, it should be noted a review of the Translink Website found that there are no regular Translink services that operate from these bus stops.

From discussions with school representatives, it is understood the school is also serviced by eight (8) private school bus services. These buses utilise setdown areas along the schools Robert Street frontage (item 9, Figure 2) and service the surrounding areas.

4.1.3 Existing Active Transport

Urangan SHS is well serviced by existing pedestrian pathways, with pathways provided along the site northern and western frontages, connecting the site to the wider pedestrian network. A signalised pedestrian crossing is provided approximately 200m north of the proposed development site.

Urangan SHS is well serviced by existing cycle infrastructure with cycle routes provided along Robert Street and Emerald Park Way, connecting the site to the wider cycle network.

The school currently provides one (1) secure storage area for student bicycle/ scooter parking within the school grounds. The facility provides for approximately 560 bicycle parking spaces and based on existing utilisation levels is at approximately 80% of existing capacity.

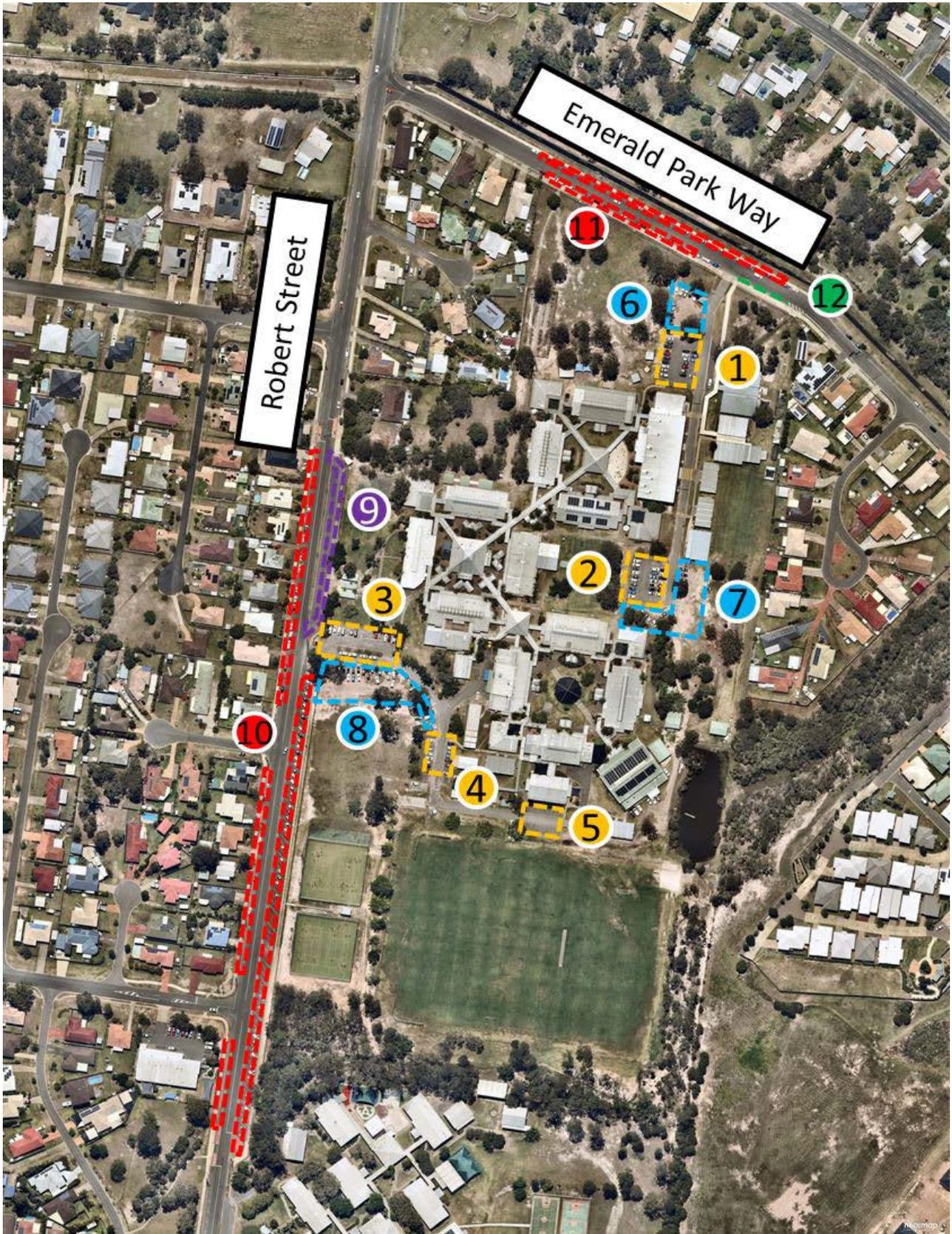
4.1.4 Existing Car Parking

The existing parking supply at Urangan SHS consists of 269 formal car parking spaces including eight (8) Persons with Disability (PWD) bays and six (6) pick-up/ drop-off bays. Additional informal parking currently caters for the overflow of parking and provides an additional 55 spaces for the school. This equates to an overall capacity for 324 car parking spaces.

The location of parking areas and breakdown of spaces is illustrated in *Figure 2* and includes:

- Areas 1, 2, 3, 4 and 5 – 109 formal on-site spaces
- Areas 6, 7 and 8 – 55 informal on-site spaces
- Areas 10 and 11 – 166 on-street parking spaces
- Area 12 – pick-up/ drop-off bays

Figure 2 – Existing Car Parking Arrangements



Source: Lambert and Rehbein Traffic Impact Assessment

4.2 Services

4.2.1 Water Infrastructure

The site has access to existing water infrastructure located on the site frontage to Robert Street.

4.2.2 Sewer Infrastructure

The site has access to existing reticulated sewer network located along the site frontage to Robert Street. Existing buildings are connected via a 150mm service.

4.2.3 Stormwater Infrastructure

The subject site consists of a single internal catchment that is governed by the lot boundaries.

The current Legal Point of Discharge (LPOD) for the greater catchment is a waterbody on the eastern boundary of the school, which outlets into a major drainage easement, before discharging into Pulgal Creek.

4.2.4 Electricity Infrastructure

The school has access to electricity infrastructure.

4.2.5 Telecommunications Infrastructure

The school has access to telecommunications infrastructure.

PART D – DESIGNATION PROPOSAL

5 Subject Site

5.1 Description under the Planning Regulation 2017

The proposal seeks to designate the site as follows:

**Urangan State High School
120 Robert Street, Hervey Bay
Lot 50 on SP104331**

The infrastructure type is described under the *Planning Regulation 2017*, Schedule 5, Part 2 as:

3 community and cultural facilities, including community centres, galleries, libraries and meeting halls

6 educational facilities

15 sporting facilities

5.2 Intent of Designation

The designation affirms the site as an educational establishment and will facilitate delivery of the proposed works for the existing Urangan SHS to provide improved learning facilities for the school population and provides the school with the ability to offer its facilities for use by the surrounding community.

Educational and community facilities are defined as community infrastructure under Schedule 5 of the *Planning Regulation 2017*, being assets necessary to support the community and for the public benefit.

The proposed infrastructure will facilitate the efficient and timely supply of infrastructure; and satisfy statutory requirements and budgetary commitments of the State for the supply of infrastructure.

5.3 Project History

The Queensland Government is investing in a four year School Halls and Performing Arts Centre program for various schools to deliver new facilities, infrastructure upgrades and refurbishments focused on improving learning and creating opportunities for stronger engagement within communities.

The Urangan SHS has been allocated funding for the delivery of Multi-Purpose Hall to provide the school with upgraded spaces to meet curriculum, extra-curriculum needs and support student enrolments.

5.4 Proposal Description and Details

The proposal forms part of DoE's *School Halls and Performing Arts Program* and will seek to deliver the following works at the subject site:

Stage 1:

- Construct a new Multi-purpose Hall (11.8m) which includes:
 - Foyer, covered entry, external courtyard and kiosk/ kitchen area
 - Two (2) courts and associated equipment/ storage areas
 - One (1) Stage
 - One (1) Kinesiology Gym and one (1) Kinesiology Theory room
 - Staff work room
 - Amenities spaces

- Courtyard areas to the northern and eastern sides of the Multi-purpose Hall.
- Other building considerations including covered link access from the new building to the spine of the school and associated landscaping

Future works subject to the allocation of project planning, funding and student growth to include:

- Construct a new Performing Arts Centre (12m)
- Future internal road and car park area with capacity for 17 spaces to the southern side of the Multi-purpose Hall

The proposed works are illustrated within the proposal plans provided within **Appendix 1**.

5.4.1 School Population

The existing enrolment count at Urangan SHS as of February 2021 was 1,706 students.

The proposed variance in existing student capacity as a consequence of the projects is as follows:

Project Scope	Student Enrolment Capacity
Current Capacity	1,760
Stage 1 <i>Multi-purpose Hall</i>	1,782 + 22
Future Stage <i>Performing Arts Complex</i>	1,870 + 110
Ultimate capacity increase	+ 132 students

The school also has a full-time equivalent (FTE) of 192 staff. The proposed development will result in an ultimate increase of seven (7) FTE staff, that includes:

- One (1) FTE staff member as part of the Stage 1 works
- Six (6) FTE staff members as part of the Stage 2 works

5.4.2 Hours of Operation

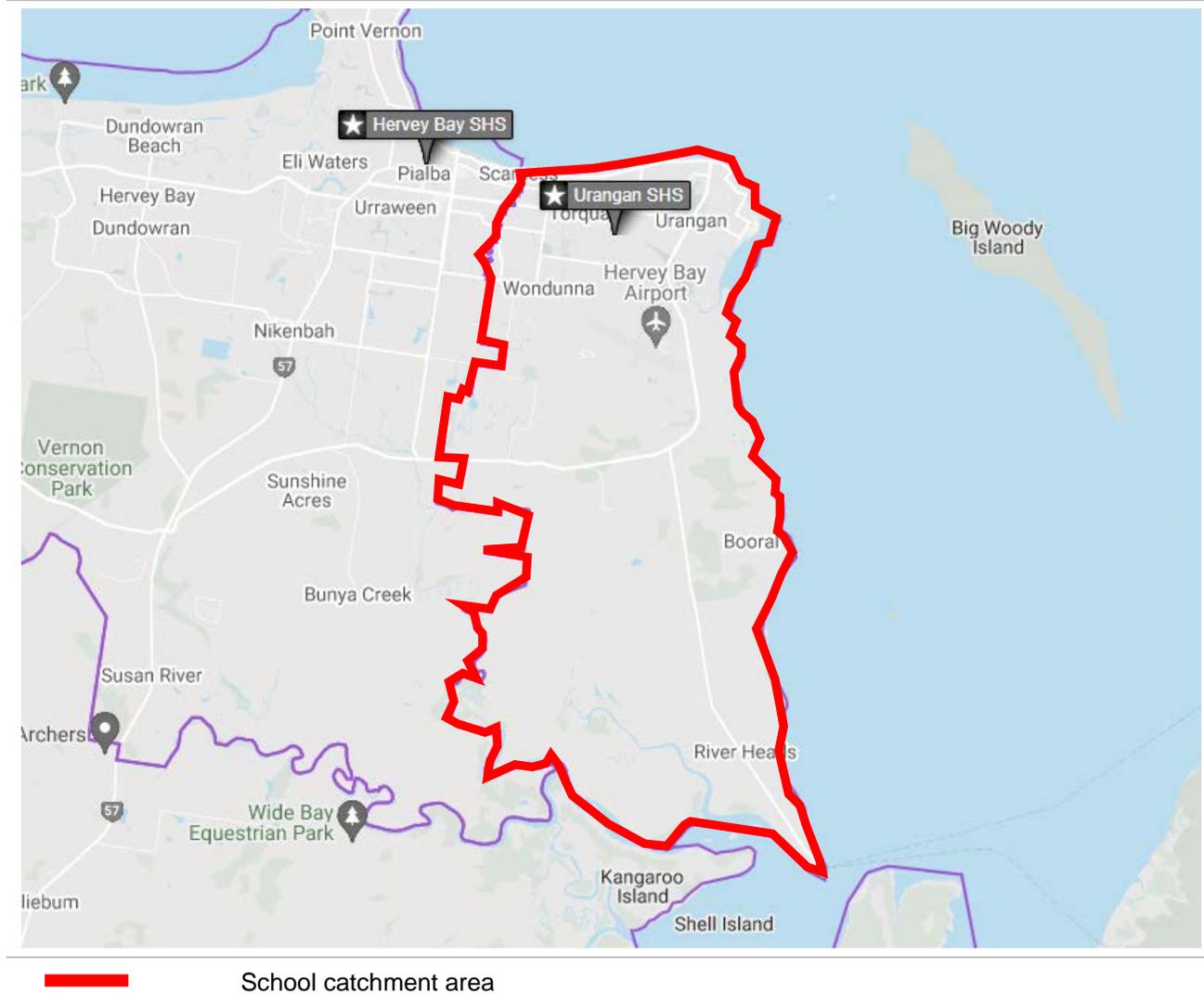
The Urangan SHS operates from 8:55am and finishes at 3:00pm with office hours open from 8:00am until 3:30pm Monday to Friday.

As a SHS the school does not provide outside school hours care.

5.4.3 School Catchment

The Urangan SHS catchment area has boundaries as shown below in *Figure 3*. There are no changes to this boundary proposed as part of this MID.

Figure 3 – School Catchment Area



5.4.4 Vehicle Parking

The Stage 1 works does not involve any provision of additional car parking. It is recognised the proposed Stage 1 development will result in the removal of the existing formal staff car parking area (with 20 spaces) and four (4) on-street parking spaces, resulting in a net loss of 24 parking spaces.

The proposed future Stage development will result in the removal of an existing informal staff parking area. However this will be offset with a new carpark facility which is anticipated to provide 17 spaces.

Despite the overall decrease in parking spaces and the marginal increase in parking required from the proposed development, it is understood the proposed development will not have a significant impact on the schools current parking supply or network operation. This is due to the existing surplus of on-site parking spaces and the availability of informal parking within the school.

5.4.5 Bicycle parking

The school provides one (1) storage area with capacity to accommodate for approximately 560 bicycle parking spaces. An on-site review found the facility was approximately 80% occupied. Given the small increase in student enrolments as part of this development, the existing facility is considered to have sufficient capacity to support the school population and no additional bicycle parking spaces are therefore proposed.

5.4.6 Pedestrian Facilities

As noted in Section 4.1.4 the school and the surrounding area is supported with access to a number of pedestrian paths. No changes to existing pedestrian infrastructure are proposed as part of this proposal.

5.4.7 Building Design and Building Height

The Hall has an overall height of approximately 11.8m to the highest point.

The future Performing Arts Centre will have a comparable height and while not currently designed is not anticipated to exceed 12m from ground level.

The height of both of these facilities is influenced by the functional needs of the space and future flexibility to accommodate a range of activities including sports.

5.4.8 Vegetation Removal and Landscaping

To facilitate the proposed Hall construction it is proposed to remove all existing vegetation in the building footprint area. The area contains several medium to large-planted Ficus and Eucalypt species, which border the roads and a sports field within the school grounds. There are currently 49 trees on the building footprint area proposed to be removed.

An Environmental Assessment has been included in **Appendix 5** and confirms that none of the assessed trees are considered significant and can be removed provided works are conducted under a low risk Species Management Plan and with a suitably qualified fauna spotter/ koala spotter is present.

Notwithstanding, the proposed development will include some replacement landscaping treatments. Reference should be made to the Landscape Plan in **Appendix 2** for details on the proposed landscaping treatments to be provided as part of the development.

5.4.9 Acoustic Impacts

An acoustic assessment has been prepared and is contained in **Appendix 7**. The findings of the report have influenced the design of the Hall including the location of mechanical plant and building openings and treatment of the building form. The assessment includes recommendations for appropriate sound insulating requirements and should be implemented as part of detailed design.

Use of the Hall and future Performing Arts Centre by third parties shall also be designed to control noise emissions to comply with the Indoor Venue noise criteria from the *Environmental Protection Act 1994* (EPA 1994). Limitations on use of the Hall and Performing Arts Centre will be subject to further acoustic assessment and an operational management plan.

5.4.10 Proposed Use of Hall and Performing Arts Centre by School

The Hall and Performing Arts Centre shall primarily be used by the school during school hours to a scheduled timetable for learning purposes.

Out of hours school events will be at least three (3) to four (4) times per term with times ranging between 3.30pm – 9.30pm, depending on the proposed event.

5.4.11 Permitted Community-Use / Sporting Activities

The designation is intended to capture potential outside of school hours use of the halls, school oval and classrooms by a third party such as a local sporting or community group subject to future agreement by the school and Department.

It is noted the school has no existing agreements for uses by third parties.

5.4.11.1 Potential Hire Arrangements – user groups, hours and frequency

As a new facility that is yet to be constructed, there are no hire agreements in place. Based on discussions with the school the potential hire of the Hall and future Performing Arts Centre may include out of hours school events at least three (3) to four (4) times per term with times ranging between 3.30pm – 9.30pm, depending on the proposed event.

The proposal will present new opportunities to hire the facilities to third parties moving forward. Facility hire will be considered on application to the school and a facility hire application will be developed in line with school and departmental requirements.

Community hire is not intended to be a priority, but a joint usage agreement may be considered in the future during daylight hours on weekends and after school.

5.4.11.2 Traffic Impacts

As an after-hours use, there is likely to be an associated increase in traffic and parking with the operation of any potential user group. However, it is noted impacts are likely to be minimal as the number of users will be less when compared during the morning and afternoon peak hours and the availability of parking on-site, along with their operational schedules being outside of normal school hours to ensure traffic and parking impacts are considered negligible.

5.4.11.3 Acoustic Impacts

The acoustic assessment in **Appendix 7** notes that the building envelope (façade) of the proposed Hall shall be designed to control noise generated within the buildings breaking-out and affecting nearby noise sensitive receivers. Compliance with the Section 440W Indoor venues of the EPA 1994 is required where the Hall is to be used under a commercial hire arrangement.

It is therefore recommended that further acoustic assessment be undertaken as a requirement of the designation to document project compliance with the requirements of the EPA and inform an operational management plan to provide guidance to third party users of the Hall requirements for noise management.

Further detailed assessment is required for the design of the Performing Arts Hall and will be set as a project requirement in section 8.

5.4.11.4 Operational Management Plan – Third Party Hire

As noted, any use of the facility is intended to also require development of an Operational Management Plan between the external user groups and school to provide guidance for out of school hours usage. The Operational Management Plan should include specific guidance on general operations, noise management and car parking procedures.

5.5 Project Benefits

The proposed development will provide the school population with improved facilities that meets current learning needs and standards.

Further to the above, the school will also provide opportunities to offer sporting and other recreation/ learning facilities for the nearby community to utilise, subject to agreement with the school and department.

PART E – LOCAL & STATE PLANNING PROVISIONS

5 Planning Assessment

In terms of development under the PA 2016, the designation is proposed to be undertaken in accordance with Chapter 2, Part 5 of the Act. The effect of the designation, if made, is that the use of the site for the designated infrastructure and service will be accepted development.

Building works are accepted development in accordance with Schedule 7, Part 1, item 2 of the PR 2017.

6.1 Local Planning Framework

Although not assessable against the local planning instrument, the designating Minister is required to have regard to the requirements of the relevant local planning instrument/s.

The *Fraser Coast Planning Scheme 2014* (the Planning Scheme) is the relevant planning scheme for the land.

6.2 Planning Scheme Provisions

The below table provides a summary of the key Planning Scheme provisions relevant to the site.

Planning scheme information	
Planning scheme	<i>Fraser Coast Planning Scheme 2014</i>
Zoning	Community Facilities Zone, CF1 – Education and Training Facilities
Local area plan	Not Applicable
Overlays	<ul style="list-style-type: none"> • Acid Sulfate Soils • Airport and Aviation • Flood Hazard
Existing use definition	<p>Educational Establishment</p> <p><i>Premises used for–</i></p> <p><i>(a) training and instruction to impart knowledge and develop skills; or</i></p> <p><i>(b) Student accommodation, before or after school care, or vacation care, if the use is ancillary to the use in paragraph (a)</i></p>
Proposed use definition	As above

6.3 Zoning

Under the planning scheme the subject site is identified within the Community Facilities Zone as indicated in *Figure 4*.

Figure 4 – Planning Scheme – Zone Map



Legend

Source: FCRC Planning Scheme

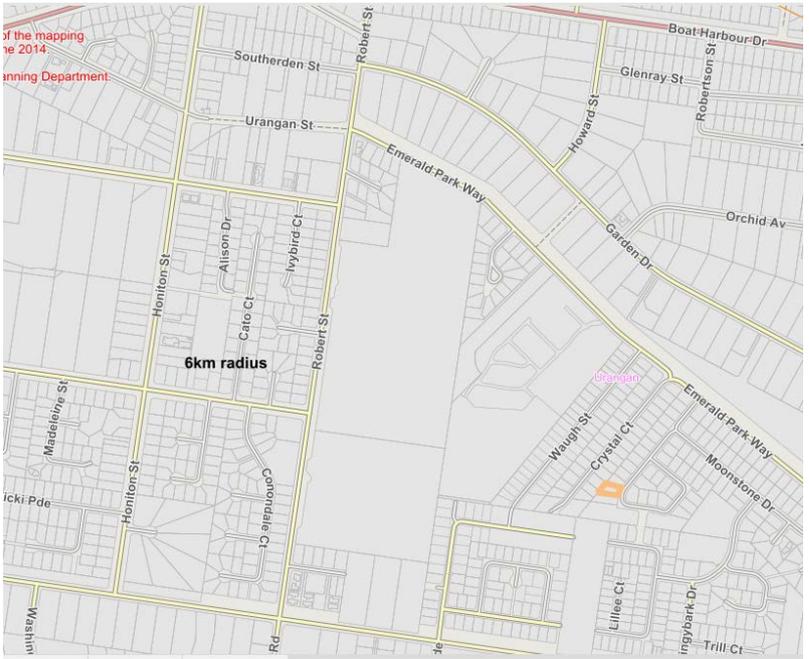
Planning Zones

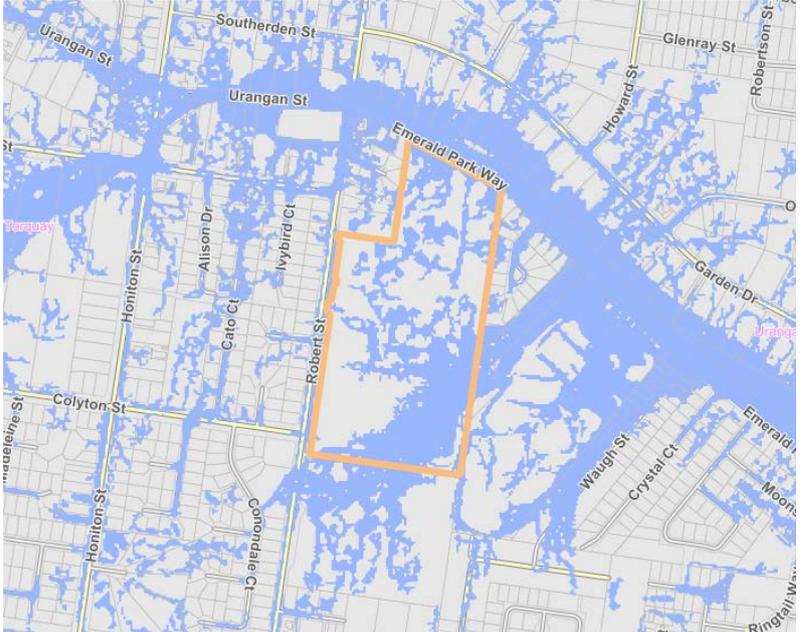
 Low Density Residential	 Low Impact Industry	 Environmental Management and Conservation	 District Centre
 Medium Density Residential	 Medium Impact Industry	 Community Facilities	 Limited Development (Constrained Land)
 High Density Residential	 High Impact Industry	CF1 - Education & Training Facilities	 Mixed Use
 Principal Centre	 Waterfront and Marine Industry	CF2 - Government Purpose & Public Utilities	 Rural
 Local Centre	 Sport and Recreation	CF3 - Hospitals & Medical Service Facilities	 Rural Residential
 Neighbourhood Centre	 Open Space	CF4 - Community & Cultural Facilities	 Specialised Centre
		CF5 - Telecommunication Facilities	
		CF6 - Cemetery	
		 Emerging Communities	

6.4 Overlays

The Planning Scheme identifies physical constraints affecting development through the inclusion of overlays. Where a site is affected by an overlay, additional development limitations or opportunities may apply to the property by the Planning Scheme.

The site is affected by the following overlays:

Overlay	Overlay Map
<p>Acid Sulfate Soils</p> <p>The site is identified as affected by Acid Sulfate Soils (ASS) overlay and is mapped in the 5-20m AHD area.</p> <p>The proposal is supported by a Geotechnical Assessment (Appendix 6) and ASS have not been identified. An ASS management plan is not considered necessary.</p>	 <p>The map displays a residential area with streets including Honiton St, Alison Dr, Ivybird Ct, Robert St, Emerald Park Way, Urangan St, Howard St, Garden Dr, Waugh St, and Crystal Ct. A large area is shaded in orange, indicating the Acid Sulfate Soils (ASS) overlay. The site is outlined in orange within this shaded area. A scale bar indicates 5m to 20m AHD.</p>
<p>Airport and Aviation</p> <p>The site is identified in the Airport and Aviation overlay.</p> <p>No impacts are anticipated on airport operations as the proposed development will not be of a height, emit light, nor attract wildlife in a manner that could reasonably impact on the efficiency of aviation activity.</p>	 <p>The map shows a wider residential area with streets including Southerden St, Robert St, Emerald Park Way, Howard St, Glenray St, Robertson St, Boat Harbour Dr, Orchid Av, Garden Dr, Urangan St, Honiton St, Alison Dr, Ivybird Ct, Robert St, Waugh St, Crystal Ct, Moonstone Dr, Emerald Park Way, Lillie Ct, Kingybank Dr, and Trill Ct. A yellow shaded area indicates the Airport and Aviation overlay. The site is marked with an orange square within this area. A '6km radius' label is present. Text in the top left corner reads 'of the mapping the 2014 Planning Department'.</p>

Overlay	Overlay Map
<p>Flood Hazard Parts of the site are mapped as affected by the flood hazard overlay and in particular, overland flow.</p> <p>The proposed Hall and future Performing Arts Centre are not located in the areas mapped as flood hazard as documented in the Stormwater Management Plan in Appendix 4.</p>	

6.5 Development Approval History

A search on Council’s Planning and Development website shows no history of development applications over the school site. As such no ongoing approvals or conditions/ obligations exist over the site.

At the time of construction of the existing school, the State was not bound by planning schemes or Local Government Acts, and the existing school infrastructure will be considered as an existing lawful use under the *Planning Act 2016*.

7 State Planning Framework

7.1 The Planning Act 2016

Under Schedule 2 of the PA, a state interest means an interest that the Minister considers—

- affects an economic or environmental interest of the state or a part of the state’ or
- affects the interest of ensuring that the purpose of the Act is achieved.

The State Planning Policy (SPP) is the overarching document which promotes the state’s interests in land use planning and development. Under section 8(4) (a) of the PA 2016 the SPP has effect throughout Queensland and sits above regional plans and planning schemes in the hierarchy of planning instruments.

7.2 State Planning Policy

The SPP applies to the extent relevant when designating premises for infrastructure. When making or amending a designation, the Planning Minister must have regard to the relevant parts of the SPP as shown in the table below.

Application of the SPP	Who is responsible	Parts of the SPP that are applicable						
		Part A, B & C	Part D	Part E: State interest policies	Part E: Assessment benchmarks	Part F	Part G: Appendix 1	Part G: Appendix 2
Designating premises for infrastructure	State and local government	✓	✓	✓	✓	✓	✓	✓

Consideration of how the proposal meets the relevant parts of the SPP are discussed in further detail below:

7.2.1 The Guiding Principles

OUTCOME FOCUSES

Clearly focus on the delivery of outcomes

- *Plans and development outcomes integrate and balance the economic, environmental and social needs of current and future generations in order to achieve ecological sustainability.*
- *Plans express clear performance outcomes for development, supported by a range of acceptable outcomes, where possible.*
- *Innovative and flexible approaches to design and development are supported and encouraged when consistent with a plan’s strategic intent.*
- *Decision making ensures that, where acceptable, when outcomes are satisfied by development, then the relevant performance outcome is taken to be satisfied in full. Performance outcomes may still be satisfied, even though an associated acceptable outcome is not met.*
- *Plans and development outcomes support stated objectives, needs and aspirations of the community at the state, regional and local level.*

The proposal seeks to designate the site for the purposes of delivering improved educational facilities for the school. The designation considers economic, environmental and social needs of current and future generations through the delivery of the infrastructure.

INTEGRATED**Reinforce the role of local planning schemes as the integrated, comprehensive statement of land use policy and development intentions for a local area**

- *Plans coordinate and integrate land use policy for a local area by considering:

 - *international agreements, such as the UNESCO world heritage listing of the Great Barrier Reef and Ramsar Convention*
 - *national, state, regional and local matters, to the extent relevant.**
- *Plans integrate land use, resource management and infrastructure needs and considerations.*
- *Plans support a 15 year supply of land for development.*
- *The zoning of land reflects and responds to the characteristics of the land that constrain its use.*
- *Overlays should be compatible with and not operate either individually or cumulatively to prevent or restrict land from being used for the purpose for which it has been zoned.*
- *Plans include a performance-based assessment of development against a clear hierarchy of policies linked to the achievement of realistic and long-term strategic planning.*

Not applicable as the proposal is for an Infrastructure Designation and not for plan making

EFFICIENT**Support the efficient determination of appropriate development**

- *Plans and assessment processes result in development outcomes that are certain, responsive and performance-based.*
- *Plans regulate development only to the extent necessary to address potential impacts. When applied, plans adopt the lowest appropriate level of assessment required to efficiently and effectively address those impacts.*
- *The level of assessment for development is proportionate to the potential impacts and level of risk of the development being regulated and a plan's strategic intent and purpose of the relevant zone, local plan and/or precinct, for instance development that is:

 - *minor, low-risk and that is encouraged or contemplated in a zone should be identified as accepted development*
 - *consistent and in accordance with the broad intent of a zone and able to be assessed against assessment benchmarks, should be identified as code assessable development*
 - *contrary to the intent of a zone, requires public input or is unforeseen by a planning scheme, should be identified as impact assessable development and assessed against a broader range of matters.**

The proposal seeks to designate the site for the purposes of providing improved educational facilities and community uses at Urangan SHS. The designation forwards the efficient and timely delivery of infrastructure while ensuring that subsequent works on the site can proceed without an assessment against *Fraser Coast Planning Scheme 2014*.

POSITIVE**Enable positive responses to change, challenges and opportunities**

- *Contemporary information, challenges and community needs and aspirations are reflected through up-to-date plans.*
- *Evidence and objectively assessed needs form a basis for planning that uses the best available knowledge.*
- *Plans are written using clear, concise and positive language to describe what outcomes are sought, required or encouraged in a particular location, rather than what is to be avoided, prevented or discouraged.*

- *Community health and wellbeing, and resilience and adaptability to change (including economic change, social change, and climate change adaptation and mitigation), are promoted in plans and development outcomes.*
- *Plans adopt a performance-based approach to development assessment to allow for innovation and flexibility in how development in a local area can be achieved.*
- *Plans are drafted to ensure that development is assessed on its individual merits.*

Not applicable as the proposal is for an Infrastructure Designation and not for plan making.

ACCOUNTABLE

Promote confidence in the planning system through plans and decisions that are transparent and accountable

- *Plans and development outcomes reflect balanced community views and aspirations based on a clear understanding of the importance of the community's involvement in plan making.*
- *Plans resolve competing state and local interests through using an evidence-based approach, which balances community needs, views and aspirations.*
- *Reasonable, logical and fair development decisions are supported by clear and transparent planning schemes.*
- *Plans only seek to regulate land use and planning outcomes and do not address matters regulated outside of the planning system, for instance building work regulated under the Building Act 1975 (unless permitted).*
- *Obtaining access to planning information is simple and direct, capitalising on opportunities presented by information technology.*

The infrastructure designation process is proposed in accordance with Chapter 2 of the PA 2016. Development of plans and assessment of impacts has had due consideration to relevant State and local plans and mapping and consultation with relevant State agency stakeholders, political representatives, and the local government will occur as part of this process.

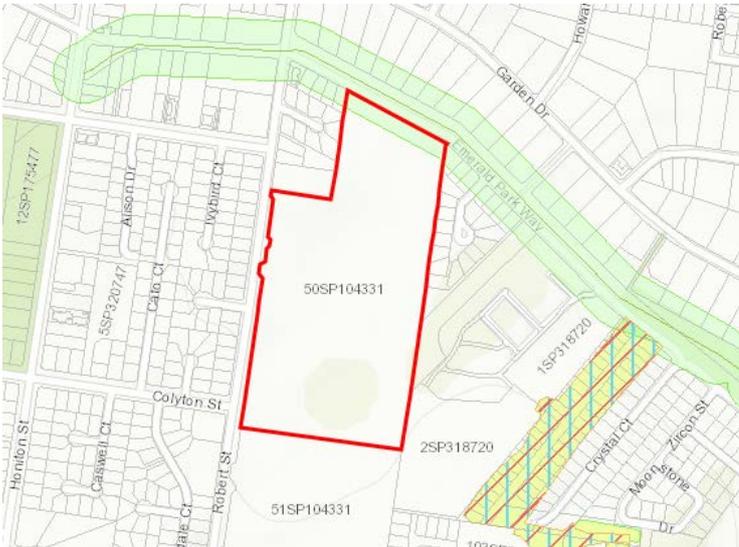
7.2.2 State Interest Statements

The following table lists the State interests contained in the SPP relevant to the subject site.

State Planning Policy	Applicability
Planning for Liveable Communities and Housing	
Liveable Communities	N/A
Housing Supply and Diversity	N/A
Planning for Economic Growth	
Agriculture	N/A
Development and Construction	N/A
Mining and Extractive Resources	N/A
Tourism	N/A
Planning for the Environment and Heritage	
Biodiversity	Yes
Coastal Environment	N/A
Cultural Heritage	N/A
Water Quality	Yes

Planning for Safety and Resilience to Hazards	
Emissions and Hazardous Activities	N/A
Natural Hazards Risk and Resilience	Yes
Planning for Infrastructure	
Energy and Water Supply	N/A
Infrastructure Integration	N/A
Transport Infrastructure	N/A
Strategic Airports and Aviation Facilities	Yes
Strategic Ports	N/A

Relevant state interests are further described in the following table, as obtained from the SPP Interactive Mapping System:

State Interest	State Interest Map
<p>Biodiversity</p> <p>The northern boundary of the site is mapped as MSES – Regulated vegetation (Category R).</p> <p>Development is not proposed in the mapped area and further assessment of relevant site values and legislative obligations has been undertaken as documented in Appendix 5. Importantly the proposal does not adversely impact on the state interest.</p>	
<p>Water Quality</p> <ul style="list-style-type: none"> Water resource catchment <p>The site is within the Climatic regions – stormwater management design objectives and reference should be made with the SPP, including the SPP Code: Water Quality.</p> <p>A stormwater management plan has been prepared for the site and included in Appendix 4.</p> <p>Details on how the proposed development manages stormwater impacts are discussed in Part F – Environmental Assessment.</p>	

State Interest	State Interest Map
<p>Strategic Airports And Aviation Facilities</p> <ul style="list-style-type: none"> • Obstacle limitation surface area • Wildlife hazard buffer zone • Aviation facility <p>The proposed Hall and future Performing Arts Centre addresses the key state interests, through:</p> <ul style="list-style-type: none"> • Building height is limited to 11.8m so as to not create potential sight obstruction or result in any impacts to aircraft operations/ movements. • Use of non-reflective materials and provision of lighting in accordance with relevant standards to ensure no visual impacts for aircraft operations. <p>The site is also not an attractor of wildlife, likely to impact on aircraft operations.</p>	

7.3 Regional Planning

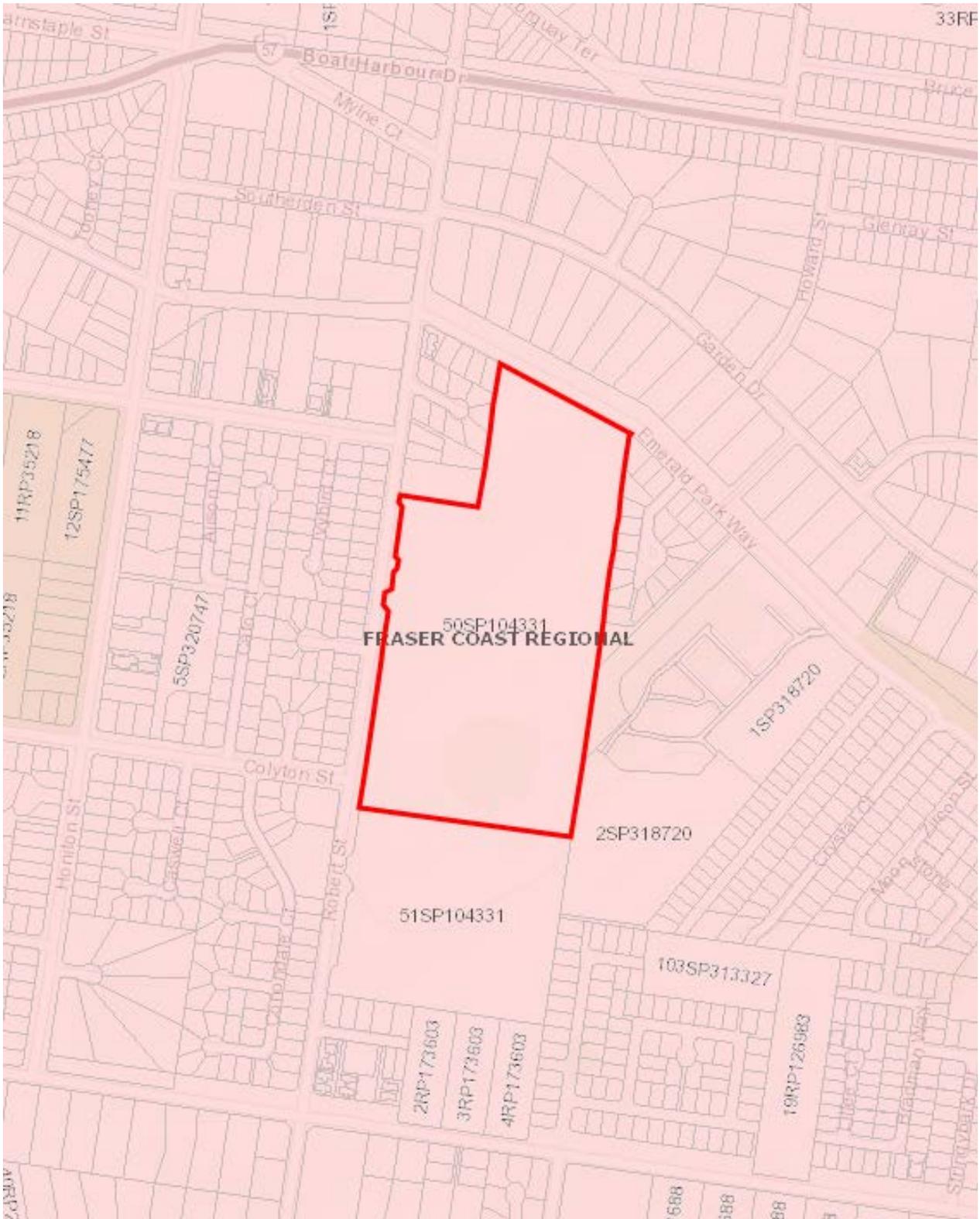
The site is included within the Urban Footprint of the Wide Bay Burnett Regional Plan (refer to *Figure 5*).

The Urban Footprint identifies land within which the region’s urban development needs to 2031 can be accommodated in a way consistent with the goals, elements and strategies of the plan.

The Urban Footprint identifies land that can meet the Region’s urban development needs seeks to incorporate the full range of urban uses including housing, industry, business, infrastructure, community facilities and other integral components of well-planned urban environments, such as local areas for sport and recreation and urban open space.

The proposed development is considered consistent with the intent of the Regional Plan. The proposed works will provide necessary supporting community infrastructure that supports the existing and future residential community.

Figure 5 – Wide Bay Burnett Regional Plan



Legend

Source: DSDILGP SARA



Site Boundary



Urban Footprint

PART F – ENVIRONMENTAL ASSESSMENT

8 Planning Assessment

Before designating land for infrastructure, the Minister must be satisfied that adequate environmental assessment, including adequate consultation, has been carried out in relation to the development that is subject to the designation.

The environmental assessment must have regard to—

- all planning instruments that relate to the premises; and
- any assessment benchmarks, other than in planning instruments, that relate to the development that is the subject of the designation or amendment; and
- if the premises are in a State development area under the State Development Act—any approved development scheme for the premises under that Act; and
- if the premises are in a priority development area under the Economic Development Act 2012—any development scheme for the priority development area under that Act; and
- any properly made submissions made as part of the consultation carried out under section 37; and
- the written submissions of any local government.

This section of the Report provides an environmental assessment of impacts the development or use may generate, and ways in which those environmental impacts are being managed or mitigated. Regard is given to natural and physical resources, as well as short and long-term effects and impacts on the environment and community from both the construction and operational phase of the proposal. The range of matters considered includes:

- soils and geology;
- natural resources and hazards;
- conservation and heritage values;
- health, safety, amenity and social impacts;
- infrastructure, traffic and transport.

Reference should also be made to Part E – Local and State Planning Provisions with regards to mapping relevant to the subject site.

8.1 Road Infrastructure

8.1.1 Site Access and Traffic

8.1.1.1 Context

Site access is provided via two (2) driveways into the site including:

- Gated entry from Emerald Park Way into the staff carpark
- Driveway from Roberts Street into staff carpark adjacent to the administration building.

8.1.1.2 Proposal

No changes to the existing access arrangements are proposed as part of Stage 1 delivery of the Hall.

An additional access road and parking area is proposed in Stage 2 with the delivery of the future Performing Arts Centre.

With reference to the Traffic Assessment in **Appendix 3**, the additional traffic generated by the proposal across Stages 1 and 2 notes the development generated traffic will have negligible impact on the surrounding road network.

Further, the assessment notes the Hall may also be used for third party hire, however this will occur outside of school hours and is therefore anticipated to not have any adverse impacts on school traffic when compared to normal school peak times. Therefore, the proposed development is not expected to have a significant impact on the external road network.

8.1.1.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.1.2 Car Parking

8.1.2.1 Context

The existing parking supply at the school includes 269 formal car parking spaces including eight (8) PWD bays and six (6) pick-up/ drop-off bays.

Additional informal parking currently caters for the overflow of parking and provides an additional 55 spaces.

Overall the school provides a total parking capacity for 324 car parking spaces.

8.1.2.2 Proposal

The proposal is supported by a traffic impact assessment (**Appendix 3**) and provides the following recommendations in relation to car parking across both stages of development.

The proposed Stage 1 development will result in the removal of 24 car parking spaces, made up of an existing on-site formal staff car parking area with 20 spaces and four (4) on-street parking spaces.

The proposed future stage development will result in the removal of the existing informal staff parking area which currently provides an estimated 25 informal spaces. To meet the future Stage 2 parking requirements, a new carpark facility with access from Roberts Street is proposed and will have capacity to accommodate 17 car parking spaces.

Despite the overall decrease in parking spaces, the existing surplus of on-site parking spaces will ensure the proposed development will not have a significant impact on the schools current parking supply or network operations. It is however recommended that the school develop a School Transport Management Plan in conjunction with Council and school representatives to improve operational efficiency of the school's parking and transport facilities and cater for the loss of parking until the future Stage 2 car park is delivered.

8.1.2.3 Actions and Recommendations

1.	<p>(a) Prior to commencement of use for Stage 1, liaise with the Council and prepare a School Transport Management Plan (STMP) that seeks to include/ address:</p> <ul style="list-style-type: none"> • management of car parking and pick-up/ drop-off timing and activities, • addressing driver behaviour (queuing behind angled parking bays), • student behaviour (unsafe crossing points etc, staff supervision of this pick up areas), • staff parking (discourage use of parking on Emerald Park Way southern frontage) <p>(b) As part of the delivery of the future stage project provide a formalised car park on site to provide a minimum of 17 car parking spaces generally in accordance with <i>'Urangan State</i></p>
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	<i>High School Multi-purpose Hall, Master Plan, Drawing number A-11-01, Revision 5' as included in Appendix 1.</i>
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8.1.3 Public Transport Infrastructure

8.1.3.1 Context

The development site has connections to one (1) existing Translink service. However on review of the Translink Website there are no regular Translink services that operate from this bus stop.

From discussions with school representatives, it is understood that the school is also serviced by eight (8) private school bus services. These buses utilise setdown areas along the schools Robert Street frontage

8.1.3.2 Proposal

The existing school bus services are expected to adequately accommodate the increase in student population as part of this proposed development and not additional services are considered necessary.

8.1.3.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.1.4 Active Transport Infrastructure

8.1.4.1 Context

The school is well serviced by existing pedestrian pathways, with pathways provided along the site northern and western frontages, connecting the site to the wider pedestrian network. A signalised pedestrian crossing is provided approximately 200m north of the proposed development site.

Urangan SHS is well serviced by existing cycle infrastructure with cycle routes provided along Robert Street and Emerald Park Way, connecting the site to the wider cycle network.

The school has one (1) secure storage area for students to park their bicycles or scooters within the school grounds. The facility provides for approximately 560 bicycle parking spaces and based on existing utilisation levels is at approximately 80% of existing capacity.

8.1.4.2 Proposal

While the proposal provides for an increase in student capacity there is currently surplus bicycle parking available and the existing bicycle storage area is considered sufficient to cater for the school's bicycle parking demands.

8.1.4.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.2 Services Infrastructure

8.2.1 Water Infrastructure

8.2.1.1 Context

The site has access to existing water infrastructure located on the site frontage to Robert Street.

8.2.1.2 Proposal

The delivery of the proposed works will continue to rely on the existing connections, and the water supply to the new building will be via the existing internal water network. The existing reticulated network is understood to have sufficient capacity to supply the development.

8.2.1.3 Actions and Recommendations

2.	<p>(a) The Contractor will engage with the relevant water service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase.</p> <p>(b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.</p>
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8.2.2 Sewer Infrastructure

8.2.2.1 Context

The site has access to existing reticulated sewer network located to the north of the site.

8.2.2.2 Proposal

The proposed development will be capable of connecting to the school's internal drainage system, prior to discharge to the reticulated network.

8.2.2.3 Actions and Recommendations

3.	<p>(a) The Contractor will engage with the relevant sewer service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase.</p> <p>(b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.</p>
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8.2.3 Stormwater Infrastructure

8.2.3.1 Context

The subject site consists of a single internal catchment that is governed by the lot boundaries. The current LPOD for the greater catchment is a water body on the eastern boundary of the school, which outlets into a major drainage easement, before discharging into Pulgal Creek.

8.2.3.2 Proposal

A Stormwater Management Plan has been prepared to assess the proposed Hall as included in **Appendix 4**.

The existing lawful point of discharge will be maintained with most of the site flows being captured for stormwater quantity treatment prior to discharge from the site.

The stormwater quantity objective was to demonstrate non-worsening in peak discharges from the subject site for all storm events up to and including the 100-year annual recurrence interval (ARI). This is to ensure the existing infrastructure and/ or downstream properties are not adversely affected.

The total catchment contributing flow to the site's lawful point of discharge is circa 38ha. The developed area is approximately 2% of the contributing catchment. Subsequently, any increase in flow resulting from the associated increase in fraction impervious from the developed area is not expected to cause nuisance within the drainage easement downstream of the water body. Therefore, no detention is required for the proposed development.

Although the site triggers the SPP (based on size of works area), for this infill project upstream of a water body, it is proposed to avoid tertiary Water Quality Objects (WQOs) in lieu of Best Practice and WSUD outcomes including;

- Trash baskets within grated pits
- First flush diverters on downpipes discharging into landscaped areas.

- Developed area discharges immediately into vegetated swales adjacent to oval. Vegetated swale length to be maximised
- Further downstream, site run-off discharges into water body (Dam), which is claimed to capture pollutants from site prior to discharge to downstream waterway
- While the above 'best practice' water quality device arrangement may not meet SPP's tertiary WQOs it will ensure water quality is significantly improved prior to release from the site.

8.2.3.3 Actions and Recommendations

4.	(a) For the construction of the Multi-Purpose Hall, the Contractor will ensure appropriate stormwater objectives are achieved at both the operational and construction phases of the proposed development in accordance with the stormwater management plan contained in Appendix 4.
5.	(a) DoE to ensure a new Stormwater Management Plan is prepared with regards to future development of the Stage 2 works and ensure appropriate stormwater objectives are achieved at both the operational and construction phases of the proposed development.

8.2.4 Electricity Infrastructure

8.2.4.1 Context

The site is serviced via the existing overhead electrical infrastructure within Robert Street.

8.2.4.2 Proposal

The proposed Hall is anticipated to be supplied from the existing site supply from Robert Street.

8.2.4.3 Actions and Recommendations

6.	<p>(a) The Contractor will engage with the relevant electrical service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase.</p> <p>(b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.</p>
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8.2.5 Telecommunications Infrastructure

8.2.5.1 Context

The site has access to existing telecommunication infrastructure.

8.2.5.2 Proposal

New internal telecommunication services will be connected to each new building as necessary.

8.2.5.3 Actions and Recommendations

7.	<p>(a) The Contractor will engage with the relevant telecommunications service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase.</p> <p>(b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.</p>
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8.3 Flora and Fauna

8.3.1 Environmental Protection and Biodiversity Conservation Act 1999

8.3.1.1 Context

The purpose of the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is to ensure the protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places as defined in the EPBC Act.

8.3.1.2 Proposal

The EPBC Protected Matters Search (refer to **Appendix 5**) identified some EPBC species (or their habitat) which may be present within a 1km radius of the site.

The Environmental Assessment in **Appendix 5** confirms none of the listed species in the development footprint were identified in the development works area. Importantly, the works are being undertaken on an existing maintained school site and the likelihood of listed species or their habitats being impacted on the project is considered low.

8.3.1.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.3.2 Nature Conservation Act 1992

8.3.2.1 Context

The *Nature Conservation Act 1992* (NCA) protects all plants that are native to Australia. The *Nature Conservation (Wildlife Management) Regulation 2006* regulates the clearing of protected plants in Queensland.

8.3.2.2 Proposal

The Department of Environment and Science (DES) Protected Plants Flora Survey Trigger Map notes the site is not mapped as a 'high risk' area for protected plants (refer to **Appendix 8**).

The NCA Wildlife Online database shows records of four (4) vulnerable, or near-threatened species under the NCA present within a 1km radius of the subject site (refer to **Appendix 5**). The findings of the Environmental Assessment (refer **Appendix 5**) identified a number of birds were observed on site. Two (2) stick nests (including one active crow nest) and two (2) trees containing small hollows (with skink species observed) were recorded on site.

Under the NCA, any on-site activities that are required to tamper with a confirmed native animal breeding place in order to complete the scope of works must be undertaken in accordance with a Species Management Program (SMP) or Damage Mitigation Permit (DMP) approved by DES. A low risk SMP is required to be submitted for the project.

8.3.2.3 Actions and Recommendations

8.	<ul style="list-style-type: none"> (a) Trees to be removed should be confirmed and inspected for hollows and nests by a suitably qualified person prior to clearing. If hollows, nests or other potential breeding places are present, they must be assessed by a suitably qualified person to determine if they are breeding places in accordance with the NCA. (a) Under the NCA, any onsite activities that are required to tamper with a confirmed native animal breeding place in order to complete the scope of works must be undertaken in accordance with a Species Management Program (SMP) or Damage Mitigation Permit (DMP) approved by DES. A low risk Species Management Program (SMP) is required to be submitted for the project.
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8.3.3 Vegetation Management Act 1999

8.3.3.1 Context

Vegetation clearing is predominantly regulated under the *Vegetation Management Act 1999* (VMA) and the PA. A development permit is required to clear where the clearing is not exempt clearing work through the *Planning Regulation 2017*, or where it cannot be carried out under a self-assessable vegetation clearing code or an area management plan under the VMA.

Many routine vegetation management activities can be carried out as exempt clearing work listed in the *Planning Regulation 2017*, or through a self-assessable vegetation clearing code or an area management plan (AMP). The need for a development approval depends on the type of vegetation; the land tenure of the land (e.g. freehold or Indigenous land); the location, extent and purpose of the proposed clearing; and who is proposing to do the clearing (e.g. state government body, landholder).

8.3.3.2 Proposal

With reference to the State Interest Mapping in **Appendix 8**, the site does not contain matters of MSES and vegetation is not mapped under the planning scheme.

As noted previously, it is proposed to remove all existing vegetation in the building footprint areas. The area contains several medium to large-planted Ficus and Eucalypt species, which border the roads and a sports field within the school grounds. With reference to the Environmental Assessment in **Appendix 5** there are 49 trees within the area to accommodate the Hall proposed to be removed. The findings of the assessment confirm that none of the assessed trees are considered significant and all trees within the works area can be removed provided works are conducted under a low risk SMP and a suitably qualified fauna spotter/koala spotter is present.

Replacement planting is proposed to offset the loss of existing vegetation as illustrated on the landscape plan provided in **Appendix 2**.

8.3.3.3 Actions and Recommendations

9.	<p>(a) Vegetation that is not required to be cleared for the proposed development should be protected from construction impacts in accordance with the AS 4970-2009 Protection of Trees on Development Sites.</p> <p>(b) Implementation of the proposed landscape treatments generally in accordance with '<i>Urangan Multi-purpose Hall, Schematic Design, 3.1 Landscape Plan</i>' as included in Appendix 2.</p>
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8.3.4 Protected and Vulnerable Areas

8.3.4.1 Context

The map of referable wetlands is a state-wide regulatory map under the *Environmental Protection Regulation 2008*. It identifies the location of wetland protection areas (WPA) in Great Barrier Reef (GBR) catchments and also identifies wetlands of high ecological significance (HES) and general ecological significance (GES) across the state.

8.3.4.2 Proposal

The site is not mapped within a wetland protection area or wetlands of high ecological significance.

8.3.4.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.3.5 Invasive Species

8.3.5.1 Context

The *Queensland Biosecurity Act 2014* refers to ‘Designated Biosecurity Matter’ which includes pest plants and animals. These are further classified as either ‘Prohibited’ or ‘Restricted’:

- Prohibited Matter is biosecurity matter not currently present or known to be present in Queensland. It is prohibited because it may have a significant adverse effect on a biosecurity consideration if it did enter Queensland.
- Restricted Matter is biosecurity matter found in Queensland that may have adverse effects on biosecurity consideration if conditions or restrictions under the Act were not imposed.

Prohibited Plants are listed in Schedule 1 Part 3 and Prohibited Animals are listed in Schedule 1 Part 4 of the *Biosecurity Act 2014*. Restricted Plants and Restricted Animals are also listed in Schedule 2 Part 2 of the *Biosecurity Act 2014*.

8.3.5.2 Proposal

Preliminary desktop searches indicate there are several invasive weed species or invasive plants under the *Queensland Biosecurity Act 2014* recorded within a 1km radius of the site. As a managed school site the presence of weeds in managed areas is low.

Weeds encountered in the project works area are required to be removed in accordance with best practice.

8.3.5.3 Actions and Recommendations

10.	(a) In accordance with the <i>Biosecurity Act 2014</i> , Category 3 restricted invasive plants must not be distributed (i.e. released into the environment) unless the distribution or disposal is authorised in a regulation or under a permit. More generally, landowners are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants under their control.
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8.4 Soils and Geology

8.4.1 Erosion Risk

8.4.1.1 Context

The release of sediments or other contaminants to water is an offence under the *Environmental Protection Act 1994*. All activities that expose soil have the potential to result in release of sediment to waterways or stormwater systems.

8.4.1.2 Proposal

To minimise the risk of releasing sediment (and other contaminants) to waters during construction and to the meet the General Environmental Duty under the *Environmental Protection Act 1994*, a site Erosion and Sediment Control Plan (ESCP) is to be prepared in accordance with the IECA Best Practice Erosion and Sediment Control prior to commencing construction.

8.4.1.3 Actions and Recommendations

11.	(a) The Contractor prepares an ESCP that addresses the erosion risks identified for the site, and that the Plan is implemented and monitored throughout the construction phase for the proposed development.
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8.4.2 Acid Sulfate Soils

8.4.2.1 Context

Acid sulfate soils (ASS) occur naturally over low-lying coastal areas, generally at an elevation of less than 5 metres AHD (though up to 20m AHD). These soils may be found close to natural ground level but may also be found at depth in the soil profile.

Potential adverse effects from disturbing ASS including, excavating or otherwise removing soil or sediment, extracting groundwater or filling land causes disturbance of ASS.

8.4.2.2 Proposal

The proposal is supported by a Geotechnical Assessment (**Appendix 6**) and ASS have not been identified. An ASS management plan is not considered necessary.

8.4.2.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.4.3 Contaminated Land

8.4.3.1 Context

With reference to **Appendix 9**, the site is not listed on the Environmental Management Register (EMR) or Contaminated Land Register (CLR).

8.4.3.2 Proposal

The project will not involve any EMR activities nor involve uses which could contaminate the land.

8.4.3.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.5 Heritage and Native Title

8.5.1 Historical Heritage

8.5.1.1 Context

The site is not listed on the local and State heritage register. A search of the Australian Government's Australian Heritage Places indicated that the site is not listed on the database.

8.5.1.2 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.5.1 Cultural Heritage

8.5.1.3 Context

The *Aboriginal Cultural Heritage Act 2003* (ACHA) requires that a person must exercise Due Diligence and reasonable precaution before undertaking an activity which may harm Aboriginal Cultural Heritage. The ACHA – Duty of Care Guidelines (the Guidelines) was gazetted in April 2004 to provide guidance on actions required to demonstrate compliance with this Act.

8.5.1.4 Proposal

Search results from the Department of Aboriginal and Torres Strait Islander Partnership (DATSIP) cultural heritage database shows no records of indigenous cultural heritage within 1km of school site. It should be noted that the absence of recorded Aboriginal cultural heritage places reflects a lack of previous cultural heritage surveys of the area. Therefore, the search is not likely to reflect a true picture of the Aboriginal cultural heritage values of the area.

The nature of the proposed development activities on the site is likely to be classified as ‘area previously subject to significant disturbance’ – Category 4 under the ACHA, Section 28 Duty of Care Guidelines and it is generally unlikely that development activities will harm Aboriginal cultural heritage and the activity will comply with the guidelines. Subject to measures set out in paragraph 5.6 – 5.12 under Category 4 of the Duty of Care Guidelines under the ACHA, the proposed activity can proceed without further cultural heritage assessment.

8.5.1.5 Actions and Recommendations

12.	(a) Any Aboriginal cultural heritage, if found, is protected under the ACHA even if DES has not recorded it. Contract documents should include provisions for works to cease and the relevant Aboriginal Party to be contacted if evidence of Aboriginal cultural heritage is encountered during site works.
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8.5.2 Native Title

8.5.3.1 Context

Native title recognises the traditional rights and interests to land and waters of Aboriginal and Torres Strait Islander people in accordance with the *Native Title Act 1993*.

8.5.3.2 Proposal

Native Title (NT) has been investigated by the DoE is wholly extinguished under section 20 of the *Native Title (Qld) Act 1993*.

8.5.3.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.6 Natural Hazards

8.6.1 Flooding

8.6.1.1 Context

The site is within the Flood hazard area – Local Government flood mapping area, meaning, the SPP has relied on localised flood studies (planning scheme overlays) to determine whether the site is flood affected.

The site is impacted by overland flood.

8.6.2.2 Proposal

The development footprints are not affected by flood or overland flow and the building levels achieve the required immunity levels.

8.6.1.2 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.6.2 Bushfire

8.6.2.1 Context

The site is not mapped as affected by bushfire hazard under the SPP or Planning Scheme.

8.6.2.2 Proposal

The site is not identified as affected by bushfire hazard.

8.6.2.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.6.3 Landslide

8.6.3.1 Context

Landslides occur across a wide range of landscapes and areas and cause loss of life, property and infrastructure, as well as environmental damage. They can also use up significant resources as communities respond to and recover from natural hazard events. Different communities have different levels of exposure, vulnerability and tolerance to the risks presented by landslide. Landslide risk is mapped under the planning scheme.

8.6.3.2 Proposal

The site is not mapped as affected by steep slopes or landslide. The proposal is informed by a geotechnical assessment provided in **Appendix 6** and does not identify any risks associated with landslide. Appropriate design and construction measures will be utilised in the development of the works.

8.6.3.3 Actions and Recommendations

13.	(a) Implementation of the required measures outlined in the Geotechnical Assessment in should be made as part of project detailed design and construction.
-----	--

8.7 Socio-economic Impacts

8.7.1 Socio-economic Profile

8.7.1.1 Context

Consideration should be given to the social and economic impacts from the proposed development, which includes matters such as employment opportunities, access to services, quality of education and the demographics profile.

8.7.1.2 Proposal

The proposed development at Urangan SHS will provide positive socio-economic impacts, including:

- continued long-term educational and associated (i.e. trades) employment opportunities;
- an investment of funds and the associated benefits to the economy;
- improved educational facilities that meets the projected population growth;
- meeting the demographic profile and providing the community with access to educational services;
- focus on delivering quality education, with a curriculum that caters for the varied needs and skills of students; and
- integration with the surrounding community with potential for external user groups to utilise community spaces provided by the school.

8.7.1.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.8 Construction Impacts

8.8.1 Construction Management

8.8.1.1 Context

Environmental management plans describe how an action might impact on the natural environment in which it occurs and set out clear commitments from the person taking the action on how those impacts will be avoided, minimised and managed so that they are environmentally acceptable.

8.8.1.2 Proposal

Construction impacts may arise during the development. The project construction is to be in accordance with the Construction Environmental Management Plan.

8.8.1.3 Actions and Recommendations

14.	<p>(a) Prior to the commencement of work for each stage of development, a Construction Environmental Management Plan (CEMP) is to be prepared by a suitably qualified person. The CEMP must include / address:</p> <ul style="list-style-type: none"> • an Erosion and Sediment Control Plan that addresses the erosion risks and surface water run-off • dust mitigation methods (such as use of water to suppress potential dust) and air quality management procedures • construction noise and vibration, including the default noise standards in accordance with the <i>Environmental Protection Act 1994</i> • hours of construction, including: <ol style="list-style-type: none"> i. construction activities to be restricted to Monday to Saturday (excluding public holidays) between 6.30am and 6.30pm ii. operation of regulated devices such as chainsaws, mulchers and electrical, mechanical or pneumatic power tools is restricted to Monday to Saturday (excluding public holidays) between 7:00am and 7:00pm and iii. no work is undertaken on public holidays • waste control and management, in conjunction with a waste management plan if deemed necessary • proximity of works to habitat areas and the impacts on ecological and environmental values and functions, including stormwater quality • disposal and management of hazardous materials and regulated waste, including removal by a suitably licenced contractor where deemed necessary • access locations for and management of construction vehicle traffic • other required permits from Fraser Coast Regional Council and / or utility providers • any requirements under the <i>Environmental Protection Act 1994</i> in relation to contaminated land. <p>(b) Prior to the commencement of work for each stage of development, place an information sign on the site. The information sign is to:</p> <ol style="list-style-type: none"> i. include the following details: <ul style="list-style-type: none"> • a link to where a copy of the designation and Construction Environmental Management Plan can be viewed on the DSDILGP website • the name, postal and/or email address and a contact telephone number for the key contact/principal contractor ii. be positioned on the road frontage of the site and be clearly visible for a pedestrian iii. be non- illuminated and maintained at all times during construction.
-----	--

8.9 Operational Impacts

8.9.1 Traffic

8.9.1.1 Context

Traffic associated with the school has potential to cause impacts to the continuing operation of the road network, in addition to nearby properties and amenity.

8.9.1.2 Proposal

As noted in section 8.1 of this Report, the proposed development is not considered to result in any significant impacts to the road and traffic network.

8.9.1.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.9.2 Air Quality

8.9.2.1 Context

The proposed development will not produce any emissions, gasses or negative air quality impacts.

8.9.2.2 Proposal

The proposed scope of works aims to provide new educational facility that will not result in any emissions, gasses or negative air quality impacts in operation.

8.9.2.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

8.9.3 Noise

8.9.3.1 Context

With respect to noise, anticipated impacts to, and from the proposed works includes noise generated by the following potential emission sources:

- students and teachers in the new halls and learning spaces;
- mechanical plant;
- after hours use of the hall.

The site is located opposite a residential area and the proposed multipurpose hall and future performing arts complex has the potential to adversely impact on the neighbours.

8.9.3.2 Proposal

The acoustic assessment (**Appendix 7**) notes that the building envelope (façade) of the proposed buildings shall be designed to control noise generated within the buildings breaking-out and affecting nearby noise sensitive receivers.

Compliance with the Section 440W Indoor venues of the EP Act is required where the Hall is to be used under a commercial hire arrangement. It is therefore recommended that further acoustic assessment be undertaken as a requirement of the designation to document project compliance with the requirements of the EPA and to inform any potential hire arrangement to ensure the use of the Hall can comply.

Additionally, it is recommended that the school develop an operational management plan as part of any community hire use arrangement to provide guidance to third party users of the Hall requirements for noise management.

Further detailed acoustic assessment is required for the design of the Performing Arts Hall and is set as a project recommendation.

8.9.3.3 Actions and Recommendations

15.	<ul style="list-style-type: none"> (a) Implementation of the required measures outlined in the Acoustic Assessment in Appendix 7 should be made as part of project detailed design and construction. (b) An Operational Management Plan should be developed to provide guidance to third party users of the Hall requirements for noise management (e.g. limitations on use hours, control of building opening, complaints management etc).
16.	<ul style="list-style-type: none"> (a) Further detailed acoustic assessment is required for the design of the Performing Arts Hall to ensure compliance with the provisions of the <i>EPA 1994</i>. (b) If required, prepare an Operational Management Plan to provide guidance to third party users of the Performance Arts Centre requirements for noise management (e.g. limitations on use hours, control of building opening, complaints management etc).

8.9.4 Light

8.9.4.1 Context

The school will be used during normal hours and may require the provision of internal lighting and external security lighting.

8.9.4.2 Proposal

Any new lighting will be designed in accordance with applicable *Australian Standard (AS)* and owing to the separation between the nearest sensitive receiver will not be likely to be of nuisance.

8.9.4.3 Actions and Recommendations

No further actions or recommendations are considered necessary.

PART G – CONSULTATION

9 Consultation Strategy

9.1 Stakeholders

The stakeholders relevant for consultation with regards to the proposed designation includes:

Affected Parties

Fraser Coast Regional Council

State Government Departments

Department of State Development, Infrastructure, Local Government and Planning (DSDILGP), representing relevant State Agencies.

Elected Representatives

Councillor Zane O’Keefe, Division 10 Fraser Coast Regional Council

State Member for Hervey Bay, Mr Adrian Tantari MP

Federal Member for Hinkler, Hon Keith Pitt MP

Stakeholders

Adjoining landowners; and

Surrounding landowners.

Cultural Heritage Party

Butchulla People Land & Sea

9.2 Community Engagement Plan

The following community engagement plan has been adopted as part of this Infrastructure Designation process.

Activity		Stakeholder Group	Action
Prior to Public Notification			
Email	Email seeking advice about infrastructure requirements.	Fraser Coast Regional Council	Email Telephone call
Meeting	If stakeholder requests a meeting, a meeting will be conducted to present the project and discuss matters of interest to the stakeholder—in particular impacts on local government infrastructure.	Fraser Coast Regional Council	Meet if requested.
During Public Notification			
Public notice	Place public notice in local newspaper	Broader community	Prepare and book public notice
Street signage	Place street signage to the Robert Street and Emerald Park Way frontages.	Broader community	Prepare and erect public notice signage to street

Update web content	Update DSDILGP web page with information about the Infrastructure Designation proposal, including the EAR and details about the engagement process.	Broader community	Prepare content Publish content update
Letters to stakeholders	Prepare letters that outline the Infrastructure Designation proposal and the engagement process. Distribute the letters.	Affected parties and stakeholders	Prepare letter Distribute
Email address and telephone contact	Email: infrastructuredesignation@dasilgp.qld.gov.au Phone: 1300 967 433 Submissions during public notification can be made online or by infrastructuredesignation@dasilgp.qld.gov.au	Affected parties and stakeholders Broader community	Publish contact information in relevant public notices and letters

9.3 Initial Consultation

A number of consultation activities took place prior to, and during, preparation of the designation reporting materials. The below table provides a summary of the activities in accordance with the community engagement plan.

Stakeholder Group	Date	Description
Fraser Coast Regional Council	20/10/21	<ul style="list-style-type: none"> Provide email correspondence to Council seeking preliminary comments regarding the proposed development works.
	08/02/22	<ul style="list-style-type: none"> Council verbally advised it did not intend to make a submission regarding the project and would provide comment in the formal consultation period.
DSDILGP	28/08/21	<ul style="list-style-type: none"> Lodge request for pre-lodgement with DSDILGP. Provide correspondence with summary of proposal.
	13/09/21	<ul style="list-style-type: none"> Pre-lodgement advice was provided by DSDILGP. Confirm technical reporting requirements (i.e. traffic, stormwater etc).
Community pre-engagement	11/02/2022 – 25/02/2022	<ul style="list-style-type: none"> No submissions were received during the pre-engagement period.

PART H – CONCLUSION

10 Conclusion and Recommendations

This EAR has been prepared by QBuild, seeking an Infrastructure Designation of land for the Urangan SHS. The proposed designation applies to land located at 120 Robert Street, Hervey Bay QLD 4655 and described as Lot 50 on SP104331.

The PA 2016 prescribes the way in which a designation can be undertaken. Chapter 2, Part 5 of the PA 2016 prescribes that a Minister, before designating land for infrastructure, must be satisfied that for development the subject of the proposed designation:

- the infrastructure will satisfy statutory requirements, or budgetary commitments, for the supply of the infrastructure; or
- there is or will be a need for the efficient and timely supply of the infrastructure.

The proposed development at Urangan SHS is defined as infrastructure under Schedule 5, Part 2 of the PR 2017:

3 community and cultural facilities, including community centres, galleries, libraries and meeting halls

6 educational Facilities

15 sporting facilities

The designation will facilitate delivery of the proposed development and designation of the site ensures the efficient and timely supply of infrastructure; and satisfy statutory requirements and budgetary commitments of the State for the supply of the infrastructure.

The assessment provided within this EAR provides details with respect to the proposed works and has undertaken an assessment of the proposed infrastructure against the relevant statutory frameworks, incorporating local and state assessment criteria and Commonwealth legislation.

10.1 Development Recommendations

The proposed development of the land for Urangan SHS is to be subject to the following design and development parameters.

1.	<p>(a) Prior to commencement of use for Stage 1, liaise with the Council and prepare a School Transport Management Plan (STMP) that seeks to include/ address:</p> <ul style="list-style-type: none"> • management of car parking and pick-up/ drop-off timing and activities, • addressing driver behaviour (queuing behind angled parking bays), • student behaviour (unsafe crossing points etc, staff supervision of this pick up areas), • staff parking (discourage use of parking on Emerald Park Way southern frontage) <p>(b) As part of the delivery of the Stage 2 project provide a formalised car park on site to provide a minimum of 17 car parking spaces generally in accordance with '<i>Urangan State High School Multi-purpose Hall, Master Plan, Drawing number A-11-01, Revision 5</i>' as included in Appendix 1.</p>
2.	<p>(a) The Contractor will engage with the relevant water service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase.</p>

	(b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.
3.	(a) The Contractor will engage with the relevant sewer service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase. (b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.
4.	(a) For the construction of the Multi-Purpose Hall, the Contractor will ensure appropriate stormwater objectives are achieved at both the operational and construction phases of the proposed development in accordance with the stormwater management plan contained in Appendix 4 .
5.	(a) DoE to ensure a new Stormwater Management Plan is prepared with regards to future development of the Stage 2 works and ensure appropriate stormwater objectives are achieved at both the operational and construction phases of the proposed development.
6.	(a) The Contractor will engage with the relevant electrical service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase. (b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.
7.	(a) The Contractor will engage with the relevant telecommunications service provider as development progresses and confirm the adequacy, capability and location of the existing infrastructure prior to construction phase. (b) The access requirements of the service provider should be considered during the detailed design phase and confirmed with the service provider.
8.	(b) Trees to be removed should be confirmed and inspected for hollows and nests by a suitably qualified person prior to clearing. If hollows, nests or other potential breeding places are present, they must be assessed by a suitably qualified person to determine if they are breeding places in accordance with the NCA. (c) Under the NCA, any onsite activities that are required to tamper with a confirmed native animal breeding place in order to complete the scope of works must be undertaken in accordance with a Species Management Program (SMP) or Damage Mitigation Permit (DMP) approved by DES. A low risk Species Management Program (SMP) is required to be submitted for the project.
9.	(a) Vegetation that is not required to be cleared for the proposed development should be protected from construction impacts in accordance with the AS 4970-2009 Protection of Trees on Development Sites. (b) Implementation of the proposed landscape treatments generally in accordance with ‘ <i>Urangan Multi-purpose Hall, Schematic Design, 3.1 Landscape Plan</i> ’ as included in Appendix 2 .
10.	(a) In accordance with the <i>Biosecurity Act 2014</i> , Category 3 restricted invasive plants must not be distributed (i.e. released into the environment) unless the distribution or disposal is authorised in a regulation or under a permit. More generally, landowners are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants under their control.

11.	(a) The Contractor prepares an ESCP that addresses the erosion risks identified for the site, and that the Plan is implemented and monitored throughout the construction phase for the proposed development.
12.	(a) Any Aboriginal cultural heritage, if found, is protected under the ACHA even if DES has not recorded it. Contract documents should include provisions for works to cease and the relevant Aboriginal Party to be contacted if evidence of Aboriginal cultural heritage is encountered during site works.
13.	(a) Implementation of the required measures outlined in the Geotechnical Assessment in Appendix 6 should be made as part of project detailed design and construction.
14.	<p>(a) Prior to the commencement of work for each stage of development, a Construction Environmental Management Plan (CEMP) is to be prepared by a suitably qualified person. The CEMP must include / address:</p> <ul style="list-style-type: none"> • an Erosion and Sediment Control Plan that addresses the erosion risks and surface water run-off • dust mitigation methods (such as use of water to suppress potential dust) and air quality management procedures • construction noise and vibration, including the default noise standards in accordance with the <i>Environmental Protection Act 1994</i> • hours of construction, including: <ol style="list-style-type: none"> i. construction activities to be restricted to Monday to Saturday (excluding public holidays) between 6.30am and 6.30pm ii. operation of regulated devices such as chainsaws, mulchers and electrical, mechanical or pneumatic power tools is restricted to Monday to Saturday (excluding public holidays) between 7:00am and 7:00pm and iii. no work is undertaken on public holidays • waste control and management, in conjunction with a waste management plan if deemed necessary • proximity of works to habitat areas and the impacts on ecological and environmental values and functions, including stormwater quality • disposal and management of hazardous materials and regulated waste, including removal by a suitably licenced contractor where deemed necessary • access locations for and management of construction vehicle traffic • other required permits from Fraser Coast Regional Council and / or utility providers • any requirements under the <i>Environmental Protection Act 1994</i> in relation to contaminated land. <p>(b) Prior to the commencement of work for each stage of development, place an information sign on the site. The information sign is to:</p> <ol style="list-style-type: none"> i. include the following details: <ul style="list-style-type: none"> • a link to where a copy of the designation and Construction Environmental Management Plan can be viewed on the DSDILGP website • the name, postal and/or email address and a contact telephone number for the key contact/principal contractor ii. be positioned on the road frontage of the site and be clearly visible for a pedestrian iii. be non- illuminated and maintained at all times during construction.
15.	(a) Implementation of the required measures outlined in the Acoustic Assessment in Appendix 7 should be made as part of project detailed design and construction.

	(b) An Operational Management Plan should be developed to provide guidance to third party users of the Hall requirements for noise management (e.g. limitations on use hours, control of building opening, complaints management etc).
16.	(a) Further detailed acoustic assessment is required for the design of the Performing Arts Hall to ensure compliance with the provisions of the <i>EPA 1994</i> . (b) If required, prepare an Operational Management Plan to provide guidance to third party users of the Performance Arts Centre requirements for noise management (e.g. limitations on use hours, control of building opening, complaints management etc).

PART I – APPENDICES

The following is a list of appendices to this Environmental Assessment Report:

Appendix 1	Proposal Plans
Appendix 2	Landscape Plan
Appendix 3	Traffic Assessment
Appendix 4	Stormwater Management Plan
Appendix 5	Environmental Assessment
Appendix 6	Geotechnical Assessment
Appendix 7	Acoustic Assessment
Appendix 8	State Interest Mapping
Appendix 9	Contaminated Land Register and Environmental Management Register Search
Appendix 10	Property Information
Appendix 11	Extracts from the <i>Planning Act 2016</i>
Appendix 12	Designation Flowchart

Appendix 1 – Proposal Plans

URANGAN STATE HIGH SCHOOL

ROBERT STREET, HERVEY BAY
421094

DRAWING LIST

SHEET No.	SHEET NAME	Current Revision
01 Cover Sheets		
A-01-00	COVER SHEET - DRAWING INDEX	6
11 Site Plans		
A-11-00	CONTEXT PLAN	4
A-11-01	MASTER PLAN	4
A-11-02	SITE KEY PLAN - GF	4
A-11-03	SITE KEY PLAN - ROOF	4
21 Floor Plans		
A-21-00	GROUND FLOOR PLAN - MULTI-PURPOSE HALL	7
A-21-01	UPPER ROOF PLAN - MULTI-PURPOSE HALL	3
A-21-05	GROUND FLOOR PLAN - COURTYARD	4
A-21-06	WALKWAY - PLAN	4
30 Elevations		
A-30-00	ELEVATIONS - OVERALL SITE	5
A-30-01	ELEVATIONS - MULTI-PURPOSE HALL	6
A-30-02	ELEVATIONS - MULTI-PURPOSE HALL	5

DRAWING LIST

SHEET No.	SHEET NAME	Current Revision
40 Sections		
A-40-00	SECTIONS	6
65 JOINERY DETAILS		
A-65-10	JOINERY - KITCHENETTE	1
80 3D Views		
A-80-00	3D VIEWS	5
A-80-01	3D VIEWS	5
83 Materials		
A-83-00	MATERIALS	5
A-83-01	MATERIALS	1
A-83-10	EXTERNAL FINISHES BOARD	1
A-83-11	INTERNAL FINISHES BOARD	1
Grand total: 20		



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2	REVISED SDPP ISSUE	MT	19/11/21
3	VM UPDATES	MT	09/12/21
4	VM UPDATES	MT	10/01/22
5	PROGRESS ISSUE	SH	27/01/22
6	FOR INFORMATION	MT	10/02/22

Client **QLD Department of Education**

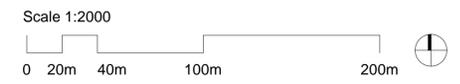
Project No. **421094**

Document Control Status:

Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**

Drawing Title
COVER SHEET - DRAWING INDEX

Co-ordinated: SH
Project Architect: CM
Project Director: MS
Drawing Number: **A-01-00**
Drawn: RC
Scale: @ A1
Date: 26/04/17
Revision: **6**



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4	VM UPDATES	MT	09/12/21
5	BUILDING HEIGHTS NOTED	SG	22/02/22

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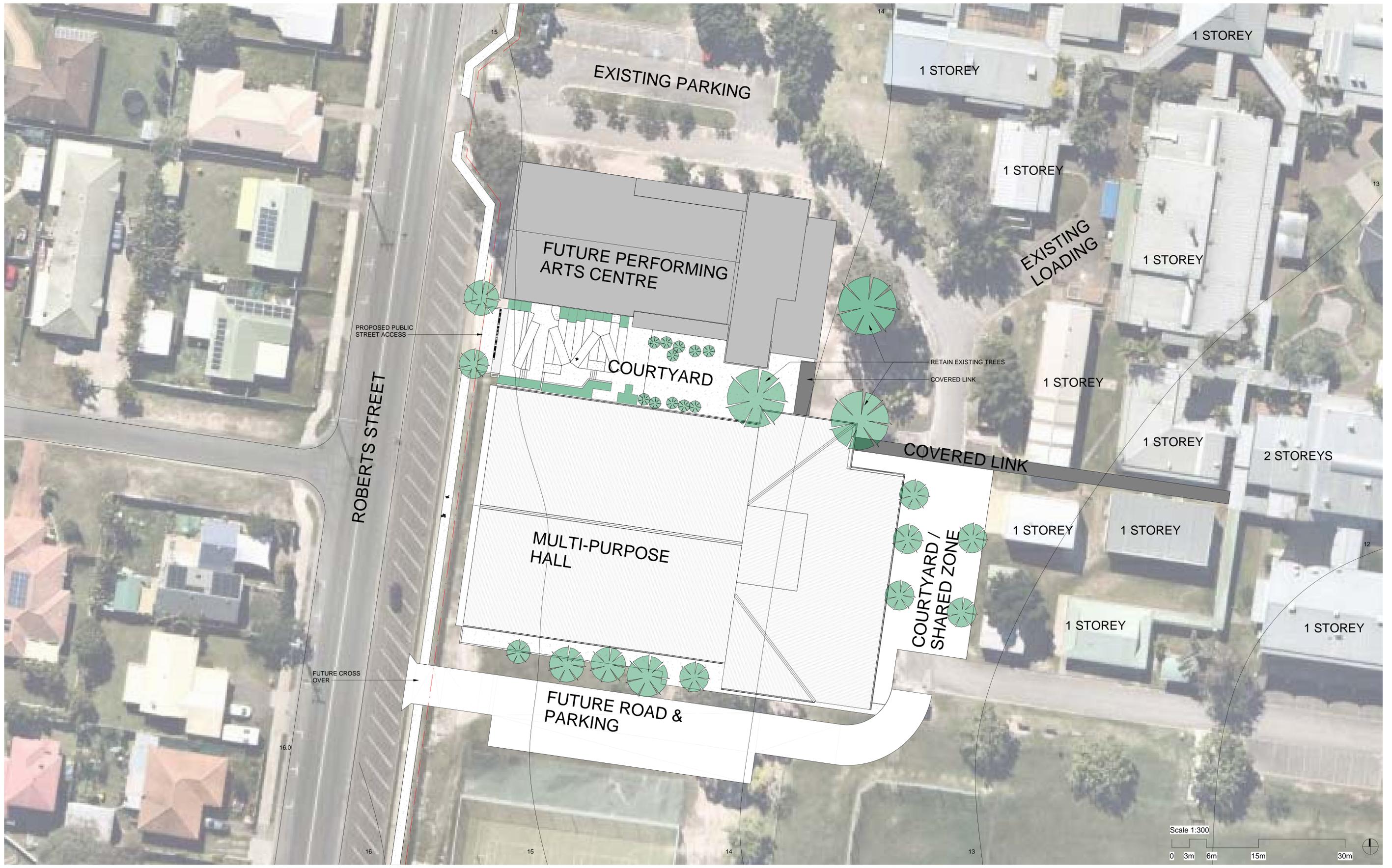
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Co-ordinated: CM
Project Architect: SH
Project Director: RC
Drawing Number: A-11-00

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Scale: 1:2000 @ A1
Date: 26/04/17
Revision:

CONTEXT PLAN



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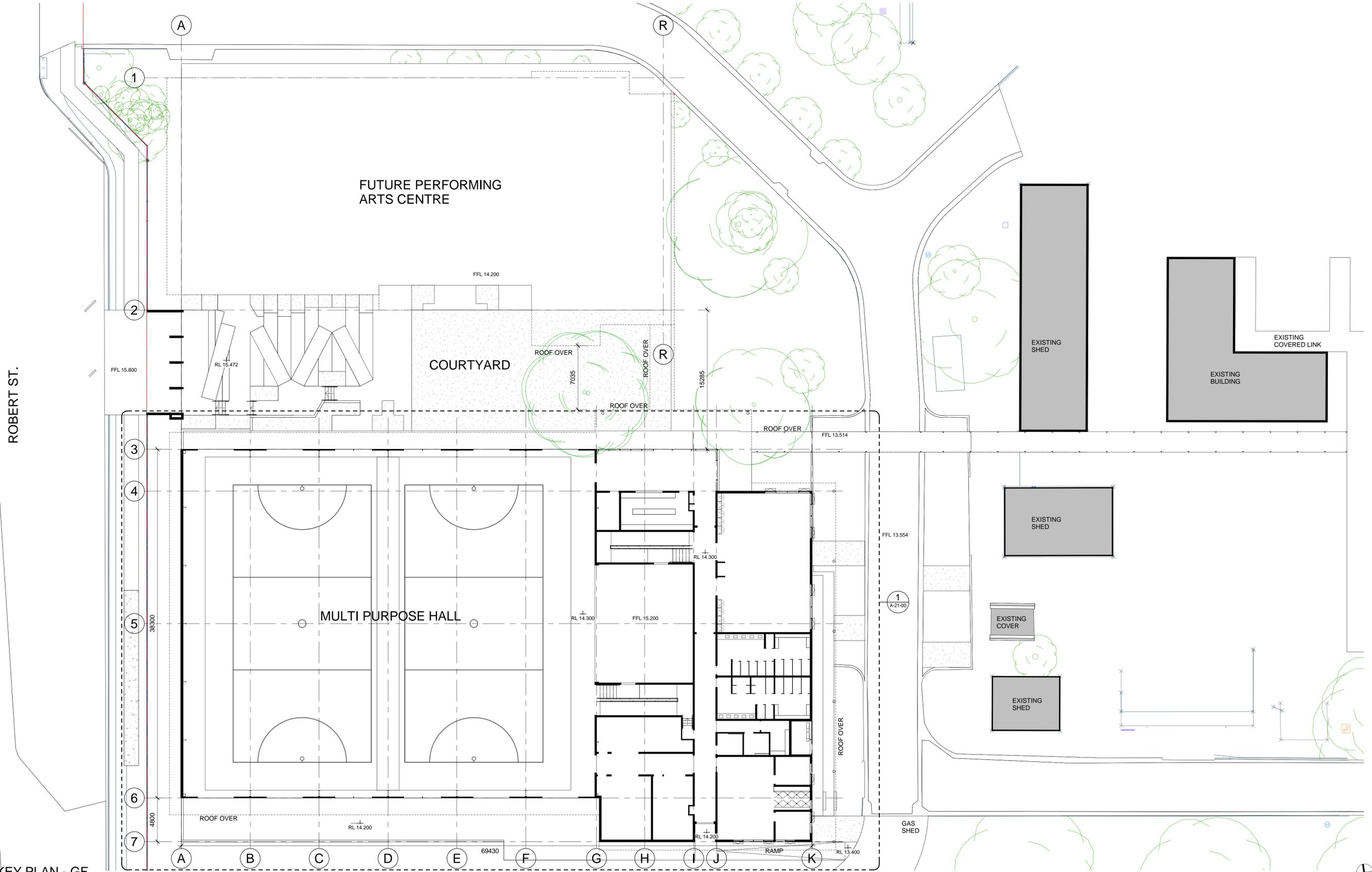
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2	SDPP ISSUE	MT	04/11/21
3	REVISED SDPP ISSUE	MT	19/11/21
4	VM UPDATES	MT	09/12/21
5	BUILDING HEIGHTS NOTED	SG	22/02/22

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Project **Urangan State High School
 Multi-purpose Hall
 Robert Street, Hervey Bay**
 Drawing Title **MASTER PLAN**

Co-ordinated: **CM**
 Project Architect: **SH**
 Project Director: **RC**
 Drawing Number: **A-11-01**

Drawn: **MS**
 Scale: **1:300 @ A1**
 Date: **10/01/21**
 Revision: **5**



1 SITE KEY PLAN - GF
SCALE 1:200



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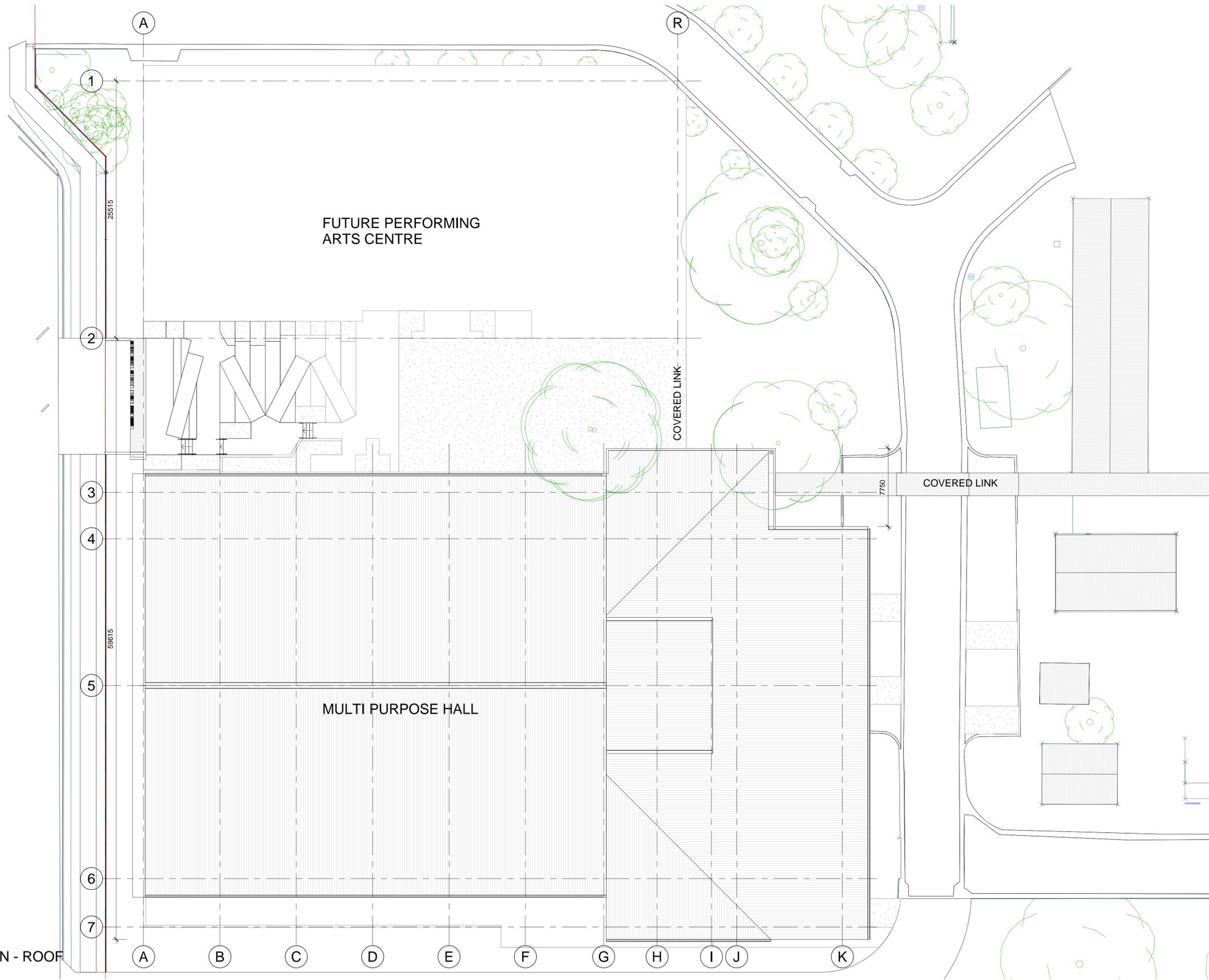
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Project No. **421094**
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Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**

Co-ordinated: SH
Project Architect: CM
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Drawing Number: A-11-02
Date: 10/25/21
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Drawing Title
SITE KEY PLAN - GF

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1 SITE KEY PLAN - ROOF
SCALE 1:200



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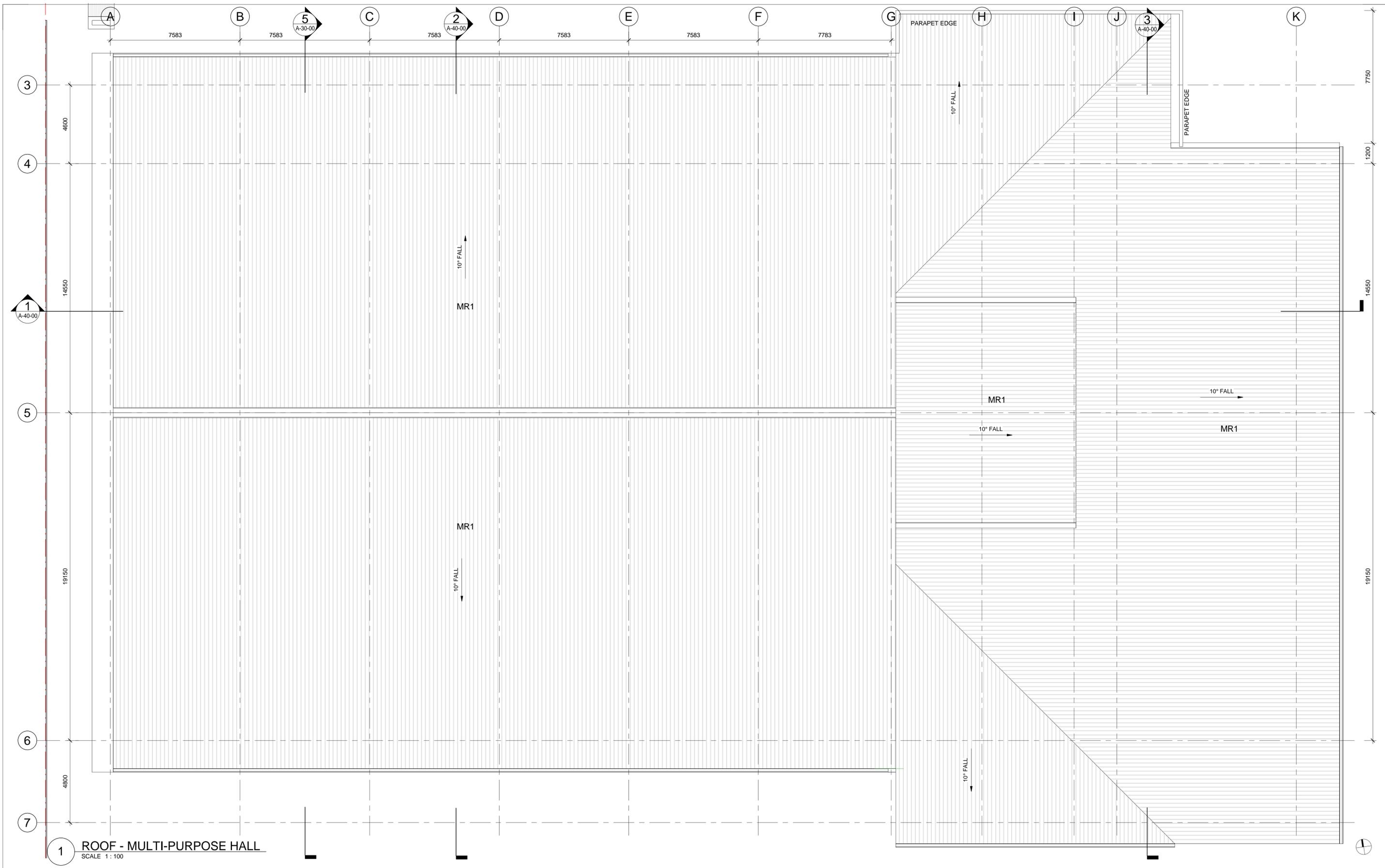
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Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **SITE KEY PLAN - ROOF**

Co-ordinated: SH
Project Architect: CM
Project Director: RC
Drawing Number: **A-11-03**
Drawn: MS
Scale: 1:200 @ A1
Date: 10/25/21
Revision:



1 ROOF - MULTI-PURPOSE HALL
SCALE 1 : 100



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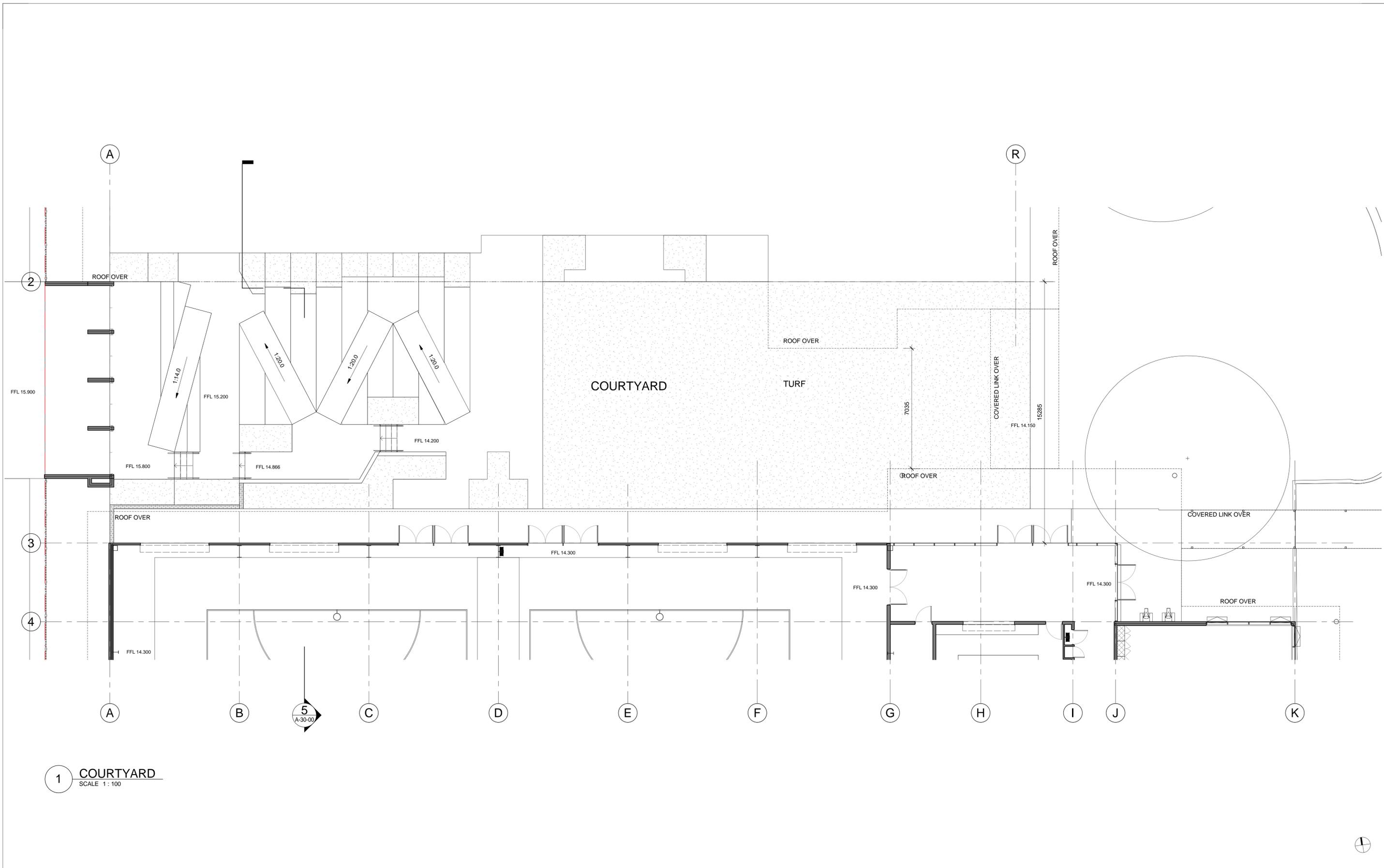
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Project **Urangan State High School
Multi-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **UPPER ROOF PLAN -
MULTI-PURPOSE HALL**

Co-ordinated: SH
Project Architect: CM
Project Director: RC
Drawing Number: **A-21-01**
Drawn: MS
Scale: 1 : 100 @ A1
Date: 10/27/21
Revision:



1 COURTYARD
SCALE 1 : 100



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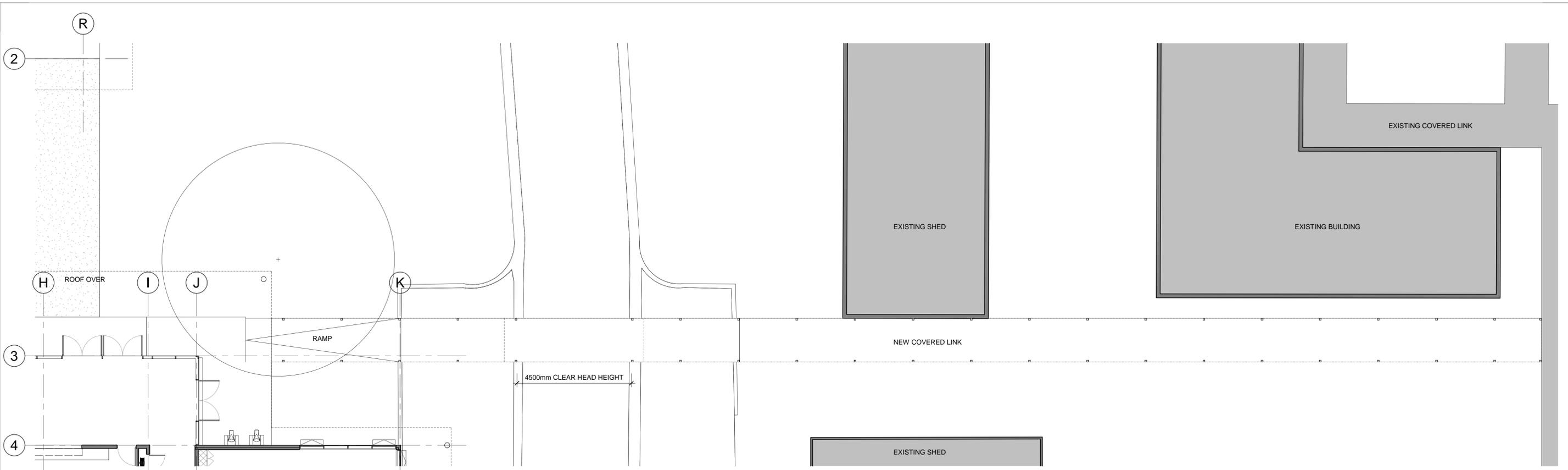
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3	VM UPDATES	SH	09/12/21
4	PROGRESS ISSUE	SH	27/01/22

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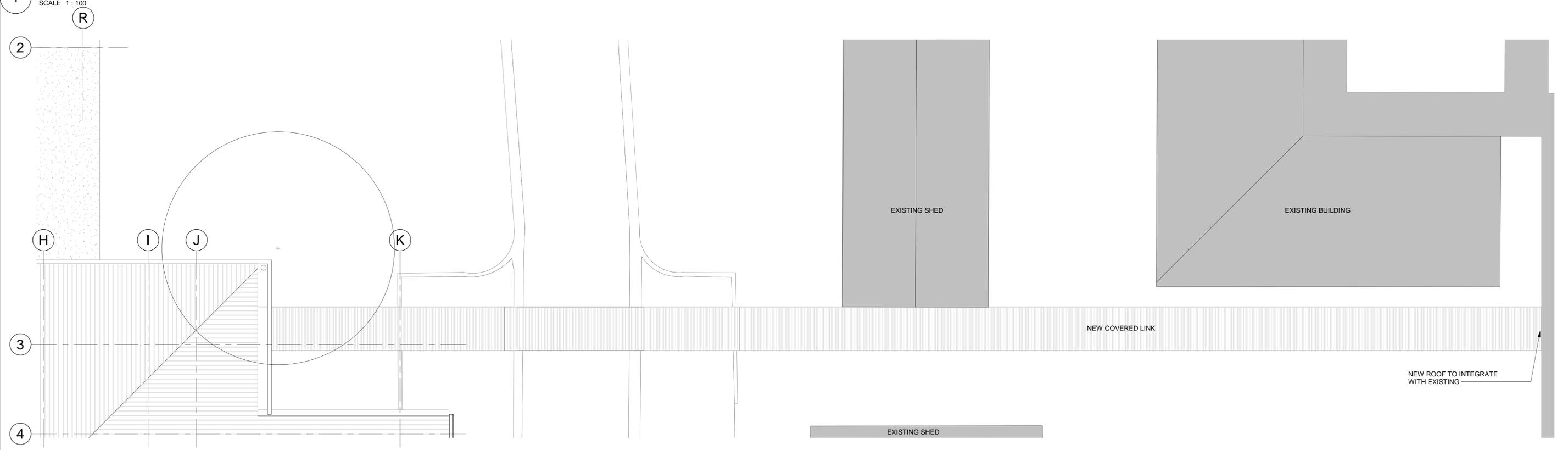
Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **GROUND FLOOR PLAN -
COURTYARD**

Co-ordinated: _____
Project Architect: _____
Project Director: _____
Drawing Number: **A-21-05**

Drawn: **MS**
Scale: **1 : 100 @ A1**
Date: **26/04/17**
Revision: _____



1 WALKWAY PLAN
SCALE 1:100



2 WALKWAY ROOF PLAN
SCALE 1:100



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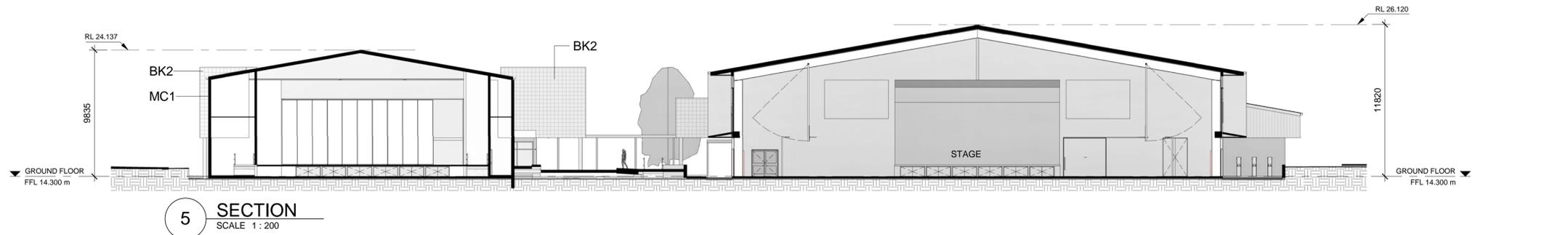
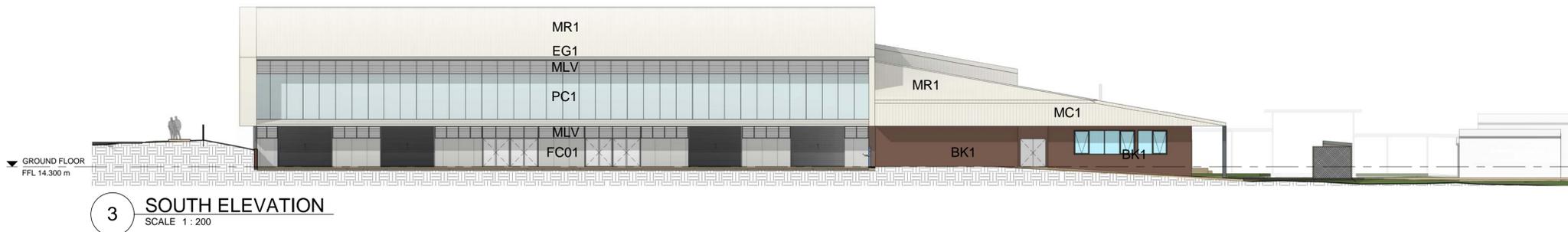
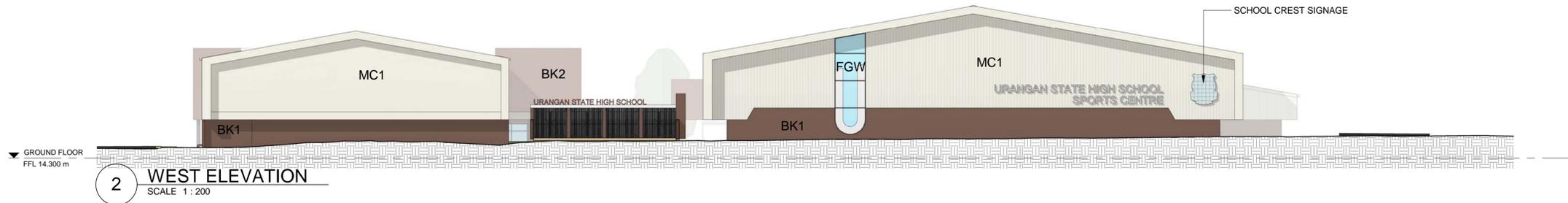
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Client **QLD Department of Education**
Project No. **421094**
Document Control Status: _____

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Drawing Title **WALKWAY - PLAN**

Co-ordinated: **CM**
Project Architect: **SH**
Project Director: **MS**
Drawing Number: **A-21-06**
Drawn: **RC**
Scale: **1:100 @ A1**
Date: **10/25/21**
Revision: _____



MATERIAL LEGEND	
AW	AWNING WINDOW
BK1	BRICK TYPE 1
BK2	BRICK TYPE 2
COL	PAINT FINISHED STEEL COLUMN
EG1	EAVES GUTTER TYPE 1
FC01	FIBRE CEMENT SHEETING
FGW	FIXED GLASS WINDOW
GL1	OPERABLE GLASS LOUVRE
MC1	METAL CLADDING TYPE 1
MEL	METAL EXPANDED LOUVRE MESH
MLV	OPERABLE METAL LOUVRE
MR1	METAL ROOF SHEETING
PC1	TRANSLUCENT POLYCARBONATE SHEETING

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6	BUILDING HEIGHTS NOTED	SG	22/02/22

Client QLD Department of Education

Project No. 421094

Document Control Status:

Project Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay

Drawing Title

ELEVATIONS - OVERALL SITE

Co-ordinated: CM

Project Architect: SH

Project Director: RC

Drawing Number: A-30-00

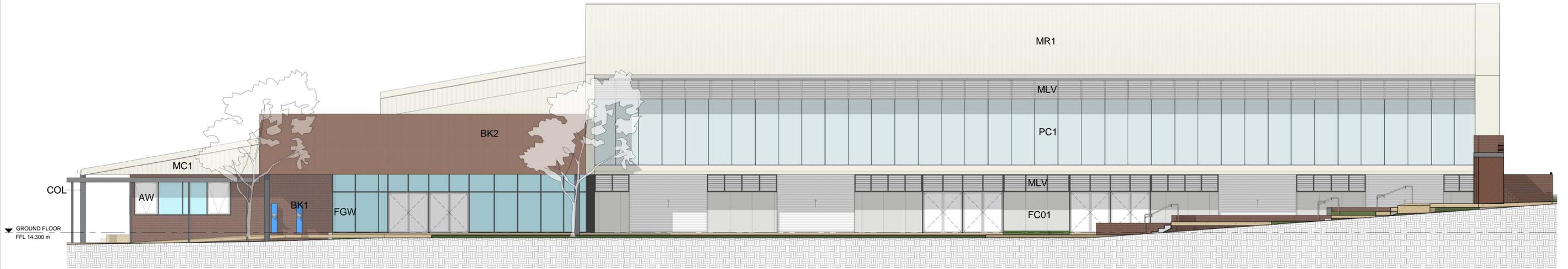
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Revision:



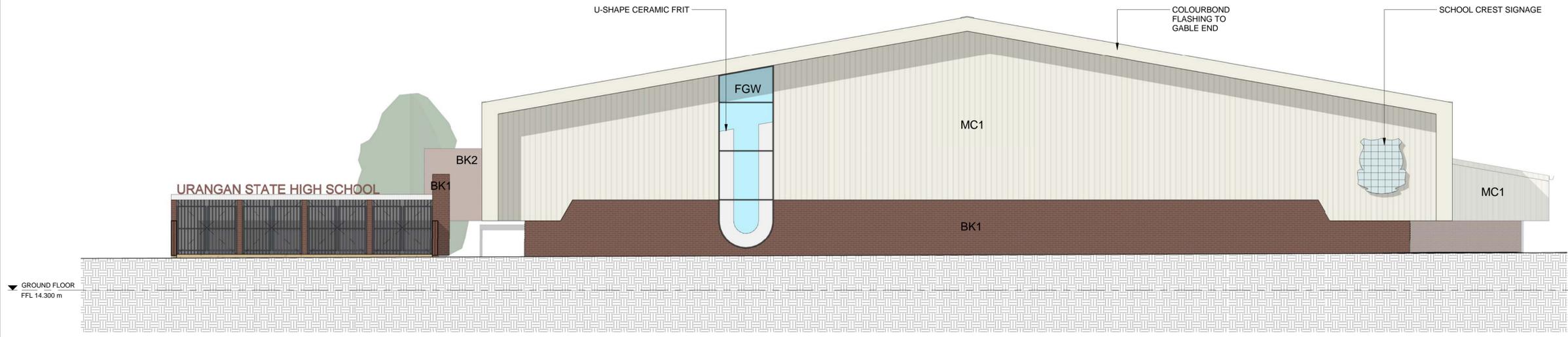
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1 NORTH ELEVATION - MP
SCALE 1 : 100



2 WEST ELEVATION - MP
SCALE 1 : 100

MATERIAL LEGEND	
AW	AWNING WINDOW
BK1	BRICK TYPE 1
BK2	BRICK TYPE 2
COL	PAINT FINISHED STEEL COLUMN
EG1	EAVES GUTTER TYPE 1
FC01	FIBRE CEMENT SHEETING
FGW	FIXED GLASS WINDOW
GL1	OPERABLE GLASS LOUVRE
MC1	METAL CLADDING TYPE 1
MEL	METAL EXPANDED LOUVRE MESH
MLV	OPERABLE METAL LOUVRE
MR1	METAL ROOF SHEETING
PC1	TRANSLUCENT POLYCARBONATE SHEETING



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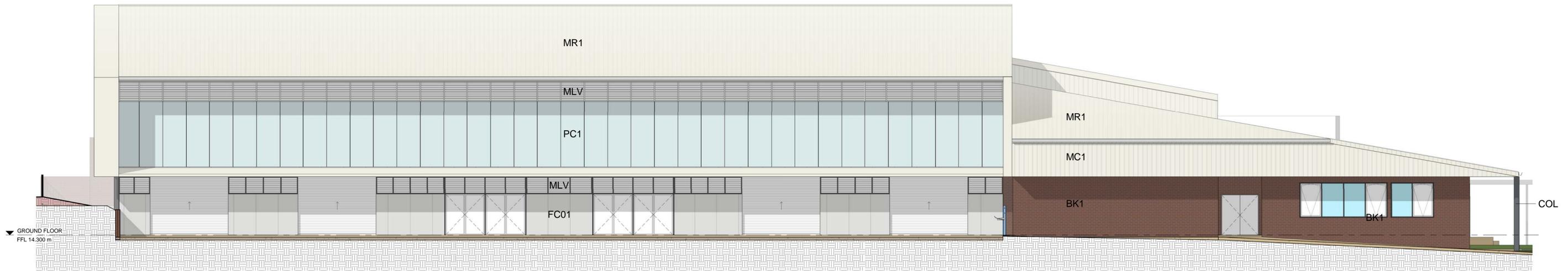
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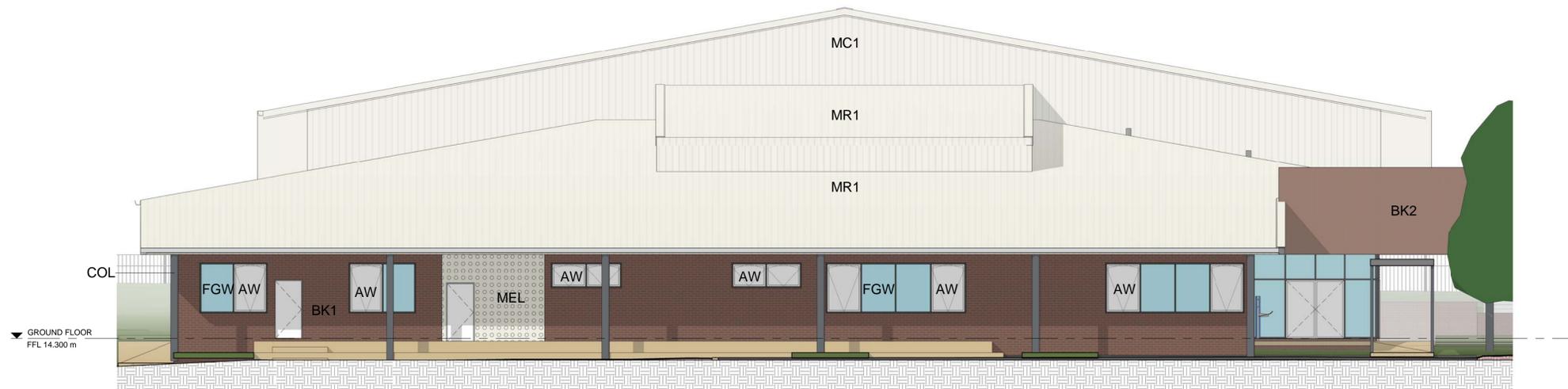
Client **QLD Department of Education**
Project No. **421094**
Document Control Status:

Project **Urangan State High School
Multi-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **ELEVATIONS -
MULTI-PURPOSE HALL**

Co-ordinated: **CM**
Project Architect: **SH**
Project Director: **RC**
Drawing Number: **A-30-01**
Drawn: **MS**
Scale: **1 : 100 @ A1**
Date: **26/04/17**
Revision:



1 SOUTH ELEVATION - MP
SCALE 1 : 100



2 EAST ELEVATION - MP
SCALE 1 : 100

MATERIAL LEGEND	
AW	AWNING WINDOW
BK1	BRICK TYPE 1
BK2	BRICK TYPE 2
COL	PAINT FINISHED STEEL COLUMN
EG1	EAVES GUTTER TYPE 1
FC01	FIBRE CEMENT SHEETING
FGW	FIXED GLASS WINDOW
GL1	OPERABLE GLASS LOUVRE
MC1	METAL CLADDING TYPE 1
MEL	METAL EXPANDED LOUVRE MESH
MLV	OPERABLE METAL LOUVRE
MR1	METAL ROOF SHEETING
PC1	TRANSLUCENT POLYCARBONATE SHEETING



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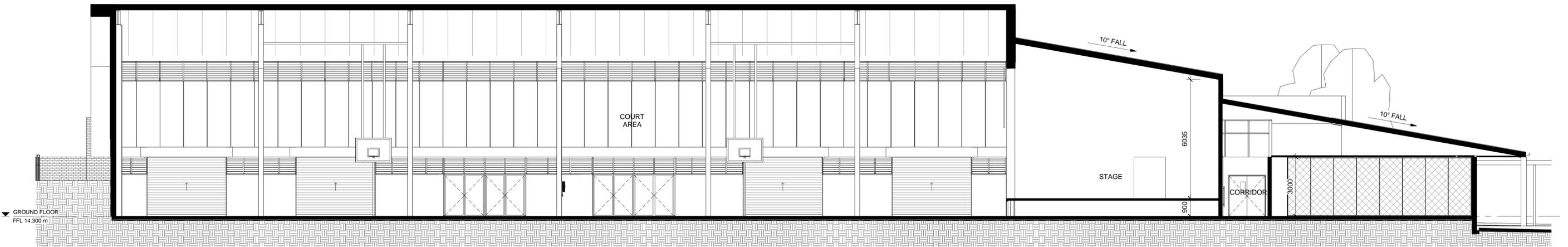
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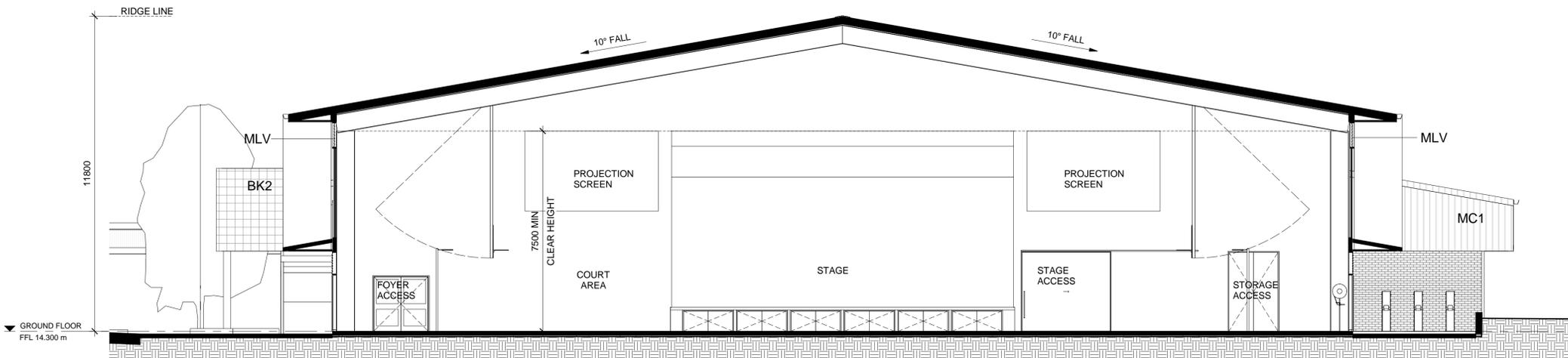
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Project No. **421094**
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Drawing Title **ELEVATIONS -
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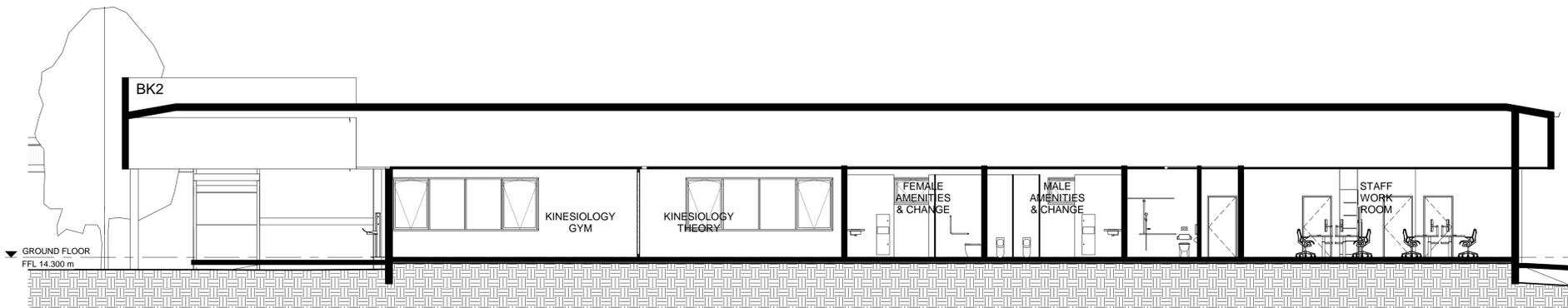
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Project Director: **RC**
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Scale: **1 : 100 @ A1**
Date: **26/04/17**
Revision:



1 MP SECTION 1
SCALE 1 : 100



2 MP SECTION 2
SCALE 1 : 100



3 MP SECTION 3
SCALE 1 : 100

MATERIAL LEGEND	
AW	AWNING WINDOW
BK1	BRICK TYPE 1
BK2	BRICK TYPE 2
COL	PAINT FINISHED STEEL COLUMN
EG1	EAVES GUTTER TYPE 1
FC01	FIBRE CEMENT SHEETING
FGW	FIXED GLASS WINDOW
GL1	OPERABLE GLASS LOUVRE
MC1	METAL CLADDING TYPE 1
MEL	METAL EXPANDED LOUVRE MESH
MLV	OPERABLE METAL LOUVRE
MR1	METAL ROOF SHEETING
PC1	TRANSLUCENT POLYCARBONATE SHEETING



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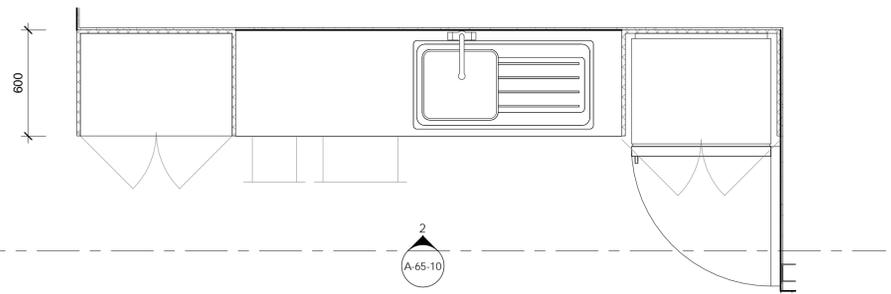
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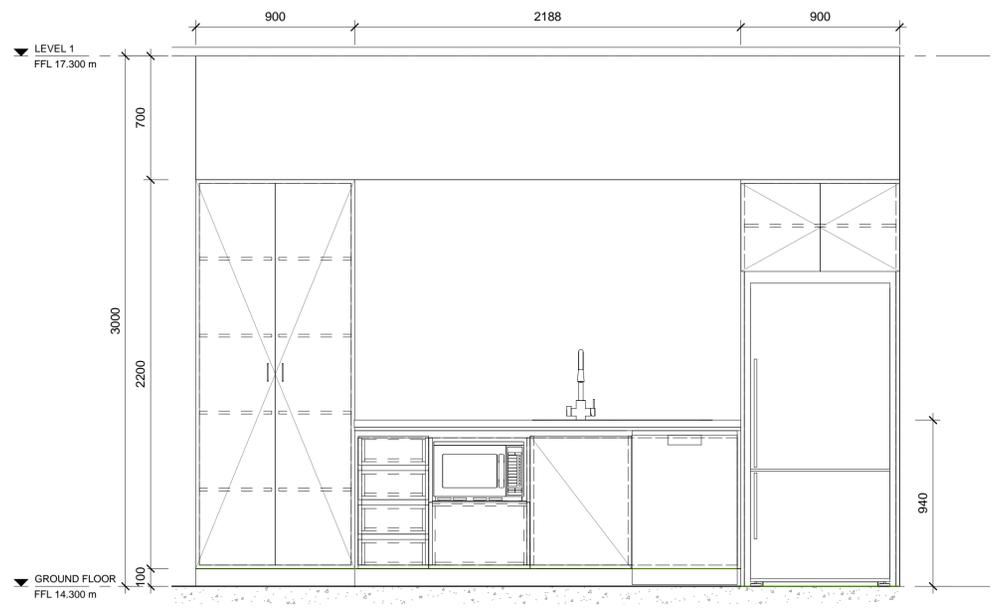
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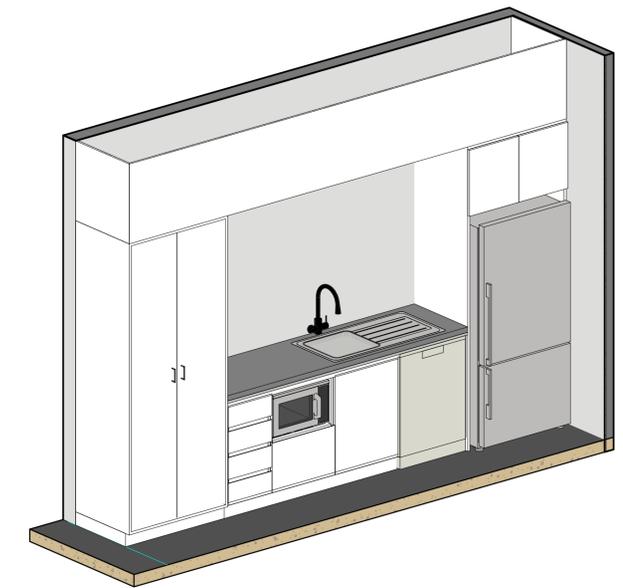
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Drawn: **MS**
Scale: **1 : 100 @ A1**
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1 Joinery Plan - Kitchenette
SCALE 1 : 20



2 Kitchenette Elevation
SCALE 1 : 20



3 Staff Kitchenette - 3D View
SCALE



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Document Control Status:

Project Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay
Drawing Title JOINERY - KITCHENETTE

Co-ordinated: SH
Project Architect: SH
Project Director: RC
Drawing Number: A-65-10
Drawn: MT
Scale: 1:20 @ A1
Date: 02/10/22
Revision:



1 3D VIEW 01 - MP & PAC
SCALE



2 3D VIEW 02 - MP & PAC
SCALE



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Project No. **421094**
Document Control Status:

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Drawing Title **3D VIEWS**

Co-ordinated: **CM**
Project Architect: **SH**
Project Director: **RC**
Drawing Number: **A-80-00**
Drawn: **MS**
Scale: **@ A1**
Date: **26/04/17**
Revision:



1 3D VIEW 01 - MP
SCALE



2 3D VIEW 02 - MP
SCALE



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Project No. 421094
Document Control Status:

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Co-ordinated: CM
Project Architect: SH
Project Director: RC
Drawing Number: A-80-01
Drawing Title 3D VIEWS

Drawn: MS
Scale: @ A1
Date: 26/04/17
Revision:

3D VIEWS

A-80-01

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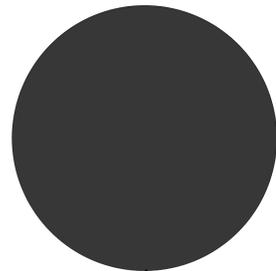
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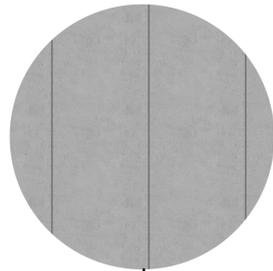
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BK2 - FEATURE ENTRY BREEZE BLOCK



GL1 - CHARCOAL ALUMINIUM WINDOWS



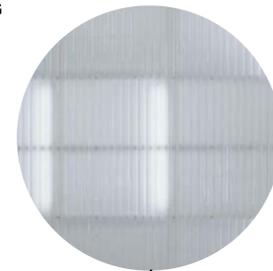
FC01 - FIBRE CEMENT PANELS



MLV - FIXED LOUVERS



MR1/MC1 - SURFMIST ROOF SHEETING



PC1 - SEMI-TRANSPARENT WALL



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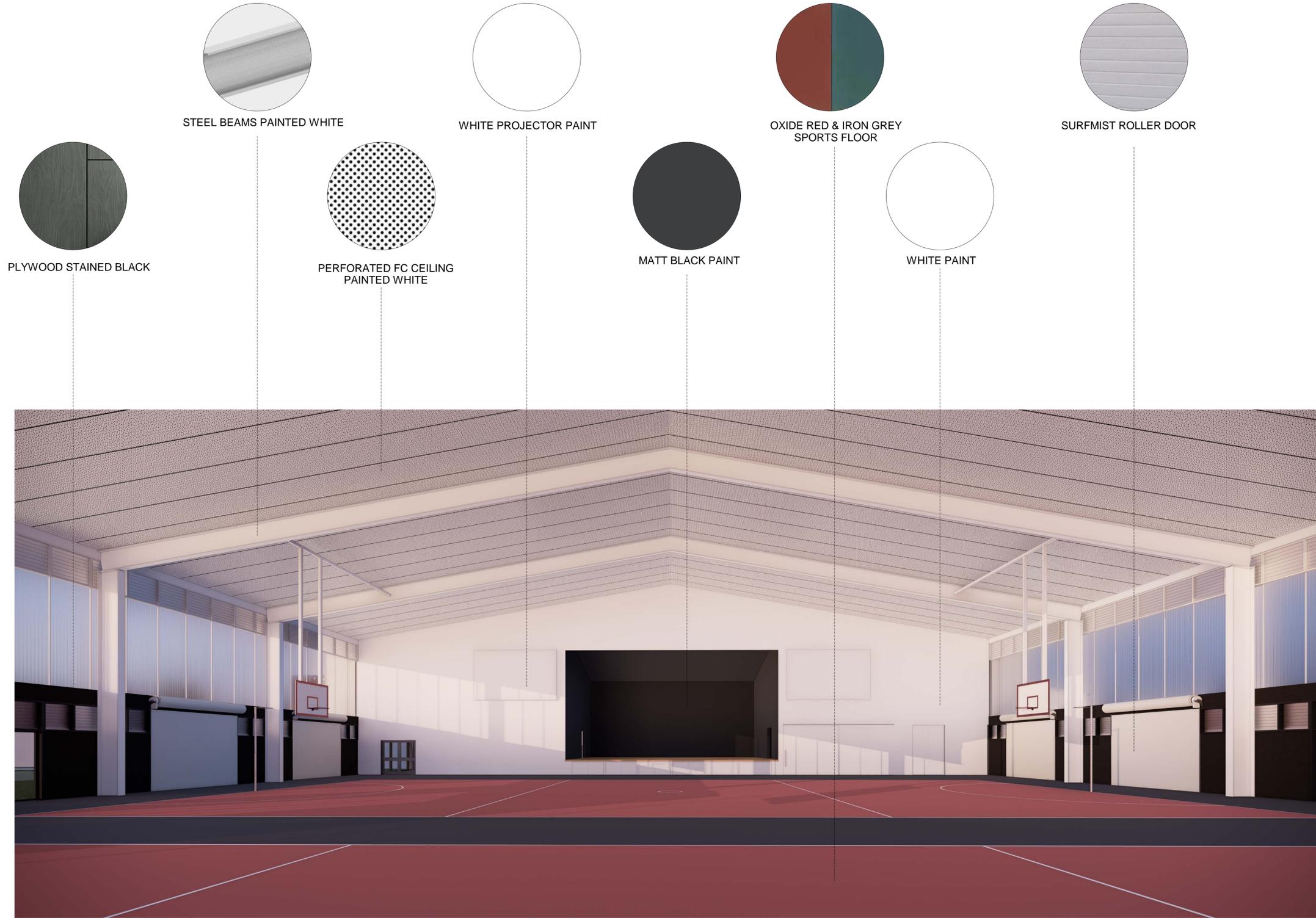
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 Project Architect: **SH**
 Project Director: **RC**
 Drawing Number: **A-83-00**
 Drawn: **MS**
 Scale: **1 : 200 @ A1**
 Date: **26/04/17**
 Revision:

MATERIALS

A-83-00

5

PLOT STAMP DATE: 27/01/2022 11:58:08 PM



PLYWOOD STAINED BLACK

STEEL BEAMS PAINTED WHITE

WHITE PROJECTOR PAINT

OXIDE RED & IRON GREY SPORTS FLOOR

SURFMIST ROLLER DOOR

PERFORATED FC CEILING PAINTED WHITE

MATT BLACK PAINT

WHITE PAINT



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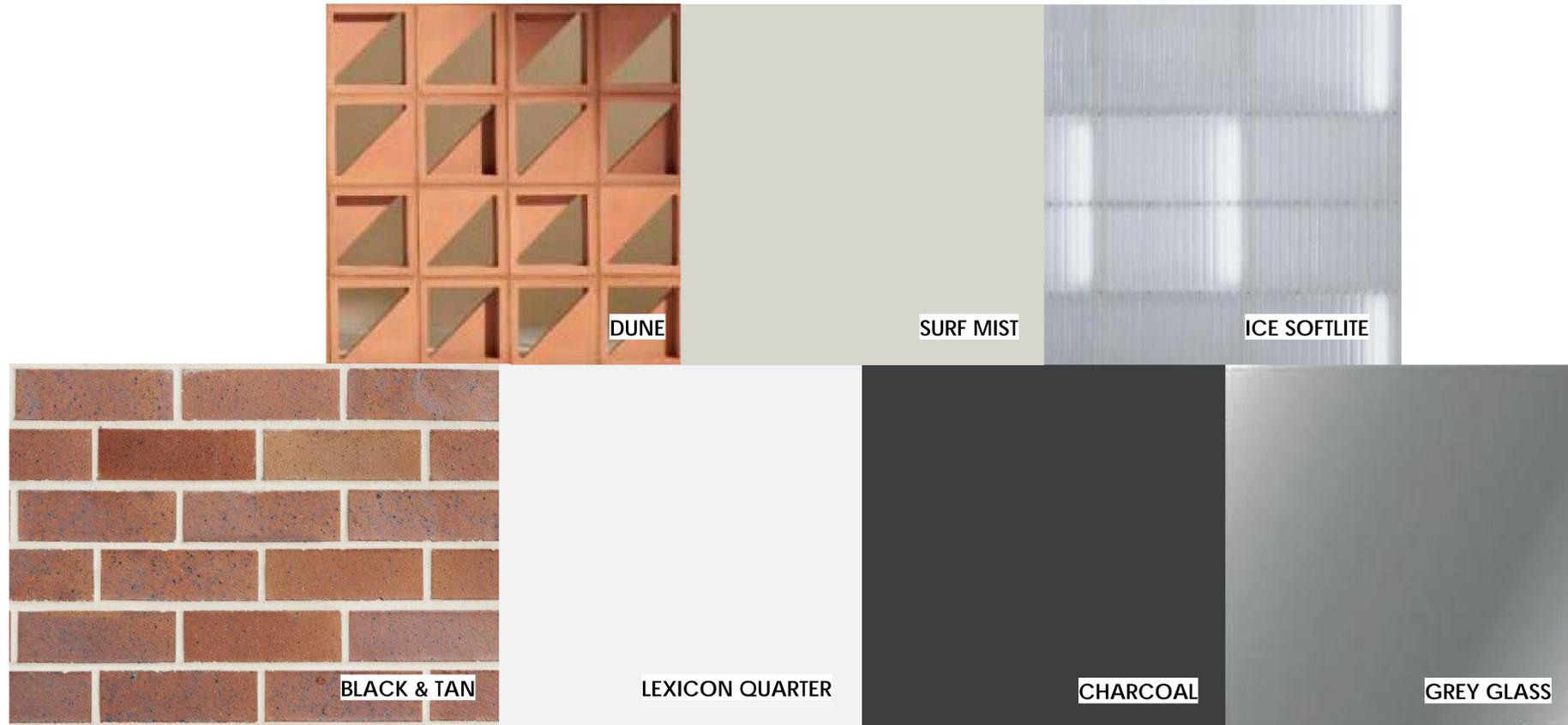
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Project **Urangan State High School
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 Drawing Title

Co-ordinated: SH
 Project Architect: CM
 Project Director: RC
 Drawing Number: **A-83-01**
 Drawn: MT
 Scale: 1 : 200 @ A1
 Date: 01/20/22
 Revision: 1

MATERIALS



MULTI-PURPOSE HALL



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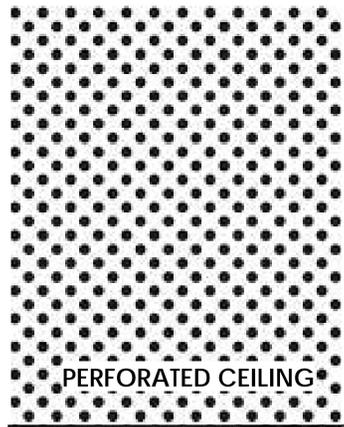
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 Mult-purpose Hall
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Drawing Title EXTERNAL FINISHES BOARD

Co-ordinated: _____
Project Architect: _____
Project Director: _____
Drawing Number: A-83-10

Checked: _____
Designer: _____
Approver: _____

Author: _____
Scale: 1 : 2 @ A1
Date: 01/28/22
Revision: 1



PERFORATED CEILING

GLOSS WHITE

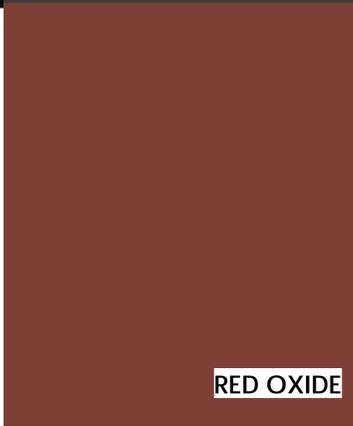
LEXICON QUARTER



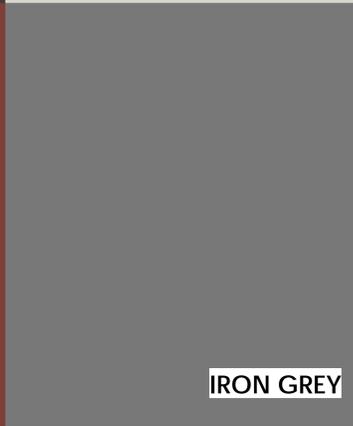
BLACK STAINED
PLYWOOD

DOMINO

SURF MIST



RED OXIDE



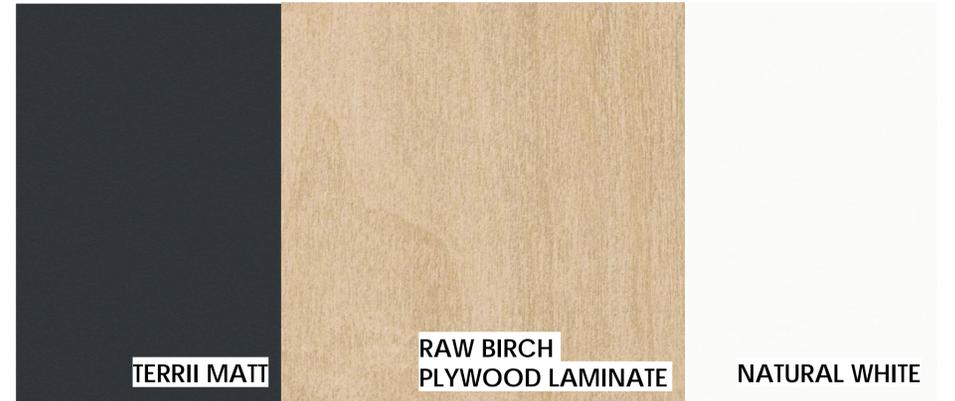
IRON GREY



CORAL CARPET TILE

LEXICON QUARTER

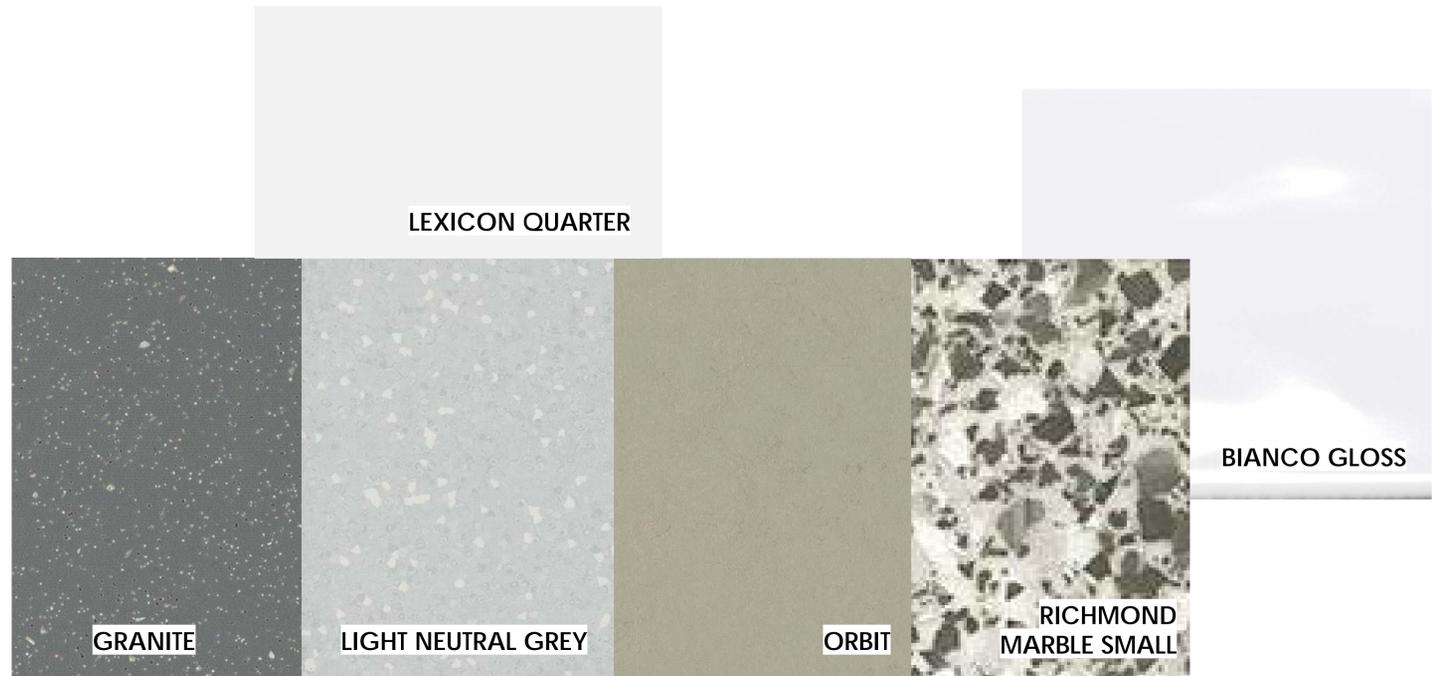
IRONBANK



TERRI MATT

RAW BIRCH
PLYWOOD LAMINATE

NATURAL WHITE



LEXICON QUARTER

GRANITE

LIGHT NEUTRAL GREY

ORBIT

RICHMOND
MARBLE SMALL

BIANCO GLOSS

COURT AREA

BOH AREAS



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Robert Street, Hervey Bay
Drawing Title INTERNAL FINISHES BOARD

Co-ordinated: _____
Project Architect: _____
Project Director: _____
Drawing Number: A-83-11

Checked: _____
Designer: _____
Approver: _____

Drawn: _____
Author: _____
Scale: 1 : 2 @ A1
Date: 01/28/22
Revision: _____

Appendix 2 – Landscape Plan

Section 1 – Context and Site Analysis

1.2 Opportunities and Constraints

- LEGEND**
- Site
 - Main site entry (Existing)
 - Open space (Educational)
 - Existing Vegetation
 - Urangan Multi Purpose Hall Location
 - Neighbourhood road
 - Pedestrian pathway
 - Key Movement
 - Future Movement.
 - Vehicle cross over
 - Pedestrian crossings
 - Car parking
 - 1 Canteen
 - 2 Admin
 - 3 Theatre of the Round



2.1 Landscape Vision

The landscape response supports the architecture by grounding the built form into the Urangan Hall's landscape. Through defining key entry points and promenades, softening the interface between courtyard and building with inviting green space, the landscape will create and encourage student collaboration and activation.



DEFINED ENTRANCE

The open entrance aims to provide a welcoming experience, with view lines into the site to assist legibility. Taking cues from existing materiality, the entrance will provide opportunities for gathering and be visually connected to its surrounding context.



OUTDOOR LEARNING SPACES

A simple planting palette will be incorporated to ensure ease of maintenance, whilst providing a considered evolution of the existing courtyard space which better reflects the environment of surround school courtyards.

Section 3 – Landscape Concept

SCALE
1:200@A1

3.1 Landscape Plan

Key

- 1 Courtyard
- 2 Courtyard Terrace
- 3 Terrace planting areas
- 4 Building planting edges
- 5 Existing Feature Tree
- 6 Feature Tree Seating
- 7 Covered link
- 8 Shared zone/ parking area
- 9 Planting build out areas
- 10 Tree and buffer planting to back of Hall
- 11 Seating platforms
- 12 Stair link incorporated into terracing
- 13 Loading area
- 14 Retaining wall
- 15 Terrace seating
- 16 Terrace ramps
- ↔ Entry areas into buildings
- - - Property Boundary (to be confirmed)



4.1 Planting and Materials Palette

The planting palette aims to extend the character established in the local area of Hervey Bay.



Snake Vine
Hibbertia scandens



Yellow Buttons
Chrysocephalum apiculatum



Mat Rush
Lomandra confertifolia



Swamp Banksia
Banksia robur



Wallum Bottlebrush
Melaleuca pachyphylla

4.3 Materials Palette

Supporting the architectural materials, the landscape palette will focus on warm tones and textures to compliment the Building



Broom Finish Concrete Pavement
(painted patterning)



Asphalt (duratherm patterning)



Timber bench seat



Timber platform seat

Appendix 3 – Traffic Assessment



URANGAN STATE HIGH SCHOOL

DEPARTMENT OF EDUCATION- INFRASTRUCTURE SERVICES BRANCH

Traffic Impact Assessment

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DRAFT	26/11/21	DRAFT	EG	ND	MB
A	06/12/21	FINAL	EG	ND	MB
B	24/02/22	FINAL	EG	ND	MB

1. INTRODUCTION

Lambert & Rehbein has been commissioned by The Department of Education - Infrastructure Services Branch to undertake a Traffic Assessment for the proposed expansion of Urangan State High School (USHS). USHS is located at 120 Robert Street, Hervey Bay, QLD 4655, which is formally described as Lot 50 on SP104331 with a total site area of 13.38 ha.

According to February 2021 Census data, the enrolment count at Urangan SHS was 1,706 students for the year range 07-12. Urangan SHS currently has a Student Enrolment Capacity (SEC) of 1,760 and a Built capacity of 2,141. It is understood that after the completion of the proposed project USHS will increase to a Student Enrolment Capacity (SEC) of 1,782 and a Built capacity of 2,168. Queensland Government Statisticians Office has forecast the school enrolments to remain steady over the next 4 years.

The proposed development is anticipated to be completed across two (2) stages. As part of Stage 1, Infrastructure Planning and Delivery has proposed to deliver a new multi-purpose hall. Stage 2 consists of a future performing arts centre with an associated car parking facility. See **Appendix A** for Masterplan Layout illustrating the proposed site plans and parking provision. It is understood that the multi-purpose hall may also be used for third party hire.

The report has been compiled in a clear and concise manner and is set out as follows:

Section 2 discusses the existing land use and traffic arrangements in the vicinity of the proposed development site.

Section 3 discusses the existing network operations and provides a safety review in regards to car parking.

Section 4 provides details of the school's proposed additional facilities. Displays the calculations and assumptions used to establish the required parking provision for the increase in facilities. This section also discusses any infrastructure improvements that may be required as a result of the proposed development.

Section 5 displays the calculations and assumptions used to establish the forecast generation and distribution of the proposed development traffic. This section also assesses the potential impacts of the proposed development traffic on the surrounding road network.

Section 6 summarises the key outcomes of the traffic investigation.

Lambert & Rehbein has derived the data in this report primarily from the data provided by the Client, traffic survey volumes collected and an inspection conducted in November 2021.

This report has been prepared on behalf of the Client, and is subject to and issued in connection with the provisions of the agreement between Lambert & Rehbein and the Client. Lambert & Rehbein has undertaken this work on behalf of the client to inform the future stages of the development of the subject school proposal. While we recognise that this report may be made available to third parties, Lambert & Rehbein accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party. Any third party that intends to rely on the findings of this report should make its own enquiries with respect to the content of same.

2. CONTEXT OF THE DEVELOPMENT SITE

This section of the report describes the context of the development site and includes a description of the existing road network, adjacent land uses, existing public transport facilities servicing the site, and existing school parking provisions.

2.1 DEVELOPMENT SITE

USHS is located at 120 Robert Street, Hervey Bay, QLD 4655, which is formally described as Lot 50 on SP104331 with a total site area of 13.28 ha.

The site is currently zoned as 'Community facilities' as per Fraser Coast Regional Council's (FCRC) Planning Scheme. Immediately south of the site is Sandy Strait State School located along the sites southern border. The development site in context of the surrounding road network can be seen in **Figure 2-1**.



Figure 2-1 Development Site

2.2 ADJACENT ROAD NETWORK

A desktop inspection of the land use, road condition, intersection characteristics, public transport facilities, pedestrian access, and cyclist provisions surrounding the proposed development site was undertaken in preparation of this assessment. This was completed to collect information about the road network operation, safety characteristics, public transport network and specific network / land-use factors potentially of influence to the proposed development.

2.2.1 ROBERT STREET

Robert Street runs along the western frontage of USHS providing access into the site. Robert Street is classified as a 'Minor Road' under the jurisdiction of FCRC. The general form of Robert Street is shown in **Figure 2-2** and was found to have the following characteristics at the site frontage:

- Two-way, two-lane road;
- Kerb and channel provided on both sides of the road;
- Kerb to kerb width of approximately 19.0m (at widest section of road);
- No on-street cycle lanes provided;
- Pedestrian footpaths provided on both sides of the road;
- On-street parking available on both sides of road; and
- Posted speed limit of 60km/hr (40km/hr through school zone during 7am - 9am and 2pm – 4pm on school days).



Figure 2-2 Robert Street at Site Frontage (Facing North)

2.2.2 EMERALD PARK WAY

Emerald Park Way runs along the northern frontage of USHS providing access into the site. Emerald Park Way is classified as a 'Minor Road' under the jurisdiction of FCRC. The general form of Emerald Park Way is shown in **Figure 2-2** and was found to have the following characteristics at the site frontage:

- Two-way, two-lane road;
- Kerb and channel provided along the Southern side of the road;
- Kerb to kerb width of approximately 11.0m;
- No on-street cycle lanes provided;
- Pedestrian footpaths provided on both sides of the road;
- On-street parking available on both sides of road; and
- Posted speed limit of 50km/hr (40km/hr through school zone during 7am - 9am and 2pm – 4pm on school days).



Figure 2-3 Emerald Park Way at Site Frontage (Facing East)

2.3 EXISTING ACTIVE TRANSPORT

2.3.1 PEDESTRIAN PATHWAY NETWORK

USHS is well serviced by existing pedestrian pathways, with pathways provided along the site northern and western frontages, connecting the site to the wider pedestrian network, as illustrated in **Figure 2-4**. Informal pedestrian crossings can also be found at several locations surrounding the site.

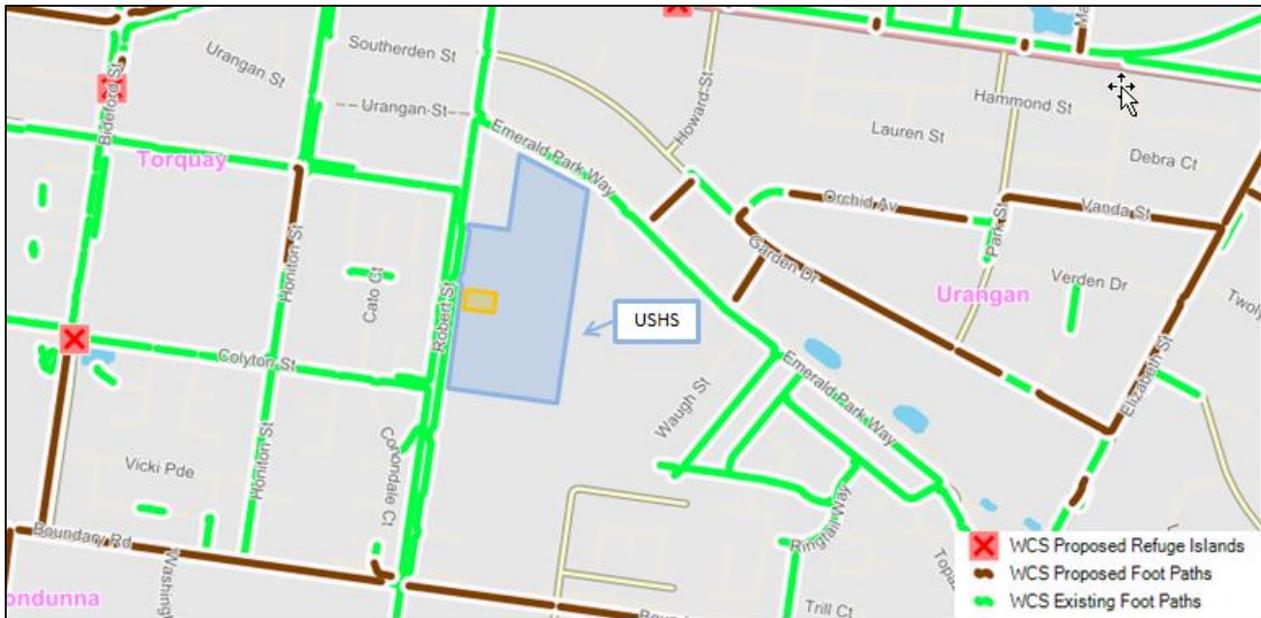


Figure 2-4 Surrounding Pedestrian Network

2.3.2 BICYCLE NETWORK

USHS is well serviced by existing cycle infrastructure with cycle routes provided along Robert Street and Emerald Park Way, connecting the site to the wider cycle network. **Figure 2-5** shows the surrounding cycle routes in accordance with FCRC. As highlighted via orange lines in **Figure 2-5**, Robert Street and Emerald Park Way are classified as 'District network' routes as per Councils Planning Scheme. This route connects with a 'Special Network' route along Boat Harbour Drive north of the site, as highlighted by green lines in **Figure 2-5**.



Figure 2-5 FCRC's Existing Bicycle Routes

USHS currently provides one (1) storage area for students to park their bicycles or scooters within the School's grounds. The location of this bicycle cage can be seen in **Figure 2-6**. This facility provides approximately 560 bicycle parking spaces, as seen in **Figure 2-7**. An on-site review found that facility was approximately 80% occupied.



Figure 2-6 Bicycle Parking Location



Figure 2-7 Bicycle Parking Racks

2.4 PUBLIC TRANSPORT

The development site is connected to the existing public transport network, with one (1) Translink bus stop located within a typical 400m walking catchment of the site, as seen in **Figure 2-8**. It should be noted that a review of the Translink Website found that there are no regular Translink services that operate from these bus stops.

From discussions with school representatives, it is understood that the school is also serviced by eight (8) private school bus services. These buses set-down and pick-up along the schools Robert Street frontage and service the surrounding areas.

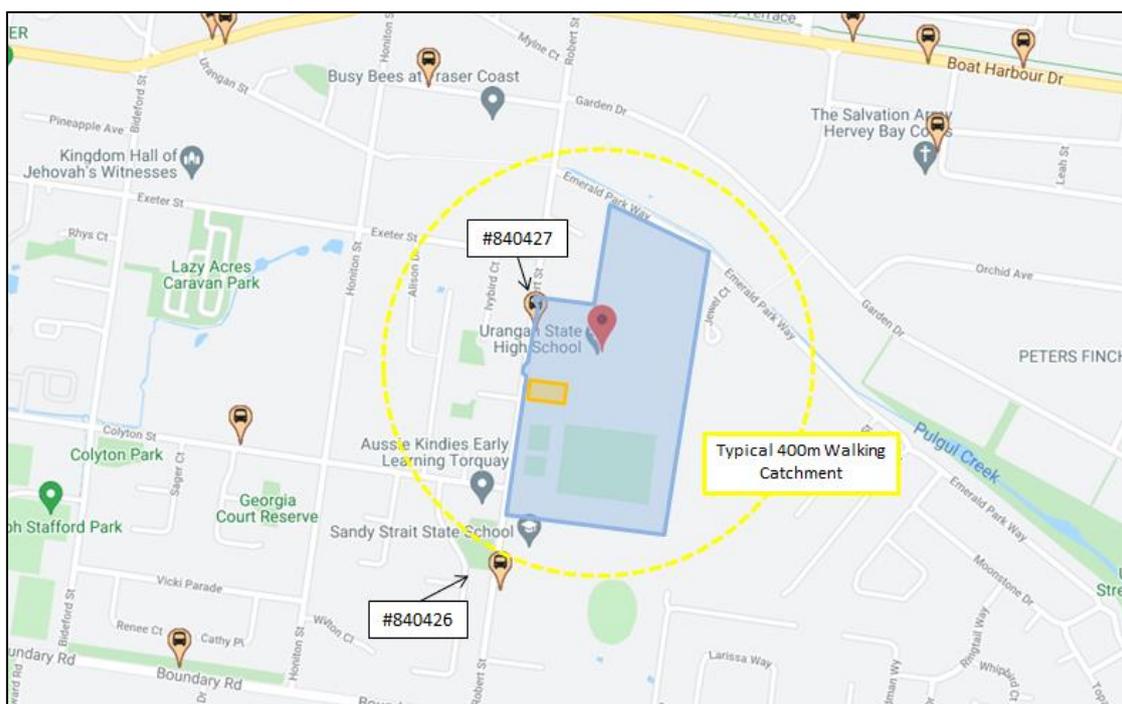


Figure 2-8 Surrounding Public Transport Facilities

2.5 EXISTING CAR PARKING REQUIREMENTS

Table 2-1 outlines the existing parking requirements based on the below guidelines, which has been based off the current SEC and staff numbers. The relevant guidelines that have been assessed are as follows:

- *Fraser Coast Regional Council (FCRC) Transport and Parking Code;*
- *The Department of Transport and Main Roads (TMR) Planning for Safe Transport Infrastructure at Schools; and*
- *Department of Education (DoE) Design Standard.*

Table 2-1 Current Car Parking Requirements for USHS (Based off SEC)

GOVERNING BODY	USE	RATE	EXISTING ENROLMENT	NUMBER OF CAR PARKS	CLASS OF CAR PARK
FCRC	Long term parking (staff/visitor)	1 space/ employee (FTE)	192*	192	
	Long term parking	1 space/ 10 students + provision of space for setting down and picking up of students	1760	176	
	Total Car Parks Required			368	
TMR	Long term parking (staff/visitor)	0.7 per staff member	192*	135	Class 1/1A for staff and Class 2 for visitor only parking areas
	Short-term (15 minutes)	1 per 15 students	1760	118	Class 3/3A
	Pick Up / Drop Off (2 Minutes)	20% of Short Term Supply	118	24 of 118	
	Total Car Parks Required			253	
DoE	Public Parking & Drop-Off/Set-Down Area	13% of total student numbers plus 10% of year 12 students* and 2% of all car park spaces to be PWD	1760 (212 year 12)	250 (incl. 5 PWD)	
	Visitor Parking	15 spaces (including 1 PWD)		15 (incl. 1 PWD)	
	Total Car Parks Required			265 (incl. 6 PWD)	

*Staff numbers have been sourced from the Australian Curriculum, Assessment and Reporting Authority Myschool website

Table 2-1 show the requirements, citing the various available government references as noted. If FCRC's *Transport and Parking Code* requirements were adopted then the school would require 368 parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of 253 parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be 265 parking spaces, including six (6) PWD.

2.6 EXISTING CAR PARKING ARRANGEMENTS

As seen in **Figure 2-9**, USHS currently has the following car parking arrangements:

- Five (5) formal visitor and staff parking areas within the schools grounds, highlighted via orange #1 to #5 in **Figure 2-9**;
- Three (3) informal visitor and staff parking areas within the schools grounds, highlighted via blue #6 to #8 in **Figure 2-9**;
- One (1) formal on-street bus set-down / drop-off facility on the western boundary of the school, highlighted via purple #9 in **Figure 2-9**;
- Formal on-street parking provided on the northern and western boundaries of the school along Emerald Park Way and Robert Street, highlighted via red #10 and #11 in **Figure 2-9**; and
- One (1) student set-down / drop-off facility on the northern boundary of the school along Emerald Park Way, highlighted via green #12 in **Figure 2-9**.

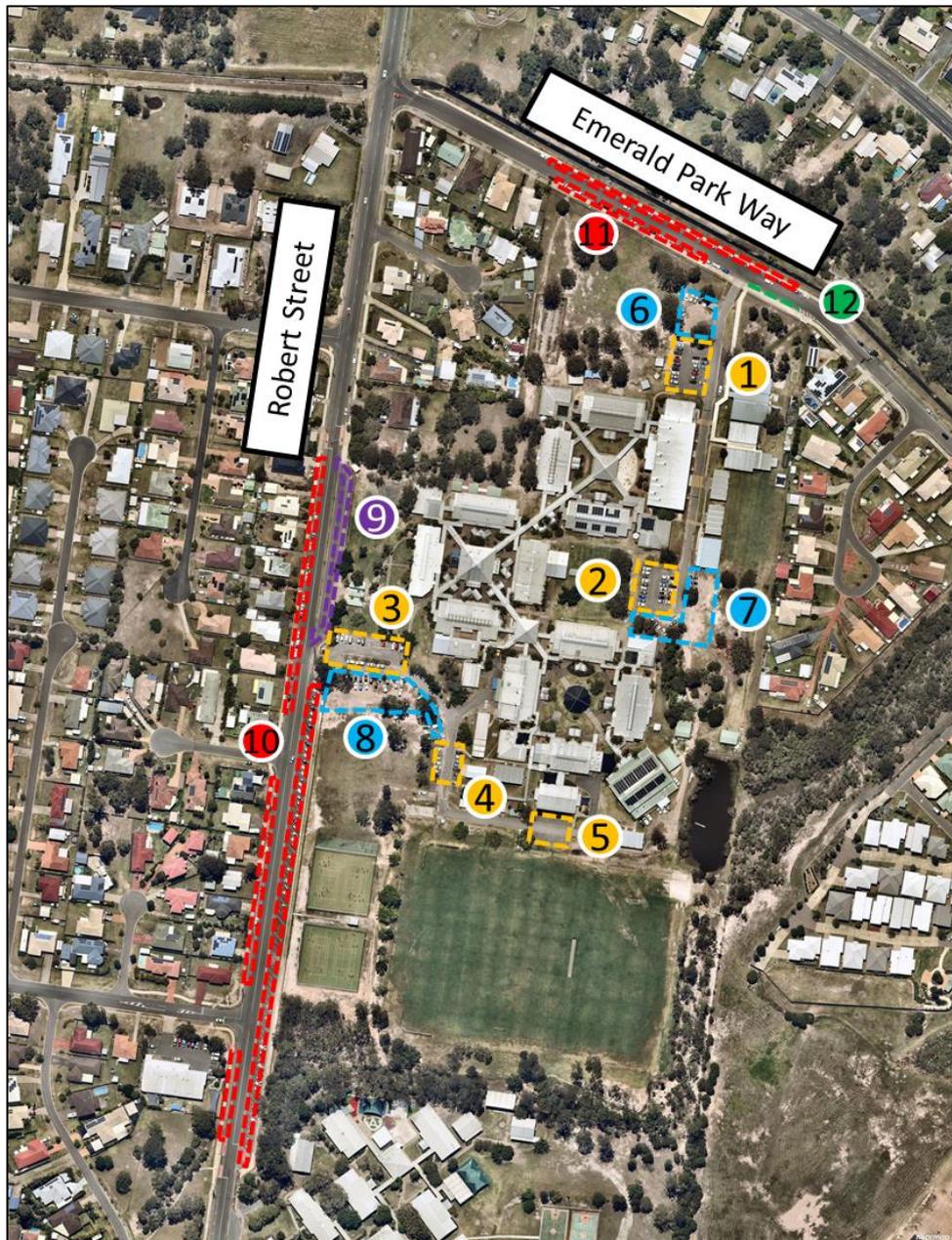


Figure 2-9 USHS Parking Facilities

Table 2-2 summarises the existing parking supply at USHS.

Table 2-2: Existing Car Parking Supply at USHS

DESCRIPTION	SUPPLY
Formal Staff Carpark #1	24 spaces (incl. 3 PWD)
Formal Staff Carpark #2	26 spaces
Formal Staff Carpark #3	20 spaces (incl. 2 PWD)
Formal Staff Carpark #4	20 spaces
Formal Staff Carpark #5	19 spaces
Informal Staff Carpark #1	Estimated 15 spaces
Informal Staff Carpark #2	Estimated 15 spaces
Informal Staff Carpark #3	Estimated 25 spaces
Existing Bus Set-Down Bay Approx. 120m (including taper)	Approx. 5 Bus Spaces
On-Street Parking Robert Street	37 formal parallel bays + 75 angled parks (incl. 3 PWD)
Emerald Park Way On-Street Parking	48 formal parallel bays
Emerald Park Way set-down / drop-off	6 spaces (Approx. 36m)
Total Car Parking Provided	269 formal spaces (incl. 8 PWD) (324 spaces including overflow) 5 Bus Spaces 6 set-down / drop-off spaces

As seen in **Table 2-2**, the existing parking supply at USHS is 269 formal car parking spaces including eight (8) PWD bays. Based on the current SEC, this equates to a shortfall of 99 spaces from FCRC's Transport and Parking Code requirements, a surplus of 11 spaces from DTMR *Planning for Safe Infrastructure at Schools* guidelines and a surplus of 16 parking spaces from DoE Guidelines. Aerial photography illustrates an overflow of parking on the grass areas surrounding the formal parking areas, increasing the schools parking supply to an estimated 324 car parking spaces

3. EXISTING NETWORK OPERATIONS & RECOMMENDATIONS

The following section provides a high level review in regards to existing car parking operations (including pickup of students and staff movements) during a typical school afternoon peak (as observed). These observations have been included due to activities witnessed during site investigations. Each issue is listed and, where possible, potential solutions have been noted. The issues and possible solutions will need further assessment and refinement and will also discussions with School, Council and State governing representatives.

3.1 ROBERT STREET AND EMERALD PARK WAY PICKUP AREAS

During the afternoon peak, parents were observed to utilise the available parking provided along Robert Street and Emerald Park Way. Parents were observed to arrive up to 25 minutes prior to school finishing, generally occupying all the available spaces along the school frontages. Although these areas were generally observed to operate efficiently, some key safety concerns were noted.

As seen in **Figure 3-1**, parents were observed to store in the area behind the angled parking bays provided along Robert Street. As a result, students were observed to walk between parked cars and onto the road in order to access these stored vehicles. This is an unsafe practice as it leads to conflicts between reversing vehicles, students and double park vehicles.



Figure 3-1 Parent Stored Behind Parked Vehicles Waiting for Child to Arrive

Recommendations

We recommend staff supervision of this pick up area and implementation of a School Traffic Management Plan (STMP) to ensure this area is managed effectively.

3.2 ROBERT STREET PEDESTRIAN CROSSING

Students were observed to cross Robert Street at the signalised pedestrian crossing outside the pedestrian green time period. Discussion with school representatives revealed there to be a number of reported near misses at this location.

Recommendations

We recommend staff supervision of this area to manage the flow of students across the road, ensuring they cross only during the pedestrian green time period.

3.3 EMERALD PARK WAY PEDESTRIAN CONNECTIVITY

Emerald Park Way currently provides a formal set-down / drop-off facility along with on-street parking, however does not provide a formal crossing facility. Many parents were observed to utilise Emerald Park Way as a pickup area, as such, students are required to cross the road informally in order to access their respective vehicles. **Figure 3-2** below shows a photo of a student crossing informally in order to access a parked vehicle. Often it was observed that a student would run across the road in order to avoid oncoming traffic. Given the high volume of students crossing Emerald Park Way, combined with a high volume of school traffic, we identify this location as a key safety risk.



Figure 3-2 Student Running Across the Road to Access a Parked Vehicle

Recommendations

Encourage staff to park on the northern side of Emerald Park Way to leave on-street parking along the school's frontage available for the use of student pick-up and drop-off.

Complete a more detailed assessment to identify whether a formalised pedestrian crossing facility is required to assist students to cross the road in a safe and timely matter. Alternatively, a supervising staff member could be present during the peak pick-up period to ensure students cross at appropriate times and locations.

4. PROPOSED DEVELOPMENT

This section of the report describes the nature of the proposed development, and the associated car parking requirements.

4.1 PROPOSED DEVELOPMENT

The proposed development is anticipated to be completed across two (2) stages. As part of Stage 1, Infrastructure Planning and Delivery has proposed to deliver a new multi-purpose hall. Stage 2 consists of a future performing arts centre with an associated car parking facility. See **Appendix A** for Masterplan Layout illustrating the proposed site plans and parking provision. It is understood that the multi-purpose hall may also be used for third party hire.

Figure 4-1 below shows the proposed plans for Stages 1 & 2 of the development.

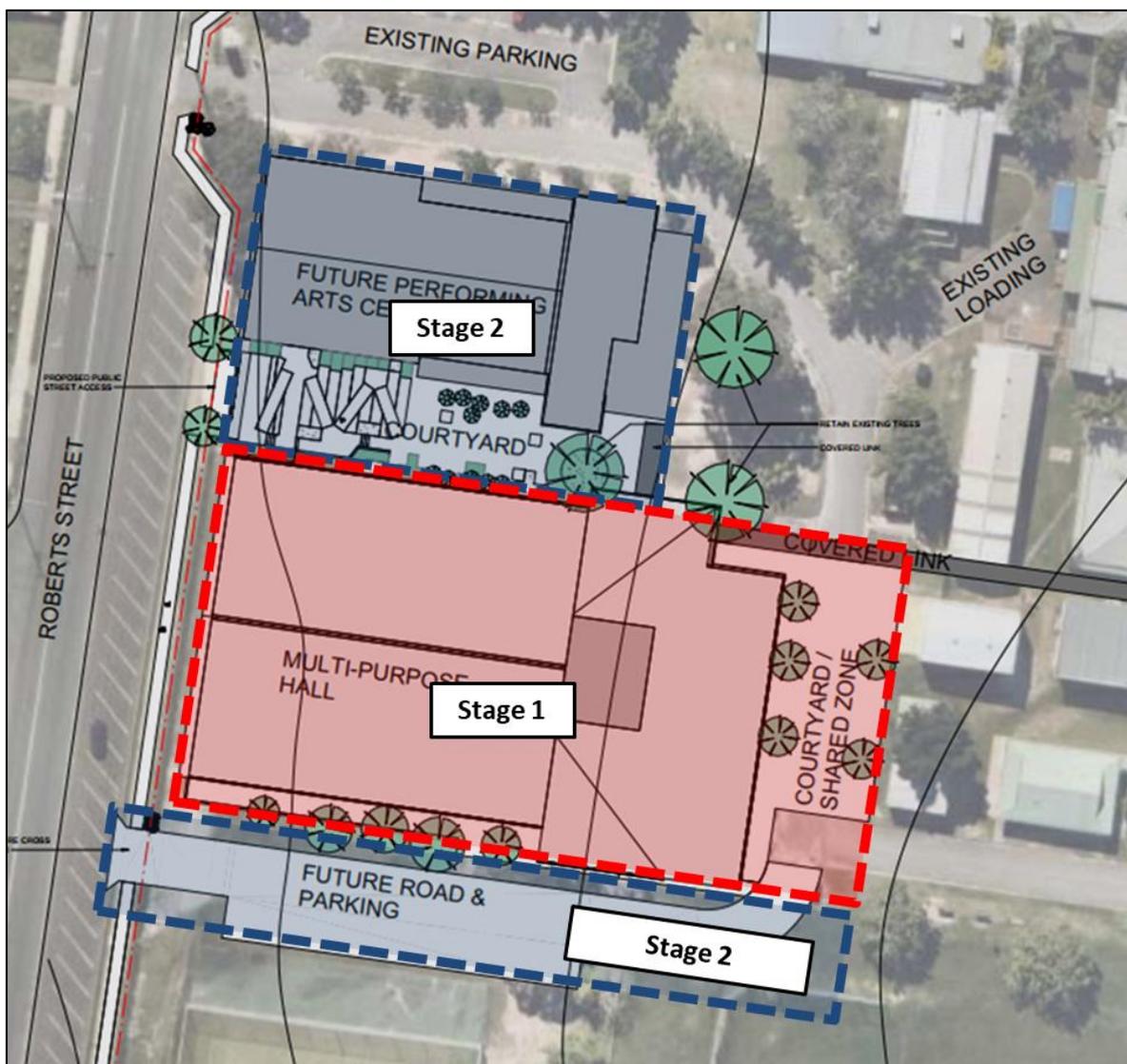


Figure 4-1 Proposed Multi-Purpose Hall Layout

Table 4-1 below outlines the increase in Student Enrolment Capacity (SEC), Built Capacity (BC) and staff population as a result of the proposed development.

Table 4-1 Increase in Capacities

PROJECT SCOPE	STUDENT ENROLMENT CAPACITY (SEC)	BUILT CAPACITY	STAFF POPULATION (FTE)
Current capacity	1760	2141	192
Stage 1 +1 Multipurpose Hall	1782 (+22)	2168 (+27)	193 (+ 1)*
Stage 2 Future Performing Arts Centre +4 GLA's	1870 (+110)	2,276 (+135)	198 (+ 6)*
Total	(+132)	(+162)	(+7)

**Increased staff numbers have been assumed at a rate of 1 per 20 additional students (SEC)*

4.2 CAR PARKING REQUIREMENTS – STAGE 1

Table 4-2 outlines the future parking requirements for Stage 1 of the development based on the below guidelines, which has been based off the proposed increase in student enrolment capacity (SEC), and staff numbers. The relevant guidelines that have been assessed are as follows:

- FCRC's *Transport and Parking Code*;
- *The Department of Transport and Main Roads (TMR) Planning for Safe Transport Infrastructure at Schools*; and
- *Department of Education (DoE) Design Standard*.

Table 4-2 Future Car Parking Requirements for USHS (Based off SEC) – Stage 1

GOVERNING BODY	USE	RATE	EXISTING ENROLMENT	NUMBER OF CAR PARKS	CLASS OF CAR PARK
FCRC	Long term parking (staff/visitor)	1 space/ employee (FTE)	1	1	
	Long term parking	1 space/ 10 students + provision of space for setting down and picking up of students	22	3	
	Total Car Parks Required			4	
TMR	Long term parking (staff/visitor)	0.7 per staff member	1	1	Class 1/1A for staff and Class 2 for visitor only parking areas
	Short-term (15 minutes)	1 per 15 students	22	2	Class 3/3A
	Total Car Parks Required			3	
DoE	Public Parking & Drop-Off/Set-Down Area	13% of total student numbers plus 10% of year 12 students* and 2% of all car park spaces to be PWD	22 (4* Year 12's)	3	
	Total Car Parks Required			3	

* Assume ratio of additional year 12's is 1/6th of the increased enrolment (even split across grades 7 to 12)

Table 4-2 shows the future Stage 1 parking requirements, citing the various available government references as noted. If FCRC's *Transport and Parking Code* requirements were adopted then the school would require four (4) additional car parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of three (3) additional car parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be three (3) additional car parking spaces.

4.3 CAR PARKING REQUIREMENTS – STAGE 2

Table 4-3 outlines the future parking requirements for Stage 2 of the development based on the below guidelines, which has been based off the proposed increase in student enrolment capacity (SEC), and staff numbers. The relevant guidelines that have been assessed are as follows:

- FCRC's *Transport and Parking Code*;
- *The Department of Transport and Main Roads (TMR) Planning for Safe Transport Infrastructure at Schools*; and
- *Department of Education (DoE) Design Standard*.

Table 4-3 Future Car Parking Requirements for USHS (Based off SEC) – Stage 2

GOVERNING BODY	USE	RATE	EXISTING ENROLMENT	NUMBER OF CAR PARKS	CLASS OF CAR PARK
FCRC	Long term parking (staff/visitor)	1 space/ employee (FTE)	6	6	
	Long term parking	1 space/ 10 students + provision of space for setting down and picking up of students	110	11	
	Total Car Parks Required			17	
TMR	Long term parking (staff/visitor)	0.7 per staff member	6	5	Class 1/1A for staff and Class 2 for visitor only parking areas
	Short-term (15 minutes)	1 per 15 students	110	8	Class 3/3A
	Total Car Parks Required			13	
DoE	Public Parking & Drop-Off/Set-Down Area	13% of total student numbers plus 10% of year 12 students* and 2% of all car park spaces to be PWD	110 (19* Year 12's)	17	
	Total Car Parks Required			17	

* Assume ratio of additional year 12's is 1/6th of the increased enrolment (even split across grades 7 to 12)

Table 4-3 shows the future Stage 2 parking requirements, citing the various available government references as noted. If FCRC's *Transport and Parking Code* requirements were adopted then the school would require 17 additional car parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of 13 additional car parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be 17 additional car parking spaces.

4.4 PROPOSED CAR PARKING ARRANGEMENT

Figure 4-2 below shows the proposed parking arrangement for Stage 1 and Stage 2 of the development.

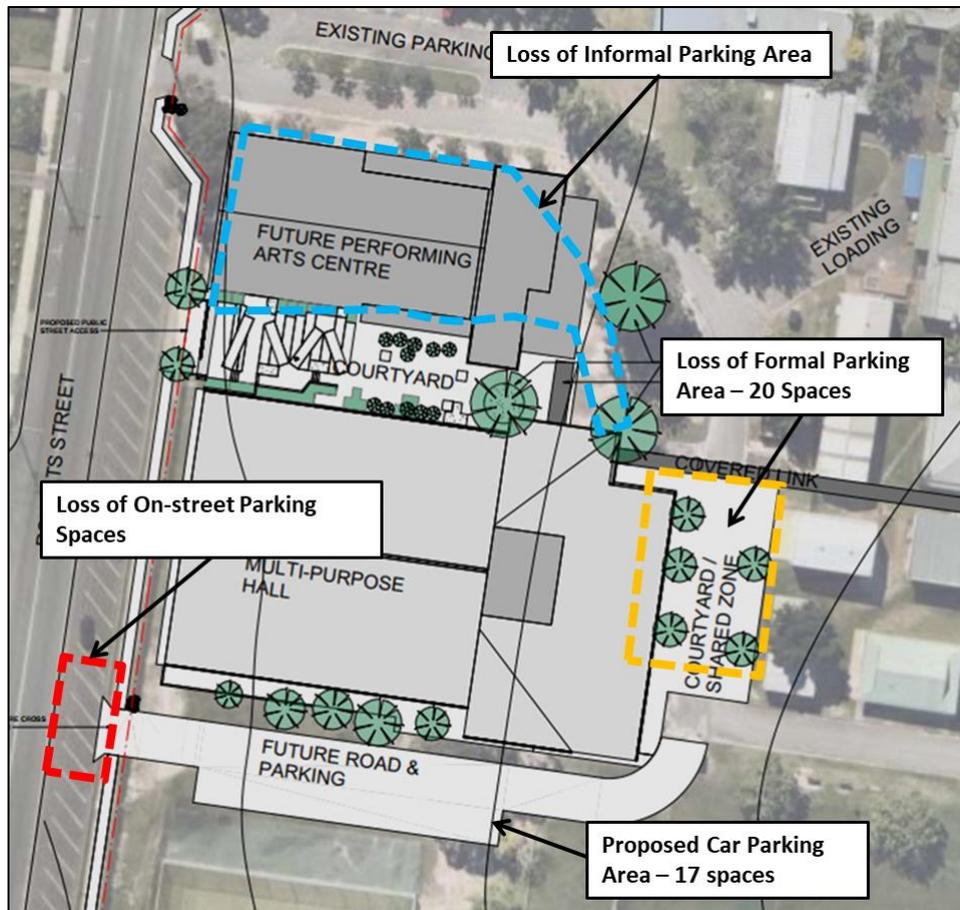


Figure 4-2 Proposed Parking Arrangement

4.4.1 STAGE 1

As seen in **Figure 4-2**, the proposed Stage 1 development will result in the removal of the existing formal staff car parking area #4 (20 spaces), and removal of four (4) on-street parking spaces, resulting in a net loss of 24 parking spaces. Despite the decrease in parking spaces and the marginal increase in parking required (due to the proposed increase in SEC) we believe that the proposed development will not have a significant impact on the schools current parking supply or network operation. This is due to the existing surplus of on-site parking spaces from DTMR and DoE parking requirements and the availability of informal parking on site, as documented in our assessment in **Section 2.5**.

4.4.2 STAGE 2

As seen in **Figure 4-2**, the proposed Stage 2 development will result in the removal of the existing informal staff parking area #8. As previously stated in **Section 4.3**, for Stage 2 of the development, if FCRC's *Transport and Parking Code* requirements were adopted then the school would require 17 additional car parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of 13 additional car parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be 17 additional car parking spaces. In order to meet the future Stage 2 parking requirements, a new carpark facility has also been proposed (as shown in **Figure 4-2**) which is anticipated to provide 17 additional spaces, satisfying FCRC, DTMR and DOE guidelines.

It is recommended that a School TMP be developed in conjunction with the Council and the School to improve operational efficiency of the School's parking and transport facilities and cater for the loss of parking until Stage 2's future carpark is completed.

4.4.3 PWD PARKING

We note that the school currently provides eight (8) formal PWD spaces across the site. The existing formal Staff Carpark #3 located directly north of the proposed multi-purpose hall and performing arts centre currently provides two (2) PWD spaces. It is understood that visitors to the new facility requiring PWD parking would utilise these available PWD parking spaces provided within the formal Staff Carpark #3. Notwithstanding this, we note that if Council / DoE are not satisfied with the proposed PWD parking supply or location, additional PWD parking can be provided within the proposed new car parking facility.

5. IMPACT ASSESSMENT

This section of the report provides details of the potential impact that the development generated traffic volumes could have on the operation of the surrounding road network.

5.1 TRIP GENERATION

Additional traffic associated with the proposed development has been forecasted using DTMR's Road Planning and Design Manual traffic generation data for various land uses. A state secondary school traffic generation rate of 0.12 trips / student in the AM and PM peak hours has been adopted for this analysis. Additionally, a generation rate of 1 trip/staff member has been adopted in both peak hours to provide a conservative estimate.

The traffic generation rates and in/out directionality of movements adopted for the analysis within this report is documented in **Table 5-1**.

Table 5-1 Generation & Directionality Rates

LAND USE	GENERATION RATE		DIRECTIONALITY (% IN / % OUT)	
	AM Peak	PM Peak	AM Peak	PM Peak
Student	0.12 trips/student	0.12 trips/student	50% In / 50% Out	50% In / 50% Out
Staff	1 trip/staff	1 trip/staff	90% In / 10% Out	10% In / 90% Out

5.1.1 STAGE 1

As such, based on the above guidelines and assumptions, the estimated traffic generated by the proposed Stage 1 development is documented in **Table 5-2**.

Table 5-2 Development Traffic Generation 2021 – Stage 1

LAND USE	ADDITIONAL NO.	AM PEAK (IN)	AM PEAK (OUT)	PM PEAK (IN)	PM PEAK (OUT)
Student	22	2	2	2	2
Staff	1	1	0	0	1
Total Trips per Peak		3	2	2	3
		5		5	

As summarised in **Table 5-2**, Stage 1 of the development will generate an additional five (5) trips (combined in and out) during both the AM and PM peak hour. This equates to one (1) additional trip every 12 minutes. This traffic will also be dispersed between both Robert Street and Emerald Park Way. As such, it is reasonable to assume that the development generated traffic will have negligible impact on the surrounding road network.

It is noted that the multi-purpose hall may also be used for third party hire, however this will occur outside of school hours, as such we anticipate that this will not have adverse impacts on school traffic during set-down and pick-up periods. Therefore, the proposed development is not expected to have a significant impact on the external road network.

5.1.2 STAGE 2

As such, based on the above guidelines and assumptions, the estimated traffic generated by the proposed Stage 2 development is documented in **Table 5-2**.

Table 5-3 Development Traffic Generation 2021 – Stage 2

LAND USE	ADDITIONAL NO.	AM PEAK (IN)	AM PEAK (OUT)	PM PEAK (IN)	PM PEAK (OUT)
Student	110	7	7	7	7
Staff	6	6	0	0	6
Total Trips per Peak		13	7	7	13
		20		20	

As summarised in **Table 5-2**, Stage 2 of the development will generate an additional 20 trips (combined in and out) during both the AM and PM peak hour. This equates to one (1) additional trip every three (3) minutes. This traffic will also be dispersed between both Robert Street and Emerald Park Way. As such, it is reasonable to assume that the development generated traffic will have negligible impact on the surrounding road network.

6. SUMMARY

Lambert & Rehbein has been commissioned by The Department of Education - Infrastructure Services Branch to undertake a Traffic Assessment for the proposed expansion of Urangan State High School (USHS). USHS is located at 120 Robert Street, Hervey Bay, QLD 4655, which is formally described as Lot 50 on SP104331 with a total site area of 13.38 ha.

According to February 2021 Census data, the enrolment count at Urangan SHS was 1,706 students for the year range 07-12. Urangan SHS currently has a Student Enrolment Capacity (SEC) of 1,760 and a Built capacity of 2,141. It is understood that after the completion of the proposed project USHS will increase to a Student Enrolment Capacity (SEC) of 1,782 and a Built capacity of 2,168. Queensland Government Statisticians Office has forecast the school enrolments to remain steady over the next 4 years.

The proposed development is anticipated to be completed across two (2) stages. As part of Stage 1, Infrastructure Planning and Delivery has proposed to deliver a new multi-purpose hall. Stage 2 consists of a future performing arts centre with an associated car parking facility. See **Appendix A** for Masterplan Layout illustrating the proposed site plans and parking provision. It is understood that the multi-purpose hall may also be used for third party hire.

The details in **Table 2-1** show the schools parking requirements, citing the various available government references as noted. If FCRC's *Transport and Parking Code* requirements were adopted then the school would require 368 parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of 253 parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be 265 parking spaces, including six (6) PWD.

As seen in **Table 2-2**, the existing parking supply at USHS is 269 formal car parking spaces including eight (8) PWD bays. Based on the current SEC, this equates to a shortfall of 99 spaces from FCRC's *Transport and Parking Code* requirements, a surplus of 11 spaces from DTMR *Planning for Safe Infrastructure at Schools* guidelines and a surplus of 16 parking spaces from DoE Guidelines. Aerial photography illustrates an overflow of parking on the grass areas surrounding the formal parking areas, increasing the schools parking supply to an estimated 324 car parking spaces

An on-site review of the existing network operations revealed there to be three (3) key safety concerns regarding the schools current parking / travel arrangement.

Robert Street On-Street Parking

Parents were observed to store in the area behind the angled parking bays provided along Robert Street. As a result, students were observed to walk between parked cars and onto the road in order to access these stored vehicles. This is an unsafe practice as it leads to conflicts between reversing vehicles, students and double park vehicles.

We recommend staff supervision of this pick up area and implementation of a School Traffic Management Plan (STMP) to ensure this area is managed effectively.

Robert Street Signalised Pedestrian Crossing

Another key safety concern observed was the operation of the Robert Street signalised crossing. Students were observed to cross Robert Street at the signalised pedestrian crossing outside the pedestrian green time period. Discussion with school representatives revealed there to be a number of reported near misses at this location.

We recommend staff supervision of this area to manage the flow of students across the road, ensuring they cross only during the pedestrian green time period.

Emerald Park Way Pickup Area

Many parents were observed to utilise Emerald Park Way as a pickup area, as such, students are required to cross the road informally in order to access their respective vehicles. Given the high volume of students crossing Emerald Park Way, combined with a high volume of school traffic, we identify this location as a key safety risk.

Encourage staff to park on the northern side of Emerald Park Way to leave on-street parking along the school's frontage available for the use of student pick-up and drop-off.

Complete a more detailed assessment to identify whether a formalised pedestrian crossing facility is required to assist students to cross the road in a safe and timely matter. Alternatively, a supervising staff member could be present during the peak pick-up period to ensure students cross at appropriate times and locations.

Table 4-2 shows the future Stage 1 parking requirements, citing the various available government references as noted. If FCRC's *Transport and Parking Code* requirements were adopted then the school would require four (4) additional car parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of three (3) additional car parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be three (3) additional car parking spaces.

Table 4-3 shows the future Stage 2 parking requirements, citing the various available government references as noted. If FCRC's *Transport and Parking Code* requirements were adopted then the school would require 17 additional car parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of 13 additional car parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be 17 additional car parking spaces.

The proposed Stage 1 development will result in the removal of the existing formal staff car parking area #4 (20 spaces), and removal of four (4) on-street parking spaces, resulting in a net loss of 24 parking spaces. Despite the decrease in parking spaces and the marginal increase in parking required (due to the proposed increase in SEC) we believe that the proposed development will not have a significant impact on the schools current parking supply or network operation. This is due to the existing surplus of on-site parking spaces from DTMR and DoE parking requirements and the availability of informal parking on site, as documented in our assessment in **Section 2.5**. It is recommended that a School TMP be developed in conjunction with the Council and the School to improve operational efficiency of the School's parking and transport facilities and cater for the loss of parking until stage 2's future carpark is completed.

The proposed Stage 2 development will result in the removal of the existing informal staff parking area #8. As previously stated in **Section 4.3**, for Stage 2 of the development, if FCRC's *Transport and Parking Code* requirements were adopted then the school would require 17 additional car parking spaces. If the DTMR *Planning for Safe Infrastructure at Schools* guidelines were adopted, the school would require a total of 13 additional car parking spaces and if the requirements of the DoE Guidelines were adopted the parking requirement for the school would be 17 additional car parking spaces. In order to meet the future Stage 2 parking requirements, a new carpark facility has also been proposed which is anticipated to provide 17 additional spaces, satisfying FCRC, DTMR and DoE guidelines.

It is understood that visitors to the new facility requiring PWD parking would utilise the available PWD parking spaces provided within the formal Staff Carpark #3. Notwithstanding this, we note that if Council / DoE are not satisfied with the proposed PWD parking supply or location, additional PWD parking can be provided within the proposed new car parking facility.

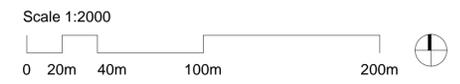
Stage 1 of the development will generate an additional five (5) trips (combined in and out) during both the AM and PM peak hour. This equates to one (1) additional trip every 12 minutes. This traffic will also be dispersed between both Robert Street and Emerald Park Way. As such, it is reasonable to assume that the development generated traffic will have negligible impact on the surrounding road network.

Stage 2 of the development will generate an additional 20 trips (combined in and out) during both the AM and PM peak hour. This equates to one (1) additional trip every three (3) minutes. This traffic will also be dispersed between both Robert Street and Emerald Park Way. As such, it is reasonable to assume that the development generated traffic will have negligible impact on the surrounding road network.

It is noted that the multi-purpose hall may also be used for third party hire, however this will occur outside of school hours, as such we anticipate that this will not have adverse impacts on school traffic during set-down and pick-up periods. Therefore, the proposed development is not expected to have a significant impact on the external road network.

We do not believe that any traffic and transport engineering matters have been identified that should preclude approval of the proposed development.

APPENDIX A – SITE LAYOUT



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Rev	Description	By	Date
1	FOR INFORMATION		18/10/21
2	SDPP ISSUE		04/11/21
3	REVISED SDPP ISSUE		19/11/21
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Client QLD Department of Education
Project No. 421094
Document Control Status:

Project Urangan State High School
 Mult-purpose Hall
 Robert Street, Hervey Bay
Co-ordinated: CM
Project Architect: SH
Project Director: RC
Drawing Number: A-11-00

Drawn: MS
Scale: 1:2000 @ A1
Date: 26/04/17
Revision:

CONTEXT PLAN





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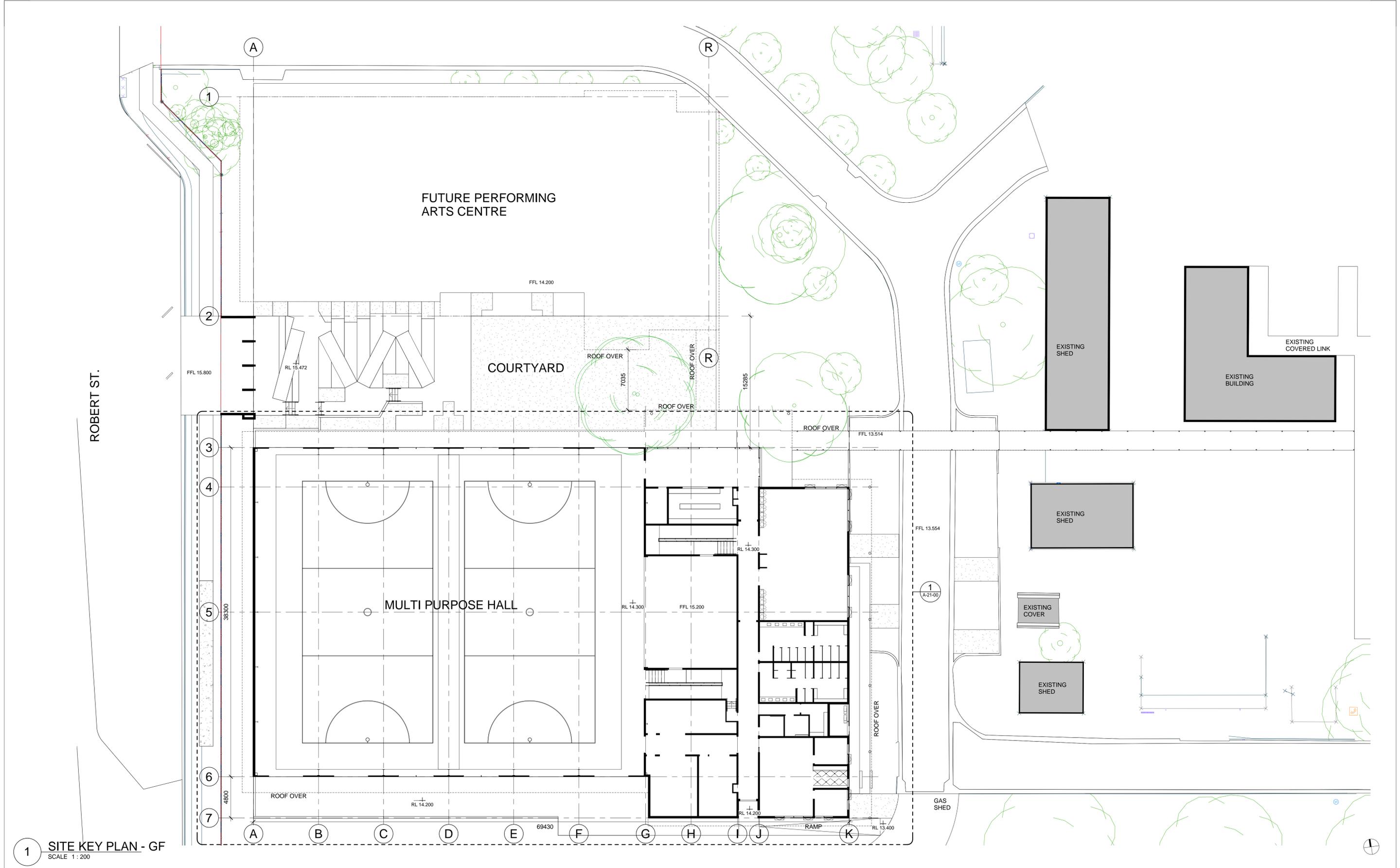
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Client **QLD Department of Education**
 Project No. **421094**
 Document Control Status:

Project **Urangan State High School
 Multi-purpose Hall
 Robert Street, Hervey Bay**
 Drawing Title **MASTER PLAN**

Co-ordinated: **CM**
 Project Architect: **SH**
 Project Director: **RC**
 Drawing Number: **A-11-01**
 Drawn: **MS**
 Scale: **1:300 @ A1**
 Date: **10/01/21**
 Revision:

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1 SITE KEY PLAN - GF
SCALE 1:200



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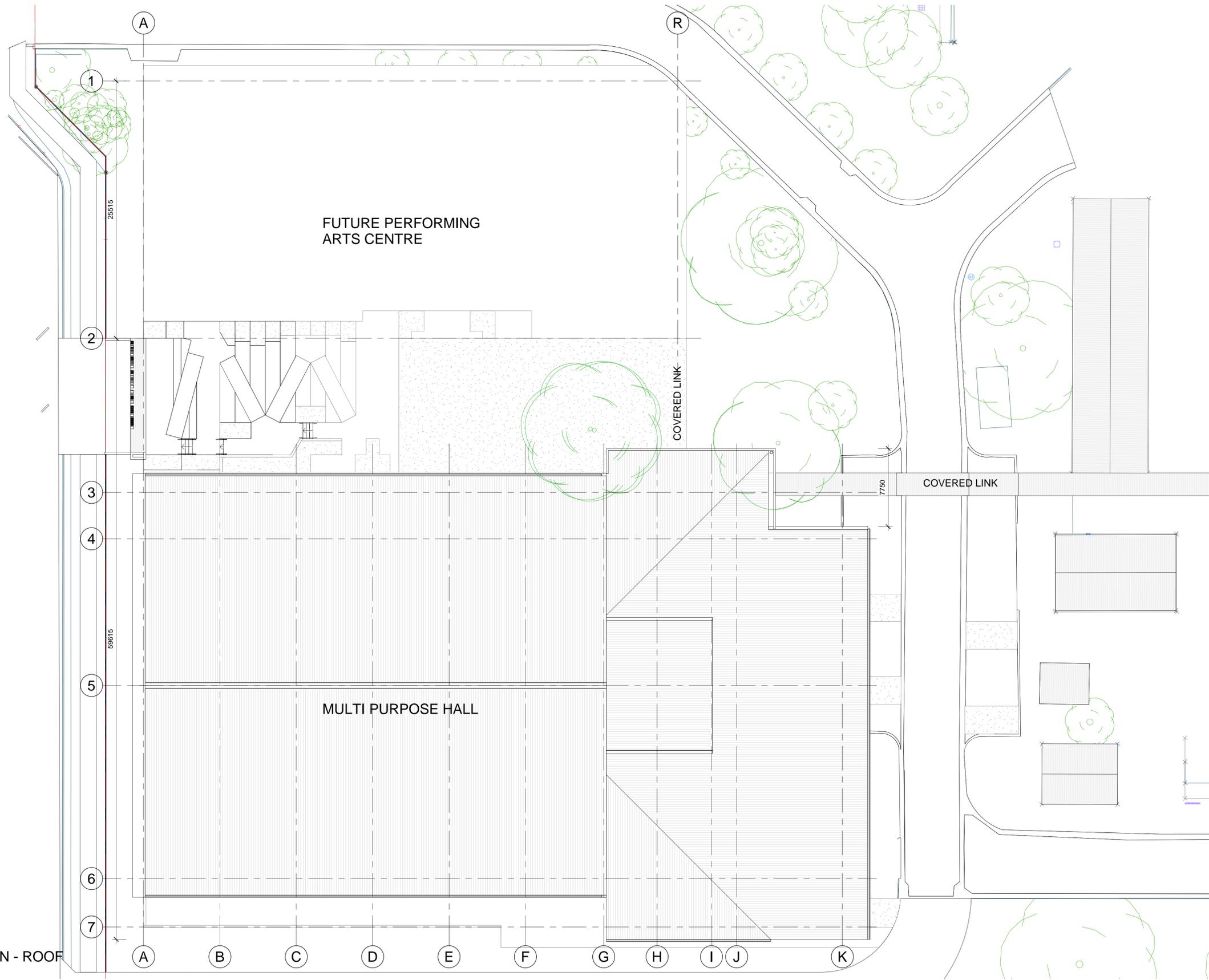
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Client **QLD Department of Education**
Project No. **421094**
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Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **SITE KEY PLAN - GF**

Co-ordinated: SH
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Project No. **421094**
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Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **SITE KEY PLAN - ROOF**

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Project Director: _____ RC
Drawing Number: _____
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Appendix 4 – Stormwater Management Plan



CIVIL ENGINEERING REPORT: SITE BASED STORMWATER
MANAGEMENT PLAN

Urangan State High School - Multi-Purpose Hall

120 Robert Street Hervey Bay QLD

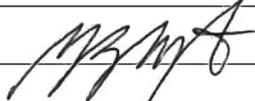
PREPARED FOR
Queensland Department of Education

Ref: BN212349
Rev: B
Date: 07.03.2022

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Document Control

Parameter	Description
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Site Address:	120 Robert Street Hervey Bay QLD
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Current Revision:	B
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-	-	-	-	-	-

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Glossary

Term	Definition
ADP	Area Development Plan
AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval
ESR	Engineering Services Report
EY	Exceedances per year
IECA	International Erosion Control Association
kL	Kilolitres
MCU	Material Change of Use
ML	Megalitres
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
MHP	Multi-Purpose Hall
QUDM	Queensland Urban Drainage Manual
ROL	Reconfiguring of a Lot
SARA	State Assessment and Referral Agency
SBSMP	Site Based Stormwater Management Plan
SDAP	State Development Assessment Provisions
SPP	State Planning Policy
SQID	Stormwater Quality Improvement Device
WQO	Water Quality Object
WSUD	Water Sensitive Urban Design

Executive Summary

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Queensland Department of Education to prepare a Site Based Stormwater Management Plan (SBSMP) for an Infrastructure Assessment Report by QBuild for Community Infrastructure Designation and any nominated referral agency submission to Fraser Coast Regional Council. The development will also be assessed by State Development Assessment Provisions (SDAP) and State Assessment and Referral Agency (SARA). The proposed Educational Development is located at 120 Robert Street Hervey Bay QLD and will deliver a Multi-Purpose Hall, Performing Arts Centre, new Access and Parking area. The development will expand on the existing school infrastructure located on site.

This SBSMP addresses the stormwater management strategy for the proposed development and demonstrates that the proposed development can be constructed and operated in accordance with all stormwater objectives required for the development. The primary outcomes of this SBSMP are as follows:

Lawful Point of Discharge

The subject site consists of a single internal catchment that is governed by the lot boundaries. The current Legal Point of Discharge (LPOD) for the greater catchment is a water body on the eastern boundary of the school, which outlets into a major drainage easement, before discharging into Pulgal Creek.

The existing lawful point of discharge will be maintained with most of the site flows being captured for stormwater quantity treatment prior to discharge from the site.

Stormwater Quantity

The stormwater quantity objective was to demonstrate non-worsening in peak discharges from the subject site for all storm events up to and including the 100-year. The purpose is to ensure that the existing infrastructure and/or downstream properties are not adversely affected.

The total catchment contributing flow to the site's lawful point of discharge is circa 38ha. The developed area is approximately 2% of the contributing catchment. Subsequently, any increase in flow resulting from the associated increase in fraction impervious from the developed area is not expected to cause nuisance within the drainage easement downstream of the water body. Therefore, no detention is required for the proposed development.

Stormwater Quality

Although the site triggers the SPP (based on size of works area), for this infill project upstream of a water body, it is proposed to avoid tertiary Water Quality Objects (WQOs) in lieu of Best Practice and WSUD outcomes including;

- Trash baskets within grated pits
- First flush diverters on downpipes discharging into landscaped areas.
- Developed area discharges immediately into vegetated swales adjacent to oval. Vegetated swale length to be maximised
- Further downstream, site run-off discharges into water body (Dam), which is claimed to capture pollutants from site prior to discharge to downstream waterway

While the above 'best practice' water quality device arrangement may not meet SPP's tertiary WQOs it will ensure water quality is significantly improved prior to release from the site.

Erosion and Sediment Control

Construction phase ESCP measures are to be implemented during construction in accordance with the relevant requirements.

1. Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Queensland Department of Education to develop a Site Based Stormwater Management Plan (SBSMP) in support of an Infrastructure Assessment Report by QBuild for Community Infrastructure Designation and any nominated referral agency submission to Fraser Coast Regional Council and any nominated referral agency. The proposed Educational Development is located at 120 Robert Street Hervey Bay QLD (Lot 5 SP104331), the full site details are summarised in Table 1-1 below. The proposed development will deliver a Multi-Purpose Hall, Performing Arts Centre, new Access and Parking area.

Table 1-1 - Property Details

Category	Description
Site Address	120 Robert Street Hervey Bay QLD
Lot Title	Lot 5 SP104331
Total Work Area (approx.)	7700 m ²
Proposed Land Use	Educational Development

This primary objectives of this SBSMP is to define the following:

- Lawful point of discharge
- Stormwater Conveyance and Flood Management
- Stormwater Quantity management strategy
- Stormwater Quality management strategy
- Erosion and Sediment Control strategy.

1.1. Related Reports and Documents

This report is to be read in conjunction with the following reference documents:

- Architectural Design Drawings by COX (Rev 1. 18.10.2021)
- Geotech Report BY ARCOS. (Revision 1. 14/10/2021)
- Schematic Civil Layout Design Drawings by Northrop (05.11.2021)

2. Site Context and Existing Characteristics

The subject site is located at 120 Robert Street Hervey Bay QLD. The subject site comprises of one registered lot and is currently bound by:

- Robert Street to the West
- Low and Medium density residential to the South, North and East respectively

In its current state the site is an existing school on the northwest portion of the site with a fall west to north of 2% as well as average density of vegetation across entire site. Figure 2-1 below illustrates the site location and existing site characteristics.



Figure 2-1 - Site Locality (QLD Globe, 2022)

2.1. Existing Lawful Point of Discharge

The following stormwater infrastructure has been identified in the vicinity of the site. The information has been sourced from the survey information (refer to Appendix C), and GIS Mapping Search (Appendix D).

The existing lawful point of discharge is the local creek running along the existing stormwater easement on east boundary near water dam. All stormwater runoff from the site will be captured by the internal swale system or overland flow and discharge to the council's land in the east.

2.2. Flood Overlay

Fraser Coast Planning Scheme has confirmed the project site is impacted by overland flood. However, the development footprints are not affected by flood or overland flow and the building levels achieve the required immunity. (Refer to Appendix D), showing the building footprint outside of overland flow overlay extent. We confirm that stormtide overlay is well clear, and does not impact the school site.

3. Proposed Development

The proposed development is an Educational Development that involves construction of a Multi-Purpose Hall, Performing Arts Centre, new Access and Parking area. This will be the facility upgrade to the existing site which already operates as a school for years.

The proposed architectural layout of the development prepared by COX Architecture Pty Ltd is shown below in Figure 3-1. Full Architectural drawings are included in Appendix F.



Figure 3-1 - Proposed Development (COX Architecture Pty Ltd. Rev 1)

3.1. Proposed Stormwater Management Strategy

All stormwater management for the site is to be completed to DETE guidelines and Queensland Urban Drainage Manual (QUDM) - Latest Revision. Generally

- Minor flows (Q20) to be piped to a lawful point of discharge
- Major flows (Q100) to be conveyed safely via overland flow to a suitable lawful point of discharge
- Stormwater strategy is to avoid creation of nuisance flows
- Maintain existing catchments and overland flow paths where possible

An indicative stormwater layout has been included on the civil concept plan utilising the existing stormwater infrastructure. It is proposed to construct the following stormwater quality improvement devices to achieve Water Quality objectives:

- No detention is required, as the site discharges to existing swale adjacent to oval, before discharging into water body. Any minor increase in flow as a consequence of development is not expected to trigger nuisance flows downstream of the site.
- Although the site triggers the SPP (based on size of works area), for this infill project upstream of a water body, it is proposed to avoid tertiary Water Quality Objects (WQOs) in lieu of Best Practice and WSUD outcomes including;
 - Trash baskets within grated pits
 - First flush diverters on downpipes discharging into landscaped areas.
 - Developed area discharges immediately into vegetated swales adjacent to oval. Vegetated swale length to be maximised
 - Further downstream, site run-off discharges into water body (Dam), which is claimed to capture pollutants from site prior to discharge to downstream waterway

While the above 'best practice' water quality device arrangement may not meet SPP's tertiary WQOs it will ensure water quality is significantly improved prior to release from the site.

All stormwater management for the site is to be completed to DETE guidelines and Queensland Urban Drainage Manual (QUDM) - Latest Revision.

A schematic of the proposed stormwater strategy presented below in Figure 3-2.

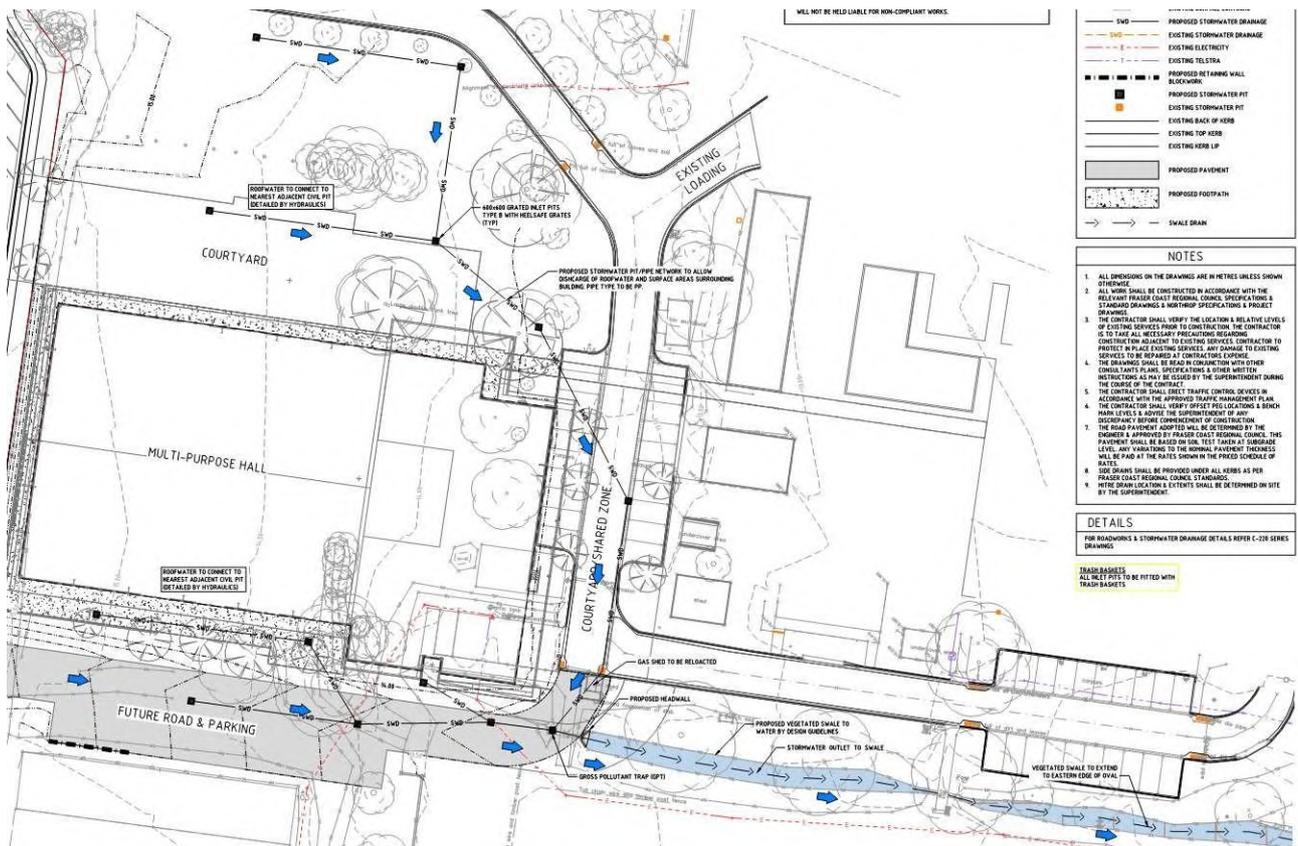


Figure 3-2 - Schematic of Proposed Stormwater Management Strategy

4. Stormwater Management Objectives

4.1. Development Control Plan Objectives

Stormwater management for the proposed development has been designed in accordance with the following documents:

- Fraser Coast Regional Council Planning Scheme Policy
- State Planning Policy (SPP), 2017
- Environmental Protection (Water) Policy, 2009)
- Queensland Urban Drainage Manual (QUDM) Fourth Edition, 2016
- Water By Design MUSIC Modelling Guidelines, Version 3.0, 2018
- Water by Design - Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands V1.1, 2010
- Plumbing and Drainage Code AS3500.3
- Australian Rainfall and Runoff Guideline (ARR)
- International Erosion Control Association – Best Practise Erosion and Sediment Control, 2008

The stormwater management objectives for the development are summarised below:

- Development should not result in water being diverted onto land that is not normally subject to overland flow
- Define a lawful point of discharge that will not cause an actionable nuisance in accordance with QUDM
- Ensure that the development does not create adverse flood impacts to upstream or adjacent properties
- No increase in post development flows for all rainfall events up to and including 100-year event
- Stormwater quality to achieve the minimum design requirements of the State Planning Policy (2017) and achieve water quality objectives in accordance with Environmental Protection (Water) Policy (2009), as follows in Table 4-1 below.

Table 4-1 - Water Quality Objectives

Pollutant	Percent Reduction
Gross Pollutants (>5mm), GP	90%
Total Suspended Solids, TSS	80%
Total Phosphorous, TP	60%
Total Nitrogen, TN	45%

5. Stormwater Quantity Management

5.1. Stormwater Conveyance Management

The proposed pit and pipe system has been sized for the 20-year ARI event. All major flows will overland flow to the south-west into the drainage reserve/wetland area.

5.2. Rational Method Calculations

Existing and developed rational method calculations have been prepared in accordance with QUDM for the 1, 2, 5, 10, 20, 50, and 100-year rainfall events for proposed Multi-purpose Hall only. All of the parameters used for the rational method calculations are summarised below in Table 5-1 and Table 5-2. Refer to Appendix B for full rational method calculations.

Table 5-1 - Catchment Details

Catchment ID	E1	D1
Catchment Description	Existing Undeveloped site	Developed site
Area (ha)	0.77	0.77
Slope (%)	1.8%	10%
Fraction Impervious ¹	0	0.8
Runoff Coefficient (C ₁₀) ²	0.7	0.86
Time of Concentration (min)	19.7	13

¹Fraction impervious calculated from survey and proposed development plans

²Runoff coefficient taken from QUDM – Table 4.5.3 and Table 4.5.4

Table 5-2 - Rational Calculation Results

Catchment ID	Peak Flow (m ³ /s)						
	1	2	5	10	20	50	100
E1	0.095	0.112	0.165	0.203	0.242	0.306	0.353
D1	0.138	0.164	0.241	0.294	0.351	0.445	0.495

Rational Method calculations have been undertaken to determine the volume of detention required to attenuate peak discharge from all ARIs to pre-developed flows or less for the new building site. A total detention storage volume of 57 m³ was determined as an adequate volume. Refer to Appendix B for full detention volume calculations for all ARIs.

The total catchment contributing flow to the site's lawful point of discharge is circa 38ha. The developed area is approximately 2% of the contributing catchment. Subsequently, any increase in flow resulting from the associated increase in fraction impervious from the developed area is not expected to cause nuisance within the drainage easement downstream of the water body. Therefore, no detention is required for the proposed development.

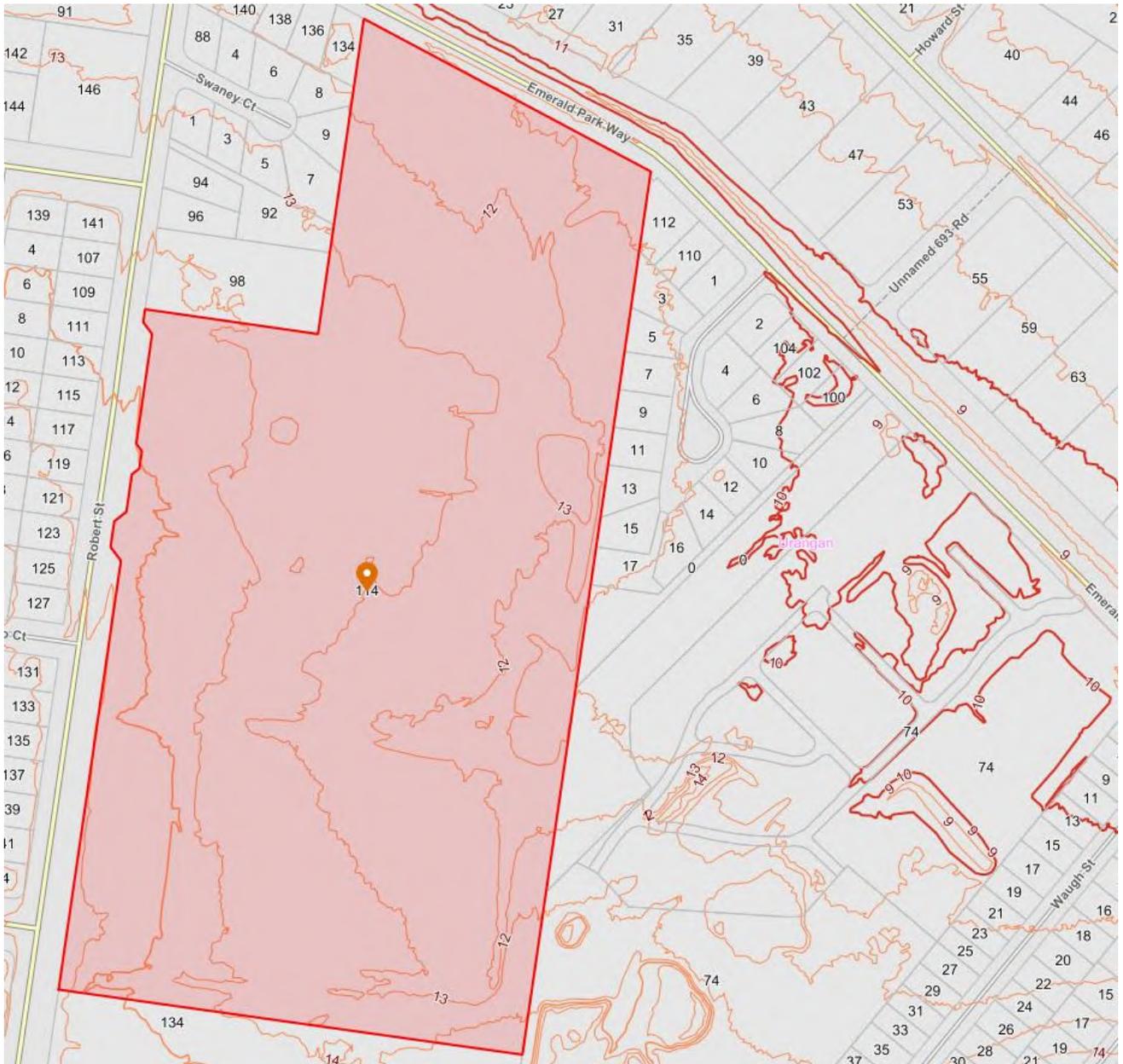


Figure 5-1 – Contour (Fraser Regional City Council Mapping 2022)

6. Stormwater Quality Management - Construction Phase

6.1. Erosion and Sediment Control

Prior to construction commencing, it is the principal contractor's responsibility to ensure adequate erosion and sediment control measures are installed around the subject site to minimise disturbance and ensure the quality of runoff discharging from the site is of an acceptable standard.

An erosion and sediment control plan (ESCP) will be included as part of the detailed design drawings. The ESCP has been prepared in accordance with the Best Practice Erosion and Sediment Control Manual (ICEA 2009) based on Type 1 techniques. Erosion and sediment control techniques used for the site include:

- Sediment barriers to be installed on all entrances to stormwater inlet pits
- Construction entry and exit shakedown areas
- Sediment fences are to be installed on the downstream boundaries of the subject site
- Construction of temporary bunds at the top of all earthworks batters to ensure runoff is directed away from exposed batters
- Construction of temporary diversion drains to divert water to sediment basins and around any stockpiles
- Sediment fences to be installed on the downstream side of any stockpiles
- Stabilisation of all batters upon reaching the finished earthworks levels
- Dust control measures which include covering stockpiles, maintain site fences and watering exposed areas
- Sediment basin in accordance with IECA Best Practice Erosion and Sediment Control

7. Stormwater Quality Management - Operational Phase

7.1. Proposed Stormwater Quality Improvement Devices (SQID's)

During the operational phase of the development, it is proposed to construct the following stormwater quality improvement devices to achieve the stormwater quality objectives summarised in Section 4.1.

- Trash baskets within grated pits
- First flush diverters on downpipes discharging into landscaped areas.
- Developed area discharges immediately into vegetated swales adjacent to oval. Vegetated swale length to be maximised
- Further downstream, site run-off discharges into water body (Dam), which is claimed to capture pollutants from site prior to discharge to downstream waterway

Engineering drawings will be provided as part of the detailed design to provide more details on the basin arrangement and locality.

7.1.1. Trash Baskets within grated pits

The Trash Baskets filters stormwater entering the pit through the grate, retaining the collected trash while allowing unrestricted passage of water travelling through pipes connected into the pit.

7.1.2. First Flush Diverters

A first flush diverter (also known as a roof washer) is a simple contraption that diverts the first flow of water away from a rainwater catchment system. The first pass of water in any storm essentially washes your roof of all the sediments that have collected since the last rain. The idea is that diverting the first flush can help ensure cleaner water in your rain tanks or barrels.

7.1.3. Swale

A swale is an open channel that is often grass-lined. Swales operate primarily as a stormwater conveyance method but also provide water quality pre-treatment. The grass within the swale helps reduce flow velocity that facilitates the interaction between the stormwater and vegetation to remove pollutants and coarse to medium sediments often associated with the 'first flush'. Swales also help in reducing peak catchment flow rates by providing a disconnect from impervious areas to pit and pipe drainage systems, resulting in slower travel times.

The proposed swale has been sized off the existing swale which conveys flows from the proposed headwall outlet to the eastern portion of the site where stormwater flows into the existing dam then discharge into the local creek system.

7.1.4. Rainwater Harvesting Dam

The existing dam is a critical aspect of the stormwater harvesting scheme that involves collecting, storing and treating stormwater runoff. The stored water within the rainwater tanks allows for non-potable reuse applications such as outdoor irrigation, toilet flushing, general maintenance and industrial uses, thereby reducing the demand for drinking (potable) water. It used within a stormwater harvesting scheme minimises the stress on urban streams and waterways by reducing the volume of stormwater runoff and associated pollutants that would otherwise enter urban streams and waterways.

The existing dam capacity is approximate 3000m³ for landscaping irrigation. Landscaping irrigation demands for the site have been calculated from WBD MUSIC Modelling Guidelines for SEQ. A water balance will be completed at detailed design to ensure rainwater harvesting tanks are appropriately sized to meet demand.

7.2. Stormwater Quality Modelling (MUSIC) Methodology

Stormwater quality modelling for the site was prepared using 'Model for Urban Stormwater Improvement Conceptualisation' (MUSIC) Version 6.3. The model has been built to assess the adequacy of the proposed

SQID's and to ensure that the quality of stormwater meets the WQO's for the development. A diagrammatic layout of the MUSIC Model is presented in Figure 7-1 below.

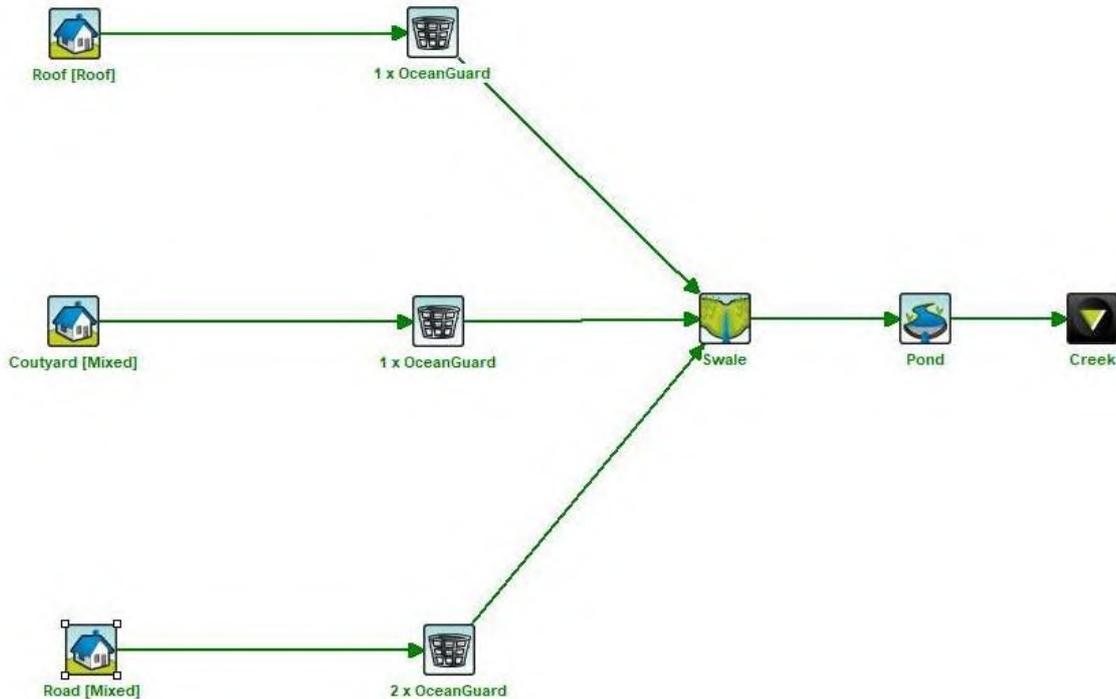


Figure 7-1 - MUSIC Link and Node Diagram

For the analysis of the MUSIC modelling, Meteorological data (average potential evapotranspiration (PET) and Rainfall Station) was based on the recommendations listed in WBD MUSIC Modelling Guidelines for SEQ, Table 3.1. The rainfall data was obtained from the Bureau of Meteorology for Station No. 040126 at Maryborough. The analysis was undertaken using a 6 min time step for the period 02/08/1964 to 31/07/2010.

The following rainfall and runoff parameters shown in Table 7-1 have been utilised.

Table 7-1 - Rainfall Runoff Parameters

Parameter	Value*
Land Use Category	Urban Residential
Rainfall Threshold (mm/day)	1.0
Soil Storage Capacity (mm)	500
Initial Storage (% of Capacity)	10
Field Capacity (mm)	200
Infiltration Capacity Coefficient – a	211
Infiltration Capacity Exponent – b	5.0
Initial Depth (mm)	50
Daily Recharge Rate (%)	28
Daily Base flow Rate (%)	27
Daily Deep Seepage Rate (%)	0

* Parameter values taken from WBD – MUSIC Modelling Guidelines for SEQ, V3.0 (2018), Table A1.2

The catchments used for MUSIC modelling were broken down into land use category to accurately model the pollutant runoff characteristics for all land-use categories. The Source node catchments are summarised below in Table 7-2.

Table 7-2 - Catchment Source Node Summary

Catchment ID	MUSIC Source Nodes	Catchment Area (Ha)	Impervious %
D1	Roof	0.488	100%
	Courtyard	0.134	80%
	Road/Carpark	0.15	100%

The pollutant concentration parameters used in the model were based on information provided in Water By Design – MUSIC Modelling Guidelines for South East Queensland V3.0 (2018). The parameters are listed in Table 7-3 below:

Table 7-3 - Water Quality Parameters for MUSIC Source Nodes

Land- Use Category		Log TSS (mg/L)		Log TP (mg/L)		Log TN (mg/L)	
		Storm Flow	Base flow	Storm Flow	Base Flow	Storm Flow	Base Flow
Roof Areas (Urban Residential)	Mean	1.30	N/A	-0.89	N/A	0.26	N/A
	Std Dev	0.39	N/A	0.31	N/A	0.23	N/A
Roads (Urban Residential)	Mean	2.43	1.00	-0.30	-0.97	0.26	0.20
	Std Dev	0.39	0.34	0.31	0.31	0.23	0.20
Ground Level (Urban Residential)	Mean	2.18	1.00	-0.47	-0.97	0.26	0.20
	Std Dev	0.39	0.34	0.31	0.31	0.23	0.20

**Parameter values taken from WBD – MUSIC Modelling Guidelines for SEQ, V3.0 (2018), Table 3.9.*

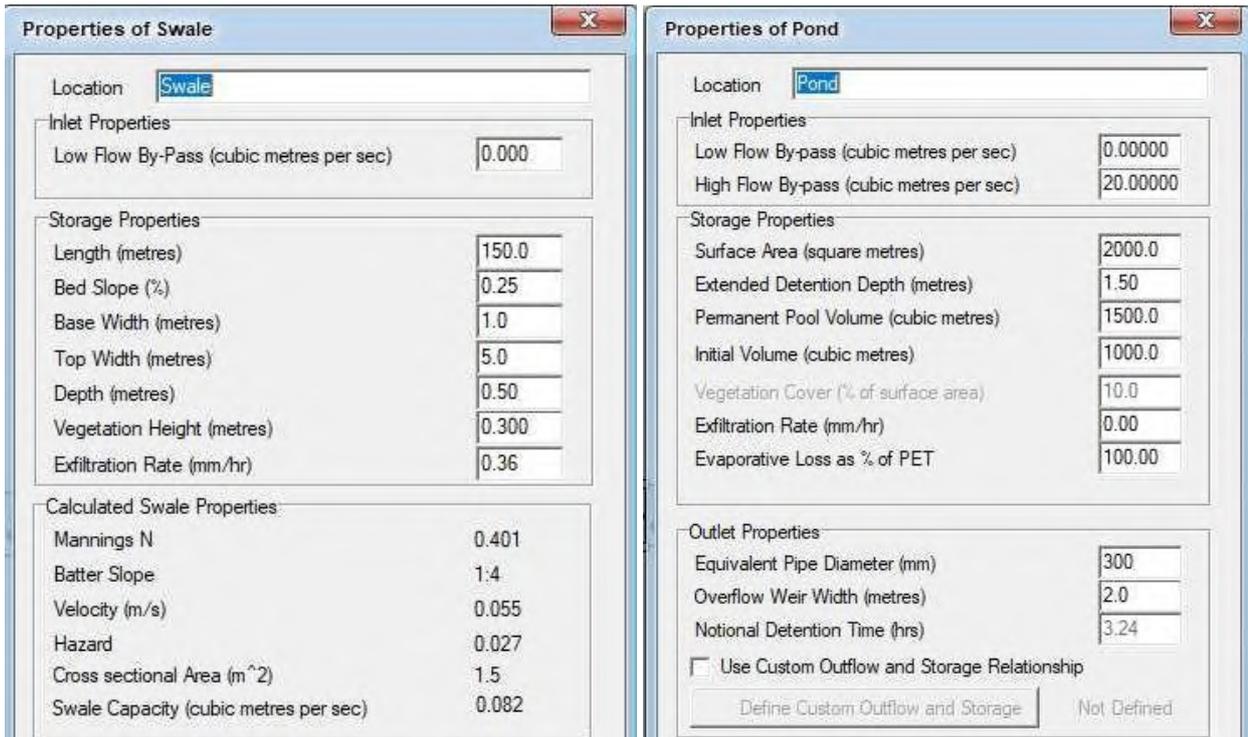


Figure 7-2 - MUSIC Node Properties

Table 7-4 - MUSIC Model Results

Pollutant	Annual Loads (kg/yr)		% Reduction		Compliance
	Source	Residual	Actual	Target	
TSS	866	41.3	95.2	80	OK
TP	2.26	0.317	86	60	OK
TN	20.2	4.12	79.6	45	OK
GP	171	0	100	90	OK

The modelling results shown in Table 7-4 demonstrates that the treatment train will achieve the water quality targets set out in Table 4-1.

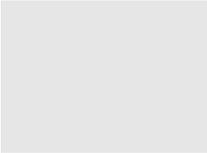
8. Maintenance

All the stormwater quantity and quality infrastructure detailed in this document are contained within the subject site and will remain an asset of the development's property owner.

In order to achieve a highly functioning system it is recommended to inspect and maintain the system in accordance with Table 8-1 and immediately after a significant rainfall event (<50mm/day) following the construction establishment period. The inspections will inform if any additional maintenance is required that will increase this inspection and maintenance frequency.

Table 8-1 - Maintenance Frequency

Location	Maintenance	Performance Indicator*	Min. Frequency (Months)
General	Damaged Structures e.g. pit lids, grates, bollards	- No damage that poses a risk to public safety or structural integrity	12
Inlet and/or Sediment Forebay	Erosion	- No evidence of erosion of subsidence/ settlement	12
	Sediment, Litter and Debris	- Coarse Sediment forebay <75% full - No blockage from litter or debris	12
Bioretention System	Erosion	- No evidence of erosion of subsidence/ settlement - Erosion that does not pose a risk to public safety or structural integrity and will not worsen if left unattended	12
	Crust of fine sediment	- No surface crusting	12
	Depression or mounds	- No surface depression or mounds >100mm	12
	Hydraulic conductivity / permeability	- Filter media is draining freely - Water does not pond for more than 12 hours after rainfall - No obvious impermeable or clay-like surface on the filter media	6
	Underdrain flush out	- Flush out underdrainage - No damage and end caps securely in place	3
	Litter	- Remove litter	3
	Vegetation	- Minimum 95% vegetation cover - Plants healthy and free from disease - Average plant height >500mm	3
	Algal bloom / moss growth	- Max 10% of surface covered in algae - No moss growth	6
	Outlet Structure	Erosion	- No evidence of erosion of subsidence/ settlement, including edges of rock protection of top of weir for large systems
Damaged Structures e.g., pit lids, grates		- No damage that poses a risk to public safety or structural integrity	6
Sediment, Litter and Debris		- No blockage	3

	Outlet freely draining	<ul style="list-style-type: none">- No downstream impediments to release of water- No erosion or damage to outlet structure- No evidence of malfunction	6
---	------------------------	---	---

**As defined in the Inspection and Maintenance checklist for bioretention systems, by Water By design*

9. Conclusion

Northrop Consulting Engineers has prepared this SBSMP for the proposed Educational Development at 120 Robert Street Hervey Bay QLD. Based on investigations, analyses and designs, it has been demonstrated that the proposed development can be constructed and operated in accordance with all stormwater objectives listed in Section 4. The primary outcomes of this SBSMP are as follows:

- **Lawful Point of Discharge:** The current Legal Point of Discharge (LPOD) for the catchment is the local creek located on the east side of school. The existing lawful point of discharge will be maintained with most of the site flows being captured for stormwater quantity treatment prior to discharge from the site.
- **Stormwater Quantity:** The total catchment contributing flow to the site's lawful point of discharge is circa 38ha. The developed area is approximately 2% of the contributing catchment. Subsequently, any increase in flow resulting from the associated increase in fraction impervious from the developed area is not expected to cause nuisance within the drainage easement downstream of the water body. Therefore, no detention is required for the proposed development.
- **Stormwater Quality:** Although the site triggers the SPP (based on size of works area), for this infill project upstream of a water body, it is proposed to avoid tertiary Water Quality Objects (WQOs) in lieu of Best Practice and WSUD outcomes including.
 - Trash baskets within grated pits
 - First flush diverters on downpipes discharging into landscaped areas.
 - Developed area discharges immediately into vegetated swales adjacent to oval. Vegetated swale length to be maximised
 - Further downstream, site run-off discharges into water body (Dam), which is claimed to capture pollutants from site prior to discharge to downstream waterway
- **Erosion and Sediment Control:** Construction phase ESCP measures are to be implemented during construction in accordance with the relevant requirements.

Appendix A – Schematic Civil Layout Design

URANGAN SHS

MULTI-PURPOSE HALL CIVIL ENGINEERING WORKS PACKAGE



SOURCE : QLDGLOBE.INFORMATION.QLD.GOV.AU (©2021)

DRAWING SCHEDULE	
DWG NUMBER	DWG TITLE
C-001	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
C-002	HAZARD SHEET
C-010	SPECIFICATION NOTES SHEET 1 OF 3
C-011	SPECIFICATION NOTES SHEET 2 OF 3
C-012	SPECIFICATION NOTES SHEET 3 OF 3
C-020	EXISTING FEATURES PLAN
C-101	BULK EARTHWORKS PLAN
C-211	ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN

SPECIFICATION & MANDATORY REFERENCES

ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.



DRAWN: XXXX
DESIGNED: XXXX
JOB MANAGER: XXXX
VERIFIER: XXXX

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<table border="1"> <thead> <tr> <th>REVISION</th> <th>DESCRIPTION</th> <th>ISSUED</th> <th>VER'D</th> <th>APP'D</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SCHEMATIC DESIGN</td> <td>RM</td> <td>MB</td> <td>MB</td> <td>04.11.21</td> </tr> <tr> <td>2</td> <td>SCHEMATIC DESIGN</td> <td>MR</td> <td>MB</td> <td>MB</td> <td>05.11.21</td> </tr> </tbody> </table>	REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	1	SCHEMATIC DESIGN	RM	MB	MB	04.11.21	2	SCHEMATIC DESIGN	MR	MB	MB	05.11.21	<p>CLIENT</p> <p>Queensland Government Department of Education and Training</p>	<p>ARCHITECT</p> <p>COX Architecture</p>	<p>ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.</p>	<p>NORTHROP Brisbane Level 9, 200 Mary Street, Brisbane QLD 4000 GPO BOX 423 Brisbane QLD 4001 (07) 3365 0400 brisbane@northrop.com.au ABN 81 094 433 100</p>	<p>PROJECT</p> <p>URANGAN SHS MULTIPURPOSE HALL</p>	<p>DRAWING TITLE</p> <p>CIVIL ENGINEERING PACKAGE COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE</p>	<table border="1"> <tr> <td colspan="2">JOB NUMBER</td> </tr> <tr> <td colspan="2">BN212349</td> </tr> <tr> <td>DRAWING NUMBER</td> <td>REVISION</td> </tr> <tr> <td>C-001</td> <td>2</td> </tr> <tr> <td colspan="2">DRAWING SHEET SIZE = A1</td> </tr> </table>	JOB NUMBER		BN212349		DRAWING NUMBER	REVISION	C-001	2	DRAWING SHEET SIZE = A1	
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HAZARD / RISK ASSESSMENT REGISTER - CIVIL WORKS

PROJECT	MULTIPURPOSE HALL
ADDRESS	120 Robert St, Hervey Bay QLD 4655
PROJECT NUMBER	BN212349
PROJECT DESCRIPTION	MULTIPURPOSE HALL

A HAZARD is something with the potential to cause harm.
 RISK is a combination of the likelihood of the harm occurring and the severity of the harm should it occur.
 CONTROLS are measures to eliminate or reduce risk to an acceptable level.
 ABNORMAL RISKS are aspects of our project as identified by our design which may present significant hazards that are unusual, not obvious or may be difficult to manage

RISK ID NO	PROJECT PHASE	HAZARD / RISK DESCRIPTION	RISK MANAGER	CONSEQUENCE / LIKELY HARM	LIKELIHOOD	SEVERITY	INITIAL RISK RATING = L x S	TREATMENT OPTION MITIGATION ACTION PLAN FOR AVOIDANCE CONTROLS TO BE PROVIDED	EXPECTED RESULT	LIKELIHOOD	SEVERITY	RESIDUAL RISK RATING = L x S	- ADOPTED TREATMENT - REASON - BY WHOM	COMMENT
1	DESIGN / CONSTRUCTION	EXISTING SERVICES	CONTRACTOR	DAMAGE TO INFRASTRUCTURE	4	2	8	EXISTING SERVICES LOCATION TO BE DETERMINED PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS	EXTREME CARE MUST BE TAKEN WHILST EXCAVATING	2	2	4	TREATMENT TO BE ADOPTED BY CIVIL CONTRACTOR	
2	DESIGN / CONSTRUCTION	CONSTRUCTION UNDER TRAFFIC AND WITHIN PUBLIC SPACE	CONTRACTOR	PERSONAL INJURY, DISABILITY OR DEATH FOR WORKER OR PUBLIC	4	5	20	CIVIL CONTRACTOR TO INSTALL TEMPORARY PHYSICAL BARRIERS (INCLUDING BUT NOT LIMITED TO SEPARATION ZONES, WATER BARRIERS, FLAGGING, FENCING) AS REQUIRED UNDER THEIR SITE SAFETY MANAGEMENT PLAN. INSTALLATION OF APPROPRIATE WARNING SIGNS, REDUCTION OF SPEED LIMITS AND USE OF FLAGMAN OR ELECTRIC STOP/GO SIGNAGE. REMOVE OF THE ABOVE CONTROLS TO BE CAREFULLY TIMED	PROVIDES VISUAL AND PSYCHICAL BARRIER	2	5	10	TREATMENT TO BE ADOPTED BY CIVIL CONTRACTOR	
3	DESIGN / CONSTRUCTION	(BALANCE OR RISK ITEMS TO BE DEVELOPED & ADDRESSED BY CONTRACTOR)												

VERIFIER: XXXX
 JOB MANAGER: XXXX
 DESIGNED: XXXX
 DRAWN: XXXX

NOTES

- CONSTRUCTION ACTIVITY CAN BE HAZARDOUS, POTENTIAL SAFETY HAZARDS CONSIDERED BY THE DESIGNERS TO BE ABNORMAL RISKS ARE IDENTIFIED IN THE HAZARD/RISK ASSESSMENT REGISTER. PLEASE NOTE THAT DESIGNERS HAVE A LOWER LEVEL OF UNDERSTANDING OF THE RISKS INVOLVED IN CONSTRUCTION COMPARED TO THAT OF A COMPETENT CONTRACTOR. IT IS ESSENTIAL THAT AN ADEQUATE SAFETY PLAN IS PREPARED BY THE CONTRACTOR FOR THE WORKS. THE DESIGNERS MAY NOT BE AWARE OF ALL SAFETY RISKS AND HAZARDS INVOLVED IN THE PROJECT AND THE ABSENCE OF COMMENT DOES NOT IMPLY THERE ARE NO RISKS OR HAZARDS.
- THE CONTRACTOR SHALL COMPLETE AND WILL SOLELY BE RESPONSIBLE FOR THE IMPLEMENTATION OF ANY NECESSARY SAFETY PLANS TO COMPLETE THE WORKS.
- THE CONTRACTOR MUST COMPLY WITH ANY GUIDELINE ACTS OR CODE OF PRACTICE AND OTHER RELEVANT DOCUMENTS REGARDING SAFE WORK PRACTICES.
- THE CONTRACTOR SHALL HAVE A NOMINATED WORKPLACE HEALTH AND SAFETY (WH&S) OFFICER FOR THE DURATION OF THE CONTRACT. THE WH&S OFFICER WILL BE RESPONSIBLE FOR ALL WH&S ISSUES ON SITE.
- ALL PERSONS ENTERING THE SITE SHALL COMPLETE A SAFETY INDUCTION WITH THE NOMINATED WH&S OFFICER. THIS IS TO INCLUDE REFERENCE TO SAFETY IN DESIGN ISSUES RELEVANT TO THE PROJECT.

LIKELIHOOD	SCORE
OCCURRENCE VIRTUALLY INEVITABLE, MAY OCCUR MANY TIMES	5
OCCURRENCE NOT SURPRISING, MAY OCCUR MORE THAN ONCE	4
LIKELY TO OCCUR SOMETIMES	3
UNLIKELY TO OCCUR, THOUGH CONCEIVABLE	2
SO UNLIKELY THAT PROBABILITY IS CLOSE TO ZERO	1

SEVERITY	SCORE
FATALITY	5
MAJOR INJURY	4
SIGNIFICANT INJURY	3
FIRST AID INJURY	2
MINOR INJURY	1

RISK RATING RESULTS		
15-25	VERY HIGH	THIS ACTIVITY MUST NOT BE UNDERTAKEN, OR SHOULD BE STOPPED, UNTIL ADDITIONAL MEASURES HAVE BEEN PUT IN PLACE TO REDUCE THE RISK
8-12	HIGH	ALL REASONABLY PRACTICABLE CONTROL MEASURES MUST BE PUT IN PLACE BEFORE THIS TASK MAY PROCEED
3-6	MEDIUM	CONTROL MEASURES MUST BE PUT IN PLACE TO REDUCE THIS RISK UNLESS IT WOULD INVOLVE EXCESSIVE COST FOR LITTLE BENEFIT
1-2	LOW	NO FURTHER ACTION REQUIRED UNLESS BENEFICIAL ACTION CAN BE EASILY UNDERTAKEN

RISK RATING					
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5

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AUTHORITY APPROVALS AND DESIGN COORDINATION

- ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT COUNCIL AND WATER AUTHORITY APPROVAL CONDITIONS ASSOCIATED WITH THE PROJECT. CONDITIONS AND APPROVED PLANS ARE TO BE REVIEWED (AND REQUESTED IF NOT ALREADY RECEIVED) PRIOR TO CONSTRUCTION.
- READ THESE DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL AND OTHER ENGINEERING DRAWING, SPECIFICATIONS AND WITH ALL OTHER WRITTEN INSTRUCTIONS ISSUED. WHERE RELEVANT, REFER TO ARCHITECTURAL DRAWINGS FOR SETTING OUT AND DETAIL DIMENSIONS. IN CASE OF DISCREPANCY, PRECEDENCE IS GIVEN TO DRAWINGS, THEN NOTES, THEN SPECIFICATION. IN ALL CASES, REFER DISCREPANCIES TO SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

ACCESS AND SAFETY

- THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
- THE CONTRACTOR SHALL PROVIDE TRAFFIC MANAGEMENT PLANS FOR THE PROPOSED WORKS COMPLETED BY A SUITABLY QUALIFIED PERSON AND APPROVED BY COUNCIL / REGULATORY AUTHORITY. WORK IS NOT TO COMMENCE ON SITE PRIOR TO APPROVAL OF TRAFFIC MANAGEMENT SCHEME.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
- WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.
- THE CONTRACTOR SHALL ENSURE PUBLIC ACCESS EXTERNAL TO THE SITE IS IN ACCORDANCE WITH COUNCILS REQUIREMENTS.

CLEARING, ENVIRONMENT AND ECOLOGY

- REFER TO LANDSCAPE / ARCHITECTS PLAN FOR TREES TO BE RETAINED AND PROTECTED.
- ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
 - PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.
 - ENSURING THAT NOTHING IS NAILED TO ANY PART OF THE TREE.
 - CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY. COUNCILS AND/OR INDEPENDENT ARBORISTS TO BE CONSULTED WHERE TREE ROOTS ARE TO BE REMOVED AND/OR CUT.
- PRIOR TO COMMENCEMENT OF WORKS CONTRACTOR IS TO:
 - 3(A). ENSURE ALL APPROVALS AND PERMITS IN PLACE
 - 3(B). PRESTART MEETINGS HAVE BEEN HELD
 - 3(C). SUPERINTENDENT, GEOTECHNICAL ENGINEER & NORTHROP ARE NOTIFIED.
 - 3(D). ALL EROSION & SEDIMENT CONTROL MEASURES ARE IN PLACE
 - 3(E). LOCATE ALL EXISTING SERVICES TO OL-A.
 - 3(F). REVIEW GEOTECHNICAL REPORT & (ALLOW FOR) GEOTECHNICAL ENGINEER METHODOLOGY FOR FILLING & EXCAVATION WORKS.
- AN AUTHORISED SPOTTER-CATCHER IS TO BE ON SITE PRIOR TO THE COMMENCEMENT OF & DURING THE CLEARING WORK.
- ANY CLEARING REQUIRED TO BE UNDERTAKEN BY THE CONTRACTOR IS TO BE STRICTLY IN ACCORDANCE WITH THE COUNCIL APPROVED VEGETATION MANAGEMENT PLAN.
- THE AREA WITHIN THE LIMITS OF CLEARING SHALL BE CLEARED OF ALL VEGETATION. ALL MINOR MAN-MADE STRUCTURES (SUCH AS FENCES, BUILDING MATERIAL & EXISTING DRIVEWAYS), ALL RUBBISH & OTHER MATERIALS WHICH, IN THE OPINION OF THE SUPERINTENDENT, ARE UNSUITABLE FOR USE IN THE WORKS WITH THE EXCEPTION OF CERTAIN TREES MARKED FOR PRESERVATION.
- TREES ARE TO BE MULCHED & STOCKPILED ON SITE FOR USE IN LANDSCAPING.
- WHERE PARTS OF TREES CANNOT BE MULCHED, THEY ARE TO BE DISPOSED OF OFF-SITE AT AN APPROVED FACILITY.
- ALL TOPSOIL FROM EARTHWORKS AREA SHALL BE STRIPPED & STOCKPILED PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OPERATIONS.
- NOTWITHSTANDING THE LIMITS OF CUTTING & FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE ENGINEER DURING CONSTRUCTION. FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION.
- ALL NEW WORKS TO MATCH NEATLY WITH EXISTING. THE CONTRACTOR SHALL CONFIRM LOCATION OF ALL EXISTING SERVICES & PROTECT THESE SERVICES DURING CONSTRUCTION. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
- ALL OF THE SITE SHALL BE KEPT FREE DRAINING DURING ALL PHASES OF THE PROJECT.
- ALL DISTURBED AREAS TO BE GRASS SEEDED WITH MINIMUM 80% COVERAGE. SEEDING TO OCCUR WITHIN 7 DAYS OF COMPLETION OF EARTHWORKS.

EROSION AND SEDIMENT CONTROL

- REFER TO NORTHROP EROSION AND SEDIMENT CONTROL PLANS (C-120 AND 130 SERIES) FOR NOTES, LAYOUT & CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DEVELOP AND IMPLEMENT A SUITABLE EROSION AND SEDIMENT CONTROL PROGRAM IN ACCORDANCE WITH THE CURRENT LOCAL COUNCIL STANDARDS AND INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) GUIDELINES AND STANDARD DETAILS. EROSION AND SEDIMENT CONTROL DESIGNS ARE TO BE EXTENDED IN RESPONSE TO SITE CONDITIONS. IN WHICH CASE THE CONTRACTOR IS TO 'RED PEN MARK UP' THIS PLAN AND TO ENSURE THEY HAVE AN ADEQUATE/COMPLIANT SET OF EROSION AND SEDIMENT CONTROL PLANS ON-SITE AT ALL TIMES DURING CONSTRUCTION.
- EROSION & SEDIMENT CONTROL PROTECTION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE CONTRACT.
- THE CONTRACTOR SHALL INFORM ALL SUB CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.
- UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.

EARTHWORKS

- EARTHWORKS IS TO BE CARRIED OUT IN ACCORDANCE WITH AS3798-2007 GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.
- AT THE COMMENCEMENT OF FILLING OPERATIONS FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED COMPACTION REQUIREMENTS.
- STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
- WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT.
- THE CONTRACTOR IS TO ALLOW FOR A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO PROVIDE ADVICE AND CERTIFICATION OF ANY WORKS ASSOCIATED WITH TREATING OR MANAGING UNSUITABLE GROUND CONDITIONS THROUGHOUT THE CONTRACT (e.g. STABILITY OF EXCAVATIONS, POOR SUBGRADE, etc).
- ALL SOFT OR WET MATERIAL ENCOUNTERED ON SITE THAT ARE CLASSIFIED AS UNUSABLE IN THEIR CURRENT STATE SHALL BE EXCAVATED AND DRIED TO A LEVEL WHERE IT CAN BE USED FOR ITS INTENDED PURPOSE AND ACHIEVE THE COMPACTION RATES REQUIRED.
- ALL MATERIAL THAT SATISFIES THE REQUIREMENTS OF UNSUITABLE MATERIALS (AS 3798) IS TO BE REMOVED FROM SITE AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW.
- PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.
- ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS (LOOSE) AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.5.1 AND AS1289.5.8.8 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY:

LOCATION	COMPACTION REQUIREMENT
RESIDENTIAL LOTS	95% SMDD (CS)*
COMMERCIAL, FILLS TO SUPPORT MINOR LOADINGS	98% SMDD (CS)*
FILL TO SUPPORT PAVEMENTS	95% SMDD (CS)*
(a) GENERAL FILL	95% SMDD (CS)*
(b) SUBGRADE TO A DEPTH OF 0.3M	98% SMDD (CS)*

* COHESIVE SOILS
- TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.
- ALLOW THE FOLLOWING COMPACTION TESTING BY N.A.T.A. REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 - 1 TEST PER LAYER PER MATERIAL TYPE PER 250M² OR 1 TEST PER 500M² DISTRIBUTED REASONABLY EVENLY THROUGHOUT FULL DEPTH AND AREA OR 3 TESTS PER LOT (WHICHEVER REQUIRES THE MOST TESTS).
- WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION STANDARDS ARE ACHIEVED. OTHERWISE SUBGRADE REPLACEMENT IS REQUIRED IF COMPACTION STANDARDS ARE NOT ACHIEVED.
- ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.
- WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING:
 - 14.1. BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR
 - 14.2. CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE USE
 - 14.3. PLASTICITY INDEX BETWEEN 2-15% AND CBR - 8
 - 14.4. FREE FROM ORGANIC AND PERISHABLE MATTER

MAXIMUM SIZE 50MM, PASSING 75 MICRON SIEVE (-25%)

EARTHWORKS (cont)

- THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLERS MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION. SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- DEEP EXCAVATIONS**
- PRIOR TO THE COMMENCEMENT OF EXCAVATION WORKS GREATER THAN 15M IN DEPTH, THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO DETERMINE THE STABILITY OF THE NATURAL MATERIAL AND BENCHING REQUIREMENTS.
 - THE CONTRACTOR MUST PROVIDE THE SUPERINTENDENT AND OR THE DESIGN ENGINEER WITH A COPY OF THE GEOTECHNICAL ENGINEERS REPORT.
 - THE CONTRACTOR IS TO PROVIDE SAFETY BARRIERS / FENCING IN ACCORDANCE WITH OH&S AND REGULATORY AUTHORITY REQUIREMENTS.
- SERVICE TRENCHES**
- BACKFILL UNDER EXISTING PAVEMENTS**
SAWCUT EXISTING SURFACES PRIOR TO EXCAVATION. BACKFILL ALL TRENCHES UNDER EXISTING ROADS WITH BEDDING MATERIAL TO 300MM MINIMUM ABOVE SERVICE. PROVIDE APPROVED BACKFILL MATERIAL TO WITHIN 350MM MINIMUM OF FINISHED SURFACE. PROVIDE 300MM MINIMUM LEAN MIX CONCRETE TO UNDERSIDE OF ASPHALTIC CONCRETE.
 - BACKFILL UNDER PROPOSED PAVEMENTS**
PLACE BEDDING MATERIAL TO 300MM MINIMUM ABOVE SERVICE. PLACE APPROVED BACKFILL MATERIAL TO UNDERSIDE OF PROPOSED PAVEMENT AS SPECIFIED.
 - BACKFILL UNDER FOOTPATHS, ALLOTMENTS AND LANDSCAPE AREAS**
PLACE BEDDING MATERIAL TO 300MM MINIMUM ABOVE SERVICE. PLACE APPROVED SELECT MATERIAL FROM EXCAVATION OR IMPORT TO THE SURFACE.
 - BEDDING MATERIAL, APPROVED BACKFILL MATERIAL AND SELECT MATERIAL SHALL COMPLY WITH THE FOLLOWING:

(a) BEDDING MATERIAL (FOUNDATION, HAUNCH AND OVERLAY) SHALL HAVE THE FOLLOWING GRADING OR COURSE, CLEAN, SHARP RIVER SAND APPROVED BY THE SUPERINTENDENT:	
AS SIEVE SIZE	% PASSING BY MASS
19.0	100
2.36	40 - 100
0.425	15 - 70
0.075	3 - 30

BEDDING COMPACTION
NON-COHESIVE MATERIAL - DENSITY INDEX OF 70 MIN. REFER AS1289.5.1
SAND - COMPACT BY FLOODING USE OF VIBRATORS
 - BACKFILL TO CONSIST OF APPROVED SUBGRADE REPLACEMENT MATERIAL CBR 15 MIN, PLACED IN LAYERS NOT EXCEEDING 250MM LOOSE IN DEPTH AND SHALL BE COMPACTED TO 95% MDD MIN.
 - SELECT MATERIAL FROM EXCAVATIONS SHALL BE PLACED IN LAYERS NOT EXCEEDING 250MM LOOSE IN DEPTH SHALL BE COMPACTED TO 95% SMDD MIN.
- ALLOW THE FOLLOWING COMPACTION TESTING BY N.A.T.A. REGISTERED LABORATORY FOR TRENCHES IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 - 1 TEST PER 2 LAYERS PER 40 LINEAR METRES.

EXISTING SERVICES

- REFER TO THE CURRENT SITE SURVEY PLAN FOR REFERENCE PSM TO BE USED AS REFERENCE FOR ALL SETOUT INFORMATION DURING CONSTRUCTION. CONTRACTOR TO CONFIRM SURVEY SETOUT LOCATION, EXTENT, OR METHOD OF INSTALLATION PRIOR TO CONSTRUCTION, ALL LEVELS TO AUSTRALIAN HEIGHT DATUM (AHD). GRID COORDINATE SYSTEM AS SPECIFIED BY SURVEYOR.
- ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF EXISTING UNDERGROUND SERVICES WHICH ARE PLOTTED FROM AUTHORITY RECORDS. DOCUMENTED DESIGNS MAY BE SUBJECT TO ONGOING CHANGES UNTIL RECEIPT AND REVIEW OF MINIMUM QUALITY 'LEVEL A' EXISTING SERVICE LOCATION RESULTS ALONG FULL LENGTH OF PROPOSED MAIN ALIGNMENTS. NORTHROP WILL NOT BE HELD LIABLE FOR COST INCREASE OR DESIGN/DOCUMENTATION TIME EXTENSION RESULTING FROM NECESSARY DESIGN CHANGES TO ACHIEVE AUTHORITY CODE COMPLIANCE.
- CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS AREA TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
- THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AT THE CONTRACTORS EXPENSE.
- THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
- THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED AND MAINTAINED.
- PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE RELEVANT SERVICE AUTHORITY FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
- THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.

PRECAST STORMWATER PITS

- THE USE OF PRE-CAST STORMWATER DRAINAGE PITS IS NOT ACCEPTED WITHOUT CONFIRMATION BETWEEN NORTHROP ENGINEERS AND THE CONTRACTOR REGARDING QUALITY CONTROL AND CERTIFICATION OF FINISHES.
- REFER MANUFACTURERS SPECIFICATIONS FOR INSTALLATION GUIDELINES.
- PRECAST PIT TO BE PLACED ON MINIMUM 150mm THICK CONCRETE PAD AND BED MINIMUM 50mm WHILST CONCRETE IS STILL PARTIALLY WET.
- ENSURE PENETRATION IS CORED THROUGH PIT FACE TO ALLOW CONNECTION.
- ENSURE A SMOOTH SEALED FINISH AT PIPE CONNECTIONS BY HAND APPLYING CONCRETE AROUND THE PIPE ON THE INTERNAL FACE OF THE PIT TO FILL IN ANY VOIDS CREATED WHEN PENETRATION FOR THE PIPE WAS CORED.
- ENSURE A SEALED FINISH AT PIPE CONNECTIONS BY HAND-APPLYING MINIMUM 150mm THICK CONCRETE AROUND PIPE AT THE EXTERNAL FACE OF THE PIT. ENSURE CONCRETE DOES NOT AFFECT THE INTEGRITY OF THE SUBSOIL DRAINAGE CONNECTED TO THE PIT.
- ENSURE PIPEWORK DOES NOT PROTRUDE INTO THE BEYOND THE WALL. PIPEWORK IS TO FINISH FLUSH WITH INTERNAL WALL (UNLESS OTHERWISE NOTED OR DETAIL).
- ENSURE THE OUTLET PIPE IS CONNECTED AT THE INVERT LEVEL OF THE PIT TO DRAIN. ALTERNATIVELY FILL THE BASE OF THE PIT WITH MASS CONCRETE (MIN 50mm THICK) OR APPROVED GROUTING COMPOUND (LESS THAN 50mm THICK) TO DRAIN.
- PROVIDE CONCRETE BENCHING TO SIDES OF PIT TO SUIT PIPE DIAMETER. HEIGHT TO MATCH MINIMUM 1/3 PIPE DIAMETER.

STORMWATER DRAINAGE

- THE CLASS OF STORMWATER PIPES TO BE ADOPTED FOR CONSTRUCTION SHALL MATCH THE CONTRACTOR'S ADOPTED CONSTRUCTION METHOD.
 - PIPES SHALL CONFORM IN ALL RESPECTS TO AS 4058:2007 PRECAST CONCRETE PIPES.
 - PIPES UP TO 600mm DIAMETER SHALL HAVE SPIGOT AND SOCKET JOINTS WITH RUBBER RINGS. PIPES LARGER THAN 600mm DIAMETER SHALL BE FLUSH (REBATED) JOINTED UNLESS NOTED OTHERWISE.
 - ALL PIPES SHALL BE CLASS 2 RCP U.N.O. WHERE uPVC PIPES HAVE BEEN SPECIFIED. THE FOLLOWING CLASS PIPEWORK IS TO BE ADOPTED U.N.O. #100mm OR LESS TO BE CLASS 'SN10' AND ABOVE #100mm TO BE CLASS 'SN8'.
 - PIPES DAMAGED AS AN APPARENT RESULT OF HANDLING AND CRACKED IN MORE THAN ONE PLACE SO AS TO SHOW CLEARLY VISIBLE CRACKS (EXCEEDING 0.13mm INSIDE OR OUTSIDE) WILL BE REJECTED.
 - PIPES SHOWING CLEARLY VISIBLE SHRINKAGE CRACKS INSIDE OR OUTSIDE AND WHERE THE OPENING OF THE CRACK IS MORE THAN 0.127mm FOR A LENGTH OF 300mm OR MORE WILL BE REJECTED.
 - PIPES SHALL BE JOINTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - uPVC STORMWATER LINES PASSING UNDER FLOOR SLABS TO BE CONCRETE ENCASED.
 - FRC PIPES EQUAL TO THAT OF THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED SUBJECT TO APPROVAL FROM THE SUPERINTENDENT.
 - ALL PIPE ARE TO BE LAID AT 10% MIN GRADE U.N.O.
 - COVERS**
 - 11.1. USE CAST IRON SOLID COVERS COMPLYING WITH RELEVANT COUNCIL AND AUSTRALIAN STANDARDS WHICH ARE TO BE THE BEST QUALITY CAST IRON, FREE FROM CRACKS, FLAWS AND POROUS SPOTS. THE INITIALS SW ARE TO BE CLEARLY VISIBLE.
 - 11.2. COVERS ARE TO BE CAST IRON WHERE ACCESS CHAMBERS SITUATED WITHIN THE ROAD BOUNDARIES OR OTHER TRAFFICABLE AREAS AND CONCRETE INFILLED ELSEWHERE.
 - 11.3. ALL COVERS AND GRATES TO BE POSITIONED IN A FRAME AND MANUFACTURED AS A UNIT.
 - 11.4. ALL COVERS TO BE FITTED WITH POSITIVE COVER LIFTING KEYS
 - 11.5. CONCRETE INFILLED COVERS TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS.
 - 11.6. UNLESS DETAILED OR SPECIFIED OTHERWISE, COVERS AND GRATES TO BE CLASS 'D' IN VEHICULAR PAVEMENTS AND CLASS 'B' ELSEWHERE.
 - 11.7. ALL GRATED TRENCH DRAINS SHALL BE CLASS 'D' CAST IRON WITHIN VEHICULAR PAVEMENTS AND CLASS 'B' HEEL SAFE WITHIN PESTERIAN PAVEMENTS.
 - 11.8. ALL COVERS AND GRATES SHALL FINISH FLUSH WITH THE ADJACENT FINISHED SURFACE LEVELS.
 - ALL PIPE BENDS, JUNCTIONS, ETC ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS.
 - ALL CONNECTIONS TO EXISTING DRAINAGE STRUCTURES SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
 - STORMWATER PIPEWORK TO FINISH FLUSH WITH INTERNAL PIT WALLS AND MUST NOT PROTRUDE. CONNECTION TO BE NEATLY RENDERED.
 - THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
 - U.N.O. MATERIAL USED FOR BEDDING OF PIPES SHALL BE APPROVED NON-COHESIVE GRANULAR MATERIAL HAVING HIGH PERMEABILITY AND HIGH STABILITY WHEN SATURATED AND FREE OF ORGANIC AND CLAY MATERIAL.
 - 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.
 - BEDDING SHALL BE U.N.O TYPE H52 UNDER ROADS AND H2 UNDER GENERAL AREAS IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS AND GUIDELINES.
 - THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AND AT NO EXTRA COST.
 - THE PIT GRATE LEVELS NOMINATED ARE TO THE LIP OF KERB. ACCESS CHAMBER COVERS LEVEL NOMINATED ARE TO CENTRE OF THE COVER. REFER DETAILS FOR CONFIRMATION.
 - INVERT LEVELS SHOWN ON THE DRAINAGE LONGITUDINAL SECTIONS ARE THE LEVELS CALCULATED AT THE CENTRE OF MANHOLES.
- SUBSOIL DRAINAGE**
- #100mm SUBSOIL DRAINAGE LINES WITH NON-WOVEN GEOTEXTILE FILTER SOCK SURROUND SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT (AT MIN 1% LONGITUDINAL GRADE) AND PROVIDED IN THE FOLLOWING LOCATIONS:
 - 22.1. THE HIGH SIDE OF PROPOSED TRAFFICKED PAVEMENT AREAS.
 - 22.2. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS.
 - 22.3. BEHIND RETAINING WALLS (IN ACCORDANCE WITH RETAINING WALL DETAIL).
 - 22.4. ALL OTHER AREAS SHOWN ON DRAWINGS.
 - 22.5. CONTRACTOR IS TO MAKE ALLOWANCE IN BOTH TENDER AND CONSTRUCTION COSTING TO ALLOW FOR SUBSURFACE DRAINAGE BEHIND ALL RETAINING WALLS / ABOVE LOCATIONS AND TO MAKE CONNECTION TO STORMWATER SYSTEM.

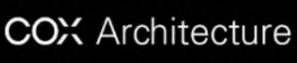
STORMWATER DRAINAGE (cont)

- WHERE SUBSOIL DRAINAGE PASSES BENEATH BUILDINGS / PAVED AREAS AND/OR PAVEMENTS. CONTRACTOR TO ENSURE #100MM CLASS 'SN10' uPVC DRAINAGE LINE IS USED AND THAT PROPRIETARY FITTINGS ARE USED TO RECONNECT SUBSOIL DRAINAGE LINE.
- THE CONTRACTOR SHALL INSTALL INSPECTION OPENINGS / CLEAROUTS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS AND IN ACCORDANCE WITH COUNCIL SPECIFICATIONS AT MAXIMUM 30M CENTRES AND AT ALL UPSTREAM ENDPOINTS.
- PROVIDE 3.0M LENGTH OF #100 SUBSOIL DRAINAGE LINE WRAPPED IN NON-WOVEN GEOTEXTILE FILTER FABRIC TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO DRAINAGE PIT.
- IN AREAS WHERE DUMPED / HAND PLACED ROCK IS USED AS A MEANS OF SCOUR PROTECTION, CONTRACTOR IS TO EXCAVATE A MINIMUM OF 100MM FROM PROPOSED SURFACE. LEVEL AND COMPACT SUBGRADE AS SPECIFIED. ROCK TO THEN BE PLACED ON GEOTEXTILE FILTER FABRIC.

SITWORKS

- ALL WORKS TO BE IN ACCORDANCE WITH RELEVANT LOCAL COUNCIL / REGULATORY AUTHORITIES REQUIREMENTS, ALL SPECIFICATIONS AND AUSTRALIAN STANDARDS. CONFLICTS BETWEEN SAID DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.
- THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH ALL REGULATORY AUTHORITIES, INCLUSIVE OF LOCAL COUNCIL REGULATIONS AND REQUIREMENTS.
- THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED PRIOR TO COMMENCEMENT OF WORKS.
- RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT ON COMPLETION OF WORKS. WHERE PLANTING OF NEW GRASS IS NECESSARY REFER TO LANDSCAPE ARCHITECT AND / OR ARCHITECT DOCUMENTATION.
- ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.
- THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR PRIOR TO COMMENCEMENT OF WORKS.
- THE CONTRACTOR TO VERIFY EXISTING PAVEMENT LEVELS AT SAWCUT LINES MATCH THE DOCUMENTED LEVELS. IF THE LEVELS ARE NOT CORRECT, CONTRACTOR IS TO ADVISE SUPERINTENDENT.
- DO NOT OBTAIN DIMENSIONS BY SCALING DRAWINGS.
- IN CASE OF DOUBT OR DISCREPANCY REFER TO SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- WHERE NEW WORKS ABOUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED. MAKE SMOOTH TRANSITION TO EXISTING FEATURES AND MAKE GOOD WHERE JOINED.
- TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.
- ALL CIVIL ENGINEERING DESIGN HAS BEEN DOCUMENTED UNDER THE ASSUMPTION THAT ALL NECESSARY SITE CONTAMINATION REMEDIATION WORKS HAVE BEEN SATISFACTORILY COMPLETED (IF APPLICABLE) AND THAT THE SITE IS NOT AFFECTED BY ANY SOIL STRATA OR GROUNDWATER TABLE CONTAMINATION.

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	PROJECT	DRAWING TITLE	JOB NUMBER	
1	SCHEMATIC DESIGN	RM	MB	MB	04.11.21	 Queensland Government Department of Education and Training	 COX Architecture	 NORTHROP Brisbane Level 9, 200 Mary Street, Brisbane QLD 4000 GPO BOX 423 Brisbane QLD 4001 (07) 3965 0400 brisbane@northrop.com.au ABN 81 094 433 100	URANGAN SHS MULTIPURPOSE HALL	CIVIL ENGINEERING PACKAGE SPECIFICATION NOTES SHEET 1 OF 3	BN212349	
2	SPECIFICATION NOTES UPDATED	MR	MB	MB	28.02.22							
						DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED	THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD				DRAWING NUMBER C-010	REVISION 2
											DRAWING SHEET SIZE = A1	

VERIFIER: XXXX
 JOB MANAGER: XXXX
 DESIGNED: XXXX
 DRAWN: XXXX

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH DEFE STANDARDS & AUTHORITY (INCLUDING LGA AND WATER AUTHORITY) STANDARDS AND GUIDELINES. THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

SIGNAGE AND LINEMARKING

- ALL SIGNAGE, LINEMARKING AND RRPM'S ARE TO BE INSTALLED IN ACCORDANCE WITH THE CURRENT DEPT. OF TRANSPORT & MAIN ROADS 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D.)
- EXISTING LINEMARKING MADE REDUNDANT BY NEW LINEMARKING IS TO BE REMOVED BY ROUTING OR OTHER METHOD APPROVED BY DEPARTMENT OF TRANSPORT & MAIN ROADS.
- ALL LINEMARKING TO BE REFLECTORIZED WHITE. U.N.O LINEMARKING REGULARLY DRIVEN ACROSS BY TRAFFIC SHALL BE PLACED USING THERMOPLASTIC (IE STOP, GIVE WAY, CONTINUITY LINES, ARROWS, ETC). PAVEMENT MARKING PAINT TYPE SHALL BE IN ACCORDANCE WITH: OLD-NUTCO-ROAD MARKING MATERIALS, WATERBORNE PAINT, FOR USE WITH DROP-ON BEADS.
- ALL TRAFFIC SIGNAL PAVEMENT MARKINGS TO BE INSTALLED IN ACCORDANCE WITH THE CURRENT DEPT. OF TRANSPORT & MAIN ROADS 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES' (M.U.T.C.D.)
- THE NOSE OF ALL ISLANDS ARE TO BE PAINTED WITH WHITE REFLECTORIZED PAINT.
- ALL TRAFFIC SIGNS TO BE SIZE 'B' UNLESS NOTED OTHERWISE.
- FOR GUIDE POST INSTALLATION & DETAILS, REFER QUEENSLAND TRANSPORT STANDARD DRAWING No.1356
- FOR TRAFFIC SIGN SUPPORT DETAILS, REFER QUEENSLAND TRANSPORT STANDARD DRAWING No.'s 1360 & 1362.
- ALL SIGN MATERIAL TO BE CLASS 1.
- LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING BY THE SUPERINTENDENT.
- WORKING BAYS ADJACENT TO PATHWAYS ARE REQUIRED TO HAVE WHEEL STOPS. REFER TO AS2890.1 FOR ADDITIONAL DETAILS.

LANDSCAPING

- REFER TO DRAWINGS BY OTHERS FOR DETAILS OF PROPOSED LANDSCAPING TREATMENT.
- U.N.O ALL DISTURBED SURFACES ARE TO BE TEMPORARILY STABILISED WITH HYDROMULCH UPON COMPLETION OF WORKS.
- A 500mm STRIP OF TURF (CT2 COUCH) IS TO BE PLACED BEHIND ALL NEW KERB AND GUTTER / ROLL KERB.

PAVEMENTS

- PRIOR TO PLACING THE PAVING MATERIAL, THE SUBGRADE SHALL BE TRIMMED TO THE CORRECT LINE AND SHAPE AND SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 98% OF THE STANDARD MAXIMUM DRY DENSITY.
- THE CONTRACTOR SHALL CONFIRM THE DESIGN CBR WITH A MINIMUM OF 3 TESTS TAKEN AT SUBGRADE LEVEL. WHERE DISCREPANCY IS FOUND, CONTACT THE DESIGN ENGINEER.
- PAVEMENT MATERIALS SHALL COMPLY WITH THE FOLLOWING DEPT. OF TRANSPORT AND MAIN ROADS SPECIFICATION MRT505 UNBOUND PAVEMENTS:
 - BASE COURSE MATERIALS SHALL BE TYPE 2.1, GRADING B OR C.
 - SUBBASE COURSE MATERIALS SHALL BE TYPE 2.3, GRADING B OR C.
 - SUBGRADE REPLACEMENT MATERIALS SHALL BE TYPE 2.5, GRADING B OR C.
- COMPACTION STANDARDS (U.N.O BY AUTHORITY CODES)

BASE	95% MMD
SUBBASE	95% MMD
SUBGRADE	98% SMD
SUBGRADE REPLACEMENT / CBR15	98% SMD
- ALLOW THE FOLLOWING COMPACTION TESTING BY A N.A.T.A REGISTERED LABORATORY - NOT LESS THAN 1 TEST PER 25 LINEAL METRES OF 2 LANE ROAD PER PAVEMENT COURSE OR PART THEREOF OR 1 TEST PER 300m² PER PAVEMENT COURSE.
- PAVEMENT MATERIAL SHALL BE COMPACTED IN LAYERS NOT LESS THAN 75mm AND NOT EXCEEDING 200mm COMPACTED THICKNESS.
- BASE COURSE SHALL BE TRIMMED TO THE REQUIRED LEVELS IN ACCORDANCE WITH THE FINISHED SURFACE LEVELS AND THE REQUIRED MINIMUM SURFACING THICKNESS.
- PAVEMENT MATERIALS SHALL BE EXTENDED UNDER KERBS, AND KERB & CHANNEL FOR A DISTANCE OF 150mm BEYOND THE BACK OF THE KERB AND SHALL BE COMPACTED AS FOR PAVEMENT MATERIALS. THE MINIMUM COMPACTED THICKNESS OF PAVEMENT MATERIAL UNDER KERBS AND KERB & CHANNEL SHALL BE 75mm.
- MATCH NEW PAVEMENTS NEATLY AND FLUSH WITH EXISTING SURFACE.
- PAVEMENT HOLD POINTS
 - SUBGRADE PROOF ROLL AND PRIOR TO SET-UP AND FORM FOR CONCRETE POUR.
 - PRESEAL PROOF ROLL
 - INSPECTION OF FORMWORK / STEEL PRIOR TO CONCRETE POUR.
 - SUBMISSION OF SUBGRADE AND BASE DENSITY TESTS.

ASPHALTIC CONCRETE (cont)

- NEW PAVEMENT SHALL BE DAMPENED AND THEN THOROUGHLY BROOMED AND ANY FOREIGN MATERIAL REMAINING ON THE PAVEMENT AFTER BROOMING SHALL BE REMOVED BY OTHER MEANS BEFORE ANY APPLICATION OF PRIMER.
- THE PRIMER USED SHALL SATISFY THE REQUIREMENTS OF AS2157. PRIMING SHALL BE CARRIED OUT AT LEAST 48 HOURS BEFORE ASPHALT IS APPLIED.
- THE SELECTION OF THE TYPE, RATE AND TEMPERATURE OF APPLICATION OF THE PRIMER OR PRIMER SEAL SHALL TAKE INTO CONSIDERATION:
 - THE PERMEABILITY AND ABSORPTION CHARACTERISTICS OF THE PAVEMENT.
 - THE TYPE OF MATERIAL USED IN THE PAVEMENT
 - THE CONDITION OF THE PAVEMENT SURFACE
 - WHETHER OR NOT THE PAVEMENT WILL BE OPEN TO TRAFFIC AFTER PRIMING
 - THE PERIOD OF TIME BEFORE APPLICATION OF ASPHALT SURFACING
- APPLICATION RATES FOR PRIMER SHALL BE:

TYPE OF SURFACE	PRIMER GRADE	APPLICATION RATE
LOW POROSITY (EXTREMELY HARD AND DENSE AFTER COMPACTION)	AMC00 OR AMC0	0.5 - 101 L/M ²
MEDIUM POROSITY (GRAVELS WITH SANDY SILT BINDERS)	AMC0 OR AMC1	0.5 - 101 L/M ²
HIGH POROSITY (WEAK FROM TEXTURED APPEARANCE)	AMC1 OR AMC2	0.8 - 141 L/M ²
- PRIMING SHALL NOT BE CARRIED OUT IF THE PAVEMENT IS WET, RAIN THREATENS OR THE PAVEMENT OR AMBIENT TEMPERATURE IS LESS THAN 15°C.
- TACK COAT SHALL BE SPRAYED ON THE EXISTING SURFACE FOR RESURFACING WORK. IT IS NOT REQUIRED ON A NEW PRIMER OR PRIMER SEAL UNLESS ORDERED BY THE SUPERINTENDENT.
- APPLY THE TACK COAT LIGHTLY AND EVENLY WITH A FINE SPRAY OF APPROVED BITUMEN EMULSION AT A RATE EQUIVALENT TO 0.3 - 0.5 L/M². DILUTION WITH WATER MAY BE REQUIRED TO FACILITATE SPRAYING.
- ANY OVERSPRAY OF THE TACK COAT OR PRIMER ONTO KERB AND CHANNEL, MEDIANS, GULLY PITS ETC. SHALL BE REMOVED.
- ASPHALT SHALL BE PLACED UTILISING AN APPROVED SELF-PROPELLED MACHINE WITH AN EFFECTIVE SPREADING CAPACITY OF NOT LESS THAN 400 TONNES OF MIX PER 8 HOUR DAY OR OF A SUITABLE CAPACITY FOR WORK ON SMALL CONSTRUCTION AREAS AND FOOTPATHS. IT SHOULD INCLUDE THE FOLLOWING FEATURES:
 - MEANS OF PUSHING EACH MOTOR TRUCK DURING SPREADING
 - A RECEIVING HOPPER INTO WHICH MOTOR TRUCKS CAN DISCHARGE MATERIAL
 - DISTRIBUTING SCREWS TO PLACE THE MATERIAL EVENLY IN FRONT OF THE SCREED PLATE WITHOUT SEGREGATION
 - AUTOMATIC TAMPING OR VIBRATING DEVICE
 - AN ADJUSTABLE SCREED CAPABLE OF PROVIDING A SMOOTH EVEN SURFACE FREE FROM TEARS OR OTHER BLEMISHES TO A WIDTH NOT LESS THAN 3.5M FOR WORK ON ROADWAYS. PROVISION SHALL BE MADE FOR EASY ADJUSTMENT TO PERMIT LESSER WIDTHS
 - AN APPROVED SCREED HEATING DEVICE
 - EFFECTIVE STEERING SUCH THAT THE MIX CAN BE LAID TO A TRUE LINE
 - MEANS OF ADJUSTING DEPTH OF SPREAD BETWEEN 6MM AND 100MM (COMPACTED THICKNESS)
- THE TEMPERATURE OF THE MIX WHEN IT IS TIPPED INTO A SPREADER SHALL NOT BE LESS THAN 130°C, NOR GREATER THAN 175°C. SPREADING SHALL COMMENCE AT A TEMPERATURE OF NOT LESS THAN 95°C NOR GREATER THAN 130°C. IT MAY BE NECESSARY TO COMPLETE COMPACTION AT HIGHER TEMPERATURES 95°C FOR THIN LAYERS (LESS THAN 50MM) IN COLDE AND WINDY CONDITIONS.
- DO NOT HAND PLACE ASPHALT WITHOUT PRIOR APPROVAL FROM ENGINEER.
- THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM.
- THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REMAINDER OF THE LAYER.
- COMPACTION SHALL BE CARRIED OUT USING SUCH EQUIPMENT AND TECHNIQUES AS ARE NECESSARY TO ACHIEVE A FIELD DENSITY OF AT LEAST 93% OF THAT OF A LABORATORY SPECIMEN OF THE SAME MIX, COMPACTED BY THE MARSHALL TEST METHOD.
- THE FINISHED SURFACE OF ALL COMPACTED ASPHALT SHALL BE FINISHED TRUE TO GRADE AND PROFILE WITH SMOOTH JOINTS AND A NEAT FINISH AROUND MANHOLES AND OTHER ROAD SURFACE FITTINGS AND SHALL NOT VARY MORE THAN:
 - ±5MM FROM THE SPECIFIED PLAN LEVEL AT ANY POINT.
 - ±5MM OR -0MM FROM THE BOTTOM OF A STRAIGHT EDGE.
 - ±5MM OR -0MM ADJACENT TO OTHER ELEMENTS SUCH AS KERBS AND THE LIKE TO AVOID POOLING OF SURFACE WATER.
- MEASURED CORES CUT FOR DENSITY TESTING SHALL HAVE 4 OUT OF 5 TESTS FALL WITHIN TOLERANCE. 1 OUT OF 5 TESTS MAY FALL LESS THAN 5MM OUTSIDE OF TOLERANCE.
- DO NOT STORE PLANT EQUIPMENT OR TRAFFIC NEWLY LAID ASPHALTIC CONCRETE PAVEMENTS WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- DO NOT APPLY MARKING PAINTS UNTIL ASPHALT HAS CURED IN ACCORDANCE WITH PAINT MANUFACTURERS SPECIFICATIONS.

ENGINEERING CERTIFICATION

- TO CERTIFY THE CONSTRUCTED CIVIL WORKS, A QUALIFIED EXPERIENCED ENGINEER IS TO VISIT THE SITE TO OBSERVE CONSTRUCTION TECHNIQUES AND VARIOUS ELEMENTS THAT MAY BE CONCEALED WHEN THE WORKS ARE COMPLETE. PLEASE NOTE THAT RPEO CERTIFIED CONSTRUCTION CERTIFICATION CANNOT BE PROVIDED WHERE NORTHROP STAFF HAVE NOT ATTENDED INSPECTIONS AND ADEQUATE AS-CONSTRUCTED DOCUMENTATION HAS NOT BEEN SUPPLIED. CONTRACTOR IS LIABLE FOR ALL COSTS & RE-WORK REQUIRED WHERE ADEQUATE CONSTRUCTION INSPECTIONS/RECORDS HAVE NOT BEEN FACILITATED & SUPPLIED.
- THIS SPECIFICATION ALLOWS FOR CERTIFICATION OF WORKS CONTROLLED BY A PRIVATE CERTIFIER FOR LAND DEVELOPMENT WORKS. THIS SPECIFICATION DOES NOT COVER CERTIFICATION REQUIREMENTS FOR AUTHORITIES SUCH AS THE LOCAL COUNCIL, DEPT. OF TRANSPORT AND MAIN ROADS OR SERVICE PROVIDER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND PROVIDE ALL PROJECT SPECIFIC CONSTRUCTION COMPLIANCE (AS CONSTRUCTED) INFORMATION TO THE SATISFACTION OF THE STAKEHOLDER / AUTHORITY. DISCREPANCIES BETWEEN THIS SPECIFICATION AND SPECIFICATIONS OF OTHER EXTERNAL STAKEHOLDERS / AUTHORITIES IS TO BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION.
- THE CONTRACTOR IS TO AGREE WITH THE ENGINEER AN APPROPRIATE SITE VISIT SCHEDULE AND FEE ARRANGEMENT PRIOR TO COMMENCEMENT OF THE WORKS. THE CONTRACTOR SHALL ENSURE THAT THE ENGINEER CAN SAFELY ACCESS ALL CIVIL ELEMENTS TO BE REVIEWED. SITE VISITS ARE CONDUCTED DURING NORMAL BUSINESS HOURS. WE REQUIRE TWO (2) WORKING DAY NOTICE FOR ANY SITE VISIT.
- TO PROVIDE CERTIFICATION THE ENGINEER MUST VISIT THE SITE TO OBSERVE:
 - PAVEMENTS
 - POOR SUBGRADE CONDITIONS
 - PROOF ROLLING OF SUB-GRADE
 - PROOF ROLLING OF PRE-SEAL
 - PLACEMENT OF SUB-BASE COURSE, BASE COURSE AND WEARING COURSE
 - PLACEMENT OF STEEL REINFORCEMENT, DOWELS AND JOINT CRADLES PRIOR TO POURING OF CONCRETE
 - EARTHWORKS
 - TOPSOIL STRIP
 - EARTHWORKS BATTER
 - FILLING
 - STORMWATER DRAINAGE
 - DRAINAGE TRENCHES PRIOR TO BACKFILLING
 - LEGAL POINT OF CONNECTION PRIOR TO BACKFILLING
 - ANY OTHER DRAINAGE STRUCTURE THAT MAY BE CONCEALED DURING THE COURSE OF THE WORKS
 - CONCRETE STRUCTURES
 - PLACEMENT OF ANY STEEL REINFORCEMENT PRIOR TO CONSTRUCTION
- THE CONTRACTOR SHALL PROVIDE SURVEYED LEVELS, PREPARED BY A QUALIFIED SURVEYOR FOR SUBGRADE, SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.
- THE CONTRACTOR SHALL PROVIDE AS CONSTRUCTED DOCUMENTATION PREPARED BY A QUALIFIED PRACTISING SURVEYOR. THE AS CONSTRUCTED DRAWINGS SHALL CLEARLY SHOW, STORMWATER GRATE / COVER LEVELS, STORMWATER PIT INVERT LEVELS AND CORRESPONDING INVERT LEVELS OF ANY INCOMING OR OUTGOING PIPES, DIAMETER OF ALL PIPES, DIMENSIONS AND VOLUME OF ON-SITE OVERTFLOW FACILITIES, INVERT LEVELS OF ORIFICE PLATES, DEFLEW WEIRS, BASE OF TANK FINISHED LEVELS OF PAVEMENTS. THE AS CONSTRUCTED DRAWINGS SHALL SHOW WHERE THE SIZE OR ALIGNMENT OF CIVIL ENGINEERING ELEMENTS WHEN THEY DEVIATE FROM THE DESIGN DOCUMENTATION.
- THE AS CONSTRUCTED DRAWINGS SHALL BE STAMPED WITH THE FOLLOWING STATEMENT "THESE AS CONSTRUCTED DRAWINGS HAVE BEEN PREPARED BY [COMPANY NAME] AND ARE A TRUE AND ACCURATE REPRESENTATION OF THE CONSTRUCTED WORKS". EACH DRAWING SHALL BE SIGNED AND DATED BY THE SURVEYOR WHO PREPARED THE DRAWINGS.

THESE AS CONSTRUCTED DRAWINGS HAVE BEEN PREPARED BY [COMPANY NAME] AND ARE A TRUE AND ACCURATE REPRESENTATION OF THE CONSTRUCTED WORKS.

SIGNED..... DATE.....

NAME.....

POSITION.....
- AS CONSTRUCTED DRAWINGS SHALL BE PROVIDED IN BOTH AUTOCAD AND PDF FORMAT.
- CONTRACTOR IS TO UNDERTAKE A CCTV INSPECTION OF ALL STORMWATER DRAINAGE PIPELINES AND PROVIDE TO THE ENGINEER FOR APPROVAL.
- THE CONTRACTOR SHALL PROVIDE ALL RELEVANT TEST CERTIFICATES PROGRESSIVELY THROUGHOUT THE DURATION OF THE WORKS. ALL TEST CERTIFICATES SHALL BE PREPARED BY A NATA REGISTERED LABORATORY. TEST CERTIFICATES ARE REQUIRED FOR SUBGRADE COMPACTION, COMPACTION OF PAVEMENT LAYERS, COMPACTION OF FILLING OPERATIONS, CONCRETE SLUMP TEST, AND CONCRETE STRENGTH TESTS. THE CONTRACTOR SHALL PROVIDE ALL RELEVANT VALIDATIONS BY A GEOTECHNICAL ENGINEER FOR ALL IMPORTED FILL.
- THE CONTRACTOR IS TO MAINTAIN COMPREHENSIVE CONSTRUCTION RECORDS (PHOTOS, AS-CONSTRUCTED SURVEY, TESTING RESULTS MATERIAL DOCKETS ETC) AND IS TO ISSUE TO NORTHROP AT THE END OF EACH WORKING WEEK, AS WELL AS A WELL ORGANISED AND COLLATED 'CONSTRUCTION COMPLIANCE PACKAGE' OF DATA AT THE COMPLETION OF WORKS.

ENGINEERING CERTIFICATION (cont)

- EACH TEST CERTIFICATE WILL NOMINATE THE DATE AND TIME OF THE TEST AND PROVIDE A LOCATION OF WHERE THE TEST SAMPLE WAS TAKEN FROM.
- THE CONTRACTOR SHALL ARRANGE FOR THE ENGINEER TO CONDUCT A FINAL VISIT TO REVIEW OF THE CONSTRUCTED WORKS. THIS WILL REVIEW WILL NOT TAKE PLACE UNTIL THE WAE DOCUMENTATION AND RELEVANT TEST CERTIFICATES HAVE BEEN RECEIVED.
- IF DEFECTIVE OR INCOMPLETE WORK IS FOUND DURING THE FINAL INSPECTION ANOTHER INSPECTION MAY BE REQUIRED AT THE CONTRACTORS EXPENSE TO VERIFY THE RECTIFICATION WORKS HAVE BEEN COMPLETED.

BITUMEN SEALING

- PAVEMENT PREPARATION
 - THE SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL, FOREIGN OR LOOSE MATTER.
 - IF APPROVED BY THE MANAGING CONTRACTOR, ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT TO GENERAL LEVEL OF PAVEMENT WITH ASPHALT CONCRETE BEFORE SEALING COMMENCES.
- MATERIALS
 - BINDER SHALL BE CLASS 170 TO AS 2008 OR APPROVED PROPRIETARY MATERIAL FOR PRIMING AND PRIME SEALING.
 - AGGREGATE SHAPE, DURABILITY AND WET TO DRY STRENGTH SHALL COMPLY TO AS2758 FOR CLASS 'N' AGGREGATES. A 20kg SAMPLE TO BE APPROVED BY THE MANAGING CONTRACTOR PRIOR TO USE.
 - AGGREGATES SHALL BE DELIVERED UNIFORMLY PRECOATED. EXCESSIVE PRECOATING WILL RESULT IN AGGREGATES BEING REJECTED.
 - FOR TWO COAT FLUSH SEALS, THE SIZE OF THE AGGREGATE FOR THE SECOND COAT, WHILE NORMALLY HALF THAT OF THE FIRST COAT, SHALL BE DIMENSIONALLY COMPATIBLE WITH THAT OF THE FIRST COAT.
 - PRECOATING AGENTS SHALL BE COMPATIBLE WITH THE AGGREGATES AND BINDER TO BE USED.
- DESIGN
 - DESIGN OF SPRAYED BITUMINOUS SEALS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AUSTRADRS (INASRA) PUBLICATION "PRINCIPLES AND PRACTICE OF BITUMINOUS SURFACING, VOLUME 1 - SPRAYED WORK".
 - WHERE NOT INDICATED ON THE DRAWINGS, PRIMES AND PRIMER SEALS SHALL BE DESIGNED TO REMAIN INTACT UNTIL FINAL SEALING TAKES PLACE, HAVING REGARD FOR THE TRAFFIC AND CLIMATIC CONDITIONS.
 - UNLESS OTHERWISE SPECIFIED, BINDER APPLICATION RATES SHALL BE SELECTED TO FILL 85% OF THE THEORETICAL VOIDS OF THE MAT.
- BITUMEN FLUSH SEALING
 - BITUMEN FLUSH SEALS SHALL BE EITHER SINGLE OR DOUBLE COAT AS SHOWN ON THE DRAWINGS. eg 14/7 INDICATES A DOUBLE COAT FLUSH SEAL USING TWO APPLICATIONS OF BITUMEN AND AGGREGATE. THE FIRST AGGREGATE LAYER BEING OF 14mm NOMINAL SIZE, THE SECOND 7mm.
 - COVER AGGREGATE SHALL BE SPREAD IMMEDIATELY AFTER SPRAYING OF BINDER. IN NO CASE SHALL SPREADING BE DELAYED MORE THAN 8 MINUTES.
- RECORDS
 - ALL SPRAY RECORDS AND AGGREGATE SUPPLY TONNAGE RECEIPTS SHALL BE RETAINED AND PASSED ON TO THE CONSULTING ENGINEER AS PART OF QUALITY ASSURANCE PROCEDURES.

CONCRETE SEALING

- THE CURING PROCESS FOR NEW CONCRETE IS TO INCORPORATE THE FOLLOWING ASPECTS, GENERALLY AS ORDERED,
 - SPRAY CURING COMPOUND
 - SAWCUT JOINTS AS LOCATED AND SPECIFIED AS SOON AS CURING PERMITS.
 - COVER NEW PAVING WITH HESSIAN AND BLACK PLASTIC SHEETS TAPED AT JOINTS ON COMPLETION OF SAWCUTTING. NOTE COVERING IS TO EXTEND A MINIMUM 5m BEYOND PAVEMENT BEING CURED. OVER ADJOINING (EXISTING) PAVEMENT AREAS, MAINTAIN CURING AS SPECIFIED.

CONCRETE PAVEMENTS

- THIS SECTION REFERS TO CIVIL CONCRETE WORKS AND DOES NOT INCLUDE STRUCTURAL ELEMENTS SUCH AS BUILDINGS, BELOW GROUND STRUCTURES OR RETAINING WALLS.
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- CONCRETE QUALITY AND REINFORCING COVER

ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

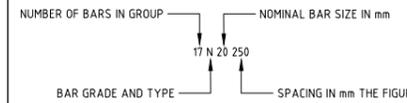
ELEMENT	CONCRETE STRENGTH f _c (MPa)	SPECIFIED SLUMP	NOMINAL AGGREGATE SIZE	MAX. 56 DAY DRYING SHRINKAGE	COVER (mm)
KERBS AND PATHS	25	60	20	650microns	TOP 40
PITS AND VEHICULAR PAVEMENTS	32	80	20	650microns	TOP 40

- CONCRETE PROPERTIES SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS:
 - MINIMUM CEMENT CONTENT 250 kg/m³
 - MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
 - WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
- CONCRETE PROPERTIES SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS:
 - MINIMUM CEMENT CONTENT 250 kg/m³
 - MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
 - WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
- ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS. PLASTIC CHAIRS OR CONCRETE CHAIRS NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL.
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1319. TEST CYLINDERS ARE TO BE KEPT ON SITE.
- ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE CIVIL ENGINEER FOR REVIEW.
- ALL CONCRETE IS TO BE CONTINUOUSLY CURED FOR A MINIMUM PERIOD OF 10 DAYS AFTER PLACING. CURING TO COMMENCE IMMEDIATELY AFTER FINISHING. SPRAY ON CURING COMPOUNDS TO COMPLY WITH AS3799.
- PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR. ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM THE CIVIL ENGINEER.
- FALLS IN SLAB AS SHOWN ON PLAN MAINTAIN MINIMUM SLAB THICKNESS AS SHOWN.
- NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER.
- THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.
- FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:
 

FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS1304.
- POLYETHYLENE SHEET SHALL BE PLACED BELOW ALL CONCRETE PAVEMENTS.
- ALL PENETRATIONS TO HAVE 2/N12 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 700 BEYOND PENETRATION. MAINTAIN 40mm COVER TOP AND BOTTOM.
- FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS3600.
- SURFACE FINISHES:

ELEMENT	FORMWORK CLASS
STORMWATER PIT PAVEMENTS	OFF FORM
KERBS	MACHINE FLOAT / BROOM FINISH
	STEEL FLOAT / TROWEL
- REINFORCEMENT SYMBOLS:

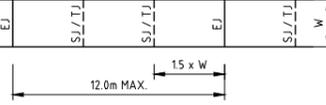
N	NOTES GRADE 450 N BARS TO AS1302 GRADE N
R	NOTES 230 R HOT ROLLED PLAIN BARS TO AS1302
SL	NOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304



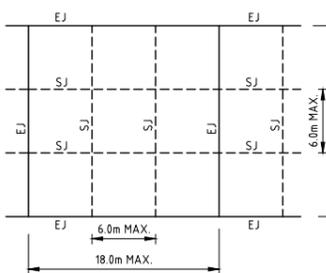
PAVEMENT JOINTS

- PROVIDE 10mm ABLEFLEX BETWEEN NEW CONCRETE WORKS AND EXISTING STRUCTURES.
- LOCAL AUTHORITY REQUIREMENTS SHALL TAKE PRECEDENCE WITHIN THE PUBLIC ROAD RESERVE.
- DOWELS TO BE PLACED ON PROPRIETARY CRADLES TO ENSURE CORRECT SPACING AND ALIGNMENT.
- PEDESTRIAN PAVEMENTS

ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.

 - EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 12.0m CENTRES.
 - WEAKENED PLANE JOINTS (SAWN OR TOOL JOINTS) ARE TO BE LOCATED AT A MAX. SPACING OF 15m x WIDTH OF THE PAVEMENT.
 - WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
 - TYPICAL PEDESTRIAN PAVEMENT JOINT DETAIL:
 
- VEHICULAR PAVEMENTS

ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.

 - TIED KEYED CONSTRUCTION JOINTS SHOULD GENERALLY BE LOCATED LONGITUDINALLY AT A MAX. OF 6.0m CENTRES.
 - SAWN JOINTS SHOULD GENERALLY BE LOCATED LATERALLY AT A MAX. OF 6.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX. 18.0m CENTRES.
 - TYPICAL VEHICULAR PAVEMENT JOINT DETAIL:
 
- KERB EXPANSION JOINTS SHALL BE FORMED FROM 10mm ABLEFLEX FOR FULL DEPTH OF SECTION.
- KERB EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, TANGENT POINTS OF CURVES / CORNERS AND AT 12m MAX CENTRES.
- KERB TOOLED JOINTS TO BE MIN 3mm WIDE AND LOCATED AT MAX 3m CENTRES.
- INTEGRAL KERB JOINTS SHALL MATCH THE LOCATION OF PAVEMENT JOINTS.

ASPHALTIC CONCRETE

- ALL ASPHALTIC CONCRETE (AC) WORK TO BE PREPARED AND CARRIED OUT IN ACCORDANCE WITH GOOD ASPHALTIC PAVING PRACTICE AS DESCRIBED IN AS2150-2005 "ASPHALT (HOT-MIXED) PAVING - GUIDE TO GOOD PRACTICE" AND CURRENT DEPT. OF TRANSPORT AND MAIN ROADS SPECIFICATION MRT505.
- ASPHALT SURFACING SHALL NOT COMMENCE UNTIL THE UNDERLYING PAVEMENT (EITHER NEW OR EXISTING) HAS BEEN INSPECTED AND APPROVED BY THE SUPERINTENDENT.
- EXISTING SURFACES SHALL BE THOROUGHLY CLEANED, BY BROOMING OR OTHER APPROVED MEANS. ALL FOREIGN MATTER ADHERING TO THE PAVEMENT SHALL BE REMOVED BEFORE ANY TACK COATING OR ASPHALT SPREADING IS CARRIED OUT.

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT	ARCHITECT	ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE	PROJECT	DRAWING TITLE	JOB NUMBER
1	SCHEMATIC DESIGN	RM	MB	MB	04.11.21	Queensland Government Department of Education and Training	COX Architecture	NORTHROP Brisbane Level 9, 200 Mary Street, Brisbane QLD 4000 GPO BOX 423 Brisbane QLD 4001 (07) 3995 0400 brisbane@northrop.com.au ABN 81 094 433 100	URANGAN SHS MULTIPURPOSE HALL	CIVIL ENGINEERING PACKAGE SPECIFICATION NOTES SHEET 2 OF 3	BN212349
2	SPECIFICATION NOTES UPDATED	MR	MB	MB	28.02.22						DRAWING NUMBER C-011
											REVISION 2
											DRAWING SHEET SIZE = A1

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH DETE STANDARDS & AUTHORITY (INCLUDING LGA AND WATER AUTHORITY) STANDARDS AND GUIDELINES. THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

CONCRETE

1. CARRY OUT ALL CONCRETE WORK IN ACCORDANCE WITH AS3600 AND NATSPEC CONCRETE STANDARDS.

2. CONCRETE PROPERTIES AND COVER TO REINFORCING:

ELEMENT	CONCRETE STRENGTH f _c (MPa)	MAX. 56 DAY DRYING SHRINKAGE	COVER (mm)	
SLABS ON GROUND	32	650microns	TOP 40	BTM 40
TANK LID	40	700microns	TOP 40	BTM 40

MAXIMUM AGGREGATE SIZE = 20mm U.N.O.
SLUMP DURING PLACING = 75mm
EXPOSURE CLASSIFICATION = B1
NO ADMIXTURES SHALL BE USED IN CONCRETE MIX UNLESS APPROVED BY STRUCTURAL ENGINEER IN WRITING.

3. CONCRETE PROPERTIES FOR SLABS AND BEAMS SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS:
- MINIMUM CEMENT CONTENT 250kg/cu.m
- PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.

4. SUBMIT FOR APPROVAL THE FOLLOWING TO THE STRUCTURAL ENGINEER:
- CURING PROCEDURE (PVA MEMBRANES NOT PERMITTED)
- STRIPPING PROCEDURE
- DETAILS AND LOCATION OF CAST IN SERVICES
- CONDUITS, PENETRATIONS AND CONSTRUCTION JOINT LOCATIONS

5. ALL CONCRETE MIXES SHALL BE DESIGNED BY A RECOGNISED TESTING LAB AND SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER.

6. ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.

7. PROJECT CONTROL TESTING SHALL BE CARRIED OUT ON ALL CONCRETE IN ACCORDANCE WITH AS1379. TEST CYLINDERS ARE TO BE KEPT ON SITE.

8. ALL CONCRETE IS TO BE CONTINUOUSLY CURED FOR A MINIMUM PERIOD OF 10 DAYS AFTER PLACING. CURING TO COMMENCE IMMEDIATELY AFTER FINISHING. SPRAY ON CURING COMPOUNDS TO COMPLY WITH AS3799.

9. FOR TENDER PURPOSES ASSUME MINIMUM STRIPPING TIMES AND EXTENT OF BACK PROPPING AS PER AS3610-1995 SECTION 5.0 AND AS PER GENERAL NOTES FOR FORMWORK AND PROPPING.

10. FORMWORK FINISH CLASSIFICATION TO AS3600:

ELEMENT	CLASS
- INGROUND FOOTINGS	5
- RETAINING WALLS	5 EARTH FACE
- RETAINING WALLS	3 EXPOSED FACE
- COLUMNS	2
- BEAMS AND SLABS	2

11. SURFACE FINISHES:
- COLUMNS AND WALLS OFF FORM

12. COMPACT ALL CONCRETE INCLUDING FOOTINGS AND SLABS, USING MECHANICAL VIBRATORS.

13. PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR. ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM THE STRUCTURAL ENGINEER.

14. CONCRETE PROFILES:
- BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE THE SLAB THICKNESS
- SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES
- NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
- PROVIDE DRIP GROOVES AT ALL EXPOSED EDGES, CHAMFERS, DRIP GROOVES, REGLETS ETC TO BE TO ARCHITECTS DETAILS.

15. ALL PENETRATIONS TO HAVE 2-N16 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 600 BEYOND PENETRATION.

16. SETDOWNS OR FALLS IN FLOOR SURFACES ARE NOT PERMITTED UNLESS SHOWN ON DRAWINGS. MAINTAIN MINIMUM SLAB THICKNESS SHOWN ON PLAN WHERE FALLS OCCUR.

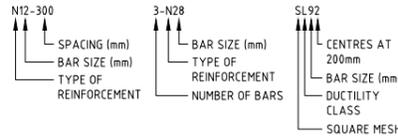
CONCRETE (cont)

17. REINFORCEMENT GRADE AND NOTATION:

SYMBOL	BAR SHAPE	STRENGTH GRADE (MPa)	DUCTILITY CLASS	TO COMPLY WITH AUSTR STANDARD
N	DEFORMED RIB BAR	500	NORMAL	AS4671
R	PLAIN ROUND BAR	250	NORMAL	AS4671
RL	RECTANGULAR MESH OF DEFORMED RIB BAR	500	LOW	AS4671
SL	SQUARE MESH OF DEFORMED RIB BAR	500	LOW	AS4671
L-TM	TRENCH MESH	500	LOW	AS4671

ALL REINFORCING BARS SHALL BE GRADE D500N TO AS4671 AND ALL MESH SHALL BE GRADE S00L TO AS4671 U.N.O. CLASS L REINFORCEMENT SHALL NOT BE USED U.N.O.

REINFORCEMENT LABELS:



18. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, AND NOT NECESSARILY IN TRUE PROJECTION. BARS SHOWN ARE INDICATIVE ONLY AND LENGTHS MAY VARY. BEAM ELEVATIONS TAKE PRECEDENCE OVER SECTIONS. SLAB PLANS TAKE PRECEDENCE OVER SECTIONS. REFER TO SECTIONS FOR EXTRA BARS THAT MAY BE REQUIRED.

19. USE ONLY ALL PLASTIC OR CONCRETE CHAIRS AT EXTERNAL SURFACES.

20. SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A RE-BENDING TOOL. THE BARS SHALL BE RE-BENT AGAINST A FLAT SURFACE OR A PIN WITH A DIAMETER NOT LESS THAN THE MINIMUM PIN SIZE PRESCRIBED IN AS3600-2001.

21. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH AS3600 SECTION 13 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.

22. FOR LAPS IN MESH REFER TO SLAB ON GROUND NOTES.

23. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.

24. AT EXTERNALLY EXPOSED SURFACES NO METALLIC ITEMS INCLUDING FORM BOLTS, FORM SPACERS, METALLIC BAR CHAIRS AND THE WIRE ARE TO BE PLACED IN THE COVER ZONE.

25. ALL REINFORCEMENT, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION AND INSPECTED BY THE STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE.

26. HOLD DOWN BOLTS SHALL BE HOT DIPPED GALVANISED.

27. U.N.O. ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAMSET TRUBOLTS (LONGEST VERSION) OR APPROVED EQUIVALENT. BOLTS SHALL BE GALVANISED WHERE THEY ARE ADJOINING NON FERROUS OR PREPAINTED MEMBERS. PROVIDE STAINLESS STEEL BOLTS FOR ALL EXTERNAL CONDITIONS, OR WHERE EXPOSED TO THE WEATHER.

SCOUR PROTECTION ROCK

1. ROCK USED IN THE SCOUR PROTECTION SHALL CONSIST OF MATERIAL WHICH COMPLIES WITH THESE NOTES AND THE DRAWINGS. THIS REQUIREMENT APPLIES TO BOTH IMPORTED ROCK AND IN-SITU ROCK WHICH IS RE-USED.

2. INDIVIDUAL ROCKS SHALL BE FREE FROM CRACKS, CLEAVAGE PLANES, SEAMS AND DEFECTS WHICH WOULD RESULT IN THE BREAKDOWN OF THE ROCK IN SERVICE.

3. ROCK UNITS SHALL BE EITHER SEDIMENTARY ROCK ONLY OR IGNEOUS ROCK ONLY AND AS A MINIMUM, SHALL SATISFY THE FOLLOWING CRITERIA:

- ROCK SHALL BE ROUGH AND ANGULAR.
- ROCK SHALL HAVE A MINIMUM DRY DENSITY OF 2200 kg/m.
- IGNEOUS ROCK SHALL HAVE NO MORE THAN 10% (BY VOLUME) OLIVINE MATERIAL AND SHALL EXHIBIT NO ZONES OF SECONDARY ALTERATION SUCH AS CHLORITISATION. SEDIMENTARY ROCK SHALL HAVE A MINIMUM SODIUM SULPHATE SOUNDNESS WEIGHT LOSS NOT EXCEEDING 25%.
- ROCK SHALL HAVE A SATURATED POINT LOAD STRENGTH INDEX (IS50) NO LESS THAN 5.0 MPa FOR IGNEOUS ROCK AND 15 MPa FOR SEDIMENTARY ROCK.
- THE RATIO OF THE MAXIMUM DIMENSION TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION SHALL NOT EXCEED 2.5.

4. THE ROCK UNITS SHALL BE PLACED SUCH THAT THE SPECIFIED REQUIREMENTS FOR SIZE, FINISHED SIDE SLOPES, TOP AND TOE LEVELS AND DENSITY REQUIREMENTS, ARE SATISFIED. IN ADDITION, ROCKS SHALL BE WEDGED AND LOCKED TOGETHER SUCH THAT THEY ARE NOT FREE TO MOVE. ROCK UNITS SHALL NOT BE ROLLED OR DROPPED INTO POSITION, THEY SHALL BE PLACED.

5. THE METHOD OF ROCK PLACEMENT SHALL BE SUCH AS TO MINIMISE ITS BREAKDOWN ON HANDLING AND THE PRODUCTION OF FINES.

6. A NON-WOVEN GEOTEXTILE (BIDIM A64 OR EQUIVALENT) SHALL BE PLACED UNDERNEATH AND BEHIND ALL ROCK ARMOUR AND EXTEND 0.5m ABOVE THE EXTENT OF THE WORKS OR AS OTHERWISE SHOWN ON THE DRAWINGS. THE GEOTEXTILE IS TO BE LAID ON A NEATLY TRIMMED BATTER THAT IS FREE OF HOLLOWES OR SHARP OBJECTS.

7. GEOTEXTILE LAYERS SHALL EITHER OVERLAP OR ANOTHER BY 100mm OR BE SEWN TOGETHER (WITH A NON-BIODEGRADABLE THREAD) WITH AN OVERLAP OF 100mm.

8. ROCK SUB-ARMOUR SHALL BE PLACED UPON THE GEOTEXTILE IN A LAYER NO LESS THAN 150mm THICK UNLESS NOTED OTHERWISE ON DRAWINGS.

9. ROCK ARMOUR SHALL BE SELECTIVELY HAND PLACED UPON THE SUB-ARMOUR TO ENSURE A SNUG FIT SUCH THAT INDIVIDUAL ROCKS ARE NOT TO MOVE. THE PLACING OF ANY ARMOUR ROCK SHALL BE COMPLETED IN SUCH A MANNER TO MINIMISE THE DISTURBANCE OR DISLODGEEMENT OF THE SUB-ARMOUR.

10. THE ROCK ARMOUR SHALL BE NO LESS THAN 375mm THICK UNLESS NOTED OTHERWISE ON THE DRAWINGS.

11. THE ARMOUR ROCK AND SUB-ARMOUR ROCK SHALL BE PLACED TO THE CONSTRUCTION TOLERANCES SHOWN ON THE DRAWINGS.

12. AT LEAST FOURTEEN (14) DAYS PRIOR TO THE SUPPLY OF ANY ROCK, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO DEMONSTRATE THAT THE ROCK TO BE SUPPLIED COMPLIES WITH THE REQUIREMENTS OF THE SPECIFICATION.

BIO-RETENTION SWALES & BASIN

1. FILTER MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1.1". THE MINIMUM ORGANIC CONTENT OF THE FILTER MEDIA SHALL BE 3%.

2. TRANSITION & DRAINAGE MEDIA LAYER SHALL CONFORM WITH THE SPECIFICATIONS OF FAWB GUIDELINES FOR BIOFILTRATION MEDIA (VERSION 3.01) & WATER BY DESIGN SPECIFICATIONS "BIO RETENTION TECHNICAL DESIGN GUIDELINES VERSION 1.1".

3. THE CONTRACTOR IS RESPONSIBLE FOR UNDERTAKING DETAILED SURVEY OF EACH LAYER OF THE MEDIA INSTALLED INCLUDING THE SUBGRADE & FINISHED LEVEL SURVEYS. THE DIGITAL SURVEY DATA FOR EACH LAYER IS TO BE ISSUED TO THE SUPERINTENDENT FOR REVIEW PRIOR TO THE SUBSEQUENT LAYER BEING INSTALLED. THE REQUIRED TOLERANCES FOR CONSTRUCTION OF THE MEDIA LAYERS IS INCLUDED IN THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS - BIORETENTION SYSTEMS (VERSION 1.1). ALL COSTS ASSOCIATED WITH THE DETAILED SURVEY OF THE BIORETENTION SYSTEMS, THE STAGED CONSTRUCTION APPROACH DUE TO THE SURVEY REVIEW PROCESS, & ANY REWORKS REQUIRED AS A RESULT OF THE SURVEY REVIEWS ARE DEEMED INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR THE PROJECT.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-SIGNING THE WATER BY DESIGN CONSTRUCTION & ESTABLISHMENT SIGN OFF FORMS - BIORETENTION SYSTEMS (VERSION 1.1) AT THE TIME OF CONSTRUCTION OF THE BIORETENTION SYSTEMS AS WELL AS MANAGING & COMPLYING WITH THE RELEVANT HOLD & SWITNESS POINTS SPECIFIED IN THESE FORMS.

5. A PERMEABLE NON-WOVEN GEOTEXTILE (MIN. 200mm/h) IS TO BE WRAPPED AROUND ALL BIO-RETENTION BASIN / SWALES DRAINAGE MEDIA TO PROTECT AGAINST THE INGRESS OF FINES.

6. BIO-RETENTION FILTER MEDIA IS TO BE FREE OF RUBBISH, DELETERIOUS MATERIAL AND LIGHTLY COMPACTED ONLY.

7. BIO-RETENTION FILTER MEDIA SATURATED HYDRAULIC CONDUCTIVITY TO BE 200mm/hr. PERMEABILITY IS TO BE TESTED USING THE AS4419 (LATEST EDITION) (SOILS FOR LANDSCAPING AND GARDEN USE) METHOD (APPENDIX H).

8. BIO-RETENTION FILTER MEDIA PARTICLE SIZE DISTRIBUTION IS TO BE AS FOLLOWS:

CLAY & SILT	-3%	(-0.05mm)
VERY FINE SAND	5-30%	(0.05 - 0.15mm)
FINE SAND	10-30%	(0.15 - 0.25mm)
MEDIUM TO COARSE SAND	40-60%	(0.25 - 1.0mm)
COARSE SAND	7-10%	(1.0 - 2.0mm)
FINE GRAVEL	-3%	(2.0 - 3.4mm)

THE COMBINED PERCENTAGE OF CLAY AND SILT MAY NOT EXCEED 3% UNDER ANY CIRCUMSTANCES.

9. ADDITIONAL HYDRAULIC CONDUCTIVITY TESTING OF BIO-RETENTION FILTER MEDIA IS TO BE CARRIED OUT USING MCINTYRE AND JAKOBSEN (1998) METHOD OR AS/NZS 1547 PERMEABILITY TESTING METHOD (CONSTANT HEAD TEST).

10. BIO-RETENTION FILTER MEDIA WATER HOLDING CAPACITY IS TO BE AT LEAST 15 - 20% BY VOLUME AT 300mm OF SUCTION USING THE MCINTYRE AND JAKOBSEN (1998) METHOD.

11. ANY COMPONENT OF BIO-RETENTION FILTER MEDIA FOUND TO CONTAIN HIGH LEVELS OF SALT, HIGH LEVELS OF CLAY OR SILT PARTICLES, EXTREMELY LOW LEVELS OF ORGANIC CARBON OR ANY OTHER EXTREMES WHICH MAY BE CONSIDERED RETARDANT TO PLANT GROWTH AND DENITRIFICATION IS TO BE REJECTED.

12. COPIES OF ALL TEST RESULTS ARE TO BE PROVIDED FOR CERTIFICATION PRIOR TO PLACEMENT.

3D INFORMATION DISCLAIMER

PLEASE BE ADVISED 12D DESIGN FILE, IF SUPPLIED, IS DEEMED TO BE AN ACCURATE REFLECTION OF NORTHROP'S DESIGN AT THE TIME OF FINAL DESIGN DEVELOPMENT AND MAY NOT FULLY REFLECT THE DESIGN SURFACE AS PRESENTED. HOWEVER THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INCORPORATION IN THE CONSTRUCTION WORKS.

YOU ARE FURTHER ADVISED THAT ISSUED HARD COPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSISTENCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO THEIR INCORPORATION IN THE WORKS.

NORTHROP CONSULTING ENGINEERS TAKES NO RESPONSIBILITY FOR USE OF NON-VERIFIED 3D DESIGN INFORMATION USED IN THE WORKS.

THE USE OF THE 3D MODEL INFORMATION SHALL CONSTITUTE ACKNOWLEDGMENT AND ACCEPTANCE OF THE ABOVE STATEMENTS BY THE RECIPIENT.

RETAINING

1. ALL RETAINING WALL/TERRACING TO SATISFY AUTHORITY CODES & STANDARDS. REFER TO COUNCIL'S FILLING AND EXCAVATION/EARTHWORKS CODES FOR FURTHER DETAILS. RETAINING WALL FINISHES THAT PRESENT TO ADJOINING LAND ARE TO BE OF QUALITY APPEARANCE. HAVE LOW MAINTENANCE REQUIREMENTS AND BE COMPATIBLE WITH SURROUNDING DEVELOPMENT.

2. ANY PROPOSED RETAINING WALL WORKS (INCLUDING REAR OF RETAINING WALL DRAINAGE INFRASTRUCTURE) MUST BE WHOLLY WITHIN THE PROPERTY BOUNDARY OF THE SUBJECT SITE.

3. ALL RETAINING WALLS SHOWN ON NORTHROP DRAWINGS ARE INDICATIVE ONLY WITH FINAL RETAINING WALL STRUCTURAL DESIGN & CONSTRUCTION CERTIFICATE BY MANUFACTURER / INSTALLER OR BY RPEQ STRUCTURAL ENGINEER.

4. CONTRACTOR TO CONFIRM RETAINING WALL BACKSLOPE ANGLE (IF STEEPER THAN 1m:4) WITH GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.

5. CONTRACTOR TO ENSURE FREE DRAINING (NO FINES) BACKFILL MATERIAL IS IMPLEMENTED BEHIND ALL RETAINING WALL U.N.O BY RPEQ STRUCTURAL ENGINEER. SOCKED SUBSOIL DRAINAGE (SLOTTED PIPE) TO BE PLACED BEHIND BASE OF RETAINING WALL AND IS TO DISCHARGE TO SUITABLE POINT OF DISCHARGE, OR ALLOW FOR WEEP HOLES AT BASE OF WALL.

6. ENSURE NO VEHICLE LOADING WITHIN A HORIZONTAL DISTANCE FROM TOP OF WALL EQUAL TO THE HEIGHT OF THE WALL DURING OR AFTER CONSTRUCTION, U.N.O BY RPEQ ENGINEERED DESIGN WHICH ALLOWS FOR LOADING.

VERIFIER: XXXX

JOB MANAGER: XXXX

DESIGNED: XXXX

DRAWN: XXXX

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE	CLIENT
1	SCHEMATIC DESIGN	RM	MB	MB	04.11.21	<p>Queensland Government Department of Education and Training</p>
2	SPECIFICATION NOTES UPDATED	MR	MB	MB	28.02.22	

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

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ABN 81 094 433 100

PROJECT

**URANGAN SHS
MULTIPURPOSE HALL**

DRAWING TITLE

**CIVIL ENGINEERING PACKAGE
SPECIFICATION NOTES
SHEET 3 OF 3**

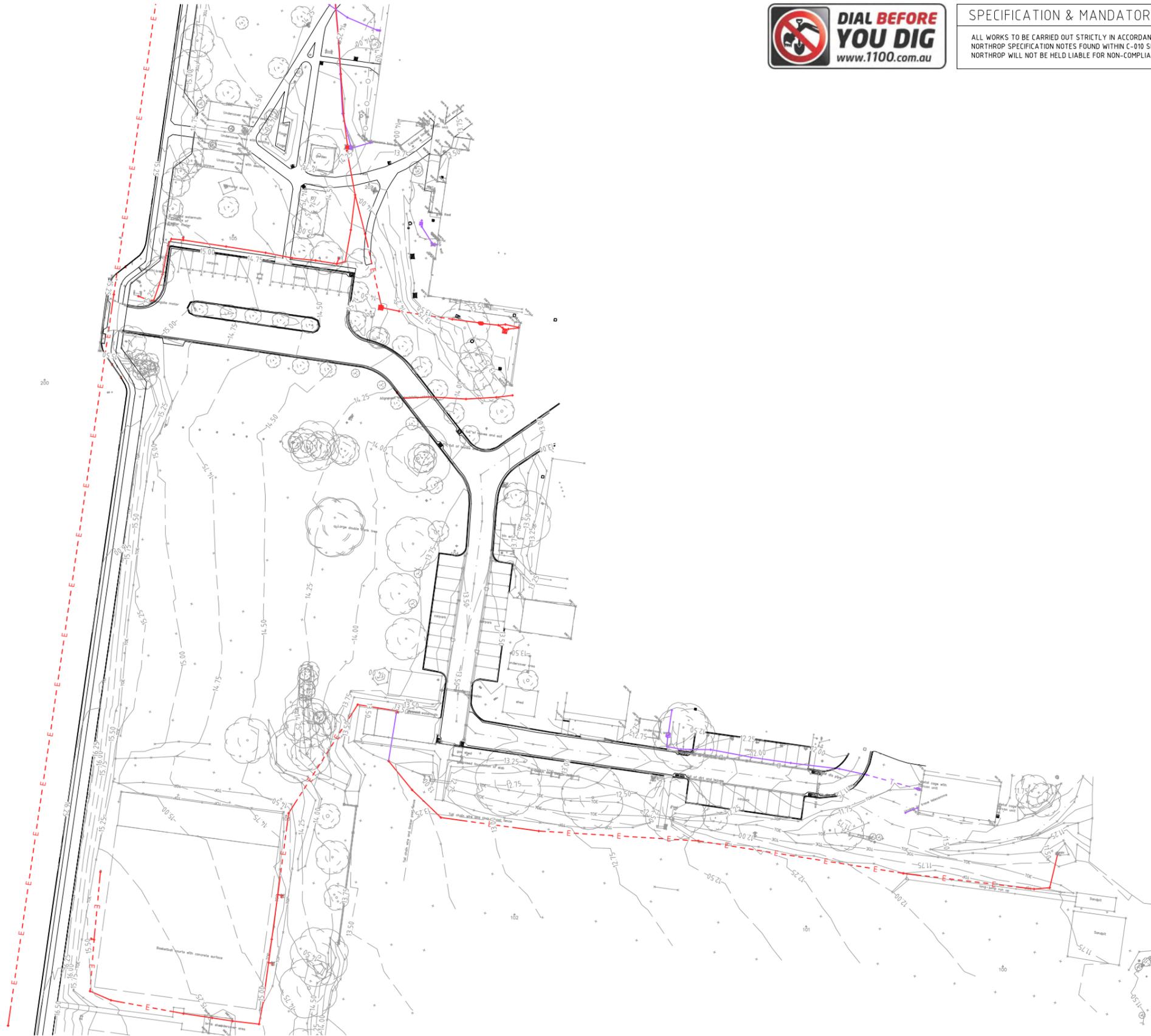
JOB NUMBER

BN212349

DRAWING NUMBER	REVISION
C-012	2

DRAWING SHEET SIZE = A1

NOT FOR CONSTRUCTION



SPECIFICATION & MANDATORY REFERENCES

ALL WORKS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NORTHROP SPECIFICATION NOTES FOUND WITHIN C-010 SERIES DRAWINGS. NORTHROP WILL NOT BE HELD LIABLE FOR NON-COMPLIANT WORKS.

NOTES

1. THE EXISTING UTILITY SERVICES INFORMATION SHOWN HAS BEEN COMPILED FROM SURVEY INFORMATION SUPPLIED BY CULLEN & COOPER PTY LTD.
2. THE INFORMATION IS NOT INTENDED TO PROVIDE THE CONTRACTOR WITH COMPLETE OR ACCURATE INFORMATION CONCERNING THE LOCATION & EXTENT OF UTILITY SERVICES.
3. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ANY DAMAGE INCURRED TO EXISTING UTILITY SERVICES AS A RESULT OF THE EXECUTION OF WORK UNDER THE CONTRACT. NO WORK SHALL BE CARRIED OUT WITHIN 3 METRES OF ANY EXISTING SERVICES WITHOUT PRIOR RECORDED CONSULTATION WITH THE RELEVANT AUTHORITY.
4. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH & EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
5. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH & EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
6. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH & EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
7. ALL EXISTING SERVICES & STRUCTURES ARE TO BE MAINTAINED IN GOOD ORDER FOR THE DURATION OF THE CONTRACT & WHERE RELOCATION IS REQUIRED, REFER SPECIFICATION.

DRAWN: XXXX DESIGNED: XXXX JOB MANAGER: XXXX VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR	SW	SM	MG	XX.XX.XX

CLIENT

Queensland Government
 Department of Education and Training

ARCHITECT

COX Architecture
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 SCALE 1:500@A1



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PROJECT
URANGAN SHS MULTIPURPOSE HALL

DRAWING TITLE
CIVIL ENGINEERING PACKAGE EXISTING SURVEY PLAN

JOB NUMBER
BN212349
 DRAWING NUMBER
C-020
 REVISION
1
 DRAWING SHEET SIZE = A1

SPECIFICATION & MANDATORY REFERENCES

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LEGEND

- XX.XX--- PROPOSED SURFACE CONTOURS
- - - - - XX.XX - - - - - EXISTING SURFACE CONTOURS
- SWD** PROPOSED STORMWATER DRAINAGE
- SWD** EXISTING STORMWATER DRAINAGE
- E** EXISTING ELECTRICITY
- T** EXISTING TELSTRA
- █** PROPOSED RETAINING WALL BLOCKWORK
- █** PROPOSED STORMWATER PIT
- █** EXISTING STORMWATER PIT
- EXISTING BACK OF KERB
- EXISTING TOP KERB
- EXISTING KERB LIP
- █ PROPOSED PAVEMENT
- █ PROPOSED FOOTPATH
- → → SWALE DRAIN

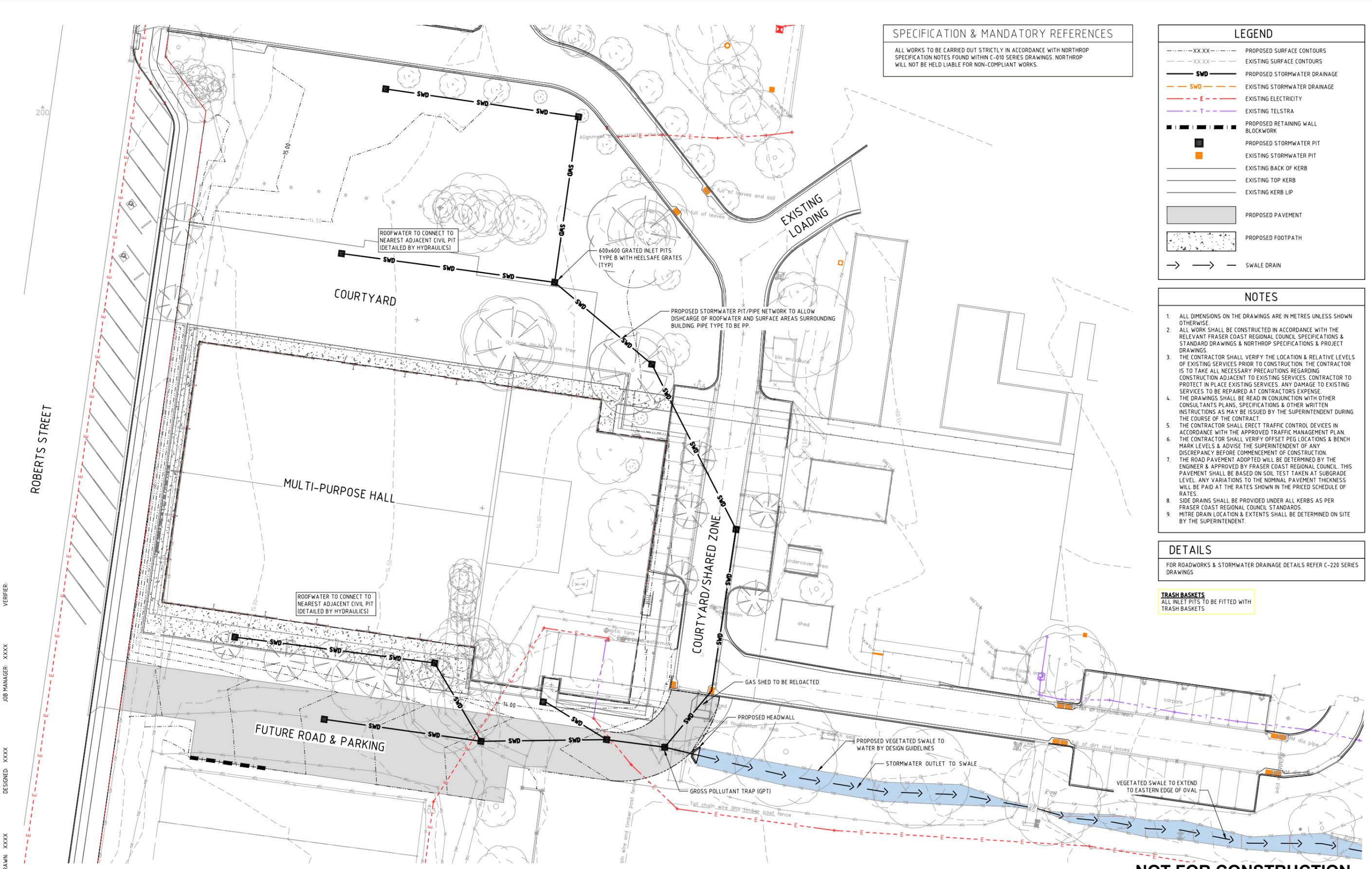
NOTES

1. ALL DIMENSIONS ON THE DRAWINGS ARE IN METRES UNLESS SHOWN OTHERWISE.
2. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE RELEVANT FRASER COAST REGIONAL COUNCIL SPECIFICATIONS & STANDARD DRAWINGS & NORTHROP SPECIFICATIONS & PROJECT DRAWINGS.
3. THE CONTRACTOR SHALL VERIFY THE LOCATION & RELATIVE LEVELS OF EXISTING SERVICES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO TAKE ALL NECESSARY PRECAUTIONS REGARDING CONSTRUCTION ADJACENT TO EXISTING SERVICES. CONTRACTOR TO PROTECT IN PLACE EXISTING SERVICES. ANY DAMAGE TO EXISTING SERVICES TO BE REPAIRED AT CONTRACTORS EXPENSE.
4. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS PLANS, SPECIFICATIONS & OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED BY THE SUPERINTENDENT DURING THE COURSE OF THE CONTRACT.
5. THE CONTRACTOR SHALL ERECT TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE APPROVED TRAFFIC MANAGEMENT PLAN.
6. THE CONTRACTOR SHALL VERIFY OFFSET PEG LOCATIONS & BENCH MARK LEVELS & ADVISE THE SUPERINTENDENT OF ANY DISCREPANCY BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE ROAD PAVEMENT ADOPTED WILL BE DETERMINED BY THE ENGINEER & APPROVED BY FRASER COAST REGIONAL COUNCIL. THIS PAVEMENT SHALL BE BASED ON SOIL TEST TAKEN AT SUBGRADE LEVEL. ANY VARIATIONS TO THE NOMINAL PAVEMENT THICKNESS WILL BE PAID AT THE RATES SHOWN IN THE PRICED SCHEDULE OF RATES.
8. SIDE DRAINS SHALL BE PROVIDED UNDER ALL KERBS AS PER FRASER COAST REGIONAL COUNCIL STANDARDS.
9. METRE DRAIN LOCATION & EXTENTS SHALL BE DETERMINED ON SITE BY THE SUPERINTENDENT.

DETAILS

FOR ROADWORKS & STORMWATER DRAINAGE DETAILS REFER C-220 SERIES DRAWINGS

TRASH BASKETS
ALL INLET PITS TO BE FITTED WITH TRASH BASKETS



NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	SCHEMATIC DESIGN	RM	MB	MB	04.11.21
2	SCHEMATIC DESIGN	MR	MB	MB	05.11.21
3	SCHEMATIC DESIGN	MR	MB	MB	16.11.21
4	SCHEMATIC DESIGN	MR	MB	MB	07.12.21

CLIENT
 Queensland Government
 Department of Education and Training

ARCHITECT
 COX Architecture

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SCALE 1:250 @ A1

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PROJECT
URANGAN SHS MULTIPURPOSE HALL

DRAWING TITLE
CIVIL ENGINEERING PACKAGE ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN

JOB NUMBER
BN212349

DRAWING NUMBER
C-211

REVISION
4

DRAWING SHEET SIZE = A1

DRAWN: XXXX DESIGNED: XXXX JOB MANAGER: XXXX VERIFIER: XXXX

Appendix B – Rational Method Calculations



DESIGNED BY:	RH
DATE:	18-01-22
PROJECT NAME:	Urangan SHS
JOB No:	BN212349

RATIONAL METHOD SUMMARY CALCULATIONS

Catchment ID:	E1	
Description:	Existing Catchment	
Catchment Area, A:	0.77	Ha
Overland Sheet Flow Path Length, L:	70	m
Hortons Surface Roughness Factor, n:	0.035	
Slope of surface, S:	1.8	%
Time of Concentration, t:	19.7	minutes
Impervious Fraction, f _i :	0	
Land Description (Only use if f _i < 0.2)	Low Density Bushland - MED Soil Permeability	
10year Discharge Coefficient, C ₁₀ :	0.7	

BOM IFD's:	2019
------------	------

Surface Type	n
Pavement	0.015
Soil	0.0275
Poor Grass	0.035
Average Grass	0.045
Dense Grass	0.06

Event	Rainfall Intensity	Runoff Coefficient	Discharge
	mm/h	C	m ³ /s
1 EY	79.22	0.56	0.095
0.5 EY	88.26	0.60	0.112
0.2 EY	116.20	0.67	0.165
10%	135.60	0.70	0.203
5%	154.00	0.74	0.242
2%	177.80	0.81	0.306
1%	196.20	0.84	0.353

QUDM, Table 4.5.2

Frequency Factor, F _y	
1 year ARI:	0.8
2 years ARI:	0.85
5 years ARI:	0.95
10 years ARI:	1
20 years ARI:	1.05
50 years ARI:	1.15
100 years ARI:	1.2

QUDM, Table 4.5.3 - Table of C₁₀ values

Intensity (mm/hr)	Fraction Impervious, f _i						
	0.00	0.20	0.40	0.60	0.80	0.90	1.00
39-44	Refer to Table 4.5.4	0.44	0.55	0.67	0.78	0.84	0.90
45-49		0.49	0.60	0.70	0.80	0.85	0.90
50-54		0.55	0.64	0.72	0.81	0.86	0.90
55-59		0.60	0.68	0.75	0.83	0.86	0.90
60-64		0.65	0.72	0.78	0.84	0.87	0.90
65-69		0.71	0.76	0.80	0.85	0.88	0.90
70-90		0.74	0.78	0.82	0.86	0.88	0.90

QUDM, Table 4.5.4 - C₁₀ value for zero fraction impervious

Land Description	High Density Bush			Medium density bush: good grass cover, high density pasture, zero tillage cropping			Low density bush: poor grass cover, low density pasture, low cover bare fallows		
	Soil Permeability			Soil Permeability			Soil Permeability		
	High	Med	Low	High	Med	Low	High	Med	Low
39-44	0.08	0.24	0.32	0.16	0.32	0.40	0.24	0.40	0.48
45-49	0.10	0.29	0.39	0.20	0.39	0.49	0.29	0.49	0.59
50-54	0.12	0.35	0.46	0.23	0.46	0.58	0.35	0.58	0.69
55-59	0.13	0.40	0.53	0.27	0.53	0.66	0.40	0.66	0.70
60-64	0.15	0.44	0.59	0.30	0.59	0.70	0.44	0.70	0.70
65-69	0.17	0.50	0.66	0.33	0.66	0.70	0.50	0.70	0.70
70-90	0.18	0.53	0.70	0.35	0.70	0.70	0.53	0.70	0.70



DESIGNED BY:	RH
DATE:	18-01-22
PROJECT NAME:	Urangan SHS
JOB No:	BN212349

RATIONAL METHOD SUMMARY CALCULATIONS

Catchment ID:	D1	
Description:	MPH	
Catchment Area, A :	0.77	Ha
Overland Sheet Flow Path Length, L :	0	m
Hortons Surface Roughness Factor, n :	0.015	
Slope of surface, S :	10	%
Time of Concentration, t :	13.0	minutes
Impervious Fraction, f _i :	0.8	
Land Description (Only use if f _i < 0.2)		
10year Discharge Coefficient, C ₁₀ :	0.86	

BOM IFD's:	2019
------------	-------------

Surface Type	n
Pavement	0.015
Soil	0.0275
Poor Grass	0.035
Average Grass	0.045
Dense Grass	0.06

Event	Rainfall Intensity	Runoff Coefficient	Discharge
	mm/h	C	m ³ /s
1 EY	94.06	0.69	0.138
0.5 EY	104.86	0.73	0.164
0.2 EY	137.80	0.82	0.241
10%	160.00	0.86	0.294
5%	181.60	0.90	0.351
2%	210.20	0.99	0.445
1%	231.40	1.00	0.495

QUDM, Table 4.5.2

Frequency Factor, F _y	
1 year ARI:	0.8
2 years ARI:	0.85
5 years ARI:	0.95
10 years ARI:	1
20 years ARI:	1.05
50 years ARI:	1.15
100 years ARI:	1.2

QUDM, Table 4.5.3 - Table of C₁₀ values

Intensity (mm/hr)	Fraction Impervious, f _i						
	0.00	0.20	0.40	0.60	0.80	0.90	1.00
39-44	Refer to Table 4.5.4	0.44	0.55	0.67	0.78	0.84	0.90
45-49		0.49	0.60	0.70	0.80	0.85	0.90
50-54		0.55	0.64	0.72	0.81	0.86	0.90
55-59		0.60	0.68	0.75	0.83	0.86	0.90
60-64		0.65	0.72	0.78	0.84	0.87	0.90
65-69		0.71	0.76	0.80	0.85	0.88	0.90
70-90		0.74	0.78	0.82	0.86	0.88	0.90

QUDM, Table 4.5.4 - C₁₀ value for zero fraction impervious

Land Description	High Density Bush			Medium density bush: good grass cover, high density pasture, zero tillage cropping			Low density bush: poor grass cover, low density pasture, low cover bare fallows		
	Soil Permeability			Soil Permeability			Soil Permeability		
	High	Med	Low	High	Med	Low	High	Med	Low
39-44	0.08	0.24	0.32	0.16	0.32	0.40	0.24	0.40	0.48
45-49	0.10	0.29	0.39	0.20	0.39	0.49	0.29	0.49	0.59
50-54	0.12	0.35	0.46	0.23	0.46	0.58	0.35	0.58	0.69
55-59	0.13	0.40	0.53	0.27	0.53	0.66	0.40	0.66	0.70
60-64	0.15	0.44	0.59	0.30	0.59	0.70	0.44	0.70	0.70
65-69	0.17	0.50	0.66	0.33	0.66	0.70	0.50	0.70	0.70
70-90	0.18	0.53	0.70	0.35	0.70	0.70	0.53	0.70	0.70



DESIGNED BY:	RH
DATE:	18-01-22
PROJECT NAME:	Urangan SHS
JOB No:	BN212349

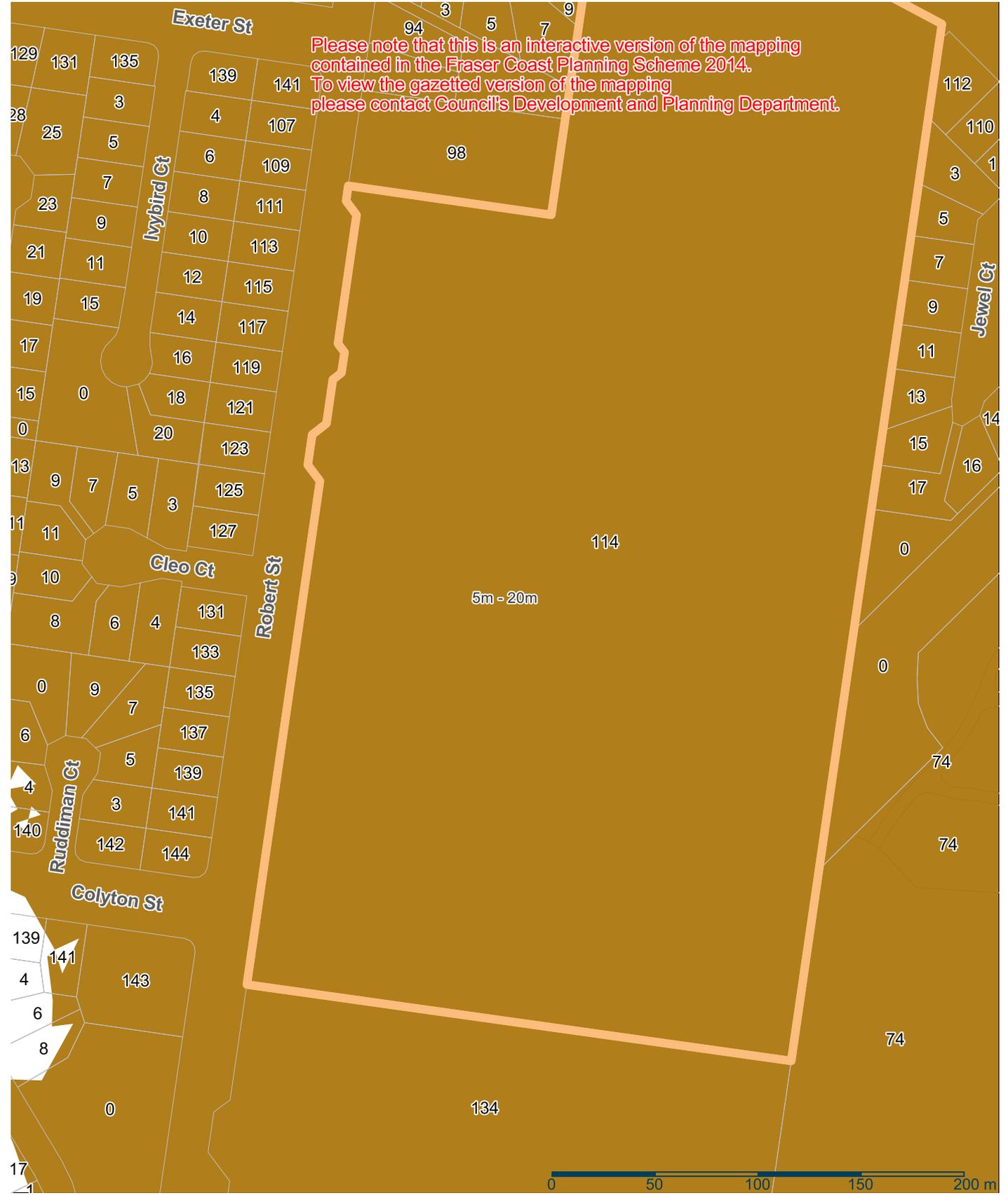
DETENTION CALCULATIONS

Q Event	Predeveloped Flow (m3/s)	Developed Flow (m3/s)	Difference (m3/s)	% Increase in Flow	Time to Peak (Ultimate) min.	Vi	r	Vs	Vs	Vs	Vs	Vs	Vs MAX (L)
								Culp	Boyd	Carroll	Basha	Maximum	
								(m3)	(m3)	(m3)	(m3)	(m3)	
1	0.09	0.14	0.04	46	5	55.4	0.31	9	17	10	13	17	17411
2	0.11	0.16	0.05	46	5	65.6	0.31	11	21	12	16	21	20651
5	0.17	0.24	0.08	46	5	96.3	0.31	16	30	17	23	30	30209
10	0.20	0.29	0.09	45	5	117.7	0.31	20	37	21	28	37	36515
20	0.24	0.35	0.11	45	5	140.3	0.31	23	43	25	33	43	43458
50	0.31	0.44	0.14	45	5	177.9	0.31	30	55	32	43	55	55405
100	0.35	0.49	0.14	40	5	198.0	0.29	30	57	32	43	57	56973

DETENTION VOLUME CALCULATIONS	
FOR ARI EVENT (yr):	0
PRE-DEVELOPED CATCHMENT FLOW (Qo) (m ³ /s)	0.495
POST-DEVELOPED CATCHMENT FLOW (Qi) (m ³ /s)	0.142
TIME OF CONCENTRATION (t _c) (mins)	198
REDUCTION RATIO (r)	29.92
INFLOW VOLUME (Vi)	0.3
STORAGE VOLUME (Vs) (m³) by method:	
(i) References CULP 1948	57
(ii) References BOYD 1989	32
(iii) References CARROL 1990	43
(iv) References BASHA 1994	57
PROPOSED TOTAL STORAGE VOLUME Vs (m3)	
(Adopted as maximum of the four methods)	57

Appendix C – Council Overlay

Please note that this is an interactive version of the mapping contained in the Fraser Coast Planning Scheme 2014. To view the gazetted version of the mapping please contact Council's Development and Planning Department.



Acid Sulfate Soils

Date: 30/11/2021

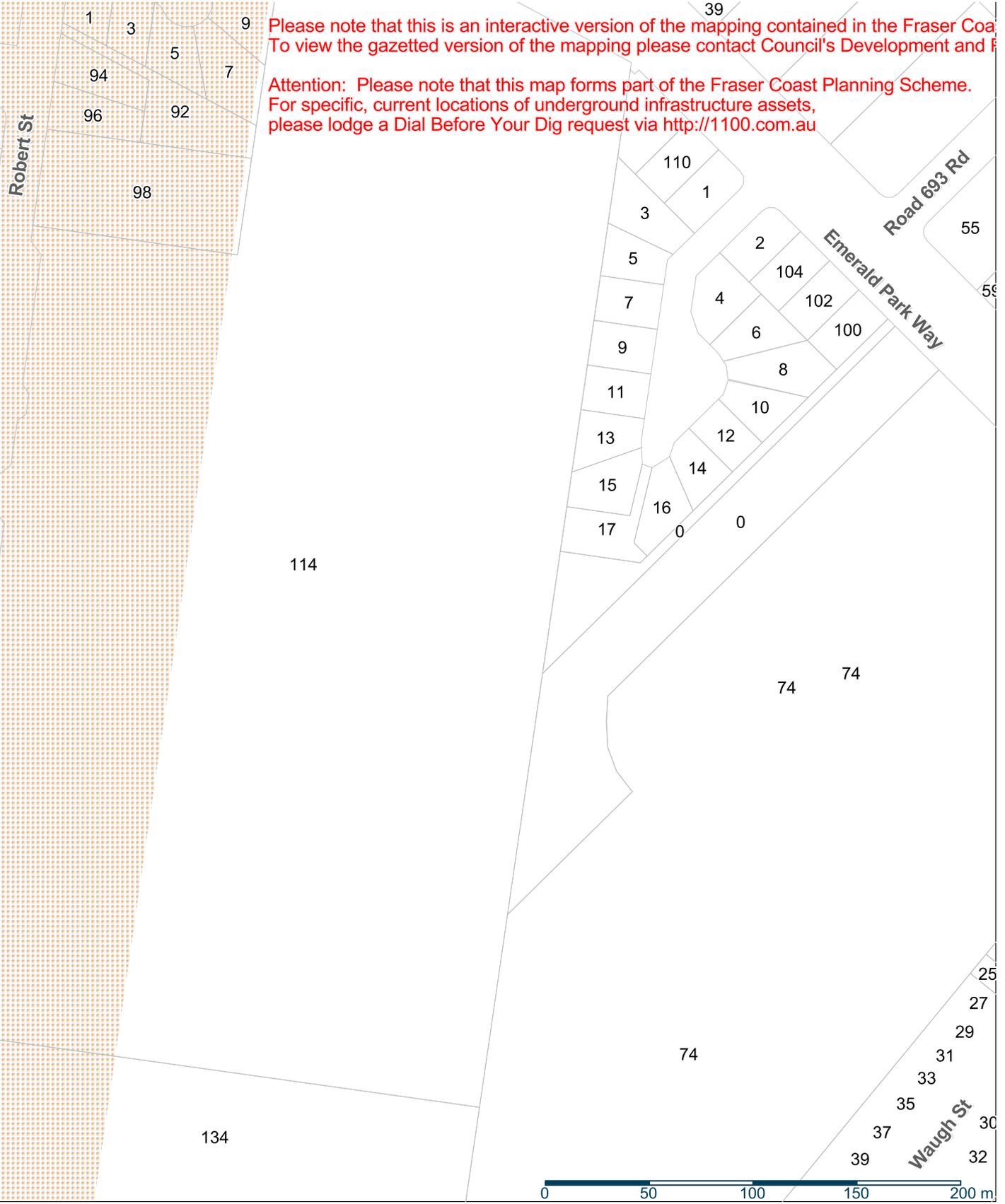
Scale: 1:2598 When Printed @ A4



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Projection: GDA94 / MGA zone 56
Map created by:





Please note that this is an interactive version of the mapping contained in the Fraser Coast Regional Council's Development and Planning Scheme. To view the gazetted version of the mapping please contact Council's Development and Planning Department.

Attention: Please note that this map forms part of the Fraser Coast Planning Scheme. For specific, current locations of underground infrastructure assets, please lodge a Dial Before Your Dig request via <http://1100.com.au>

High Voltage Sub-Transmission Line Buffer 66kV, 110kV and 132kV

Date: 30/11/2021

Scale: 1:2598 When Printed @ A4



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Projection: GDA94 / MGA zone 56
Map created by:



Appendix D – Flood Hazard Overlay



Date: 30/11/2021

Scale: 1:2000 When Printed @ A4



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Projection: GDA94 / MGA zone 56
 Map created by:



Appendix E – Architectural Plans

URANGAN STATE HIGH SCHOOL

ROBERT STREET, HERVEY BAY
421094

DRAWING LIST

SHEET No.	SHEET NAME	Current Revision
01 Cover Sheets		
A-01-00	COVER SHEET - DRAWING INDEX	5
11 Site Plans		
A-11-00	CONTEXT PLAN	4
A-11-01	MASTER PLAN	4
A-11-02	SITE KEY PLAN - GF	4
A-11-03	SITE KEY PLAN - ROOF	4
21 Floor Plans		
A-21-00	GROUND FLOOR PLAN - MULTI-PURPOSE HALL	6
A-21-01	UPPER ROOF PLAN - MULTI-PURPOSE HALL	3
A-21-05	GROUND FLOOR PLAN - COURTYARD	4
A-21-06	WALKWAY - PLAN	4
A-21-10	GROUND FLOOR PLAN - CONCEPT PERFORMING ARTS CENTRE	2
A-21-11	LEVEL 1 PLAN - CONCEPT PERFORMING ARTS CENTRE	2
A-21-12	ROOF PLAN - CONCEPT PERFORMING ARTS CENTRE	1
30 Elevations		
A-30-00	ELEVATIONS - OVERALL SITE	5
A-30-01	ELEVATIONS - MULTI-PURPOSE HALL	5
A-30-02	ELEVATIONS - MULTI-PURPOSE HALL	5
40 Sections		
A-40-00	SECTIONS	5
80 3D Views		
A-80-00	3D VIEWS	5
A-80-01	3D VIEWS	5
83 Materials		
A-83-00	MATERIALS	5
A-83-01	MATERIALS	1



Cox Architecture
Level 2, 2 Edward Street,
Brisbane, QLD 4000, Australia
T + 61 7 3210 0844
F + 61 7 3210 0541
www.coxarchitecture.com.au

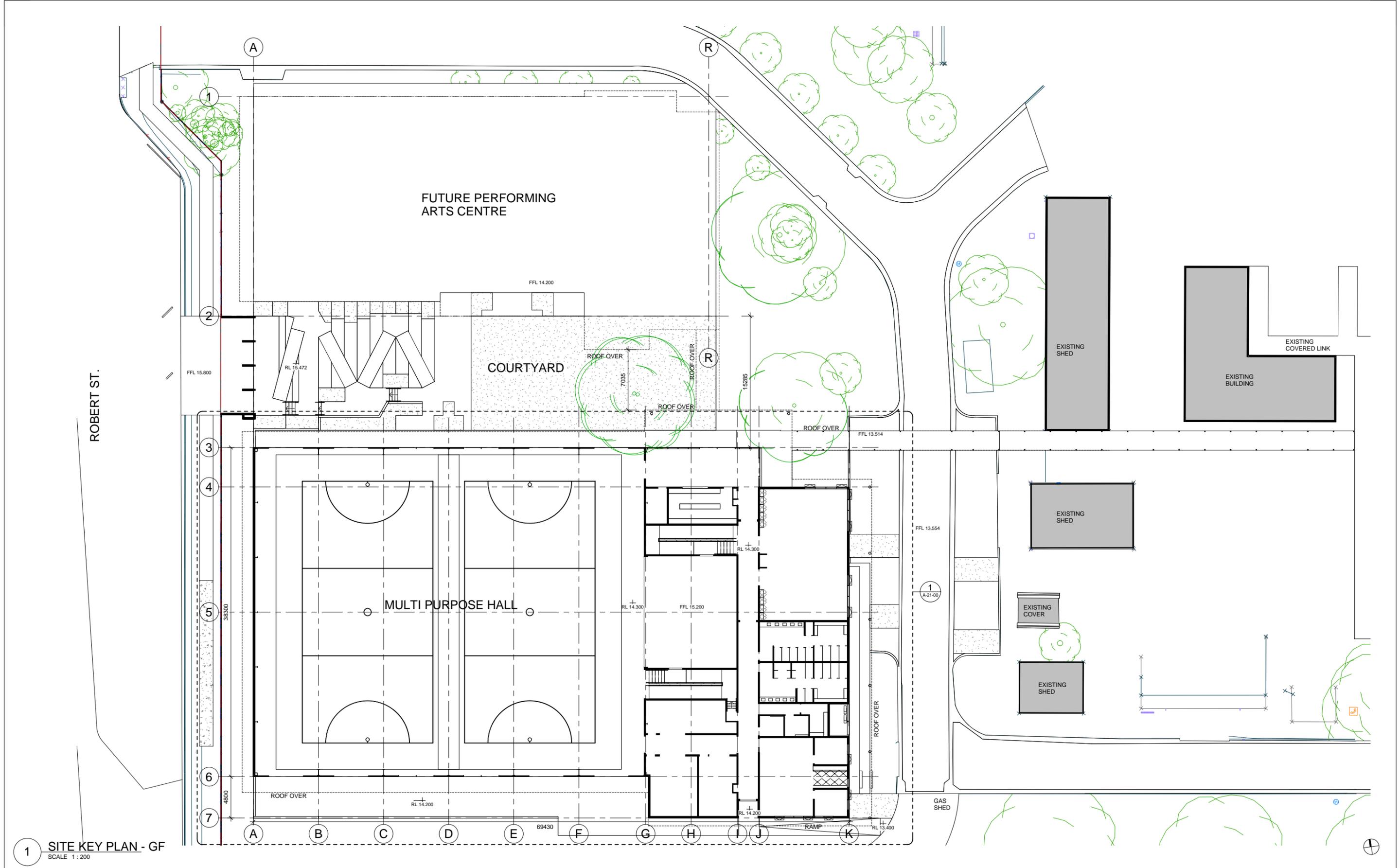
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Rev	Description	By	Date
1	SDPP ISSUE		04/11/21
2	REVISED SDPP ISSUE		19/11/21
3	VM UPDATES		09/12/21
4	VM UPDATES		10/01/22
5	PROGRESS ISSUE	SH	27/01/22

Client **QLD Department of Education**
Project No. **421094**
Document Control Status:

Project **Urangan State High School
Multi-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **COVER SHEET - DRAWING INDEX**

Co-ordinated: SH
Project Architect: CM
Project Director: MS
Drawing Number: **A-01-00**
Drawn: RC
Scale: @ A1
Date: 26/04/17
Revision: 5



1 SITE KEY PLAN - GF
SCALE 1:200



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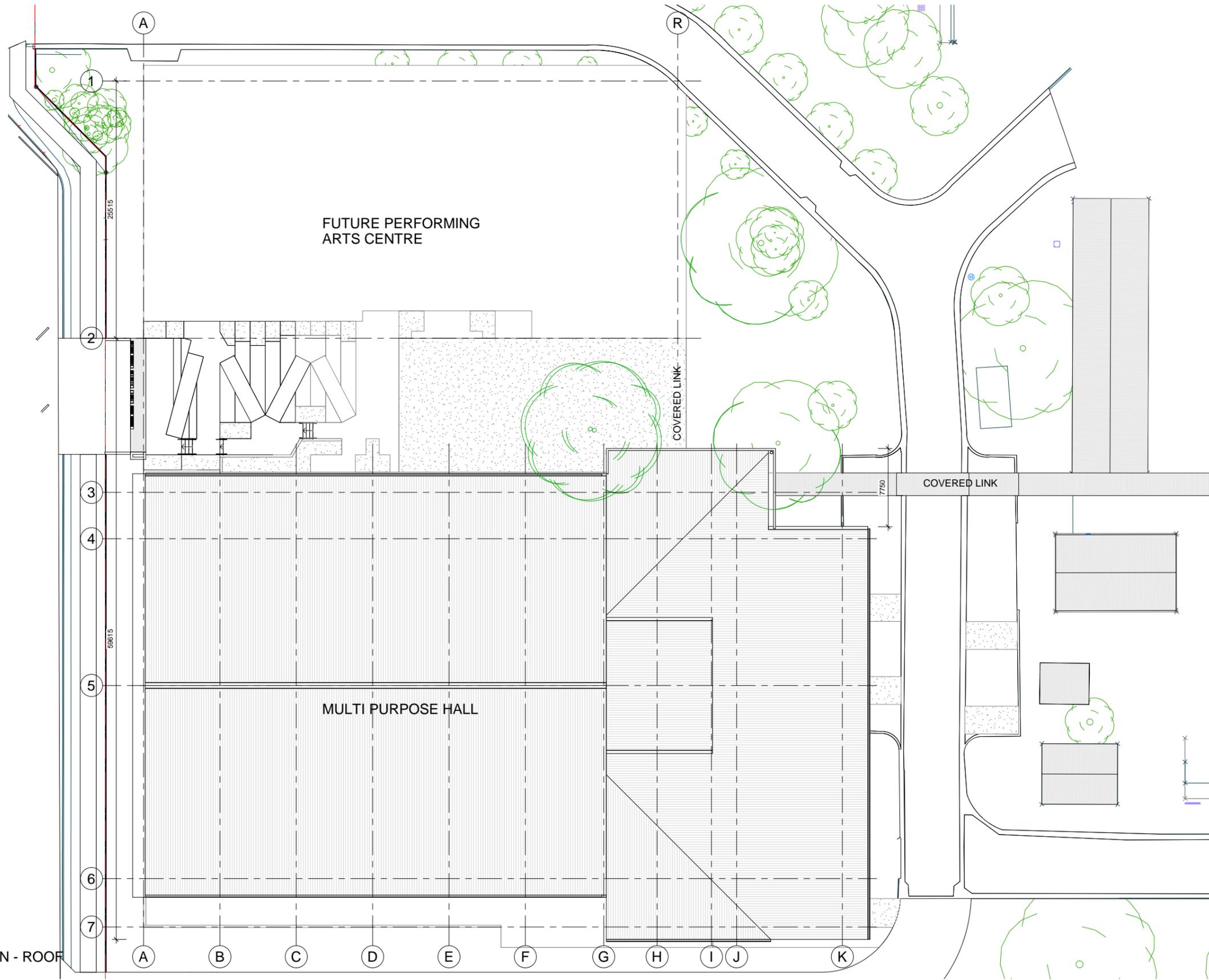
Rev	Description	By	Date
1	SDPP ISSUE		04/11/21
2	REVISED SDPP ISSUE		19/11/21
3	VM UPDATES		09/12/21
4	PROGRESS ISSUE	SH	27/01/22

Client **QLD Department of Education**
Project No. **421094**
Document Control Status:

Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **SITE KEY PLAN - GF**

Co-ordinated: SH
Project Architect: CM
Project Director: RC
Drawing Number: **A-11-02**

Drawn: MS
Scale: 1:200 @ A1
Date: 10/25/21
Revision: **4**



1 SITE KEY PLAN - ROOF
SCALE 1:200



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Rev	Description	By	Date
1	SDPP ISSUE		04/11/21
2	REVISED SDPP ISSUE		19/11/21
3	VM UPDATES		09/12/21
4	PROGRESS ISSUE	SH	27/01/22

Client **QLD Department of Education**
Project No. **421094**
Document Control Status:

Project **Urangan State High School
Mult-purpose Hall
Robert Street, Hervey Bay**
Drawing Title **SITE KEY PLAN - ROOF**

Co-ordinated: SH
Project Architect: CM
Project Director: RC
Drawing Number: **A-11-03**
Drawn: MS
Scale: 1:200 @ A1
Date: 10/25/21
Revision:

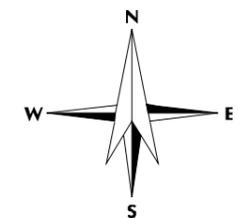
Appendix F – Dial Before You Dig



Sequence: 205830756
Date: 30/11/2021
Scale: 1:1025
OVERVIEW

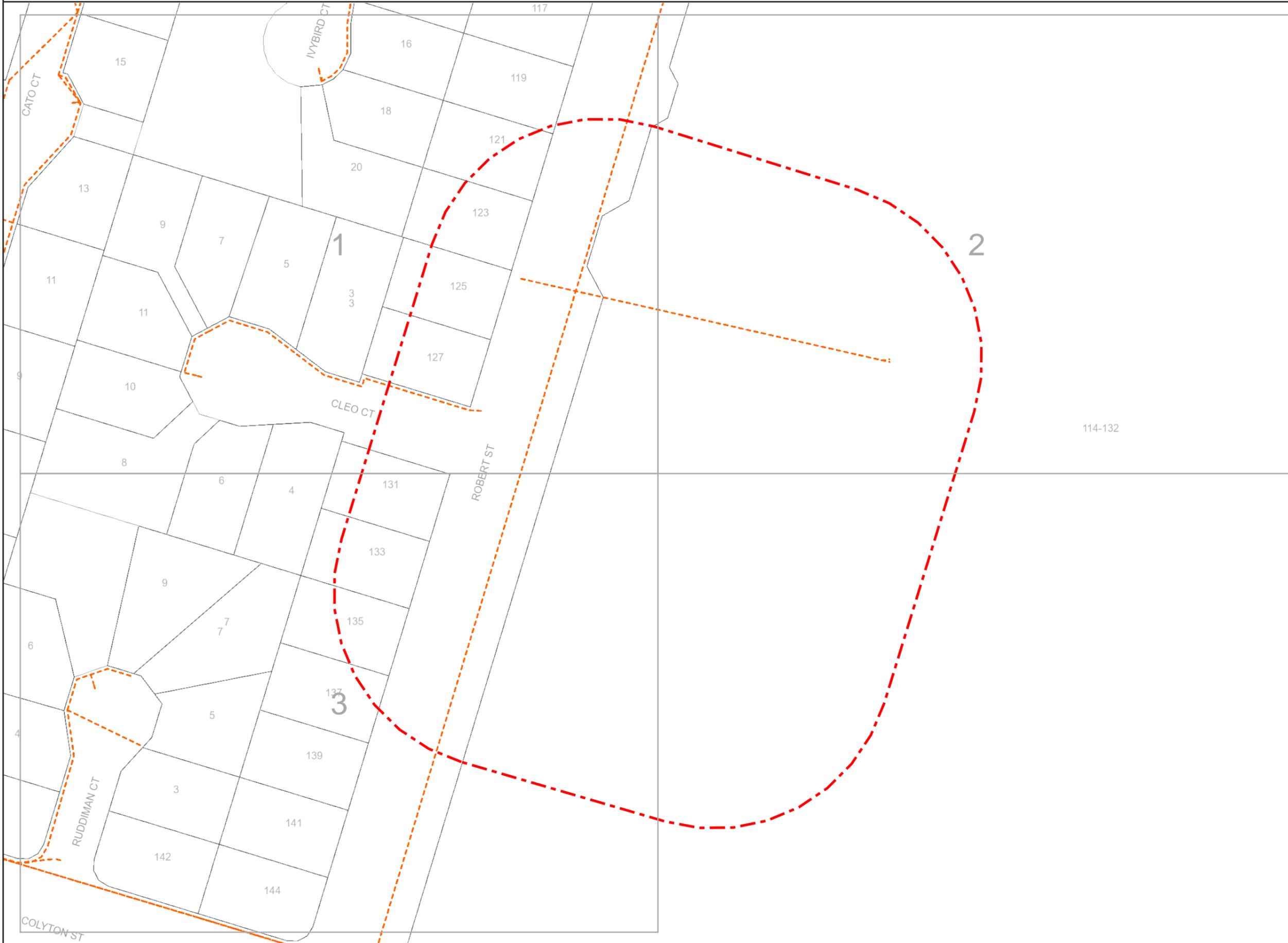
For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan



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All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ERGON ENERGY DBYD map, then ERGON ENERGY shall be contacted immediately.



This output provides details of the ERGON ENERGY electrical network. As variations map exist no responsibility is incurred by ERGON ENERGY for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ERGON ENERGY DBYD map, then ERGON ENERGY shall be contacted immediately.

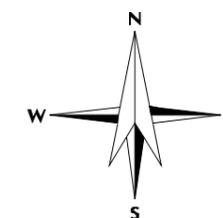
For Emergency Situations please call 13 16 70



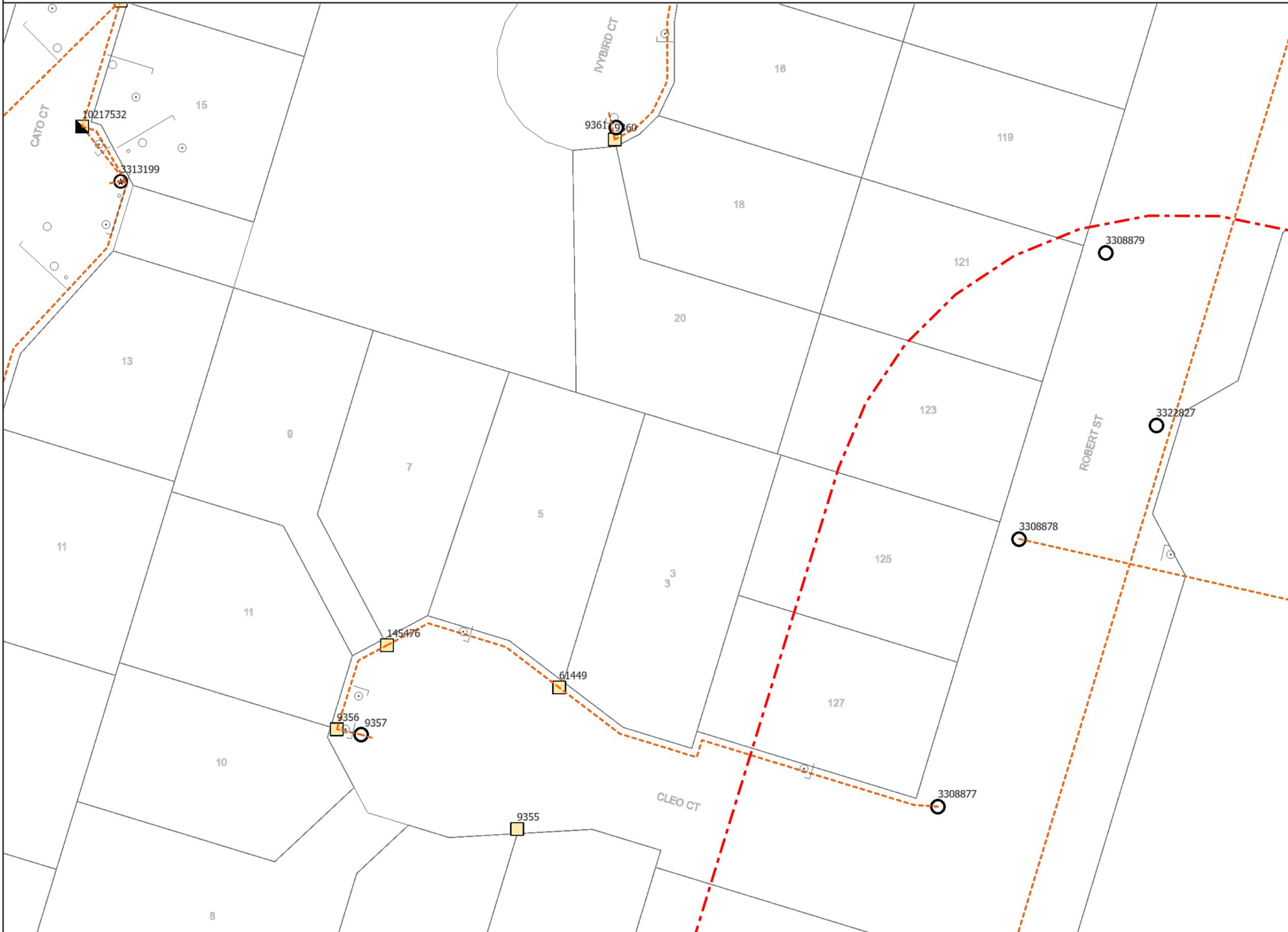
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Date: 30/11/2021
Scale: 1:500
Tile No: 1

For a full list of Map Symbols, please refer to the supplied DBYD Symbology Legend page

AS5488 Category "D" Plan



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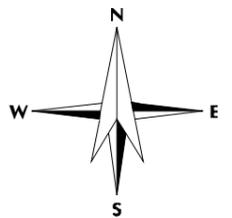
This output provides details of the ERGON ENERGY electrical network. As variations map exist no responsibility is incurred by ERGON ENERGY for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.



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Date: 30/11/2021
Scale: 1:500
Tile No: 2

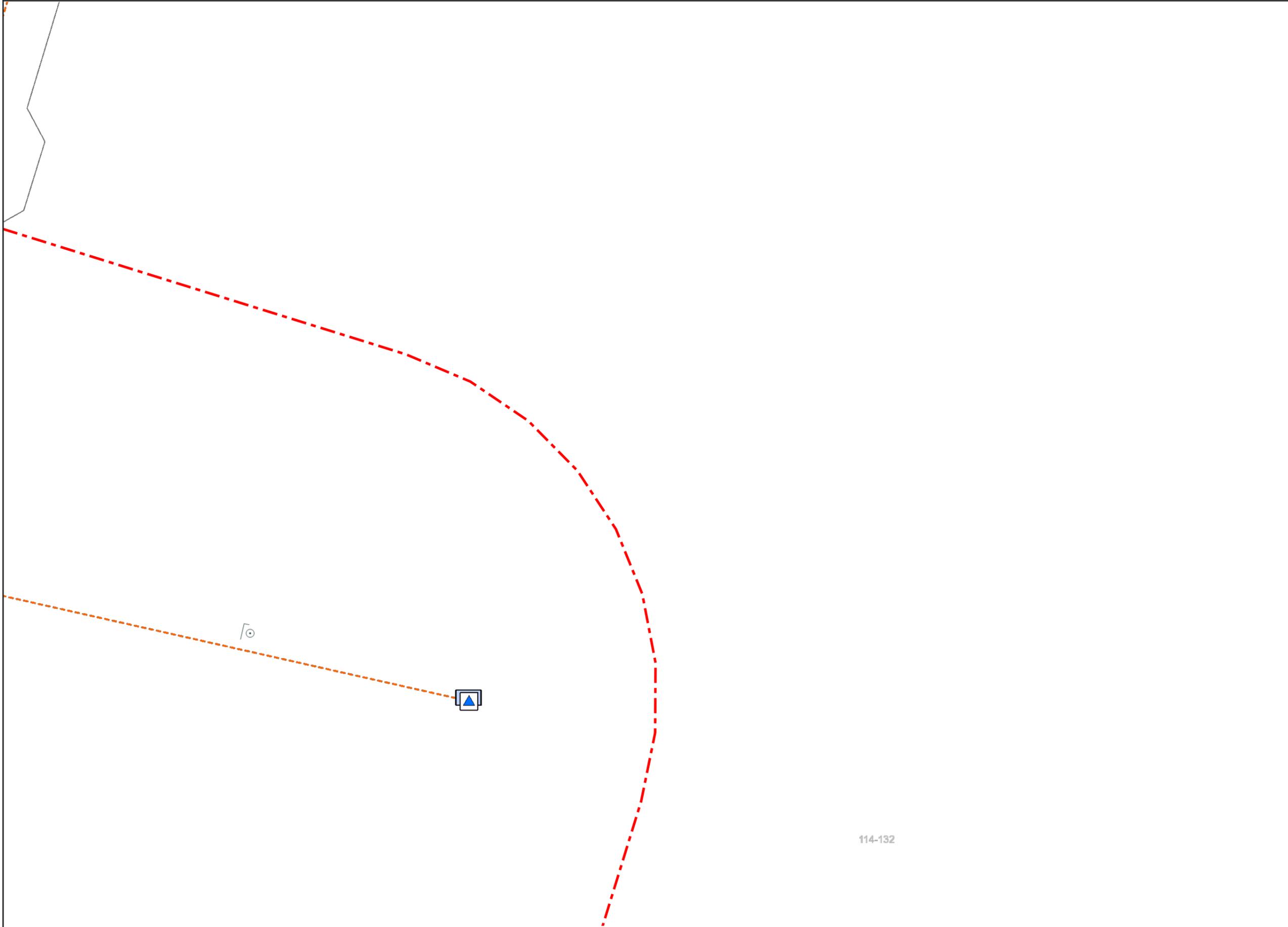
**For a full list of Map
Symbols, please
refer to the supplied
DBYD Symbology
Legend page**

AS5488 Category "D" Plan



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All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ERGON ENERGY DBYD map, then ERGON ENERGY shall be contacted immediately.



114-132

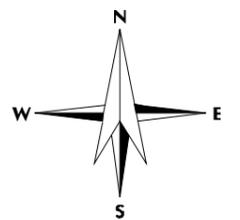
This output provides details of the ERGON ENERGY electrical network. As variations map exist no responsibility is incurred by ERGON ENERGY for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.



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Date: 30/11/2021
Scale: 1:500
Tile No: 3

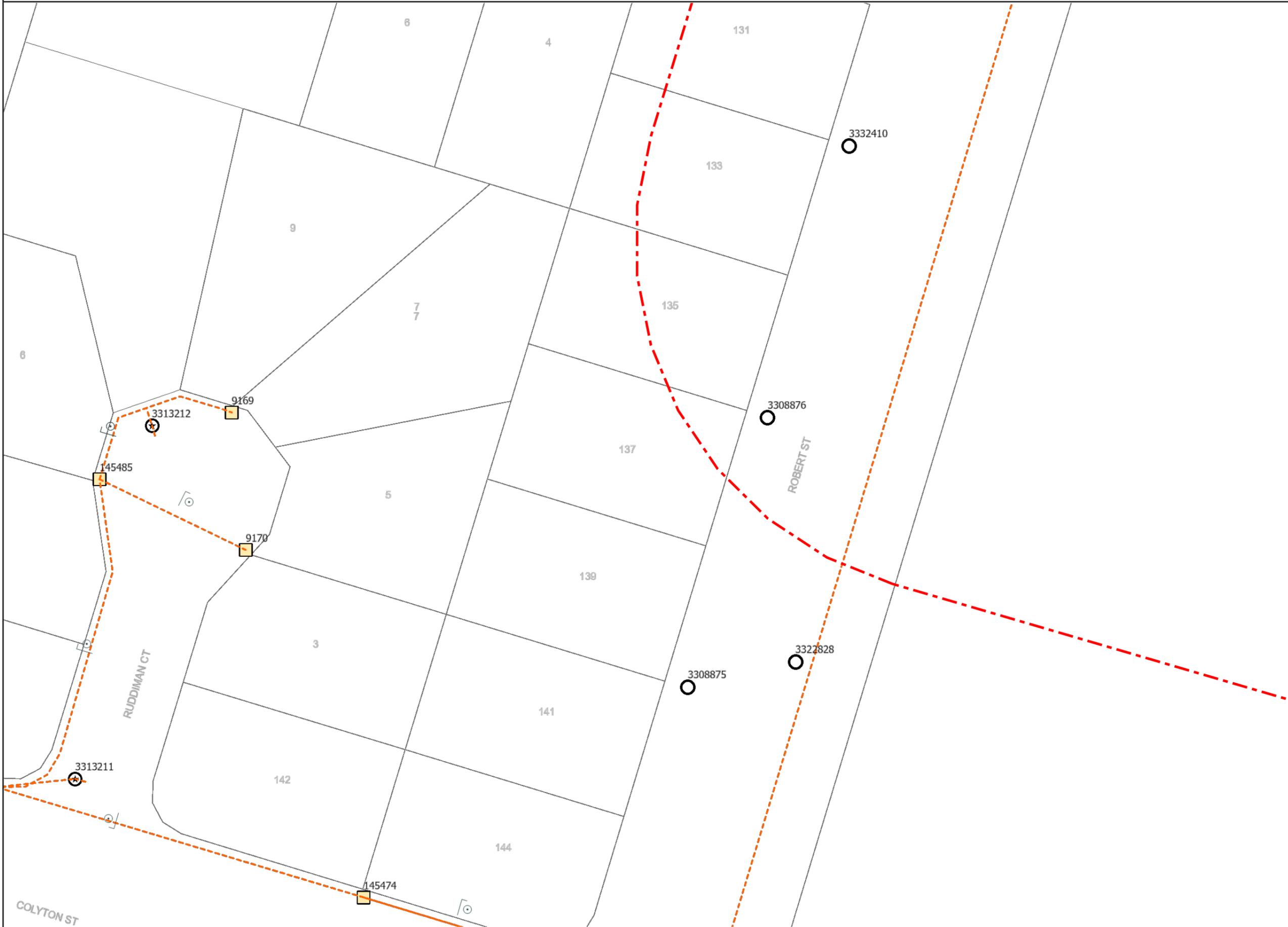
For a full list of Map
Symbols, please
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DBYD Symbology
Legend page

AS5488 Category "D" Plan



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All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ERGON ENERGY DBYD map, then ERGON ENERGY shall be contacted immediately.



This output provides details of the ERGON ENERGY electrical network. As variations map exist no responsibility is incurred by ERGON ENERGY for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

To: Robin Huang
Phone: Not Supplied
Fax: Not Supplied
Email: rhuang@northrop.com.au

Dial before you dig Job #:	30999425	
Sequence #	205830758	
Issue Date:	30/11/2021	
Location:	127 Robert Street , Torquay , QLD , 4655	

Indicative Plans

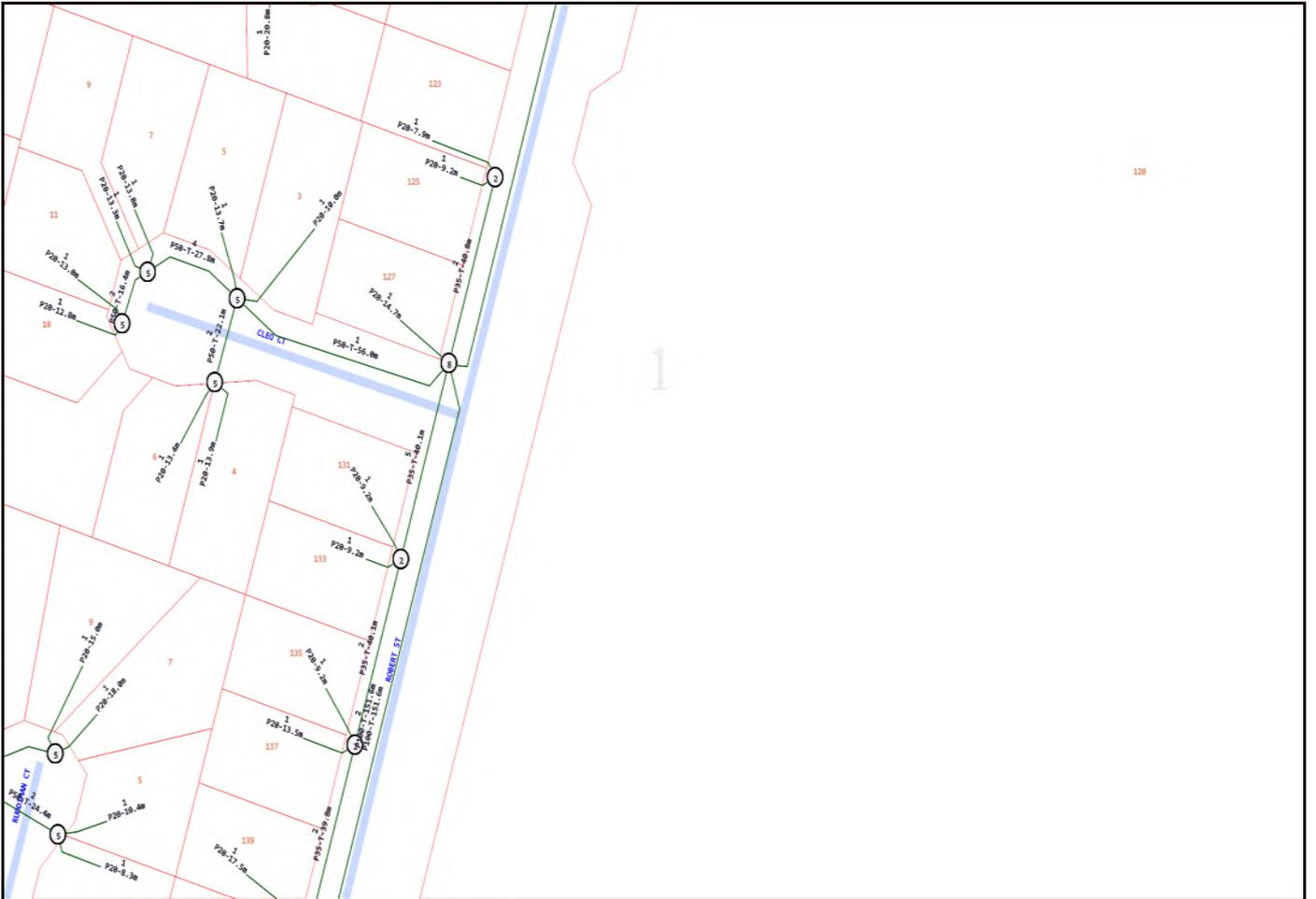




LEGEND



	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m



Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Customer Details

Contact: Robin Huang
Company: Not Supplied
Postal Address: Level 9,200 Mary Street Brisbane City
Phone(W): +61400222218
Phone(H): +61400222218
Mobile: NA
Fax: NA
Email: gvsfa26iwtatp.l9zy2gllpskwc9@smarterwx-

Enquiry Details

SEQ ref: 205830759
Requester Date: 30/11/2021 05:41
Job Number: 30999425
Address: 127 Robert Street Torquay
Activity: Planning & Design
Commencement: 07/12/2021
Completion: 07/12/2021
Search Title:

Fraser Coast Regional Council Dial Before You Dig Automated Response. Job Number: 30999425, Date of Issue: 30/11/2021 3:43:55 PM

Dear Robin Huang,

In response to your above enquiry, based on the current information available to Fraser Coast Regional Council (Council), the attached maps provide the approximate location of any underground infrastructure within the boundary of your enquiry. Should your area of enquiry include a Wide Bay Water (WBW) site/property you will need to contact WBW directly on 1300 79 49 29.

To ensure that your area of interest is correct, please refer to the DBYD map (right). If it is incorrect, please re-visit the DBYD webpage (<http://www.1100.com.au>) and modify the area and re-lodge your DBYD request.

The water and/or sewer property service connection pipework on the attached map is indicative only. The precise location of a water service pipe should be confirmed on site by visual location of the property water meter. Should any damage be sustained to these connections, it is the property owner's responsibility to repair.

It is your responsibility to locate any underground infrastructure by careful hand digging or pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

As it is illegal to interfere or tamper with Council infrastructure, **Council will seek compensation** for any interference or damage caused, including potentially any consequential damage or loss to its property and infrastructure.

Please refer to your obligations on the following page of this response.

Regards,
Fraser Coast Regional Council Assets Team
T – 1300 79 49 29
E – servicedesk@frasercoast.qld.gov.au



IMPORTANT INFORMATION

Validity: The attached maps are valid for 30 days from the date of issue. If this timeframe has elapsed, please request a new map.

Warning: Due to the nature of Council underground infrastructure and the age of some pipes and records, it is not considered possible to ascertain the precise location of all infrastructure from supplied records. The maps are indicative only and Council do not guarantee that the information shown is accurate and accepts no responsibility for any inaccuracy.

Obligations: Positive identification of all Council infrastructure and associated equipment within your area of enquiry is mandatory prior to any works being undertaken. It is your responsibility to perform your own investigation to ensure the accuracy of the information. This includes, but is not limited to:

- you must always perform onsite soft digging (potholing/hand digging/vacuum excavation) prior to and during excavation to positively locate infrastructure;
- you must contact Council to determine required depth of cover where heavy crawler or vibration type machinery is to be operated over the top of identified infrastructure;
- you must ensure you adhere to any State legislative requirements regarding duty of care and safe digging requirements;
- you must report any damage immediately on 1300 79 49 29;
- you must contact WBW directly on 1300 79 49 29 should your area of enquiry include a WBW site or property;
- you must submit a new enquiry should your scope of work change or the map validity date expires;
- you must contact Council's Assets Team on 1300 79 49 29 or email servicedesk@frasercoast.qld.gov.au if the attached maps are not clear and/or require additional information.

Copyright: Council retains copyright for all maps and details provided in connection with any request. Maps are provided for the use of the applicant, its servants, employees, contractors and agents and must not be used for any unauthorised purpose.

Reporting any discrepancies: Should you find any omissions or errors in these maps, please do not hesitate to contact Council's Assets Team on 1300 79 49 29 or for further information please visit Council's online mapping system –

[LINK - 205830759](#)

Emergencies: For any emergencies related to Council infrastructure, please call 1300 79 49 29.





LEGEND



-  Sewer gravity main
-  Sewer - non Council
-  Sewer rising main
-  Sewer rising main - non Council
-  Sewer house connection
-  Sewer manhole
-  Sewer valve
-  Sewer pump station
-  Water main
-  Water main - non Council
-  Water main - minor
-  Water main - non Council
-  Water road conduit
-  Water trunk main
-  Raw water trunk main
-  Water valve
-  Hydrant
-  Water pump station
-  Effluent reuse main
-  Effluent reuse valve
-  Effluent manhole
(decommissioned assets are represented in grey)
-  Council water or sewer site
(phone 1300 79 49 29 for details at this location)
-  Council telecommunications cable
-  Stormwater pit
-  Stormwater pipe
-  Electrical access
-  Electrical lighting
-  Electrical conduit
-  Traffic lights
-  Property boundary
-  Customer area of enquiry

For any emergencies related to Council infrastructure, please call 1300 79 49 29.



LEGEND



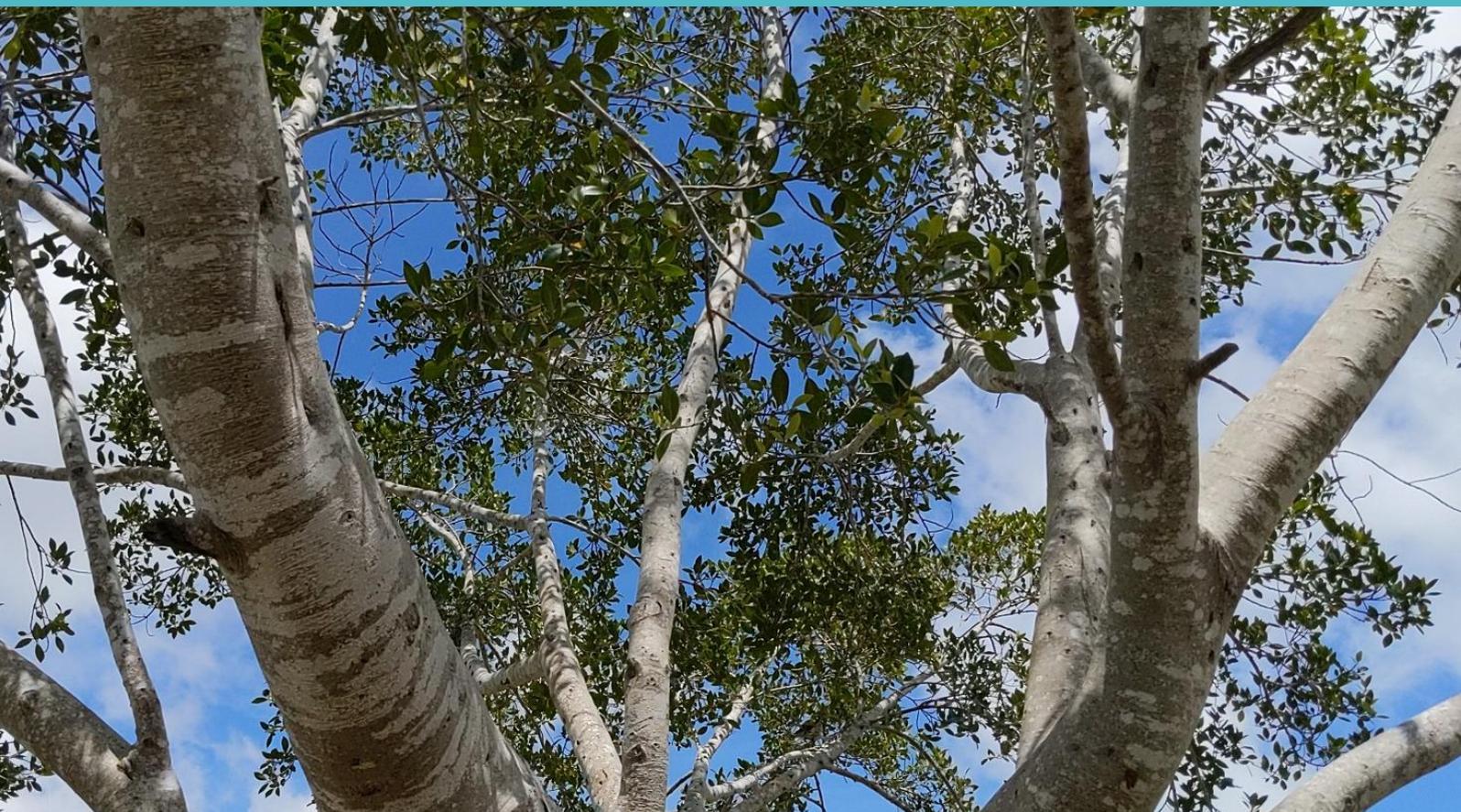
- Sewer gravity main
- - - Sewer - non Council
- Sewer rising main
- - - Sewer rising main - non Council
- Sewer house connection
- Sewer manhole
- ⊗ Sewer valve
- Ⓟ Sewer pump station
- Water main
- - - Water main - non Council
- Water main - minor
- - - Water main - non Council
- Water road conduit
- Water trunk main
- Raw water trunk main
- ⊗ Water valve
- Ⓟ Hydrant
- Ⓟ Water pump station
- Effluent reuse main
- ⊗ Effluent reuse valve
- Effluent manhole
(decommissioned assets are represented in grey)
- Council water or sewer site
(phone 1300 79 49 29 for details at this location)
- Council telecommunications cable
- ▣ Stormwater pit
- Stormwater pipe
- Electrical access
- Electrical lighting
- Electrical conduit
- ◆ Traffic lights
- Property boundary
- Customer area of enquiry

For any emergencies related to Council infrastructure, please call 1300 79 49 29.

Appendix 5 – Environmental Assessment

Fauna habitat and vegetation assessment report

Urangan State High School, Robert Street, Urangan, Queensland
November 2021



Ecology | Environment | Heritage

www.redleafenv.com.au

Citation: Redleaf Environmental (2021) Fauna habitat and vegetation assessment report: Urangan State High School, Robert Street, Urangan, Queensland

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Title		Principal Scientist	Title		Senior Environmental Scientist

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1 Introduction

Lambert & Rehbein have engaged Redleaf Environmental to conduct a fauna habitat and vegetation assessment for the proposed works at Urangan State High School, Urangan, Queensland. Specifically, the report notes observations in fauna habitat and will assess whether trees in the building footprint/works area can be removed.

1.1 Site description and study area

The works area is located entirely within the building envelope of Urangan SHS, Robert Street (Lot 50 SP104331). The property is designated Community Facilities 1 under the Fraser Coast Planning Scheme 2014. The area contains several medium to large planted Ficus and eucalypt species, which border the roads and a sports field within the school grounds. Ground cover consisted of mown lawns of mainly couch grass and various weed species. The clearing area and trees designated for removal are shown in Figure 1.

1.2 Proposed Activities at the Site

Lambert & Rehbein are proposing to clear bordering trees on the site to make way for additional development of the High School.



Legend

- works area
- DCDB
- Trees designated for removal
- small hollows
- stick nest

CRS: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



Scale
0 25 50 m



Figure 1: Trees designated for removal and associated habitat features

Urangan SHS vegetation and habitat assessment
Prepared for Lambert & Rehbein

O	Issued for use	CK	DF	30/11/2021
A	Issued for review	CK	DF	30/11/2021
Rev	Description	Drawn	Approved	Date

Map Number 1 of 1 Job Number FSC21075



2 Desktop Methodology

The assessment involved the interrogation of the following data sources and mapping:

- Commonwealth Department of Agriculture, Water and the Environment (DWE) Protected Matters Search Tool;
- Queensland Department of Natural Resources, Mines and Energy (DNRME) Regulated Vegetation Management Maps (Regional Ecosystem (RE) Mapping (version11.0));
- NRME Property Map of Assessable Vegetation (PMAV);
- NRME Essential Habitat Mapping (version 4.0);
- Queensland Department of Environment and Science (DES) Wildlife Online Search Tool Wildlife Online Database;
- Queensland DES Protected Plants Flora Survey Trigger Map;
- Atlas of Living Australia interactive mapping

3 Field methodology

A field survey was undertaken by Redleaf staff on the 24th of November 2021 to ground truth the desktop data and to note additional features of environmental significance.

3.1 Vegetation assessment

Redleaf Environmental conducted a rapid field habitat assessment. Environmental values identified in the field were documented with photography, GPS coordinates, and note taking. This included capturing data on:

- Floristic values, including the presence of threatened species, and weeds of national significance;
- DBH (Diameter at breast height) of all trees designated for removal
- Matters of National Environmental Significance (MNES); and
- Matters of State Environmental Significance (MSES).

Fauna survey and pre-clearance habitat assessment

Survey methodologies involved assessing each tree designated for removal and identifying key features likely to provide habitat for native wildlife. The GPS location of all trees scheduled for removal was recorded marked and any habitat features in or around the tree were documented. Habitat features (e.g., hollows) were observed for a minimum of one (1) minute to determine any potential activity. Any incidental fauna recorded on site were noted.

3.2 Survey Limitations

Ecological surveys have inherent biases because of the cryptic nature of some species, search effort, time-of-year (seasonal variations in flora and fauna) and the climatic conditions under which the surveys were conducted. Seasonal searches over the course of a year may reveal a range of additional species inhabiting these sites. However, the collection of true presence / absence data is difficult and time-consuming requiring extensive resourcing. The results of these ecological surveys should not be regarded as conclusive evidence that certain protected flora or fauna do not occur within the study sites.

In stating these limitations, the efficacy of the ecological survey carried out at these sites is highly effective. Consequently, the data and recommendations made here provide a reliable and true representation of the values of the site.

3.3 Legislation terminology interpretation

3.3.1 'In the wild'

The Queensland Government's key piece of environmental legislation for the protection of wildlife is the *Nature Conservation Act 1992* (NC Act). The NC Act aims to protect and manage Matters of State Environmental Significance which include state important flora, fauna, ecological communities, and protected areas. Under the Act it is an offence to knowingly clear protected plants that are 'in the wild', and clearing activities of protected plants is regulated by the *Nature Conservation (Plants) Regulation 2020*. The NC Act defines "in the wild" as being "in an independent state of natural liberty", therefore for the purpose of environmental assessment Redleaf interprets the legislation such that an EVNT individual will be considered in the wild if it meets the following criteria:

- It is independent – its establishment was unassisted (unless a part of a planting/offset/conservation program) and no exogenous forces are maintaining it (except natural forces e.g. rain).
- It is natural – it is occurring within its natural distribution range and growing in its typical condition(s).
- It is at liberty – it is free to perform all lifetime physiological functions (e.g., reproduction and seeding) as no exogenous forces are preventing the physiological processes.

3.3.2 'Breeding places'

For the purposes of this report, the definition of "breeding places" follows that provided in Schedule 7 of the *Nature Conservation (Animals) Regulation 2020*.

Habitat features that were considered significant for assessing the presence of breeding places and/or breeding habitat value of protected species include but are not limited to:

- Presence of hollow-bearing trees that are being used by birds, reptiles or arboreal mammals for the purposes of incubating or rearing offspring;
- Presence of bowers, nests, dreys or other structures commonly used by birds or mammals to incubate or rear offspring;
- Presence of cracking clay soils or other soil characteristics required for some species, particularly reptiles and amphibians;
- Presence of caves, mounds, ground hollows, coarse woody debris or other structures commonly used by birds, mammals, reptiles or amphibians to incubate or rear offspring; and
- Presence of permanent water, ephemeral ponding, depressions and/or, seasonally inundated areas that may be used for breeding by aquatic species or amphibians, or that may provide intermittent breeding habitat for opportunistic species.

4 Desktop Results

4.1 Matters of State Environmental Significance (MSES)

Matters of State Environmental Significance (MSES) are an element of the biodiversity state interest defined under the State Planning Policy 2017 (SPP).

No MSES were found within the works area.

4.1.1 Regulated vegetation

The Queensland Herbarium RE vegetation mapping indicates that the lot contains 13.27 ha of cleared Category X vegetation (containing scattered mature trees).

Table 1 Mapped REs

Vegetation type	Status	Relative location
Non-remnant	Category X	100% of the lot within its boundaries.

4.1.2 Essential habitat

No mapped essential habitat occurs within the proposed clearing/works area.

4.1.3 Koala habitat

Koalas are listed as Vulnerable under both State and Federal legislation.

Queensland's Koala regulations involving Koala Priority areas, Koala habitat areas and Rehabilitation areas are limited to South-East Queensland, and therefore do not apply to this works area.

Therefore, no further actions are required by the State under the Nature Conservation (Koala) Conservation Plan 2017. There may however be other requirements under the Federal government legislation.

4.2 Matters of National Environmental Significance

Table 2 lists the MNES under the EPBC Act and comments on their relevance to this study.

Table 2 Matters of National Environmental Significance relevant to the proposed works

MNES	Relevance	Explanation
Listed threatened species and ecological communities	Relevant	The PMST report identifies that the study area potentially contains listed species and/or communities, and/or supporting habitat.
Listed migratory species	Relevant	The PMST report identifies that the study area potentially contains supporting habitat for migratory species.
Wetlands of International Importance	Not applicable	The nearest wetland is the Great Sandy Strait. Given the relatively small scope of works, there will be no downstream impacts to this MNES.
The Commonwealth Marine Park	Not applicable	The PMST report did not identify this MNES.
World Heritage properties	Not applicable	The PMST report did not identify this MNES.
National Heritage places	Not applicable	The PMST report did not identify this MNES.
Nuclear Actions	Not applicable	The proposed works are not a nuclear action.
Great Barrier Reef Marine Park	Not applicable	The PMST report did not identify this MNES.

4.2.1 Threatened Ecological Communities

A search of the EPBC Act Protected Matters Search Tool indicates that the four (4) threatened ecological communities (TEC's) may occur within the area of the works footprint (see search results in Appendix B). Additional desktop analysis indicate that these communities are unlikely to be found on site.

4.2.2 Threatened Flora and Fauna

The EPBC Act PMST report indicated that habitat for 58 threatened species and 71 migratory species may potentially occur within 5 km of the project area. The search results attached in Appendix B.

The DES flora trigger mapping indicates that the project area does not fall within the mapped high-risk areas and as such a protected flora survey is not required.

4.2.3 Koala habitat

There are no recent koala sightings within the area however some of the koala trees within the site are koala habitat and food species so koala presence is still possible. A fauna spotter / koala spotter should be on site to supervise clearing to reduce potential injury to fauna.

5 Field results

5.1 Vegetation

Field assessment confirmed that the works area is a non-remnant, partly cleared area with predominantly planted mature and juvenile trees throughout. All the trees within the works area can be removed as necessary. Tree protection zones (TPZ) are identified in Appendix B if any of the trees are to be retained.

5.1.1 Threatened ecological communities

No TECs were identified within the study area.

5.1.2 Threatened flora

No threatened flora was identified within the study area.

5.1.3 Weeds

No 'Restricted invasive plants' under the *Biosecurity Act 2014* were found during the site inspections.

5.2 Fauna

5.2.1 Fauna Habitat/Animal Breeding places

A number of birds were observed on site (See appendix D). Two (2) stick nests (including one active crow nest) and two (2) trees containing small hollows (with skink species observed) were recorded on site (Table 3). Location of breeding places can be found in Figure 1.

Table 3 Habitat features present within the clearing area

Tree Number	Habitat type	Latitude	Longitude
T10	Small hollows containing skink species	-25.297128	152.876011
T25	Small hollows containing skink species	-25.297346	152.8765
T27	Birds nest	-25.297304	152.876364

5.2.2 Threatened fauna

No threatened fauna species were recorded on site.

6 Legislative requirements

6.1.1 *Vegetation Management Act 2000 (Qld)*

The proposed clearing area is mapped Category X. Clearing in these areas is an exempt activity under the Act. Therefore, no further action is required under the VM Act.

6.1.2 *Nature Conservation (Plants) Regulation 2020 (Qld)*

The area does not fall within the High-Risk Trigger Mapping for Protected Flora and no threatened plants were identified within the study area.

Therefore, no further action under the Nature Conservation (Plants) Regulation is required.

6.1.3 *Nature Conservation (Animals) Regulation 2020 (Qld)*

A Low-Risk Species Management Program (SMP) will be required where an animal breeding place has been identified and activities are required to tamper with the breeding place in order to complete the scope of works. Animal breeding places include obvious structures such as bird nests and tree hollows, as well as more cryptic places such as amphibian or reptile habitat where breeding takes place.

6.1.4 *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*

No Matters of National Environmental Significance were identified within the works area. Therefore, no further action is required under the EPBC.

6.1.5 *Nature Conservation (Koala) Conservation Plan 2017.*

No further actions are required for koalas under this legislation.

7 Ecological Impact Assessment and mitigation measures

The ecological values on site are considered to be low. The assessment of vegetation on site determined that the site category X vegetation. No threatened species were found during the site assessment. Some of the trees area koala food tree species but presence is considered to be unlikely. Some of the trees located within the works area contain habitat and potential breeding places for fauna.

All trees within the works area can be removed provided works are conducted under a low risk SMP and a suitably qualified fauna spotter/koala spotter is present.

8 Conclusions

This report identifies ecological values associated with the vegetation on site. No threatened flora or fauna species were observed on site. The proposed clearing works have been designed to comply with the planning and environmental requirements of the Fraser Coast Regional Council 2014, State and Commonwealth environmental legislation.

By implementing the mitigation measures designed to minimise impacts during tree clearing the proposed works will reduce its impact on local wildlife. It is concluded that the future development of the site satisfies Commonwealth, State and Local environmental legislation.

9 References

- Commonwealth of Australia (2013) *Matters of National Environmental Significance Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment. Canberra, Australia.
- Commonwealth of Australia (2020) *EPBC Act Protected Matters Report*. [website] Compiled June 2020. Department of Environment. Brisbane, Australia. URL <http://www.environment.gov.au/epbc/pmst/index.html>.
- Queensland Government (2009) *Guide to Exemptions from the Vegetation Management Framework*, Department of Environment and Resource Management, Brisbane, Australia.
- Queensland Government (2020) *Wildlife Online. (Database)*. Compiled June 2020, Department of Environment and Science, Brisbane, Australia. URL <https://www.qld.gov.au/environment/plants-animals/species-list>

Appendix A – Site Photos



Ficus rubiginosa within the works area



Two stock nests found within the works area



Melaleuca quinquenervia within the works area



General site photo showing trees to be removed and surrounding mown areas

Appendix B – Details of trees flagged for removal

Tree number	Latitude	Longitude	DBH (m)	TPZ (m)	Species	Habitat Features
T1	-25.2971	152.8759	0.4	4.3	<i>Corymbia intermedia</i>	
T2	-25.2971	152.8759	0.4	4.4	<i>Corymbia intermedia</i>	
T3	-25.2971	152.8759	0.3	3.1	<i>Corymbia intermedia</i>	
T4	-25.2971	152.8759	0.3	3.3	<i>Eucalyptus cloeziana</i>	
T5	-25.2971	152.8759	0.3	3.3	<i>Corymbia intermedia</i>	
T6	-25.2972	152.8759	0.3	3.0	<i>Eucalyptus cloeziana</i>	
T7	-25.2971	152.8759	0.3	3.4	<i>Eucalyptus cloeziana</i>	
T8	-25.2972	152.8759	0.2	3.0	<i>Eucalyptus cloeziana</i>	
T9	-25.2972	152.8759	0.2	2.8	<i>Eucalyptus cloeziana</i>	
T10	-25.2971	152.876	0.4	4.7	<i>Eucalyptus cloeziana</i>	multiple small hollows
T11	-25.2971	152.8762	0.2	1.9	<i>Ficus rubiginosa</i>	
T12	-25.2971	152.8763	0.2	2.1	<i>Ficus rubiginosa</i>	
T13	-25.2971	152.8763	0.2	2.1	<i>Ficus rubiginosa</i>	
T14	-25.2971	152.8764	0.2	1.9	<i>Ficus rubiginosa</i>	
T15	-25.2971	152.8764	0.2	1.9	<i>Ficus rubiginosa</i>	
T16	-25.2972	152.8765	0.2	1.9	<i>Ficus rubiginosa</i>	
T17	-25.2972	152.8765	0.2	1.9	<i>Ficus rubiginosa</i>	
T18	-25.2973	152.8766	0.2	1.9	<i>Ficus rubiginosa</i>	
T19	-25.2973	152.8766	0.2	2.1	<i>Ficus rubiginosa</i>	
T20	-25.2975	152.8766	0.2	1.8	<i>Ficus rubiginosa</i>	
T21	-25.2976	152.8766	0.1	1.4	<i>Ficus rubiginosa</i>	
T22	-25.2975	152.8765	0.4	4.3	<i>Eucalyptus robusta</i>	
T23	-25.2973	152.8765	0.2	1.9	<i>Eucalyptus robusta</i>	
T24	-25.2973	152.8765	0.3	3.3	<i>Corymbia intermedia</i>	
T25	-25.2973	152.8765	0.7	8.6	<i>Eucalyptus cloeziana</i>	multiple small hollows
T26	-25.2973	152.8764	0.3	3.3	<i>Corymbia intermedia</i>	
T27	-25.2973	152.8764	0.3	3.4	<i>Corymbia intermedia</i>	two nests (1 active)
T28	-25.2973	152.8763	0.2	2.3	<i>Melaleuca quinquenervia</i>	
T29	-25.2973	152.8763	0.4	4.6	<i>Eucalyptus cloeziana</i>	
T30	-25.2973	152.8763	0.4	4.4	<i>Eucalyptus cloeziana</i>	
T31	-25.2973	152.8763	0.3	3.3	<i>Eucalyptus cloeziana</i>	
T32	-25.2973	152.8763	0.2	2.6	<i>Melaleuca quinquenervia</i>	
T33	-25.2973	152.8762	0.2	2.2	<i>Melaleuca quinquenervia</i>	
T34	-25.2975	152.8764	0.4	5.0	<i>Corymbia intermedia</i>	
T35	-25.2975	152.8764	0.5	5.7	<i>Eucalyptus cloeziana</i>	
T36	-25.2977	152.8765	0.3	3.4	<i>Ficus rubiginosa</i>	
T37	-25.2976	152.8765	0.4	4.6	<i>Unidentified Eucalyptus</i>	
T38	-25.2978	152.8763	0.2	2.6	<i>Eucalyptus tereticornis</i>	
T39	-25.2978	152.8763	0.2	2.1	<i>Eucalyptus tereticornis</i>	
T40	-25.2979	152.8763	0.2	2.3	<i>Eucalyptus robusta</i>	
T41	-25.2979	152.8763	0.4	5.0	<i>Eucalyptus cloeziana</i>	

T42	-25.2979	152.8764	0.2	1.9	<i>Eucalyptus cloeziana</i>
T43	-25.2979	152.8763	0.4	4.3	<i>Eucalyptus cloeziana</i>
T44	-25.2981	152.8763	0.3	3.3	<i>Eucalyptus robusta</i>
T45	-25.298	152.8763	0.5	6.1	<i>Eucalyptus cloeziana</i>
T46	-25.2979	152.8761	0.3	3.3	<i>Ficus rubiginosa</i>
T47	-25.298	152.8764	0.2	2.1	<i>Ficus rubiginosa</i>
T48	-25.2981	152.8764	0.2	3.0	<i>Ficus rubiginosa</i>
T49	-25.2982	152.8764	0.2	2.3	<i>Ficus rubiginosa</i>

Appendix C – Wildnet, MSES and EPBC Data



Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Queensland status: All

Records: All

Date: All

Latitude: -25.2975

Longitude: 152.8760

Distance: 5

Email: kelly@redleafenv.com.au

Date submitted: Wednesday 20 Oct 2021 13:24:45

Date extracted: Wednesday 20 Oct 2021 13:30:04

The number of records retrieved = 365

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The information provided should be appropriately acknowledged as being derived from WildNet database when it is used. As the WildNet Program is still in a process of collating and vetting data, it is possible the information given is not complete. Go to the WildNet database webpage (<https://www.qld.gov.au/environment/plants-animals/species-information/wildnet>) to find out more about WildNet and where to access other WildNet information products approved for publication. Feedback about WildNet species lists should be emailed to wildlife.online@des.qld.gov.au.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	<i>Rhinella marina</i>	cane toad	Y			3
animals	amphibians	Hylidae	<i>Litoria caerulea</i>	common green treefrog		C		19
animals	amphibians	Hylidae	<i>Litoria fallax</i>	eastern sedgefrog		C		12
animals	amphibians	Hylidae	<i>Litoria gracilentia</i>	graceful treefrog		C		1
animals	amphibians	Hylidae	<i>Litoria latopalmata</i>	broad palmed rocketfrog		C		1
animals	amphibians	Hylidae	<i>Litoria nasuta</i>	striped rocketfrog		C		1
animals	amphibians	Hylidae	<i>Litoria peronii</i>	emerald spotted treefrog		C		3
animals	amphibians	Hylidae	<i>Litoria rubella</i>	ruddy treefrog		C		11
animals	amphibians	Limnodynastidae	<i>Limnodynastes peronii</i>	striped marshfrog		C		14
animals	amphibians	Limnodynastidae	<i>Limnodynastes tasmaniensis</i>	spotted grassfrog		C		1
animals	amphibians	Myobatrachidae	<i>Crinia parinsignifera</i>	beeping froglet		C		1
animals	amphibians	Myobatrachidae	<i>Pseudophryne major</i>	great brown broodfrog		C		2
animals	amphibians	Myobatrachidae	<i>Pseudophryne raveni</i>	copper backed broodfrog		C		1
animals	birds	Acanthizidae	<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill		C		6
animals	birds	Acanthizidae	<i>Acanthiza lineata</i>	striated thornbill		C		1
animals	birds	Acanthizidae	<i>Acanthiza nana</i>	yellow thornbill		C		3
animals	birds	Acanthizidae	<i>Gerygone levigaster</i>	mangrove gerygone		C		3
animals	birds	Acanthizidae	<i>Gerygone olivacea</i>	white-throated gerygone		C		18
animals	birds	Acanthizidae	<i>Gerygone palpebrosa</i>	fairy gerygone		C		4
animals	birds	Acanthizidae	<i>Sericornis frontalis</i>	white-browed scrubwren		C		3
animals	birds	Accipitridae	<i>Accipiter cirrocephalus</i>	collared sparrowhawk		C		1
animals	birds	Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk		C		3
animals	birds	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle		C		1
animals	birds	Accipitridae	<i>Elanus axillaris</i>	black-shouldered kite		C		2
animals	birds	Accipitridae	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle		C		10
animals	birds	Accipitridae	<i>Haliastur indus</i>	brahmyny kite		C		44
animals	birds	Accipitridae	<i>Haliastur sphenurus</i>	whistling kite		C		27
animals	birds	Accipitridae	<i>Pandion cristatus</i>	eastern osprey		SL		29
animals	birds	Acrocephalidae	<i>Acrocephalus australis</i>	Australian reed-warbler		C		6
animals	birds	Aegothelidae	<i>Aegotheles cristatus</i>	Australian owl-nightjar		C		1
animals	birds	Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher		C		1
animals	birds	Anatidae	<i>Anas gracilis</i>	grey teal		C		1
animals	birds	Anatidae	<i>Anas platyrhynchos</i>	northern mallard	Y			3
animals	birds	Anatidae	<i>Anas superciliosa</i>	Pacific black duck		C		47
animals	birds	Anatidae	<i>Aythya australis</i>	hardhead		C		6
animals	birds	Anatidae	<i>Chenonetta jubata</i>	Australian wood duck		C		33
animals	birds	Anatidae	<i>Cygnus atratus</i>	black swan		C		15
animals	birds	Anatidae	<i>Dendrocygna arcuata</i>	wandering whistling-duck		C		9
animals	birds	Anatidae	<i>Radjah radjah</i>	radjah shelduck		C		1
animals	birds	Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian darter		C		29
animals	birds	Anseranatidae	<i>Anseranas semipalmata</i>	magpie goose		C		1
animals	birds	Apodidae	<i>Apus pacificus</i>	fork-tailed swift		SL		1
animals	birds	Apodidae	<i>Hirundapus caudacutus</i>	white-throated needletail		V	V	2
animals	birds	Ardeidae	<i>Ardea alba modesta</i>	eastern great egret		C		18
animals	birds	Ardeidae	<i>Ardea intermedia</i>	intermediate egret		C		11
animals	birds	Ardeidae	<i>Ardea pacifica</i>	white-necked heron		C		4

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animals	birds	Ardeidae	<i>Bubulcus ibis</i>	cattle egret		C		8
animals	birds	Ardeidae	<i>Butorides striata</i>	striated heron		C		4
animals	birds	Ardeidae	<i>Egretta garzetta</i>	little egret		C		17
animals	birds	Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron		C		37
animals	birds	Ardeidae	<i>Egretta sacra</i>	eastern reef egret		C		2
animals	birds	Ardeidae	<i>Ixobrychus flavicollis</i>	black bittern		C		1
animals	birds	Artamidae	<i>Artamus leucorhynchus</i>	white-breasted woodswallow		C		28
animals	birds	Artamidae	<i>Cracticus nigrogularis</i>	piebald butcherbird		C		54
animals	birds	Artamidae	<i>Cracticus torquatus</i>	grey butcherbird		C		37
animals	birds	Artamidae	<i>Gymnorhina tibicen</i>	Australian magpie		C		69
animals	birds	Artamidae	<i>Strepera graculina</i>	piebald currawong		C		4
animals	birds	Burhinidae	<i>Burhinus grallarius</i>	bush stone-curlew		C		1
animals	birds	Burhinidae	<i>Esacus magnirostris</i>	beach stone-curlew		V		5
animals	birds	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		C		38
animals	birds	Cacatuidae	<i>Cacatua sanguinea</i>	little corella		C		13
animals	birds	Cacatuidae	<i>Cacatua tenuirostris</i>	long-billed corella	Y	C		1
animals	birds	Cacatuidae	<i>Calyptorhynchus banksii</i>	red-tailed black-cockatoo		C		2
animals	birds	Cacatuidae	<i>Calyptorhynchus lathami</i>	glossy black-cockatoo		V		1
animals	birds	Cacatuidae	<i>Eolophus roseicapilla</i>	galah		C		35
animals	birds	Cacatuidae	<i>Nymphicus hollandicus</i>	cockatiel		C		9
animals	birds	Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		C		60
animals	birds	Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike		C		4
animals	birds	Campephagidae	<i>Coracina tenuirostris</i>	cicadabird		C		6
animals	birds	Campephagidae	<i>Lalage leucomela</i>	varied triller		C		25
animals	birds	Campephagidae	<i>Lalage tricolor</i>	white-winged triller		C		1
animals	birds	Caprimulgidae	<i>Caprimulgus macrurus</i>	large-tailed nightjar		C		1
animals	birds	Charadriidae	<i>Charadrius leschenaultii</i>	greater sand plover		V	V	1
animals	birds	Charadriidae	<i>Charadrius ruficapillus</i>	red-capped plover		C		2
animals	birds	Charadriidae	<i>Elseya melanops</i>	black-fronted dotterel		C		2
animals	birds	Charadriidae	<i>Pluvialis fulva</i>	Pacific golden plover		SL		2
animals	birds	Charadriidae	<i>Vanellus miles</i>	masked lapwing		C		7
animals	birds	Charadriidae	<i>Vanellus miles novaehollandiae</i>	masked lapwing (southern subspecies)		C		19
animals	birds	Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola		C		20
animals	birds	Columbidae	<i>Columba livia</i>	rock dove	Y			3
animals	birds	Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove		C		20
animals	birds	Columbidae	<i>Geopelia striata</i>	peaceful dove		C		32
animals	birds	Columbidae	<i>Lopholaimus antarcticus</i>	topknot pigeon		C		1
animals	birds	Columbidae	<i>Macropygia amboinensis</i>	brown cuckoo-dove		C		4
animals	birds	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon		C		51
animals	birds	Columbidae	<i>Ptilinopus regina</i>	rose-crowned fruit-dove		C		1
animals	birds	Columbidae	<i>Streptopelia chinensis</i>	spotted dove	Y			67/1
animals	birds	Coraciidae	<i>Eurystomus orientalis</i>	dollarbird		C		23
animals	birds	Corvidae	<i>Corvus coronoides</i>	Australian raven		C		2
animals	birds	Corvidae	<i>Corvus orru</i>	Torresian crow		C		46
animals	birds	Cuculidae	<i>Cacomantis flabelliformis</i>	fan-tailed cuckoo		C		3
animals	birds	Cuculidae	<i>Cacomantis pallidus</i>	pallid cuckoo		C		1

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animals	birds	Cuculidae	<i>Cacomantis variolosus</i>	brush cuckoo		C		2
animals	birds	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		C		17
animals	birds	Cuculidae	<i>Chalcites basal</i>	Horsfield's bronze-cuckoo		C		4
animals	birds	Cuculidae	<i>Chalcites lucidus</i>	shining bronze-cuckoo		C		4
animals	birds	Cuculidae	<i>Chalcites minutillus barnardi</i>	Eastern little bronze-cuckoo		C		2
animals	birds	Cuculidae	<i>Eudynamys orientalis</i>	eastern koel		C		21
animals	birds	Cuculidae	<i>Scythrops novaehollandiae</i>	channel-billed cuckoo		C		14
animals	birds	Dicruridae	<i>Dicrurus bracteatus</i>	spangled drongo		C		42
animals	birds	Estrildidae	<i>Lonchura castaneothorax</i>	chestnut-breasted mannikin		C		3
animals	birds	Estrildidae	<i>Lonchura punctulata</i>	nutmeg mannikin	Y			6
animals	birds	Estrildidae	<i>Neochmia temporalis</i>	red-browed finch		C		2
animals	birds	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch		C		18
animals	birds	Eurostopodidae	<i>Eurostopodus mystacalis</i>	white-throated nightjar		C		1
animals	birds	Falconidae	<i>Falco berigora</i>	brown falcon		C		1
animals	birds	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		C		3
animals	birds	Falconidae	<i>Falco longipennis</i>	Australian hobby		C		1
animals	birds	Haematopodidae	<i>Haematopus fuliginosus</i>	sooty oystercatcher		C		1
animals	birds	Haematopodidae	<i>Haematopus longirostris</i>	Australian pied oystercatcher		C		26
animals	birds	Halcyonidae	<i>Dacelo novaeguineae</i>	laughing kookaburra		C		57
animals	birds	Halcyonidae	<i>Todiramphus macleayii</i>	forest kingfisher		C		7
animals	birds	Halcyonidae	<i>Todiramphus sanctus</i>	sacred kingfisher		C		27
animals	birds	Halcyonidae	<i>Todiramphus sordidus</i>	Torresian kingfisher		C		1
animals	birds	Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow		C		60
animals	birds	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		C		14
animals	birds	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		C		9
animals	birds	Jacanidae	<i>Irediparra gallinacea</i>	comb-crested jacana		C		9
animals	birds	Laridae	<i>Anous minutus</i>	black noddy		C		1/1
animals	birds	Laridae	<i>Chlidonias hybrida</i>	whiskered tern		C		1
animals	birds	Laridae	<i>Chroicocephalus novaehollandiae</i>	silver gull		C		33
animals	birds	Laridae	<i>Gelochelidon nilotica</i>	gull-billed tern		SL		5
animals	birds	Laridae	<i>Gygis alba</i>	white tern		C		2/2
animals	birds	Laridae	<i>Hydroprogne caspia</i>	Caspian tern		SL		16
animals	birds	Laridae	<i>Thalasseus bengalensis</i>	lesser crested tern		C		1
animals	birds	Laridae	<i>Thalasseus bergii</i>	crested tern		SL		19/1
animals	birds	Maluridae	<i>Malurus lamberti</i>	variegated fairy-wren		C		5
animals	birds	Maluridae	<i>Malurus melanocephalus</i>	red-backed fairy-wren		C		31
animals	birds	Megaluridae	<i>Megalurus timoriensis</i>	tawny grassbird		C		1
animals	birds	Megapodiidae	<i>Alectura lathamii</i>	Australian brush-turkey		C		3
animals	birds	Meliphagidae	<i>Anthochaera chrysoptera</i>	little wattlebird		C		21
animals	birds	Meliphagidae	<i>Entomyzon cyanotis</i>	blue-faced honeyeater		C		42
animals	birds	Meliphagidae	<i>Gavicalis fasciogularis</i>	mangrove honeyeater		C		16
animals	birds	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		C		69
animals	birds	Meliphagidae	<i>Manorina melanocephala</i>	noisy miner		C		69
animals	birds	Meliphagidae	<i>Meliphaga lewinii</i>	Lewin's honeyeater		C		16
animals	birds	Meliphagidae	<i>Melithreptus albogularis</i>	white-throated honeyeater		C		32
animals	birds	Meliphagidae	<i>Melithreptus lunatus</i>	white-naped honeyeater		C		1

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animals	birds	Meliphagidae	<i>Myzomela obscura</i>	dusky honeyeater		C		4
animals	birds	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		C		17
animals	birds	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		C		35
animals	birds	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		C		24
animals	birds	Meliphagidae	<i>Phylidonyris niger</i>	white-cheeked honeyeater		C		1
animals	birds	Meropidae	<i>Merops ornatus</i>	rainbow bee-eater		C		33
animals	birds	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		C		72
animals	birds	Monarchidae	<i>Monarcha melanopsis</i>	black-faced monarch		SL		4
animals	birds	Monarchidae	<i>Myiagra alecto</i>	shining flycatcher		C		2
animals	birds	Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher		C		33
animals	birds	Monarchidae	<i>Symposiachrus trivirgatus</i>	spectacled monarch		SL		7
animals	birds	Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian pipit		C		7
animals	birds	Nectariniidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		C		22
animals	birds	Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole		C		16
animals	birds	Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird		C		50
animals	birds	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush		C		24
animals	birds	Pachycephalidae	<i>Colluricincla megarrhyncha</i>	little shrike-thrush		C		6
animals	birds	Pachycephalidae	<i>Pachycephala pectoralis</i>	golden whistler		C		5
animals	birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		C		49
animals	birds	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote		C		34
animals	birds	Passeridae	<i>Passer domesticus</i>	house sparrow	Y			18
animals	birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		C		18
animals	birds	Petroicidae	<i>Eopsaltria australis</i>	eastern yellow robin		C		3
animals	birds	Petroicidae	<i>Petroica rosea</i>	rose robin		C		1
animals	birds	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		C		22
animals	birds	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant		C		21
animals	birds	Phalacrocoracidae	<i>Phalacrocorax varius</i>	pied cormorant		C		10
animals	birds	Phasianidae	<i>Coturnix ypsilophora</i>	brown quail		C		5
animals	birds	Podargidae	<i>Podargus ocellatus plumiferus</i>	plumed frogmouth		V		1
animals	birds	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		C		10
animals	birds	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		C		19/1
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		C		11
animals	birds	Procellariidae	<i>Macronectes sp.</i>			C		1
animals	birds	Psittacidae	<i>Alisterus scapularis</i>	Australian king-parrot		C		5
animals	birds	Psittacidae	<i>Cyclopsitta diophthalma coxeni</i>	Coxen's fig-parrot		E	E	3
animals	birds	Psittacidae	<i>Pezoporus wallicus wallicus</i>	ground parrot		V		1
animals	birds	Psittacidae	<i>Platycercus adscitus</i>	pale-headed rosella		C		27
animals	birds	Psittacidae	<i>Platycercus eximius</i>	eastern rosella		C		1
animals	birds	Psittacidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet		C		16
animals	birds	Psittacidae	<i>Trichoglossus moluccanus</i>	rainbow lorikeet		C		95
animals	birds	Psophodidae	<i>Psophodes olivaceus</i>	eastern whipbird		C		3
animals	birds	Ptilonorhynchidae	<i>Ailuroedus crassirostris</i>	green catbird		C		1
animals	birds	Rallidae	<i>Fulica atra</i>	Eurasian coot		C		10
animals	birds	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen		C		33
animals	birds	Rallidae	<i>Gallirallus philippensis</i>	buff-banded rail		C		1
animals	birds	Rallidae	<i>Porphyrio melanotus</i>	purple swamphen		C		33

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animals	birds	Rallidae	<i>Porzana fluminea</i>	Australian spotted crane		C		1
animals	birds	Rallidae	<i>Porzana pusilla</i>	Baillon's crane		C		2
animals	birds	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail		C		17
animals	birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail		C		54
animals	birds	Rhipiduridae	<i>Rhipidura rufifrons</i>	rufous fantail		SL		3
animals	birds	Scolopacidae	<i>Arenaria interpres</i>	ruddy turnstone		SL		1
animals	birds	Scolopacidae	<i>Calidris tenuirostris</i>	great knot		CR	CE	3
animals	birds	Scolopacidae	<i>Limosa lapponica baueri</i>	Western Alaskan bar-tailed godwit		V	V	16
animals	birds	Scolopacidae	<i>Numenius madagascariensis</i>	eastern curlew		E	CE	31
animals	birds	Scolopacidae	<i>Numenius phaeopus</i>	whimbrel		SL		20
animals	birds	Scolopacidae	<i>Tringa brevipes</i>	grey-tailed tattler		SL		5
animals	birds	Scolopacidae	<i>Tringa nebularia</i>	common greenshank		SL		7
animals	birds	Strigidae	<i>Ninox boobook</i>	southern boobook		C		6
animals	birds	Sulidae	<i>Sula leucogaster</i>	brown booby		SL		5
animals	birds	Threskiornithidae	<i>Platalea regia</i>	royal spoonbill		C		9
animals	birds	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		C		50
animals	birds	Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis		C		18
animals	birds	Timaliidae	<i>Zosterops lateralis</i>	silvereye		C		29
animals	birds	Turnicidae	<i>Turnix sp.</i>			C		1
animals	birds	Turnicidae	<i>Turnix varius</i>	paintied button-quail		C		1
animals	birds	Tytonidae	<i>Tyto delicatula</i>	eastern barn owl		C		1
animals	insects	Libellulidae	<i>Rhyothemis graphiptera</i>	graphic flutterer				1/1
animals	mammals	Balaenopteridae	<i>Balaenoptera acutorostrata</i>	dwarf minke whale		C		1
animals	mammals	Balaenopteridae	<i>Megaptera novaeangliae</i>	humpback whale		V	V	3
animals	mammals	Canidae	<i>Vulpes vulpes</i>	red fox	Y			2
animals	mammals	Dasyuridae	<i>Planigale maculata</i>	common planigale		C		2/1
animals	mammals	Dugongidae	<i>Dugong dugon</i>	dugong		V		1
animals	mammals	Emballonuridae	<i>Saccolaimus flaviventris</i>	yellow-bellied sheath-tail bat		C		1
animals	mammals	Equidae	<i>Equus caballus</i>	horse	Y			1
animals	mammals	Felidae	<i>Felis catus</i>	cat	Y			1
animals	mammals	Macropodidae	<i>Macropus giganteus</i>	eastern grey kangaroo		C		2
animals	mammals	Miniopteridae	<i>Miniopterus australis</i>	little bent-wing bat		C		1
animals	mammals	Miniopteridae	<i>Miniopterus schreibersii oceanensis</i>	eastern bent-wing bat		C		1
animals	mammals	Molossidae	<i>Austronomus australis</i>	white-striped freetail bat		C		3
animals	mammals	Molossidae	<i>Mormopterus norfolkensis</i>	east coast freetail bat		C		1
animals	mammals	Muridae	<i>Melomys cervinipes</i>	fawn-footed melomys		C		1
animals	mammals	Muridae	<i>Mus musculus</i>	house mouse	Y			2
animals	mammals	Muridae	<i>Pseudomys gracilicaudatus</i>	eastern chestnut mouse		C		1
animals	mammals	Muridae	<i>Rattus rattus</i>	black rat	Y			2/1
animals	mammals	Otariidae	<i>Arctocephalus pusillus doriferus</i>	Australian fur seal		C		1
animals	mammals	Petauridae	<i>Petaurus norfolcensis</i>	squirrel glider		C		2
animals	mammals	Phalangeridae	<i>Trichosurus vulpecula</i>	common brushtail possum		C		3
animals	mammals	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala		V	V	7
animals	mammals	Pteropodidae	<i>Pteropus alecto</i>	black flying-fox		C		48/1
animals	mammals	Pteropodidae	<i>Pteropus poliocephalus</i>	grey-headed flying-fox		C	V	22
animals	mammals	Pteropodidae	<i>Pteropus scapulatus</i>	little red flying-fox		C		29

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animals	mammals	Pteropodidae	<i>Pteropus sp.</i>			C		3
animals	mammals	Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's wattled bat		C		1
animals	mammals	Vespertilionidae	<i>Chalinolobus morio</i>	chocolate wattled bat		C		1
animals	mammals	Vespertilionidae	<i>Chalinolobus nigrogriseus</i>	hoary wattled bat		C		1
animals	mammals	Vespertilionidae	<i>Nyctophilus sp.</i>			C		1
animals	mammals	Vespertilionidae	<i>Scoteanax rueppellii</i>	greater broad-nosed bat		C		1
animals	mammals	Vespertilionidae	<i>Scotorepens greyii</i>	little broad-nosed bat		C		1
animals	mammals	Vespertilionidae	<i>Scotorepens orion</i>	south-eastern broad-nosed bat		C		1
animals	ray-finned fishes	Poeciliidae	<i>Poecilia latipinna</i>	sailfin molly	Y			1
animals	reptiles	Agamidae	<i>Pogona barbata</i>	bearded dragon		C		2
animals	reptiles	Boidae	<i>Morelia spilota</i>	carpet python		C		1
animals	reptiles	Colubridae	<i>Dendrelaphis punctulatus</i>	green tree snake		C		1
animals	reptiles	Elapidae	<i>Cacophis harriettae</i>	white-crowned snake		C		1
animals	reptiles	Elapidae	<i>Demansia psammophis</i>	yellow-faced whipsnake		C		1
animals	reptiles	Elapidae	<i>Demansia vestigiata</i>	lesser black whipsnake		C		2/1
animals	reptiles	Scincidae	<i>Anomalopus sp.</i>			C		1
animals	reptiles	Scincidae	<i>Anomalopus verreauxii</i>	three-clawed worm-skink		C		2
animals	reptiles	Scincidae	<i>Carlia pectoralis sensu lato</i>			C		1
animals	reptiles	Scincidae	<i>Carlia vivax</i>	tussock rainbow-skink		C		2
animals	reptiles	Scincidae	<i>Cryptoblepharus pulcher pulcher</i>	elegant snake-eyed skink		C		3/1
animals	reptiles	Scincidae	<i>Ctenotus leonhardii</i>	Leonhardi's ctenotus		C		1
animals	reptiles	Scincidae	<i>Ctenotus spaldingi</i>	straight-browed ctenotus		C		1
animals	reptiles	Scincidae	<i>Ctenotus taeniolatus</i>	copper-tailed skink		C		1
animals	reptiles	Scincidae	<i>Cyclodomorphus gerrardii</i>	pink-tongued lizard		C		2/2
animals	reptiles	Scincidae	<i>Eroticoscincus graciloides</i>	elf skink		C		1
animals	reptiles	Scincidae	<i>Lampropholis delicata</i>	dark-flecked garden sunskink		C		1
animals	reptiles	Scincidae	<i>Lygisaurus foliorum</i>	tree-base litter-skink		C		1
animals	reptiles	Scincidae	<i>Tiliqua scincoides</i>	eastern blue-tongued lizard		C		1
animals	uncertain	Indeterminate	<i>Indeterminate</i>	Unknown or Code Pending				1
chromists	brown algae	Dictyotaceae	<i>Lobophora variegata</i>			C		2/2
chromists	brown algae	Scytosiphonaceae	<i>Hydroclathrus clathratus</i>			C		1/1
chromists	brown algae	Sporochneaceae	<i>Sporochneus comosus</i>			C		2/2
fungi	Agaricomycetes	Boletaceae	<i>Phylloporus clelandii</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea baileyi</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea himantodes</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea mekista</i>			C		1/1
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea nidifica</i>			C		13/13
fungi	lecanoromycetes	Parmeliaceae	<i>Usnea trichodeoides</i>			C		1/1
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina confirmata</i>			C		1/1
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina exiguella</i>			C		1/1
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina leiodea</i>			C		1/1
fungi	lecanoromycetes	Ramalinaceae	<i>Ramalina pacifica</i>			C		1/1
plants	Compsopogonophyceae	Erythrotrichiaceae	<i>Erythrotrichia carnea</i>			C		1/1
plants	Florideophyceae	Acrochaetiaceae	<i>Audouinella microscopica</i>			C		1/1
plants	Florideophyceae	Ceramiales	<i>Ceramium</i>					1/1
plants	Florideophyceae	Ceramiales	<i>Ceramium clarionense</i>			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	Florideophyceae	Cystocloniaceae	<i>Hypnea</i>					2/2
plants	Florideophyceae	Cystocloniaceae	<i>Hypnea musciformis</i>			C		1/1
plants	Florideophyceae	Cystocloniaceae	<i>Hypnea spinella</i>			C		1/1
plants	Florideophyceae	Delesseriaceae	<i>Caloglossa leprieurii</i>			C		1/1
plants	Florideophyceae	Delesseriaceae	<i>Martensia</i>					1/1
plants	Florideophyceae	Gelidiaceae	<i>Gelidium</i>					2/2
plants	Florideophyceae	Gelidiaceae	<i>Gelidium allanii</i>			C		1/1
plants	Florideophyceae	Gelidiaceae	<i>Gelidium pusillum</i>			C		1/1
plants	Florideophyceae	Liagoraceae	<i>Liagora australasica</i>			C		1/1
plants	Florideophyceae	Rhodomelaceae	<i>Chondria</i>					2/2
plants	Florideophyceae	Rhodomelaceae	<i>Laurencia rigida</i>			C		1/1
plants	Florideophyceae	Rhodomelaceae	<i>Polysiphonia denudata</i>			C		1/1
plants	Florideophyceae	Rhodomelaceae	<i>Polysiphonia infestans</i>			C		2/2
plants	Florideophyceae	Rhodomelaceae	<i>Tolypocladia glomerulata</i>			C		1/1
plants	Florideophyceae	Spyridiaceae	<i>Spyridia filamentosa</i>			C		2/2
plants	Florideophyceae	Wrangeliaceae	<i>Griffithsia metcalfii</i>			C		1/1
plants	Stylonematophyceae	Stylonemataceae	<i>Stylonema alsidii</i>			C		1/1
plants	Ulvophyceae	Bryopsidaceae	<i>Bryopsis indica</i>			C		1/1
plants	Ulvophyceae	Ulvaceae	<i>Enteromorpha</i>					4/4
plants	Ulvophyceae	Ulvaceae	<i>Enteromorpha intestinalis</i>			C		2/2
plants	land plants	Acanthaceae	<i>Asystasia gangetica</i> subsp. <i>gangetica</i>		Y			1/1
plants	land plants	Acanthaceae	<i>Barleria repens</i>		Y			1/1
plants	land plants	Acanthaceae	<i>Justicia betonica</i>		Y			1/1
plants	land plants	Acanthaceae	<i>Ruellia simplex</i>		Y			1/1
plants	land plants	Agavaceae	<i>Yucca aloifolia</i>		Y			1/1
plants	land plants	Asparagaceae	<i>Asparagus aethiopicus</i> 'Sprengerii'	basket asparagus fern	Y			2/2
plants	land plants	Asphodelaceae	<i>Aloe arborescens</i>		Y			1/1
plants	land plants	Asphodelaceae	<i>Aloe vera</i> var. <i>officinalis</i>		Y			1/1
plants	land plants	Asteraceae	<i>Centratherum punctatum</i>		Y			1/1
plants	land plants	Asteraceae	<i>Helianthus debilis</i> subsp. <i>cucumerifolius</i>		Y			1/1
plants	land plants	Asteraceae	<i>Hypochaeris radicata</i>	catsear	Y			1/1
plants	land plants	Asteraceae	<i>Sphagneticola trilobata</i>		Y			1
plants	land plants	Asteraceae	<i>Thymophylla tenuiloba</i>		Y			1/1
plants	land plants	Boraginaceae	<i>Argusia argentea</i>	octopus bush			C	1/1
plants	land plants	Casuarinaceae	<i>Casuarina equisetifolia</i> subsp. <i>incana</i>				C	3/3
plants	land plants	Ceratophyllaceae	<i>Ceratophyllum demersum</i>	hornwort			C	1/1
plants	land plants	Colchicaceae	<i>Gloriosa superba</i>	glory lily	Y			1/1
plants	land plants	Commelinaceae	<i>Callisia fragrans</i>		Y			1/1
plants	land plants	Convolvulaceae	<i>Polymeria calycina</i>	pink bindweed			C	1/1
plants	land plants	Crassulaceae	<i>Bryophyllum delagoense</i>		Y			1/1
plants	land plants	Crassulaceae	<i>Bryophyllum fedtschenkoi</i>		Y			1/1
plants	land plants	Crassulaceae	<i>Bryophyllum pinnatum</i>	resurrection plant	Y			1/1
plants	land plants	Cyperaceae	<i>Cyperus brevifolius</i>	Mullumbimby couch	Y			1/1
plants	land plants	Dracaenaceae	<i>Sansevieria trifasciata</i> var. <i>trifasciata</i>		Y			1/1
plants	land plants	Fabaceae	<i>Crotalaria trichotoma</i>		Y			1/1
plants	land plants	Fabaceae	<i>Daviesia umbellulata</i>				C	1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Fabaceae	<i>Desmodium incanum</i>		Y			1/1
plants	land plants	Fabaceae	<i>Vigna luteola</i>	dalrymple vigna	Y			1/1
plants	land plants	Lamiaceae	<i>Clerodendrum heterophyllum</i>		Y			1/1
plants	land plants	Lamiaceae	<i>Vitex trifolia</i> var. <i>trifolia</i>				C	1/1
plants	land plants	Loranthaceae	<i>Amylotheca dictyophleba</i>				C	1/1
plants	land plants	Meliaceae	<i>Xylocarpus granatum</i>	cedar mangrove			C	2/2
plants	land plants	Mimosaceae	<i>Acacia disparrima</i> subsp. <i>disparrima</i>				C	1/1
plants	land plants	Mimosaceae	<i>Acacia leiocalyx</i> subsp. <i>herveyensis</i>				C	1/1
plants	land plants	Mimosaceae	<i>Acacia maidenii</i>	Maiden's wattle			C	1/1
plants	land plants	Mimosaceae	<i>Desmanthus leptophyllus</i>		Y			2/2
plants	land plants	Mimosaceae	<i>Leucaena leucocephala</i>		Y			2
plants	land plants	Myrtaceae	<i>Corymbia intermedia</i>	pink bloodwood			C	1/1
plants	land plants	Myrtaceae	<i>Eucalyptus exserta</i>	Queensland peppermint			C	2/2
plants	land plants	Myrtaceae	<i>Eugenia uniflora</i>	Brazilian cherry tree	Y			1/1
plants	land plants	Myrtaceae	<i>Melaleuca nodosa</i>				C	1/1
plants	land plants	Ochnaceae	<i>Ochna serrulata</i>	ochna	Y			1/1
plants	land plants	Orchidaceae	<i>Arthrochilus irritabilis</i>	leafy elbow orchid			C	2/1
plants	land plants	Orchidaceae	<i>Caladenia carnea</i>				C	2
plants	land plants	Orchidaceae	<i>Dipodium variegatum</i>				C	1
plants	land plants	Orchidaceae	<i>Diuris alba</i>				C	1
plants	land plants	Orchidaceae	<i>Diuris chrysantha</i>	double yellow tails			C	1
plants	land plants	Orchidaceae	<i>Eriochilus cucullatus</i>				C	1
plants	land plants	Orchidaceae	<i>Geodorum densiflorum</i>	pink nodding orchid			C	1
plants	land plants	Orchidaceae	<i>Glossodia minor</i>	small wax lip orchid			C	1
plants	land plants	Orchidaceae	<i>Microtis parviflora</i>	slender onion orchid			C	1
plants	land plants	Orchidaceae	<i>Prasophyllum brevilibre</i>				C	1/1
plants	land plants	Orchidaceae	<i>Prasophyllum exilis</i>				NT	1
plants	land plants	Orchidaceae	<i>Thelymitra pauciflora</i>	slender sun orchid			C	1
plants	land plants	Phyllanthaceae	<i>Glochidion lobocarpum</i>				C	1/1
plants	land plants	Phyllanthaceae	<i>Glochidion sumatranum</i>	umbrella cheese tree			C	1/1
plants	land plants	Plantaginaceae	<i>Bacopa monnieri</i>				C	1/1
plants	land plants	Poaceae	<i>Cenchrus setaceus</i>		Y			1
plants	land plants	Poaceae	<i>Diplachne fusca</i> var. <i>fusca</i>				C	1/1
plants	land plants	Poaceae	<i>Megathyrsus maximus</i> var. <i>pubiglumis</i>		Y			1/1
plants	land plants	Poaceae	<i>Paspalum vaginatum</i>	saltwater couch	Y			1/1
plants	land plants	Poaceae	<i>Sorghum bicolor</i>	forage sorghum	Y			1/1
plants	land plants	Poaceae	<i>Zoysia macrantha</i> subsp. <i>macrantha</i>				C	1/1
plants	land plants	Proteaceae	<i>Stenocarpus sinuatus</i>	wheel of fire			C	1/1
plants	land plants	Rutaceae	<i>Flindersia schottiana</i>	bumpy ash			C	1/1
plants	land plants	Sapindaceae	<i>Cupaniopsis anacardioides</i>	tuckeroo			C	1/1
plants	land plants	Simaroubaceae	<i>Samadera</i>					1/1
plants	land plants	Simaroubaceae	<i>Samadera bidwillii</i>			V	V	5/4
plants	land plants	Verbenaceae	<i>Stachytarpheta</i>					1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*.

The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*.

The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).

This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 20/10/21 14:23:34

[Summary](#)

[Details](#)

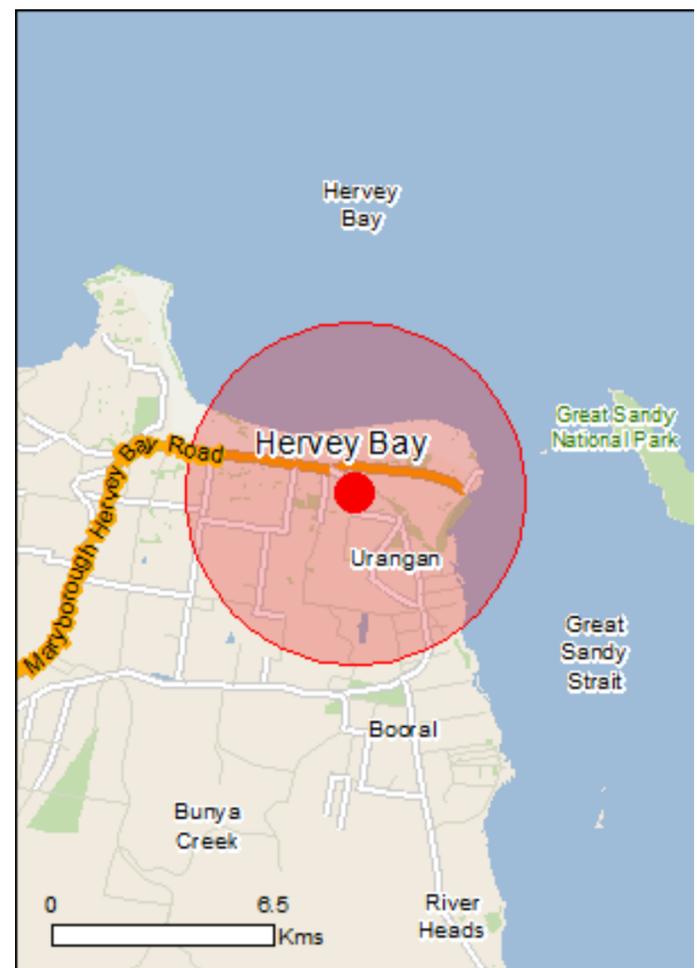
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	58
Listed Migratory Species:	71

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	106
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	25
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Great sandy strait (including great sandy strait, tin can bay and tin can	Within Ramsar site

Listed Threatened Ecological Communities

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area
Plants		
Acacia attenuata [10690]	Vulnerable	Species or species habitat may occur within area
Cossinia australiana Cossinia [3066]	Endangered	Species or species habitat may occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat likely to occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area
Macrozamia pauli-guilielmi Pineapple Zamia [5712]	Endangered	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat likely to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Furina dunmali Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharias taurus (east coast population) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species

Name	Threatened	Type of Presence
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		habitat known to occur within area Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur

Name	Threatened	Type of Presence within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Roosting known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris alba Sanderling [875]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Roosting known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Roosting known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Roosting known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Roosting known to occur within area
Pluvialis squatarola Grey Plover [865]		Roosting known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat may occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species

Name	Threatened	Type of Presence
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	habitat may occur within area Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Roosting known to occur within area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus kelloggi Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Micrognathus andersonii Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Microphis manadensis Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area
Solegnathus dunckeri Duncker's Pipehorse [66271]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Laticauda colubrina a sea krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur

Name	Threatened	Type of Presence within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Congregation or aggregation known to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Name	State
Duggan	QLD

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
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Birds

Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
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Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
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Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
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Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
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Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
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Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
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Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
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Frogs

Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
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Mammals

Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
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Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
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Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
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Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
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Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
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Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species
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Name	Status	Type of Presence
Rattus rattus Black Rat, Ship Rat [84]		habitat likely to occur within area Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

Plants

Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area

Reptiles

Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat may occur within area
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Nationally Important Wetlands

Name	State
Great Sandy Strait	QLD

[[Resource Information](#)]

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-25.29756 152.87607

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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Appendix 6 – Geotechnical Assessment

Geotechnical Services (Wide Bay) Pty Ltd

By Email

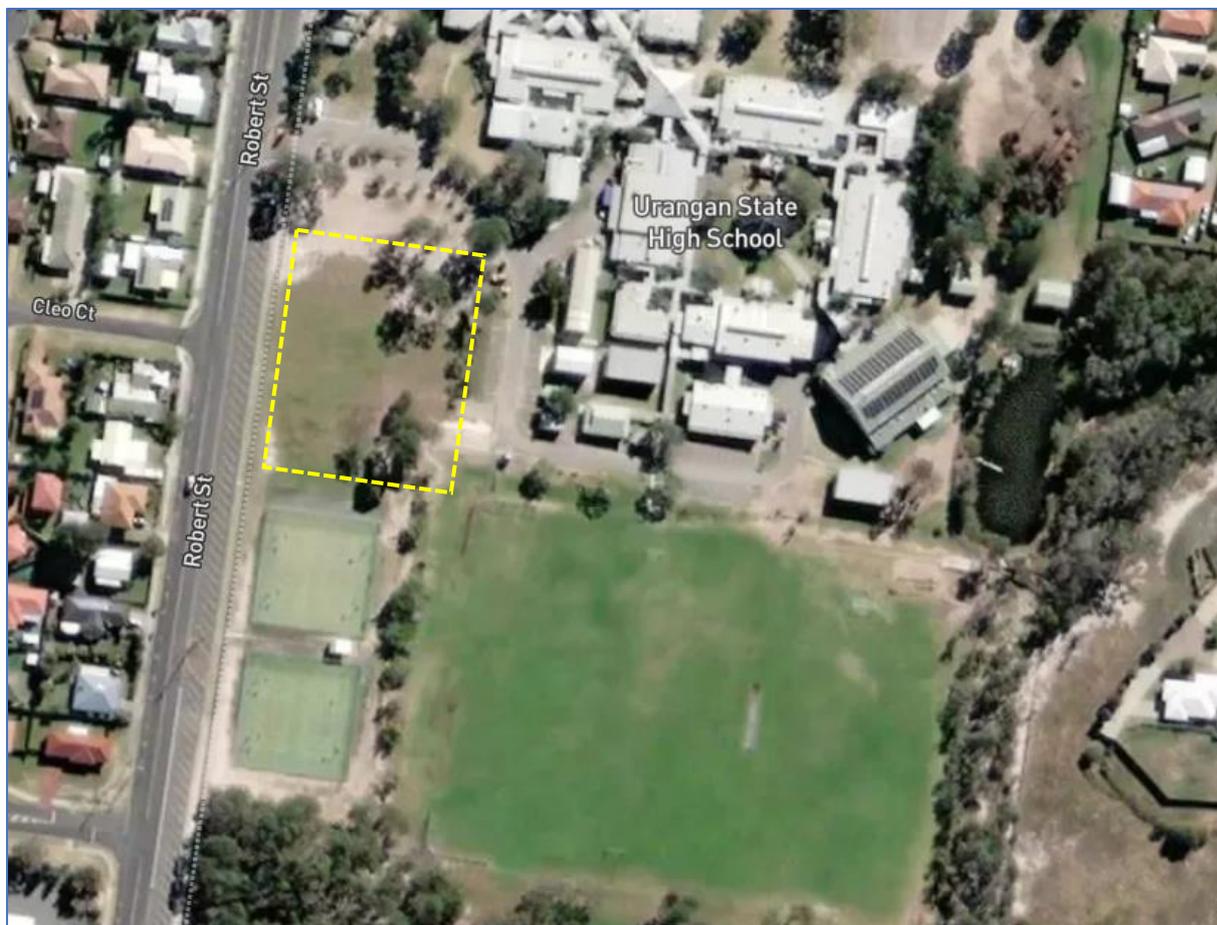
14 October 2021

Report 14 Revision 1

Project: AG210364

Please find attached our geotechnical report undertaken for the geotechnical investigations undertaken by Geotechnical Services (Wide Bay) Pty Ltd for the proposed multipurpose hall development at Urangan State High School.

If you require any clarification at all, please contact the office.



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1.0 Introduction

Arcos Unit Group Pty Ltd (Arcos) was commissioned to undertake an assessment of the geotechnical investigations undertaken by Geotechnical Services (Wide Bay) Pty Ltd (GSWB) at the site described on the cover page of this report.

The assessment undertaken by Arcos based on GSWB's investigations was undertaken in order to provide commentary within an interpretive report with comments on the following items:

- subsurface conditions including groundwater (if encountered);
- earthworks and site preparation; and
- suitable foundation types, pile founding strata, bearing pressures and estimated settlements.

This report must be kept in entirety. The use of this report is undertaken in accordance with our terms and conditions.

2.0 Regional Geology

Figure 1 shows the aerial imagery and site geology overlays from Qld Globe.



Figure 1: Aerial Image of Site with Geology

The site is in an area underlain by the Early Cretaceous aged Burrum Coal Measures which typically comprises "*feldspatholithic labile sandstone, siltstone, mudstone, shale, coal, conglomerate, glauconitic sandstone*". The fieldwork results returned silty sand overlying silty and sandy clays with weathered mudstone and sandstone seams encountered at depth, which is consistent with the weathering of the expected geology.

3.0 Fieldwork Methods and Results

The fieldwork for the investigation was undertaken by GSWB. A total six bores were drilled to between 2.8 m and 3 m depth.

The bores were drilled using a 4WD ute mounted drill rig using solid flight augers fitted with a tungsten carbide 'v' shaped bit. This enabled the monitoring of groundwater ingress or seepage. Dynamic cone penetrometer (DCP) testing was undertaken within the bores.

The bores were backfilled upon completion of works with excess material left slightly high to allow for some settlement.

A suitably experienced geotechnician from GSWB was present during the fieldwork to log the encountered subsurface conditions through observation of drilling techniques, and returned cuttings.

The subsurface conditions observed at the test locations are described in detail on the attached bore logs; however, the subsurface can be generalised as comprising silty sand topsoil to 0.2 m depth overlying "firm" to "stiff" clays. The "firm" clays noted on the GSWB logs generally appear to be more consistent with a stiff clay in accordance with AS1726.

4.0 Laboratory Results

Geotechnical laboratory testing comprised a combination of plasticity and shrink-swell index (Iss) testing. Laboratory test results are summarised in Table 2.

Table 2: Summary of Laboratory Testing

Bore	Depth (m)	Material	LL (%)	PL (%)	PI (%)	LS (%)	Iss (%)
2	0.7-1.0	Silty Sandy CLAY	-	-	-	-	3.5
1	1.5-1.8	Silty CLAY	57	25	32	17	-
2	0.7-1.0	Silty Sandy CLAY	58.4	35.6	33.4	17.0	-
4	0.5-1.0	Silty Sandy CLAY	60	25	35	17	-
5	0.7-1.1	Silty CLAY	59	26	33	17	-

5.0 Geotechnical Comments

Geotechnical comments are based on the factual findings of the investigation, best practice, local experience, published correlations, however, are fundamentally founded in opinion and this should be considered.

5.1. Excavation

It is expected that the natural soils should be readily excavatable with small to medium size earthmoving equipment such as 5 to 14 tonne or larger excavators.

Allowances would be required for hydraulic attachments where concrete or other obstructions may exist and cannot be readily excavated through over excavation methods.

This information is based on previous experience and published literature; however, it should only be taken as a guide as many factors contribute to the excavatability of a material outside of the strength of the material such as operator experience.

5.2. Temporary Batters

Near vertical temporary excavations less than 1.5 m depth in dry conditions are likely to be suitable for short term installation of underground services or retaining walls provided there are no sensitive services, loads or vehicular trafficked areas located in close proximity to the excavation crests.

Excavations greater than 1.5 m depth will need to be benched or battered. Unsurcharged dry batters up to 3 m in height in "firm" (or stronger) clays can be formed at a slope of 1H:1V (short term) or 2H:1V (long term). Where wet soils are encountered or water seeps from the faces, batters will need to be cut much flatter.

Slopes may need to be flatter than the angles presented to allow access for machinery or personnel to allow for maintenance.

Long term slopes will require surface protection to reduce the risk of erosion. Typically this would include something similar to duke matting and landscaping, and crest and toe drainage.

It is important to note that in accordance with legislative requirements the above will require geotechnical inspection at time of construction.

5.3. Earthworks Comments

The materials at this site can be broadly summarised into four groups as follows:

1. Natural Silty SAND
2. Natural Silty/Sandy CLAY

The following comments are provided in relation to site preparation for earthworks, where applicable:

- The area should be stripped of uncontrolled fill (if any), soft, overly wet, foreign, or otherwise deemed unsuitable material (material that is potentially compressible) down to a relatively stiff dry base ensuring no organics material is present.
- Stripped areas must be inspected by the geotechnical testing authority (GTA) to ensure no soft spots or loose zones are present. This should be done with the use of a loaded body truck or 12 tonne roller as a minimum. Areas showing signs of movement under the action of the testing equipment should be either over excavated and replaced with select fill or conditioned onsite through tyning, blending or other suitable methods.
- Although no standard exists for the moisture content of soils, it is recommended that the site soils be placed at or near optimum moisture content (OMC) for general earthworks operations. This increases efficiency during earthworks operations. A range of +/- 2% of OMC is recommend for general earthworks.
- Where site soils are proposed for use as fill in other areas, won material will need to have a maximum particle size of 75 mm or be observed to break down under the energy of compactive equipment.
- Fill materials should be placed in relatively horizontal layers with a maximum placement thickness of 250 mm. Different thicknesses could be applicable as a result of compaction equipment, type of compaction, and other governing factors. The materials are suggested to be compacted to a minimum dry density ratio relative to Standard compactive effort as below:

Purpose	Minimum Dry Density Ratio
General residential loadings (<20 kPa)	95% Standard / 70% Density Index
Commercial and Footings <100 kPa	98% Standard / 75% Density Index
Footings >100 kPa	100% Standard / 80% Density Index
Pavements : Subgrade to 0.5 m depth	100% Standard

- Highly plastic clays, if used, will be very sensitive to the presence or lack of moisture and therefore care should be used to place the material within the range nominated and to a maximum dry density of 102% relative to Standard compactive effort. Where this does not happen, the material could readily swell, soften, or be subject to significant trafficability issues.
- Earthworks quality testing will be required on this site. The GTA will need to provide supervision in accordance with AS3798 and undertake field density tests to monitor the actual dry density and moisture content of placed materials.
- Earthworks activities should be undertaken in relatively homogenous sequences where achievable (ie. do not place "pockets" of gravel material next to impermeable clays as this will lead to zones where water could become trapped).
- Fill material will be subject to potential settlement post placement. Well compacted fill placed in accordance with AS3798 and otherwise, good earthworks procedure should typically be subject to settlement in the order of 0.5% to 1.0% of the fill thickness over a log cycle of time.

Arcos can assist in preparing earthworks documentation, methodologies or guidelines for contractors to adhere to in order to achieve an efficient and “fit for purpose” end product.

5.4. Bearing Pressures

The subsurface conditions encountered in the bores comprised silty sand topsoil to 0.2 m depth, underlain by “firm” to “stiff” clays. As noted above, the “firm” clays appear to be more consistent with stiff conditions, based on the DCP results. It is envisaged that building and retaining wall foundations will typically comprise pad and/or strip footings founded into “firm” or stronger clay soils.

Where high level footings found into “firm” (or stronger) natural clays, they may be sized for an allowable bearing pressure of **100 kPa**.

All footings will need to be designed to accommodate potential ground surface movement, settlement values and any additional settlement values associated with the placement of new fill.

Settlement for suitably sized and designed high level footings should be in the order of 1-2% of the width of the footing.

If footings are located adjacent to an underground service or other obstruction that is not homogenous with the founding strata, the footing should be extended a minimum 0.3 m below an imaginary line projected at a 45 degree angle from the lowest point of the service/obstruction. This is depicted graphically for reference in Figure 1.

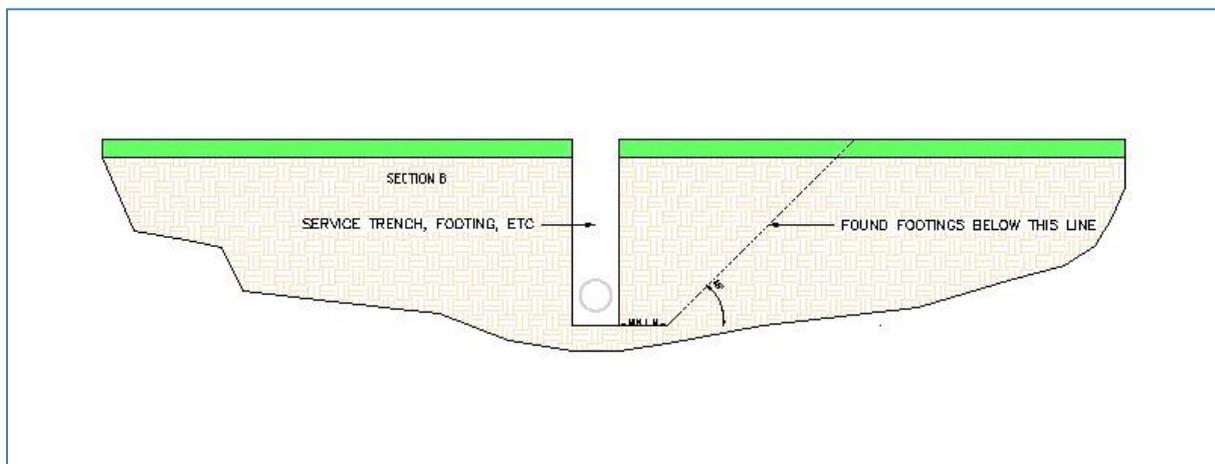


Figure 1: Interaction with trenches and other obstructions

Where development loads exceed the above allowable bearing pressures and settlements, a suitable deep foundation will be required.

The ultimate geotechnical end bearing and shaft adhesion parameter are presented in Table 3. The values given will need to be reduced by applying a suitable geotechnical strength reduction

factor (Φ_g) for limit state or divided by a suitable factor of safety for working stress methods. The Φ_g should be selected by the designer.

Table 3: Deep Level Footings – Ultimate Geotechnical Parameters (Long Pile)

Material	Bored	
	Fb (kPa)	Fs (kPa)
"Firm" to "Stiff" natural clays	450	30
"Stiff" natural clays	675	40

Notes: * - Fb = Ultimate End Bearing Pressure (unfactored) for long piles, Fs = Ultimate Shaft Adhesion (unfactored).

The upper 1 m of soil profile should be ignored in shaft calculations to allow for shrinkage cracks. The values presented in Table 3 assume that the material equal to four pile diameters below the base of any footings is as strong or stronger.

Settlement values are subjected to a variety of factors; however, a properly designed and constructed pile should have a serviceability settlement between 1% and 2% of its' diameter.

5.5. Retaining Walls

Retaining walls must be designed by a suitably qualified and experienced engineer and preferably in accordance with AS 4678. The geotechnical parameters for use in design of either flexible or rigid wall systems are presented in Table 4. Passive forces should be ignored in areas where disturbance may occur (ie. future trenching or earthworks processes).

Compaction for retaining wall backfill should be undertaken with due care. Layers should be placed thinner than for normal earthworks processes (say a maximum layer thickness of 100 mm) and compacted using light weight equipment such as hand controlled compactive equipment to minimise the stresses on the wall. If hand controlled equipment is not practical, temporary wall propping will be required.

Walls will need to incorporate full height drainage in accordance with good design practice to minimise hydrostatic pressure.

Table 4: Geotechnical Retaining Wall Parameters (Unfactored)

Material	Unit Weight (kN/m ³)	Friction Angle (ϕ)	Drained Cohesion (c')	Active (Ka)	At Rest (Ko)	Passive (Kp)
Controlled fill*	19	26	2	0.4	0.55	2.5
"Firm to Stiff" natural clays	19	24	2	0.45	0.6	2.3
"Stiff" natural clays	19	26	3	0.4	0.55	2.5

Notes: *Assumes material is placed and compacted under Level 1 inspection and testing, and behaves as clayey material.

5.6. Pavements

If site preparation is carried out as detailed in this report, the subgrade conditions are expected to generally comprise medium to high plasticity clay with varying proportions of sand and some gravel.

Based on the DCP testing, insitu CBR values for the upper subgrade at the current relative density and moisture conditions is typically between 2% and 5%.

If excavation at the site or re-use of materials won from site results in pavements being constructed on clay subgrade materials, then a CBR value of 2% is recommended.

Composite subgrades can be designed using the Japan Road Association Method where less than 1 m of fill is imported:

$$CBR_W = (D_F \cdot CBR_F^{0.33} + (1 - D_F) \cdot CBR_S^{0.33})^3$$

CBR_W = weighted subgrade CBR (%)

D_F = depth of filling (m)

CBR_F = CBR of filling material (%)

CBR_S = CBR of natural subgrade (%)

On-ground building floor slabs (ie. floating slabs) should be detailed so they can accommodate potential ground movements, including settlements. Floating slabs should also be detailed to move independently of pile supported structures. Differential settlements could be expected to vary across the site, depending on the floor loads, as well as the thickness and consistency of the near surface soils. Dowelling of floor slabs will minimise differential movements between adjacent slabs.

The satisfactory on-going performance of pavements is dependent on the subgrade not being allowed to become excessively wet. To improve pavement life, it is essential that sufficient subsoil drainage be installed and maintained in areas where there is potential for water to enter the subgrade, (ie. adjacent to unsealed areas, table drains, landscaped areas etc).

6.0 Limitations of Report

Arcos Unit Group Pty Ltd (Arcos) has prepared this document for project and client nominated on the title page of this report. The document is specific to this particular project and for the purposes as described within the document. The document cannot be used for any other project on the same site or other sites or relied upon by a third party. Any party relying upon this document beyond its exclusive use and purpose as stated above, and without the express written consent of Arcos, does so entirely at its own risk and without recourse to Arcos for any loss or damage. Arcos has necessarily relied upon information provided by the client and/or their agents.

It is important to understand that ground conditions can be spatially variable over short distances as a result of geological processes or human interference. These changes can occur after the time of which field work was undertaken. Given this, the assumed subsurface conditions within this document are only indicative of the conditions at the testing locations to the depths investigated at the time of the fieldwork.

The advice given in this document is based upon the assumed subsurface conditions. The relevance and accuracy of advice given is directly affected by variations in ground conditions across the site between testing locations that has not been captured.

This document must be kept in entirety, read in full and understood. Interpretations or conclusions made by others unless supported by an expressed written statement, interpretation, outcome or stated within this document cannot be the responsibility of Arcos.

This document or parts of it should not be used as part of a specification or design for a project without prior review and agreement by Arcos.

We trust this information is satisfactory for your current needs. Should you have any questions, please feel free to contact the undersigned.

Senior Geotechnical Engineer



Andre Dos Santos B.Eng(Civ), CPEng, RPEQ, NER, MIEAust
Attachments: Client Provided Documentation

GEOTECH REPORT

These notes have been provided to clarify and enhance the reader's understanding of the terminology used throughout the report, and also to identify where limitations exist. All investigations are undertaken based on budgetary constraints which impart a level of uncertainty as a result of limiting the amount of investigation undertaken.

Copyright

This report remains the property of Arcos Unit Group Pty Ltd at all times unless ownership is transferred in writing. It cannot be included in any documentation without the express written permission of Arcos Unit Group Pty Ltd

Subsurface Report Sheets (Bores etc)

The provided subsurface sheets are inherently an interpretation undertaken by a suitably qualified and experienced person; however, the reliability of the provided information will rely on the method of investigation. It is prudent to state that these sheets only represent a very small percentage of the subsurface conditions across a particular project.

It reasons that given the relatively small representation of the subsurface conditions for a project, spacial variability between testing locations must be taken into consideration including the orientation of strata intersections.

The presence or lack of groundwater is usually stated on the subsurface sheets; however, it must be noted that the measurements undertaken onsite are typically very inaccurate and if the presence or lack of groundwater will have any degree of affect on the project, additional groundwater monitoring techniques should be employed such as groundwater monitoring wells.

Reporting

The report has been prepared and reviewed by suitably qualified and experienced persons. The persons draw on previous experience, local knowledge, published literature, and otherwise standard engineering approaches and principals. The context of which the report has been prepared for must be considered and if the context changes, due consideration should be given to the possibility that the report is no longer considered relevant and review by Arcos Unit Group Pty Ltd must be undertaken.

Arcos Unit Group Pty Ltd undertakes quality assurance checks in accordance with its' quality system requirements; however, restrictions on the project outside of Arcos Unit Group Pty Ltd's control can result in unanticipated variations, changes in policy or interpretation of said policies by the relevant authority, or the actions of contractors subject to commercial pressure.

Site Variations

If site variations become evident at the time of construction or after the release of a report, Arcos Unit Group Pty Ltd requests immediately notification. This notification is proposed in order to assist in remediation prior to any permanent structures or design procedures are undertaken.

Collaboration

Arcos Unit Group Pty Ltd strongly recommends open and collaborative communication about the use and inherent interpretation of Arcos Unit Group Pty Ltd's report. Please contact the author of the report to arrange for an obligation free discussion regarding the potential benefits of having geotechnical consultants.

Interpretation of the Subsurface Sheets

The terminology included on Arcos Unit Group Pty Ltd's has been evolved from AS1726:2016. Typically a soil's strength, colour, plasticity, grain size, other inclusions, and moisture will be described. A rock's strength, weathering, colour, grain, and other inclusions are typically described.

Soil

Soil is typically described by the components that make it up by percentage or whichever has a governing behaviour. The types and sizes reproduced from AS1726 are:

Boulder	>200 mm
Cobble	63 to 200 mm
Gravel	2.36 to 63 mm
Sand	0.075 to 2.36 mm
Silty	0.002 to 0.075 mm
Clay	< 0.002 mm

The strength of soil is usually assessed by suitably experienced persons through the use of laboratory test results, published literature, field assessments or a combination of the above. The strength of soil is characterised into either cohesive (clays and silts) or cohesionless (sands and gravels) as shown below:

Cohesive Soil	Strength Term
Very Soft	< 12.5 kPa
Soft	12.5 to 25 kPa
Firm	25 to 50 kPa
Stiff	50 to 100 kPa
Very Stiff	100 to 200 kPa
Hard	> 200 kPa

Cohesionless Soils	Strength Term (uncorrected Qc)
Very Loose	<2 MPa
Loose	2 to 5 MPa
Medium Dense	5 to 15 MPa
Dense	15 to 25 MPa
Very Dense	> 25 MPa

Rock

Rock is typically described by the components that make it up by percentage or whichever has a governing behaviour. The strength of rock is typically the most important component. Typically, the strength of rock is based on laboratory testing, tactile assessment and other observations as relevant. The industry standard method for assessing the strength of rock in the field is to use the point load strength index (AS4133.4.1).

It is important to note that the point load strength index does not take into consideration the degree of fracturing of a rock mass which can both lower and increase the overall rock strength. The strength of rock is broken down as follows:

Very Low Strength (VLS)	< 2 MPa (UCS)
Low Strength (LS)	2 to 6 MPa (UCS)
Medium Strength (MS)	6 to 20 MPa (UCS)
High Strength (HS)	20 to 60 MPa (UCS)
Very High Strength (VHS)	60 to 200 MPa (UCS)
Extremely High Strength (EHS)	> 200 MPa (UCS)

Very Low Strength (VLS)	< 0.1 $I_{s(50)}$
Low Strength (LS)	0.1 to 0.3 $I_{s(50)}$
Medium Strength (MS)	0.30 to 1.0 $I_{s(50)}$
High Strength (HS)	1.0 to 3.0 $I_{s(50)}$
Very High Strength (VHS)	3.0 to 10.0 $I_{s(50)}$
Extremely High Strength (EHS)	> 10.0 $I_{s(50)}$

The $I_{s(50)}$ values are based on a correlation between the unconfined compressive strength (UCS) of 20. This value varies significantly and site specific testing must take precedence.

Rock weathering is broken down as follows:

Extremely weathered (EW)	Behaves as soil but rock structure evident
Highly weathered (HW)	Colour and strength of original fresh rock is not recognisable. Decomposition of rock evident
Moderately weathered (MW)	Defects are heavily stained with rock mass showing signs of discolouration
Slightly weathered (SW)	Some staining but minimal to no change in strength
Fresh stained (FS)	Minor staining evident
Fresh rock (FR)	No change

Rock fracturing is broken down as follows and can only be accurately described where undamaged continuous sampling has been undertaken:

Fragmented (Fg)	Defect spacings < 20 mm
Highly Fractured (HF)	Defect spacings 20 to 50 mm
Fractured (Fr)	Defect spacings 50 to 200 mm
Slightly Fractured (SF)	Defect spacings 200 to 1000 mm
Unbroken (Ub)	Defect spacings > 1000 mm

LTH.KEA
WR1010

28 September 2021

Lambert & Rehbein
120 Collins Avenue
EDGE HILL QLD 4870

**RE: URANGAN STATE HIGH SCHOOL – PROPOSED MULTIPURPOSE HALL
ROBERG STREET, TORQUAY**

Dear Sir

Geotechnical Services Wide Bay has undertaken an investigation at the Urangan State High School for a Proposed New Multipurpose Hall, on the 21st and 22nd of September 2021, as request by Vanessa Walker of Lambert & Rehbein.

Six (6) boreholes were drilled in the area as shown on the enclosed plan to a depth of approximately 3.0m using a trailer mounted drill rig with continuous flight augers. The six (6) boreholes were recorded on the enclosed profile logs and DCPs (dynamic cone penetrometer) tests were carried out at each Borehole.

LABORATORY TESTING

Borehole Testing and Findings

The soil Samples brought back were prepared and sampled in accordance with AS1289 7.1.1 for swell/shrink testing in order to classify the building site in accordance with AS12870.

Table 1: Shrink/Swell Results

Borehole Number	Depth (m)	Description	Shrink (%)	Swell (%)	Iss (%)
2	0.7 to 1.0m	Grey/orange/brown silty sandy clays with mudstone seams, High plasticity	3.0	4.8	3.5

Site Classification

Site classification for foundation soil reactivity strictly only applies to residential buildings up to two storeys and to buildings of similar size, loading and flexibility to those detailed in *Australian Standard AS2870 - 1996 Residential Slabs and Footings - Construction*. Such classification, however, provides an indication of the propensity of the ground surface to move with seasonal variation in moisture, and has been used (along with general climatic zoning and general experience) to assess the potential depth of seasonal cracking and potential for softening under soaked conditions.

The results of the plastic limits index/shrinkage testing were input into WBGs in-house programs to calculate the characteristic surface movement value (y_s) in general accordance with AS2870. It should be noted that AS2870 provides recommended values of change in suction (Δu) and depth of suction (H_s) for major and regional centres throughout Australia. Based on published data by Fox¹ relating climatic conditions to suction, a value of 1.2 pF was adopted for Δu and 2.0m for H_s in the calculations. A cracking depth of 0.75m based on $0.375-0.5H_s$ was used in the analysis.

The results of the analysis indicate that provided 'abnormal' soil moisture conditions are not experienced, y_s values for current site conditions are calculated to be in the order of 45-50mm, consistent with a site classification of 'Class H1' (highly reactive).

GENERAL DEFINITIONS OF SITE CLASSES

CLASS	FOUNDATIONS	Characteristic surface movement (Y_s) mm
A	Most sand and rock sites with little or no ground movement from moisture changes	$0 < Y_s \leq 20$
S	Slightly reactive clay sites which may experience only slight ground movement from moisture changes	$0 < Y_s \leq 20$
M	Moderately reactive clay or silt sites which may experience moderate ground movement from moisture changes	$20 < Y_s \leq 40$
H1	Highly reactive clay sites which may experience high ground movement from moisture changes	$40 < Y_s \leq 60$
H2	Highly reactive clay sites which may experience very high ground movement from moisture changes	$60 < Y_s \leq 75$
E	Extremely reactive sites which may experience extreme ground movement from moisture changes	$Y_s > 75$

For Classes M, H1, H2 & E further classification may be required, based on the depth of the expected moisture change. For sites with deep-seated moisture changes characteristic of dry climates and corresponding to a design depth of suction change (H_s) equal to or greater than 3m, the classification shall be M-D, H1-D, H2-D or E-D as appropriate. *For example, M represents a moderately reactive site with shallow moisture changes and M-D represents a moderately reactive site with deep moisture changes.*

In the event of the use of *in situ* material as fill, ie. Cut to fill, the compaction as per *Australian Standard AS3798 - 2007 Guidelines on Earthworks for Commercial and Residential Developments* should apply.

¹Fox E, 'A Climate-Based Design Depth of Moisture Change Map of Queensland and the Use of Such Maps to Classify Sites Under AS2870-1996', *Australian Geomechanics Vol 35 Number 4 December 2000*.

Site Classification – Continued

SITE CLASSIFICATION - CLASS 'H1'

(In accordance with AS2870)

A sample (our sample WR No. 1010) as obtained and laboratory tested in accordance with AS1289. The results are as follows:

BH #1 (1.5-1.8m)	BH #2 (0.7-1.0)	BH #4 (0.5-1.0m)	BH #5 (0.7-1.1m)
Liquid Limit = 57.0%	Liquid Limit = 58.4.0%	Liquid Limit = 60.0%	Liquid Limit = 59.0%
Plastic Limit = 25.0%	Plastic Limit = 35.6%	Plastic Limit = 25.0%	Plastic Limit = 26.0%
Plastic Index = 32.0%	Plastic Index = 33.4	Plastic Index = 35.0%	Plastic Index = 33.0%
Linear Shrinkage = 17.0%	Linear Shrinkage = 17.0%	Linear Shrinkage = 17.0%	Linear Shrinkage = 17.0%

Y_s = 50 – 55mm

Note: The Y_s value for above is based on the current site conditions when site investigation was conducted.

- Notes: (a) **Note: Please refer to the corresponding notes on the following page for further site recommendations.**
- (b) **As this site has been classified 'H1' it is recommended that you seek your engineers advice.**

Note:1		Note:2	✓	Note:3		Note:4		Note:5	
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FOUNDATION PERFORMANCE & MAINTENANCE

Ongoing foundation maintenance is always essential for the durability and stability of the footings and foundation and the appropriate required maintenance is described in AS2870 “Residential Slabs and Footings”. The design methods given in this Standard are based on the performance criteria of Clause 1.3. Importantly, significant damage may be avoided provided the foundation site conditions are properly maintained. This will require attention to:

- * Drainage of the site
- * Limitations on gardens
- * Restrictions on trees and shrubs, and
- * Repair of leaks.

A more extensive discussion of the material is contained in the CSIRO pamphlet Builders Technology File 18 ‘*Foundation maintenance and footing performance: A homeowner’s guide*’ and its recommendations should be followed. (Please refer to current CSIRO Information).

Any site/earthworks following the date of this report must comply with the requirements of AS3798 “Guidelines on Earthworks for Commercial and Residential Developments” to validate the site classification.

Thank you for the opportunity to be of service and should you require any further assistance, please contact our office.

Yours faithfully



LEX T HEWITT AMIE Aust
Institute of Engineers, Aust. No. 774321)
(QBCC Site Classifier Lic. No. 1001730)

PROFILE LOG

WR 1010

CLIENT: LAMBERT & REHBEIN

PROJECT: SITE INVESTIGATION – PROPOSED NEW MULTIPURPOSE HALL

SITE URANGAN STATE HIGH SCHOOL, ROBERT STREET, TORQUAY

LOGGED BY: LTH/CJ DATE 21/09/2021

TEST PIT NO. # 1 SURFACE R.L. SAMPLING & FIELD TESTING

DEPTH (M)	MOISTURE	CONSISTENCY	CLASSIFICATION	TEST DEPTH	Blows per 100mm
0-0.2	D-SM	F	Grey/brown silty sandy topsoil.	DS 0.6 to 1.0m	Start at 600mm
0.2-1.4	M	F	Grey/brown silty sandy clays. High plasticity.		700 - 3 2100 - 5 800 - 2 2200 - 5 900 - 2 2300 - 5
1.4-2.3	M	F-ST	Grey silty clays with mudstone seams. High plasticity.		1000 - 1.5 2400 - 3 1100 - 3 2500 - 4 1200 - 3 2600 - 4 1300 - 4 2700 - 5 1400 - 5 2800 - 5 1500 - 7 2900 - 5 1600 - 5 3000 - 5
2.3-3.0	M	F-ST	Grey/orange silty clay, high plasticity with mudstone seams.		1700 - 6 1800 - 5 1900 - 5 2000 - 6
			END OF HOLE AT 3.0M		
Drill Type – Drill Rig Driller - CJ/LTH					Water Noted - Steady Level -

Moisture: D - Dry U50 - Undisturbed 50mm dia tube sample
SM - Slightly Moist DS - Disturbed sample
M - Moist SPT - Standard Penetration Test N Value is number of blows to drive 50mm sample 300mm with a 63.3kg drop hammer falling 762mm. Blow count shown () is the number of blows required to drive U50 300mm.
S - Saturated
W - Wet

Consistency: S - Very soft VL - Very Loose P - Hand Penetrometer est'd shear strength kPa
S - Soft L - Loose N - Factor reported in kPa
F - Firm MD - Moderately Dense V - Steel V Bit
VF - Very Firm D - Dense TC - Tungsten Carbide Bit
ST - Stiff VD - Very Dense DY - Dynamic cone test 9kg hammer falling 508mm
VST - Very Stiff

PROFILE LOG

WR 1010

CLIENT: LAMBERT & REHBEIN

PROJECT: SITE INVESTIGATION – PROPOSED NEW MULTIPURPOSE HALL

SITE URANGAN STATE HIGH SCHOOL, ROBERT STREET, TORQUAY

LOGGED BY: LTH/CJ DATE 21/09/2021

TEST PIT NO. # 2 SURFACE R.L. SAMPLING & FIELD TESTING

DEPTH (M)	MOISTURE	CONSI ST-ENCY	CLASSIFICATION	TEST DEPT H	Blows per 100mm
0-0.2	D-SM	F	Grey/brown silty sandy topsoil.	DS 0.6 to 1.0m	Start at 900mm
0.2-0.5	SM	F	Grey/brown silty clay with ironstone gravel. Medium plasticity.		1000 – 2
0.5-1.8	M	F-ST	Grey/orange/brown silty sandy clays. High plasticity.		1100 – 2
1.8-2.5	M	ST	Grey/brown silty sandy clays with mudstone seams. High plasticity.		1200 – 2
2.5-3.0	M	ST	Orange/grey/brown silty clays with ironstone & mudstone seams. High plasticity.		1300 – 4
			END OF HOLE AT 3.0M		1400 – 5
					Start at 1500mm
Drill Type – Drill Rig				Water Noted -	1600 – 4
Driller - CJ/LTH				Steady Level -	1700 – 5
					1800 – 7
					Start at 2000mm
					2100 – 5
					2200 – 5
					2300 – 6
					2400 – 7
					Start at 2600mm
					2700 – 5
					2800 – 6
					2900 -7

Moisture: D - Dry U50 - Undisturbed 50mm dia tube sample
 SM - Slightly Moist DS - Disturbed sample
 M - Moist SPT - Standard Penetration Test N Value is number of blows to drive
 S - Saturated 50mm sample 300mm with a 63.3kg drop hammer falling 762mm. Blow
 W - Wet count shown () is the number of blows required to drive U50 300mm.

Consistency: S - Very soft VL - Very Loose P - Hand Penetrometer est'd shear
 strength kPa
 S - Soft L - Loose N - Factor reported in kPa
 F - Firm MD - Moderately Dense V - Steel V Bit
 VF - Very Firm D - Dense TC - Tungsten Carbide Bit
 ST - Stiff VD - Very Dense DY - Dynamic cone test 9kg hammer falling
 VST - Very Stiff 508mm

PROFILE LOG

WR 1010

CLIENT: LAMBERT & REHBEIN

PROJECT: SITE INVESTIGATION – PROPOSED NEW MULTIPURPOSE HALL

SITE URANGAN STATE HIGH SCHOOL, ROBERT STREET, TORQUAY

LOGGED BY: LTH/CJ DATE 21/09/2021

TEST PIT NO. # 3 SURFACE R.L. SAMPLING & FIELD TESTING

DEPTH (M)	MOISTURE	CONSI ST-ENCY	CLASSIFICATION	TEST DEPT H	Blows per 100mm
0-0.2	D-SM	F	Grey/brown silty sandy topsoil.	DS 0.6 to 1.0m	Start at 900mm
0.2-0.7	SM	F	Grey/brown sandy clay with ironstone gravel. Medium plasticity.		1000 – 2
0.7-1.8	M	F-ST	Grey/orange/brown silty sandy clays. High plasticity.		1100 – 1
1.8-2.4	M	ST	Grey/brown silty sandy clays with mudstone seams. High plasticity.		1200 – 2
2.4-3.0	M	ST	Orange/grey/brown silty clays with ironstone & mudstone seams. High plasticity.		1300 – 2
			END OF HOLE AT 3.0M		1400 – 4
					1500 – 5
Drill Type – Drill Rig					1600 – 5
Driller - CJ/LTH					1700 – 6
					1800 – 7
					Start at 2100mm
					2200 – 4
					2300 – 3
					2400 – 6
					2500 – 7
					2600 – 8
Drill Type – Drill Rig				Water Noted -	
Driller - CJ/LTH				Steady Level -	

Moisture: D - Dry U50 - Undisturbed 50mm dia tube sample
 SM - Slightly Moist DS - Disturbed sample
 M - Moist SPT - Standard Penetration Test N Value is number of blows to drive 50mm sample 300mm with a 63.3kg drop hammer falling 762mm. Blow count shown () is the number of blows required to drive U50 300mm.
 S - Saturated
 W - Wet

Consistency: S - Very soft VL - Very Loose P - Hand Penetrometer est'd shear strength kPa
 S - Soft L - Loose N - Factor reported in kPa
 F - Firm MD - Moderately Dense V - Steel V Bit
 VF - Very Firm D - Dense TC - Tungsten Carbide Bit
 ST - Stiff VD - Very Dense DY - Dynamic cone test 9kg hammer falling 508mm
 VST - Very Stiff

PROFILE LOG

WR 1010

CLIENT: LAMBERT & REHBEIN

PROJECT: SITE INVESTIGATION – PROPOSED NEW MULTIPURPOSE HALL

SITE URANGAN STATE HIGH SCHOOL, ROBERT STREET, TORQUAY

LOGGED BY: LTH/CJ DATE 22/09/2021

TEST PIT NO. # 4 SURFACE R.L. SAMPLING & FIELD TESTING

DEPTH (M)	MOISTURE	CONSI ST-ENCY	CLASSIFICATION	TEST DEPT H	Blows per 100mm
0-0.6	D-SM	ST	Brown/grey silty sandy clay fines with ironstone gravel.	DS 0.5 to 1.0m	Start at 500mm
0.6-1.8	M	F-ST	Mottled red/brown/grey silty sandy clay. High plasticity.		600 - 5
1.8-2.8	M	F-ST	Grey/red silty clay with mudstone seams. High plasticity.		700 - 3
			END OF HOLE AT 2.8M		800 - 3
					900 - 4
					Start at 1000mm
					1100 - 5
					1200 - 4
					1300 - 4
					1400 - 5
					1500 - 5
					1600 - 4
					1700 - 4
					1800 - 4
					1900 - 4
					2000 - 5
					2100 - 10
					2200 - 18
					2300 - 10/30mm
					Start at 2500mm
					2600 - 20/100mm
Drill Type – Drill Rig				Water Noted -	
Driller - CJ/LTH				Steady Level -	

Moisture: D - Dry
SM - Slightly Moist
M - Moist
S - Saturated
W - Wet

Consistency: S - Very soft
S - Soft
F - Firm
VF - Very Firm
ST - Stiff
VST - Very Stiff

U50 - Undisturbed 50mm dia tube sample
DS - Disturbed sample
SPT - Standard Penetration Test N Value is number of blows to drive 50mm sample 300mm with a 63.3kg drop hammer falling 762mm. Blow count shown () is the number of blows required to drive U50 300mm.

VL - Very Loose
L - Loose
MD - Moderately Dense
D - Dense
VD - Very Dense

P - Hand Penetrometer est'd shear strength kPa
N - Factor reported in kPa
V - Steel V Bit
TC - Tungsten Carbide Bit
DY - Dynamic cone test 9kg hammer falling 508mm

PROFILE LOG

WR 1010

CLIENT: LAMBERT & REHBEIN

PROJECT: SITE INVESTIGATION – PROPOSED NEW MULTIPURPOSE HALL

SITE URANGAN STATE HIGH SCHOOL, ROBERT STREET, TORQUAY

LOGGED BY: LTH/CJ DATE 22/09/2021

TEST PIT NO. # 5 SURFACE R.L. SAMPLING & FIELD TESTING

DEPTH (M)	MOISTURE	CONSI ST-ENCY	CLASSIFICATION	TEST DEPT H	Blows per 100mm
0-0.6	D-SM	ST	Grey/brown silty sandy topsoil with ironstone gravel.	DS 0.7 to 1.1m	Start at 500mm
0.6-1.8	SM-M	ST	Mottled red/grey silty clay. High plasticity.		600 - 15
1.8-2.8	SM	ST	Grey silty clay, high plasticity with mudstone seams.		700 - 8
			END OF HOLE AT 2.8M		800 - 7
					900 - 5
					1000 - 3
					1100 - 4
					1200 - 5
					1300 - 6
					Start at 1500mm
					1600 - 5
					1700 - 6
					1800 - 7
					1900 - 15
					Start at 2000mm
					2100 - 10/70mm
					Start at 2400mm
					2500 - 10/50mm
Drill Type – Drill Rig Driller - CJ/LTH				Water Noted - Steady Level -	

Moisture: D - Dry U50 - Undisturbed 50mm dia tube sample
 SM - Slightly Moist DS - Disturbed sample
 M - Moist SPT - Standard Penetration Test N Value is number of blows to drive
 S - Saturated 50mm sample 300mm with a 63.3kg drop hammer falling 762mm. Blow
 W - Wet count shown () is the number of blows required to drive U50 300mm.

Consistency: S - Very soft VL - Very Loose P - Hand Penetrometer est'd shear
 strength kPa
 S - Soft L - Loose N - Factor reported in kPa
 F - Firm MD - Moderately Dense V - Steel V Bit
 VF - Very Firm D - Dense TC - Tungsten Carbide Bit
 ST - Stiff VD - Very Dense DY - Dynamic cone test 9kg hammer falling
 VST - Very Stiff 508mm

PROFILE LOG

WR 1010

CLIENT: LAMBERT & REHBEIN

PROJECT: SITE INVESTIGATION – PROPOSED NEW MULTIPURPOSE HALL

SITE URANGAN STATE HIGH SCHOOL, ROBERT STREET, TORQUAY

LOGGED BY: LTH/CJ DATE 22/09/2021

TEST PIT NO. # 6 SURFACE R.L. SAMPLING & FIELD TESTING

DEPTH (M)	MOISTURE	CONSI ST-ENCY	CLASSIFICATION	TEST DEPT H	Blows per 100mm
0-0.6	D-SM	F-ST	Brown/grey silty sandy topsoil with ironstone gravel.		Start at 500mm
0.6-1.8	SM-M	F-ST	Brown/grey sandy silty clay. High plasticity.		600 - 7 700 - 6 800 - 7
1.8-2.8	M	F-ST	Red/grey silty clay. High plasticity.		900 - 6 Start at 1000mm
			END OF HOLE AT 2.8M		1100 - 3 1200 - 3 1300 - 3 1400 - 4 1500 - 4 1600 - 4 1700 - 5 1800 - 3 1900 - 4 2000 - 5 2100 - 4 2200 - 4 2300 - 5 2400 - 5 2500 - 5 2600 - 5 2700 - 4 2800 - 5 2900 - 6
Drill Type – Drill Rig Driller - CJ/LTH				Water Noted - Steady Level -	

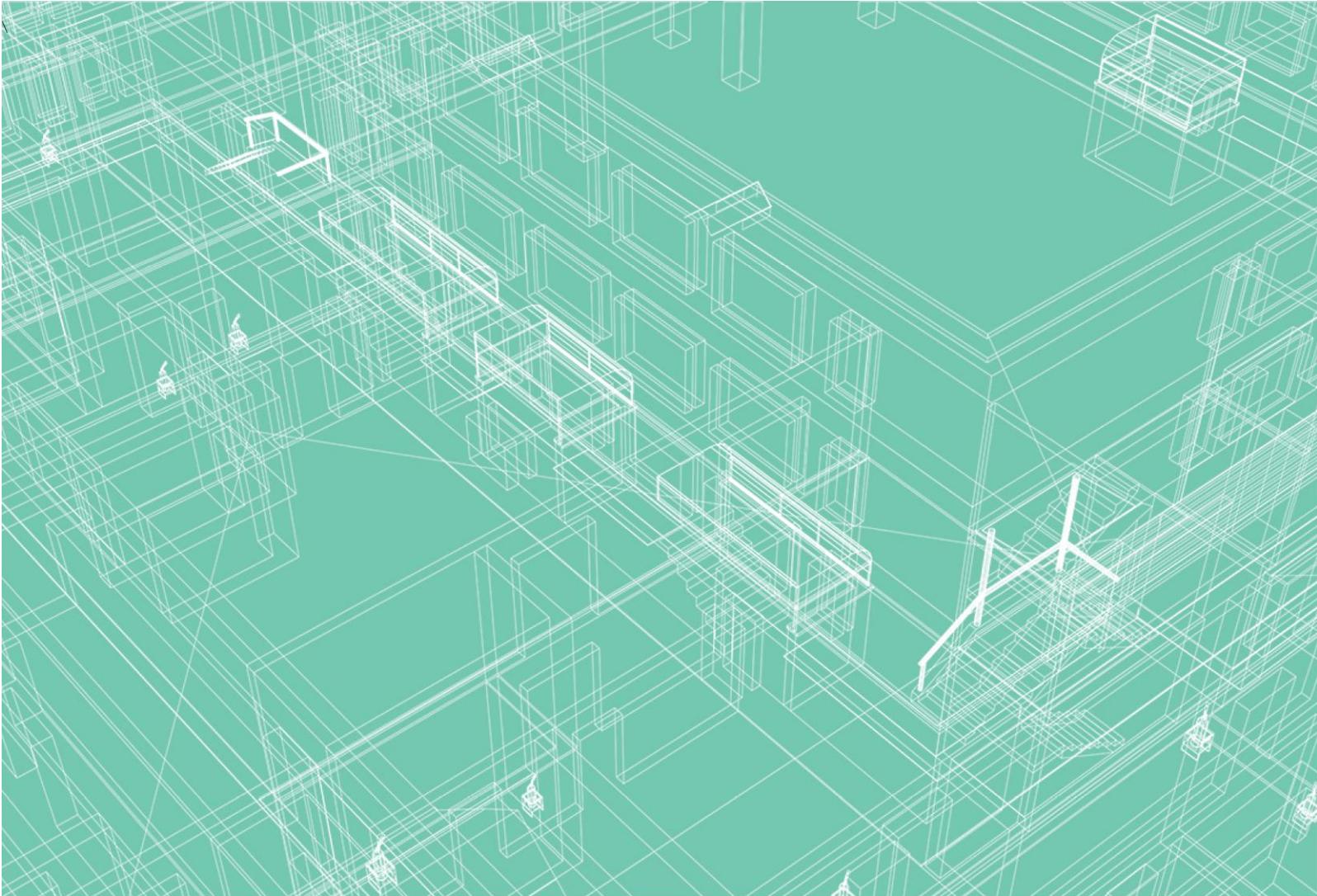
Moisture: D - Dry U50 - Undisturbed 50mm dia tube sample
 SM - Slightly Moist DS - Disturbed sample
 M - Moist SPT - Standard Penetration Test N Value is number of blows to drive
 S - Saturated 50mm sample 300mm with a 63.3kg drop hammer falling 762mm. Blow
 W - Wet count shown () is the number of blows required to drive U50 300mm.

Consistency: S - Very soft VL - Very Loose P - Hand Penetrometer est'd shear strength kPa
 S - Soft L - Loose N - Factor reported in kPa
 F - Firm MD - Moderately Dense V - Steel V Bit
 VF - Very Firm D - Dense TC - ungssten Carbide Bit
 ST - Stiff VD - Very Dense DY - Dynamic cone test 9kg hammer falling
 VST - Very Stiff 508mm

URANGAN STATE HIGH SCHOOL – PROPOSED MULTIPURPOSE HALL



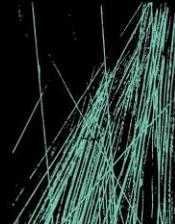
Appendix 7 – Acoustic Assessment



PROJECT BRIEF REQUIREMENTS

URANGAN STATE HIGH SCHOOL MULTIPURPOSE HALL

ACOUSTIC SERVICES



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DOCUMENT CONTROL SHEET

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1 INTRODUCTION

The purpose of this document is to outline the extent of proposed acoustic services works for Urangan State High School Multipurpose Hall project.

The project includes for the provision of a new sports court with the masterplanning works also considering the future addition of a performing arts building facility with associated student and staff working spaces.

Urangan is a coastal suburb of Hervey Bay in the Fraser Coast Region, Queensland, in the Local Government Area of Fraser Coast Region. The site address is 120 Robert Street, Hervey Bay, being the site part of the Urangan State High School precinct. The site is legally known as Lot 50 on SP104331.

The Multipurpose Hall will be located on Roberts Street on the South West of the school site. The building is to be located between the future Performing Arts Centre (PAC) and new future Road & Parking.



Figure 1: Proposed Multipurpose Hall site.

The aim of the Schematic Design Project Plan (SDPP) is to identify the required acoustic service works including: acoustic design to achieve Design Standards for DEFE Facilities acoustic requirements plus the potential implications on the noise sensitive receivers surrounding the development.

The SDPP will define the engineering services intent, applicable standards, design criteria, and acoustic design strategies proposed for the acoustic services.

1.1 LIMITATIONS

This SDPP is preliminary in nature and represents the outcomes of the site inspections, design reviews, discussions and decisions at a schematic design point of the project. The information outlined within the SDPP is expected to be reviewed and confirmed as part of the design development process whether undertaken as 'Non-Traditional' or 'Part B' as per the project brief.

1.2 REFERENCE DOCUMENTS

The SDPP has been developed with the project briefing document in consultation with the project team, and client stakeholder. The acoustic design intent have been formulated based on the following project reference documents:

- Architectural drawings of the proposed development by Cox Architecture, dated 27/10/2021.
- Facilities Brief Urangan State High School Endorsed, dated 18/06/2021.
- Room Data Sheets Urangan State High School.

2 DISCUSSION OF KEY ACOUSTIC DESIGN

2.1 INTERNAL NOISE LEVEL

This issue deals with the building envelope and how it controls noise break-in from outdoors plus noise control of building services to meet the recommended internal noise levels.

All spaces will require appropriate steady-state / continuous internal background noise levels plus the absence of excessive, intrusive external ambient noise to allow functionality to be achieved without disturbance.

Steady-state, continuous internal noise levels will be determined by the level of external noise entering the building from external noise sources (road traffic, mechanical plant, rain, etc) combined with noise from the building services systems.

The design shall achieve the relevant internal design noise levels for each space and consider all noise sources.

2.2 ROOM ACOUSTICS

This issue deals with the way sound behaves within an enclosed space, particularly for those with critical or sensitive acoustic functions.

Each room and area should have an internal room acoustic that suits the function of the space. The spaces should be comfortable to occupy and speech should sound natural, and the use of each space and environment should not be tiring over long periods.

In spaces where various activity occurs, control of reverberation time provides benefit in terms of reducing noise build-up ('Lombard Effect') which lead to creating easier communication. The reverberation control can improve sound quality in designated spaces and professional environments. The presence of acoustic absorption will help to control the noise build-up.

The use of sound absorption treatment on ceilings and walls should be maximised when proposed flooring is sound reflective.

2.3 SOUND INSULATION

This issue deals with the way sound is controlled from room to room. The occupants of the spaces must be able to carry out their tasks without disturbance from the noise generated by other nearby activities.

The sound insulation performance of a partition is determined by the activities of the room and noise sensitivity of the adjacent rooms. Areas where high noise levels take place, i.e., kitchens, generally require a high sound insulation performance. Similarly, areas which are noise sensitive, due to the type of activity, generally require a high sound insulation performance.

2.4 EXTERNAL NOISE EMISSIONS

The design of the Multipurpose Hall shall ensure that noise emissions associated with the activity and the operation of mechanical plant for the completed building are controlled to achieve appropriate levels at neighbouring noise sensitive receivers.

Noise controls will need to be incorporated with the design of the mechanical plant rooms to ensure that the cumulative noise levels from plant to the nearest sensitive receivers meets the noise level criteria. Acoustic assessment of all mechanical plant shall continue during the detailed design phase of the project in order to confirm any noise control measures.

3 ACOUSTIC CRITERIA

The acoustic services design will comply with the relevant Australian Standards and relevant guidelines including but not limited to:

- Design Standards for DEFE Facilities, Section 4.9 – Acoustic Performance (Version 3.0, September 2014).
- Australian Standard AS2107:2016 'Acoustics – Recommended internal noise levels and reverberation times for building interiors'.

This section states the minimum acoustic performance requirements as per Standards and Guidelines plus discussion of acoustic issues detailed in Section 2. Acoustic design recommendations are based on the acoustic requirements to be achieved. The overall objective of the acoustic performance requirements is to provide:

- Acoustic conditions in the building that provide acoustic comfort and stimuli to the users as per the function of the spaces.
- Control internal noise levels and reverberation times of spaces.
- Minimise noise impact due to the operation of the premises into the nearest noise sensitive receivers.

3.1 DEFE GUIDELINE

The Design Standard for DEFE Facilities set out the acoustic design criteria for internal noise levels, room acoustics and sound insulation. Acoustic requirements as per the Design Standards for DEFE Facilities are extracted below for reference.

"4.9.1 – Planning for Acoustic Control"

Factors affecting acoustic performance that need to be considered include:

- *Site location in relation to noise sources e.g. roads, aircraft, railways, industry etc., in accordance with the relevant Australian Standards (see also Section 2.1)*
- *Relationship between noise producing buildings within the site e.g. library, music, sport centre, workshops*
- *Relationship between noise producing activities and spaces within buildings*
- *Activity and equipment noise within spaces e.g. music, playground activities in covered area, machinery noise in workshop*
- *Impact and vibration noise from foot traffic and machinery from rooms above in multi-level buildings*
- *Impact noise from rain and hail on roof sheeting*
- *Impact noise, vibration and resonances in light weight metal framed structures from student movement and foot traffic*
- *Sound travel paths through openings, joints or gaps between walls, floors and ceilings and open-able joints in operable walls, doors and view panels*
- *Sound travel between rooms over the partitions via the ceiling space (where the ceiling is acoustically transparent and where partitions do not extend full height)*
- *Noise reflection and reverberation within internal spaces larger than 100sqm and in large roofed covered areas*
- *Noise from mechanical ventilation fans and air-conditioning fans*
- *Where noise reduction cannot be achieved by distance from the noise source, appropriate noise reduction strategies, such as double glazing and noise barriers, shall be provided*
- *Where the requirement for a noise engineering report is warranted, a suitably qualified acoustic professional is to be engaged to provide the report*

4.9.2 Acoustic Isolation

Unwanted airborne noise can travel into a room from external sources and from adjacent rooms through walls, windows, ceiling, and doors and through gaps and joints between them. In addition impact noise can travel through the building structure.

Acoustic isolation achieved by each barrier is the measure of reduction of sound and is defined as a weighted sound reduction index (R_w) in accordance with the relevant Australian Standards, including the rating of sound insulation in buildings and building elements for airborne sound (see also Section 2.1).

The following acoustic isolation performance categories shall be applied to each room where briefed. Please note that exceptions may be approved by DETE for non-teaching spaces.

Each category defines the minimum sound isolation levels (R_w) that shall be achieved:

4.9.2.1 Very High Isolation (Category **VH**)

- R_w50 – from adjoining rooms (including walls, ceiling, doors and view panels including joints and seals).
- R_w35 – from adjoining internal circulation corridors and from external areas including roof rain noise.

4.9.2.2 High Isolation: (Category **H**)

- R_w45 – from adjoining rooms (including walls, ceiling, doors and view panels including joints and seals)
- R_w30 – from adjoining internal circulation corridors and from external areas including roof rain noise.

4.9.2.3 Moderate Isolation: (Category **M**)

- R_w45 – from adjoining rooms (including walls, ceiling, doors and view panels including joints and seals)
- R_w25 – from adjoining internal circulation corridors and from external areas including roof rain noise.

4.9.3 Acoustic Absorption

Sound absorption properties within a room are based on the design, ambient sound levels and reverberation times shown for educational buildings in Table 1 of AS 2107-2000¹ Acoustics - Recommended design sound levels and reverberation times for building interiors.

The acoustic absorption within a room is achieved by a combination of the absorption properties of all internal surfaces (floor, ceiling, walls, furniture and people). Acoustic absorption is defined in terms of Noise Reduction Coefficient (NRC) measured over a range of sound frequencies from 250 to 2000Hz in accordance with AS ISO 354-2006 Acoustics - Measurement of sound absorption in a reverberation room, AS 2107-2000 (2000) Acoustics - Recommended design sound levels and reverberation times for building interiors, and AS/NZS 1935.1:1998 Acoustics - Determination of sound absorption coefficient and impedance in impedance tubes - Method using standing wave ratio.

Where specifically briefed, teaching spaces for students with special hearing needs, learning difficulties and students with English as a second language, shall have reverberation times lower than the nominated minimum level and shall have sound-field augmentation systems.

Learning spaces larger than 100sqm where projection of voice and music is critical, (such as open plan learning spaces, presentation/ performance auditorium), shall be subject to specialist advice from an acoustic consultant and may require sound augmentation (PA) systems.

¹ Superseded by Australian Standard AS2107:2016.

In very large spaces such as sports halls a maximum reverberation time shall be 1.5 seconds.

External covered play areas shall have roof noise damping and acoustic absorption ceilings to achieve absorption category as briefed.

Traffic noise in classrooms should not exceed 48 dB(A) L10 (1hr) when measured or calculated (in the centre of the room) as an indoor level, during school hours.

See also 4.12.4 Mechanical Services for acoustic requirements on noise generating equipment.

The following acoustic absorption categories shall be applied within each room as briefed. Each category defines minimum sound absorption levels (NRC) that shall be achieved:

*4.9.3.1 High Absorption: (Category **H**)*

To achieve an ambient sound level range of 35 to 40 dB(A) and a reverberation time of maximum 0.4 seconds

- ceiling - minimum NRC 0.7 Acceptable product – Armstrong Ultima or approved equal
- floor - carpet minimum NRC 0.5
- walls - absorptive pin boards/ panels minimum NRC 0.3 to 0.5 where wall space allows

*4.9.3.2 Moderate Absorption: (Category **M**)*

To achieve an ambient sound level of 40 to 45 dB(A) and a reverberation time of maximum 0.6 seconds.

Rooms with carpeted floors

- floor - carpet minimum NRC 0.5
- ceiling - minimum NRC 0.5
- walls – no absorption required

Rooms with vinyl, epoxy or concrete floors

- floor - non sound absorbing
- ceiling - minimum NRC 0.7. Acceptable product – Armstrong Ultima or approved equal.
- Note - Ceilings in Food Preparation Areas – NRC 0.7 washable hygienic finish. Acceptable product - Ecophon Hygiene Foodtec AC3 or equal approved.

*4.9.3.3 Low Absorption: (Category **L**)*

To achieve an ambient sound level of 45 to 48 dB(A) and a reverberation time of maximum 0.8 seconds.

Rooms and Covered Areas with vinyl, epoxy or concrete floors

- floor - non sound absorbing
- ceiling - minimum NRC 0.5"

3.2 ROOM DATA SHEETS

The following information regarding the sound insulation and absorption performance of the spaces within the building has been assembled from the Room Data Sheets.

Room	Sound Insulation	Sound Absorption
Covered Entry / Foyer / Kinesiology Laboratory / Gymnasium / Sports Theory & Nutrition / Male Amenities / Shower Change Area / Female Amenities / Shower Change Area / Kiosk / Servery	M	M
Multipurpose Hall	M	M
HOD Office / Staff Work Room	H	M
Toilet – Accessible with Shower	H	N/A
Cleaner Store	M	N/A
Data Room	H	N/A
Small Equipment Storage / Large Equipment Storage / Chair Storage	N/A	N/A
Stage	M	H

Table 1: Room Data Sheet acoustic requirements.

3.3 AS2107:2016

Australian Standard 2107:2016 'Acoustics - Recommended Design Sound Level and Reverberation Times for Building Interiors' establishes criteria for design sound levels and reverberation times within buildings. Table 2 summarizes the noise level criteria for design sound levels within spaces of the development.

Type of Occupancy/activity	Design Sound Level ($L_{Aeq,T}$)	Design Reverberation Time (RT_{mid}) range, s
Foyer	< 50	< 0.8
Multipurpose Hall	30 – 35	Refer to Section 4.2.1
Teaching Spaces	35 – 45	0.6 – 0.8
Toilets	< 55	N/A
Professional and Administrative Offices	35 – 40	0.6 – 0.8

Table 2: AS:2107:2016 Design Sound Levels and Reverberation Times.

4 ACOUSTIC DESIGN RECOMMENDATIONS

4.1 INTERNAL NOISE LEVELS

Internal noise levels within the spaces will be a cumulative contribution of all noise sources, being the noise break-in from external noise sources – i.e. traffic, internal noise levels due to mechanical services, and radiated noise from the metal sheet roof structure due to rain. The building envelope (façade) of the proposed buildings shall be designed to control external noise break-in.

The SPP Transport Noise contour mapping which only applies to residential developments, may be used as guide to traffic noise levels for the school site. Information retrieved show that the school site is not in a State Transport Noise Corridor, however the Multipurpose Hall could be impacted by traffic along Robert Street. Sound insulation performance of the building envelope, particularly the façade facing Roberts Street, shall enable to achieve the internal noise levels as per Section 3 due to traffic noise break-in.

Use of air conditioning system in rooms will enable to increase acoustic performance of the sound insulation ratings of the façade and internal partitions as doors and windows will be closed. Section 4.8.7 of the Design Standards for DETE Facilities states that “split (air conditioning) systems should be used with a single external condenser per building connected to multiple indoor units.”

Under an acoustic viewpoint, air conditioning split systems are preferred in lieu of ducted systems for school projects. This is due to two main issues:

- Acoustically treatment of all penetrations through acoustic walls, particularly for walls with a $RW > 45$.
- Cost of required noise controls for the mechanical services in order to achieve DETE acoustic requirements.

To address rain noise for steel roof sheeting, roofing shall comprise thermal insulation (glasswool/rockwool) to minimise rain noise and a ceiling shall be suspended from the roof structure. ESD requirements will take preference to comply with thermal requirements.

4.2 ROOM ACOUSTICS

4.2.1 MULTIPURPOSE HALL

The Multipurpose Hall will be likely to be used for the following activities:

- School assemblies.
- Sport events.
- Performance of music.
- Dramatic performances.
- Teaching and Lectures.
- Audio-visual presentations.

This range of functions conflicts in the acoustic performance of the Multipurpose Hall. It is well recognised that different types of performances require different room acoustics. The proper acoustic conditions for speech and music are quite different.

The acoustic design strategy shall result in the highest acoustic quality in the Multipurpose Hall for the broadest range of activities envisaged for the space. The following table shows the reverberation time criteria for the Multipurpose Hall based on AS2107:2016 recommended curves for Speech and Sports functionality. Due to the difference between the proposed criteria, an intermediate reverberation time is recommended.

<i>Functionality</i>	<i>Reverberation Time (s)</i>
<i>Speech – Curve 1</i>	1.2 – 1.4
<i>Music – Curve 2</i>	1.9 – 2.1
<i>Sports – Curve 4</i>	1.9 – 2.1
<i>Recommended</i>	1.4 – 1.6

Table 3: Reverberation time criteria for the Multipurpose Hall.

As per the above criteria and sport hall's reverberation time requirements, the maximum allowable reverberation time is 1.5 seconds and the recommended reverberation time shall be pursued to allow the range of functions. This will not have an impact on the acoustic environment for music and sports events, improving it and not being disruptive. To achieve the recommended reverberation time, the minimum Noise Reduction Coefficient (NRC) of the acoustic ceiling within the Multipurpose Hall shall be 0.70. Proposed acoustic ceilings which achieve the above NRC can be found in Table 4.

Large and high rectangular spaces such the Multipurpose Hall tend to achieve high reverberation times even with the right amount of installed sound absorption within the space – unless acoustic diffusion is provided. This is due to sound generated at head level tends to not reach the ceiling and will bounce horizontally. In order to address this issue, it is recommended a minimum of 20% to 30% of the overall required sound absorptive surfaces, to be evenly distributed on the walls as close as possible to head height. Furthermore, due to distance between parallel walls (longer than 18m), sound absorption treatment on walls is required to minimise flutter echoes within the space.

For the Stage area, as per RDS, a high absorptive ceiling and walls are required. The minimum NRC for the ceiling is 0.7 and walls shall have a NRC range of 0.3 to 0.5, where space will allow.

4.2.2 OTHER SPACES

To increase the speech privacy between spaces and reduce internal noise levels from mechanical services, sound absorptive treatments are recommended.

Since speech is a broad frequency range (125Hz to 2kHz), it is preferable to provide a sound absorptive treatment which is effective at the mentioned frequency range. Recommended minimum Noise Reduction Coefficient (NRC) of the sound absorptive treatment shall be 0.70.

Examples of acceptable sound absorptive ceilings include:

- 20% open area perforated /slotted timber or plasterboard panels and 50 mm insulation behind.
- Perforated metal pan ceiling tiles with 50 mm insulation in the pan.
- Mineral fibre or woodwool ceiling tiles.

Examples of acceptable sound absorptive treatment for walls include:

- 20% open area perforated timber or plasterboard panels with 50mm insulation in the wall cavity.
- Fabric wall panels.

Table 4 below provides typical sound absorptive internal finishes and their respective Noise Reduction Coefficients (NRC). These products are nominated as a guide only and any acoustically equivalent alternatives are supported.

<i>Material Type</i>	<i>Description</i>	<i>Typical NRC Range</i>	<i>Example Products</i>
Polyester Fabric	Minimum 25mm thickness and direct fix to internal lining	0.70 – 0.80	Autex Quietspace, InStyle Ecoacoustic or similar
Pinboard Fabric	10-12mm thickness and direct fix to internal lining	0.40	Autex Composition or similar
Solid Perforated Panels	Minimum 17% open area and 12mm thickness of panel. Sound insulation above panel	0.70 – 0.85	Knauf Stratopanel 12/25R, Supawood Supacoustic or similar
Slotted Panels	Minimum 20% open area. Sound insulation above panel	0.70 – 0.85	Supawood Supaslat, Atkar Au.di Slat or similar
Expanded Steel Mesh	Minimum 50% open area. Sound insulation above panel	> 0.80	Armstrong Metalworks or similar
Woodwool	Sound insulation above the panel and ceiling void required	0.35 – 0.85	Heradesign Fine or similar
Mineral Fibre Ceiling Tiles	Sound insulation above the panel and ceiling void required	0.50 – 0.85	Armstrong Ultima+ / AMF Thermatex Acoustic / Ecophon Hygiene or similar
Solid Plasterboard	Sound insulation within ceiling void	0.10	---

Table 4: Sound Absorptive Panel Examples.

If carpet tiles plus a full acoustic ceiling coverage are provided in the spaces, then achievement of reverberation time criteria are expected for all spaces. For ceilings with different sound absorptive properties, a minimum acoustic ceiling area shall be provided to confirm the DETE acoustic requirements.

4.3 SOUND INSULATION

4.3.1 INTERNAL LIGHTWEIGHT PARTITIONS

The proposed lightweight internal partitions to achieve the DETE Guideline requirements are summarised below in Table 5. Appendix A shows the minimum sound insulation requirements.

<i>Weighted Sound Reduction (R_w)</i>	<i>Construction</i>	<i>Above Ceiling Treatment</i>
35	13mm plasterboard (@8.4kg/m ²) / 92mm steel stud (BMT 0.55) / 13mm plasterboard (@8.4kg/m ²)	No
40	13mm plasterboard (@8.4kg/m ²) / 92mm steel stud (BMT 0.55) with sound insulation (75mm@14kg/m ³) / 13mm plasterboard (@8.4kg/m ²)	Extend on lining side of the partition 100mm above ceiling level
45	2x13mm plasterboard (@16.8kg/m ²) / 92mm steel stud (BMT 0.55) with sound insulation (75mm@14kg/m ³) / 13mm plasterboard (@8.4kg/m ²)	Partition to extend full-height (underside of slab/roof)
50	2x13mm plasterboard (@16.8kg/m ²) / 92mm steel stud (BMT 0.55) with sound insulation (75mm@14kg/m ³) / 2x13mm plasterboard (@16.8kg/m ²)	Partition to extend full-height (underside of slab/roof)

Table 5: Sound insulation performance for recommended lightweight internal partitions.

Operable walls shall achieve a minimum sound insulation rating of R_w45 between classrooms as per Section 4.3.8.9 of the DETE Guideline. To minimise noise flanking via the ceiling void, a ceiling void barrier running until the roof system soffit and with a similar sound insulation performance of the operable wall will be required.

4.3.2 ACOUSTIC DOORSETS

For areas where acoustic doors are required, the following door sets presented in Table 6 are recommended to achieve the proposed acoustic privacy ratings.

<i>Sound Insulation Rating</i>	<i>Composition</i>	<i>Acoustic Seals</i>
R_w35	40mm solid core door	Raven RP87Si perimeter seal Raven RP38Si drop/bottom seal
R_w40	50mm solid core door, with rebated frame. Likely proprietary doorset	Raven RP78Si perimeter seal Raven RP530 Raven RP70 drop/bottom seal

Table 6: Acoustic door types.

The following construction for frames is required for the corresponding level of sound insulation required:

- Type 1 – Aluminium framing filled with 32kg/m³ insulation, solid timber or steel
- Type 2 – Solid timber or steel framing

4.3.3 INTERNAL GLAZING

Table 7 shows the sound insulation ratings of typical glazing without the frame system.

<i>Sound Insulation Rating (R_w)</i>	<i>Typical arrangement</i>	<i>Typical Thickness</i>	<i>Full Height Construction</i>
35	Single	10.38mm laminated	No
40	Single	12.38mm laminated	Yes
45	Double	8.38mm / 20mm airgap / 10.38mm	Yes
>45	Not Recommended		

Table 7: General glazing wall type details.

The following constructions for frames shall be considered for the corresponding level of sound insulation required:

- $\leq R_w35$ – Aluminium framing filled with 32kg/m^3 insulation, solid timber or steel
- $> R_w35$ – Solid timber or steel framing

4.4 EXTERNAL NOISE EMISSIONS

The Multipurpose Hall building is located nearby residential receivers. The nearest residential receivers to the Multipurpose Hall could be impacted by operational noise breaking-out from the building. Noise sources can be due to the use of the facilities and mechanical services plant.

The building envelope (façade) of the proposed buildings shall be designed to control noise generated within the buildings breaking-out and affecting nearby noise sensitive receivers. It is understood that activities involving amplified music will not be undertaken in the facility. Hence the minimum sound insulation rating of R_w25 for the façade of the Multipurpose Hall, as specified by the DETE Guideline, will likely control noise generated within the hall.

The project will have Ministerial Designation (MiD) acoustic requirements that will be applied when the information will be available. Depending on the outcome of the MiD report, additional acoustic requirements may be required to meet noise level requirements at the nearest receivers. This will need to be assessed by the D&C contractor in conjunction with the Acoustic Consultant utilising noise measurements conducted on site.

4.5 BUILDING SERVICES

Outdoor plant and equipment sound power levels should be selected and specified to achieve a maximum of 40dB(A) in adjacent habitable rooms and at site boundaries as per DETE Guideline Section 4.12.4.1, plus to comply with Council, Environmental Protection Act and Environmental Protection (Noise) Policy requirements.

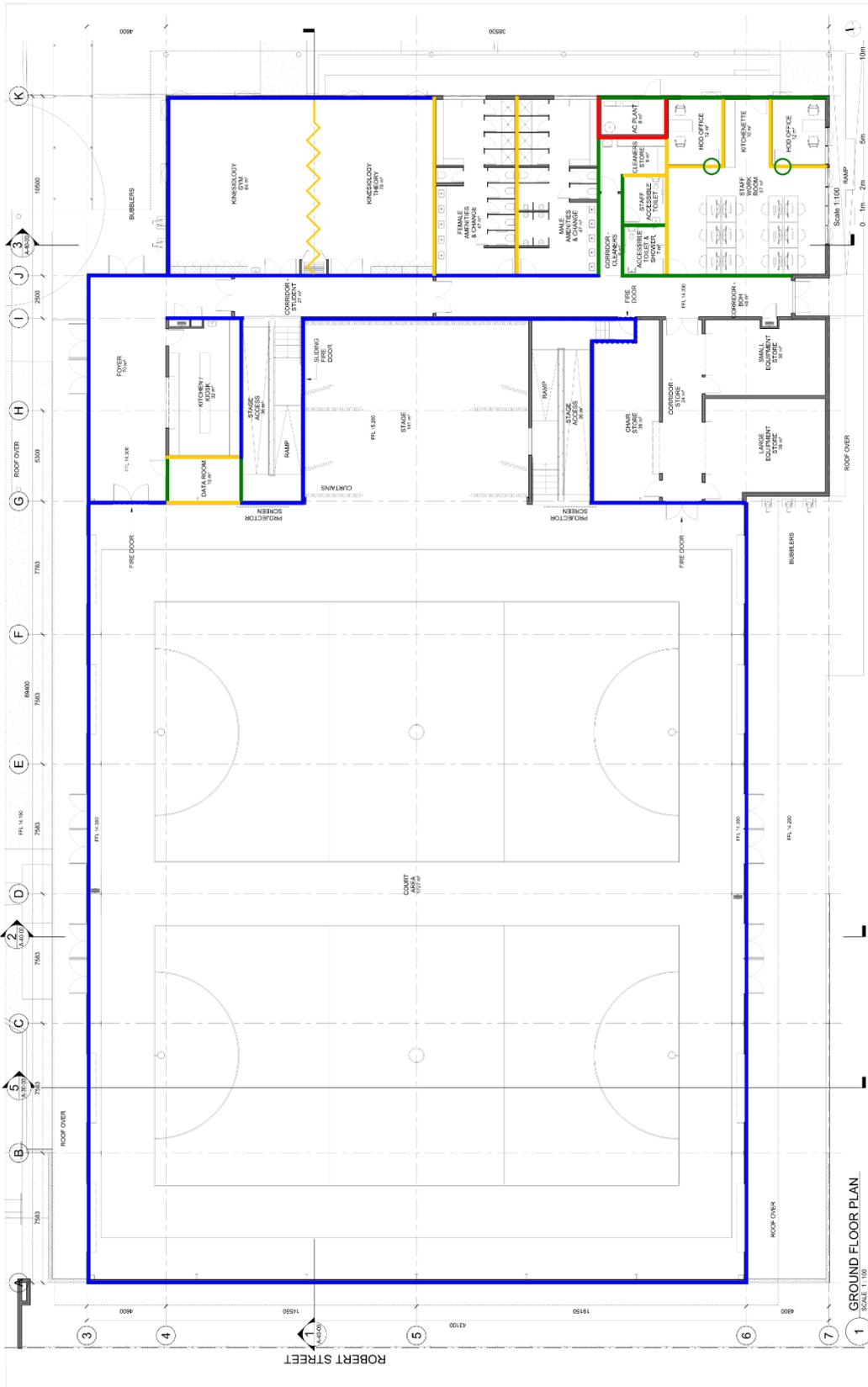
At this stage, mechanical plant selection has not been made and therefore a detailed assessment cannot be carried out. The future plant must be selected and noise controls designed to achieve the acoustic criteria at the nearest residential noise receivers and other school buildings.

Usual design noise controls that may need to be implemented will typically include, but are not limited to:

- Strategic location and selection of plant to ensure the cumulative noise levels are met.
- Selection of appropriate quiet plant.
- Acoustic noise control measures to be put in place to minimise noise such as noise enclosures or acoustic louvres as required.

Acoustic assessment of all mechanical plant shall continue during the detailed design phase of the project in order to confirm any noise control measures to achieve the relevant noise criteria at the nearest noise sensitive receivers and within the spaces.

APPENDIX A: ACOUSTIC DIAGRAM SHOWING SOUND INSULATION RATING REQUIREMENTS



Acoustic Markups Legend

- R-25 (Blue circle)
- R-30 (Green circle)
- R-35 (Yellow circle)
- R-45 (Red circle)
- R-50 (Purple circle)
- R-55 (Pink circle)

FIRE RATING LEGEND

- (Blue square) - F30/F60
- (Green square) - F30/F45
- (Yellow square) - F30/F30
- (Red square) - F30/F15
- (Purple square) - F30/F10

Client: QLD Department of Education
Project: Urangan State High School Multi-purpose Hall
Project No.: 421094
Document Control Sheet:

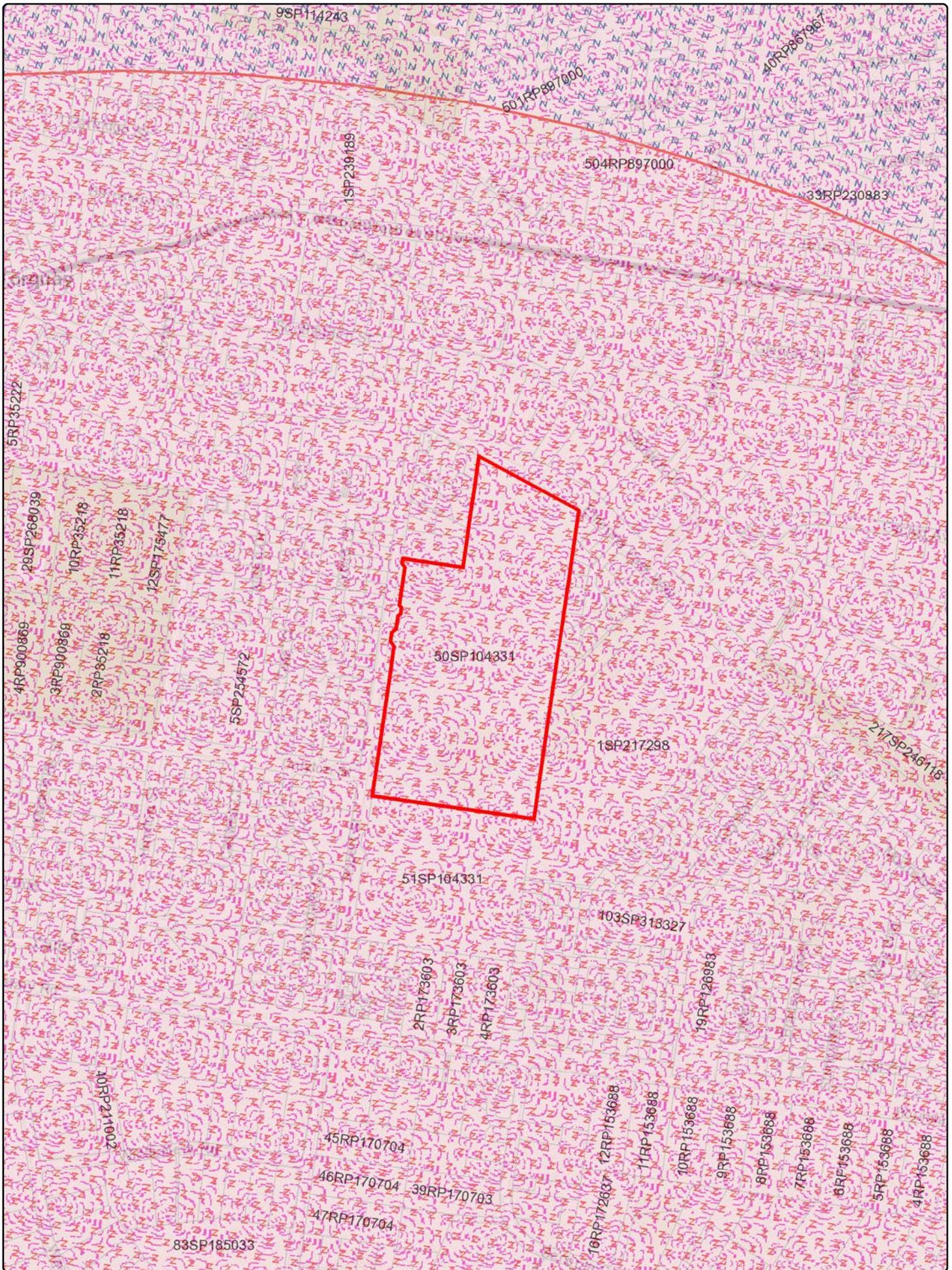
Rev	Description	By	Date
1	ISSUED FOR PERMIT APPLICATION	10/10/20	10/10/20
2	ISSUED FOR TENDER	10/10/20	10/10/20
3	ISSUED FOR CONSTRUCTION	10/10/20	10/10/20
4	ISSUED FOR AS-BUILT	10/10/20	10/10/20
5	ISSUED FOR ARCHIVE	10/10/20	10/10/20

Ground Floor Plan - Multi-Purpose Hall
 Scale: 1:100

COXX

Drawings: CD, 00
Scale: 1:100 B, 0:1
Date: 10/10/20
Project Number: A-21-00
Revision: 6

Appendix 8 – State Interest Mapping



State Planning Policy

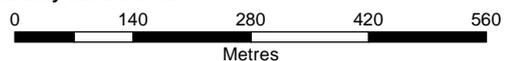
Making or amending a local planning instrument
and designating land for community infrastructure

Date: 28/06/2021



Queensland Government

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Legend

Drawn Polygon Layer

Override 1

Cadastre (10k)

 Cadastre (10k)

Wildlife hazard buffer zone

 3km

 8km

 13km

Lighting area buffer 6km

 Lighting area buffer 6km

Obstacle limitation surface area

 Obstacle limitation surface area



Queensland Government

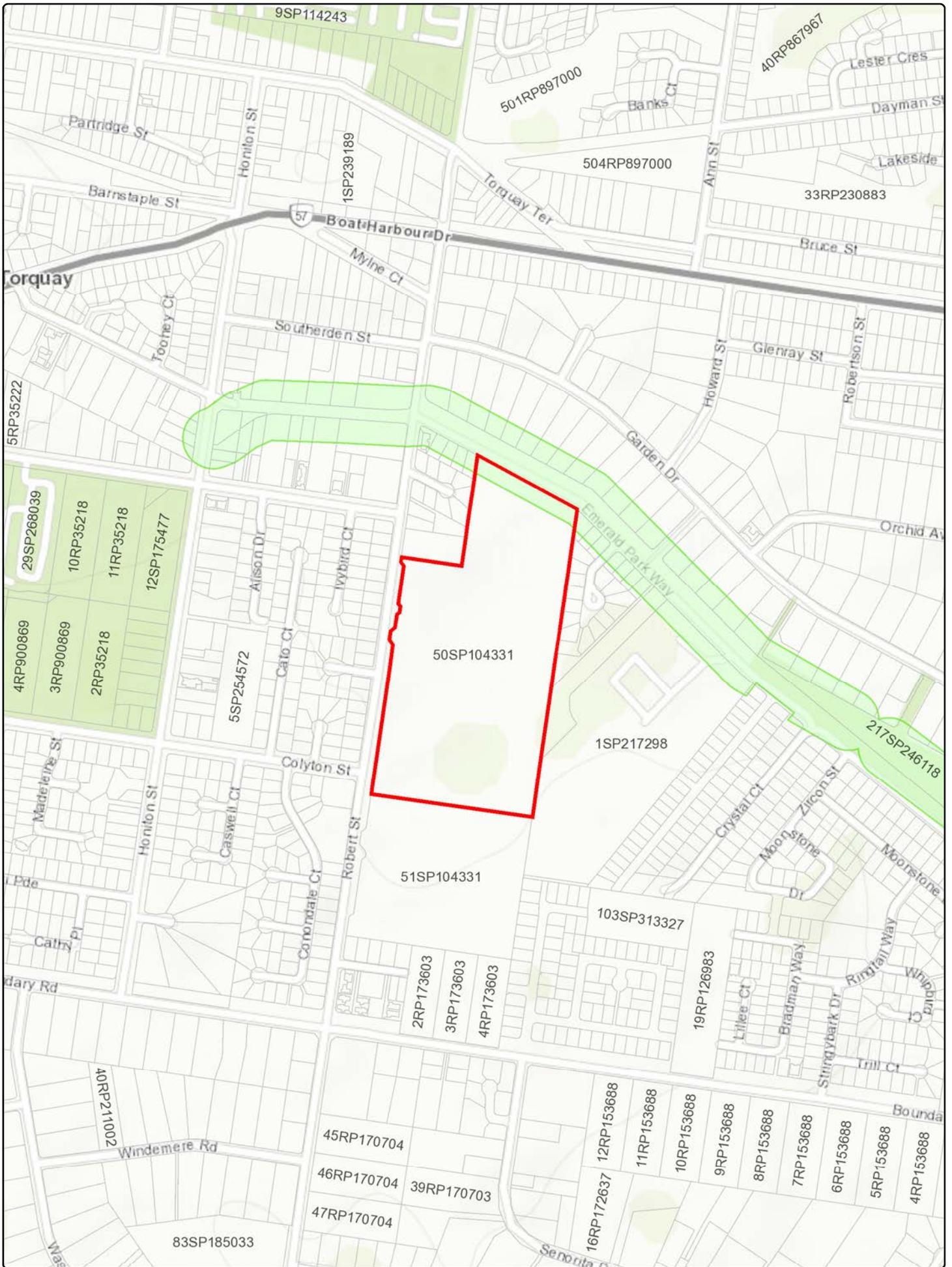
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Date: 28/06/2021

State Planning Policy Making or amending a local planning instrument and designating land for community infrastructure

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Date: 28/06/2021

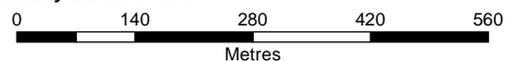
State Planning Policy

Making or amending a local planning instrument
and designating land for community infrastructure



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Legend

Drawn Polygon Layer

Override 1

Cadastre (10k)

Cadastre (10k)

MSES - Regulated vegetation (category R)

MSES - Regulated vegetation (category R)



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State Planning Policy Making or amending a local planning instrument and designating land for community infrastructure

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DA Mapping System – Print Screen

Date: 28/06/2021

0 140 280 420 560

Metres



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Legend

Drawn Polygon Layer

Override 1

Cadastre (10k)

 Cadastre (10k)

Water resource planning area boundaries

 Water resource planning area boundaries

DA Mapping System – Print Screen

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Appendix 9 – Contaminated Land Register and Environmental Management Register Search



Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454 Brisbane QLD 4001 AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Transaction ID: 50696952 EMR Site Id: 24 June 2021
This response relates to a search request received for the site:
Lot: 50 Plan: SP104331

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

Administering Authority

Appendix 10 – Property Information

Search Date: 28/06/2021 15:46

Title Reference: 50383602
Date Created: 19/02/2002

Previous Title: 40031906

REGISTERED OWNER

Dealing No: 705408829 18/02/2002

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF EDUCATION)

ESTATE AND LAND

Estate in Fee Simple

LOT 50 SURVEY PLAN 104331
Local Government: FRASER COAST

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 40031906 (Lot 50 on SP 104331)
2. EASEMENT IN GROSS No 715205730 16/07/2013 at 15:22
burdening the land
ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
over
EASEMENT B ON SP250169
Lodged at 15:22 on 16/07/2013 Recorded at 14:59 on 17/07/2013

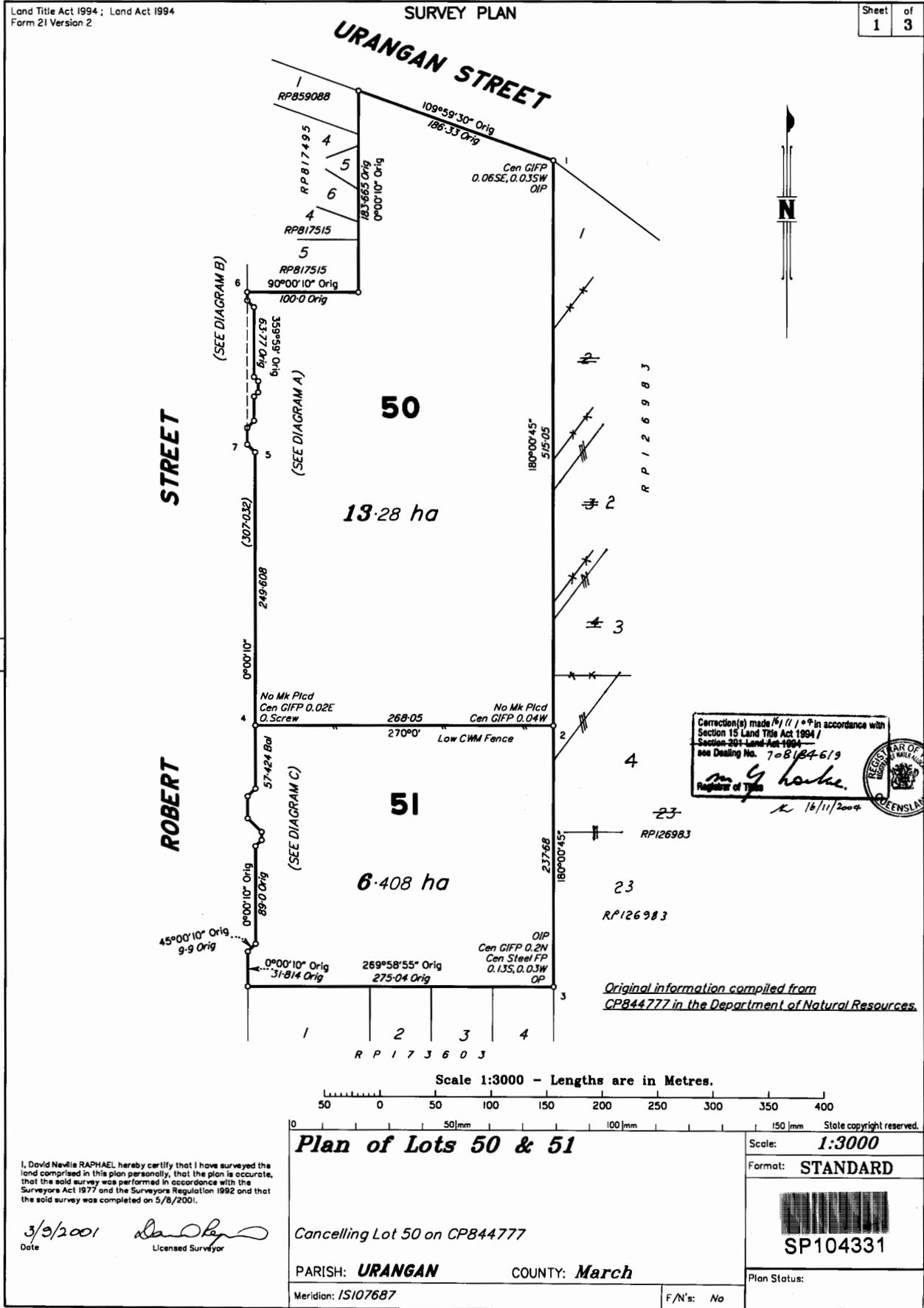
ADMINISTRATIVE ADVICES - NIL

UNREGISTERED DEALINGS - NIL

Corrections have occurred - Refer to Historical Search

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **



705108500

MH 495

NO FEE
11/10/2001 14:28

WARNING : Folded or Mutilated Plans will not be accepted.
Plans may be rolled.
Information may not be placed in the outer margins.

Registered

5. Lodged by

DEPT NATURAL RESOURCES + MARINE
PO Box 212
MAYBOROUGH 4650 MH 013
ACTION OFFICER: D. SLEEMAN
CLR 12633
(Include address, phone number, reference, and Lodger Code)

1. Certificate of Registered Owners or Lessees.

I/We

(Names in full)

* as Registered Owners of this land agree to this plan and dedicate the Public Use Land as shown hereon in accordance with Section 50 of the Land Title Act 1994.

* as Lessees of this land agree to this plan.

Signature of *Registered Owners *Lessees

APPROVED
[Signature]
RAYMOND LAURENCE DREW
ACTING DISTRICT OPERATIONS MANAGER.

* Rule out whichever is inapplicable

2. Local Government Approval.

*
hereby approves this plan in accordance with the :
%

Dated this day of

..... #

..... #

* Insert the name of the Local Government. % Insert Integrated Planning Act 1997 or # Insert designation of signatory or delegation Local Government (Planning & Environment) Act 1990

3. Plans with Community Management Statement :

CMS Number :

Name :

4. References :

Dept File : 69/1/01/MAR 2
Local Govt :
Surveyor :

6. Existing

Title Reference	Lot	Plan
49020731	50	CP844777

Created

Lots	Emts	Road
50,51		

Orig Lots

7. Portion Allocation :

a. Map Reference :
9447 21434

9. Locality :
Urangan

10. Local Government :
HERVEY BAY C. C.

11. Passed & Endorsed :

By: 3/3/2001
Date: N. WYSLING
Signed: *[Signature]*
Designation: DNR 201

12. Building Format Plans only.

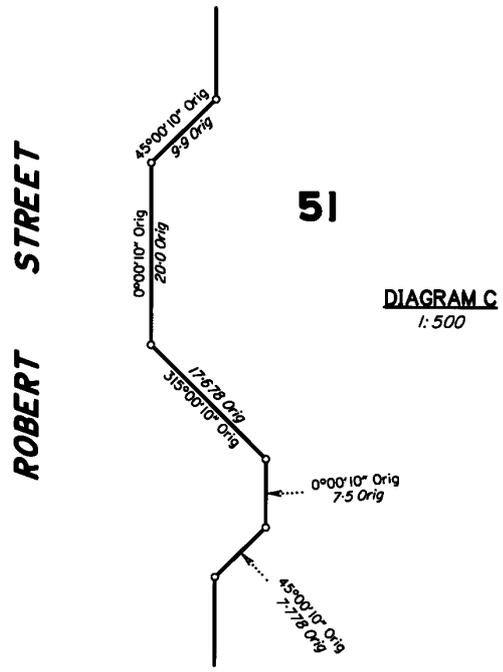
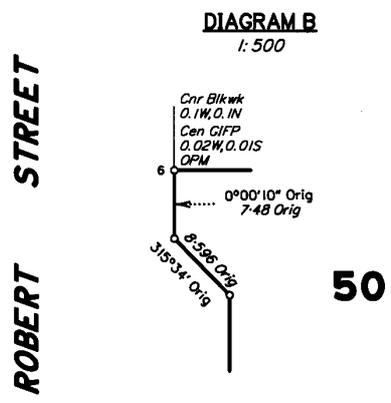
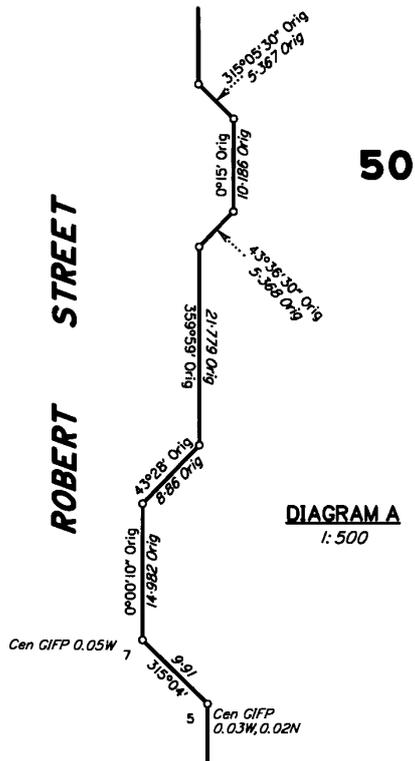
I certify that :
* As far as it is practical to determine, no part of the building shown on this plan encroaches onto adjoining lots or road;
* Part of the building shown on this plan encroaches onto adjoining * lots and road

Licensed Surveyor/Director * Date
* delete words not required

13. Lodgement Fees :

Survey Deposit \$
Lodgement \$
..... New Titles \$
Photocopy \$
Postage \$
TOTAL \$

14. Insert Plan Number
SP104331



0 50mm 100mm 150mm

State copyright reserved.
Insert Plan Number **SP104331**

REFERENCE MARKS

STN	TO	ORIGIN	BEARING	DIST
1	OIP	RP811524	0°01'35"	1.006
2	PIN		299°16'	2.9
3	OIP	RP811524	89°59'40"	1.0
4	OSCREW	1S107687	333°41'	6.514
5	RAM IN CONC		230°15'	5.43

PERMANENT MARKS

PM	ORIGIN	BEARING	DIST	NO
4-OPM	RP909735	325°02'	53.98	83584
6-OPM	RP811524	273°50'	1.0	101948

Connection only

TRAVERSES ETC

LINE	BEARING	DISTANCE
6-7	180°00'10"	123.471

State copyright reserved.

Insert
Plan
Number **SP104331**

Appendix 11 – Extracts from the Planning Act 2016

- (ii) operating times for the use; and
 - (iii) ancillary uses;
 - (c) lessening the impact of the works or use (environmental management procedures, for example).
- (3) The chief executive may, by notice, require a local government to include a matter in subsection (2) in a designation made by the local government.

Note—

For the effect of a designation on the categorisation of development, see section 44(6)(b).

36 Criteria for making or amending designations

- (1) To make a designation, a designator must be satisfied that—
- (a) the infrastructure will satisfy statutory requirements, or budgetary commitments, for the supply of the infrastructure; or
 - (b) there is or will be a need for the efficient and timely supply of the infrastructure.
- (2) To make or amend a designation, if the designator is the Minister, the Minister must also be satisfied that adequate environmental assessment, including adequate consultation, has been carried out in relation to the development that is the subject of the designation or amendment.
- (3) The Minister may, in guidelines prescribed by regulation, set out the process for the environmental assessment and consultation.
- (4) The Minister is taken to be satisfied of the matters in subsection (2) if the process in the guidelines is followed.
- (5) However, the Minister may be satisfied of the matters in another way.
- (6) Sections 10 and 11 apply to the making or amendment of the guidelines as if the guidelines were a State planning policy.

- (7) To make or amend a designation, a designator must have regard to—
- (a) all planning instruments that relate to the premises; and
 - (b) any assessment benchmarks, other than in planning instruments, that relate to the development that is the subject of the designation or amendment; and
 - (c) if the premises are in a State development area under the State Development Act—any approved development scheme for the premises under that Act; and
 - (ca) if the premises are in a priority development area under the *Economic Development Act 2012*—any development scheme for the priority development area under that Act; and
 - (d) any properly made submissions made as part of the consultation carried out under section 37; and
 - (e) the written submissions of any local government.

37 Process for making or amending designation

- (1) This section is about the process for—
- (a) making a designation for premises; or
 - (b) amending a designation for premises, including by amending—
 - (i) the area of the premises; or
 - (ii) the type of infrastructure for which the premises were designated; or
 - (iii) a requirement included in the designation under section 35(2).
- (2) If the Minister proposes to make or amend a designation, the Minister must give notice of the proposal to the affected parties.
- (3) However, the Minister need not give the notice to an owner of premises if—

-
- (a) a notice has already been given to the owner as part of the consultation for an assessment under section 36(2);
or
 - (b) the Minister can not notify the owner after making reasonable efforts.
- (4) A notice under subsection (2) must state the following—
- (a) that a submission about the proposal may be given by an affected party to the Minister;
 - (b) the period, of at least 15 business days after the notice is given, in which the submission may be made;
 - (c) the requirements for a properly made submission.
- (5) If, after considering any properly made submissions, the Minister decides not to proceed with the proposal, the Minister must give a decision notice to the affected parties.
- (6) If a local government proposes to make or amend a designation, the local government must follow the process in the designation process rules, before the local government makes or amends the designation.
- (7) Sections 10 and 11 apply to the making or amendment of the designation process rules as if the designation process rules were a State planning policy.
- (8) In this section—
- designation process rules* means rules made by the Minister and prescribed by regulation.

38 Process after making or amending designation

- (1) If, after considering any properly made submissions, the designator decides to make or amend a designation, the designator must publish a gazette notice that states—
- (a) that the designation has been made or amended; and
 - (b) a description of the designated premises; and
 - (c) the type of infrastructure for which the premises were designated; and

- (d) for an amendment—the nature of the amendment.
- (2) The designator must give the following things to each affected party and the chief executive—
 - (a) a copy of the gazette notice;
 - (b) a notice of any requirements included in the designation under section 35(2);
 - (c) a notice of how the designator dealt with any properly made submissions.

39 Duration of designation

- (1) A designation stops having effect on the day (the *end day*) that is 6 years after the designation starts to have effect, unless—
 - (a) on the end day—
 - (i) a public sector entity owns, or has an easement for the same purpose as the designation over, the designated premises; or
 - (ii) another entity owns, or has an easement over, the designated premises and construction of the infrastructure for which the premises were designated started before the end day; or
 - (b) before the end day—
 - (i) a public sector entity gave a notice of intention to resume the designated premises under the Acquisition Act, section 7; or
 - (ii) a public sector entity signed an agreement to take designated premises under the Acquisition Act or to otherwise buy the premises; or
 - (iii) the designator complies with subsection (3).
- (2) The designator may extend the duration of a designation, for up to 6 years, by publishing a gazette notice about the extension before the designation stops having effect.

-
- (3) The designator must give notice of the extension of the designation to—
 - (a) if the Minister is the designator—each of the affected parties and the chief executive; or
 - (b) if a local government is the designator—the owner of the premises and the chief executive.
 - (4) If a public sector entity discontinues proceedings to resume designated premises, either before or after the end day, the designation stops having effect on the day when the proceedings are discontinued.

40 Repealing designation—designator

- (1) A designator may repeal a designation made by the designator by publishing a gazette notice that states—
 - (a) that the designation is repealed; and
 - (b) a description of the designated premises; and
 - (c) the type of infrastructure for which the premises were designated; and
 - (d) the reasons for the repeal.
- (2) The designator must give a copy of the notice to—
 - (a) if the Minister is the designator—each of the affected parties and the chief executive; or
 - (b) if a local government is the designator—the owner of the premises and the chief executive.
- (3) Any development started under the designation may be completed as if the designation had not been repealed.
- (4) Subject to any requirements under section 35(2), a use of the premises that is the natural and ordinary consequence of the development is taken to be a lawful use.

41 Repealing designation—owner’s request

- (1) An owner of an interest in designated premises may request a designator to repeal a designation made by the designator on the basis that the designation is causing the owner hardship.
- (2) Subsection (1) does not apply if—
 - (a) the premises are subject to an easement for the infrastructure for which the premises are designated; or
 - (b) the designation also applies to other premises and relates to a land corridor for the infrastructure; or
 - (c) the premises are a road.
- (3) The request must be in writing, and contain any information that the guidelines made under section 36(3) require.
- (4) The designator must, within 40 business days after receiving the request—
 - (a) repeal the designation, using the process under section 40; or
 - (b) decide to refuse the request; or
 - (c) decide to take other action that the designator considers appropriate in the circumstances.
- (5) The designator must, within 5 business days after making a decision under subsection (4)(b) or (c), give a decision notice to the owner.

42 Noting designation in planning scheme

- (1) This section applies if a local government—
 - (a) makes, amends, extends or repeals a designation; or
 - (b) receives a notice about the Minister making, amending, extending or repealing a designation.
- (2) The local government must include a note about the making, amendment, extension or repeal in—
 - (a) the local government’s planning scheme; and

- (b) any planning scheme that the local government makes before the designation stops having effect.
- (3) The note must—
 - (a) identify the premises that were designated; and
 - (b) describe the type of infrastructure for which the premises were designated; and
 - (c) state the day when the designation, amendment, extension or repeal started to have effect.
- (4) The local government must include the note in the planning scheme in a way that ensures the other provisions of the scheme that apply to the designated premises remain effective.
- (5) To remove any doubt, it is declared that—
 - (a) the note is not an amendment of a planning scheme; and
 - (b) a designation is taken to be part of a planning scheme; and
 - (c) a designation is not the only way that a planning scheme may identify infrastructure; and
 - (d) a designation does not affect the provisions of a planning scheme that apply to designated premises, even after the designation stops having effect.

42A Amending and repealing designations under old Act

To remove any doubt, it is declared that the Minister may, under this part, amend or repeal a designation of land under the old Act made by another Minister.

Appendix 12 – Designation Flowchart

Process for making a Ministerial Infrastructure Designation (MID), and making an amendment to a MID (not a minor amendment)

Guidance Material



■ Guidance Material

■ MGR

■ Planning Act 2016

MGR & Planning Act 2016

