Environmental Assessment Report

Department of Education
6 Full Cohort Program – Kedron State High School

June 2018



Department of Housing and Public Works

Queensland Government

Document history

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Abbreviations

AHD	Australian Height Datum
ANEF	Australian Noise Exposure Forecast
ARI	Average Recurrence Interval
AS	Australian Standards
ASS	Acid Sulfate Soils
BCA	Building Code of Australia
BCC	Brisbane City Council
CLR	Contaminated Land Register
DES	Department of Environment and Science
DHPW	Department of Housing and Public Works
DoE	Department of Education
DSDMIP	Department of State Development, Manufacturing, Infrastructure and Planning
DTMR	Department of Transport and Main Roads
EMR	Environmental Management Register
EPA	*Environmental Protection Act 1994*
EPBC	*Environmental Protection and Biodiversity Conservation Act 1999* (Cth)
GFA	Gross Floor Area
NCA	*Nature Conservation Act 1992*
PA	*Planning Act 2016*
PR	*Planning Regulation 2017*
PWD	People with Disability
QDC	Queensland Development Code
SEQRP	South East Queensland Regional Plan
SEQ	South East Queensland
SHS	State High School
SPP	State Planning Policy
VMA	*Vegetation Management Act 1999*

Table of Contents

PART A – EXECUTIVE SUMMARY 6

1 Infrastructure Proposal 6

PART B – INTRODUCTION 9

2 Legislative Context 10

2.1 The Planning Act 2016 10

PART C – SITE DETAILS 11

3 Subject Site 11

3.1 Property Snapshot 11

3.2 Ownership and Tenure 11

3.3 Location 11

3.4 Surrounding Land Uses 11

3.5 Easements and Encumbrances 11

3.6 Topography 13

3.7 Socio-economic Profile 13

4 Infrastructure Characteristics 14

4.1 Transport Network 14

4.2 Services 15

PART D – DESIGNATION PROPOSAL 17

5 Proposed Designation 17

5.1 Description under the Planning Regulation 2017 17

5.2 Intent of Designation 17

5.3 Project History 17

5.4 Site Selection 18

5.5 Proposal Description and Details 18

5.6 Designation Process 21

PART E – LOCAL AND STATE PLANNING PROVISIONS 22

6 Planning Assessment 22

6.1 Local Planning Framework 22

6.2 Planning Scheme Provisions 22

6.3 Use Definition 22

6.4 Zoning 23

6.5 Overlays 24

7 State Planning Framework 28

7.1 The Planning Act 2016 28

7.2 State Planning Policy 28

7.3 Regional Planning 32

PART F – ENVIRONMENTAL ASSESSMENT 34

8 Environmental Assessment 34

8.1 Road Infrastructure 34

8.2 Services Infrastructure 39

8.3 Flora and Fauna 42

8.4 Soils and Geology 45

8.5 Heritage and Native Title 47

8.6 Natural Hazards 48

8.7 Socio-economic Impacts 49

8.8 Construction Impacts 50

8.9 Operational Impacts 52

PART G – CONSULTATION 55

9 Consultation Engagement 55

9.1 Stakeholders 55

9.2 Community Engagement Plan 55

9.3 Initial Consultation 56

PART H – CONCLUSION 58

PART I – APPENDICES 59

PART A – EXECUTIVE SUMMARY

1 Infrastructure Proposal

With reference to section 36(3) of the *Planning Act 2016,* the below sets out the matters required as part of the Infrastructure Proposal, and prepared in accordance with the Minister's Guidelines and Rules, Chapter 7—Guidelines for the process for environmental assessment and consultation for making or amending a Ministerial designation.

Matter	Proposal Details	
a) the site description including the location of the premises proposed to be designated;	Real property description:	Lot 961 on SP250949
	Property address:	34 Park Road, Kedron
	Registered owner:	The State of Queensland (represented by the Department of Education and Training)
	Tenure:	Freehold
	Site area:	7.33ha
	Google Earth co-ordinates:	27°24'48.84" S; 153°02'21.55" E
b) any existing uses on the premises proposed to be designated;	Lot 961 on SP250949 is currently improved with the existing Kedron State High School and associated and supported facilities.	
c) existing uses on adjoining sites;	• South of the premises is Park Road; • Adjoining west of the premises is QLD Ambulance Service; • Adjoining east of the premises are residential dwellings and a large vacant house site; • North of the premises is the Kedron Brook Bikeway.	
d) the type of infrastructure;	6 educational facilities	
e) information about the nature, scale and intensity of the infrastructure and each use proposed;	***Drawings at Appendix 5 – Proposal Plans***	
f) the intended outcomes of the proposed uses on the site;	In 2007 the non-compulsory Prep Year was introduced to Queensland schools and in the following year the Year 1 starting age was subsequently raised. Consequently, a smaller cohort of students, often referred to as the half cohort, was introduced to Queensland state schools. Over the following years this cohort of students has increased in size and across the state schooling sector now reflects approximately two thirds the size of a usual year level cohort. In 2015, this smaller cohort of students entered Year 8 along with the first group of Year 7 students in secondary schools as part of the Flying Start suite of reforms. The half cohort, currently in Year 10, will enter Senior Secondary in 2018 and will exit the system at the end of the 2019 school year, creating six full cohorts across secondary schools for the first time in 2020.	

	An analysis of infrastructure requirements for 2020 indicates additional capacity is needed in a number of schools across the State, including Kedron State High School. To accommodate the six full cohorts in 2020, it is proposed to provide the school with a new Learning Centre incorporating a number of learning spaces and associated spaces.	
g) any anticipated impacts on the surrounding infrastructure network (both state and local);	Nil. Impacts on surrounding infrastructure will be fully explored in the Environmental Assessment Report (EAR).	
h) a list of the applicable state interests as identified by the infrastructure entity and a statement about how they relate to the infrastructure proposal;	CULTURAL HERITAGE	The proposed development is located within an area subject to previous clearing, therefore, the nature of the activity is likely to be classified as 'area previously subject to significant disturbance – Category 4', under the *Aboriginal Cultural Heritage Act 2003* (ACHA), Section 28 Duty of Care Guidelines. Subject to measures set out in paragraph 5.6 – 5.12, under Category 4 of the Duty of Care Guidelines, the proposed activates can proceed without further cultural heritage assessment. It should be noted that any Aboriginal cultural heritage, if found, is protected under the ACHA even if DES has not recorded it. Contract documents will 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.
	WATER QUALITY	The site is in the Climatic regions - stormwater management design objectives. A Stormwater Management Plan has been prepared and included at ***Appendix 11***.
	NATURAL HAZARDS RISK AND RESILIENCE • Flood hazard area – Local Government flood mapping area	The site is mapped within the creek/ waterway flood planning area of the flood overlay of the *Brisbane City Plan 2014*. A FloodWise Property Report has been undertaken and included at ***Appendix 10***. The proposed development is within the flood planning area. A flooding assessment was undertaken as part of the Stormwater Management Plan in ***Appendix 11*** to determine an appropriate floor level for the proposed development and impact mitigation.
	TRANSPORT INFRASTRUCTURE • State-controlled road; • State-controlled transport tunnel.	Park Road is identified as a state-controlled road. The Airport Link runs underneath the frontage of the site alongside Park Road. No impacts are anticipated to Airport Link as the development is located away from the tunnel corridor. A traffic assessment has been prepared and included at ***Appendix 12*** to assess potential transport and road impacts.

	STRATEGIC AIRPORTS AND AVIATION FACILITIES • Obstacle limitation surface area • Wildlife hazard buffer zone • Aviation facility	The site is in the obstacle limitation surface contour is 147.5, the 8km wildlife hazard buffer area and Building restricted area - Area of interest. Nil impacts are anticipated as the proposed development will not be of a height, emit light, or be an attractor of bird or bat wildlife, that would obstruct the safe movement of aircraft.
	Refer to Appendix 6 – State Interest Trigger Maps	
i) 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;	The relevant regional plan is the South East Queensland Regional Plan. The site is in the Urban Footprint land use category. The site is not included in a state development area.	
	Refer to Appendix 6 – State Interest Trigger Maps	
j) sufficient information to address the requirements of section 36(1) of the Act;	The proposed infrastructure meets the criteria in section 36 of the *Planning Act 2016* as the infrastructure will satisfy budgetary commitments for the supply of infrastructure. Refer to the Capital Statement 2017-18 for the funding commitments relating to the *Six Full Cohorts – 2020 Ready* program: https://s3.budget.qld.gov.au/budget/papers/3/3-Capital-outlays-by-entity.pdf	
k) a proposed consultation strategy for the proposed designation that has taken into account the level of impact of the infrastructure proposal and that includes a method for consultation with directly affected landowners, adjoining landowners, and identified Native Title parties, differentiated from general public consultation;	***Refer to Part G – Consultation***	
l) any other matter the infrastructure entity considers relevant to the request.	Nil	

PART B – INTRODUCTION

In accordance with the requirements of the *Planning Act 2016* (PA), it is proposed to undertake an Infrastructure Designation of land within the Brisbane City Council (BCC) local government area on behalf of the Department of Education (DoE) for the Kedron State High School (SHS).

The proposed designation applies to land located at 34 Park Road, Kedron and alternatively described as Lot 961 on SP250949.

In accordance with *Six Full Cohorts – 2020 Ready* program, the Queensland Government is committed to building fit for purpose learning environments that support educational outcomes. The program provides a capital investment of $250 million over two years for new classrooms and other infrastructure in the State's secondary schools. The purpose of this is to cater for the 17,000 additional students expected by the 2020 calendar year.

The DoE has therefore made a funding commitment of approximately $5.1 million for the Kedron SHS, with the purpose of the Infrastructure Designation is to undertake the following scope of works:

- construct a new multi-storey learning facility, consisting of six (6) learning spaces and associated learning and support spaces;
- partial demolition of the tennis courts to accommodate the new building with future relocation north of the site; and
- a new covered link access from the new building to the spine of the existing school.

The proposed works are intended to future proof the school while providing facilities that improve the amenity of the Kedron SHS consistent with current standards and sited with consideration of the functionality of the buildings, and connection with existing and planned future buildings.

Building and Asset Services' (BAS) Town Planning Unit has prepared this Environmental Assessment Report (EAR) to provide information in the assessment of the proposed Ministerial designation of land for community infrastructure.

2 Legislative Context

2.1 The Planning Act 2016

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

The PA prescribes the way in which a designation can be undertaken. Chapter 2, Part 5 of the PA (refer **Appendix 1**) 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.

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, section 36(3). The applicable guideline is the *Minister's Guidelines and Rules* (July 2017) and is available at https://www.statedevelopment.qld.gov.au/). In particular, Chapter 7—Guidelines for the process for environmental assessment and consultation for making or amending a Ministerial designation outlines the five-step process which includes:

1. Planning and Preparation;
2. Minister's Acknowledgement;
3. Draft Environmental Assessment Report;
4. Consultation and State Interest Review; and
5. Finalise Environmental Assessment.

It is noted that BAS has held pre-lodgement discussions with the Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) regarding an alternative designation process to that described above. It is recognised the proposed development is considered 'low risk' and as such a streamlined approach has been agreed and includes:

1. Pre-lodgement Meeting;
2. Environmental Assessment Report;
3. Consultation and State Interest Review; and
4. Final Assessment and Minister Decision.

The EAR has been drafted in accordance with the Chapter 7 of the *Minister's Guidelines and Rules* and has been prepared to generally align with Step 2 of the alternative designation process.

The effect of a Ministerial designation is that the use of the site for the described community infrastructure and services may proceed despite the local government's planning scheme.

This designation will be undertaken in accordance with Chapter 2, Part 5 of the PA.

PART C – SITE DETAILS

3 Subject Site

3.1 Property Snapshot

Site Overview	
Street Address	34 Park Road, Kedron
Real Property Description	Lot 961 on SP250949
Site Area	7.33ha
Local Government Authority	Brisbane City Council
Current Land Use	Educational Establishment
Regional Plan	South East Queensland Regional Plan 2017

3.2 Ownership and Tenure

The allotment is freehold and owned by the State of Queensland (represented by the Department of Education and Training).

3.3 Location

The site is located within the Brisbane City Council local government area. As illustrated in *Figure 1* and *Figure 2*, the site consists of a single allotment with an area of 7.33 hectares. The site is currently improved with the Kedron SHS, which from DoE records was established in 1956 and comprised of various school buildings, ancillary outbuildings/ structures and infrastructure with a street frontage to Park Road (approximately 151 metres), and to Gorman Street (approximately 86 metres). Primary vehicular access to the site is via Park Road and an internal road network.

3.4 Surrounding Land Uses

The site is located approximately 7 kilometres north of the Brisbane CBD and is within 4 kilometres of Westfield Chermside.

The site is bound by detached residential dwellings to the east, and Kedron Brook to the north, with the area generally characterised by low density residential uses. To the west is land similarly zoned Community facilities and contains buildings associated with the Emergency Services Complex. The school has a direct interface with fourteen (14) residential properties.

An overland flow path is located within the site, aligned with the stormwater infrastructure.

3.5 Easements and Encumbrances

There are three easements burdening the site to the north-western, western (between the school and the Emergency Services Complex and southern (for the Airport Link) boundaries of the site. The proposed development will have no impacts to the easements.

A copy of the Certificate of Title, Survey Plan and Smart Map is in **Appendix 3** for reference.



Figure 1. Site Aerial Source: DSDMIP SARA



Figure 2. Site Context Source: DSDMIP SARA

3.6 Topography

The site has a fall of approximately 4m across the site. The northern boundary is the lowest point on the site at 10m AHD and increases to the primary location of buildings on the site to 15m AHD.

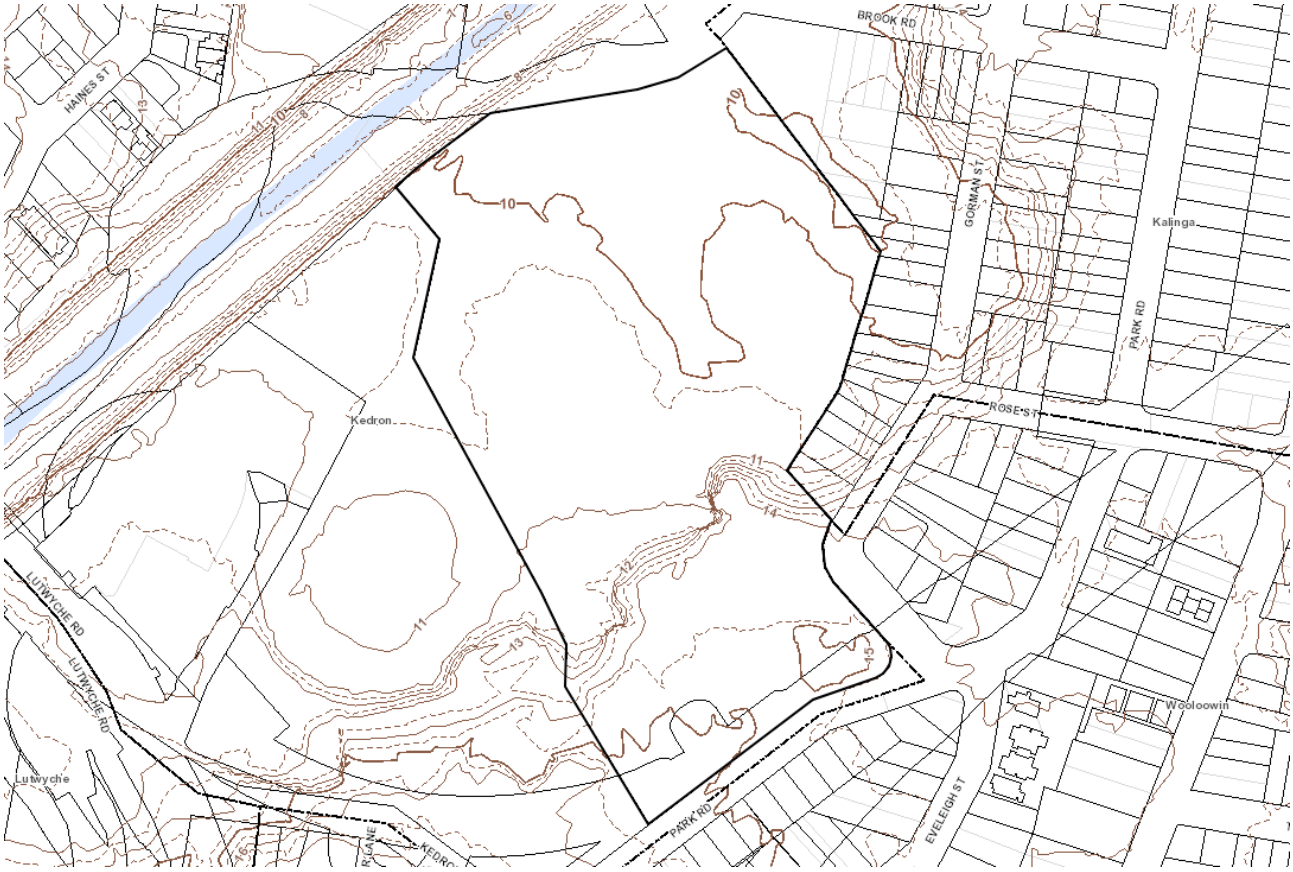


Figure 3. Contour Plan (2002) Source: BCC eBIMAP

A contour and detail survey of the development area is included in **Appendix 4** for reference.

3.7 Socio-economic Profile

3.7.1 Brisbane City Council Local Government Area Profile

Brisbane is a City and Local Government Area (LGA) in the south-east corner of Queensland, Australia. It is the State capital of Queensland and the most populous LGA in the country. Neighbouring GLAs include Moreton Bay, Redland, Logan, Ipswich and Somerset.

The Brisbane LGA has a resident population of approximately 1,131,155 persons (at 2016).

3.7.2 Kedron Profile

At 2016, the resident population for Kedron was 9,359 persons. The median age of people in Kedron was 34 years. Children aged 0 – 14 years made up 19.5% of the population and people aged 65 years and over made up 10.1% of the population.

Of the families in Kedron, 46.5% were couple families with children, 36.5% were couple families without children and 13.7% were one parent families.

In Kedron, 31.0% of people were attending an educational institution. Of these, 27.6% were in primary school, 19.0% were in secondary school and 26.8% were at a tertiary or technical institution.

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 primary road frontage is Park Road, being the largest road frontage with a width of 151m. A secondary frontage of 86m is to Gorman Street which also serves as the primary bus setdown facilities for the school.

Park Road turns into Kedron Park Road which provides a direct connection to Lutwyche Road.

4.1.2 Existing Public Transport Network

The Kedron SHS is services by a number of school only, and Translink bus services and is detailed further in the table below:

Services			
Stop Location	**Route Number**	**Servicing**	**Frequency**
Both sides of Park Road, in proximity to Kedron Park Road	321	Toombul, Wooloowin, Lutwyche, RBWH, Spring Hill, City	Peak – 30 mins Off-peak – 60 mins Sat – 60 mins Sun – No services
Park Road eastbound, in proximity to Kedron Park Road	942 (school bus)	Bracken Ridge, Taigum, Zillmere, Geebung, Wavell Heights, Chermside, Kedron, Kedron High	1 morning service No weekend services
	947 (school bus)	McDowall, Stafford Heights, Stafford, Kedron, Wooloowin, Kedron High	1 morning service No weekend services
	948 (school bus)	Chermside West, Stafford Heights, Stafford, Gordon Park, Wooloowin, Kedron High	1 morning service No weekend services
	950 (school bus)	Mitchelton, Everton Park, Stafford, Gordon Park, Wooloowin, Kedron High	1 morning service No weekend services
Both sides of Park Road, in proximity to Gorman Street	321	Toombul, Wooloowin, Lutwyche, RBWH, Spring Hill, City	Peak – 30 mins Off-peak – 60 mins Sat – 60 mins Sun – No services
	369	Mitchelton, Stafford, Kedron Brook, Eagle Junction, Toombul	30 mins weekdays and weekends
Park Road westbound, in proximity to Gorman Street	946 (school bus)	Kedron High, Wooloowin, Kedron, Stafford Heights, Everton Park, Mitchelton	1 morning service 1 afternoon service No weekend services
Gorman Street northbound at Kedron Park High School	942 (school bus)	Kedron High, Kedron, Chermside, Wavell Heights, Geebung, Zillmere, Taigum, Bracken Ridge	1 afternoon service No weekend services
	947 (school bus)	Kedron High, Wooloowin, Kedron, Stafford, Stafford Heights, McDowall	1 afternoon service No weekend services

	948 (school bus)	Kedron High, Wooloowin, Gordon Park, Stafford, Stafford Heights, Chermside West	1 afternoon service No weekend services
	950 (school bus)	Kedron High, Wooloowin, Gordon Park, Stafford, Everton Park, Mitchelton	1 afternoon service No weekend services
Kedron Brook – Busway Station – Platforms 1 & 2	77	Eight Mile Plains, Holland Park, Buranda, Windsor, Chermside	Peak – 15 mins Off-peak – 60 mins No weekend services
	P332	UQ, City, Spring Hill, RBWH, Lutwyche, Chermside, Zillmere	Morning peak – 8 services inbound Evening peak – 8 services outbound No weekend services
	333	Cultural Centre, City, Normanby, RBWH, Lutwyche, Chermside	Peak – 5-10 mins Off-peak – 15 mins Weekend – 15 mins
	340	Woolloongabba, City, Normanby, RBWH, Chermside, Carseldine	Peak – 10-15 mins Off-peak – 15 mins Weekend – 15 mins
	369	Mitchelton, Stafford, Kedron Brook, Eagle Junction, Toombul	30 mins weekdays and weekends

4.1.3 Existing Active Transport Network

The subject site is located within a well-established urban network and has access to an existing comprehensive active transport network. All roads within 800m of the site (i.e. 10-minute walking distance) have a concrete footpath on at least one side. Furthermore, the school contains footpaths along all road frontages to the school.

The Kedron Park Road/ Park Road intersection is a controlled intersection and provides adequate crossing access for pedestrians. A children's crossing to Park Road (fronting Block K) is also available to assist pedestrian crossings to Park Road.

It is noted the school also backs onto the Kedron Brook Bikeway, which provides a shared pathway which runs alongside the majority of the waterway and provides active transport movements that is separated from the road and traffic network. The Bikeway stretches for almost 20km and acts as a key east-west link from Mitchelton to Nundah and utilises a mixture of off-road shared pathways and separated bikeways. East of Nundah, it connects to the Jim Soorley Bikeway, which ultimately connects through to the Nudgee Golf Club.

4.2 Services

4.2.1 Water Infrastructure

With reference to Council's eBIMAP mapping system the school has access to water infrastructure, via two (2) 100mm connections to the trunk main. One is located in the Gorman Street road reserve and the other is in the Park Road road reserve.

Hydrants are provided in close proximity to the road frontages in Park Road and Gorman Street.

Refer to **Appendix 9** for a copy of the service infrastructure plans.

4.2.2 Sewer Infrastructure

With reference to Council's eBIMAP mapping system the school has access to sewer infrastructure. A 450mm diameter sewer gravity main traverses the site with three manholes located within the boundaries.

Refer to **Appendix 9** for a copy of the service infrastructure plans.

4.2.3 Stormwater Infrastructure

With reference to Council's eBIMAP mapping system the school has access to stormwater infrastructure. A 600mm diameter pipe is located in the centre of the site, discharging to Kedron Brook at the northern boundary.

Refer to **Appendix 9** for a copy of the service infrastructure plans.

4.2.4 Electricity Infrastructure

The existing site supply to the school is via powerlines from Park Road and is fed from a Pad-mount Transformer rated at 500kVA which is shared between the school and the adjacent Kedron Emergency services.

4.2.5 Telecommunications Infrastructure

The existing Centre of Network is located within Block F and is the main connection point for backbone data services to service the school. The existing site Main Distribution Frame (MDF) is also located within the Administration Building.

PART D – DESIGNATION PROPOSAL

5 Proposed Designation

5.1 Description under the Planning Regulation 2017

The proposal seeks to designate the site as follows:

Kedron State High School

34 Park Road, Kedron QLD 4030

Lot 961 on SP250949

Pursuant to Chapter 2, Part 5 of the PA, it is proposed to designate the land described above for infrastructure. Ministerial designation is proposed in order to facilitate the efficient allocation of resources and enable the timely supply of the community infrastructure. The proposed community infrastructure is best described in the *Planning Regulation 2017*, Schedule 5, Part 2 as:

6 educational facilities

5.2 Intent of Designation

The designation affirms the existing use of the site as an educational establishment, and will facilitate the immediate planned works at the school and future planned developments on the site consistent with the designation purpose.

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

5.3 Project History

In 2007 the non-compulsory Prep Year was introduced to Queensland schools and in the following year the Year 1 starting age was subsequently raised. Consequently, a smaller cohort of students, often referred to as the half cohort, was introduced to Queensland state schools.

Over the following years this cohort of students has increased in size and across the state schooling sector now reflects approximately two thirds the size of a usual year level cohort.

In 2015, this smaller cohort of students entered Year 8 along with the first group of Year 7 students in secondary schools as part of the Flying Start suite of reforms. The half cohort, currently in Year 9, will enter Senior Secondary in 2018 and will exit the system at the end of the 2019 school year, creating six full cohorts across secondary schools for the first time in 2020.

An analysis of infrastructure requirements for 2020 indicates additional capacity is needed in number of schools across the State, including Kedron SHS. To accommodate the six full cohorts in 2020, it is proposed to provide the school with a new Learning Centre incorporating a number of learning spaces and associated spaces.

The *Six Full Cohorts – 2020 Ready* program is a Queensland Government commitment to delivering fit for purpose learning environments that support educational outcomes. The program

provides a capital investment of $250 million over two years for new classrooms and other infrastructure in the State's secondary schools to cater for the 17,000 additional students expected by the 2020 calendar year.

To align with the *Six Full Cohorts – 2020 Ready* program, the DoE has made a funding commitment of $5.1 million to deliver the following:

- construct a new multi-storey learning facility, consisting of six (6) learning spaces and associated learning and support spaces;
- partial demolition of the tennis courts to accommodate the new building with future relocation north of the site; and
- a new covered link access from the new building to the spine of the existing school.

Further to the above works the master plan has also made consideration for a future car parking area to accommodate the increasing school population. The area identified is an extension to the existing car parking along the western boundary. It is noted these works are not funded through the current *Six Full Cohorts – 2020 Ready* program and will be subject to a separate funding allocation in the future.

5.4 Site Selection

The DoE and lead architect lead an informal planning analysis to determine the most suitable location for the proposed development at Kedron SHS. As part of this process consultation was undertaken with relevant stakeholders, such as the school community and Parent's and Citizens' (P&C) Association to discuss key requirements and needs for the school. In particular it is noted the analysis has consideration of the following:

- the existing topographic conditions over the site;
- flood awareness in recognition the site is subject to creek and waterway flooding; and
- providing a design that has a visual relationship between the existing Block R and the new development to continue the design language of the previous development.

On the basis of the above, the location of the new building was considered the most appropriate location for the proposed development.

5.5 Proposal Description and Details

The proposal seeks to undertake the following works at Kedron SHS:

- construct a new multi-storey learning facility, consisting of six (6) learning spaces and associated learning and support spaces;
- partial demolition of the tennis courts to accommodate the new building with future relocation north of the site; and
- a new covered link access from the new building to the spine of the existing school.

The proposal plans are provided in **Appendix 5** for further reference.

The proposed General Learning Building is designed with a building height of up to 11m. The building will consist of two levels, with the ground level to accommodate an industrial kitchen, associated food storage, a staff work room and flexible learning spaces and the first floor to accommodate for the junior kitchen, associated food storage areas and various general learning areas and collaboration rooms. The first floor will also provide for a covered link to Block R, which adjoins the proposed building to the east.

The proposed pitch of the roof ranges from 10 degrees to 23.5 degrees, which will provide sufficient natural ventilation and clearance for the proposed internal fixtures. The proposed building will not result in the removal of, or impacts on existing mapped significant vegetation, being located on existing predominantly cleared land within the site.

The external materials proposed for the new Learning Centre will be concrete framed with a suspended concrete slab to both the Ground and First Floor. External walls will be steel framed with insulation, lined internally with fibre cement and externally will be clad in durable, minimal maintenance materials such as metal sheeting. The raftered roof structure will be insulated and finished with metal roof sheeting externally and flush set fibre-cement ceilings with access panels internally. The new materials have been chosen to continue the relationship with the existing external design of Block R.

The proposed works are intended to future proof the school while providing facilities that improve the amenity of the Kedron SHS consistent with current standards and sited with consideration of the functionality of the buildings, and connection with existing and planned future buildings.

The works relating to a new GLA building will ensure the school is able to address current capacity challenges and foreseeable expansion of capacity.

The school has also made provision for a future car parking area within the school site. The area identified is an extension to the existing car parking along the western boundary. It is re-iterated these works are not funded through the current *Six Full Cohorts – 2020 Ready* program and will be subject to a separate funding allocation to DoE in the future.

5.5.1 School Population

At present, the school has a student enrolment capacity (SEC) to accommodate 1,584 students and a built capacity (BLT) to accommodate for 1,926 students.

Based on DoE forecasts the proposed development provides for an ultimate SEC of approximately 1,704 students and BLT of 2,077 students. The proposed building ensures the Kedron SHS is able to meet the population growth demands for the 2020 calendar year.

It is noted the DoE references the SEC when considering the number of students a school can optimally accommodate within existing learning spaces. These learning spaces are generally designed with a larger capacity (being the BLT) to ensure that any unforeseen or increase in student for a particular year can still accommodate enrolments where necessary.

Where student enrolments exceed the SEC then the DoE will seek to investigate opportunities for new infrastructure to accommodate the increase in student population growth.

5.5.2 Hours of Operation

The Kedron SHS operates from 8:50am and finishes at 2:40pm with office hours open from 8:00am until 4:00pm.

5.5.3 School Catchment Area

The Kedron SHS catchment is typically includes parts of Kedron, Wooloowin, Gordon Park, Lutwyche, Albion and Windsor.

The catchment area is bound to the north-east by Kedron Brook, extending west towards Clifford Street where it extends south to Kedron Brook to form the western boundary.

The southern boundary is generally Kedron Brook Road, and extending east towards the Brisbane River. The eastern boundary is generally the Albion suburb boundary, extending north towards Junction Road, and to the western side of the railway line.

School Catchment Area



Source: DoE

Legend

	School Catchment Areas
	Kedron SHS Catchment Area

5.5.4 Vehicle and Bicycle Parking

Vehicular access to the Kedron SHS is currently provided for via four (4) driveway crossovers including:

- dedicated entry and exit only access points to Park Road; and
- dedicated entry and exit only access points to Gorman Street.

Car parking is currently provided within the subject site, predominately within three (3) areas, and are located from:

- Park Road – which is a one-way through-route that includes a turnaround area with 15 pick-up/ drop-off spaces and 20 marked car parking spaces (including 1 PWD space) with separate entry and exit points;

- Park Road (west) – which is a shared road between the school and Emergency Services Complex which provides a right-turn lane into the school with:
  - 12 car parking spaces and a pick-up/ drop off zone towards the main frontage;
  - three (3) car parking spaces (including 1 PWD adjoining the existing Hall); and
  - 64 staff car parking spaces (including 1 PWD space) to the rear of the school with a recent extension (completed in 2018) for an additional 15 staff car parking spaces.

Furthermore, the DoE has also identified a future car parking area which will be considered as part of future development works at the school site. The proposed area is an extension to the existing main staff car parking area to the rear of the school site. Provision of the car park will be subject to a separate funding allocation to DoE in the future however initial investigations note an allowance for a minimum of 25 car parking spaces is required.

5.5.5 Pedestrian Facilities

Numerous pedestrian paths, covering the full verge width, are provided along the direct frontages and along all roads in proximity of the subject site. As such, the existing network is considered to provide safe and direct pedestrian access to the school.

5.6 Designation Process

In accordance with the alternative designation process as agreed with DSDMIP, this EAR has been prepared with the intention to support the consultation and state interest review stage being undertaken with those stakeholders identified in Part G – Consultation of this report. Section 9.2 also includes an approved Community Engagement Plan in which this Infrastructure Designation Proposal will follow.

Although an alternative process, this EAR has been drafted in accordance with the Chapter 7 of the *Minister's Guidelines and Rules*.

Once information gathered as part of this stage is collated, the DSDMIP will undertake a final assessment of the proposed development before consideration by the Minister for State Development, Manufacturing, Infrastructure and Planning.

PART E – LOCAL AND STATE PLANNING PROVISIONS

6 Planning Assessment

In terms of development under the PA, 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 exempt from the local government's planning scheme.

In relation to any building works, these will be accepted development in accordance with Schedule 7, Part 1, item 2 of the PR.

6.1 Local Planning Framework

Where land is not designated for infrastructure, any development involving a material change of use should have regard to the requirements of the relevant planning scheme. Whilst the intended designation will result in development being exempt from assessment against the planning scheme, consideration has still been given to its relevant provisions.

The *Brisbane City Plan 2014* (Planning Scheme) commenced on 30 June 2014 and is the relevant planning scheme for the site.

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	*Brisbane City Plan 2014*
Area classification	CF5 Community facilities zone (Education purposes)
Local area plan	Lutwyche Road corridor neighbourhood plan
Overlays	• Airport environs overlay • Biodiversity areas overlay • Critical infrastructure and movement network overlay • Flood overlay • Potential and actual acid sulfate soils overlay • Road hierarchy overlay • Streetscape hierarchy overlay • Transport noise corridor overlay • Waterway corridors overlay

6.3 Use Definition

With reference to the Planning Scheme, Schedule 1 Definitions, the proposal for a new building within an established school is classified under 'Educational Establishment' and defined below.

Educational Establishment: *means the use of premises for—*

(a) training and instruction to impart knowledge and develop skills; or

(b) student accommodation, before or after school care, or vacation care, if the use is ancillary to the use in paragraph (a).

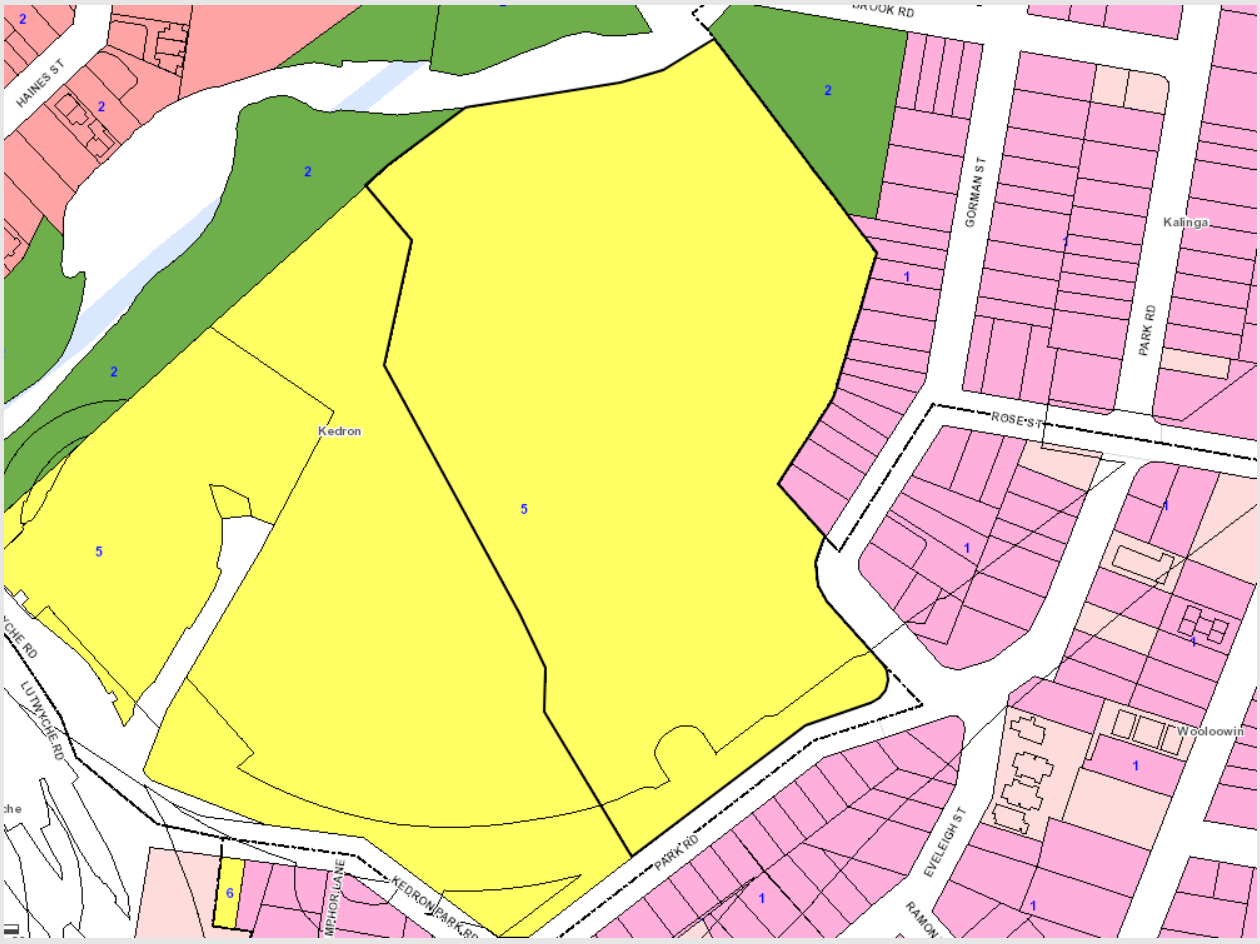
Examples of an educational establishment— college, outdoor education centre, primary school, secondary school, special education facility, technical institute, university

In accordance with Table SC1.1.2.B – Defined activity groups, an Educational Establishment is listed under the Community Facilities – Education Purposes under the Planning Scheme.

6.4 Zoning

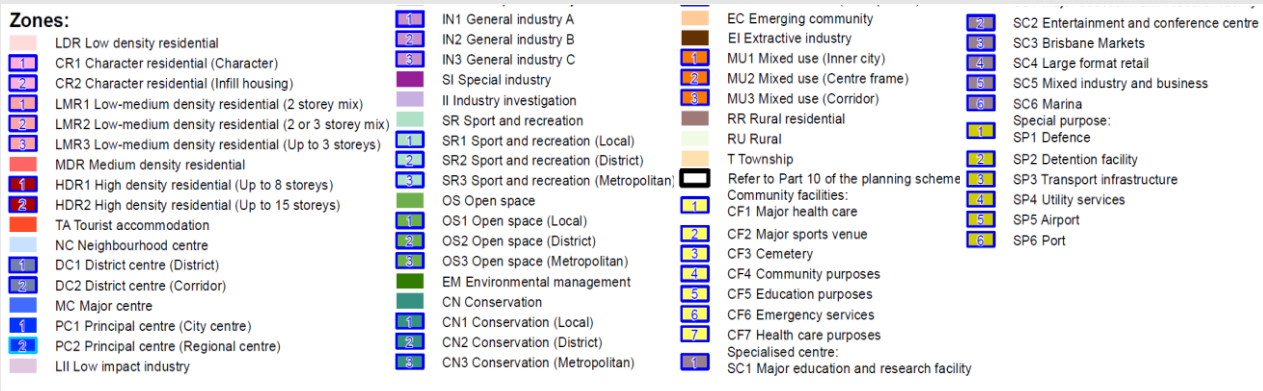
Under Part 6 of the Planning Scheme the subject site is identified within the CF5 Community Facilities (Education Purpose) Zone, as indicated in the figure below.

Planning Scheme – Zoning



Source: Brisbane City Plan

Legend



The purpose of the Community facilities zone code is to provide for community related activities and facilities whether under public or private ownership. These may include the provision of municipal services, public utilities, government installations, hospitals and schools, transport and telecommunication networks and community infrastructure of an artistic, social or cultural nature.

The following overall outcomes are to be achieved by development in the Community Facilities zone:

(a) Development contributes to the city being well served with community buildings, facilities, spaces and activities meeting the diversity of community needs.

(b) Development provides for both privately owned community facilities and community facilities that are owned or operated by federal, state or local government.

(c) Development that limits the ongoing operation and expansion of an existing community facility or prejudices the establishment of a new community facility appropriate to the relevant zone precinct is not accommodated.

(d) Development in a particular zone precinct is predominantly for community facilities that are envisaged in that zone precinct, unless an appropriate adaptation of the premises for another community facility use can be demonstrated.

The Kedron SHS is an existing State government educational establishment with the proposed works consistent in scale, height and bulk of development at the school. The proposed multi storey General Learning Building does not include a reconfiguration component and will not prejudice the established use of the site and is in keeping with the purpose and character of the facility and community needs.

The location of the proposed works is well separated from adjoining detached dwellings and will be appropriately attenuated to further minimise potential impacts to amenity.

The proposed works are located within the developed area of the site (eastern area of the school grounds). This area has been cleared of native vegetation and is outside mapped environmental features.

The new building will utilise existing established urban infrastructure on the site.

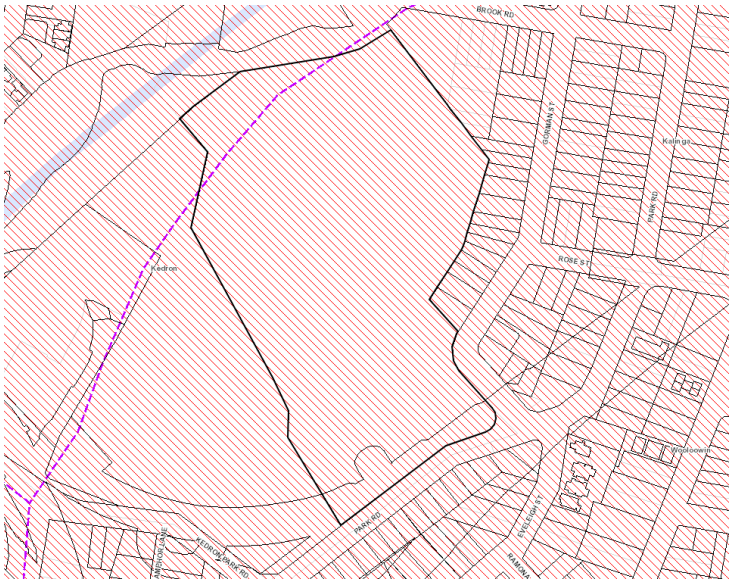
6.4.1 Local Plan

The site is not identified within a specific local or neighbourhood plan under the Planning Scheme.

6.5 Overlays

The planning scheme identifies physical constraints affecting development through the inclusion of overlays. Where a site is affected by a Council constraint, additional development limitations may be placed over the property/s by the Planning Scheme.

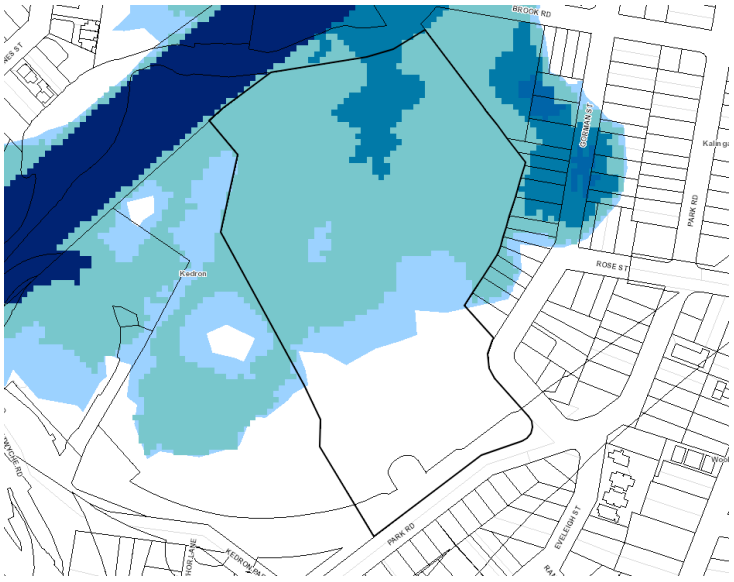
It is noted that the site is affected by the following overlays:

Constraint	Overlay map
Airport Environs overlay The site is identified within the: • OLS – Horizontal limitation surface boundary; • Procedures for Air Navigation Surfaces (PANS) • Bird and Bat Strike zone (Distance from Airport 3-8km)	
Biodiversity areas overlay • The site identified in the High ecological significance sub-category.	
Critical Infrastructure and Movement Network overlay • The site is mapped within the critical infrastructure and movement planning area.	

Flood overlay

The site is mapped within the:

- Creek/waterway flood planning area sub-category 1, 2, 3 and 5.
- overland flow flood planning area



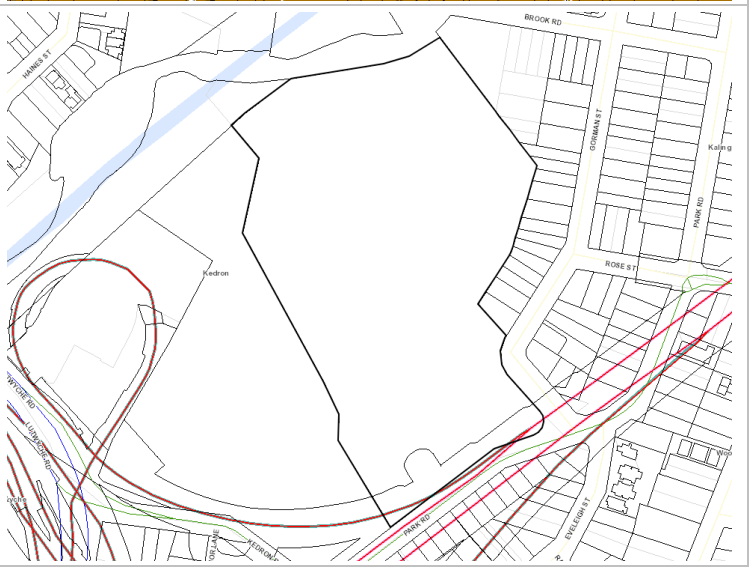
Potential and actual acid sulfate soils overlay

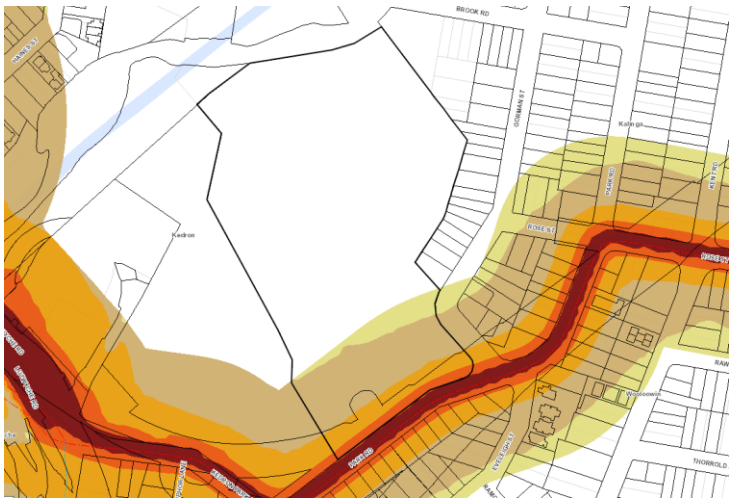
- The site is identified in the potential and actual acid sulfate soils sub-category and the Land above 5m AHD and below 20m AHD sub-category.



Road Hierarchy

- Park Road is identified as a Suburban road;
- Gorman Street is identified as Neighbourhood road.



Streetscape hierarchy overlay • All frontages of the site are classified as neighbourhood streets – minor road.	
Transport noise corridor overlay • The site is identified in the Designated State Noise corridor - State controlled road (MANDATORY area)	
Waterway corridors overlay • The site is identified in the Citywide waterway corridor sub-category.	

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 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, to the extent relevant						
		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 FOCUSED

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 at Kedron SHS. The designation forwards the efficient and timely delivery of infrastructure while ensuring that subsequent works on the site can proceed without assessment against the *Brisbane City Plan 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. 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, local government and the community will occur as part of this process.

7.2.2 State Interest Statements

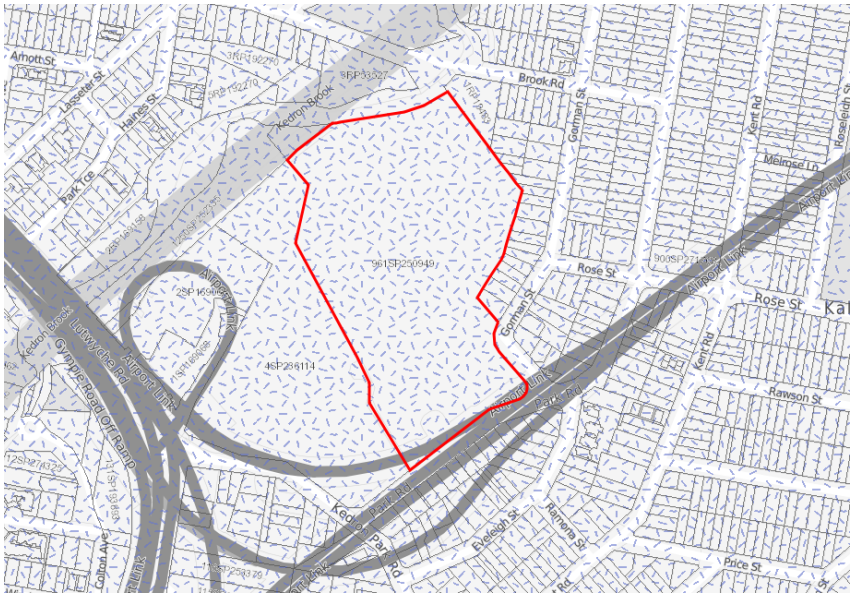
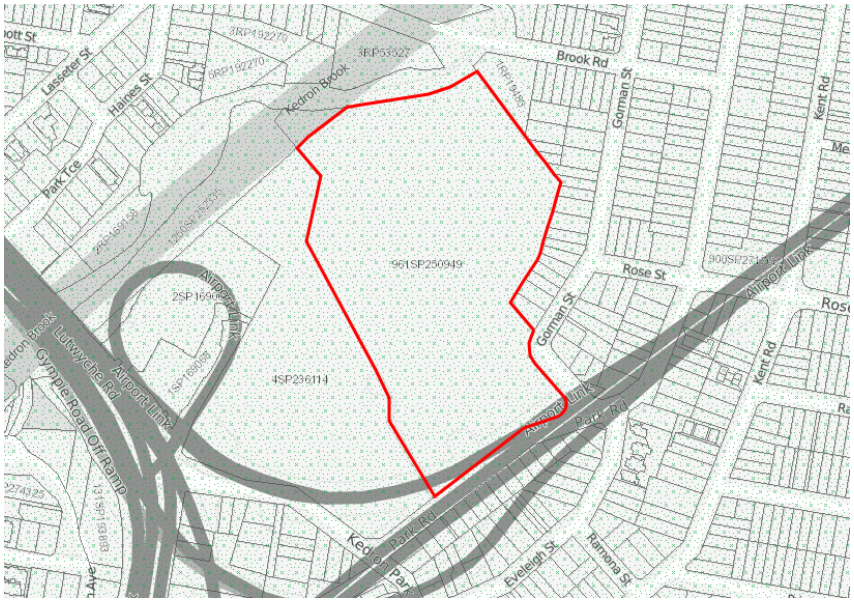
The following table lists the State interests contained in the SPP relevant to the subject site.

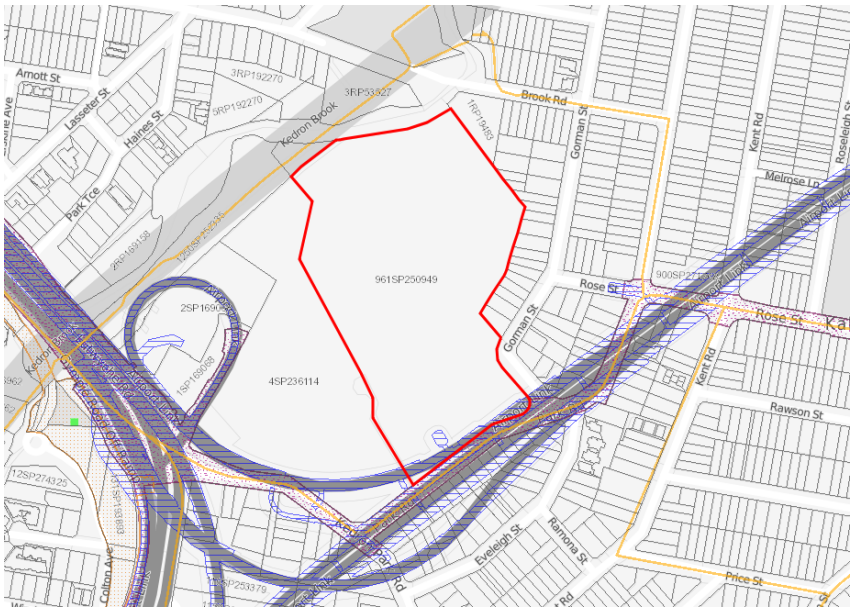
State Planning Policy	Applicability
Planning for Liveable Communities and Housing	
Liveable Communities	N/A
Housing Supply and Diversity	N/A
Planning for Economic Growth	
Agriculture	N/A
Development and Construction	N/A
Mining and Extractive Resources	N/A
Tourism	N/A
Planning for the Environment and Heritage	
Biodiversity	N/A
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	Yes
Strategic Airports and Aviation Facilities	Yes
Strategic Ports	N/A

7.2.3 SPP Interactive Mapping System

Relevant state interests as identified in section 7.2.2 are further described in the following table, as obtained from the SPP Interactive Mapping System:

State Interest	Mapping Layer
Water Quality The site is within the water resource catchments and reference should be made with the SPP, including the SPP Code: Water Quality. A site-based stormwater management plan has been prepared and is provided in **Appendix 11.**	
Natural Hazards Risk and Resilience The site is within the Flood hazard area – Local Government flood mapping. A FloodWise Property Report has also been undertaken and included at **Appendix 10**. An assessment of the potential flooding impacts has been undertaken as part of the stormwater management plan (refer **Appendix 11**). The building has been designed at a level that meets both the 1% and 0.2% AEP levels.	

Infrastructure Park Road is a state-controlled road and ultimately connects to another state-controlled road being Lutwyche Road to the west. The front of the school site is also identified as an active transport corridor, which is reflective of the Airport Link tunnel which traverses underneath the site. A Traffic Impact Assessment has been undertaken and included at **Appendix 12**.	
Strategic Airports and Aviation Facilities The site is mapped within the Obstacle limitation surface area, Wildlife Hazard Buffer Zone (8km) and Building restricted area – Area of interest. The proposed development will not be of a height, emit light, or be an attractor of bird or bat wildlife, that would obstruct the safe movement of aircraft.	

7.2.4 Stormwater Management Design Objectives

Information on how the proposal meets the SPP stormwater management design objectives is discussed further in Part F – Environmental Assessment.

7.3 Regional Planning

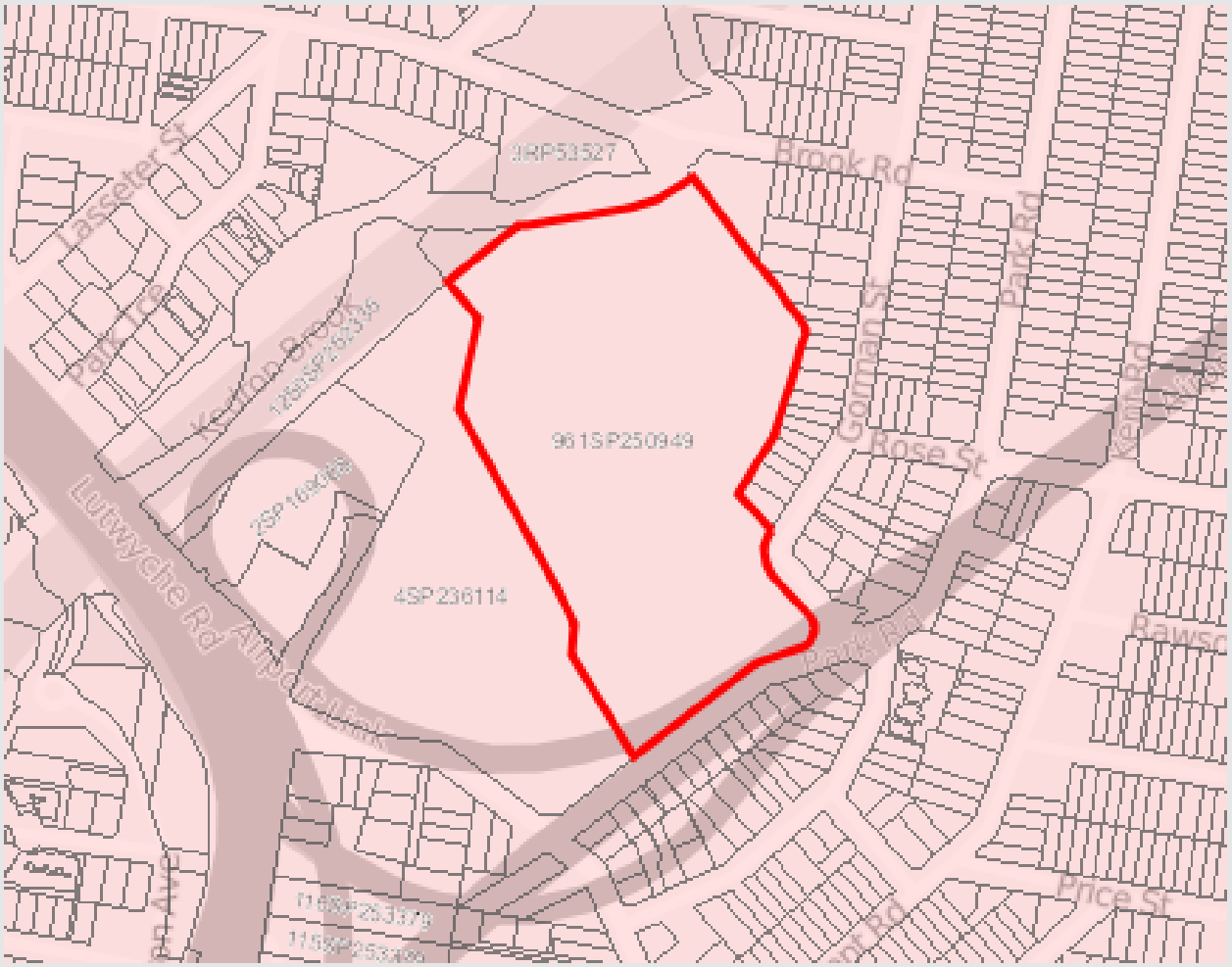
The site is included within the Urban Footprint of the *South East Queensland Regional Plan 2017*.

The Urban Footprint identifies land within which the region's urban development needs to 2041 can be accommodated in a way consistent with the goals, elements and strategies of *ShapingSEQ*.

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 Kedron SHS and proposed scope of works are considered consistent with the intent of the Regional Plan, providing additional community infrastructure that supports the existing and future residential community.

Regional Plan – Urban Footprint



Source: DSDMIP SARA

Legend

- Site Boundary
- Urban Footprint

PART F – ENVIRONMENTAL ASSESSMENT

8 Environmental 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:

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

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

Context

The site has frontage to Park Road, which is identified as a state-controlled road. The school also has frontage to Gorman Street to the east. Under the Planning Scheme, Gorman Street is designated as a Neighbourhood Road and Park Road is designated as a Suburban Road.

The primary vehicle access to the site is via two (2) existing crossovers along Park Road. Gorman Street also provides two (2) secondary access points.

The school also operates buses during normal school hours to assist with extra-curricular activities (i.e. excursions).

Proposal

The Kedron SHS has a current student capacity to support up to 1,584 enrolments. The proposed scope of works is provided to cater for an anticipated growth in enrolments to 1,704 students, and 210 full-time equivalent (FTE) staff by the 2020 calendar year.

Based on the current student capacity (being 1,584 students), and the anticipated growth to 1,704 students there is a potential overall increase to the school population of up to 199 students and 22 FTE staff.

Site investigations of the school note

- parent drop-off and pick-ups from loading areas on both sides of Park Road, with the northern side of Park Road more heavily utilised by parents;
- parent drop-off and pick-ups also occur from loading areas on both sides of Gorman Street, with the western side of Gorman Street more heavily utilised by parents;
- traffic demands generated by the subject site appeared to be more evenly spread across the morning peak period than those generated in the afternoon peak period;
- in the afternoon, traffic demands generated by the subject site appeared to reduce significantly from around 3:15pm (school finishes at approximately 2:55pm).

A traffic report has been prepared and included in **Appendix 12** and notes the following:

- the assessment considers potential development related traffic impacts during:
  - 2018 base year (when traffic survey data was captured); and
  - 2020 future year (assumed 'Year of Opening' for the proposed expansion).
- future year background traffic volumes was estimated based on applying growth rates to surveyed traffic volumes and based on a review of existing and expected development accessed by each road, which notes:
  - Kedron Park Road: 3% p.a.;
  - 5 Park Road: 3% p.a.;
  - Gorman Street: 0% p.a.;
- 60:40 in:out split for the morning peak and 40:60 in:out split in the afternoon peak periods has been adopted and results show an expected increase to traffic generation by 143 trips morning peak (86 in and 57 out) and 84 trips in the afternoon peak (33 in and 50 out) periods;
- a SIDRA analysis was conducted for the signalised intersection based on the three development scenario years and notes:
  - average delays at the intersection may increase by approximately 3% due to the proposed expansion.
  - as delays are expected to increase by less than 5%, the GTIA does not require any mitigation works to offset impacts associated with the expansion.

Actions and Recommendations

The traffic analysis indicates the proposed expansion will not have a significant impact on the operation of the surrounding road network, including the Kedron Park Road/ Park Road signalised intersection and no intersection upgrades are therefore warranted.

8.1.2 Car Parking

Context

The site currently provides car parking within three (3) formal areas within the school, made up of:

- Park Road – which is a one-way through-route that includes a turnaround area with 15 pick-up/ drop-off spaces and 20 marked car parking spaces (including 1 PWD space) with separate entry and exit points;
- Park Road (west) – which is a shared road between the school and Emergency Services Complex which provides a right-turn lane into the school with:
  - 12 car parking spaces and a pick-up/ drop off zone towards the main frontage;
  - three (3) car parking spaces (including 1 PWD adjoining the existing Hall); and
  - 64 staff car parking spaces (including 1 PWD space) to the rear of the school with a recent extension (completed in 2018) for an additional 15 staff car parking spaces.

Site investigations noted the majority of the pick-up and drop-off arrangements occurred within the loading areas on both Park Road and Gorman Street.

Proposal

As part of the traffic assessment, the *Brisbane City Plan 2014, Transport, access, parking and servicing planning scheme policy* (TAPS Policy) applies a rate of 1 space per staff plus 0.1 spaces per staff for visitors for educational establishments.

Based on the increase of 22 FTE staff there is a requirement for an additional 25 car parking spaces, made up of 22 staff parking spaces and 3 visitor parking spaces.

It is noted that under the *Six Full Cohorts – 2020 Ready* program, funding is directly related to delivery of infrastructure relating to the new learning facility and additional parking is therefore not included as part of this proposal. However the recent extension of the car park to the rear of the school that provides an additional 15 car parking spaces will assist in accommodating the parking demands in the immediate short term.

Nevertheless, the DoE has considered the recommendations from the traffic assessment and has identified a future car parking area, which will be a further extension to the existing main staff car parking area to the rear of the school site. Provision of the car park will be subject to a separate funding allocation to DoE in the future however initial investigations note an allowance for a minimum of 25 car parking spaces is required.

Actions and Recommendations

The current formal and informal parking provision within the school is considered sufficient to support the growth forecasts for the school, with forecasts resulting in an increase of 22 FTE staff and 199 students over 3 years.

However the following recommendations have been identified:

- the DoE will ensure future programs of work as undertaken by the school has appropriate consideration to deliver the future car park with provision of up to 25 car parking spaces and provide a formalised access road which extends from the existing staff car park; and
- the car parking area and spaces should be configured in accordance with the TAPS Policy, AS2890.1, AS2890.2 and/ or AS2890.6.

8.1.3 Public Transport Infrastructure

Context

The use of public transport is a preferred travel mode and highly encouraged by the school, for students, staff and visitors.

Proposal

There are a number bus stops within approximately 500m of the subject site which are serviced by several inbound and outbound bus routes. This includes school only, and Translink bus services and listed in the table below:

Services			
Stop Location	**Route Number**	**Servicing**	**Frequency**
Both sides of Park Road, in proximity to Kedron Park Road	321	Toombul, Wooloowin, Lutwyche, RBWH, Spring Hill, City	Peak – 30 mins Off-peak – 60 mins Sat – 60 mins Sun – No services
Park Road eastbound, in proximity to Kedron Park Road	942 (school bus)	Bracken Ridge, Taigum, Zillmere, Geebung, Wavell Heights, Chermside, Kedron, Kedron High	1 morning service No weekend services
	947 (school bus)	McDowall, Stafford Heights, Stafford, Kedron, Wooloowin, Kedron High	1 morning service No weekend services
	948 (school bus)	Chermside West, Stafford Heights, Stafford, Gordon Park, Wooloowin, Kedron High	1 morning service No weekend services
	950 (school bus)	Mitchelton, Everton Park, Stafford, Gordon Park, Wooloowin, Kedron High	1 morning service No weekend services
Both sides of Park Road, in proximity to Gorman Street	321	Toombul, Wooloowin, Lutwyche, RBWH, Spring Hill, City	Peak – 30 mins Off-peak – 60 mins Sat – 60 mins Sun – No services
	369	Mitchelton, Stafford, Kedron Brook, Eagle Junction, Toombul	30 mins weekdays and weekends
Park Road westbound, in proximity to Gorman Street	946 (school bus)	Kedron High, Wooloowin, Kedron, Stafford Heights, Everton Park, Mitchelton	1 morning service 1 afternoon service No weekend services
Gorman Street northbound at Kedron Park High School	942 (school bus)	Kedron High, Kedron, Chermside, Wavell Heights, Geebung, Zillmere, Taigum, Bracken Ridge	1 afternoon service No weekend services
	947 (school bus)	Kedron High, Wooloowin, Kedron, Stafford, Stafford Heights, McDowall	1 afternoon service No weekend services
	948 (school bus)	Kedron High, Wooloowin, Gordon Park, Stafford, Stafford Heights, Chermside West	1 afternoon service No weekend services
	950 (school bus)	Kedron High, Wooloowin, Gordon Park, Stafford, Everton Park, Mitchelton	1 afternoon service No weekend services
Kedron Brook – Busway Station – Platforms 1 & 2	77	Eight Mile Plains, Holland Park, Buranda, Windsor, Chermside	Peak – 15 mins Off-peak – 60 mins No weekend services

	P332	UQ, City, Spring Hill, RBWH, Lutwyche, Chermside, Zillmere	Morning peak – 8 services inbound Evening peak – 8 services outbound No weekend services
	333	Cultural Centre, City, Normanby, RBWH, Lutwyche, Chermside	Peak – 5-10 mins Off-peak – 15 mins Weekend – 15 mins
	340	Woolloongabba, City, Normanby, RBWH, Chermside, Carseldine	Peak – 10-15 mins Off-peak – 15 mins Weekend – 15 mins
	369	Mitchelton, Stafford, Kedron Brook, Eagle Junction, Toombul	30 mins weekdays and weekends

With reference to the traffic assessment in **Appendix 12**, it was observed that a large proportion of students utilise the available bus services available in proximity to the site. Given the number of public transport options available the proposed development is not anticipated to trigger the need for any modifications to the existing school bus routes or additional services.

From a useability perspective, it has been identified that only the Park Road eastbound bus stop, in proximity to Kedron Park Road has shelter facilities. The remaining three (3) Park Road bus stops, and the Gorman Street northbound stop do not have shelter facilities.

Actions and Recommendations

The existing number of bus services is sufficient to support the school population and as such there is no material impact anticipated to the public transport infrastructure.

The Park Road bus stops are utilised by both regular and school bus services and it is therefore recommended these bus stops be upgraded to include shelters. The traffic assessment notes that each of the bus stop upgrades are recommended to address existing infrastructure deficiencies (i.e. the proposed school expansion does not solely necessitate the upgrades). The DoE will have further discussions with Translink in the future regarding potential upgrades to the existing bus infrastructure.

8.1.4 Active Transport Infrastructure

Context

The site is located within a well-established urban network and as such, it benefits from access to an existing comprehensive active transport network. Typically, all roads within 800m of the subject site (i.e. 10-minute walking distance) have a concrete footpath on at least one side. Importantly, there are existing paths along all frontages to the subject site.

There are also signalised crossings at the Kedron Park Road/ Park Road intersection and a children's crossing on Park Road to assist pedestrian movements.

The school currently provides a bicycle parking area within the site, and is located adjacent to the Administration Building and can be easily accessed via the existing access point off Park Road.

Proposal

The predicted school population growth will not have any material impact to the active transport networks external to the school site.

However with reference to the traffic assessment in **Appendix 12** it is noted:

- due to the high number of pedestrians during school peak periods, some sections of the footpath on the northern side of Park Road were congested at times;
- the children's crossing on Park Road was not supervised/ controlled during school peak periods and on several occasions students and other pedestrians did not wait for others before crossing, resulting in uncontrolled crossing distributions which impacts on the operation of Park Road;
- the increase in school population from the proposed development identifies an additional 40 bicycle parking spaces with reference to the TAPS Policy.

Further to the above, it is noted the school has, or will have access, to two key pieces of active transport infrastructure which encompasses the wider catchment areas for the school population. These include:

- Kedron Brook Bikeway – an existing east-west route which links Mitchelton to Nundah; and
- North Brisbane Bikeway – a future north-south route which links Fortitude Valley to Kedron Brook Bikeway.

Actions and Recommendations

The proposed works are not considered to have a material impact to the existing active transport infrastructure or network.

The DoE, as part of future program works at the school, will consider the following:

- provision of an additional 40 bicycle parks within the school grounds to promote cycling as a viable travel option for students; and
- to improve the safety and efficiency of Park Road, it is recommended a pedestrian crossing officer manages crossings after school finishes each day, which is therefore expected to improve traffic flows on Park Road, reducing queues and delays.

8.2 Services Infrastructure

8.2.1 Water Infrastructure

Context

With reference to Council's eBIMAP mapping system (refer **Appendix 9**) the school has access to water infrastructure, via two (2) 100mm connections to the trunk main. One is located in the Gorman Street road reserve and the other is in the Park Road road reserve.

Hydrants are provided in close proximity to the road frontages in Park Road and Gorman Street.

Proposal

The refurbishment of existing building infrastructure will continue to utilise the existing connections, The water supply to the proposed GLA Buildings will connect to the existing water service. Further investigations will be undertaken as detailed design progresses to confirm whether the existing service is suitable, or an upgrade is required to service the proposed development.

This site does not have an internal fire main located. The existing fire mains are located in the surrounding road reserves. The proposal will require the fire main to be extended with new hydrants in order to provide appropriate coverage to the proposed GLA Buildings.

Actions and Recommendations

The adequacy, capability and location of the existing water infrastructure to service the proposed development will be confirmed prior to the construction phase.

8.2.2 Sewer Infrastructure

Context

With reference to Council's eBIMAP mapping system (refer **Appendix 9**) the school has access to sewer infrastructure. A 450mm diameter sewer gravity main traverses the site with three manholes located within the boundaries.

Proposal

The existing network is considered to have sufficient capacity to cater for the proposed development. The refurbishment of existing building infrastructure will continue to utilise the existing connections, with the proposed GLA Building to implement a new connection that will branch into the existing sewer infrastructure.

Actions and Recommendations

The adequacy, capability and location of the existing sewer infrastructure to service the proposed development will be confirmed prior to the construction phase.

8.2.3 Stormwater Infrastructure

Context

With reference to Council's eBIMAP system (refer **Appendix 9**) the school has access to stormwater infrastructure. A 600mm diameter pipe is located in the centre of the site, discharging to Kedron Brook at the northern boundary. This existing pipe is considered the lawful point of discharge for the site.

Proposal

The location of the new multi-storey learning facility is currently occupied by an impervious area in the existing courts. The proposed works associated with the new multi-storey learning facility will cover approximately 790m^2 of land.

A Stormwater Management Plan is included in **Appendix 11** and notes the following with regards to the proposed development:

- there is no change in stormwater run-off as the location of the proposed building is on an existing impervious area (being the courts);
- the development area has a gradual slope to the north towards Kedron Book and stormwater is collected by means of a formalised piped system as well as diversion swales that discharge into the existing 600mm diameter pipe and into Kedron Brook;
- overland sheet flow also discharges through the area where the new building is proposed and provision has been made to divert the overland flow by means of swales and bunds, using a level spreader downstream of the new proposed development to ensure overland flow into Kedron Brook is consistent with pre-development stormwater drainage;

Actions and Recommendations

The proposed development shall incorporate the stormwater management measures as summarised above and as described in the Stormwater Management Plan in **Appendix 11**.

To ensure that there is no negative effect on the Water Quality due to the proposed development, it is recommended to apply best management practices (BMPs) to ensure no adverse impacts to the downstream environment.

The DoE, as part of future program works (i.e. such as the future car park), will engage and undertake necessary stormwater management plans to ensure adequate systems or maintenance measures are implemented to ensure the downstream environment is not subject to adverse impacts.

8.2.4 Electricity Infrastructure

Context

The existing site supply to the school is via powerlines from Park Road and is fed from a Pad-mount Transformer rated at 500kVA which is shared between the school and the adjacent Kedron Emergency services.

Proposal

Based on investigations of the existing site loads of the Pad-mount Transformer it appears the existing infrastructure is inadequate to cater for the proposed new maximum demand loads and an upgrade is required.

In addition to the above upgrades, the school will require new underground conduit and pit systems to service the proposed new buildings. The existing site Main Switch Board (MSB) is rated at 1600 Amps 3 phase and has adequate capacity to cater for the proposed new maximum demand loads.

Actions and Recommendations

The adequacy, capability and location of the existing electricity infrastructure to service the proposed development will be confirmed with Energex prior to the construction phase.

8.2.5 Telecommunications Infrastructure

Context

The existing Centre of Network is located within Block F and is the main connection point for backbone data services to service the school. The existing site Main Distribution Frame is also located within the Administration Building.

Proposal

The DoE and school stakeholders will undertake further investigations into appropriate telecommunications infrastructure requirements during detailed design.

Actions and Recommendations

The adequacy, capability and location of the existing telecommunications infrastructure to service the proposed development will be confirmed prior to the construction phase.

8.3 Flora and Fauna

8.3.1 Vegetation Management Act 1999

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 an 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).

Proposal

The Department of Environment and Science (DES) regulated vegetation management mapping shows the entire site free of remnant vegetation (refer to **Appendix 6**).

The site is not mapped as containing areas of remnant or regrowth vegetation and removal of vegetation to accommodate the proposed development is therefore considered “operational works” under the PA. Operational works carried out by or on behalf of a public sector entity authorised under State law to carry out the work is exempt development (PA Section 232 (2)) as prescribed under Schedule 4 of the *Planning Regulation 2017*) and therefore development approval is not required for these activities.

Actions and Recommendations

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*.

8.3.2 Environmental Protection and Biodiversity Conservation Act 1999

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.

Proposal

The EPBC Protected Matters Report (refer **Appendix 8**) identified 1 critically endangered ecological community; 4 critically endangered, 5 endangered and 3 vulnerable bird species; 1 critically endangered insect species, 2 endangered, and 4 vulnerable mammal species; 1 endangered plants and 9 vulnerable plants; 2 vulnerable reptile species; and a number of migratory species which may be present within a 1km radius of the site.

Actions and Recommendations

The presence of any invasive, declared or pest species (flora or fauna) will be confirmed prior to commencement of construction. If found, these will be removed in accordance with legislative requirements.

8.3.3 Nature Conservation Act 1992

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.

Proposal

The NCA Wildlife Online database shows records of 2 endangered, vulnerable, or near-threatened species within a 1km radius of the subject site (refer to **Appendix 8**).

The DES Protected Plants Flora Survey Trigger Map also notes the site is not mapped as a 'high risk' area under the Protected Plants Flora Survey Trigger Map (refer to **Appendix 6**).

Actions and Recommendations

Trees and other vegetation 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. If any breeding places are located within the development footprint a Species Management Plan (SMP) must be approved by DES prior to impacting on the breeding place. Mitigation measures such as the establishment of nest boxes (or other relevant measures) prior to tree clearing may also be required under the SMP.

Immediately prior to removal, vegetation should be inspected for fauna. If fauna is present vegetation clearing should cease and fauna should be allowed to move out of the vegetation clearing area of its own accord and further advice should be sought from a licensed fauna spotter.

8.3.4 Protected and Vulnerable Areas

Context

The map of referable wetlands is a statewide 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.

Proposal

With reference to the relevant state interest trigger maps in **Appendix 6**, the site is not mapped as 'Fish Habitat', 'Waterways for Waterway Barrier Works' or 'Referable Wetlands' under the *Fisheries Act 1994* or the *Environmental Protection Act 1994*.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.3.5 Koala Conservation

Context

The *State Government Supported Community Infrastructure Koala Conservation Policy 2017* (The Policy) regulates the planning and delivery of all Queensland Government supported infrastructure projects, as listed under Schedule 5 of the *Planning Regulation 2017*, and applies to land within the South East Queensland Koala Protection Area (SEQKPA) which result in:

- the clearing of native vegetation that will result in a total cleared area of less than 500m^2;
- a new building and any reasonably associated infrastructure with a total development footprint of less than 500m^2;
- an extension to an existing building and any reasonably associated infrastructure if the extension results in a total development footprint of less than 500m^2;
- extracting gravel, rock or sand from an area of less than 5000m^2; and
- excavating or filling an area of less than 5000m^2.

Where a proposed development is located within the SEQKPA and meets any of the above criteria, then a Koala Self-Assessable Management Plan needs to be prepared.

Proposal

The proposal relates to State government infrastructure and involve works with a total development footprint greater than 500m^2. As such, the development is regulated by the *State Government Supported Infrastructure Koala Conservation Policy 2017*, and a Koala Self-Assessable Management Plan has been prepared and included in **Appendix 14**.

The intended outcomes of the Koala Conservation Policy has been appropriately addressed in the Management Plan. Furthermore, the Management Plan also takes into consideration the koala habitat and connectivity values identified and has been specifically developed for the site and proposed development.

Actions and Recommendations

The Management Plan must be considered in all relevant phases of the project and a copy of the document provided to relevant personnel involved in the project including project managers, principal design consultants, landscape architects and construction contractors.

To ensure adequate records are kept of the implementation of these management strategies, reference should be made to Section 4 of the Management Plan. The DoE will ensure the Project Manager is responsible in ensuring accurate records are maintained and updated as necessary.

8.3.6 Invasive Species

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*.

Proposal

The EPBC Protected Matters Report as included in **Appendix 7** identified invasive fauna and invasive flora species within 1km radius of the site.

With respect to the above, it is noted the school site is well maintained and therefore unlikely that any declared species will be present on the site.

The site is not located within a fire ant biosecurity zone.

Actions and Recommendations

Prior to works commencing on site, the DoE will ensure the Contractor undertakes a site inspection to confirm presence of any pest plants and/ or animals. If found, these will be removed in accordance with legislative requirements.

8.4 Soils and Geology

8.4.1 Geotechnical Conditions

Context

Investigations into the ground conditions are required prior to any development works on the site. The investigations should be carried out to establish the nature and type of subsurface material at the site to allow engineering assessment of site classification (AS2870); earthworks recommendations; rock excavatability; groundwater control; and suitable foundation types.

Proposal

A geotechnical investigation has been prepared and included in **Appendix 13** and notes the following:

- the subsurface profile encountered generally consisted of loose to medium dense silty sand, loose sandy gravel and stiff to very stiff sandy clay.
- ash fill was also encountered at HA2 (the courts) between 0.50m and 0.70m, and within the silty sand fill material in BH1 (between the courts and R Block between 0.05m to 0.30m.
- earthworks are expected to comprise of minor levelling to form the building pad and all earthworks operations should be carried out generally in accordance with AS3798-2007 "Guidelines on Earthworks for Commercial and Residential Developments".
- soils on site are sensitive to repetitive vehicle loading and water (i.e. they will lose strength through repetitive vehicle loading or if they become overly moist or wet) and extreme care should be exercised during the demolition/ clearing phase to ensure excessive subgrade disturbance is not caused during removal of existing structures, trees, services, etc;
- the reactive nature of the site has been assessed to be subject to abnormal moisture conditions and the site is classified Class ‘P’ and a number of building foundation recommendations should be appropriate considered as part of the design;
- The following should be considered as part of site management of the development:
  - the site be well drained and the structure at ground should slope away at 1 in 50 and fall to the stormwater system to prevent ponding of water against or near to the structures.
  - roof downpipes and garden taps should not be allowed to wet founding soils.

- service trenches under the building be minimised as disruption or breakage could lead to saturation of the under slab material resulting in an increase to moisture condition.
- footings should be placed with minimal delay after excavation to avoid desiccation or wetting of the founding soils and where footings cannot be poured on the same day as excavation, a blinding layer of 75mm thickness is recommended.
- piers should be poured immediately.
- Ensure the slab subgrade does not "dry out" prior to casting.
- maintain the site at “stable moisture conditions”, with “extremes of wetting and drying prevented” – refer AS 2870-2011, Appendix B.

Actions and Recommendations

The DoE will ensure the Contractor, as part of detailed design, carries out works in accordance with the recommendations of the Geotechnical Report.

8.4.2 Erosion Risk

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.

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.

Actions and Recommendations

The DoE will ensure 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.

8.4.3 Acid Sulfate Soils

Context

The proposed development area is mapped as ‘Land above 5m AHD and below 20m AHD’ on the planning scheme overlay map indicating the possibility of potential and actual acid sulfate soils being present on site.

Proposal

The proposal will involve minor earthworks and is not anticipated to result in any disturbance or impacts to ASS.

Actions and Recommendations

No further actions or recommendations are considered necessary.

However, if potential or actual ASS is identified during construction, an ASS investigation should be carried out and managed in accordance with an ASS management plan. Should development

works involve the removal of 100m^3 or more; or filling of 500m^3 or more of the material with an average depth off >0.5m, then the SPP State Interest – Water Quality will be triggered.

8.4.4 Contaminated Land

Context

With reference to **Appendix 8**, the site is not listed on the Environmental Management Register (EMR) or Contaminated Land Register (CLR).

Proposal

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

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.5 Heritage and Native Title

8.5.1 Historical Heritage

Context

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

Proposal

As no heritage values exist on site the proposed development will have no further impacts.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.5.2 Cultural Heritage

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.

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 proposed development is to be located within an area subject to previous clearing. Therefore, the nature of the activity is likely to be classified as 'area previously subject to significant disturbance' – Category 4, under the ACHA, Section 28 Duty of Care Guidelines. Subject to

measures set out in paragraph 5.6-5.12 under Category 4 of the Duty of Care Guide lines, the proposed activates can proceed without further cultural heritage assessment.

Actions and Recommendations

No further actions or recommendations are considered necessary.

However it should be noted that 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.

8.5.3 Native Title

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*.

Proposal

The proposed development will require confirmation of native title prior to works proceeding.

Actions and Recommendations

The DoE will ensure Native Title is undertaken and confirmed prior to construction.

8.6 Natural Hazards

8.6.1 Flooding

Context

The site is subject to the local authority flood overlay. A large portion of the western portion of the site is within the Creek/ waterway flood planning area. A small portion of the site along the western boundary to the north-west is also within the overland flow flood planning area.

A FloodWise Property Report has been obtained from Council and included at **Appendix 10**.

Proposal

The BCC nominates the accepted design floor level for educational establishments at 0.2% AEP level. Advice obtained from BCC notes the 0.2% AEP defined flood level for the site is 11.1m AHD.

Furthermore, the Flood Overlay Code notes that electrical services in the proposed building must be placed at 1% AEP flood level + 500mm. As noted in the FloodWise Property Report, the 1% AEP flood level is defined as 10.9m AHD, with the additional 500mm therefore equating to a requirement for the electrical services to be at 11.4m AHD. With reference to the proposal plans in **Appendix 5** the floor level of the multi-storey learning facility is designed at 11.4m AHD and therefore compliant with the 1% AEP and 0.2% AEP levels.

Actions and Recommendations

With reference to Appendix D of the Stormwater Management Plan in **Appendix 11**, ensure the proposed development has a design ground floor level that is not below 11.4m AHD.

8.6.2 Bushfire

Context

The site is not mapped in the local Bushfire hazard overlay mapping.

Proposal

The proposed works are not proposed to be undertaken in an area affected by bushfire hazards.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.6.3 Landslip

Context

The site is not mapped as affected by landslip.

Proposal

The proposal will involve minor earthworks to accommodate the proposed new facilities however will not result in the creation of any potential landslip areas over the site.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.7 Socio-economic Impacts

8.7.1 Socio-economic Profile

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.

Proposal

The Kedron SHS will continue to provide positive socio-economic impacts, including:

- continued long-term educational and associated (i.e. trades) employment opportunities;
- investment of $5.1 million 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; and
- focus on delivering quality education, with a curriculum that caters for the varied needs and skills of students.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.8 Construction Impacts

8.8.1 Construction Management

Context

During development and construction it is essential to minimise impacts on students, staff, neighbouring residents and the general public. Consideration for the planning of construction works within an operating school environment is paramount.

Proposal

A Construction Environmental Management Plan (CEMP) is to be prepared for the development. The plan will include at a minimum default noise standards detailed in the *Environmental Protection Act 1994*, dust mitigation methods, waste control and erosion and sediment control plans.

Actions and Recommendations

The DoE will ensure a CEMP is prepared during detailed design and that the Contractor implements and acts in accordance with the Plan during construction.

8.8.2 Hours of Construction Operation

Context

The site is located in an urban area and construction activities should be within appropriate hours to avoid impacts to nearby residences.

Proposal

Unless otherwise approved in any development approvals and/ or statutory permits, works must comply as a minimum with default noise standard detailed in the *Environmental Protection Act 1994* including:

- on a business day or Saturday, before 6.30am or after 6.30pm; or
- on any other day, at any time.

Actions and Recommendations

The DoE will ensure the default noise standards are included as part of the Contractor's CEMP.

8.8.3 Traffic

Context

Traffic associated with construction activities will require access via Park Road and may create a nuisance to nearby residences and amenity.

Proposal

Given the high order status of Park Road it is considered appropriate for construction access to utilise this existing network.

Actions and Recommendations

The DoE and Contractor will provide confirmation on access locations points as part of the CEMP. With reference to section 8.8.2, the DoE will also ensure the hours of construction operation are included as part of the Contractor's CEMP.

8.8.4 Air Quality

Context

Construction activities may cause air quality impacts (i.e. dust) to nearby properties.

Proposal

Potential air quality impacts will be treated with water and/ or appropriate procedures to limit the likelihood of discomfort to any students, staff and neighbouring personnel.

Actions and Recommendations

The DoE will ensure appropriate air quality management procedures are included as part of the Contractor's CEMP.

8.8.5 Noise

Context

The school adjoins sensitive uses in residential dwellings to the eastern boundary and will likely result in potential noise impacts from construction vehicles and development activities.

Proposal

Potential noise impacts during the construction stage will be identified during detailed design and appropriate mitigation measures included to ensure noise is minimised where possible. As noted in section 8.8.2, DoE will ensure the hours of construction operation are included as part of the CEMP and adhered to by the Contractor.

Actions and Recommendations

With reference to section 8.8.2, DoE will ensure the hours of construction operation are included as part of the Contractor's CEMP.

8.8.6 Light

Context

Potential lighting impacts from construction activities to neighbouring properties needs consideration.

Proposal

Unless otherwise approved, construction hours will be limited to the days and hours as specified under the *Environmental Protection Act 1994*, and listed in section 8.8.2 of this Report.

Given the proposed operation times for construction, the proposed works is unlikely to generate any adverse lighting impacts.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.8.7 Hazardous Materials

Context

According to the Built Environment Materials Information Register (BEMIR) records, cement based asbestos has been 'confirmed' and 'assumed' at Kedron SHS.

Proposal

The proposed development does not require demolition of any existing built infrastructure on the site and is therefore unlikely to result in exposure of hazardous materials (asbestos).

Actions and Recommendations

Development activities which involves demolition of existing structures will be subject to a hazardous materials survey to identify the presence of asbestos, lead or other materials hazardous to human health. Where such materials are identified, demolition and removal is to be undertaken by a suitably licenced contractor.

8.8.8 Waste

Context

Construction waste and hazardous materials must be appropriately disposed of during construction activities to avoid impacts to the surrounding built and natural environment.

Proposal

Any regulated waste generated during construction will be handled and disposed of appropriately and in accordance with the requirements of the *Environmental Protection Act 1994*.

Actions and Recommendations

It is unlikely the activity will generate any regulated waste. Waste that will be generated by the proposed development is to be confirmed during the planning and design stage. Waste management facilities are to be designed and provided, or modified (if existing), in conjunction with a waste management plan if necessary.

8.9 Operational Impacts

8.9.1 Traffic

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.

Proposal

The proposed works relating to the Kedron SHS will result in only a minor increase in traffic movements to, and from, the school. Based on the school population growth forecast, it is expected that the total student population is expected to grow to 1,704, and staff numbers are expected to increase to 210 FTE by the 2020 calendar year.

The existing parking provision has the capacity to cater for the additional parking demands and expected drop-off/ pick up bays required for the increase in enrolments and staff. As re-iterated in

section 8.1 of this Report the school will only result in a minor increase in proposed traffic movements to the school.

Actions and Recommendations

As noted in section 8.1.1, 8.1.2 and 8.1.3, the proposed works will result in a minor increase in school population and is not anticipated to have a material impact to the existing operation of the road or traffic network.

The DoE will ensure future program of works has appropriate consideration of funding to provide a future car parking area.

8.9.2 Air Quality

Context

The existing school does not produce any emissions, gasses or negative air quality impacts.

Proposal

The proposed scope of works is for educational uses which aims to provide improved learning facilities for the school population. The proposal will not result in any emissions, gasses or negative air quality impacts.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.9.3 Noise

Context

With respect to noise, anticipated impacts to, and from the school, includes:

- road traffic noise levels from Park Road;
- road traffic noise levels from Gorman Street; and
- ambient noise levels from the school to nearby residences.

Proposal

As a learning facility, the proposed development does not include uses (i.e. sport/ music spaces) which would generate any potential noise impacts to surrounding properties.

Furthermore, road traffic noise impacts is considered negligible due to:

- Gorman Street being a low order road with minimal traffic movements whilst being located approximately 85m from the proposed learning facility; and
- Park Road, although a state-controlled road, will be located 130m from the proposed learning facility and also located outside of the transport noise corridor.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.9.4 Light

Context

The Kedron SHS operates during normal business hours, with school operating from 8:50am until 2:40pm and office hours from 8:00am until 4:00pm.

The car park lighting operates on a timer and the school has security lights which remain on within the Administration Block and under the bus shelter zone during night periods.

Proposal

New lighting will be provided to the covered walkways/ verandahs linking the new GLA Buildings with existing walkways. Existing security lighting within the school will operate as per normal with no changes proposed.

The proposal is not considered to result in the generation of adverse lighting impacts. Lighting will be provided to the facility, including the parking area, in accordance with the applicable Australian Standards.

Actions and Recommendations

No further actions or recommendations are considered necessary.

8.9.5 Safety and Security

Context

All schools require appropriate safety and security measures and should be prepared in accordance with DoE's *Security Design Requirements*. The design of the Security System will address the functional, installation and technical upgrade and expandability requirements that provides for future proofing, flexibility and expandability.

Proposal

The Kedron SHS has a security risk rating of 'High'. As such, measures included in the cost plan for physical and electronic security includes:

- Louvres with a safety bar to the external walls of GLAs
- Crimsafe to all external glazing
- External lighting
- Passive infra-red security sensors
- Reed switches to all external doors and to roller doors
- Restricted access and lockable Staircases at the base of both Stairs from lower level

Actions and Recommendations

The DoE and relevant school stakeholders will confirm appropriate physical and/ electronic security measures for inclusion within the cost plan for the proposed scope of works and ensure it is prepared in accordance with DoE's *Security Design Requirements* for a 'High' risk site.

PART G – CONSULTATION

9 Consultation Engagement

9.1 Stakeholders

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

Affected Parties

- Brisbane City Council.

State Government Departments

- DSDMIP, representing relevant State Agencies.

Elected Representatives

- Councillor David McLachlan (Hamilton Ward) – Brisbane City Council;
- Mr Timothy Nicholls MP – State Electoral District of Clayfield; and
- Mr Trevor Evans MP – Federal Electoral Division of Brisbane.

Stakeholders

- Directly affected property landowners.

Native Title Party

- Jagera Daran and Turrbal People

School Representatives

- Principal – Kedron SHS; and
- Kedron SHS School Parent's and Citizens' (P&C) Association.

9.2 Community Engagement Plan

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

Activity	Description	Stakeholder Group	Actions
Prior to public notification			
Email	Email seeking advice about infrastructure requirements.	Brisbane City Council	Email
Meeting	On stakeholder request, organise meeting to present project and discuss matters of interest—in particular impacts on local government infrastructure.	Brisbane City 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 Park Road and Gorman Street frontages	Broader community	Prepare and erect public notice signage to street
Update web content	Update DHPW web page with information about the Infrastructure Designation proposal, including the EAR and details about the engagement process.	Broader community	Prepare content update 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@dilgp.qld.gov.au Phone: 1300 967 433 Submissions during public notification can be made online or by infrastructuredesignation@dilgp.qld.gov.au	Affected parties, stakeholders and broader community	Publish contact information in relevant public notices and letters

9.3 Initial Consultation

Prior to the commencement of the Infrastructure Designation, the DoE and key Kedron SHS representatives undertook initial consultation activities with:

Stakeholder Group	Date	Description
Brisbane City Council	28/02/2018	• Provide email correspondence to BCC with information on Infrastructure Designation Proposal;
	20/03/2018	• Correspondence received from BCC; and • EAR addresses issues as identified in correspondence.
	25/05/2018	• Project team to discuss with Council regarding increased heights of Building Platform to meet 0.2% AEP (1 in 500 year flood).
DSDMIP	23/05/2018	• Pre-lodgement meeting to discuss proposal; • Confirm school capacity and technical reporting requirements (i.e. traffic); • Confirm relevant stakeholder groups and consultation strategy;
Kedron SHS Principal, Business Manager and Infrastructure Officer	16/03/2018 22/03/2018	• Preliminary discussions on capacity needs, facility and service requirements, design issues; • Development of the project brief and schematic design project proposal; and • Confirm delivery timeframes, handover dates and review brief to confirm preferred site location.

	29/03/2018	• Telephone conference with School to confirm acceptance of room relationships and drawings.
	19/04/2018	• Discuss design development, architectural drawings (as incorporated into the site survey) and confirm no issues.
	03/05/2018	• Present the schematic design project proposal (SDPP) and seek endorsement from the school on the proposal plans.
	07/06/2018	• Update the SDPP based on discussions of relevant flooding information and design floor levels with the school and seek endorsement of the proposal plans.

PART H – CONCLUSION

This EAR has been prepared by BAS, on behalf of the DoE, seeking an Infrastructure Designation of land for the Kedron SHS, located at 34 Park Road, Kedron and otherwise described as Lot 961 on SP250949.

The PA prescribes the way in which a designation can be undertaken. Chapter 2, Part 5 of the PA 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.

Educational and community facilities are defined as community infrastructure under Schedule 5, Part 2 of the *Planning Regulation 2017*, being assets necessary to support the community and for the public benefit. The proposed designation as part of this proposal is therefore best described as:

6 educational facilities

The designation affirms the existing use of the site as an educational establishment, and will facilitate the immediate planned works at the school and future planned developments on the site consistent with the designation purpose. 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 community infrastructure.

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

PART I – APPENDICES

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

Appendix 1	Extracts from the *Planning Act 2016*
Appendix 2	Designation Flowchart
Appendix 3	Property Information
Appendix 4	Contour and Detail Survey
Appendix 5	Master Plan and Schematic Design Report
Appendix 6	State Interest Trigger Mapping
Appendix 7	EPBC Protected Matters Report & NCA Wildlife Online Report
Appendix 8	CLR & EMR Search
Appendix 9	Service Infrastructure Plans
Appendix 10	BCC FloodWise Property Report
Appendix 11	Stormwater Management Plan
Appendix 12	Traffic Impact Assessment
Appendix 13	Geotechnical Investigation
Appendix 14	Koala Self-Assessable Management Plan

Appendix 1

Extracts from Planning Act 2016

Department of Housing and Public Works

Queensland Government

Part 5 Designation of premises for development of infrastructure

35 What is a designation

(1) A ***designation*** is a decision of the Minister, or a local government, (a ***designator***) that identifies premises for the development of 1 or more types of infrastructure that are prescribed by regulation.

(2) A designation may include requirements about any or all of the following—

(a) works for the infrastructure (the height, shape, bulk, landscaping, or location of works, for example);

(b) the use of premises, for example—

(i) vehicular and pedestrian access to, and circulation on, premises; and

(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

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(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.

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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.

(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) The notice must invite the affected parties to make submissions about the proposal to the Minister within a period of at least 15 business days after the notice is given.

(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—

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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

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(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—

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(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.

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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.

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Appendix 2

Designation Flowchart

Indicative process

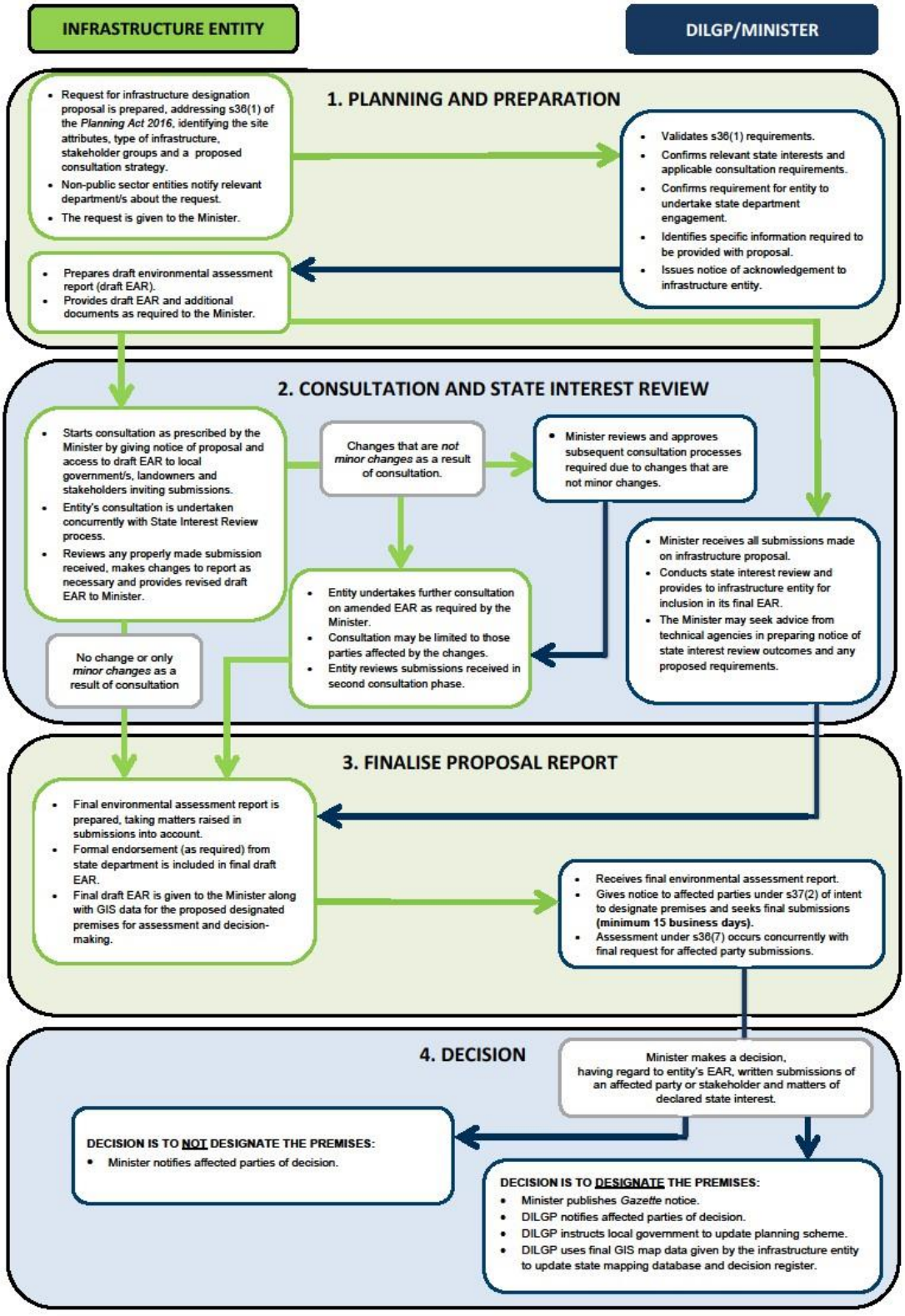


Figure 3: Flow chart of the ministerial designation process under the MGR

Appendix 3

Property Information

CURRENT TITLE SEARCH

DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND

Request No: 27996140
Search Date: 16/02/2018 16:31 **Title Reference: 50902727**
Date Created: 09/01/2013

Previous Title: 50152478

REGISTERED OWNER

Dealing No: 714872424 07/01/2013

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF EDUCATION AND TRAINING)

ESTATE AND LAND

Estate in Fee Simple

LOT 961 SURVEY PLAN 250949
Local Government: BRISBANE CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 40008239 (Lot 959 on CP SL9515)

2. EASEMENT IN GROSS No 602824408 (A1563) 25/03/1982
   Burdening
   THE LAND
   TO BRISBANE CITY COUNCIL
   OVER EASEMENT A ON CP SL9515

3. EASEMENT No 702050186 24/06/1997 at 11:55
   burdening the land to
   LOT 1182 ON CROWN PLAN SL9293
   OVER EASEMENT B ON CROWN PLAN 896849

4. EASEMENT No 702050191 24/06/1997 at 11:56
   benefiting the land over
   EASEMENT A ON CROWN PLAN 896849

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

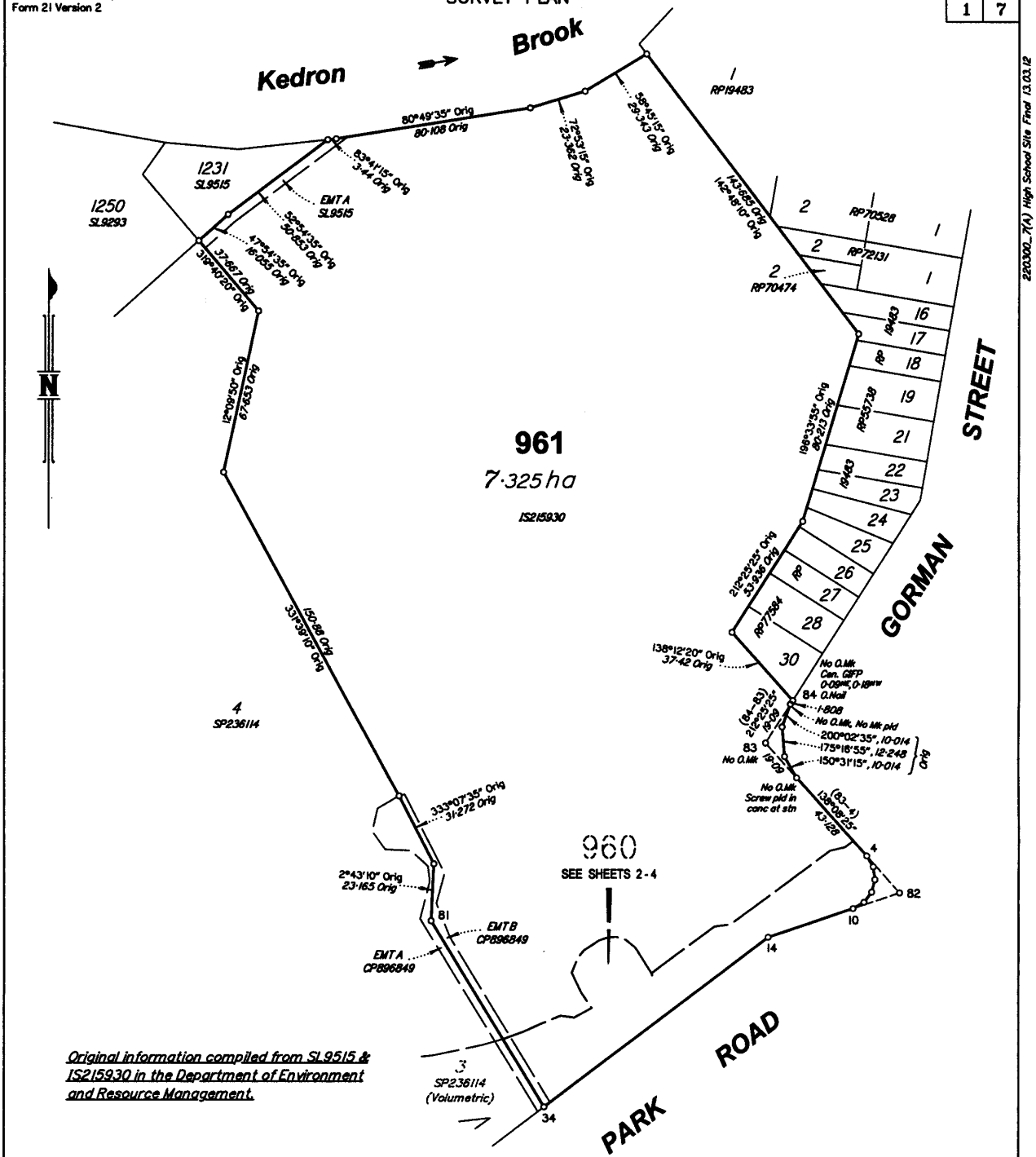
COPYRIGHT THE STATE OF QUEENSLAND (DEPT OF NATURAL RESOURCES AND MINES) [2018]
Requested By: SMIS .

Land Title Act 1994; Land Act 1994
Form 21 Version 2

SURVEY PLAN

Sheet 1 of 7

220300_7(A) High School Site Final 13.03.12



Original information compiled from SL9515 & IS215930 in the Department of Environment and Resource Management.

Scale 1: 1500 — Lengths are in Metres.

20 0 20 40 60 80 100 120 140 160 180 200 220

0 50mm 100mm 150mm

State copyright reserved.

THG HSG PTY LTD (ACN 151 517 001) hereby certify that the land comprised in this plan was surveyed by the corporation, by Richard James Hugh Pattison, surveying associate, for whose work the corporation accepts responsibility, under the supervision of Lance Edmond Heyes, cadastral surveyor and that the plan is accurate, that the said survey was performed in accordance with the *Survey and Mapping Infrastructure Act 2003* and *Surveyors Act 2003* and associated Regulations and Standards and that the said survey was completed on 9/3/2012.

Director

Delegate

Date 14.3.2012

Plan of Lots 960 & 961

Cancelling Lot 959 on SL9515

PARISH: **ENOGGERA** COUNTY: *Stanley*

Meridian: *MGA vide IS215930* F/N's: *No*

Scale: *1:1500*

Format: **VOLUMETRIC**

SP250949

Plan Status:

495/6482

Copyright protects the plan/s being ordered by you. Unauthorised reproduction or amendments are not permitted.

WARNING : Folded or Mutilated Plans will not be accepted.
Plans may be rolled.
Information may not be placed in the outer margins.

714872424

$461.80
07/01/2013 13:39

BE 400 NT

Registered

5. Lodged by
Property Acquisitions and Disposals
Dept of Transport and Main Roads
GPO Box 1412 Brisbane Q 4001
96
495/6482
(Include address, phone number, reference, and Lodger Code)

1. Certificate of Registered Owners or Lessees.

I/We THE STATE OF QUEENSLAND (REPRESENTED BY DEPARTMENT OF EDUCATION ~~AND~~ TRAINING) AND EMPLOYMENT)

(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~~

VINCENT KEITH WHITE
Executive Director, Infrastructure Operations as an authorised delegate for and on behalf of The State of Queensland (represented by Department of Education, Training and Employment)

This plan is exempt from local government approval under schedules 19 and 28 of the Sustainable Planning Regulation 2009.

* 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 Local Government (Planning & Environment) Act 1990
# Insert designation of signatory or delegation

3. Plans with Community Management Statement :
CMS Number :
Name :

4. References :
Dept File :
Local Govt :
Surveyor : 2203–00

6. Existing / Created

Title Reference	Description	New Lots	Road	Emts	Cov.	Profit a prendre
50152478	Lot 959 on SL9515	960 & 961	–	–	–	–

BENEFIT EASEMENT ALLOCATIONS

Easement	Lots Fully Benefited	Lots Partially Benefited
702050191 (Emt A on CP896849)	960 & 961	

ENCUMBRANCE EASEMENT ALLOCATIONS

Easement	Lots to be Encumbered
602824408 (Emt A on SL9515)	961
702050186 (Emt B on CP896849)	960 & 961

ADMINISTRATIVE ADVICE

Administrative Advice	Lots to be Encumbered
710688431	960 & 961

960 & 961	Lot 959 on SL9515
Lots	Orig

7. Portion Allocation :

8. Map Reference :
9543–33424

9. Locality :
KEDRON

10. Local Government :
BRISBANE CITY COUNCIL

11. Passed & Endorsed :
By : LANCE EDMOND HAYES
Date : 14.3.12 4.4.12
Signed :
Designation : CADASTRAL SURVEYOR

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

Cadastral Surveyor/Director* Date
*delete words not required

13. Lodgement Fees :

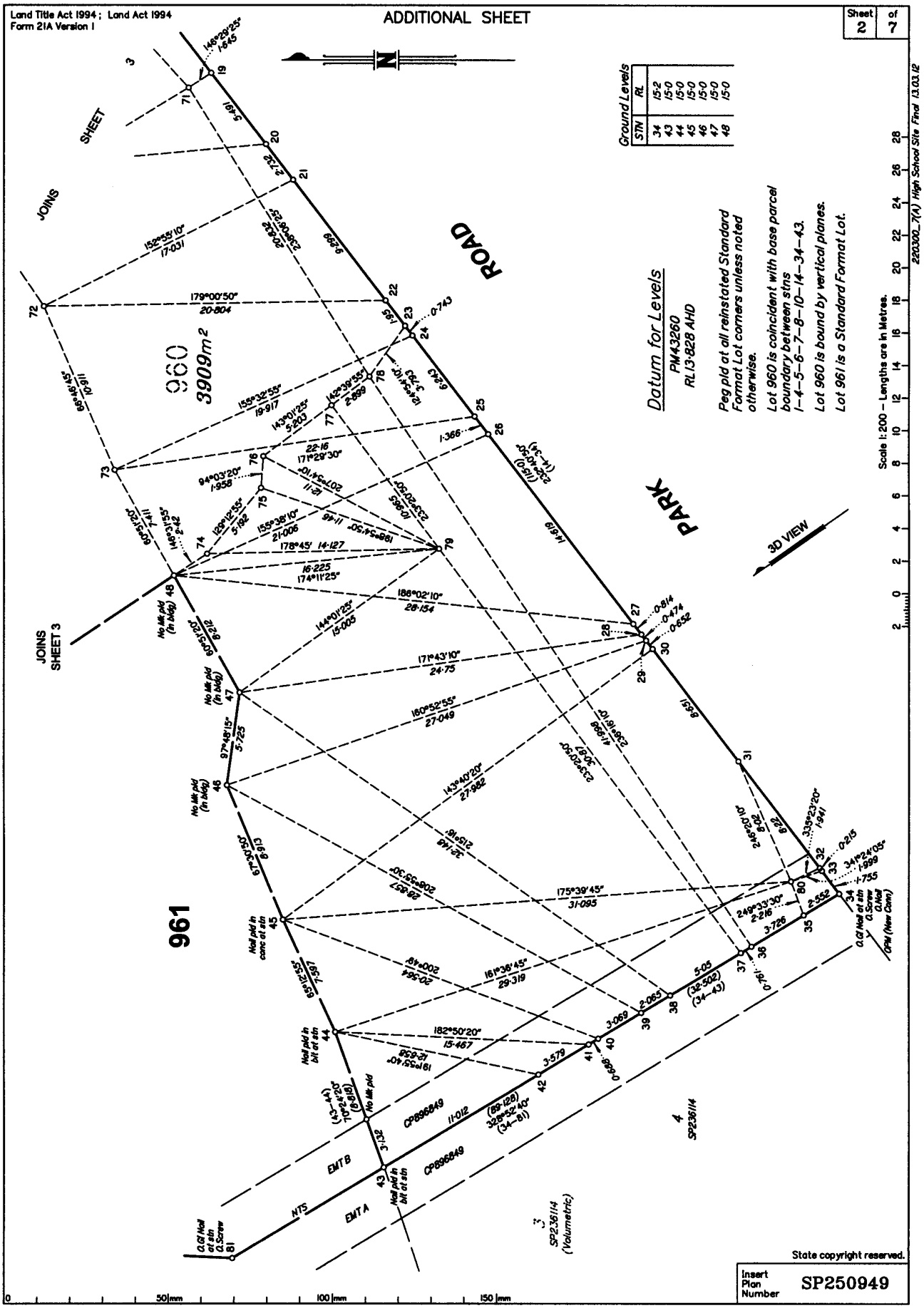
Survey Deposit	$
Lodgement	$
New Titles	$
Photocopy	$
Postage	$
TOTAL	$

14. Insert Plan Number **SP250949**

Land Title Act 1994; Land Act 1994
Form 21A Version 1

ADDITIONAL SHEET

Sheet 2 of 7



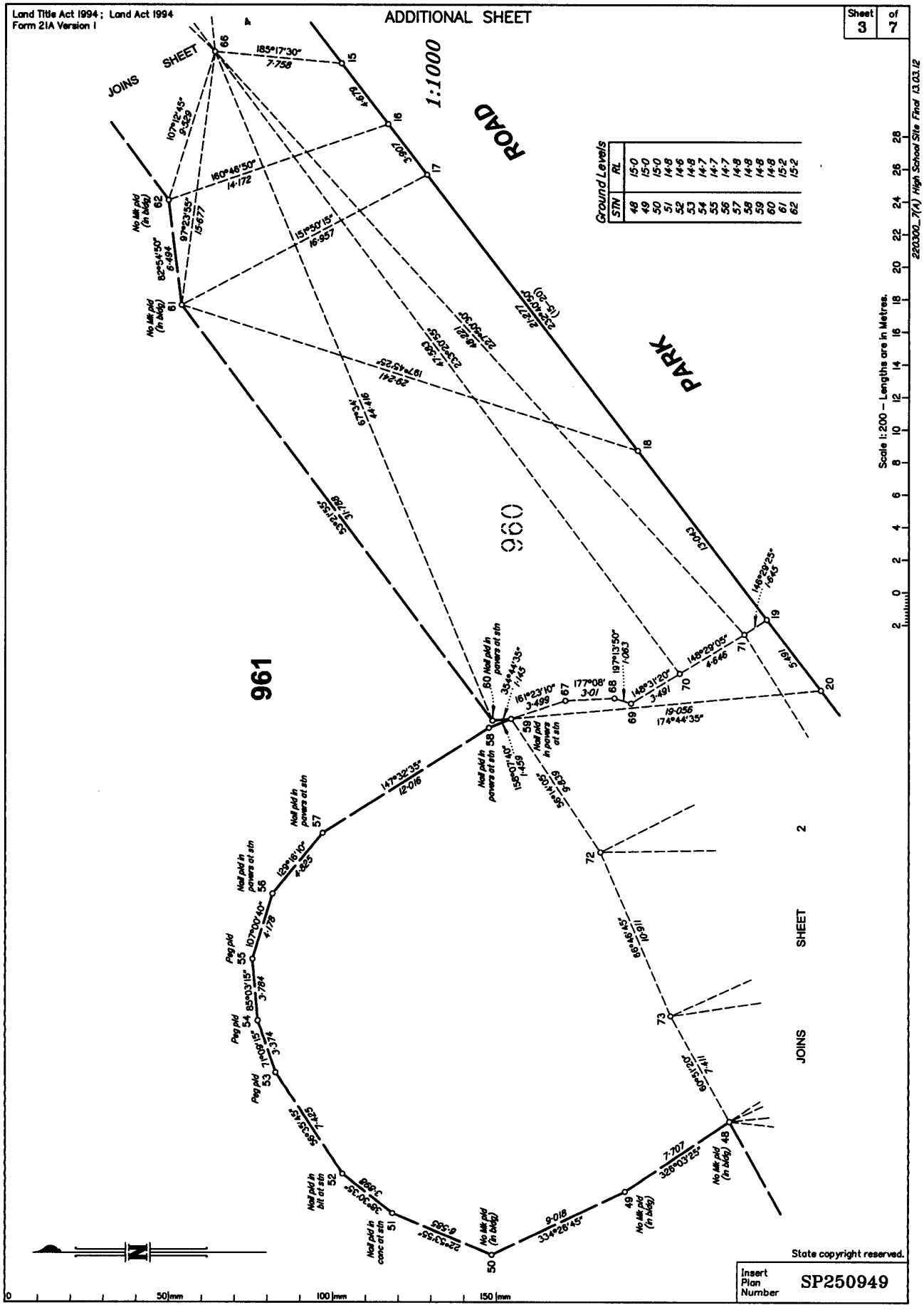
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ADDITIONAL SHEET

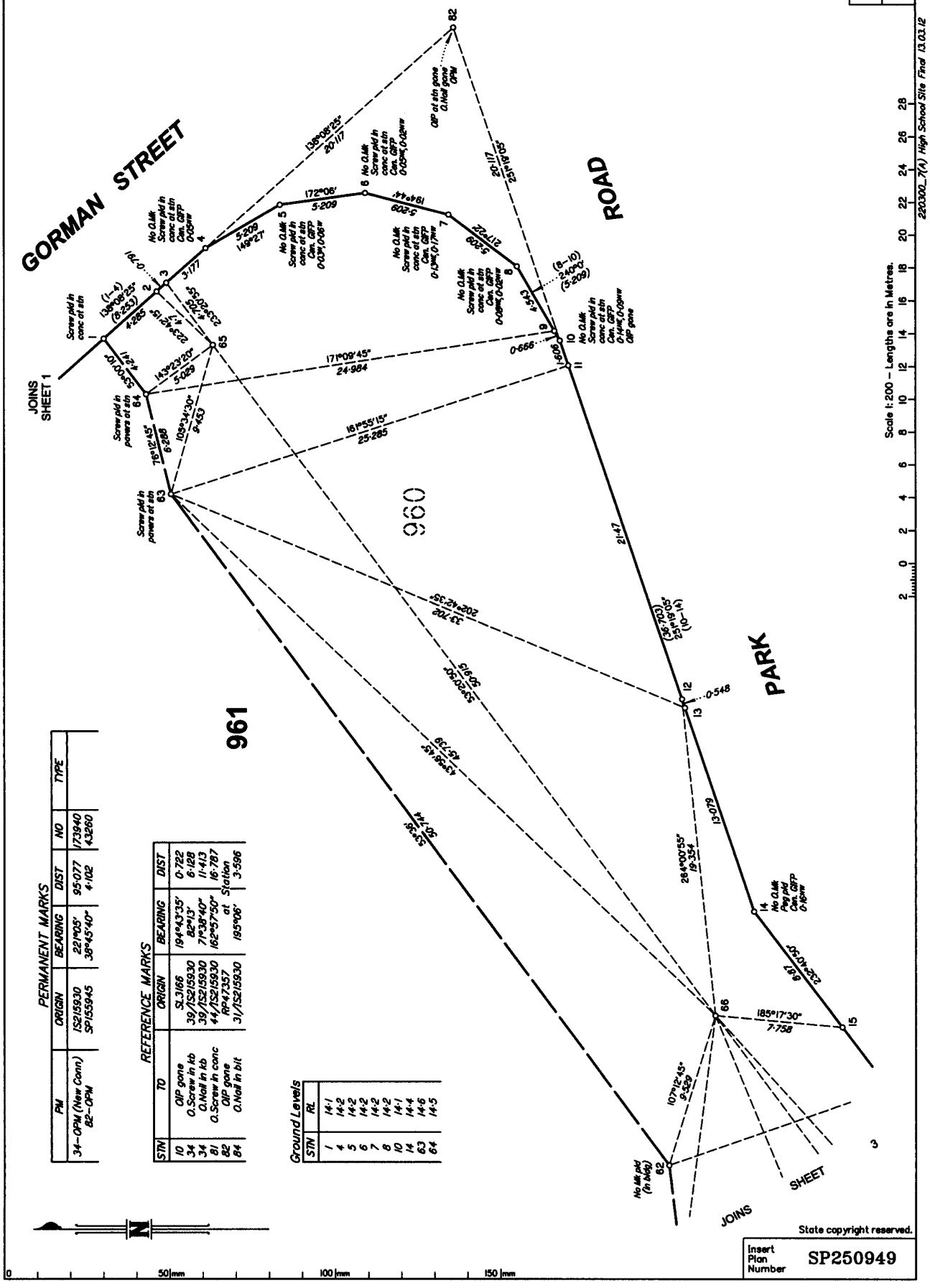
Sheet 3 of 7



Land Title Act 1994; Land Act 1994
Form 21A Version 1

ADDITIONAL SHEET

Sheet 4 of 7



PERMANENT MARKS

PM	ORIGIN	BEARING	DIST	NO	TYPE
34–OPM (New Conn)	1S215930	221°05'	95·077	173940	
82–OPM	SP155945	38°45'40"	4·102	43260	

REFERENCE MARKS

STN	TO	ORIGIN	BEARING	DIST
10	OIP gone	SL3166	194°43'35"	0·722
34	O.Screw in kb	39/1S215930	82°13'	6·128
34	O.Nail in kb	39/1S215930	71°38'40"	11·413
81	O.Screw in conc	44/1S215930	162°57'50"	16·787
82	OIP gone	RP47357	at	Station
84	O.Nail in bit	31/1S215930	195°06'	3·596

Ground Levels

STN	RL
1	14·1
4	14·2
5	14·2
6	14·2
7	14·2
8	14·2
10	14·1
14	14·4
63	14·6
64	14·5

0 50mm 100mm 150mm

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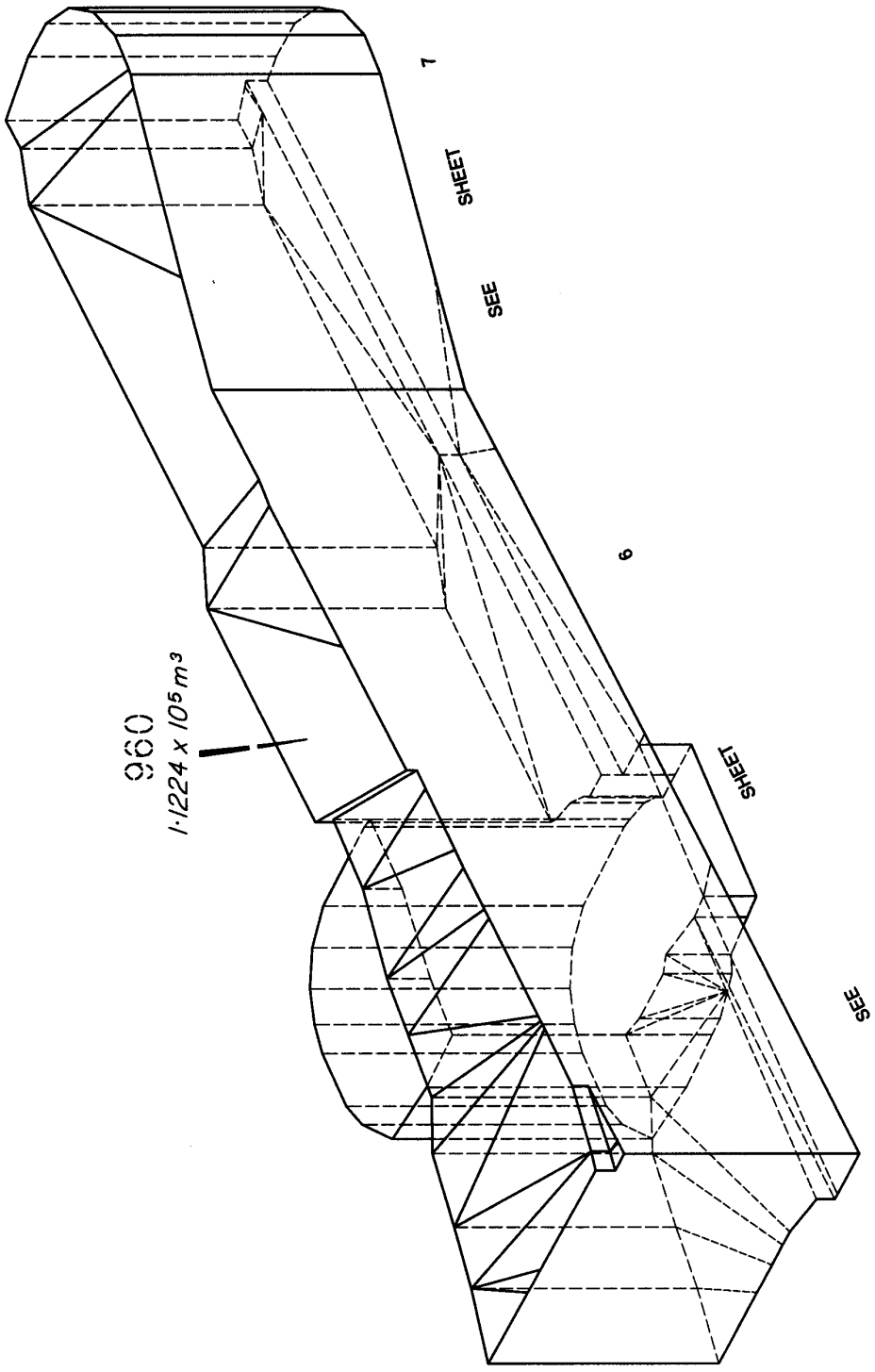
Insert Plan Number SP250949

Land Title Act 1994; Land Act 1994
Form 21A Version 1

ADDITIONAL SHEET

Sheet 5 of 7

220300_7(A) High School Site Final 13.03.12



3D VIEW
Scale 1:500

State copyright reserved.

Insert Plan Number SP250949

0 50|mm 100|mm 150|mm

Land Title Act 1994; Land Act 1994
Form 21A Version 1

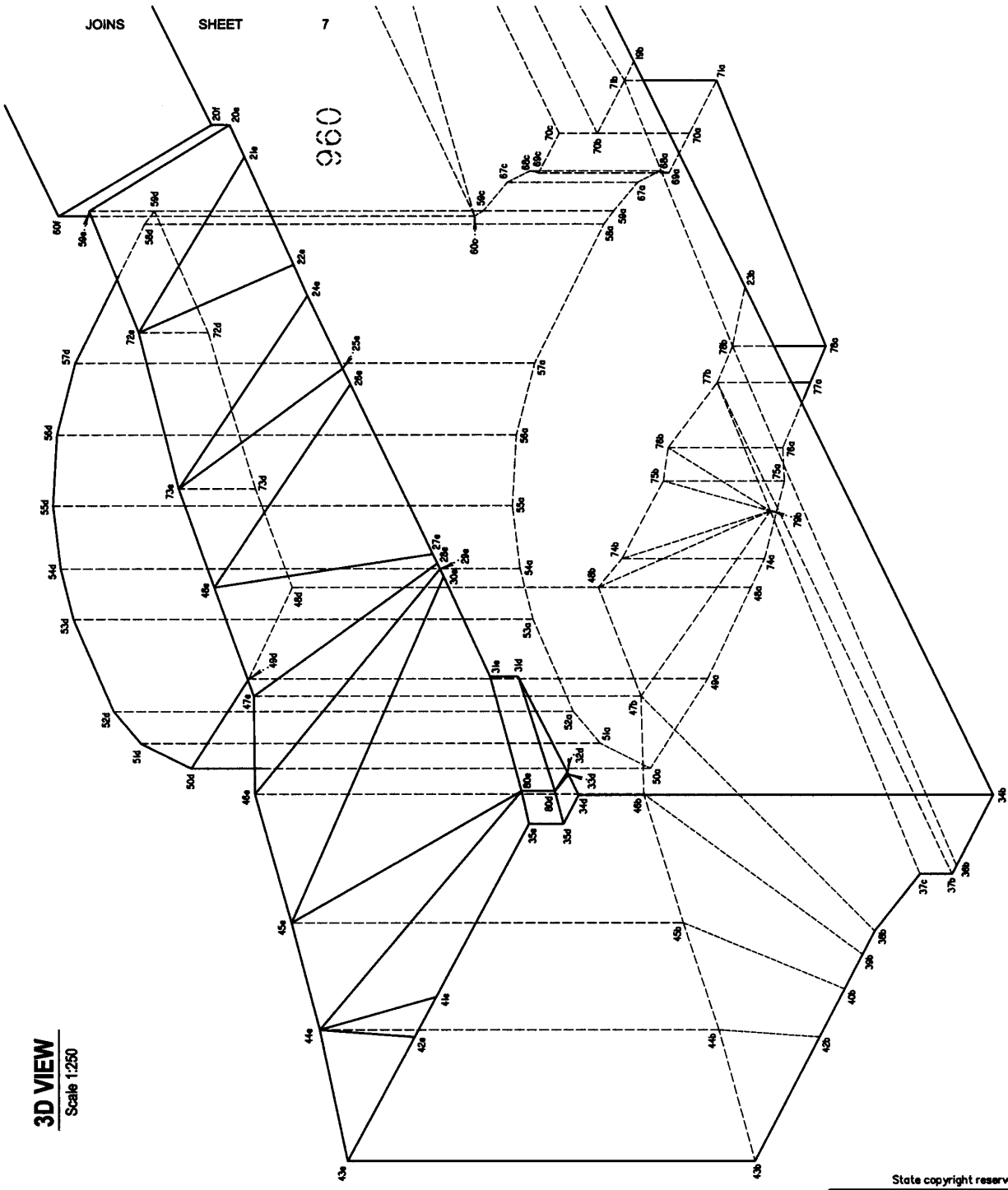
ADDITIONAL SHEET

VOLUMETRIC STN/RL'S

STN	RL
51d	-16.305
52a	-46.27
52d	-16.305
53a	-46.27
53d	-16.305
54a	-46.27
54d	-16.305
55a	-46.27
55d	-16.305
56a	-46.27
56d	-16.305
57a	-46.27
57d	-16.305
58a	-46.27
58d	-16.305
59a	-46.27
59d	-37.75
59e	-16.305
59f	-46.27
60a	-12.05
60c	-37.75
60f	-10.61
61a	-46.27
67a	-37.75
67c	-46.27
68a	-37.75
68c	-46.27
69a	-46.27
69c	-37.75
70a	-46.27
70b	-40.243
70c	-37.75
71a	-46.27
71b	-40.243
72d	-16.305
72e	-11.782
73d	-16.305
73e	-11.308
74a	-46.27
74b	-36.929
75a	-46.27
75b	-38.346
76a	-46.27
76b	-38.765
77a	-46.27
77b	-40.164
78a	-46.27
78b	-40.16
79b	-39.549
80d	-12.75
80e	-10.579

STN	RL
19b	-40.242
20a	-11.789
20f	-10.597
21a	-11.715
22a	-11.408
24a	-11.294
25a	-11.235
26a	-11.22
27a	-11.08
28a	-11.07
29a	-11.066
30a	-11.06
31d	-12.646
32d	-10.81
33d	-12.749
34b	-12.748
34c	-39.919
34d	-12.743
35d	-12.744
35e	-10.482
36b	-39.928
37b	-39.43
37c	-37.817
38b	-36.786
39b	-36.789
40b	-36.782
41a	-10.349
42b	-36.795
42e	-10.317
43b	-36.807
43e	-10.197
44b	-36.687
44e	-10.61
45b	-36.585
45e	-10.988
46b	-36.465
46e	-11.076
47b	-36.4
47e	-11.127
48a	-46.27
48b	-36.287
48d	-16.305
48e	-11.222
49a	-46.27
49d	-16.305
50a	-46.27
50d	-16.305
51a	-46.27

JOINS SHEET 7



3D VIEW

Scale 1:250

0 50|mm 100|mm 150|mm

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Insert Plan Number SP250949

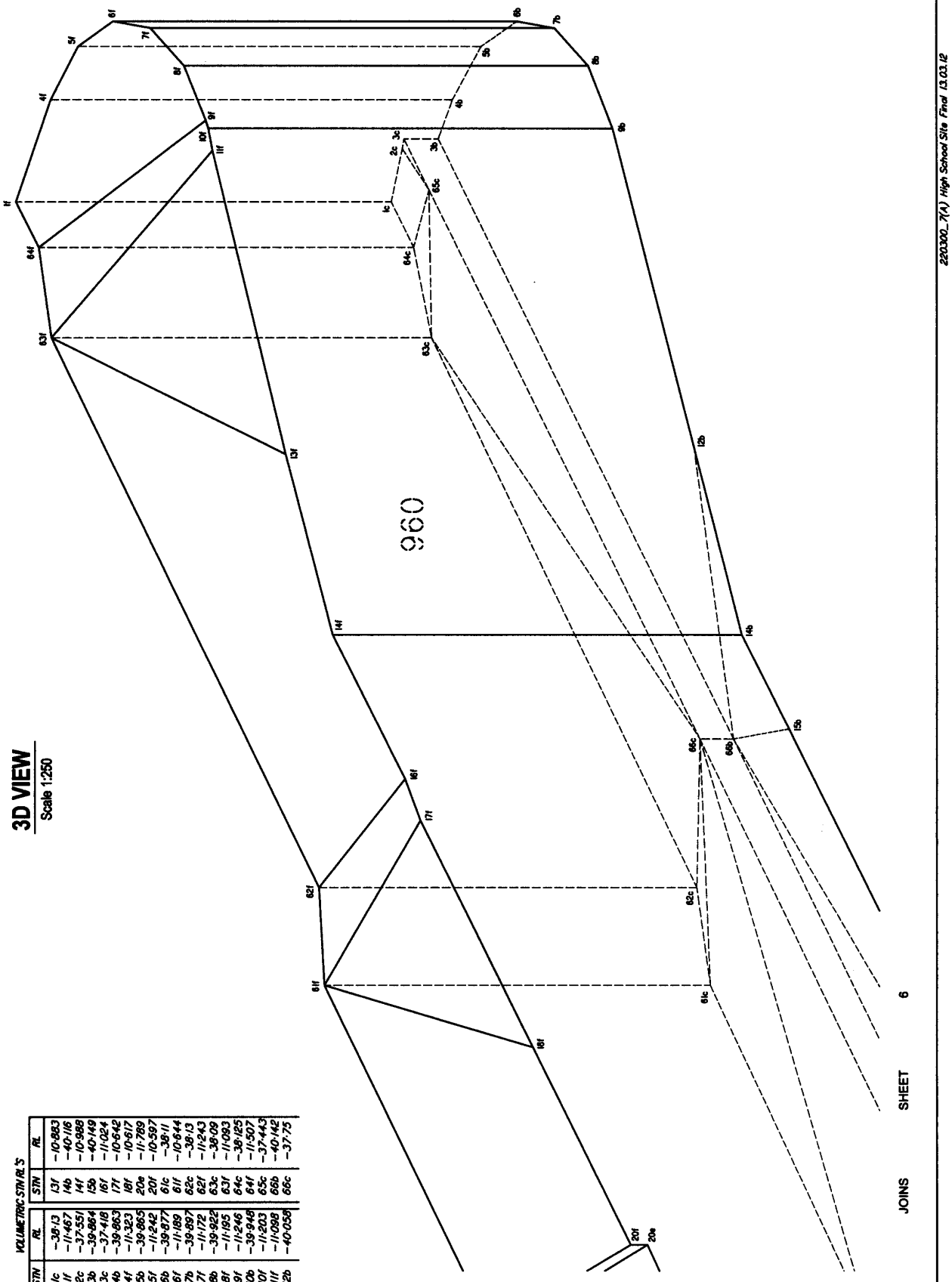
220300_7(A) High School Site Final 13.03.12

Land Title Act 1994; Land Act 1994
Form 21A Version 1

ADDITIONAL SHEET

Sheet 7 of 7

220300_7(A) High School Site Final 13.03.12



3D VIEW
Scale 1:250

VOLUMETRIC STN/RL'S

STN	RL	STN	RL
1c	-38.13	13f	-10.883
1f	-11.467	14b	-40.116
2c	-37.551	14f	-10.988
3b	-39.864	15b	-40.149
3c	-37.418	16f	-11.024
4b	-39.863	17f	-10.642
4f	-11.323	18f	-10.617
5b	-39.865	20a	-11.789
5f	-11.242	20f	-10.597
6b	-39.877	61c	-38.11
6f	-11.189	61f	-10.644
7b	-39.857	62c	-38.13
7f	-11.172	62f	-11.243
8b	-39.922	63c	-38.09
8f	-11.195	63f	-11.093
9f	-11.246	64c	-38.125
10b	-39.948	64f	-11.507
10f	-11.203	65c	-37.443
11f	-11.098	66b	-40.142
12b	-40.056	66c	-37.75

0 50|mm 100|mm 150|mm

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Insert Plan Number SP250949



STANDARD MAP NUMBER
9543-33424

0 150 300 450 600 750 m

HORIZONTAL DATUM:GDA94 ZONE:56 SCALE 1 : 7500

MAP WINDOW POSITION & NEAREST LOCATION

153°02'21".720
27°24'49".388
WOOLOOWIN
0.46 KM

SUBJECT PARCEL DESCRIPTION

DCDB

Lot/Plan	961/SP250949
Area/Volume	7.325ha
Tenure	FREEHOLD
Local Government	BRISBANE CITY
Locality	KEDRON
Segment/Parcel	28020/37

CLIENT SERVICE STANDARDS

PRINTED (dd/mm/yyyy) 16/02/2018

DCDB 15/02/2018

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SmartMap

An External Product of SmartMap Information Services

Based upon an extraction from the Digital Cadastral Data Base

Queensland Government

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GDA

Appendix 4

Contour + Detail Survey

AJS SURVEYS
SURVEYING • PLANNING • DEVELOPMENT
17 Judd Street, Gumdale, Qld 4154
P: 07 3823 2144 E: mail@ajs.net.au
W:www.ajssurveys.com.au

CONTOUR & DETAIL SURVEY

GORMAN STREET

961
SP 250949

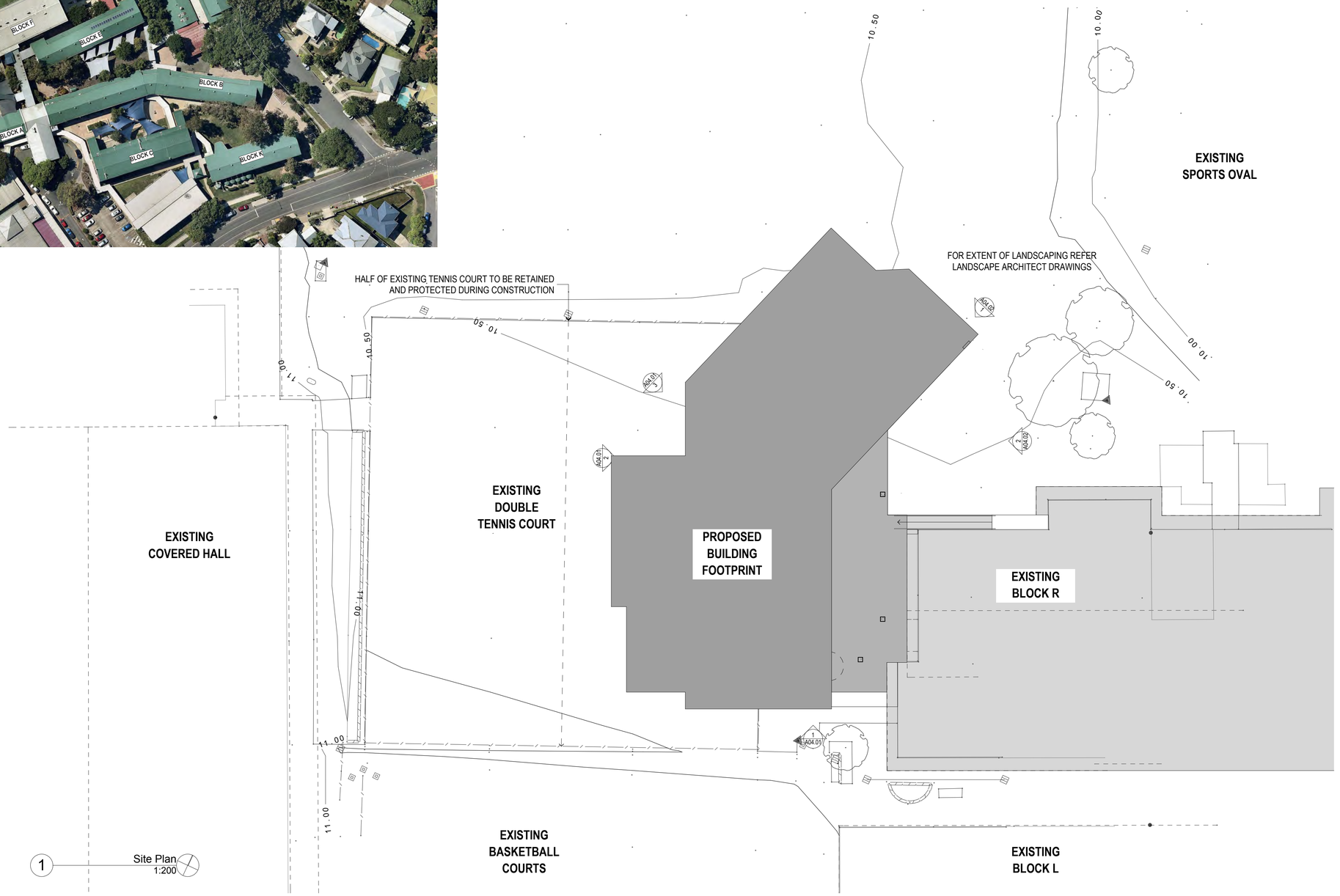
HIGHSET BUILDING
DECK
THREE STOREY BRICK BUILDING (not fully visible)
SINGLE STOREY METAL HALL (not fully visible)
HIGHSET BRICK BUILDING (not fully visible)
SHED
Garden
Concrete
Grass
Trimber Retaining Wall
Wire Mesh Fence
Timber Retaining Wall
Steel Post
Steel Line Approximate only Plotted from Council Records
Steel Manhole Approximate only Plotted from Council Records
Sewer Manhole Approximate only Plotted from Council Records
Sewer Line Approximate only Plotted from Council Records
Bench Mark Manhole (not found) Approximate only Plotted from Council Records
Gutter Level 17.61
Roof Level 14.18
Gutter Level 17.26
Roof Level 24.81
Gutter Level 17.72
Roof Level 16.98
Gutter Level 17.72
Roof Level 18.83
Gutter Level 17.72
Roof Level 18.76
Gutter Level 17.61
Roof Level 18.76
Gutter Level 17.61
Roof Level 18.76
Gutter Level 17.61

Appendix 5

Proposal Plans



1 Locality Plan
1:1000



1 Site Plan
1:200

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	12.04.18	ISSUE FOR MINISTERIAL DESIGNATION	RT
P2	13.04.18	AMENDED ISSUE FOR MIN DES	RT
P3	18.04.18	PRESENTATION TO CLIENT	RT
P4	20.04.18	AMENDED PLANS TO CLIENT	RT
P5	27.04.18	ISSUED FOR MEETING WITH QS	RT
P6	02.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P7	31.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P8	04.06.18	MINESTERIAL DESIGNATION ISSUE	RT

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D.T.	APRIL 2018
DRAWN	DATE
S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

DEPT OF EDUCATION

Kedron State High School
New Learning Centre

Site Plan_P8

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A01.01	**P8**	



1 Overall Site Plan
1:500

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	27.04.18	MINESTERIAL DESIGNATION ISSUE	RT
P2	04.06.18	MINESTERIAL DESIGNATION ISSUE	RT

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AUTHORISED FOR ISSUE	DATE

DEPT OF EDUCATION

Kedron State High School
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Site Plan for Minesterial Designation_P2

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A01.02	P2	



1 Proposed Ground Floor Plan
1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	12.04.18	ISSUE FOR MINISTERIAL DESIGNATION	RT
P2	13.04.18	AMENDED ISSUE FOR MIN DES	RT
P3	18.04.18	PRESENTATION TO CLIENT	RT
P4	20.04.18	AMENDED PLANS TO CLIENT	RT
P5	26.04.18	ISSUED FOR MEETING WITH QS	RT
P6	02.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P7	28.05.18	AMENDED ISSUE TO CONSULTANTS	RT
P8	31.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P9	01.06.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P10	04.06.18	MINESTERIAL DESIGNATION ISSUE	RT

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New Learning Centre

Proposed Ground Floor Plan_P10

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A02.01	**P10**	



1 Proposed First Floor Plan
1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	12.04.18	ISSUE FOR MINISTERIAL DESIGNATION	RT
P2	13.04.18	AMENDED ISSUE FOR MIN DES	RT
P3	18.04.18	PRESENTATION TO CLIENT	RT
P4	20.04.18	AMENDED PLANS TO CLIENT	RT
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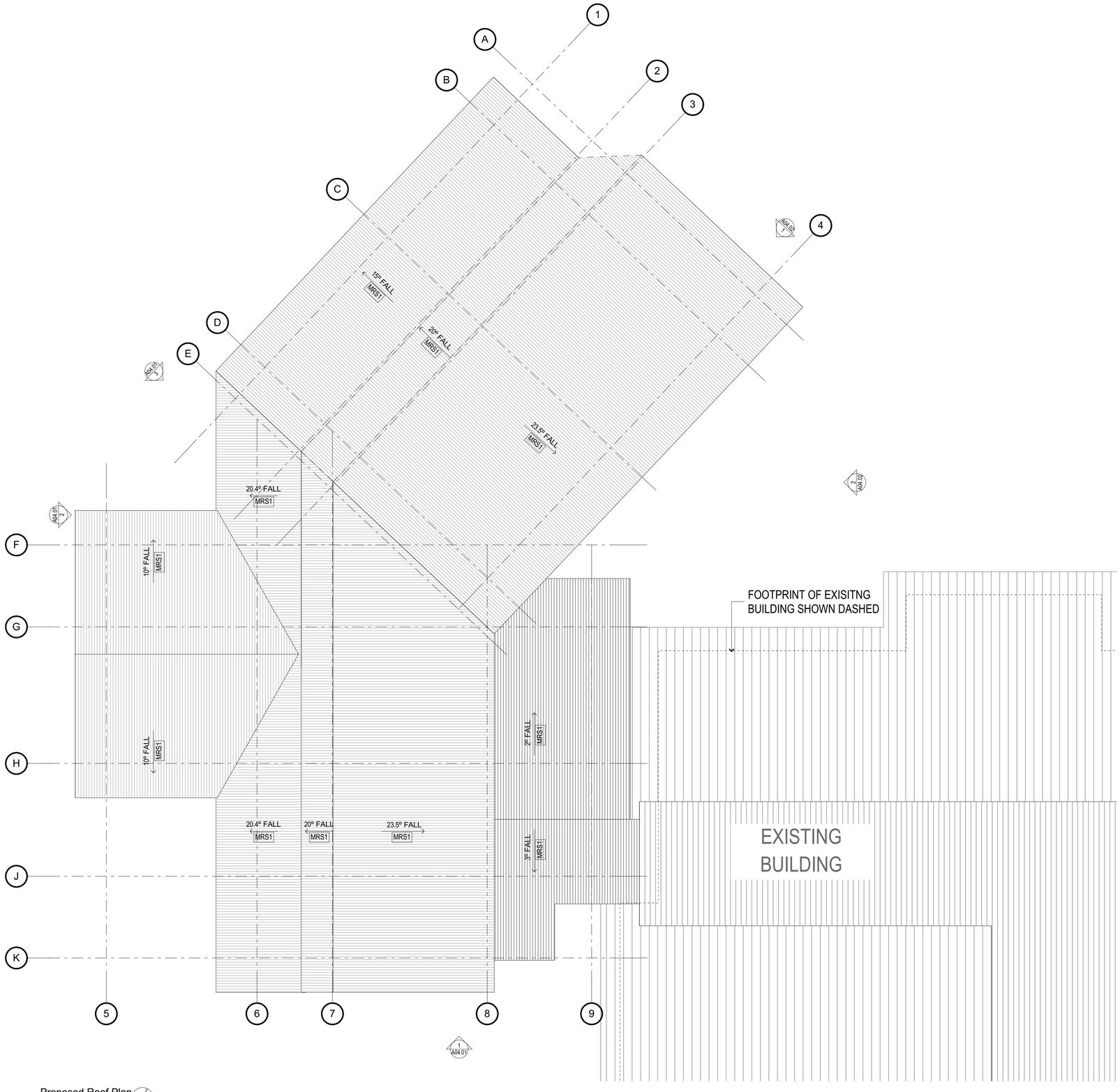
DEPT OF EDUCATION

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New Learning Centre

Proposed First Floor Plan_P9

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A02.02	**P9**	



1 Proposed Roof Plan
1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	26.04.18	ISSUED FOR MEETING WITH QS	RT
P2	02.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P3	31.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P4	04.06.18	MINESTERIAL DESIGNATION ISSUE	RT

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S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

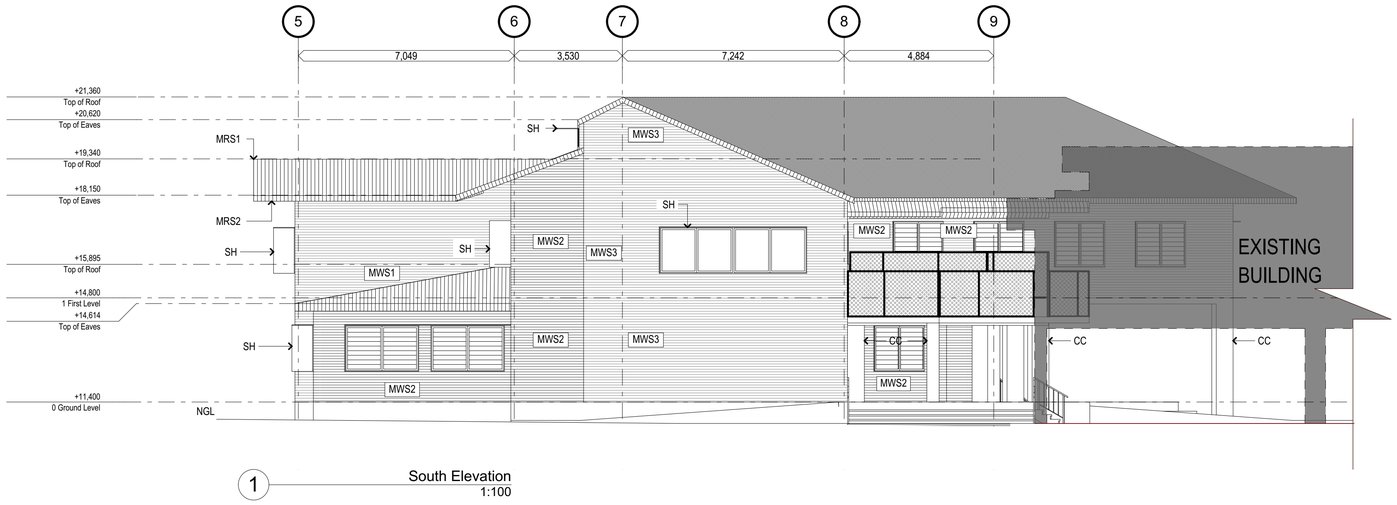
DEPT OF EDUCATION

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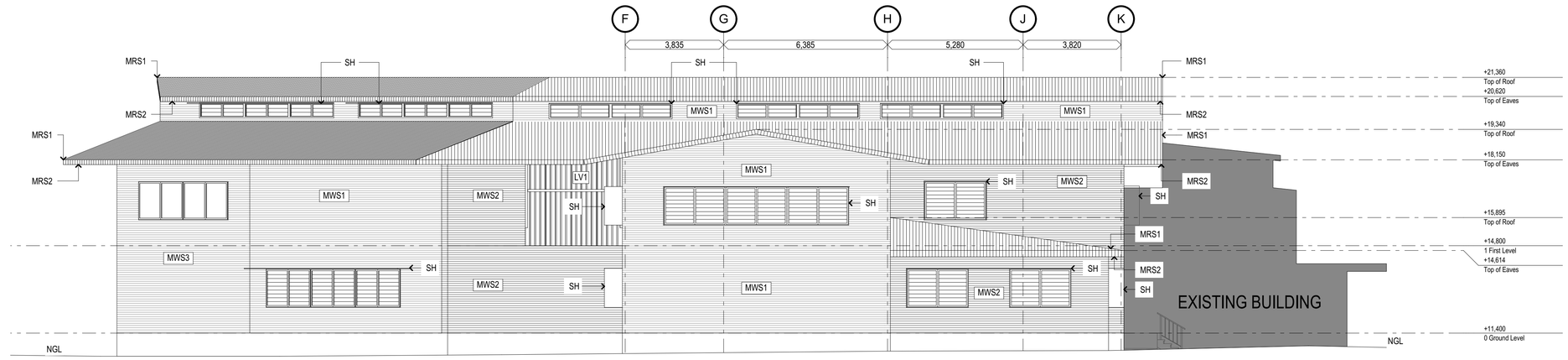
Proposed Roof Plan_P3

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

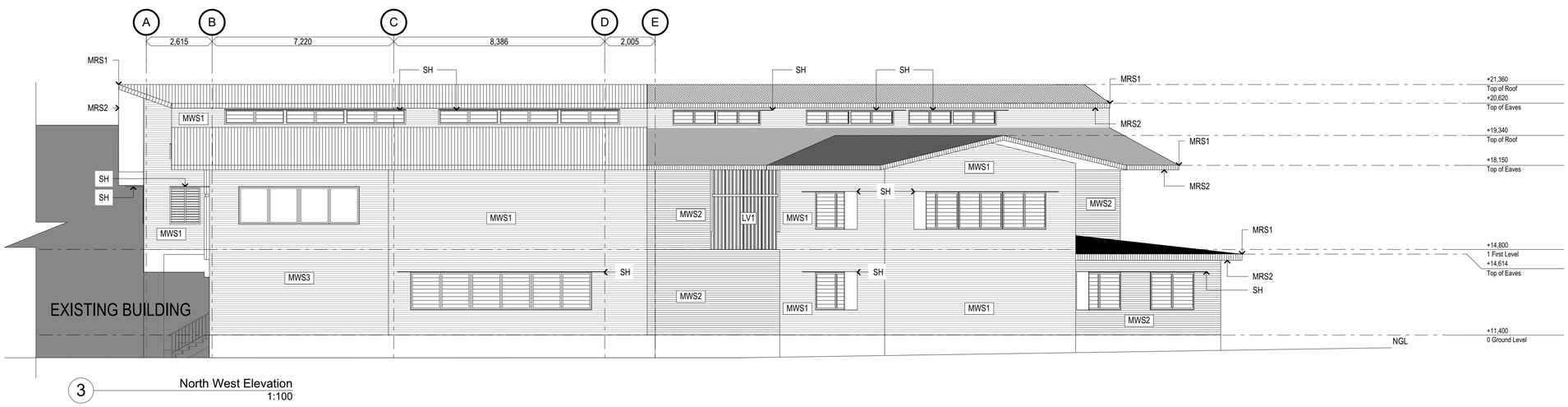
DRAWING NUMBER	ISSUE	SHEET #
A02.03	**P4**	



1 South Elevation
1:100



2 South West Elevation
1:100



3 North West Elevation
1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	12.04.18	ISSUE FOR MINISTERIAL DESIGNATION	RT
P2	18.04.18	PRESENTATION TO CLIENT	RT
P3	20.04.18	AMENDED PLANS TO CLIENT	RT
P4	26.04.26	ISSUED FOR MEETING WITH QS	RT
P5	02.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P6	31.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
P7	04.06.18	MINESTERIAL DESIGNATION ISSUE	RT

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TEAM LEADER	DATE
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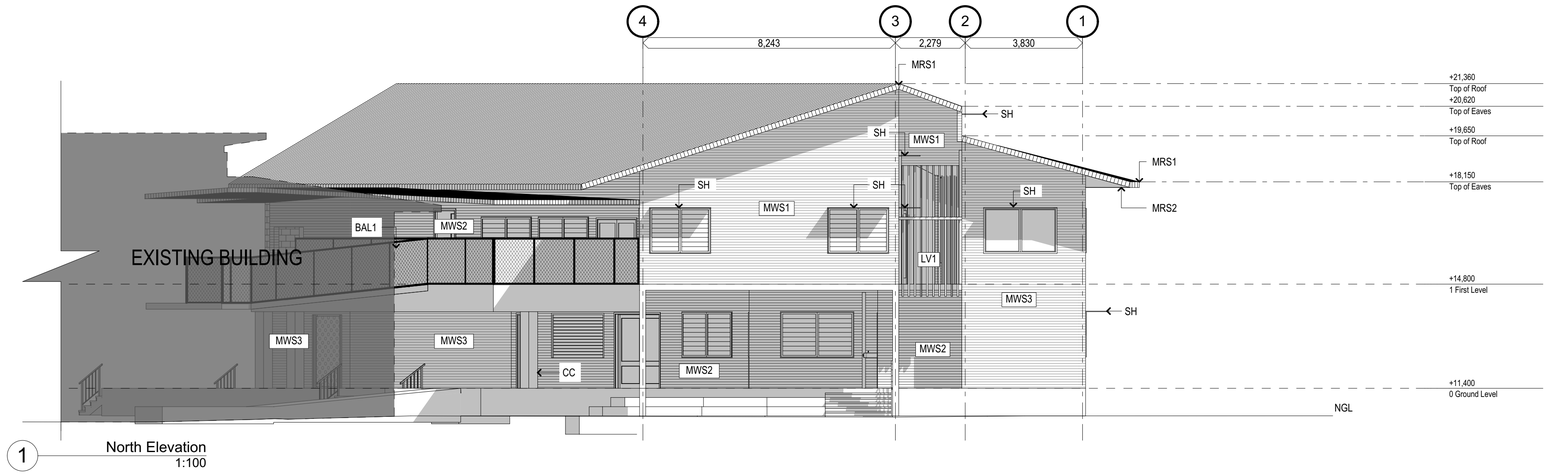
DEPT OF EDUCATION

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New Learning Centre

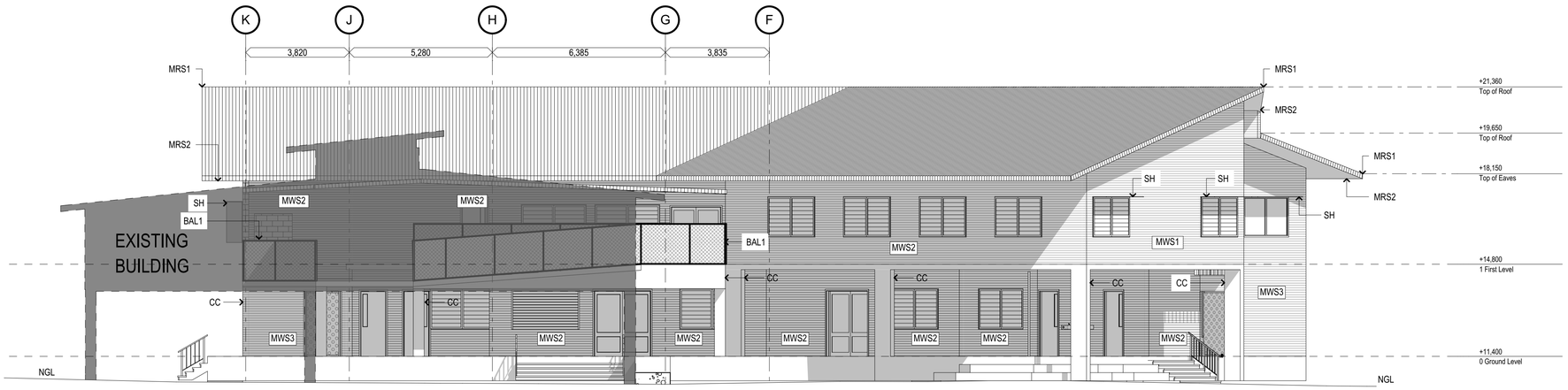
Elevations - Sheet 1_P7

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A04.01	**P6**	



1 North Elevation
1:100



2 East Elevation
1:100

NOT FOR CONSTRUCTION

AMENDMENTS

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P1	12.04.18	ISSUE FOR MINISTERIAL DESIGNATION	RT
P2	18.04.18	PRESENTATION TO CLIENT	RT
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S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

DEPT OF EDUCATION

Kedron State High School
New Learning Centre

Elevations - Sheet 2_P6

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A04.02	**P6**	



1 Perspective 1 - West 1:100



2 Perspective 2 - East 1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	18.04.18	PRESENTATION TO CLIENT	RT
P2	20.04.18	AMENDED PLANS TO CLIENT	RT
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S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

DEPT OF EDUCATION

Kedron State High School
New Learning Centre

Perspectives - Sheet 1_P5

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A16.01	**P5**	



1 Perspective 3 - North 1:100



2 Perspective 4 - South West 1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	18.04.18	PRESENTATION TO CLIENT	RT
P2	20.04.18	AMENDED PLANS TO CLIENT	RT
P3	02.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
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D.T.	APRIL 2018
DRAWN	DATE
S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

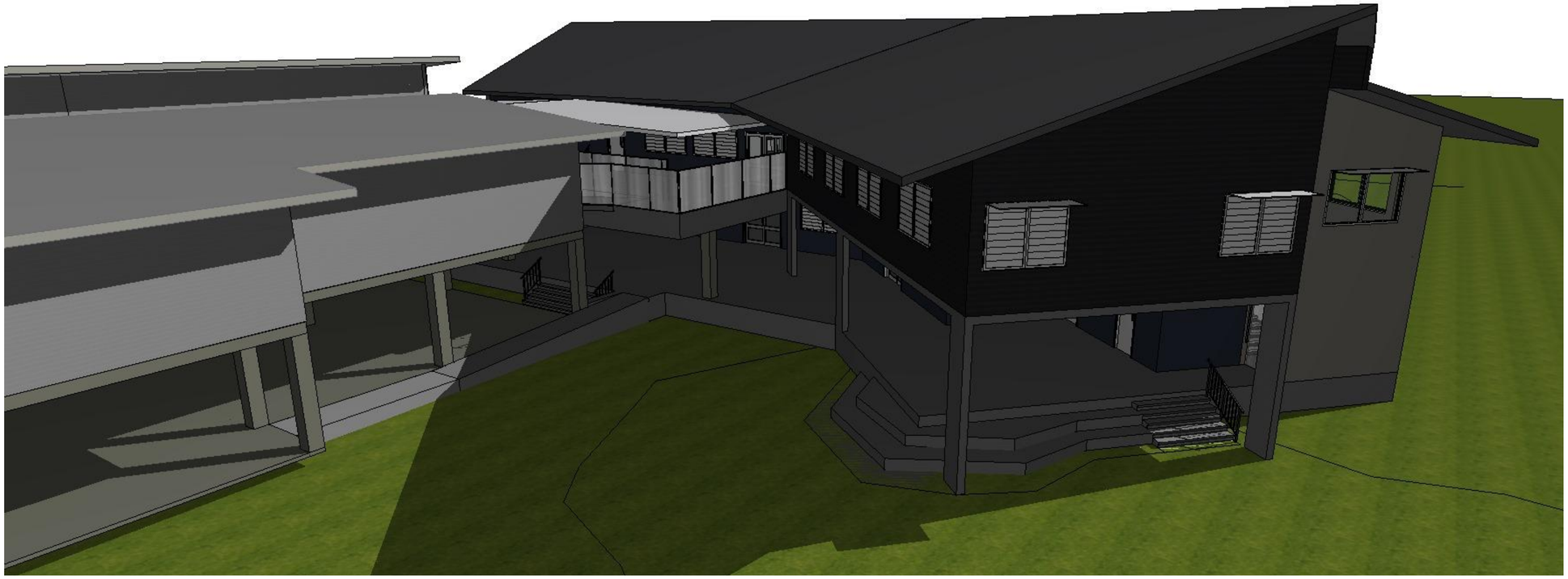
DEPT OF EDUCATION

Kedron State High School
New Learning Centre

Perspectives - Sheet 2_P5

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A16.02	**P5**	



1 Perspective 5 - Covered Connection 1:100



2 Perspective 6 - North 1:100

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	18.04.18	PRESENTATION TO CLIENT	RT
P2	20.04.18	AMENDED PLANS TO CLIENT	RT
P3	02.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT
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S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

DEPT OF EDUCATION

Kedron State High School
New Learning Centre

Perspectives - Sheet 3_P5

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A16.03	**P5**	

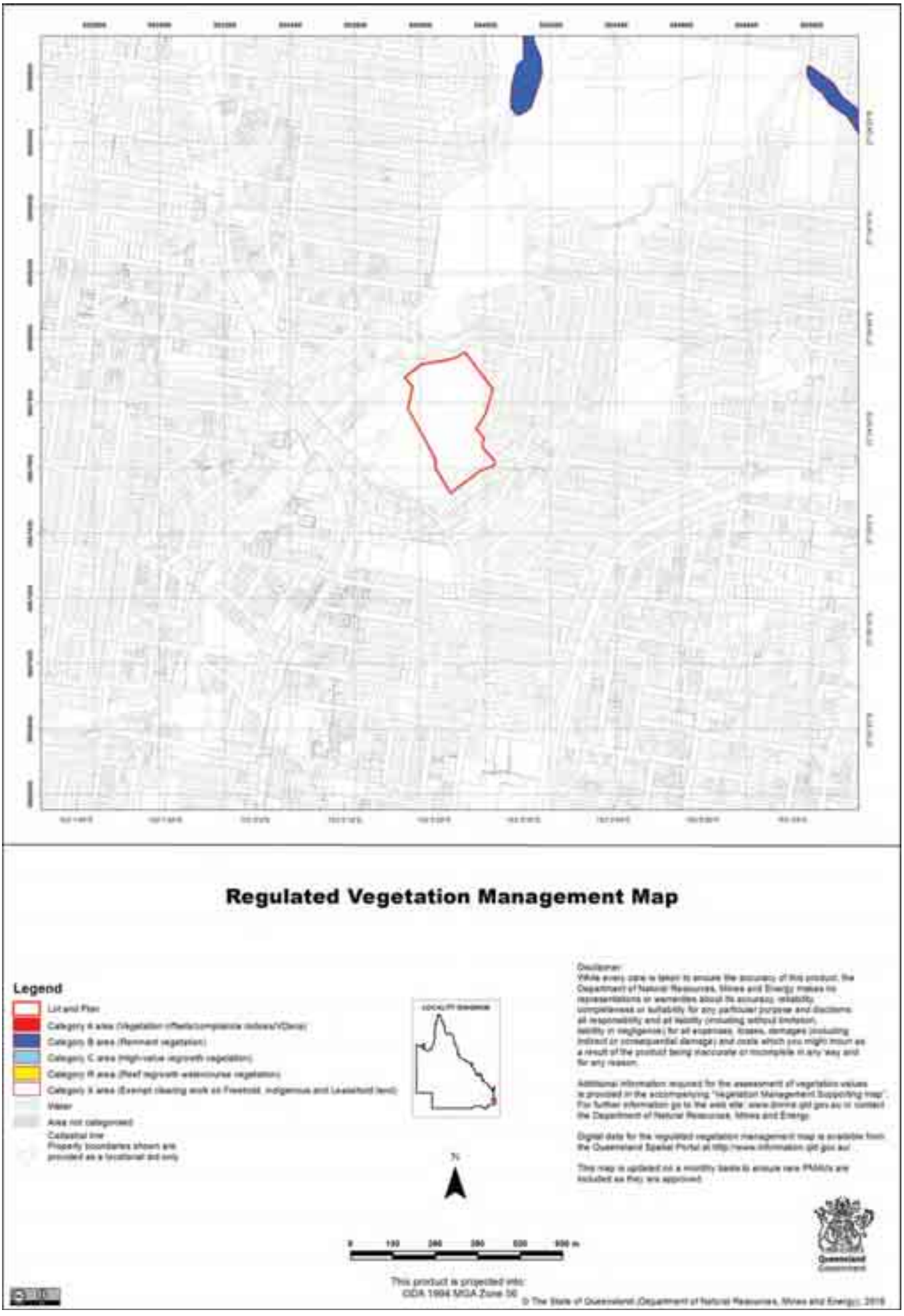
Appendix 6

State Interest Trigger Maps

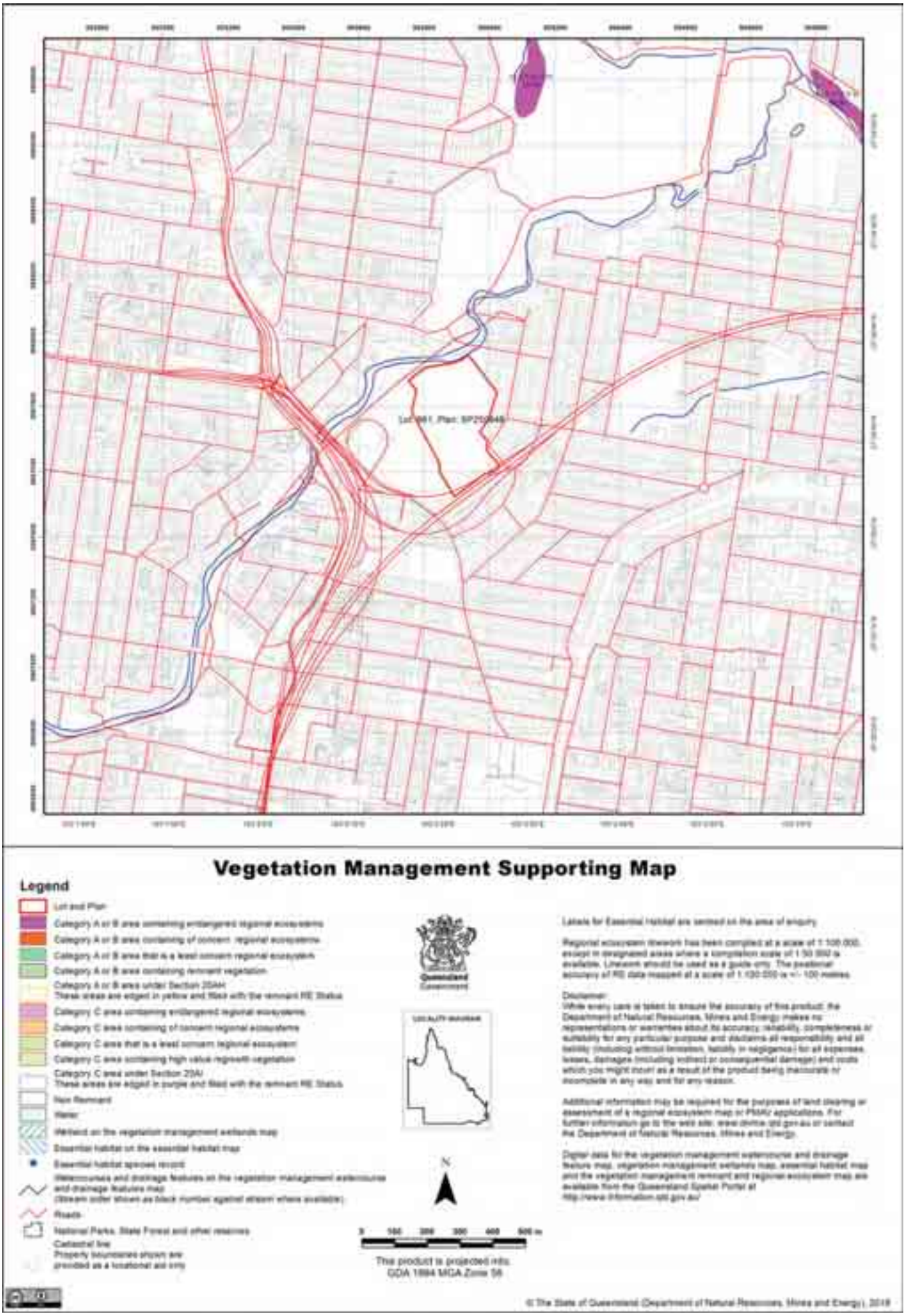
Department of Housing and Public Works

Queensland Government

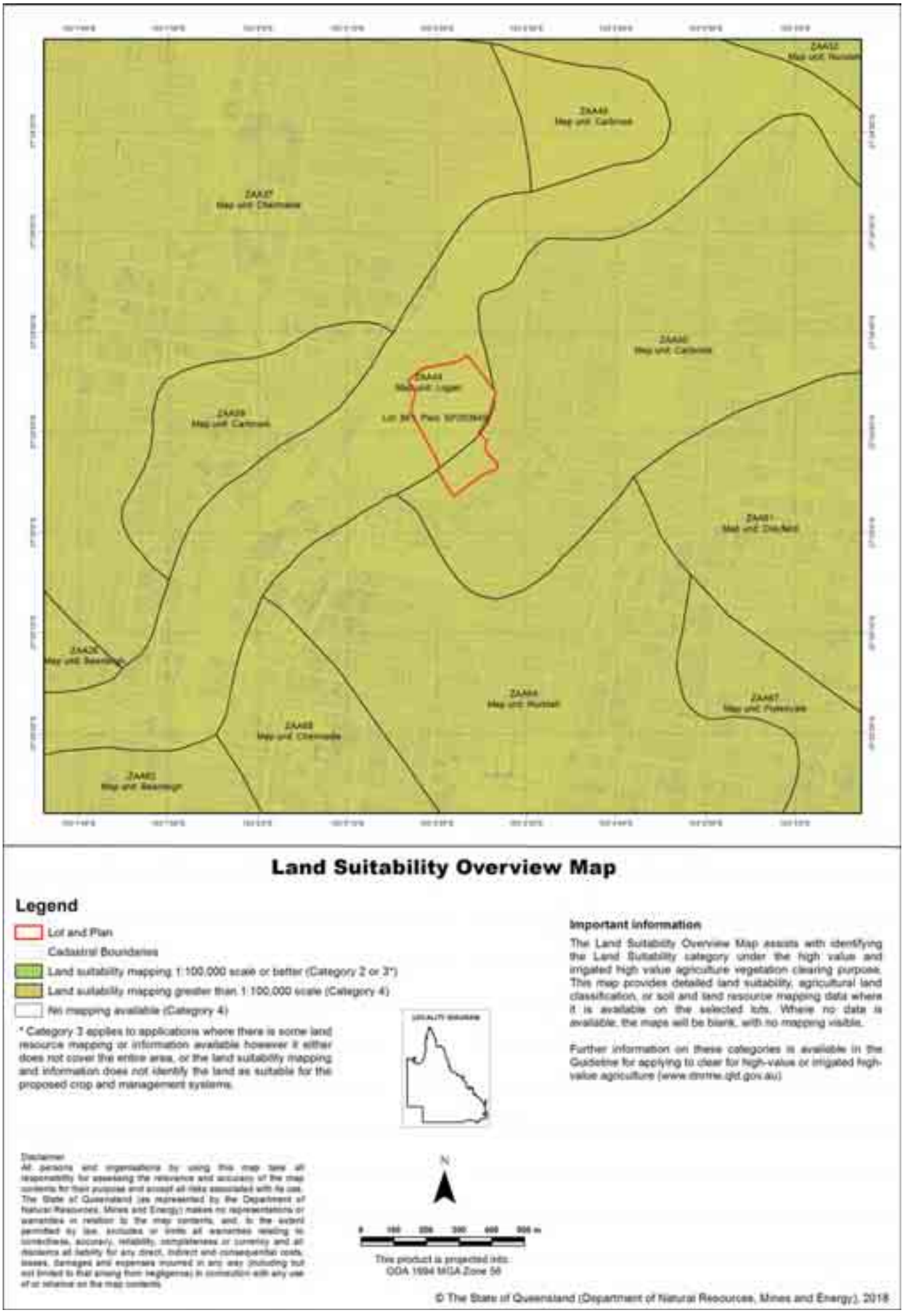
5.1 Regulated vegetation management map



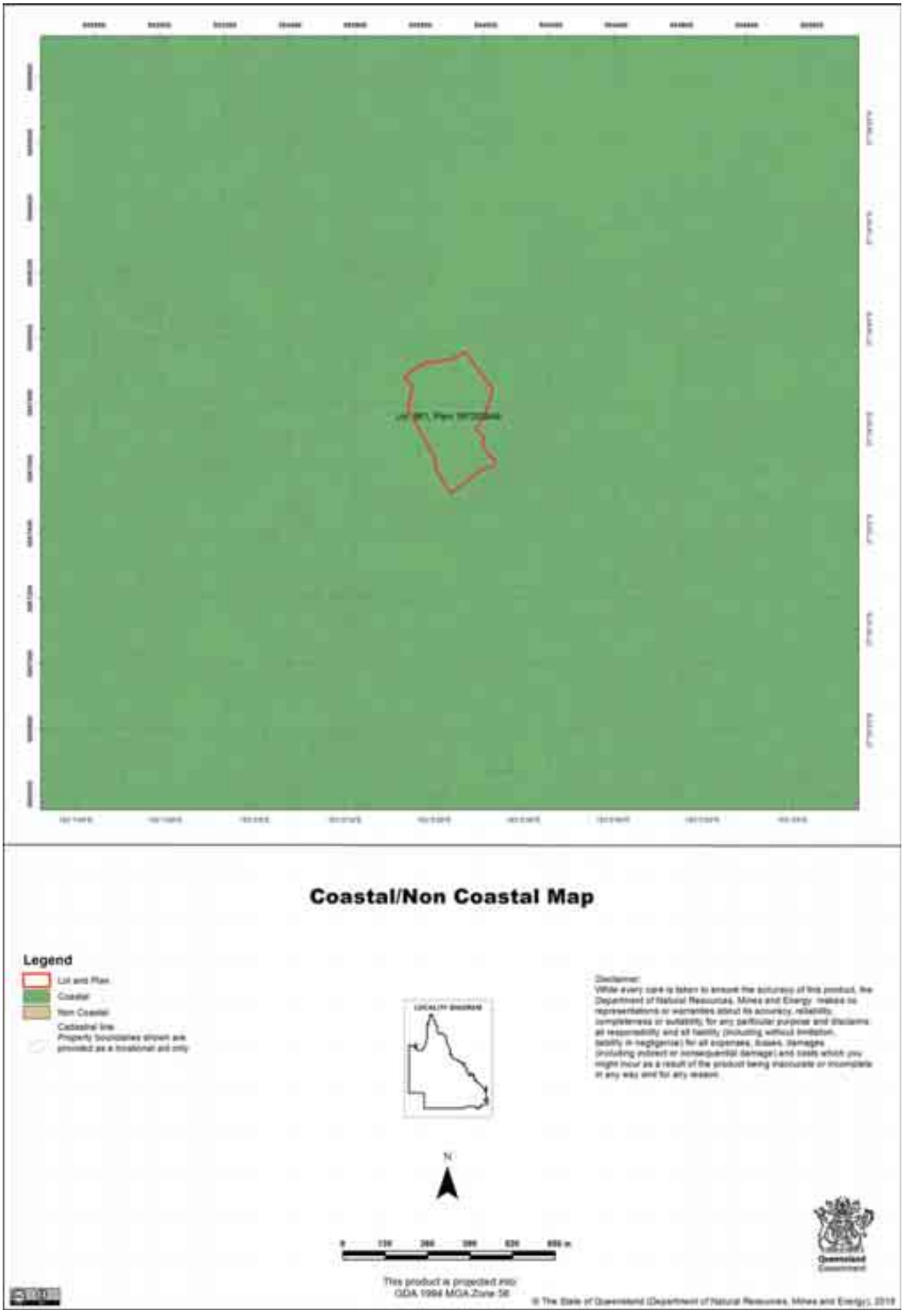
5.2 Vegetation management supporting map



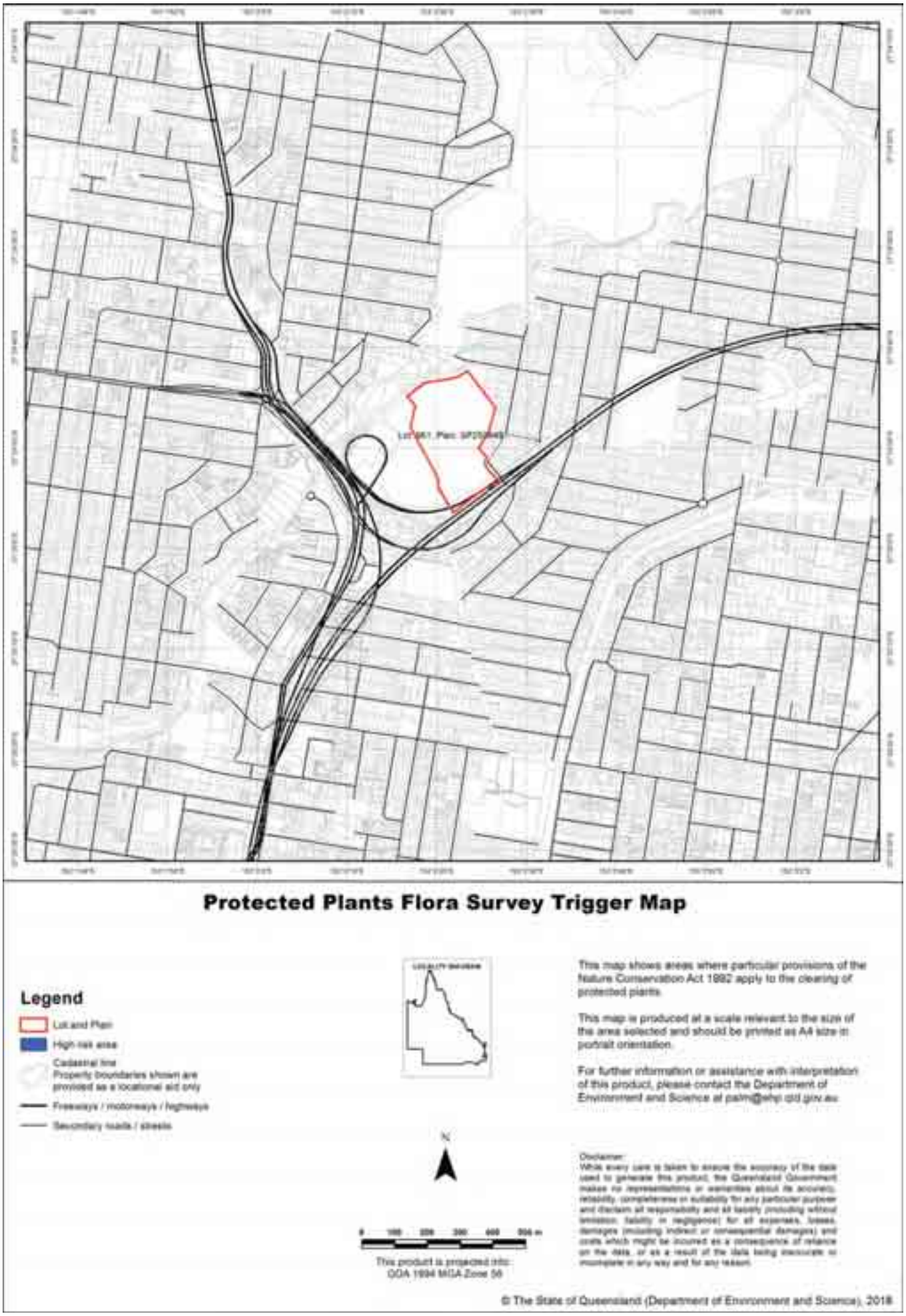
5.3 Land suitability map

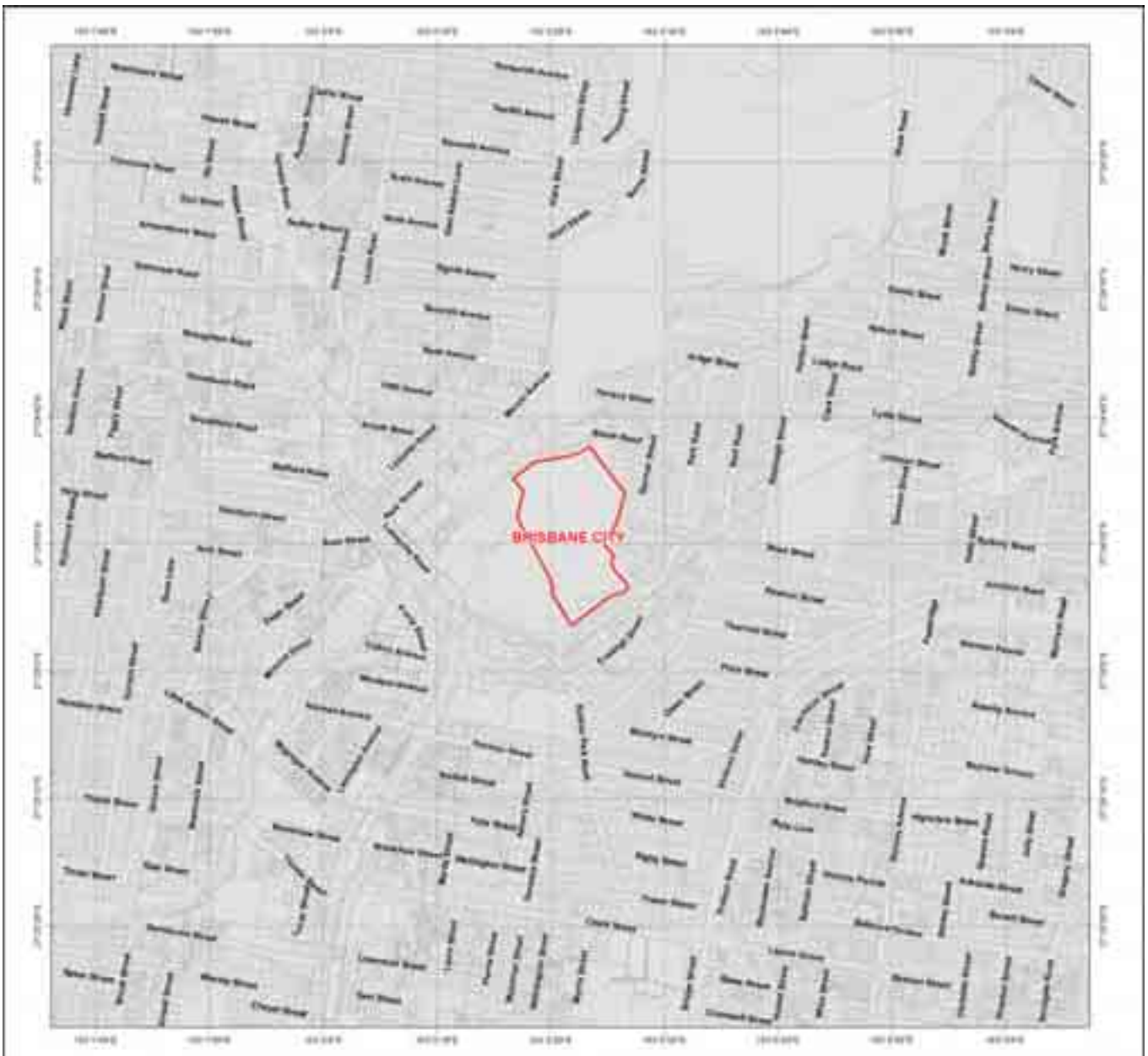


5.4 Coastal/non coastal map



5.5 Protected plants map administered by DES





Koala Habitat in South East Queensland

Lot and Plan

Koala SPP - Habitat Values

Bushland Habitat
- High Value Bushland
- Medium Value Bushland
- Low Value Bushland

Suitable for Rehabilitation
- High Value Rehabilitation
- Medium Value Rehabilitation
- Low Value Rehabilitation

Other Areas of Value
- High Value Other
- Medium Value Other
- Low Value Other
- Generally not suitable
- Water

South East Queensland Koala Habitat Values western SEQ
- Bushland Habitat
- Suitable for rehabilitation
- Other areas of value
- Generally not suitable
- Water
- Cadastral Boundaries
- Local Government Boundaries



N

0 130 260 390 520 650 m

This product is projected into GDA 1994 MGA Zone 56

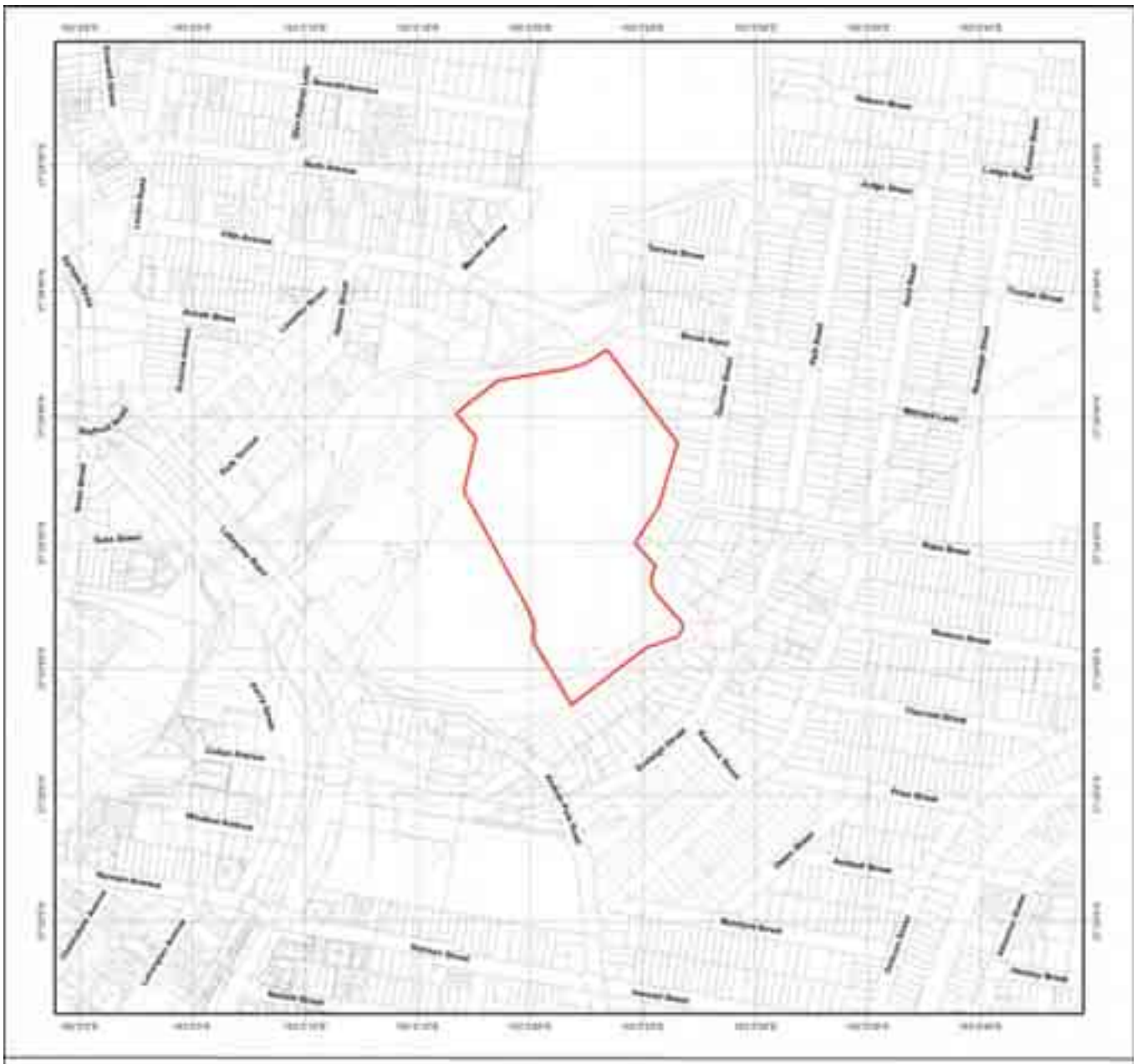
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Based on or contains data provided by the State of Queensland 2018.

Note - These maps are not regulatory. Regulatory maps and requirements can be downloaded from the DES website. Further information in relation to regulatory requirements for development and planning activities should be sought from the relevant Local Government Authority or the Department of Environment and Science.

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Map of Referable Wetlands
Wetland Protection Areas

Lot and Plan
Cadastral Boundary
Wetland Protection Areas
Wetland
Trigger Area



N

Note:
This map shows the location of wetland protection areas which are defined under the Environmental Protection Regulation 2008. Within wetland protection areas, certain types of development involving high impact earthworks are made assessable under Schedule 3 of the Sustainable Planning Regulation 2009.

The Department of State Development, Manufacturing, Infrastructure and Planning is the State Assessment Referral Agency (SARA) under Schedule 7 of the Sustainable Planning Regulation 2009 for assessable development involving high impact earthworks within wetland protection areas. The Department of Environment and Science is a technical agency.

The policy outcome and assessment criteria for assessing these applications are described in the State Development Assessment Provisions (SDAP) Module 11: Wetlands and wild rivers.

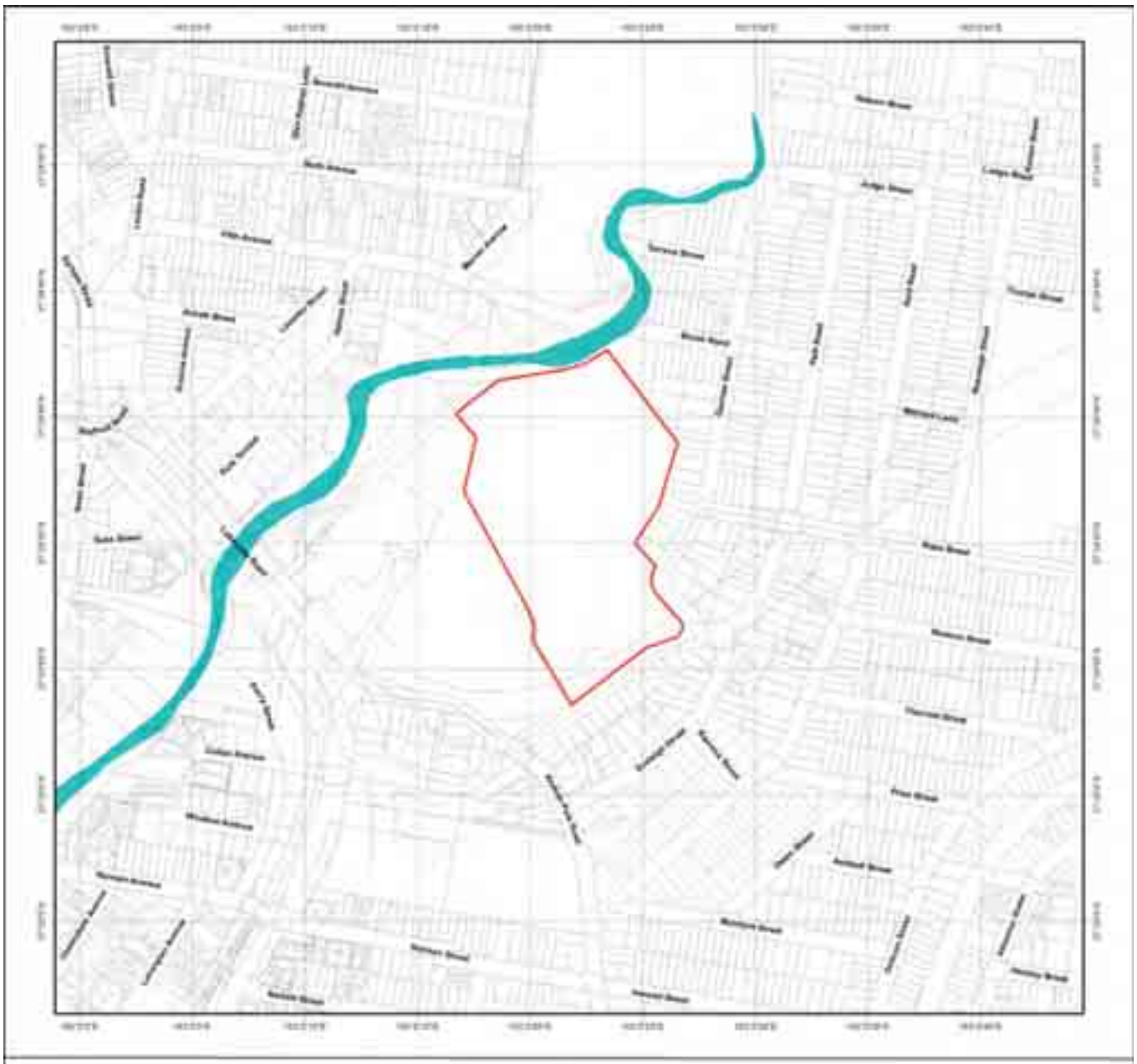
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For further information or assistance with interpretation of this product, please contact the Department of Environment and Science, email planning.support@dsiti.qld.gov.au

0 60 120 180 240 300 m

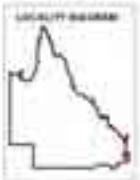
This product is projected into GDA 1994 MGA Zone 56

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Map of Referable Wetlands for the Environmental Protection Act 1994

Lot and Plan
Cadastral Boundary
HES Wetland
GES Wetland



N

Note:
This map shows the location of wetlands on the Map of Referable Wetlands which are defined under the Environmental Protection Regulation 2008.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 61A of the Environmental Protection Regulation 2008. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

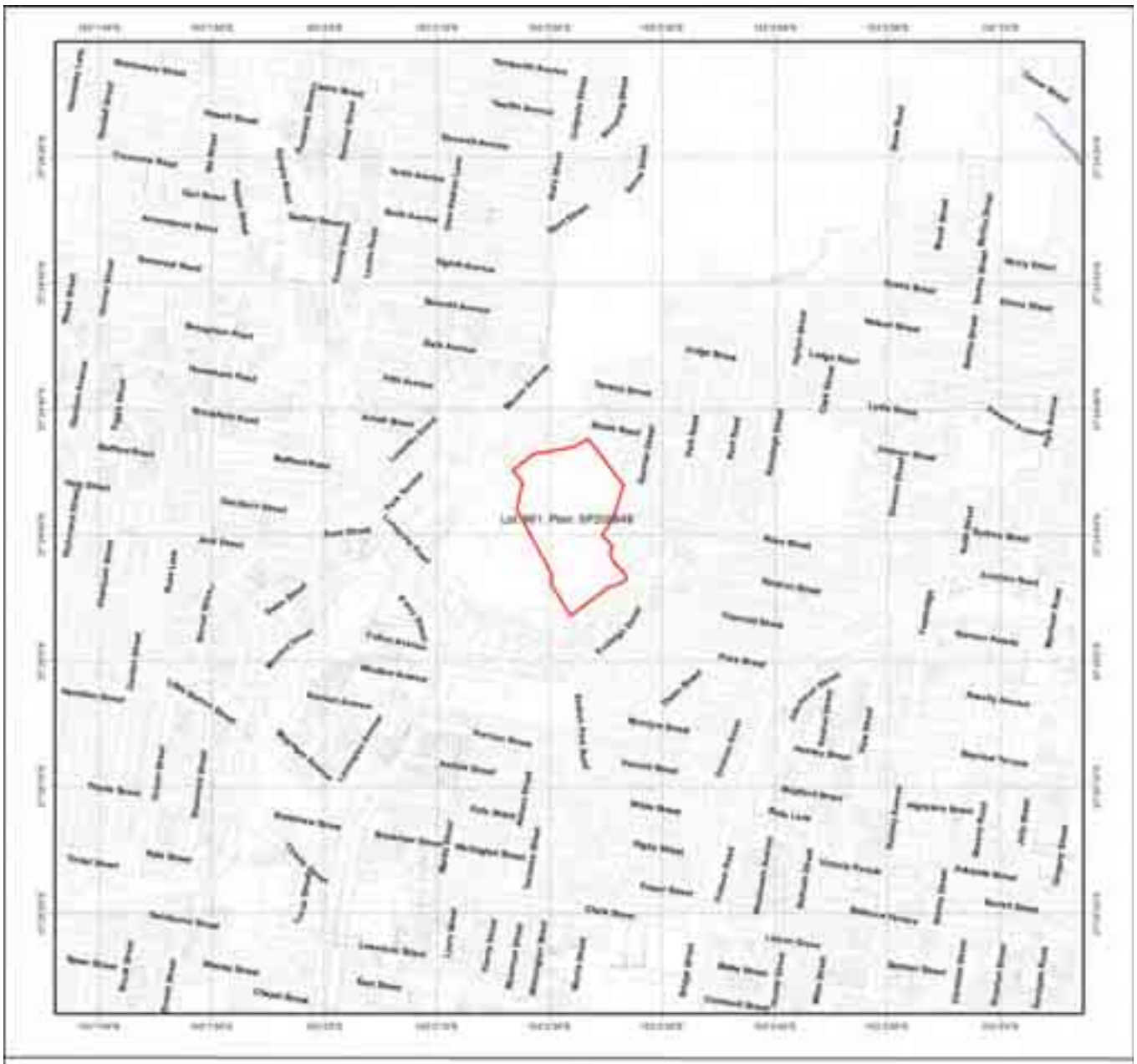
This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

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0 60 120 180 240 300 m

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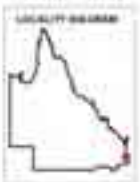
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Coastal Hazard Areas Map
Erosion Prone Area

Legend

- Lot and Plan
- Erosion due to storm impact and long term trends including sediment supply deficit and channel migration
- Erosion from permanent tidal inundation due to sea level rise
- Coastal Management District
- Coastal Building Lines



N

Notes

1. The areas shown on this map are indicative of the extent of erosion and permanent inundation defined by erosion prone area plans declared under the Coastal Protection and Management Act 1995. Only the declared erosion prone area plans should be used for development assessment. To determine the actual position of the erosion prone area a registered surveyor or geotechnical consultant may be required if there is any doubt.

2. Erosion prone area plans for each local government area and a comprehensive description of their determination are available from the Department of Environment and Science website.

Version 7 - October 2018

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0 120 240 360 480 600 m

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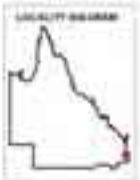


Coastal Hazard Areas Map
Storm Tide Inundation Area

Legend

- Lot and Plan
- High hazard area (greater than 1.0m water depth)
- Medium hazard area (less than 1.0m water depth)
- Coastal Management District
- Coastal hazard data not available in this area
- Coastal Building Lines

- **Regional default values for a 100yr ARI inundation level including 0.8m sea level rise.**



N

Notes

1. A default storm tide inundation level of 1.5 m HAT in South East Queensland's regional planning area and 2 m HAT for the remainder of Queensland is used where projected storm tide inundation levels have not been determined locally.

2. The high hazard area may coincide with the area of permanent inundation - refer to the Erosion Prone Area map.

3. The map should be used as a guide only. Field surveys are recommended to verify feature boundaries.

Version 4 - July 2013

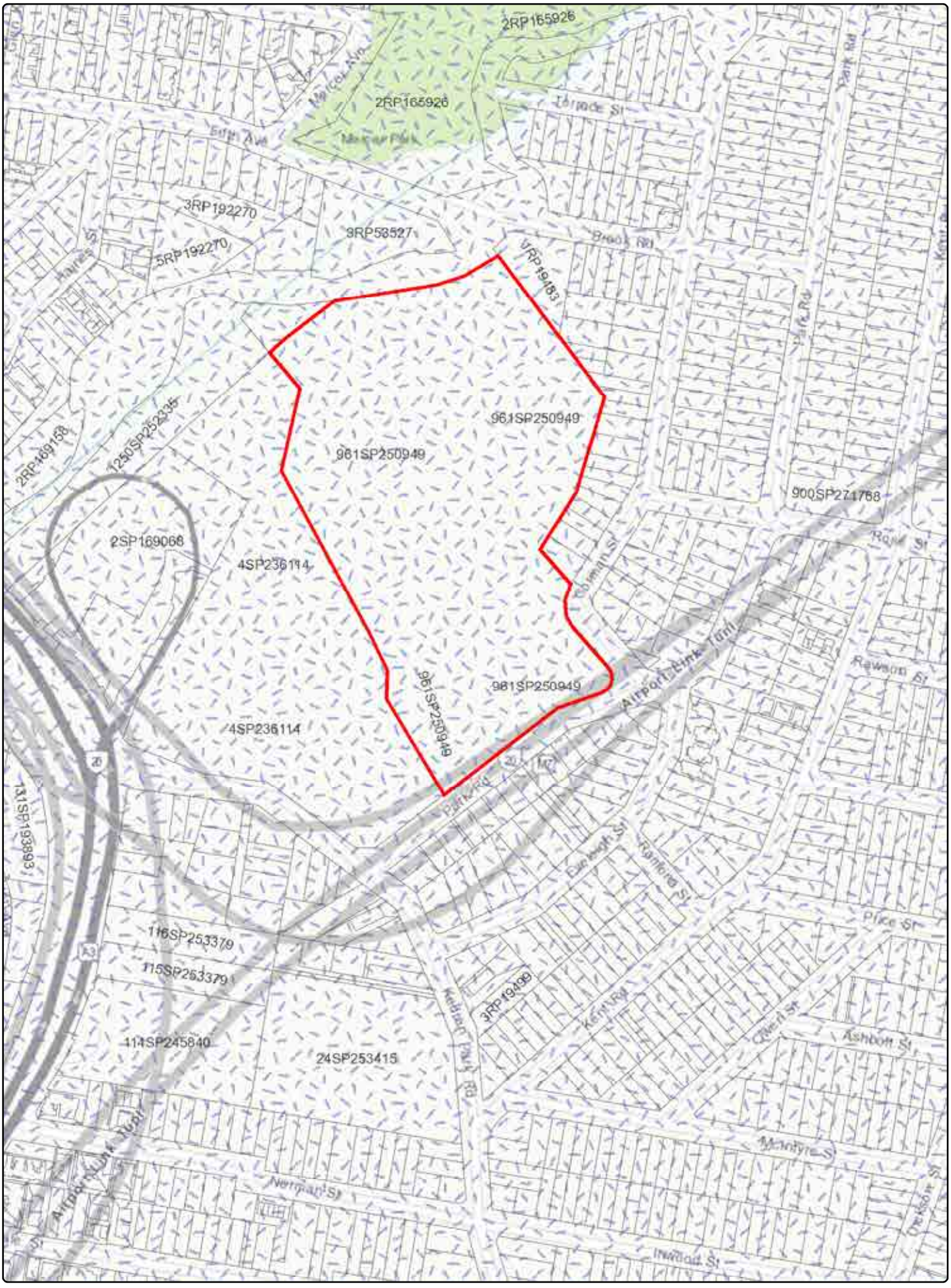
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0 120 240 360 480 600 m

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State Planning Policy

Making or amending a local planning instrument and designating land for community infrastructure

Date: 01/05/2018

Department of State Development, Manufacturing, Infrastructure and Planning

Queensland Government

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0 70 140 210 280

Metres

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Legend

Drawn Polygon Layer

Override 1

Cadastre (5k)



Cadastre (5k)

Slightly disturbed waters

Slightly disturbed waters

Climatic regions - stormwater management design objectives



Climatic regions - stormwater management design objectives

Urban water supply storage



Urban water supply storage

High ecological value water areas

High ecological value water areas

Water resource catchments

Water resource catchments

Water supply buffer area



Water supply buffer area

Date: 01/05/2018

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 (5k)

Cadastre (5k)

Flood hazard area - local government flood mapping area

Flood hazard area - local government flood mapping area

Date: 01/05/2018

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Legend

Drawn Polygon Layer

Override 1

Cadastre (5k)



Cadastre (5k)

State-controlled transport tunnel



State-controlled transport tunnel

State-controlled road



State-controlled road

Date: 01/05/2018

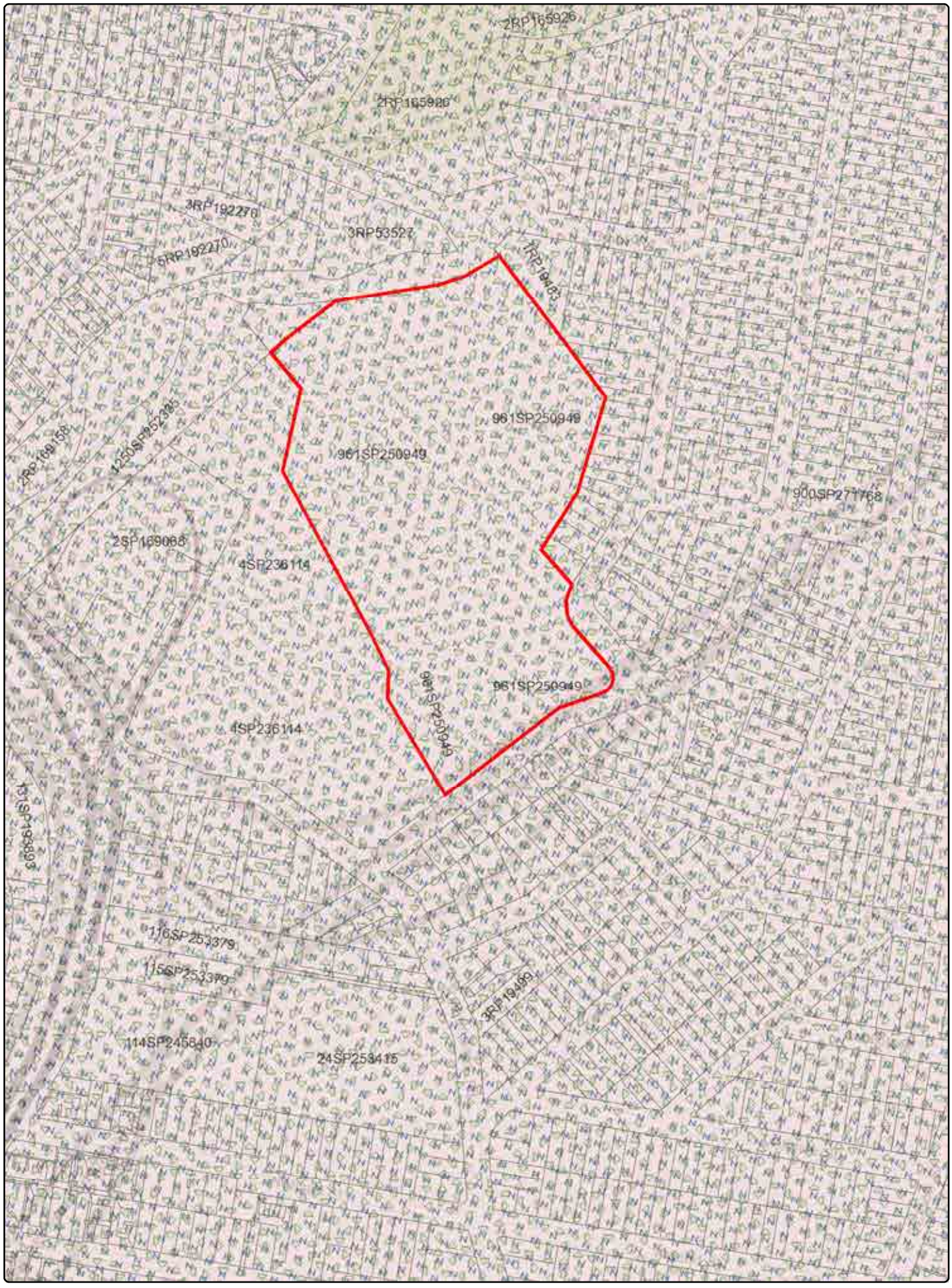
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Legend

Drawn Polygon Layer

Override 1

Cadastre (5k)

Cadastre (5k)

Wildlife hazard buffer zone

3km

8km

13km

Aviation facility

Location

Building restricted area - Zone A

Building restricted area - Zone A/B

Building restricted area - Area of interest

Obstacle limitation surface area

Obstacle limitation surface area

Date: 01/05/2018

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Appendix 7

EPBC Protected Matters Report and NCA Wildfline Report

Appendix 7

EPBC Protected Matters Report and NCA Wildfline Report

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: 09/02/18 17:10:19

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



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Coordinates
Buffer: 1.0Km



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:	1
Listed Threatened Species:	31
Listed Migratory Species:	16

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:	23
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	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:	None
Regional Forest Agreements:	None
Invasive Species:	43
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Moreton bay	Within 10km of Ramsar

Listed Threatened Ecological Communities [Resource Information]

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
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
Insects		
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
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
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	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 known 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	Foraging, feeding or related behaviour likely to occur within area
Plants		
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cryptocarya foetida Stinking Cryptocarya, Stinking Laurel [11976]	Vulnerable	Species or species habitat may occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat may 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
Macadamia ternifolia Small-fruited Queensland Nut, Gympie Nut [7214]	Vulnerable	Species or species habitat likely to occur within area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Saiphos reticulatus Three-toed Snake-tooth Skink [88328]	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		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		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 likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely 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 may 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 alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	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 likely 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 may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

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 Resouces Audit, 2001.

Name	Status	Type of Presence

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species

Name	Status	Type of Presence
		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		
Annona glabra Pond Apple, Pond-apple Tree, Alligator Apple, Bullock's Heart, Cherimoya, Monkey Apple, Bobwood, Corkwood [6311]		Species or species habitat may occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
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
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		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
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		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
Opuntia spp. Prickly Pears [82753]		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
Prosopis spp. Mesquite, Algaroba [68407]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		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
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

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

-27.41312 153.03965

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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Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -27.41
Longitude: 153.04
Distance: 1
Email: annie.jin@hpw.qld.gov.au
Date submitted: Friday 09 Feb 2018 16:10:01
Date extracted: Friday 09 Feb 2018 16:20:03

The number of records retrieved = 166

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			11/7
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		1
animals	birds	Acanthizidae	*Gerygone mouki*	brown gerygone		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		2
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		2
animals	birds	Anatidae	*Aythya australis*	hardhead		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		1
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		6
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		6
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			2
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		2
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		SL		1
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		8
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		4
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		1
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		2
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		4
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		3
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		17
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		17
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		2
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		13
animals	birds	Cacatuidae	*Cacatua tenuirostris*	long-billed corella	Y	C		1
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		12
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		2
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		4
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		19
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		5
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		2
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		4
animals	birds	Columbidae	*Streptopelia chinensis*	spotted dove	Y			22
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		10
animals	birds	Columbidae	*Columba livia*	rock dove	Y			14
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		3
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		24
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		7
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		1
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		3
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		16
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		3
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			1
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		1
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		1
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		2
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		12
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		2
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		1
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		9
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		8
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		10
animals	birds	Meliphagidae	*Manorina melanophrys*	bell miner		C		1
animals	birds	Meliphagidae	*Melithreptus lunatus*	white-naped honeyeater		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		5
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		14
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		6
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		4
animals	birds	Meliphagidae	*Anthochaera chrysoptera*	little wattlebird		C		1
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		1
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		2
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		18
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		2
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		14
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		8
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		4
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		14
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			17
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		3
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		6
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		5
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		4
animals	birds	Psittacidae	*Parvipsitta pusilla*	little lorikeet		C		1
animals	birds	Psittacidae	*Platycercus elegans*	crimson rosella		C		1
animals	birds	Psittacidae	*Platycercus eximius*	eastern rosella		C		1
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		19
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		14
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		20
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		2
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		6
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		5
animals	birds	Rallidae	*Gallirallus philippensis*	buff-banded rail		C		1
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		25
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		5
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		7
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		2
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			15
animals	birds	Sturnidae	*Acridotheres tristis*	common myna	Y			3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		5
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		4
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		23
animals	insects	Nymphalidae	*Euploea corinna*	common crow				9
animals	insects	Nymphalidae	*Tirumala hamata hamata*	blue tiger				3
animals	insects	Nymphalidae	*Vanessa kershawi*	Australian painted lady				1
animals	insects	Nymphalidae	*Danaus plexippus*	monarch				6
animals	insects	Papilionidae	*Graphium choredon*	blue triangle				1
animals	insects	Pieridae	*Delias argenthona argenthona*	scarlet jezebel				1
animals	insects	Pieridae	*Catopsilia pomona*	lemon migrant				3
animals	insects	Pieridae	*Eurema hecabe*	large grass-yellow				4
animals	insects	Pieridae	*Pieris rapae*	cabbage white				2
animals	mammals	Muridae	*Rattus rattus*	black rat	Y			1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		8
animals	mammals	Pseudocheiridae	*Pseudocheirus peregrinus*	common ringtail possum		C		8
animals	mammals	Pteropodidae	*Pteropus sp.*					1
animals	mammals	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox		C	V	2
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		2
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		1
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		1
animals	ray-finned fishes	Anguillidae	*Anguilla reinhardtii*	longfin eel				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris compressa*	empire gudgeon				1
animals	ray-finned fishes	Poeciliidae	*Gambusia holbrooki*	mosquitofish	Y			3
animals	ray-finned fishes	Poeciliidae	*Xiphophorus hellerii*	swordtail	Y			1
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		2
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		3
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1/1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		1/1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		7
animals	reptiles	Scincidae	*Lampropholis delicata*	dark-flecked garden sunskink		C		6/2
animals	reptiles	Scincidae	*Anomalopus verreauxii*	three-clawed worm-skink		C		2/2
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		3
fungi	club fungi	Basidiomycota	*Chlorophyllum molybdites*	green-spored parasol		C		1/1
fungi	sac fungi	Lichen	*Lichen*			C		1/1
plants	ferns	Blechnaceae	*Doodia caudata*			C		1/1
plants	ferns	Lindsaeaceae	*Lindsaea fraseri*			C		1/1
plants	ferns	Thelypteridaceae	*Christella dentata*	creek fern		C		1/1
plants	higher dicots	Acanthaceae	*Dyschoriste depressa*		Y			1/1
plants	higher dicots	Acanthaceae	*Justicia betonica*		Y			2/2
plants	higher dicots	Acanthaceae	*Ruellia simplex*		Y			1/1
plants	higher dicots	Araliaceae	*Astrotricha latifolia*			C		1/1
plants	higher dicots	Asteraceae	*Solenogyne bellioides*			C		1/1
plants	higher dicots	Brassicaceae	*Rapistrum rugosum*		Y			1/1
plants	higher dicots	Droseraceae	*Drosera spatulata var. spatulata*			C		1/1
plants	higher dicots	Ericaceae	*Monotoca scoparia*	prickly broom heath		C		1/1
plants	higher dicots	Fabaceae	*Daviesia umbellulata*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Malvaceae	*Sida cordifolia*		Y			1/1
plants	higher dicots	Mimosaceae	*Calliandra haematocephala*		Y			1/1
plants	higher dicots	Myrsinaceae	*Lysimachia arvensis*		Y			1/1
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia citriodora subsp. variegata*			C		1/1
plants	higher dicots	Myrtaceae	*Melaleuca salicina*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus carnea*			C		2/2
plants	higher dicots	Myrtaceae	*Eucalyptus seeana*	narrow-leaved red gum		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus resinifera*	red mahogany		C		1/1
plants	higher dicots	Myrtaceae	*Angophora woodsiana*	smudgee		C		1/1
plants	higher dicots	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus tindaliae*	Queensland white stringybark		C		1/1
plants	higher dicots	Oleaceae	*Notelaea ovata*	forest olive		C		2/2
plants	higher dicots	Phyllanthaceae	*Glochidion ferdinandi*			C		1/1
plants	higher dicots	Rubiaceae	*Richardia stellaris*		Y			1/1
plants	higher dicots	Solanaceae	*Solanum ellipticum*	potato bush		C		1/1
plants	higher dicots	Solanaceae	*Cestrum nocturnum*		Y			1/1
plants	higher dicots	Solanaceae	*Solanum chrysotrichum*		Y			1/1
plants	higher dicots	Stylidiaceae	*Stylidium debile*	frail trigger plant		C		1/1
plants	monocots	Burmanniaceae	*Burmannia disticha*			C		1/1
plants	monocots	Iridaceae	*Gladiolus*			C		1/1
plants	monocots	Laxmanniaceae	*Lomandra hystrix*			C		1/1
plants	monocots	Orchidaceae	*Acianthus fornicatus*	pixie caps		C		1/1
plants	monocots	Orchidaceae	*Arthrochilus prolixus*			C		1/1
plants	monocots	Orchidaceae	*Pterostylis ophioglossa*			C		1/1
plants	monocots	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			1/1
plants	monocots	Poaceae	*Phragmites australis*	common reed		C		1/1
plants	monocots	Poaceae	*Paspalum notatum*	bahia grass	Y			1/1

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 in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix 8

CLR & EMR Search

Department of Environment and Heritage Protection (EHP)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454 Brisbane QLD 4001 AUSTRALIA
www.ehp.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Transaction ID: 50435731 EMR Site Id: 12 February 2018
This response relates to a search request received for the site:
Lot: 961 Plan: SP250949

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 EHP has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if EHP has not been notified

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

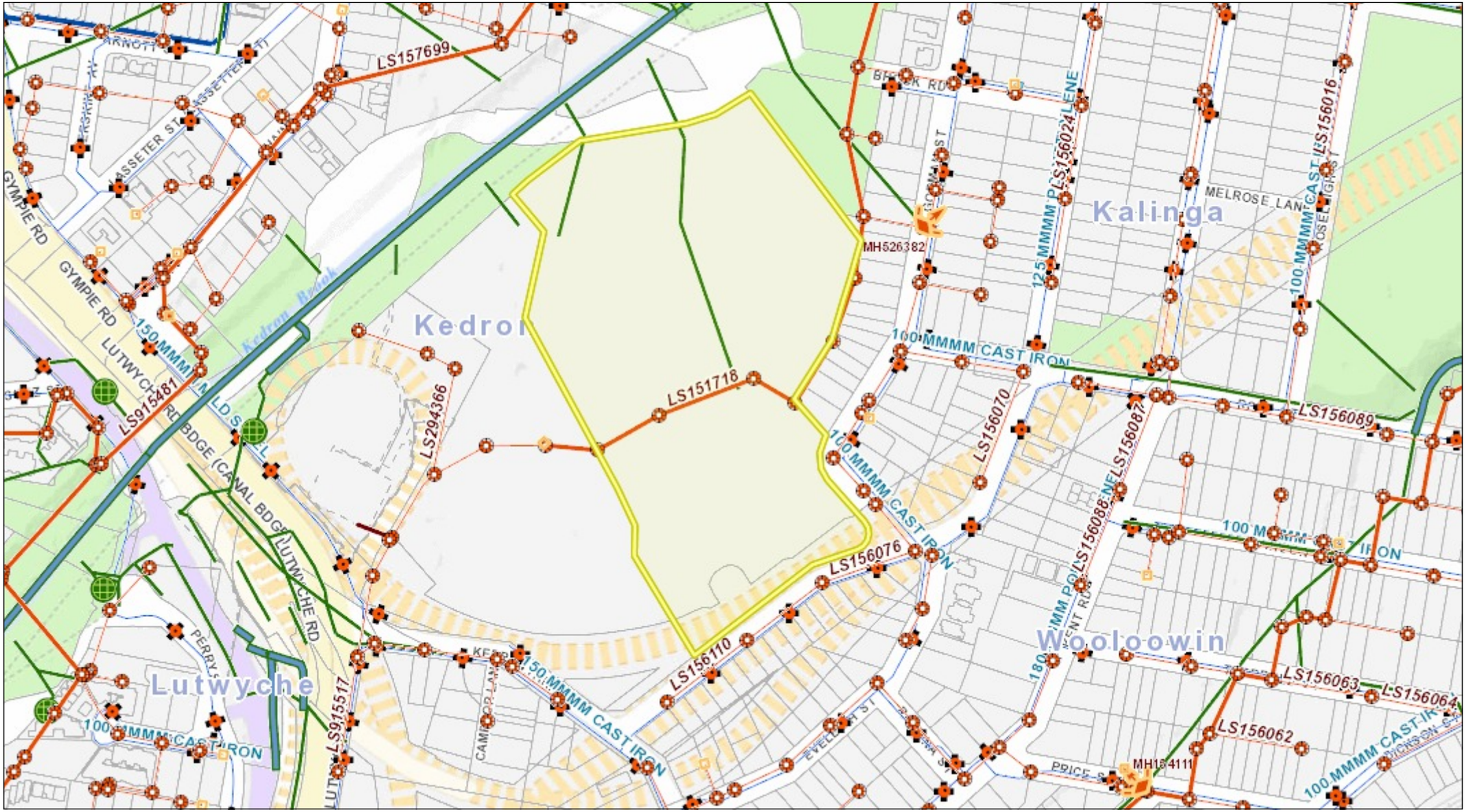
Administering Authority

Appendix 9

Service Infrastructure Plans

Department of Housing and Public Works

Queensland Government



While every care is taken to ensure the accuracy of this data, the Brisbane City Council and the copyright owners, in permitting the use of this data, make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

N

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Map Title

203 0 101 50 50

Metres

Scale: 1: 4,005

Print Date: 22/06/2018 - 12:04 PM

© Copyright Brisbane City Council 2015

Projection: Web Mercator Auxiliary Sphere

Legend

- Local Government Areas
- PRESSURE GAUGE
- PRESSURE GAUGE - OFFLINE

Recycled Water Fitting

- END CAP
- GIBAULT JOINT
- REDUCER
- RESERVOIR INLET
- SAMPLING STATION
- <all other values>
- HEAD WALL

Recycled Water Chamber

- INGROUND HYDRANT

Recycled Water Control Valve

- AIR
- ALTITUDE
- SCOUR - OFFLINE
- PRESSURE REDUCING - OFFLINE

Recycled Water System Valve

- GATE, OPEN
- BALL, OPEN
- SERVICE VALVE CLOSED
- RESERVOIR
- TREATMENT PLANT
- PUMP STATION

Recycled Water Pumps

- BOOSTER PUMP - OFFLINE

Recycled Water Pressure Main

- TRUNK MAIN
- TRUNK MAIN - OFFLINE
- END FLUSHING POINT
- VACUUM LIFT
- JOINT
- JUNCTION
- WYE
- GIBAULT JOINT
- OUTLET
- MANHOLE
- AIR

Recycled Water Device

- FLOW METER
- FLOW METER - OFFLINE
- <all other values>
- CROSS
- TAPPING BAND
- WYE
- SCOUR OUTLET
- CHEMICAL INJECTION POINT
- ANCHOR BLOCK
- PIER

Recycled Network Structure Boundary

- PILLAR HYDRANT
- REFLUX
- PRESSURE SUSTAINING
- FLOW CONTROL
- AIR - OFFLINE
- ALTITUDE - OFFLINE
- <all other values>
- BUTTERFLY, OPEN

Recycled Water Service Valve

- SERVICE VALVE OPEN
- RESERVOIR - OFFLINE
- FILLING STATION
- PUMP STATION - OFFLINE
- BOOSTER PUMP
- LIFT PUMP - OFFLINE
- MODEL LINK
- SCOUR MAIN
- SCOUR MAIN - OFFLINE
- INLINE FLUSHING POINT

Sewer Fitting - All Other Fittings

- RODDING JOINT
- END CAP
- TEE
- CROSS

Sewer Manholes

- MANHOLE - OFFLINE
- SCOUR

- <all other values>
- LEVEL SENSOR
- LEVEL SENSOR - OFFLINE
- BEND
- JOINT
- TAPPING
- TEE
- PIGGING POINT

Recycled Water Structures

- CONCRETE STOP
- PIPE BRIDGE

Recycled Water Hydrant

Recycled Water Flow Meter

- SCOUR
- PRESSURE REDUCING
- REFLUX - OFFLINE
- PRESSURE SUSTAINING - OFFLINE
- FLOW CONTROL - OFFLINE
- GATE, CLOSED
- BALL, CLOSED
- <all other values>

Recycled Water- Reservoirs

Recycled Water Network Structure

Recycled Water Pump Stations

Recycled Water Network Structure Boundary

- LIFT PUMP

Recycled Vertical Pressure Main

- RETIC MAIN
- RETIC MAIN - OFFLINE

Sewer Fitting - Main Fittings

- OUTLET
- <all other values>
- PROPERTY CONNECTION BOUNDARY
- BEND
- REDUCER
- INLET
- <all other values>

Sewer Control Valve - by Type

- VACCUM, AS CONSTRUCTED

Appendix 10

BCC FloodWise Property Report

Department of Housing and Public Works

Queensland Government

Brisbane City Council

FloodWise Property Report

Report Reference
1523586008120

13/04/2018 12:20:08

Dedicated to a better Brisbane

THIS REPORT IS FOR BUILDING AND DEVELOPMENT PURPOSES ONLY

The FloodWise Property Report provides property or lot-based flood information for building and development requirements. This report provides information on estimated flood levels, habitable floor level requirements and more technical information on the four sources of flooding: river, creek / waterway, storm tide and overland flow. Refer to the Useful Definitions section for a glossary of terms.

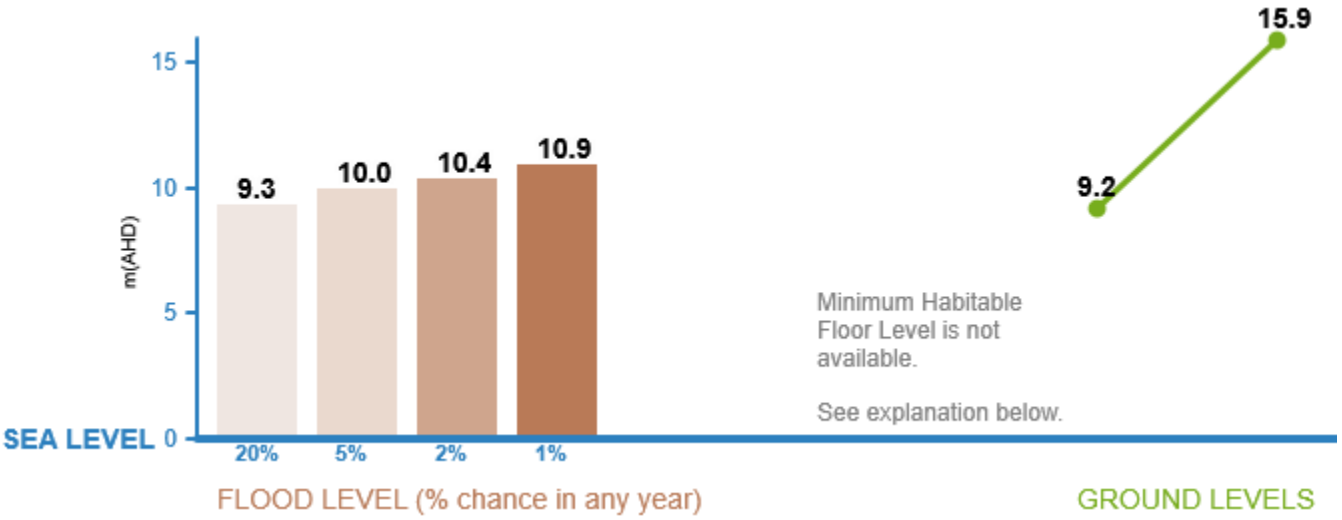
To find out more about how the contents of this report may affect building or development on this property, please visit www.brisbane.qld.gov.au/planning-building.For more general information about understanding your flood risk and how to prepare your property, family or business for potential flooding visit www.brisbane.qld.gov.au/beprepared

THIS IS A REPORT FOR:

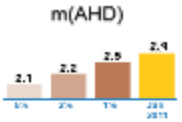
Rateable Address: 34 PARK RD, KEDRON QLD 4031

Lot Details: L.961 SP.250949

FLOOD LEVEL INFORMATION



EXPLANATION



m(AHD) - Metres Australia Height Datum. The level of 0.0m AHD is approximately mean sea level.

Flood Levels - The Flood level bar chart above shows the possible flooding level and percentage chance of that level being reached or exceeded in any year. If an orange bar shows, it is the calculated January 2011 flood level at this address or lot. If a hatched bar shows, it is the 1% AEP flood level from the 2017 Brisbane River Catchment Flood Study (BRCFS). Refer to 'Useful Definitions' for further information.

Minimum Habitable Floor Level - Applies to residential development only. Please refer to Council's planning scheme to learn how this may affect you. If a property is in an overland flow path, or a large allotment, a minimum habitable floor level cannot be provided. Refer flood and planning development flags below.

Ground Levels- The green line above shows this property's approximate lowest and highest ground levels based on latest available information (2014 airborne laser survey) to Council. If you are building, please confirm with a surveyor.

For further information and definitions please refer to the Useful Definitions page

FLOOD AND PLANNING DEVELOPMENT FLAGS

DEVELOPMENT FLAG(S)

This property may also be affected by one or more flood or property development overlays or flags. These include: OVERLAND FLOW PATH,LARGE ALLOTMENT,WATERWAY CORRIDOR

Please review the technical summary over page and refer to Council's planning scheme for further information.

Brisbane City Council

FloodWise Property Report

Dedicated to a better Brisbane

Report Reference
1523586008120
13/04/2018 12:20:08

TECHNICAL SUMMARY

This section of the FloodWise Property Report contains more detailed flood information for this property so surveyors, builders, certifiers, architects and engineers can plan and build in accordance with Council's planning scheme. For more information about building and development in Brisbane please visit www.brisbane.qld.gov.au/planning-building or talk to a Development Assessment Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

THIS IS A REPORT FOR:

Rateable Address: 34 PARK RD, KEDRON QLD 4031
Lot Details: L.961 SP.250949

PROPERTY INFORMATION (Summary)

The following table provides a summary of flood information for this property. More detailed flood level information is provided in the following sections of this report.

PROPERTY SUMMARY	LEVEL (mAHD)
Minimum Ground Level	9.2
Maximum Ground Level	15.9
Min Habitable Floor Level	Contact Council
Defined Flood Level (DFL)	10.9
Defined Flood Level Source	CREEK/WATERWAY
Flooding may also occur from	OVERLAND FLOW,CREEK/WATERWAY

ESTIMATED PEAK FLOODING LEVELS

The table below displays the peak estimated flood levels by probability for this property. Estimated flood level data should be used in conjunction with applicable planning scheme requirements - Refer to Flood Planning Development Information.

Note that the overland flow flooding level maybe higher than the levels below from other sources.

DESCRIPTION	LEVEL (mAHD)	SOURCE
20% AEP	9.3	CREEK/WATERWAY
5% AEP	10.0	CREEK/WATERWAY
2% AEP	10.4	CREEK/WATERWAY
1% AEP	10.9	CREEK/WATERWAY
DFL	10.9	CREEK/WATERWAY

* Council does not hold flood levels for this probability event, or it is not applicable for your property. If the source for the 1% AEP is River, refer to the DFL. Otherwise, refer to the BRCFS 1% AEP for information purposes only.

FLOOD PLANNING DEVELOPMENT INFORMATION

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

FLOOD OVERLAY CODE

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the Flood Planning Areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in Council's planning scheme, which is available from www.brisbane.qld.gov.au/planning-building.

FLOOD PLANNING AREAS (FPA)		
RIVER	CREEK/WATERWAY	OVERLAND FLOW
	FPA1	Applicable
	FPA3	
	FPA4	
	FPA5	

COASTAL HAZARD OVERLAY CODE

There are currently no Coastal Hazard Overlays that apply to this property.

PROPERTY DEVELOPMENT FLAGS

Overland Flow Path - Mapping indicates this property may be located within an overland flow path. Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. It is recommended you consult a Registered Professional Engineer of Queensland to determine this property's habitable floor level and flooding depth. Please refer to Council's planning scheme for further information.

Waterway Corridor - This property may also be located within a mapped waterway corridor as identified in the waterway corridors overlay map of Council's planning scheme. Please consider this in conjunction with Council's planning scheme requirements.

Large Allotment - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site. For more information or advice, it is recommended you engage a Registered Professional Engineer of Queensland.

Brisbane City Council

FloodWise Property Report

Report Reference
1523586008120

13/04/2018 12:20:08

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Useful Definitions

Australian Height Datum (AHD) - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Annual Exceedance Probability (AEP) – The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

Defined Flood Level (DFL) - The DFL for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m^3/s.

Maximum and Minimum Ground Level – Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum Habitable Floor Level – The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed.

Council's Planning Scheme - The City Plan (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Residential Flood Level (RFL) – Residential flood level (RFL) for Brisbane River flooding equates to the flood level applicable to the extent of January 2011 floods as depicted by mapping on the Queensland Reconstruction Authority website or the Council's defined flood level (DFL) for the Brisbane River, whichever is higher.

Rateable Address - A Lot or Property may have more than one street address. The address shown on this report is the address used by Council for the Lot or property selected.

Property - A property will contain 1 or more lots. The *Multiple Lot Warning* is shown if you have selected a property that contains multiple lots.

2017 Brisbane River Catchment Flood Study (BRCFS) – The BRCFS is a project led by the Queensland Government. The flood study was released in 2017. The 1% AEP flood levels from the flood study is yet to be adopted for application in planning schemes and is for information only. Other % AEPs will be updated with new information from the flood study as part of any relevant changes to City Plan 2014 as soon as is practicable.

Brisbane City Council's Online Flood Tools

Council provides a number of online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk and prepare for flooding.

Planning and Development Online Flood Tools

Council's online flood tools for planning and development purposes include:

- FloodWise Property Report
- Flood Overlay Code

For more information on Council's planning scheme and online flood tools for planning and development:

- phone 07 3403 8888 to talk to a Development Assessment Customer Liaison Officer
- visit www.brisbane.qld.gov.au/planning-building
- visit a Regional Business Centre.

Helping residents and businesses be prepared for flooding

Council has a range of free tools and information to help residents and businesses understand potential flood risks and how to be prepared. This includes:

- Flood Awareness Maps
- Flooding in Brisbane – A Guide for Residents
- Flooding in Brisbane – A Guide for Business
- Early Warning Alert Service. Visit www.brisbane.qld.gov.au/earlywarning to register for email, home phone or SMS severe weather alert updates.

Note: The Flood Awareness Maps show four levels of flood likelihood from high likelihood (flooding is very likely to occur) through to very low likelihood (very rare and extreme flood events).

For more information on Council's online flood tools for residents and business:

- Visit www.brisbane.qld.gov.au/beprepared
- Phone (07) 3403 8888.

Brisbane City Council

FloodWise Property Report

Report Reference
1523586008120

13/04/2018 12:20:08

Dedicated to a better Brisbane

Disclaimer

1. Defined Flood Levels and Residential Flood Levels, and the Minimum Habitable Floor Levels are determined from the best available information to Council at the date of issue. These flood levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating flood levels.
2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property report. Council disclaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit **www.brisbane.qld.gov.au/planning-building**

You can also find the Brisbane City Plan 2014 and Neighbourhood Plans as well as other information and training videos to help with your building and development plans.

Appendix 11

Stormwater Management Plan

Department of Housing and Public Works

Queensland Government

Stormwater Management Report

Proposed Upgrade for Kedron State High School

34 Park Rd, KEDRON, QLD 4031
Lot: L.961 SP.250949

For Department of Education

3 May 2018

Ref: B18/060

A QUALITY ASSURED COMPANY

CERTIFIED QUALITY ASSURANCE – ISO AS/NZS 9001, 4801 & 14001

SUNSHINE COAST
Suite 2, Norval Corporate Centre
13 Norval Court
Maroochydore QLD 4558
P: 0431 803 337 F: 07 5646 5857
PO Box 2016
Fortitude Valley BC, QLD 4006
E: sunshinecoast@westerapartners.com.au

BRISBANE
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Newstead QLD 4006
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Fortitude Valley BC, QLD 4006
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GOLD COAST
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Southport QLD 4215
P: 07 5571 1599 F: 07 5646 5857
PO Box 6138
Southport Mail Centre 9726
E: goldcoast@westerapartners.com.au

NORTHERN NSW
11 Sailfish Way
Kingscliff NSW 2487
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PO Box 1131
Kingscliff NSW 2487
E: nsw@westerapartners.com.au

DOCUMENT INFORMATION

Client Contact: Mr Sam Brick, Archictects for the Department of Education

Project Name: Stormwater Management Plan for Kedron SHS

Western Partners Ref: B18/060

Western Partners Contact:

Yolandi Cooper Phone: 3852 4333

Email: yolandic@westerapartners.com.au

Sam Ide Email: sami@westerapartners.com.au

Certified for Issue by:

Samuel Ide RPEQ 12231

3 May 2018

Document Control:

Revision	Author	Approved for Issue	Date
Draft	Yolandi Cooper	S.Ide RPEQ 12231	03.05.2018
Revised	Yolandi Cooper	S.Ide RPEQ 12231	08.05.2018
Revised – BCC comments	Yolandi Cooper	S.Ide RPEQ 12231	06.06.2018

This report has been prepared for the Department of Education for the purpose of informing infrastructure upgrades to be incorporated as part of the upgrade of the Kedron State High School (SHS). This report must only be used by the Department of Education for this purpose and must not be used or relied upon by any other person for any other purpose.

The assessment, conclusions or recommendations in this report are based on conditions encountered and information received at the time of preparing the report and may not be relied upon as site conditions or operations vary over time.

Contents

1 Introduction 1

2 Site Description 1

2.1 Location and Land Use 1

2.2 Lawful Point of Discharge 2

2.3 Flooding 2

2.4 Existing Catchment and Site Drainage 4

2.5 Proposed Developed Site Drainage 4

3 Water Quality Management 4

3.1 Operational Phase 4

3.2 Construction Phase 4

3.2.1 Erosion and Sediment Control 5

3.2.2 Maintenance and Monitoring Requirements 6

4 Conclusion 7

5 Appendices 8

List of Appendices

Appendix A – Survey 9

Appendix B – Engineering Drawings 10

Appendix C – Flood Mapping (BCC) 11

Appendix D – Design Statement BCC 0.2% AEP 12

1 Introduction

Westera Partners Pty Ltd has been commissioned by the Department of Education to prepare a Stormwater Management Plan for the proposed new Learning Centre to be constructed at Kedron State High School (SHS).

The new learning centre comprises a two storey building with associated infrastructure.

This report documents how stormwater runoff will be managed on site in accordance with Brisbane City Council's (BCC's) requirements and the State Planning Policy 2017.

2 Site Description

2.1 Location and Land Use

The site of the proposed development is located within the northern section of Kedron SHS at 34 Park Road, Wooloowin.

The proposed development area is approximately 790m^2 and is currently occupied by existing volleyball/tennis courts.

The site currently falls with a very gradual slope to the north towards the Kedron Brook.

The site is bound by a commercial property to the west, residential dwellings to the east, and Park Road to the south. Refer to Figure 1 for the site location. Appendix A for site survey information received from the architect.



Figure 1 – Location of new proposed building – Kedron SHS

2.2 Lawful Point of Discharge

The closest point of discharge is an existing 600mm diameter pipe passing through the lot, discharging into the Kedron Brook as indicated on the Civil Engineering Drawings in Appendix B and in the figure below from eBimap. This existing pipe is considered the lawful point of discharge.

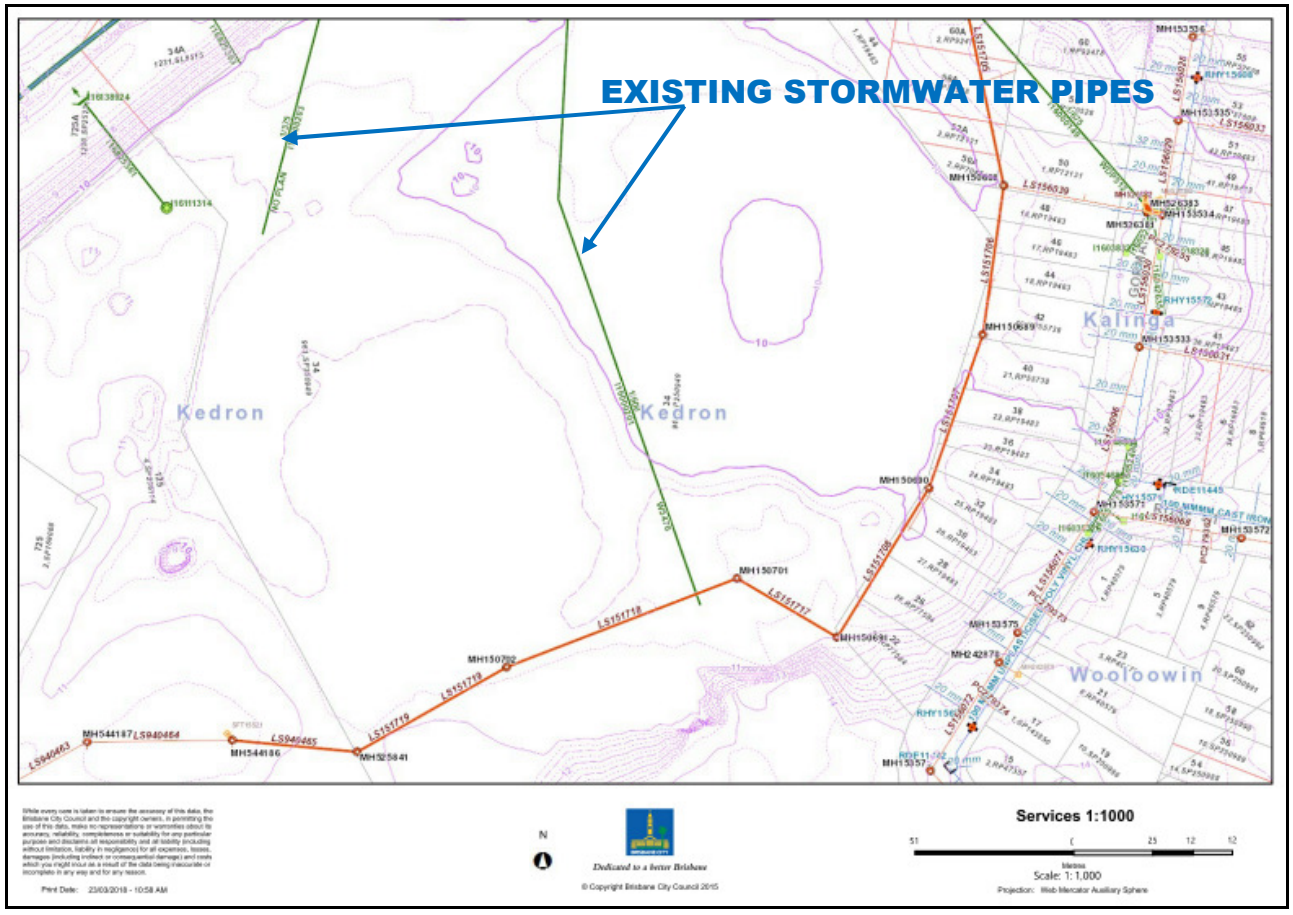


Figure 2 – BCC Flood Awareness Map – Kedron SHS (eBimap)

2.3 Flooding

In researching the flooding of the proposed building situated on Kedron SHS, it was found that the proposed development is subject to flooding from both the Kedron Brook and overland flow. Please refer to Appendix C for the Flood Wise Property Report and Flood Maps generated by the Brisbane City Council (BCC).

The report gives a flood level from the Kedron Brook with a Defined Flood Level of 10.9m AHD for the 1% AEP for the source of flooding Creek/Waterway. It is stated in the Stormwater Code that the Building floor level equates to Category A which equates to 1% AEP flood level + 500mm = 11.4m AHD. For all electrical services the same level of 11.4m AHD applies.

However, the building class as confirmed by the Townplanner is Class 9b, which requires the building floor level to be at the 0.2% AEP flood.

Below is a figure available from the BCC Flood Awareness site and the 0.2% Annual Flooding Chance is explained as a “low Likelihood” event. This report unfortunately does not provide any levels related to the 0.2% AEP.

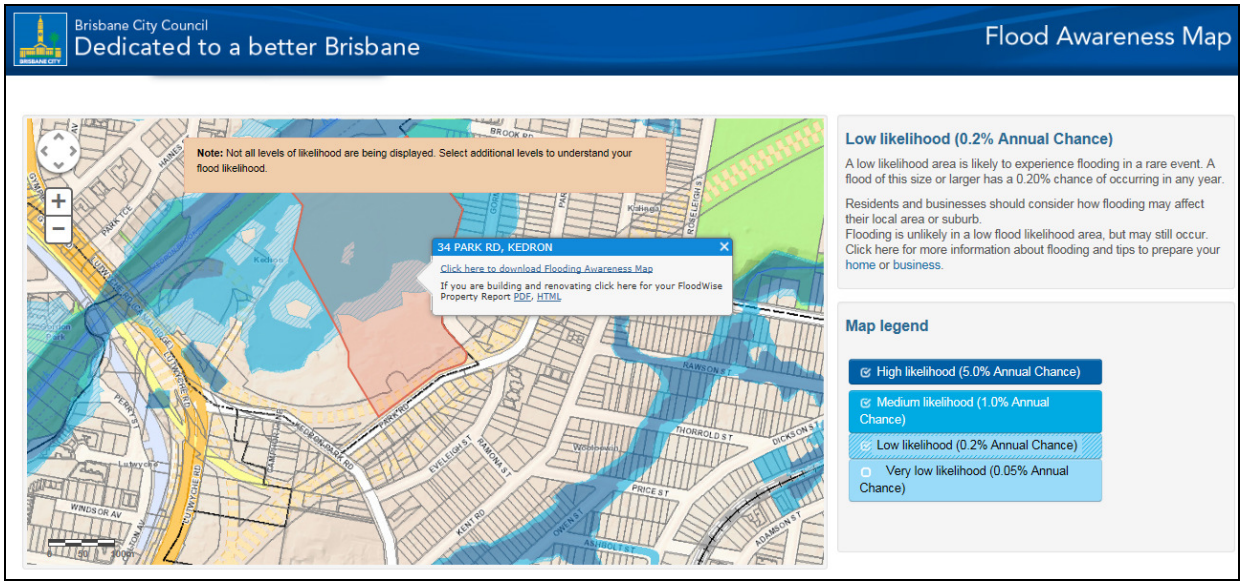


Figure 3 – BCC Flood Awareness Map – Kedron SHS

The BCC only publish up to 1% AEP listed flood levels. The 0.2% AEP flood level has been requested from BCC by means of a formal agreement as per BCC procedure. The 0.2% AEP flood level was issued by BCC and Westera Partners prepared a Design Statement explaining the results issued by BCC, the Flood Overlay Code requirements and recommendations were made based on the outcome of the combination of the results. A copy of the Design Statement that was issued to the project team is added as Appendix D of this report.

The proposed development will need to comply with these flood levels, alternatively the designation Minister may comment and override the BCC requirements. Further details regarding this process are described in the Architect’s report.

It is not expected that the proposed development will result in a worsening to overland flow flooding to the surrounding properties as the proposed building does not have a significantly different footprint to the existing buildings or volleyball/tennis courts.

The Flood Overlay Code describes the developed site as a Flood Planning area 4. It is stated that a Flood Risk assessment needs to be carried out in accordance with requirements of the Flood planning scheme policy. However, the proposed building adjoins the category 5 line to the South and existing buildings to the east and therefore is considered not necessary to undertake further assessment providing the immunity levels can be achieved.

2.4 Existing Catchment and Site Drainage

The current stormwater run-off is managed by means of a piped stormwater system that discharges stormwater run-off from existing buildings into the Kedron Brook by means of a series of large existing stormwater pipes as noted in Figure 2 of this report.

Furthermore, overland sheet flow also discharges through the area where the new building development location is proposed. Provision has been made on the engineering drawings to divert the overland flow by means of swales and bunds, using a level spreader downstream of the new proposed development to ensure overland flow into the Kedron Brook as with the pre-development stormwater drainage.

2.5 Proposed Developed Site Drainage

Stormwater is collected by means of a formalised piped system as well as diversion swales that discharge into the existing 600mm diameter pipe that is located on the lot. The existing 600mm diameter pipe discharges directly into the Kedron Brook.

The area being developed is on top of an existing tennis court hardstand that will be demolished and there is therefore no change in the imperviousness of the area being developed with the new proposed building with an impervious roof. Since there is no significant change in the imperviousness of the surface, there is no additional run-off generated by the new proposed development. Furthermore, stormwater detention is not recommended in this instance, as noted in section 7.5.2. of the Infrastructure Design Planning Scheme Policy (IDPSP), as the site is in the lower third of the Kedron Brook catchment.

3 Water Quality Management

3.1 Operational Phase

According to Brisbane City Council's Stormwater Code the site is classified as a 'low risk' development. The development is not required to meet the Queensland Governments State Planning Policy (July 2017) as the proposed development area does not exceed the 2,500m^2 minimum site area.

However, stormwater quality management must still be undertaken via the application of best management practices (BMPs) to ensure no adverse impacts to the downstream environment.

Stormwater quality best management practice is to be considered for managing operational phase stormwater quality including filter baskets to field inlets.

3.2 Construction Phase

Management of stormwater run-off during construction is necessary to avoid pollution of downstream waterways from sediment and gross pollutant loading. Pollutants typically generated during construction phase are described in the table below.

Table 1 - Pollutants typically generated during the construction phase

Pollutant	Sources
Litter (Gross Pollutants)	Paper, construction packaging, food packaging, cement bags.
Sediment	Unprotected exposed soils and stockpiles during earthworks and building.
Hydrocarbons	Fuel and oil spills, leaks from construction equipment.
Toxic materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash waters.
pH altering substances	Acid sulphate soils, cement slurry and wash waters.

3.2.1 Erosion and Sediment Control

Impacts of inadequate erosion and sediment control downstream from the site include:

1. Traffic safety problems
2. Blocked drains
3. Local flooding problems
4. Aesthetic pollution of drainage paths, and
5. Damage to local ecosystems

Best practice erosion and sediment controls must be installed to minimise the discharge of sediment laden run-off during construction.

Erosion and sediment control plans shall be developed during detailed design phase and must be continually maintained and amended as required to minimise environmental harm.

Erosion and sediment control plans are based on three sets of control measures:

1. Drainage control
2. Erosion control
3. Sediment control

These control measures must be maintained in an effective operational condition. Sediment disposal from site is to occur to the satisfaction of Brisbane City Council. Defects in erosion and sediment control devices, such as sediment fences and baskets, are to be inspected and documented. Upon Inspection, the Contractor is to determine whether the device should be replaced or repaired. Documentation is to include how the damage (if applicable) was caused and what measures can be implemented to reduce the possibility of repeat occurrences. Any damage to either permanent or temporary water quality control structures or devices is to be immediately rectified at the contractor's expense.

The effectiveness of the erosion and sediment control devices can be monitored by visual audits. All ESC measures are to be inspected:

- at least daily (when work is occurring on site) or weekly (when work is not occurring on site)

- within 24 hours of expected rain
- within 18 hours of a rainfall event (i.e. an event of sufficient intensity and duration to mobilise sediment on site)

Drainage paths are to be inspected to ensure the sediment fences are not being bypassed as a result of soil erosion.

Sediment laden run-off shall be prevented from entering neighbouring properties. This shall be achieved by landscaping disturbed areas immediately and prior to a rainfall event.

3.2.2 Maintenance and Monitoring Requirements

Periodic maintenance and monitoring of stormwater devices proposed in this report is crucial to ensure effective operation and design life.

Inspect field inlet grates, pits and underground pipes for blockage or damage at least 6 monthly or after significant rainfall event. All filter baskets shall be inspected and maintained preferably by the manufacturer to avoid damage to units and to ensure adequate cleaning and record keeping. For the first 12 months routine inspections of filter baskets shall be carried out monthly with routine clean out at alternate months. Results of the initial 12 months maintenance program shall be used to determine future maintenance intervals. Refer manufactures maintenance and monitoring methodology for specific details.

Table 2 - Maintenance of ESC measures

ESC Measure	Maintenance Trigger	Timeframe for Completion of Maintenance
Sediment basins	When settled sediment exceeds the volume of the sediment storage zone	Within 7 days of the inspection.
Other ESC measures	The capacity of ESC measures falls below 75%.	By the end of the day.

Sediment accumulation on ESC devices is to be removed and disposed of to the satisfaction of Brisbane City Council.

4 Conclusion

This SWMP with the engineering drawings outline how stormwater run-off from the site will be managed in order to not adversely impact the receiving environment.

There are minimal change in the site stormwater run-off and provisions have been made for stormwater to be collected around the new proposed building.

The 0.2% AEP flood level issued by BCC is 11.1m AHD, but the flood overlay code immunity level for electrical related services exceeds the 0.2% AEP level and is 11.4m AHD. It is recommended that the new proposed building floor level is not below 11.4m AHD to comply with BCC's Flood Overlay Code.

The primary lawful point of discharge for the site shall be the existing stormwater infrastructure within the site that discharges directly into the Kedron Brook Waterway and no evident change in the run-off due to no additional stormwater run-off being generated by the new proposed building.

To ensure that there is no negative effect on the Water Quality due to the proposed development, it is imperative that stormwater quality management must be undertaken via the application of best management practices (BMPs) to ensure no adverse impacts to the downstream environment.

By implementing the proposed stormwater management system, and providing adequate maintenance, the downstream environment and neighbouring properties will not experience any adverse deterioration of water quality as a result of the proposed development.

5 Appendices

Appendix A – Survey

AJS SURVEYS
SURVEYING • PLANNING • DEVELOPMENT
17 Judd Street, Gumdale, Qld 4154
P: 07 3823 2144 E: mail@ajs.net.au
W:www.ajssurveys.com.au

CONTOUR & DETAIL SURVEY

GORMAN STREET

961
SP 250949

HIGHSET BUILDING
DECK
THREE STOREY BRICK BUILDING (not fully visible)
SINGLE STOREY METAL HALL (not fully visible)
HIGHSET BRICK BUILDING (not fully visible)
SHED
Garden
Concrete
Grass
Trimber Retaining Wall
Wire Mesh Fence
Timber Retaining Wall
Steel Post
Steel Line Approximate only Plotted from Council Records
Steel Manhole Approximate only Plotted from Council Records
Sewer Manhole Approximate only Plotted from Council Records
Sewer Line Approximate only Plotted from Council Records
Bench Mark Manhole (not found) Approximate only Plotted from Council Records
Gutter Level 17.61
Roof Level 14.18
Gutter Level 17.26
Roof Level 24.81
Gutter Level 17.72
Roof Level 16.98
Gutter Level 17.72
Roof Level 18.83
Gutter Level 17.72
Roof Level 18.76
Gutter Level 17.61
Roof Level 18.76
Gutter Level 17.61
Roof Level 18.76
Gutter Level 17.61

Appendix B – Engineering Drawings

NOTES

1. STORMWATER DRAINAGE SHALL BE IN ACCORDANCE WITH BRISBANE CITY COUNCIL GUIDELINES AND SPECIFICATIONS. SURFACE WATER DRAINAGE SHALL COMPLY WITH BCC STD DWG BSD-8113.
2. EXISTING SERVICES ARE TO BE LOCATED AND VERIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. INFORMATION CONTAINED IN THIS DRAWING IS PRELIMINARY ONLY AND SUBJECT TO DETAILED DESIGN INCLUDING BUT NOT LIMITED TO PIPE SIZES, ALIGNMENTS, PIT TYPES AND SIZES, AND EARTHWORKS EXTENTS.

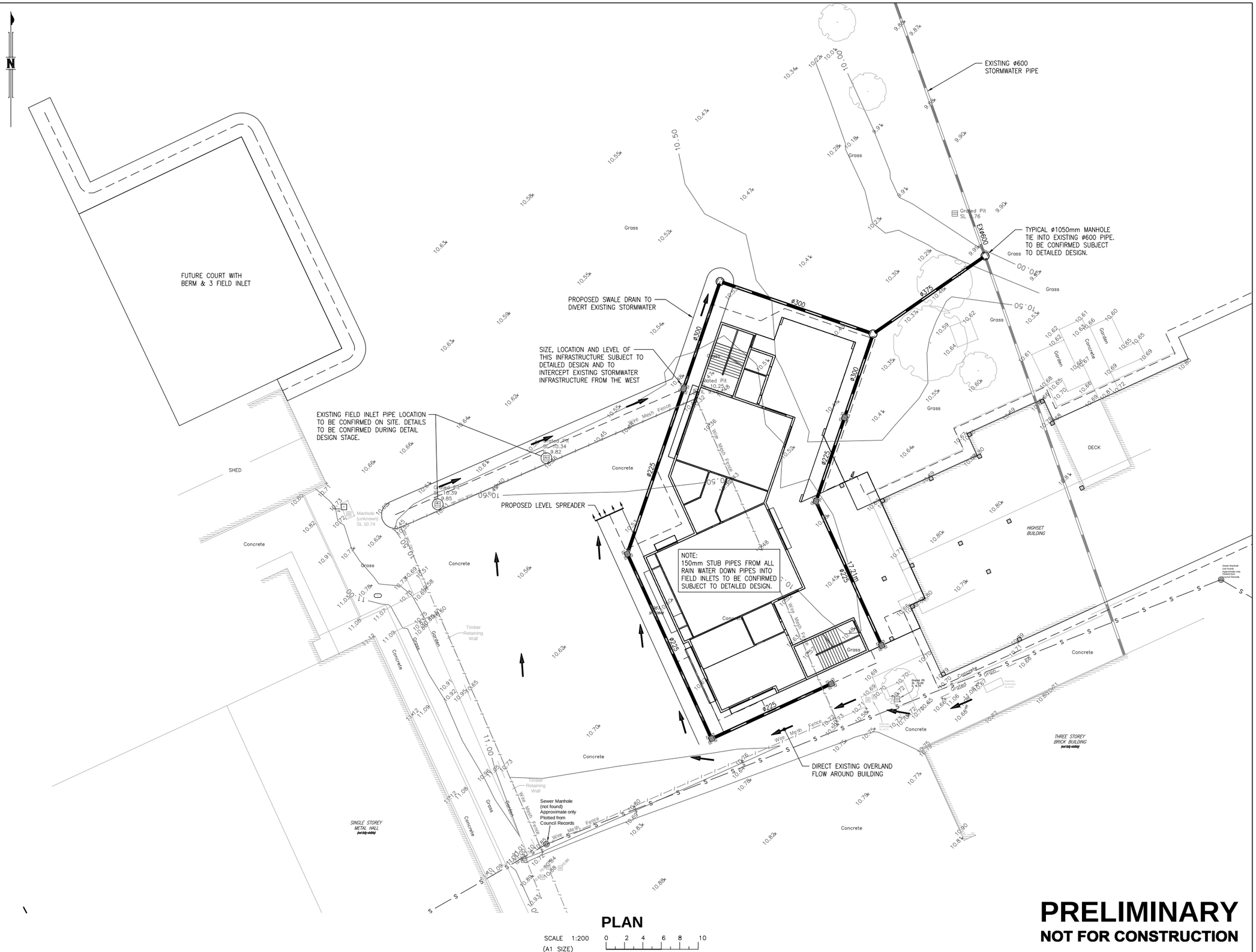
NOTE:
THE INVERT LEVEL & LOCATION OF ALL EXISTING STORMWATER & SEWER INFRASTRUCTURE SHALL BE CONFIRMED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

STORMWATER INLET PIT NOTE:
STORMWATER INLET PITS AS SHOWN ARE TO BE FITTED WITH ENVIROPOD 200 FILTER BASKETS.

✱ STORMWATER STUB NOTE:
PROVIDE STUBS AS SHOWN FOR ROOF AND/OR YARD DRAINAGE CONNECTION.

LEGEND

	ASPHALTIC PAVEMENT
	REINFORCED CONCRETE PAVEMENT
	PROPOSED SEWER MANHOLE
	EXISTING SEWER MANHOLE
S	EXISTING SEWER
S	PROPOSED SEWER
2/5	SEWER MANHOLE NUMBER
	ON GRADE GULLY PIT
	SAG GULLY PIT
	600 x 600 FIELD INLET
	900 x 600 FIELD INLET
	1500 DIA FIELD INLET
	STORMWATER LINE
	STORMWATER HEADWALL
	EXISTING STORMWATER LINE
× 23.49	NATURAL SURFACE LEVEL
2C	STORMWATER NUMBER
	WATER RETICULATION U.P.V.C.
	WATER RETICULATION D.I.C.L.
C	WATER RETICULATION CONDUIT
	GATE VALVE
FH	FIRE HYDRANT
	WATER METER
FH	DUAL OUTLET HYDRANT
SFH	SWABBING FIRE HYDRANT
W W	WATER SERVICE FITTING
T	TELEPHONE
E	ELECTRICITY
	EDGE OF BITUMEN
	FENCE
21.00	NATURAL CONTOURS
× 22.00	FINISHED SURFACE LEVEL
V	OVERHEAD POWER



PLAN

SCALE 1:200 (A1 SIZE) 0 2 4 6 8 10

PRELIMINARY
NOT FOR CONSTRUCTION

WESTERA PARTNERS
STRUCTURAL+CIVIL+ENVIRONMENTAL ENGINEERS
www.westerapartners.com.au | ABN 52 097 417 975

SUNSHINE COAST
Suite 2, Norval Corporate Centre,
13 Norval Ct, Maroochydore
T 0431 803 337
E sunshinecoast@westerapartners.com.au

GOLD COAST
Level 3
17 Welch St, Southport
T 07 5571 1599 | F 07 5571 1330
E goldcoast@westerapartners.com.au

BRISBANE
Level 2 Limestore,
33 Longland St, Newstead
T 07 3852 4333 | F 07 3852 4777
E brisbane@westerapartners.com.au

NORTHERN NSW
11 Sailfish Way, Kingscliff
T 02 6674 8047 | F 02 6674 8049
E nsw@westerapartners.com.au

SURVEYOR
AJS SURVEYS
(07) 3823 2144

DATUM
AHD
PSM 43260
RL 13.828m

USE FIGURED DIMENSIONS ONLY. DO NOT SCALE. IF A DISCREPANCY ARISES CHECK WITH THE PROJECT ENGINEER AND/OR SUPERVISING AUTHORITY. DO NOT WORK FROM REDUCED SCALE DRAWINGS (A1-A3 SIZE PAPER). COPYRIGHT OF ALL DRAWINGS & WORKS EXECUTED FROM THEM IS VESTED IN WESTERA PARTNERS AND USE OF THERE FORE WITHOUT PERMISSION IS STRICTLY PROHIBITED! IT IS THE BUILDERS RESPONSIBILITY TO ENSURE ALL WORKS ARE CARRIED OUT WITH DUE CARE AND DILIGENCE TO COMPLY WITH THE CONTRACT DOCUMENTS.

No.	DATE	REVISIONS
A	07.06.2018	REVISED STORMWATER LAYOUT

SHEET	PRELIMINARY SERVICES PLAN
PROJECT	**NEW LEARNING CENTRE**
LOCATION	LOT 961 ON SP 250949 34 PARK ROAD, WOOLOOWIN
CLIENT	**KEDRON STATE HIGH SCHOOL**

APPROVED

For and on behalf of WESTERA PARTNERS PTY. LTD.

DESIGNED	YC
DRAWN	JS
DATE DRAWN	APRIL 2018
FILE NAME	B18060SW.dwg

SHEET NUMBER 1 OF 1
REVISION A
PROJECT NUMBER B18-060SW

S:\QLD_JOBS_2018\B18_060_Kedron_State_High_School\DWGS\CAD\B18060SW.dwg - swestby - 07/06/18 - 11:10 A

LEGEND

- ⊕ STEEL SCREW PILE
- FB1 FOOTING BEAM 450W x 500d
- CC CONC. COLUMN 350 x 350
- BC 200 SERIES BLOCK 6L.
- BW " " BLOCK WALL
- EB1 SLAB EDGE BEAM 500d x 350 W
- IB1 INTERNAL SLAB BEAM 350W x 385d.
- IB2 WIDTH TO SUIT x 385d.
- ▬ LOAD BEARING WALL UNDER EDGE

385 WAFFLE SLAB MESH

JOIN LINE

DOWELLED JOINT

120TH SLAB SL82 MESH

SAW BREAK

REFER PART 2.

KEDRON SHS
WESTERA PARTNERS P/L
JOB No. B18-060
SHEET 1 OF 7

GROUND LEVEL SLAB & FOOTINGS PLAN

PART 1
1:100

• GRADE N32 CONC

REV B
5/6/2018

REFER PART 1

FB1 CC FB1 CC FB1 CC CC FB1 CC

BW IB1 BW IB1 BW IB1 FB1

385
WAFFLE
SL92 MESH

IB1 IB1 IB1 IB1 IB1 IB1 IB1

BW IB1 BW BW IB1 BW FB1

EB1 BC

120
SL82

BC IB1 BC FB1 BC BC EB1

CC CC CC CC

FB1

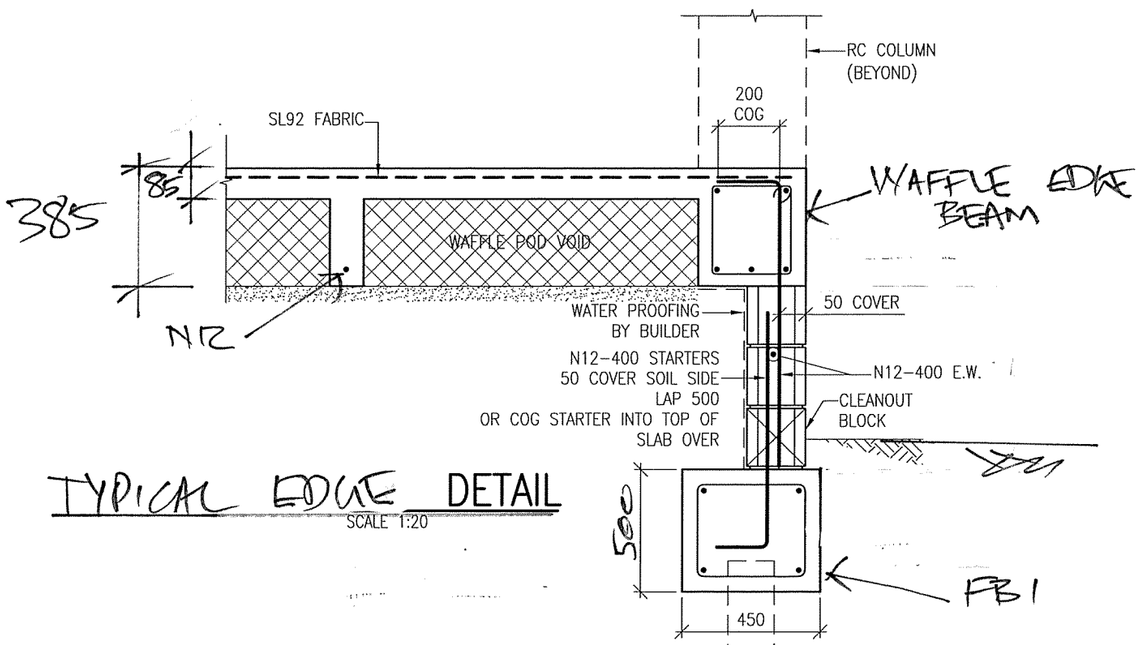
TC

Refer LEGEND ON Sheet 1.

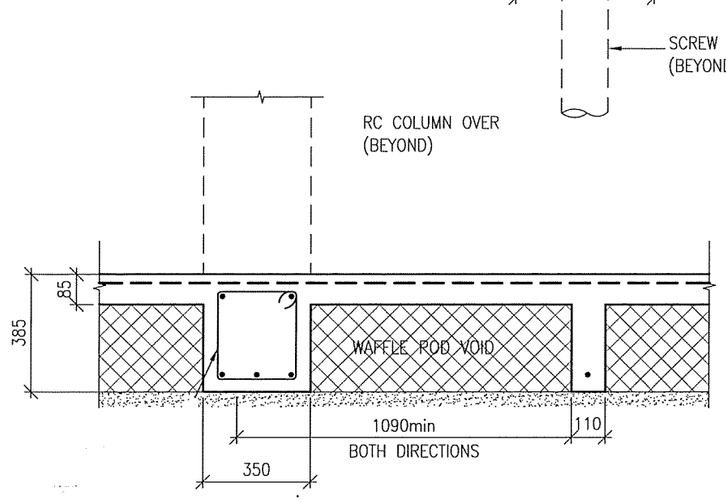
KEDRON SHS
WESTERA PANELS P/L
JOB NO. B18-060
Sheet 2 of 7
GROUND LEVEL SLAB & FOOTINGS PLAN - PART 2.

1:100

REV B 5/6/2018



TYPICAL EDGE DETAIL
SCALE 1:20



IB1 DETAIL
SCALE 1:20

10 ARELEY

KEDRON SHS
WESTERA PARTNERS P/L
JOB No. B18-060
Sheet 3 of 7
GROUND SLAB & FOOTINGS
DETAILS
REV B
5/6/2018



TGT GIRDER TRUSS
HT HIP TRUSS
RT ROOF TRUSSES
L LINTEL
M12 TIE-DOWN ROD
PP POLE PLATE

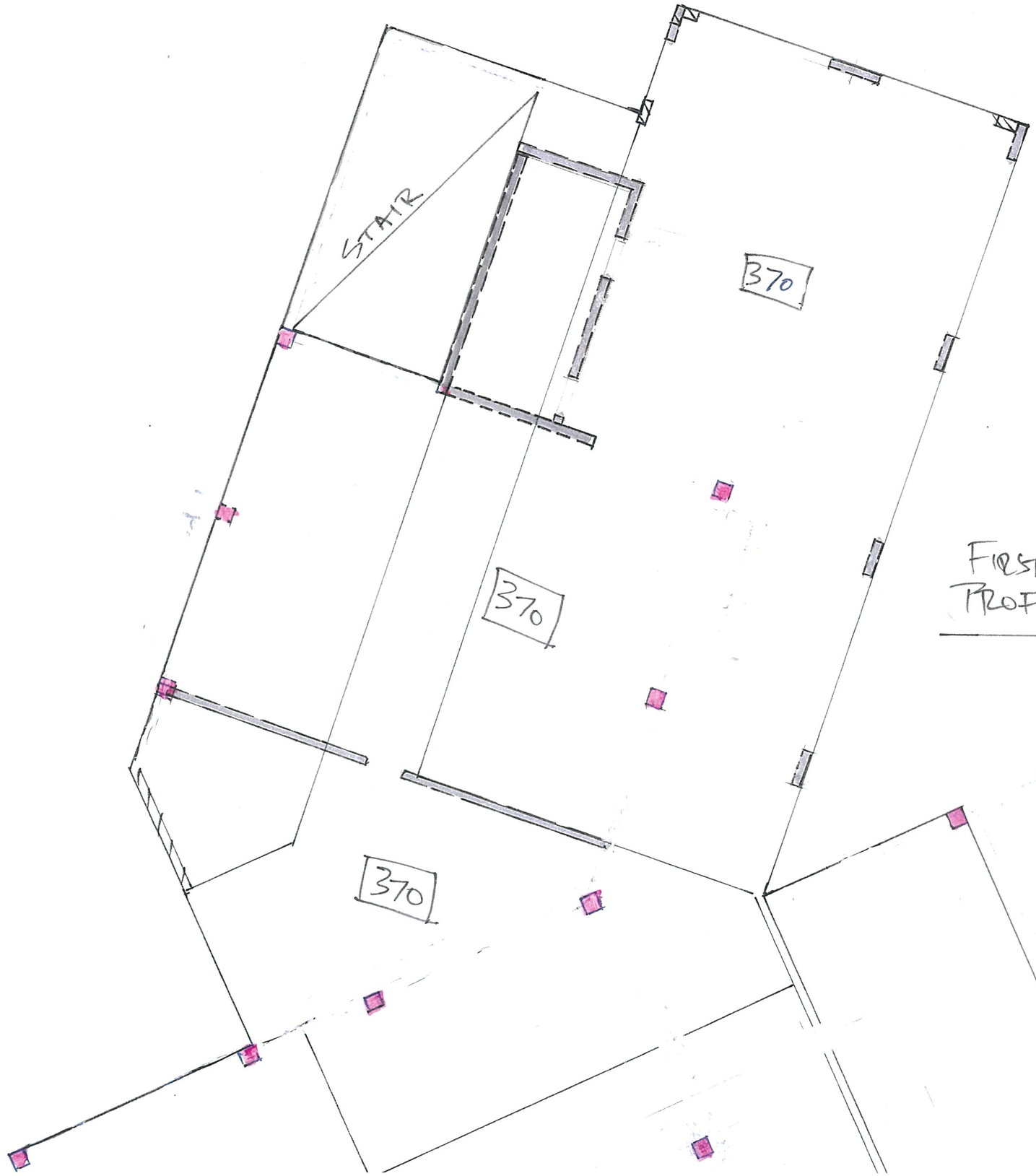
GRADE N40 CONCRETE
LOAD BEARING ELEMENT UNDER
370 SLAB THICKNESS
REO 90kg/m³

FIRST FLOOR SLABS PROFILE PLAN
1:100

ROOF FRAMING PLAN
1:100

PART 1

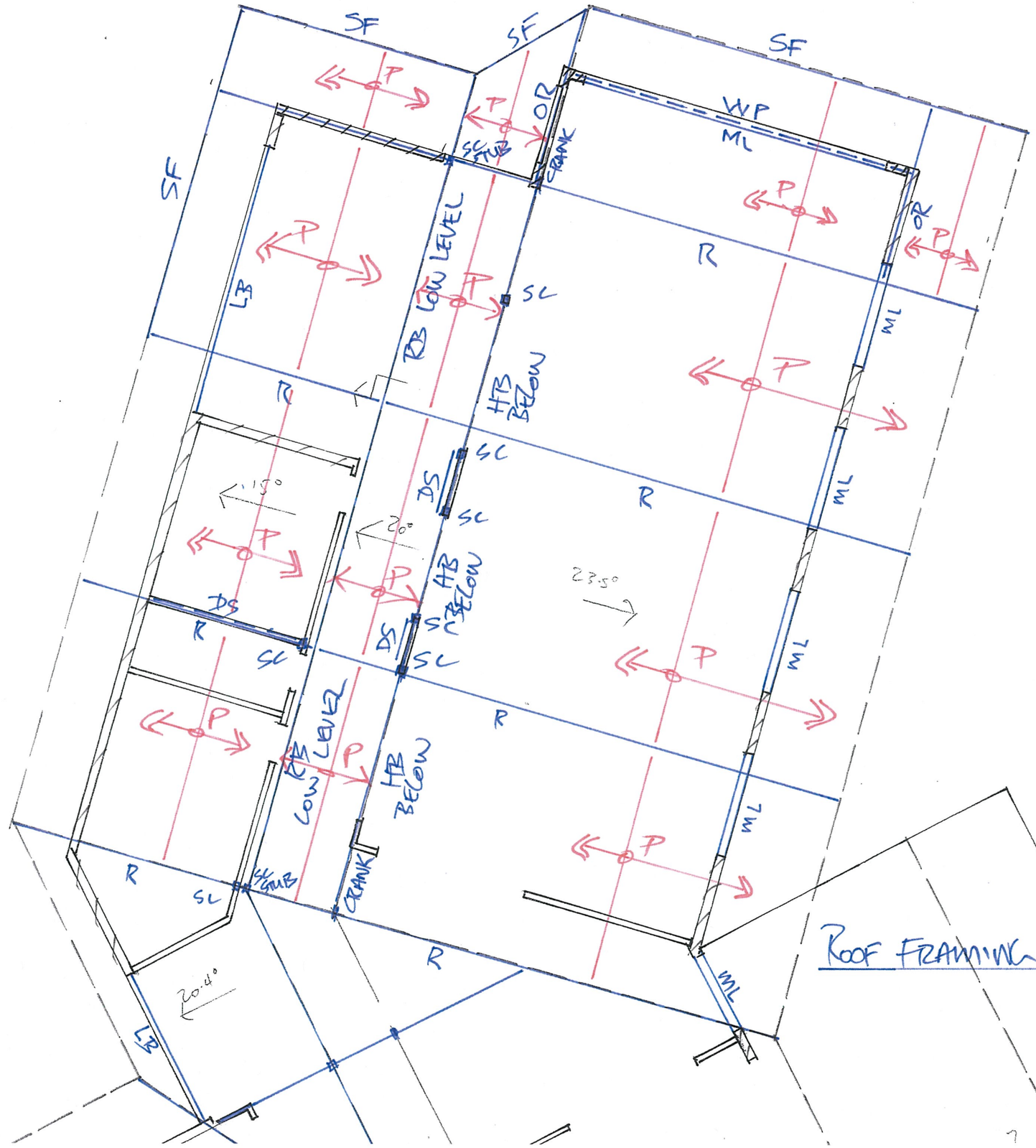
B18-060
Sheet 4 of 7
REV B
5/6/2018



FIRST FLOOR SLABS
PROFILE PLAN - PART 2

B18-060
Sheet 5 of 7
REV B
5/16/2018


SC
SC STUB
CEMNIC
R
RB
LB
ML
OR
P
LOW LEVEL
SC STUB
CEMNIC
SC
R
ML
SC
RB
ML
SC
SC
R
ML
SC
RB
R
SC
SC
SC STUB
LB
SC
SC
SC



ROOF FRAMING CONCEPT – PART 2

B18-060
Sheet 7 of 7
REV B 5/6/20 RK

Appendix C – Flood Mapping (BCC)

Brisbane City Council

FloodWise Property Report

Report Reference
1523586008120

13/04/2018 12:20:08

Dedicated to a better Brisbane

THIS REPORT IS FOR BUILDING AND DEVELOPMENT PURPOSES ONLY

The FloodWise Property Report provides property or lot-based flood information for building and development requirements. This report provides information on estimated flood levels, habitable floor level requirements and more technical information on the four sources of flooding: river, creek / waterway, storm tide and overland flow. Refer to the Useful Definitions section for a glossary of terms.

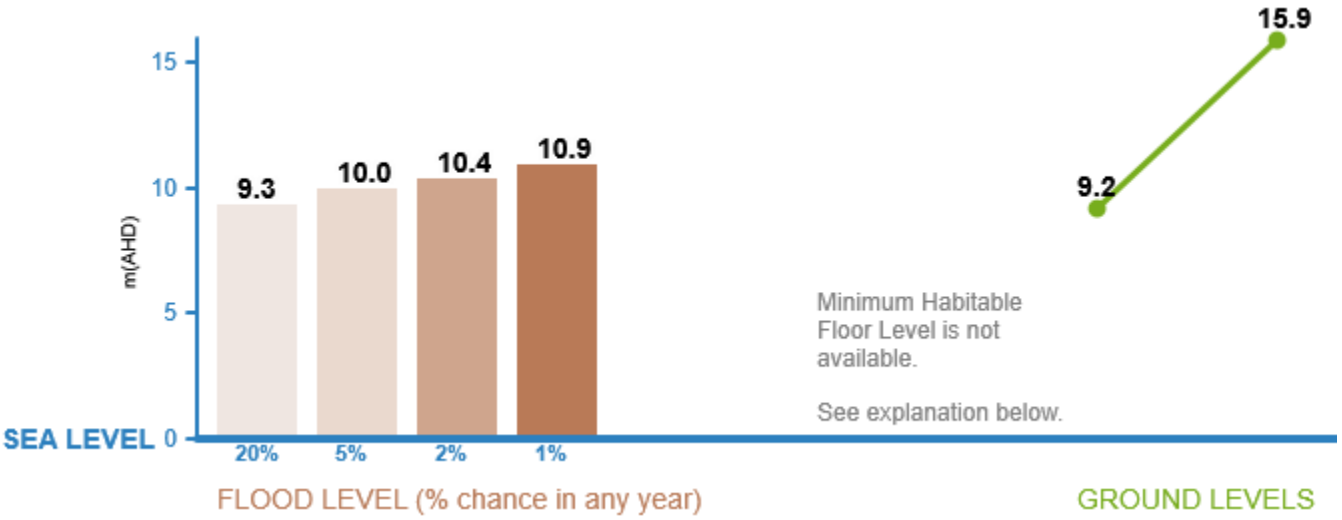
To find out more about how the contents of this report may affect building or development on this property, please visit www.brisbane.qld.gov.au/planning-building.For more general information about understanding your flood risk and how to prepare your property, family or business for potential flooding visit www.brisbane.qld.gov.au/beprepared

THIS IS A REPORT FOR:

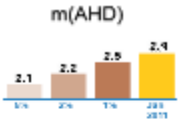
Rateable Address: 34 PARK RD, KEDRON QLD 4031

Lot Details: L.961 SP.250949

FLOOD LEVEL INFORMATION



EXPLANATION



m(AHD) - Metres Australia Height Datum. The level of 0.0m AHD is approximately mean sea level.

Flood Levels - The Flood level bar chart above shows the possible flooding level and percentage chance of that level being reached or exceeded in any year. If an orange bar shows, it is the calculated January 2011 flood level at this address or lot. If a hatched bar shows, it is the 1% AEP flood level from the 2017 Brisbane River Catchment Flood Study (BRCFS). Refer to 'Useful Definitions' for further information.

Minimum Habitable Floor Level - Applies to residential development only. Please refer to Council's planning scheme to learn how this may affect you. If a property is in an overland flow path, or a large allotment, a minimum habitable floor level cannot be provided. Refer flood and planning development flags below.

Ground Levels- The green line above shows this property's approximate lowest and highest ground levels based on latest available information (2014 airborne laser survey) to Council. If you are building, please confirm with a surveyor.

For further information and definitions please refer to the Useful Definitions page

FLOOD AND PLANNING DEVELOPMENT FLAGS

DEVELOPMENT FLAG(S)

This property may also be affected by one or more flood or property development overlays or flags. These include: OVERLAND FLOW PATH,LARGE ALLOTMENT,WATERWAY CORRIDOR

Please review the technical summary over page and refer to Council's planning scheme for further information.

Brisbane City Council

FloodWise Property Report

Dedicated to a better Brisbane

Report Reference
1523586008120
13/04/2018 12:20:08

TECHNICAL SUMMARY

This section of the FloodWise Property Report contains more detailed flood information for this property so surveyors, builders, certifiers, architects and engineers can plan and build in accordance with Council's planning scheme. For more information about building and development in Brisbane please visit www.brisbane.qld.gov.au/planning-building or talk to a Development Assessment Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

THIS IS A REPORT FOR:

Rateable Address: 34 PARK RD, KEDRON QLD 4031
Lot Details: L.961 SP.250949

PROPERTY INFORMATION (Summary)

The following table provides a summary of flood information for this property. More detailed flood level information is provided in the following sections of this report.

PROPERTY SUMMARY	LEVEL (mAHD)
Minimum Ground Level	9.2
Maximum Ground Level	15.9
Min Habitable Floor Level	Contact Council
Defined Flood Level (DFL)	10.9
Defined Flood Level Source	CREEK/WATERWAY
Flooding may also occur from	OVERLAND FLOW,CREEK/WATERWAY

ESTIMATED PEAK FLOODING LEVELS

The table below displays the peak estimated flood levels by probability for this property. Estimated flood level data should be used in conjunction with applicable planning scheme requirements - Refer to Flood Planning Development Information.

Note that the overland flow flooding level maybe higher than the levels below from other sources.

DESCRIPTION	LEVEL (mAHD)	SOURCE
20% AEP	9.3	CREEK/WATERWAY
5% AEP	10.0	CREEK/WATERWAY
2% AEP	10.4	CREEK/WATERWAY
1% AEP	10.9	CREEK/WATERWAY
DFL	10.9	CREEK/WATERWAY

* Council does not hold flood levels for this probability event, or it is not applicable for your property. If the source for the 1% AEP is River, refer to the DFL. Otherwise, refer to the BRCFS 1% AEP for information purposes only.

FLOOD PLANNING DEVELOPMENT INFORMATION

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

FLOOD OVERLAY CODE

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the Flood Planning Areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in Council's planning scheme, which is available from www.brisbane.qld.gov.au/planning-building.

FLOOD PLANNING AREAS (FPA)		
RIVER	CREEK/WATERWAY	OVERLAND FLOW
	FPA1	Applicable
	FPA3	
	FPA4	
	FPA5	

COASTAL HAZARD OVERLAY CODE

There are currently no Coastal Hazard Overlays that apply to this property.

PROPERTY DEVELOPMENT FLAGS

Overland Flow Path - Mapping indicates this property may be located within an overland flow path. Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. It is recommended you consult a Registered Professional Engineer of Queensland to determine this property's habitable floor level and flooding depth. Please refer to Council's planning scheme for further information.

Waterway Corridor - This property may also be located within a mapped waterway corridor as identified in the waterway corridors overlay map of Council's planning scheme. Please consider this in conjunction with Council's planning scheme requirements.

Large Allotment - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site. For more information or advice, it is recommended you engage a Registered Professional Engineer of Queensland.

Brisbane City Council

FloodWise Property Report

Report Reference
1523586008120

13/04/2018 12:20:08

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Useful Definitions

Australian Height Datum (AHD) - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Annual Exceedance Probability (AEP) – The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

Defined Flood Level (DFL) - The DFL for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m^3/s.

Maximum and Minimum Ground Level – Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum Habitable Floor Level – The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed.

Council's Planning Scheme - The City Plan (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Residential Flood Level (RFL) – Residential flood level (RFL) for Brisbane River flooding equates to the flood level applicable to the extent of January 2011 floods as depicted by mapping on the Queensland Reconstruction Authority website or the Council's defined flood level (DFL) for the Brisbane River, whichever is higher.

Rateable Address - A Lot or Property may have more than one street address. The address shown on this report is the address used by Council for the Lot or property selected.

Property - A property will contain 1 or more lots. The *Multiple Lot Warning* is shown if you have selected a property that contains multiple lots.

2017 Brisbane River Catchment Flood Study (BRCFS) – The BRCFS is a project led by the Queensland Government. The flood study was released in 2017. The 1% AEP flood levels from the flood study is yet to be adopted for application in planning schemes and is for information only. Other % AEPs will be updated with new information from the flood study as part of any relevant changes to City Plan 2014 as soon as is practicable.

Brisbane City Council's Online Flood Tools

Council provides a number of online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk and prepare for flooding.

Planning and Development Online Flood Tools

Council's online flood tools for planning and development purposes include:

- FloodWise Property Report
- Flood Overlay Code

For more information on Council's planning scheme and online flood tools for planning and development:

- phone 07 3403 8888 to talk to a Development Assessment Customer Liaison Officer
- visit www.brisbane.qld.gov.au/planning-building
- visit a Regional Business Centre.

Helping residents and businesses be prepared for flooding

Council has a range of free tools and information to help residents and businesses understand potential flood risks and how to be prepared. This includes:

- Flood Awareness Maps
- Flooding in Brisbane – A Guide for Residents
- Flooding in Brisbane – A Guide for Business
- Early Warning Alert Service. Visit www.brisbane.qld.gov.au/earlywarning to register for email, home phone or SMS severe weather alert updates.

Note: The Flood Awareness Maps show four levels of flood likelihood from high likelihood (flooding is very likely to occur) through to very low likelihood (very rare and extreme flood events).

For more information on Council's online flood tools for residents and business:

- Visit www.brisbane.qld.gov.au/beprepared
- Phone (07) 3403 8888.

Brisbane City Council

FloodWise Property Report

Report Reference
1523586008120

13/04/2018 12:20:08

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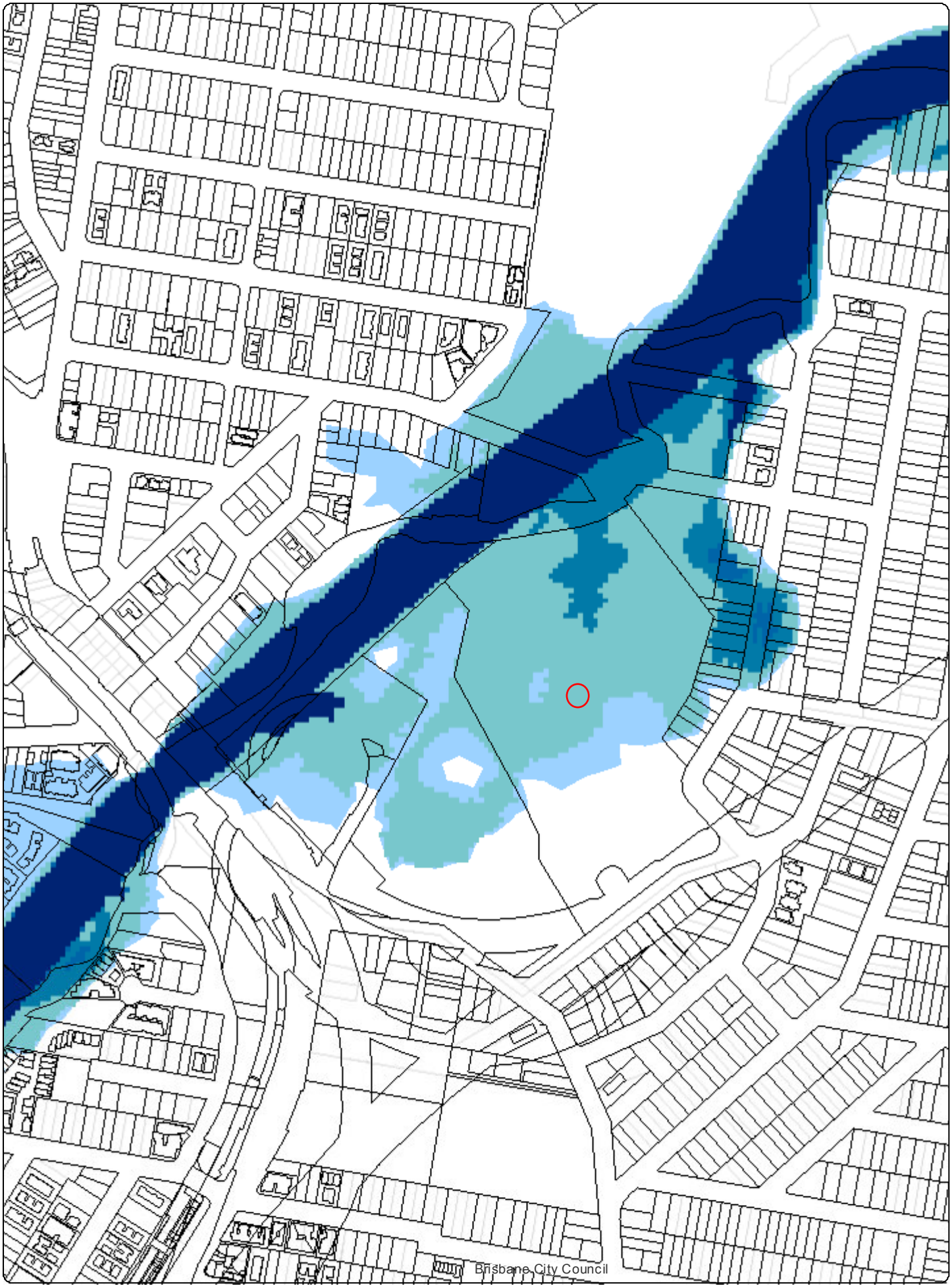
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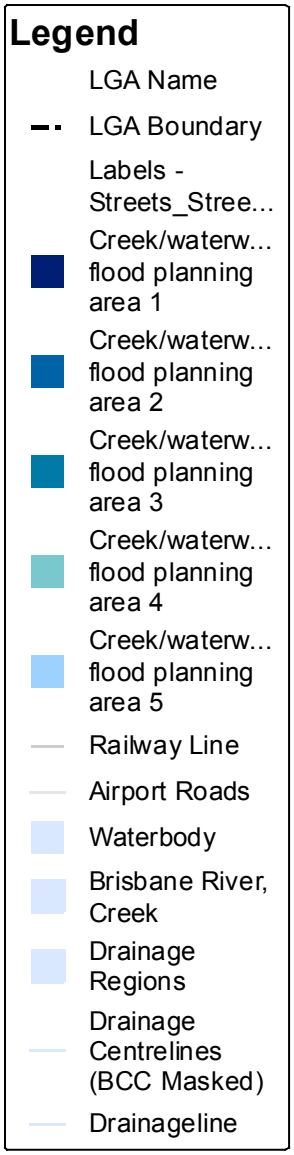
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BRISBANE CITY Planning Scheme

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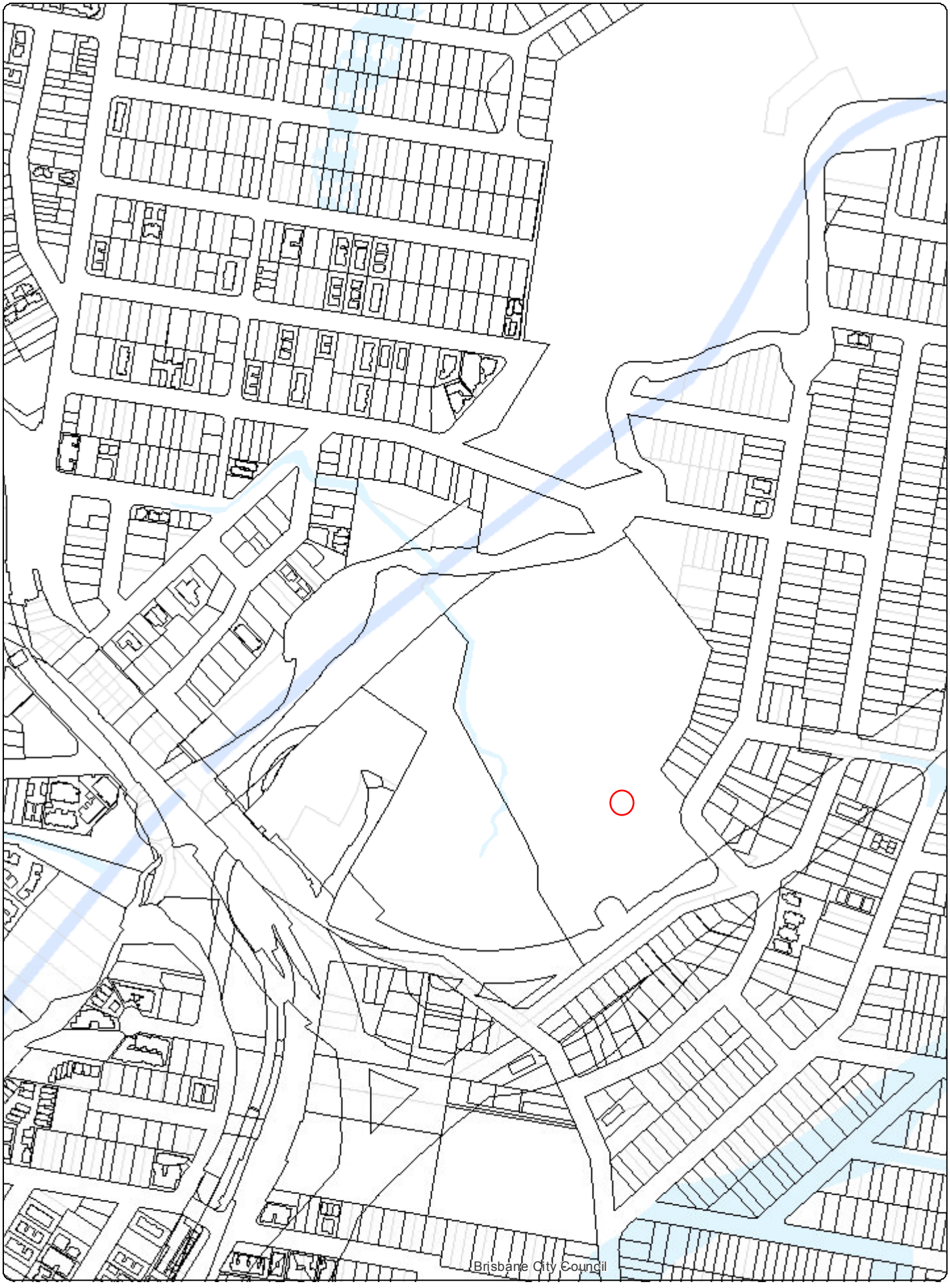
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Legend

- LGA Name
- LGA Boundary
- Labels - Streets_Stree...
- Overland flow flood planning area
- Railway Line
- Airport Roads
- Waterbody
- Brisbane River, Creek
- Drainage Regions
- Drainage Centrelines (BCC Masked)
- Drainageline

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BRISBANE CITY Planning Scheme

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Appendix D – Design Statement BCC 0.2% AEP

B18-060: Design Statement – Kedron SHS Floor Level Check and BCC received info

This Design Statement summarises the research into the Building Floor Level

1. BCC Overlay Code Requirement

Class 9	Building floor level	Category A
	Building floor level for habitable rooms in Class 9a or 9c where for a residential care facility	0.2% AEP flood
	Building floor level for habitable rooms in Class 9b where involving children, such as a childcare centre	0.2% AEP flood
	Garage or car park located in the building undercroft[3]	Category C
	Carport[5] or unroofed car park	Category D
	Vehicular access and manoeuvring areas	Category D
	Essential electrical services[2]	Category A

BCC Notes:

(1) Refer to the Building Code of Australia for definitions of building classifications.

(2) Essential electrical services include any area or room used for fire control panel, telephone PABX, sensitive substation equipment including transformers, low voltage switch gear, high voltage switch gear, battery chargers, protection control and communication equipment, low voltage cables, high voltage cables, and lift or pump controls.

(3) Basement car parks must be suitably waterproofed and all air vents, air-conditioning ducts, pedestrian access and entry and exit ramps into the basement must comply with the applicable flood planning levels in this table.

(4) A shelter for a motor vehicle, which has a roof and one or more open sides, and which can be built against the side of a building.

(5) A slight or rough structure built for shelter and storage; or a large strongly built structure, often open at the sides or end.

(6) Where essential electrical services are proposed in a basement below the specified flood planning level, the flood immunity of all air vents, air-conditioning ducts, pedestrian access, lift shafts and entry/exit ramps at the basement entrance and any other openings into that basement must conform with the flood planning levels for Category A for Residential development, and the relevant basement entry level of all other uses. To ensure flood immunity, basements require a waterproof basement design to prevent flood waters entering the basement.

- A flood event with an AEP of 2% is the equivalent of a 50 year ARI flood event.
- A flood event with an AEP of 0.2% is the equivalent of a 500 year ARI flood event.
- ***Where a building has a combination of uses that includes a component of classes 2, 3 or 9, the essential services for that building shall comply with the requirements of the building class with the greatest flood planning level requirement.***
- Use classes for residential development also include basement storage.

2. Levels issued from Flood Wise Property Report:

ESTIMATED PEAK FLOODING LEVELS

The table below displays the peak estimated flood levels by probability for this property. Estimated flood level data should be used in conjunction with applicable planning scheme requirements - Refer to Flood Planning Development Information.

Note that the overland flow flooding level maybe higher than the levels below from other sources.

DESCRIPTION	LEVEL (mAHD)	SOURCE
20% AEP	9.3	CREEK/WATERWAY
5% AEP	10.0	CREEK/WATERWAY
2% AEP	10.4	CREEK/WATERWAY
1% AEP	10.9	CREEK/WATERWAY
DFL	10.9	CREEK/WATERWAY

3. Levels issued by BCC from Additional Research – 0.2% AEP



Figure 1- 0.2%AEP Ultimate (BCC Kedron Brook Flood Study)

The level issued by BCC for the 0.2% AEP is 11.10m AHD.

The BCC requirement for electrical services refers to Category A as stated in the BCC Flood overlay Code:

Table 9.4.9.3.B—Categories of flood planning levels

Flooding type[1]	Minimum design floor or pavement levels (m AHD)[2] (refer to Table 9.4.9.3.C for assignment of these categories)				
	Category A	Category B	Category C	Category D	Category E
Waterway[A] or open channel	1% AEP flood level + 500mm	1% AEP flood level + 300mm	1% AEP flood level	1% AEP flood level	5% AEP flood level
Overland flow flooding[B]	2% AEP flood level +500mm	2% AEP flood level +300mm	2% AEP flood level	2% AEP flood level	5% AEP flood level

According to the Flood Overlay Code, Electrical services in the proposed building must be placed at 1% AEP flood level + 500mm.

When the requirement is compared to the 0.2% AEP the following is found:

1% AEP flood level is 10.9m + 500mm = 11.4m > 0.2% AEP = 11.1m AHD

4. Recommendation

Taking the above-mentioned requirements into consideration, it is recommended that the floor level is not below 11.4m AHD.

Appendix 12

Traffic Assessment

Department of Housing and Public Works

Queensland Government

KEDRON STATE HIGH SCHOOL
ADDITIONAL ACCOMMODATION – 2020
TRAFFIC IMPACT ASSESSMENT

FOR

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CONTENTS

Page

1. INTRODUCTION 1
1.1 BACKGROUND 1
1.2 PROPOSED EXPANSION OVERVIEW 1
1.3 FUTURE DEVELOPMENT 2
1.4 SCOPE OF ASSESSMENT 2
2. EXTERNAL ROADS AND INTERSECTION REVIEW 3
2.1 OVERVIEW 3
2.2 OBSERVATIONS 4
2.3 PROPOSED EXPANSION – TRAFFIC IMPACT ASSESSMENT 4
2.3.1 Transport Network Planning 4
2.3.2 Study Intersection 4
2.3.3 Assessment Methodology 4
2.3.4 Assessment Scenarios 4
2.3.5 Surveyed Traffic Volumes 5
2.3.6 Background Traffic Growth 5
2.3.7 Proposed Expansion Traffic – Generation Rates 5
2.3.8 Proposed Expansion Traffic – Directional Splits 5
2.3.9 Proposed Expansion Traffic – Generation 5
2.3.10 Proposed Expansion Traffic – External Traffic Distribution 6
2.3.11 Assessment Scenarios 6
2.3.12 Design Traffic Volumes 6
2.3.13 Analysis Results 6
3. PUBLIC TRANSPORT INFRASTRUCTURE REVIEW 8
3.1 OVERVIEW 8
3.2 OBSERVATIONS 9
3.3 RECOMMENDATIONS 12
4. EXTERNAL ACTIVE TRANSPORT INFRASTRUCTURE REVIEW 13
4.1 OVERVIEW 13
4.2 OBSERVATIONS 13
4.3 RECOMMENDATIONS 13
5. INTERNAL TRANSPORT INFRASTRUCTURE REVIEW 14
5.1 OVERVIEW 14
5.2 SITE ACCESS 14
5.3 CAR PARKING 14
5.3.1 Existing Areas 14
5.3.2 Provision Review 15
5.4 SET DOWN / PICK UP ARRANGEMENTS 15
5.5 BICYCLE PARKING 15
5.5.1 Existing Areas 15
5.5.2 Provision Review 16
5.6 SERVICING 16
6. CODE RESPONSES 17
7. SUMMARY 18

Tables

Table 1.1: Student Enrolments and Staff – Existing and Proposed

Table 2.1: Key Roads
Table 2.2: Key Intersections
Table 2.3: Traffic Survey Results Summary
Table 2.4: Adopted Background Traffic Growth Rates
Table 2.5: Adopted Trip Generation Rates
Table 2.6: Adopted Directional Split
Table 2.7: Estimated Peak Hour Demands
Table 2.8: Adopted External Traffic Distribution
Table 2.9: SIDRA Results: Study Intersection

Table 3.1: Public Transport Services

Table 5.1: Car Parking Provision Rate – TAPS Policy
Table 5.2: Car Parking Provisions Review Summary – TAPS Policy
Table 5.3: Bicycle Parking Provision Rate – TAPS Policy
Table 5.4: Bicycle Parking Provision Review Summary – TAPS Policy

Figures

Figure 1.1: Subject Site Location

Figure 2.1: Existing Road Network
Figure 2.2: Modelled Layout: Study Intersection

Figure 3.1: Public Transport Network – Bus Stops
Figure 3.2: Bus Stop (ID: 011075) – Park Road
Figure 3.3: Bus Stop (ID: 011074) – Park Road
Figure 3.4: Bus Stop (ID: 011076) – Park Road
Figure 3.5: Bus Stop (ID: 011077) – Park Road
Figure 3.6: School Bus Stop – Gorman Street

Figure 4.1: Existing Children's Crossing – Park Road

Figure 5.1: Existing Car Parking Areas
Figure 5.2: Existing Bicycle Parking Area

Appendices

Appendix A: Proposed Development Plans
Appendix B: Traffic Survey Data
Appendix C: Design Traffic Volumes
Appendix D: SIDRA Analysis Results
Appendix E: Code Responses

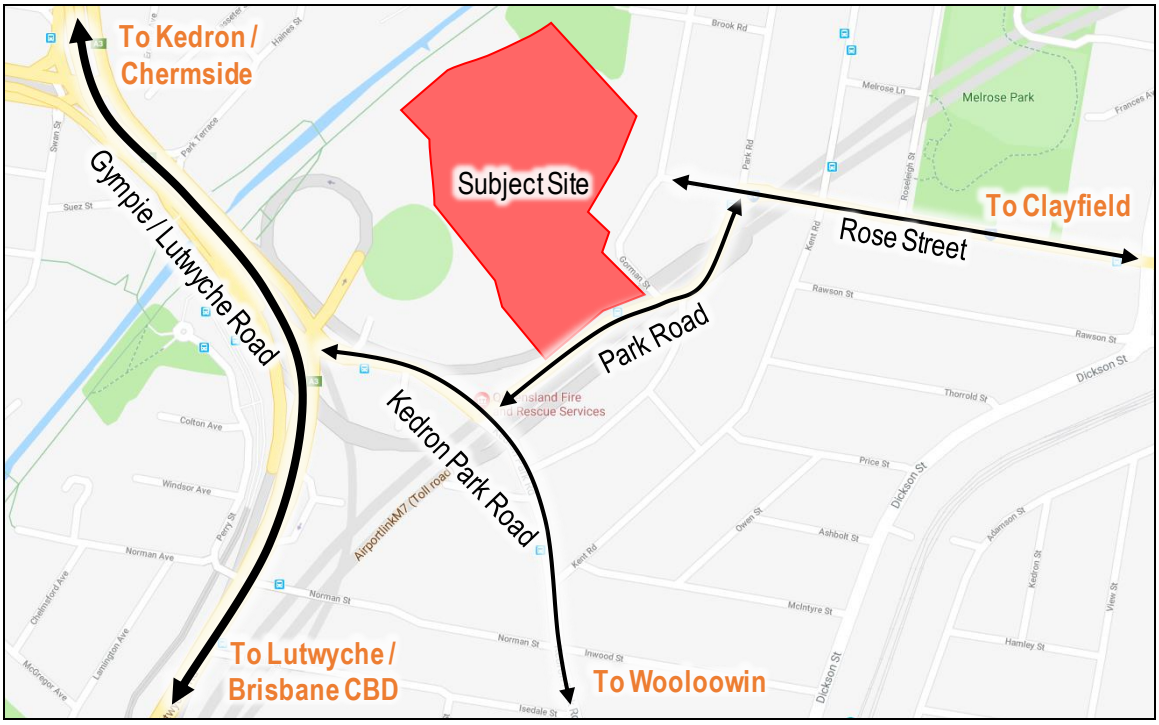
1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting has been commissioned by Queensland's Department of Education and Training (DET) to prepare a traffic impact assessment (TIA) for the 'proposed expansion' of the Kedron State High School ('the subject site').

The subject site is located at 34 Park Road, Kedron, and is formally described as Lot 961 on SP250949.

The location of the subject site is shown in Figure 1.1.



SOURCE: Google Maps

Figure 1.1: Subject Site Location

1.2 PROPOSED EXPANSION OVERVIEW

The intent of the expansion is to increase the enrolment capacity of the school to cater for anticipated growth in 2020 associated with six (6) year level cohorts attending secondary school (currently five (5) year level cohorts).

A summary of the existing and proposed number of student enrolments and staff is provided in Table 1.1.

Table 1.1: Student Enrolments and Staff – Existing and Proposed

Persons	Existing	Proposed	
		Additional	Total
Student Enrolments	1,505	199	**1,704**
Staff	210	22	**232**
Total	**1,715**	**221**	**1,936**

The proposed expansion will require the construction of a new building including six (6) teaching spaces.

A copy of the site plans is included in **Appendix A**.

Whilst existing traffic and transport matters were considered as part of this assessment, the traffic and transport matters associated with the proposed expansion was our focus. The key tasks we undertook as part of preparing this assessment are outlined in Section 1.4.

1.3 FUTURE DEVELOPMENT

High level investigation of a further expansion option has also been undertaken by DET.

It is understood that the further expansion option may support approximately 200 additional student enrolments and require approximately 10 staff i.e. 1,900 students and 242 staff in total.

This further expansion option has not been considered as part of this assessment as its need has not yet been confirmed. Therefore, the traffic and transport impacts of the further expansion will need to be considered in the future.

1.4 SCOPE OF ASSESSMENT

Whilst existing traffic and transport matters were considered as part of this assessment, the traffic and transport matters associated with the proposed expansion was our focus.

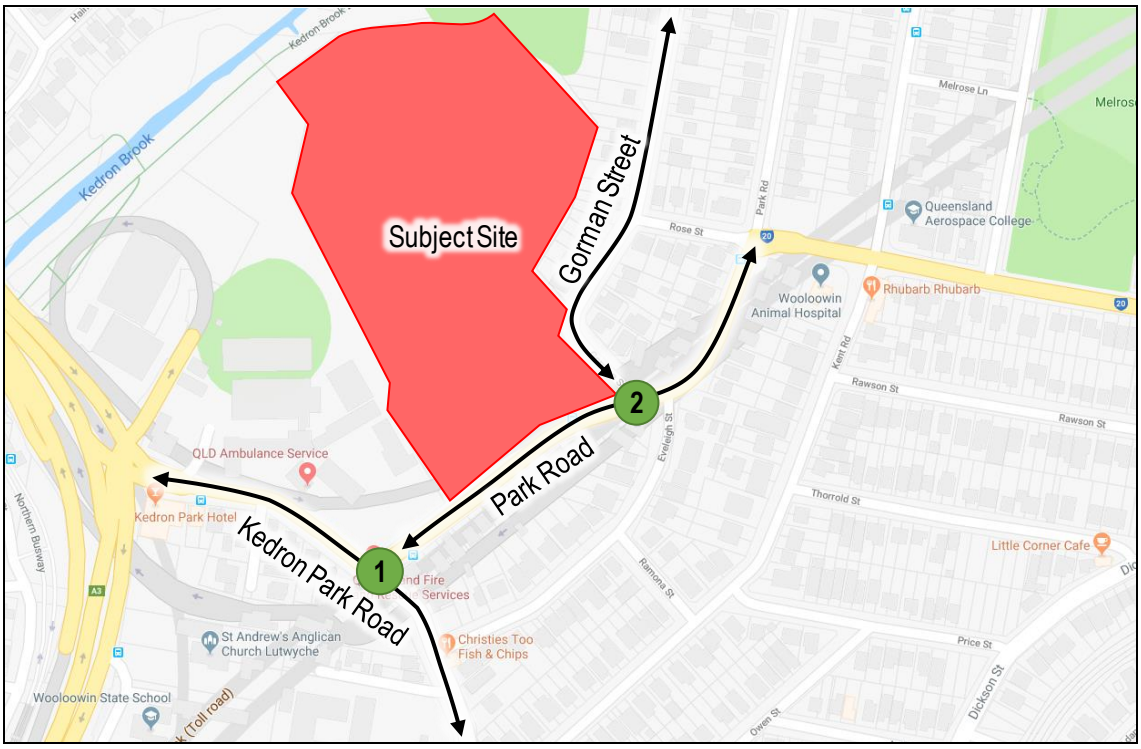
The scope of this TIA included completing the following key tasks:

- undertaking a site inspection to gain a better understanding of the transport network surrounding the subject site, observe existing traffic and transport operations, issues etc.;
- estimating the proposed expansion's traffic generation and distributing traffic volumes across the external road network;
- undertaking SIDRA analysis at the Kedron Park Road / Park Road intersection and quantifying potential expansion related impacts;
- reviewing any modified access arrangements against Brisbane City Council's (Council's) Transport, Access, Parking and Servicing Planning Scheme Policy (TAPS Policy) and/or relevant Australian Standards (AS2890);
- reviewing additional on-site car and bicycle parking provisions against Council's TAPS Policy;
- reviewing modified car park areas against Council's TAPS Policy and/or AS2890;
- reviewing modified servicing and refuse collection arrangements including swept paths; and
- reviewing active and public transport in proximity to the subject site.

2. EXTERNAL ROADS AND INTERSECTION REVIEW

2.1 OVERVIEW

Figure 2.1 illustrates the key elements of the existing road network in proximity to the subject site.



SOURCE: Google Maps

Figure 2.1: Existing Road Network

Table 2.1 provides a summary of the key roads surrounding the subject site.

Table 2.1: Key Roads

Road Name	Jurisdiction	Hierarchy	Cross-Section	Speed Limit
Kedron Park Road	TMR*	Suburban Road	4 lanes undivided	60km/h
Park Road	TMR*	Suburban Road	2 lanes undivided	60km/h (School Zone – 40km/h)
Gorman Street	Council	Neighbourhood Road	2 lanes undivided	50km/h

**The Department of Transport and Main Roads (TMR)*

Table 2.2 provides a summary of the key intersections surrounding the subject site.

Table 2.2: Key Intersections

ID	Name	Jurisdiction	Control
Intersection 1	Kedron Park Road / Park Road	TMR*	Traffic Signals
Intersection 2	Park Road / Gorman Street	TMR* / Council	Priority

**The Department of Transport and Main Roads (TMR)*

2.2 OBSERVATIONS

An inspection of the subject site and surrounding transport network was undertaken on Wednesday 18th April 2018 during both the morning and afternoon school peak periods.

Key road and intersection related observations made during our inspections are summarised below:

- parents dropped off and picked up children from loading areas on both sides of Park Road;
- loading areas on the northern side of Park Road were more heavily utilised by parents;
- parents dropped off and picked up children from loading areas on both sides of Gorman Street;
- loading areas on the western side of Gorman Street were more heavily utilised by parents;
- traffic demands generated by the subject site appeared to be more evenly spread across the morning peak period than those generated in the afternoon peak period;
- in the afternoon, traffic demands generated by the subject site appeared to reduce significantly from around 3:15pm (school finishes at approximately 2:55pm); and
- pedestrians crossing Park Road affected the operation of the road (further discussion included in Section 2.4.2).

2.3 PROPOSED EXPANSION – TRAFFIC IMPACT ASSESSMENT

2.3.1 Transport Network Planning

A review of Council's Local Government Infrastructure Plan (LGIP), indicated that no upgrades are planned for the existing road, active transport or public transport networks adjacent to the site.

A review of the Queensland Transport and Roads Investment Program (QTRIP) 2017-18 to 2020-21, published by TMR, indicated that no upgrades are planned for the existing road, active transport or public transport networks adjacent to the site.

2.3.2 Study Intersection

Operational (SIDRA) analysis has been undertaken at the Kedron Park Road / Park Road intersection (referred to herein as the 'study intersection') to determine the potential impact of development related traffic.

2.3.3 Assessment Methodology

Our traffic analysis has been undertaken generally in accordance with the Guide to Traffic Impact Assessment (GTIA), TMR 2017.

The key intersection performance threshold identified in the GTIA is intersection delay. The GTIA requires mitigation measures to be implemented if average intersection delays increase by more than 5% due to the addition of development traffic.

2.3.4 Assessment Scenarios

This report considers potential development related traffic impacts during the following years:

- 2018 base year (when traffic survey data was captured); and
- 2020 future year (assumed 'Year of Opening' for the proposed expansion).

2.3.5 Surveyed Traffic Volumes

To establish baseline traffic volumes, surveys were undertaken at the study intersection.

The survey results are summarised in Table 2.3.

Table 2.3: Traffic Survey Results Summary

Day & Date	AM School Peak Period		PM School Peak Period	
	Time	Total Traffic Volumes	Time	Total Traffic Volumes
Wednesday 18th April 2018	7:00am to 9:00am	1,753 trips	3:00pm to 4:00pm	1,298 trips

A copy of the traffic survey data is provided at **Appendix B**.

2.3.6 Background Traffic Growth

Future year background traffic volumes were estimated based on applying growth rates to surveyed traffic volumes. Traffic growth rates were identified based on a review of existing and expected development accessed by each road.

Adopted background traffic growth rates are identified in Table 2.4.

Table 2.4: Adopted Background Traffic Growth Rates

Road	Growth Rate
Kedron Park Road	3% p.a.
Park Road	3% p.a.
Gorman Street	0% p.a.

2.3.7 Proposed Expansion Traffic – Generation Rates

Table 2.5 provides a summary of the trip generation rates we adopted in our assessment.

Table 2.5: Adopted Trip Generation Rates

Land Use	AM Peak	PM Peak	Unit	Source
High School	0.72	0.42	trips / enrolment	GTA Sydney School Traffic Generation Report

2.3.8 Proposed Expansion Traffic – Directional Splits

Table 2.6 provides a summary of the adopted directional distribution splits, sourced from the GTA Sydney School Traffic Generation Report.

Table 2.6: Adopted Directional Split

Land Use	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
High School	60%	40%	100%	40%	60%	100%

2.3.9 Proposed Expansion Traffic – Generation

Table 2.7 provides a summary of the estimated peak hour demands for the proposed development.

Table 2.7: Estimated Peak Hour Demands

Land Use	AM Peak (trips)			PM Peak (trips)		
	In	Out	Total	In	Out	Total
High School	86	57	143	33	50	84

2.3.10 Proposed Expansion Traffic – External Traffic Distribution

The adopted external traffic distribution was identified based on a review of the traffic surveys results and on-site observations.

The external traffic distribution we adopted is summarised in Table 2.8.

Table 2.8: Adopted External Traffic Distribution

Direction	Via	Proportion %
North	Kedron Park Road	40%
East	Park Road	30%
South	Kedron Park Road	30%
Total	**-**	**100%**

2.3.11 Assessment Scenarios

This report considers potential development related impacts during the following design horizons:

- 2018 base year (when traffic survey data was captured); and
- 2020 future year (assumed 'Year of Opening' for the proposed expansion).

2.3.12 Design Traffic Volumes

Design traffic volumes have been derived by adding estimated development trips to the background traffic forecasts for various design horizons. The relevant design traffic volumes are included in **Appendix C**.

2.3.13 Analysis Results

The layout of the study intersection as modelled in SIDRA is illustrated in Figure 2.2.

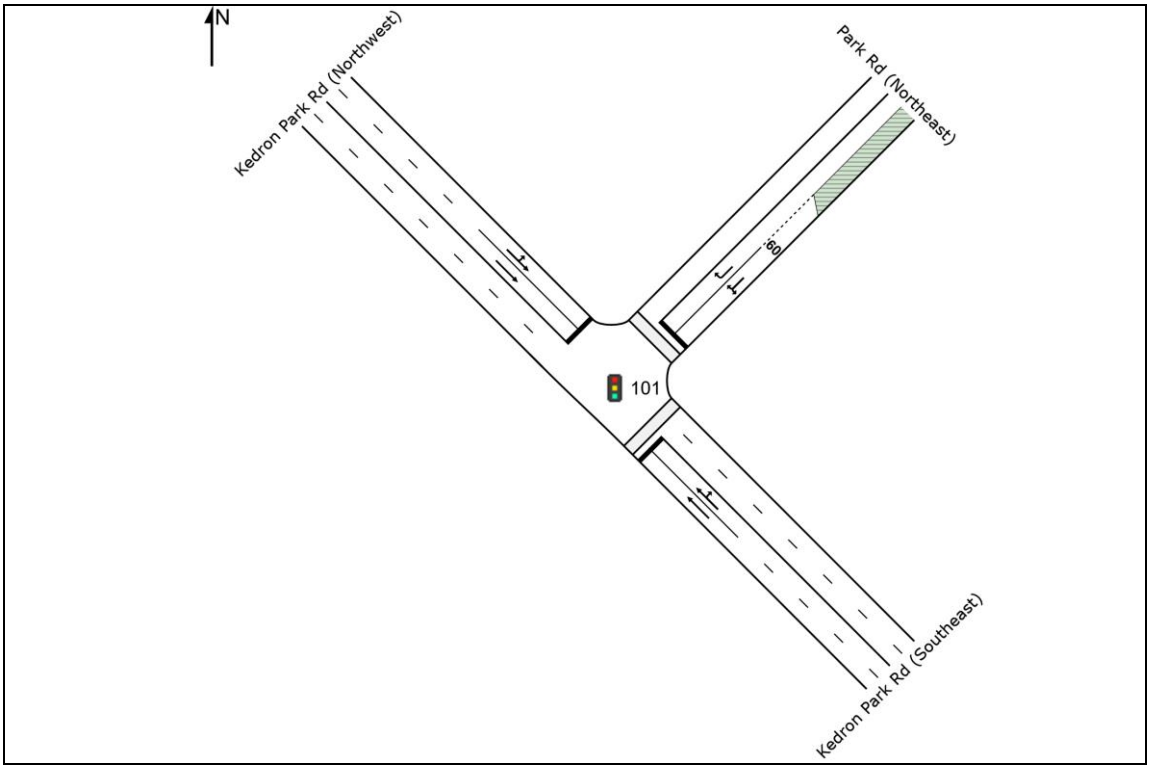


Figure 2.2: Modelled Layout: Study Intersection

The SIDRA results are summarised in Table 2.9 with detailed outputs provided at **Appendix D**.

Table 2.9: SIDRA Results: Study Intersection

Year	Peak	Scenario	Degree of Saturation (DOS)	Average Delay (s)	Level of Service	95th Percentile Queue Length (m)
2018	AM	Survey	0.73	36	D	198
	PM		0.82	36	D	190
2020	AM	Background	0.76	37	D	210
	PM		0.85	37	D	208
2020	AM	With Expansion	0.76	38	D	229
	PM		0.87	38	D	212

Green = operating below the practical operating capacity for a signalised intersection (DOS < 0.90)

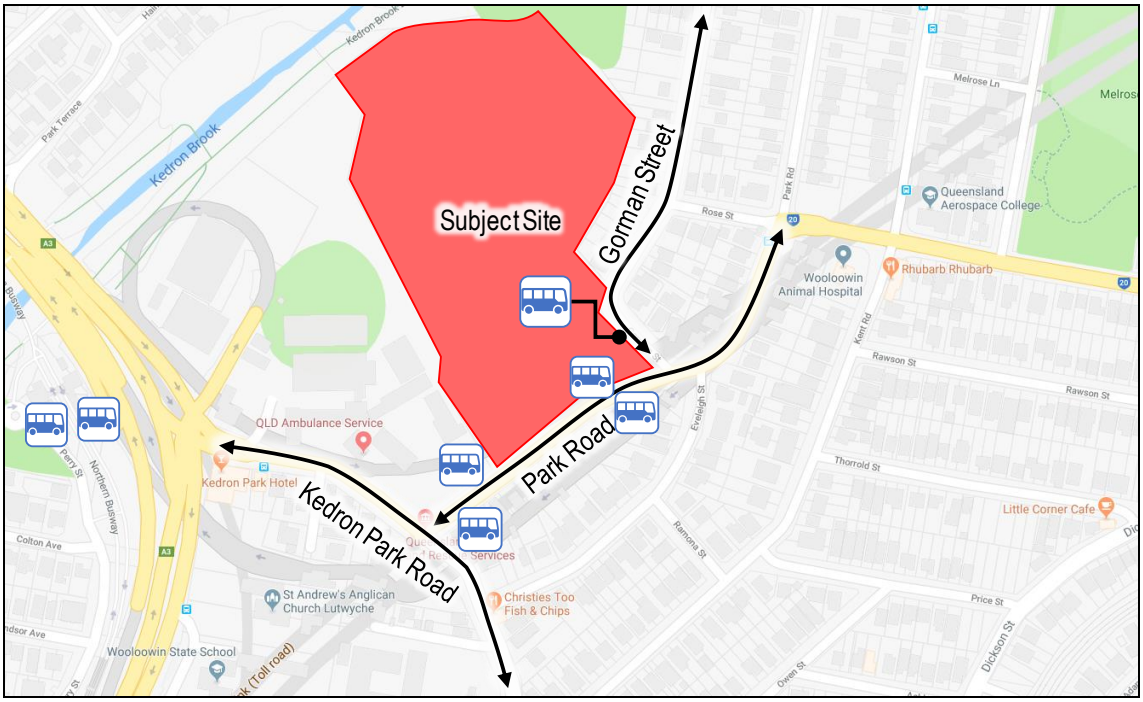
The above results suggest that average delays at the intersection may increase by approximately 3% due to the proposed expansion. As delays are expected to increase by less than 5%, no upgrades to the intersections are required by the GTIA.

3. PUBLIC TRANSPORT INFRASTRUCTURE REVIEW

3.1 OVERVIEW

There are a number bus stops within approximately 500m of the subject site which are serviced by several inbound and outbound bus routes.

Existing bus stops within approximately 500m of the subject site are identified on Figure 3.1.



SOURCE: Google Maps

Figure 3.1: Public Transport Network – Bus Stops

An overview of the bus routes which service these stops is provided in Table 3.1.

Table 3.1: Public Transport Services

Stop Location	Route Number	Servicing	Weekday Frequency	Weekend Frequency
Both sides of Park Road, in proximity to Kedron Park Road	321	Toombul, Wooloowin, Lutwyche, RBWH, Spring Hill, City	Peak – 30 mins Off-peak – 60 mins	Sat – 60 mins Sun – No services
Park Road eastbound, in proximity to Kedron Park Road	942 (school bus)	Bracken Ridge, Taigum, Zillmere, Geebung, Wavell Heights, Chermside, Kedron, Kedron High	1 morning service	No services
	947 (school bus)	McDowall, Stafford Heights, Stafford, Kedron, Wooloowin, Kedron High	1 morning service	No services
	948 (school bus)	Chermside West, Stafford Heights, Stafford, Gordon Park, Wooloowin, Kedron High	1 morning service	No services
	950 (school bus)	Mitchelton, Everton Park, Stafford, Gordon Park, Wooloowin, Kedron High	1 morning service	No services

Stop Location	Route Number	Servicing	Weekday Frequency	Weekend Frequency
Both sides of Park Road, in proximity to Gorman Street	321	Toombul, Wooloowin, Lutwyche, RBWH, Spring Hill, City	Peak – 30 mins Off-peak – 60 mins	Sat – 60 mins Sun – No services
	369	Mitchelton, Stafford, Kedron Brook, Eagle Junction, Toombul	30 mins	30 mins
Park Road westbound, in proximity to Gorman Street	946 (school bus)	Kedron High, Wooloowin, Kedron, Stafford Heights, Everton Park, Mitchelton	1 morning service 1 afternoon service	No services
Gorman Street northbound at Kedron Park High School	942 (school bus)	Kedron High, Kedron, Chermside, Wavell Heights, Geebung, Zillmere, Taigum, Bracken Ridge	1 afternoon service	No services
	947 (school bus)	Kedron High, Wooloowin, Kedron, Stafford, Stafford Heights, McDowall	1 afternoon service	No services
	948 (school bus)	Kedron High, Wooloowin, Gordon Park, Stafford, Stafford Heights, Chermside West	1 afternoon service	No services
	950 (school bus)	Kedron High, Wooloowin, Gordon Park, Stafford, Everton Park, Mitchelton	1 afternoon service	No services
Kedron Brook – Busway Station – Platforms 1 & 2	77	Eight Mile Plains, Holland Park, Buranda, Windsor, Chermside	Peak – 15 mins Off-peak – 60 mins	No services
	P332	UQ, City, Spring Hill, RBWH, Lutwyche, Chermside, Zillmere	Morning peak – 8 services inbound Evening peak – 8 services outbound	No services
	333	Cultural Centre, City, Normanby, RBWH, Lutwyche, Chermside	Peak – 5-10 mins Off-peak – 15 mins	15 mins
	340	Woolloongabba, City, Normanby, RBWH, Chermside, Carseldine	Peak – 10-15 mins Off-peak – 15 mins	15 mins
	369	Mitchelton, Stafford, Kedron Brook, Eagle Junction, Toombul	30 mins	30 mins

In summary, the subject site is well serviced by the existing public transport network.

3.2 OBSERVATIONS

Key public transport related observations made during our inspections are summarised below:

- a sizeable proportion of students used buses to travel to and from school;
- only the Park Road eastbound bus stop, in proximity to Kedron Park Road has a shelter. The remaining three (3) Park Road bus stops as identified in Figure 3.1 do not have shelters; and
- no shelters are provided at the Gorman Street northbound at Kedron Park High School, bus stop.

Figure 3.2 to Figure 3.6 illustrates existing bus stop arrangements on Park Road and Gorman Street.



SOURCE: Google Streetview

Figure 3.2: Bus Stop (ID: 011075) – Park Road



SOURCE: Google Streetview

Figure 3.3: Bus Stop (ID: 011074) – Park Road



Figure 3.4: Bus Stop (ID: 011076) – Park Road



SOURCE: Google Streetview

Figure 3.5: Bus Stop (ID: 011077) – Park Road



Figure 3.6: School Bus Stop – Gorman Street

3.3 RECOMMENDATIONS

It is noted that the Public Transport Infrastructure Manual (PTIM), TMR, March 2016 indicates that minimum boarding points i.e. those without shelters, should only be installed at stops with low boarding customer demand.

Each of the Park Road bus stops identified in Section 3.1 are currently used by both regular bus services and school bus services. It is therefore recommended that these bus stops be upgraded to include shelters.

It is important to note that each of the bus stop upgrades are recommended to address existing infrastructure deficiencies i.e. we do not believe that the proposed expansion solely necessitates the upgrades.

4. EXTERNAL ACTIVE TRANSPORT INFRASTRUCTURE REVIEW

4.1 OVERVIEW

The subject site is located within a well-established urban network and as such, it benefits from access to an existing comprehensive active transport network. Typically, all roads within 800m of the subject site (i.e. 10-minute walking distance) have a concrete footpath on at least one side. Importantly, there are existing paths along all frontages to the subject site.

There are signalised crossings at the Kedron Park Road / Park Road intersection and a children's crossing on Park Road to assist pedestrians.

In summary, the subject site is considered well serviced by the existing active transport network.

4.2 OBSERVATIONS

Key active transport related observations made during our inspections are summarised below:

- due to the high number of pedestrians during school peak periods, some sections of the footpath on the northern side of Park Road were congested at times;
- the children's crossing on Park Road was not supervised / controlled during school peak periods. On several occasions students and other pedestrians did not wait for others before crossing. Whilst pedestrians are not required by law to cross in groups, the distributed nature of pedestrians crossing affected the operation of Park Road. A photo of the existing crossing is illustrated in Figure 4.1.



Figure 4.1: Existing Children's Crossing – Park Road

4.3 RECOMMENDATIONS

In order to improve the safety and efficiency of Park Road, it is recommended that a pedestrian crossing officer manages the crossing after school finishes each day. Requiring pedestrians to cross in groups is expected to improve the flow of traffic along Park Road, reducing queues and delays.

It is important to note that management of the pedestrian crossing is primarily proposed to address an existing issue i.e. we do not believe that the proposed expansion solely necessitates management of the crossing.

5. INTERNAL TRANSPORT INFRASTRUCTURE REVIEW

5.1 OVERVIEW

As part of the proposed expansion, a new building is proposed to be constructed to the west of Building R.

It is important to note that whilst the construction of the new building will require the demolition of an existing tennis court; the existing vehicular accesses, car parks, servicing areas and vehicle manoeuvring areas will not be affected.

A review of the internal transport infrastructure arrangements considering the proposed development was undertaken is detailed herein.

5.2 SITE ACCESS

No changes to existing site access arrangements are proposed. Based on our qualitative review of existing arrangements, no changes are considered warranted in this instance noting that:

- as outlined in Section 2.3.9, traffic demands are not expected to significantly increase as a result of the proposed expansion; and
- a significant proportion of development related traffic does not access the site i.e. most students are dropped off on Park Road and Gorman Street.

5.3 CAR PARKING

5.3.1 Existing Areas

Car parking is currently provided within the subject site, predominately within three (3) areas as illustrated in Figure 5.1. It is important to note that the proposed expansion does not affect the existing car park areas.



Figure 5.1: Existing Car Parking Areas

5.3.2 Provision Review

The car parking provision required to support the expansion has been identified noting the requirements of Council's TAPS Policy.

The car parking provision rate required by the TAPS Policy is identified in Table 5.1.

Table 5.1: Car Parking Provision Rate – TAPS Policy

Land Use	Required Provision Rate
Education Establishment (Secondary School)	1 space per staff plus 0.1 spaces per staff for visitors

The car parking provisions required by the TAPS Policy are identified in Table 5.2.

Table 5.2: Car Parking Provisions Review Summary – TAPS Policy

Yield	Required Spaces by Type	Total Spaces Required
22 staff	22 staff 3 visitor	25

Our review suggests that 25 car parking spaces are required by the TAPS Policy for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion.

New car parking spaces and associated car parking areas should be configured in accordance with the TAPS Policy, AS2890.1, AS2890.2 and/or AS2890.6.

5.4 Set Down / Pick Up Arrangements

TMR's *Planning for Safe Transport Infrastructure at Schools* (PSTIS), 2011 guideline recommends that 20% of the short term (i.e. visitor) parking supply should be provided as set down / pick up area. Given that the expansion only requires an additional three (3) visitor bays, additional set down / pick up provisions are not considered warranted.

5.5 Bicycle Parking

5.5.1 Existing Areas

Bicycle parking is currently provided within the subject site, adjacent to the administration building as illustrated in Figure 5.2. It is important to note that the proposed expansion does not affect the existing bicycle parking area.



Figure 5.2: Existing Bicycle Parking Area

5.5.2 Provision Review

The bicycle parking provision required to support the expansion has been identified noting the requirements of Council's TAPS Policy.

The bicycle parking provision rate required by the TAPS Policy is identified in Table 5.3.

Table 5.3: Bicycle Parking Provision Rate – TAPS Policy

Land Use	Required Provision Rate
Education Establishment (Over Grade 4)	1 space per 5 enrolments

The bicycle parking provision required by the TAPS Policy is identified in Table 5.4.

Table 5.4: Bicycle Parking Provision Review Summary – TAPS Policy

Yield	Required Spaces
199 enrolments	40

Our review suggests that 40 bicycle parking spaces are required by the TAPS Policy for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion.

New bicycle parking spaces should be configured in accordance with the TAPS Policy and/or AS2890.3.

5.6 SERVICING

Existing servicing arrangements are proposed to be maintained as part of the expansion. Whilst the expansion may mean that the subject site needs to be serviced more frequently, additional servicing areas are not considered necessary.

6. CODE RESPONSES

The new or modified traffic arrangements proposed as part of the expansion have been reviewed against the requirements of the following codes:

- State Development Assessment Provisions (SDAP), State code 1: Development in a state-controlled road environment;
- SDAP, State code 6: Protection of state transport networks; and
- Council TAPS Code.

A copy of our responses to each of the performance outcomes identified in the codes is included in **Appendix E**.

7. SUMMARY

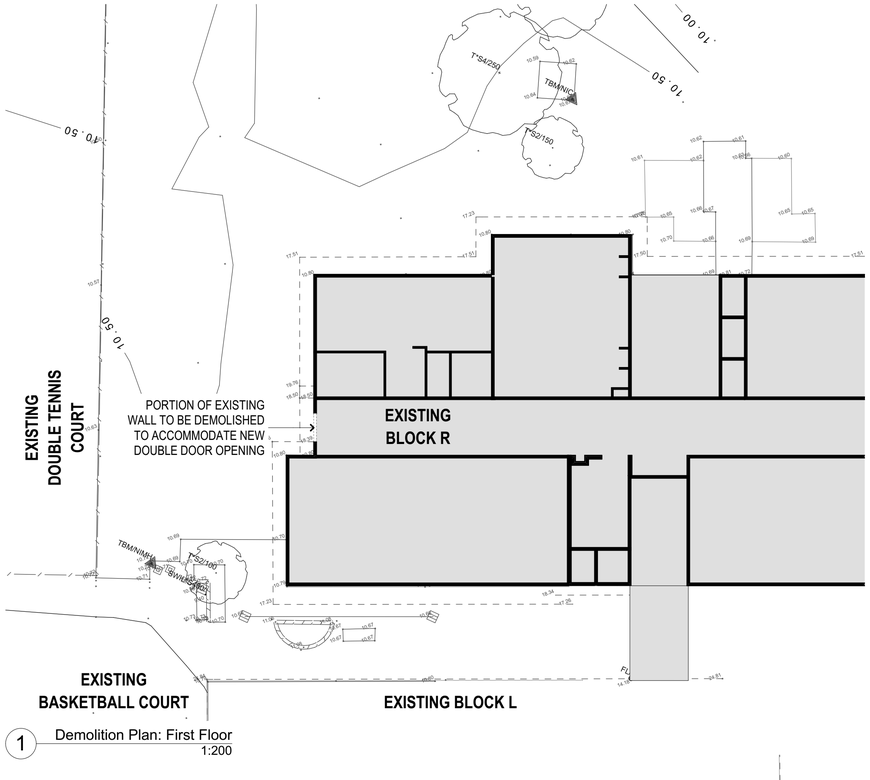
Key findings of this TIA are summarised below:

- we do not believe that the proposed expansion triggers the need for any modifications to the existing active and public transport networks or trigger the need for new public transport services;
- although not considered to be necessitated by the proposed expansion, it is recommended that the existing bus stops on Park Road in proximity to the subject site be upgraded to at least include shelters;
- although not considered to be necessitated by the proposed expansion, it is recommended that a pedestrian crossing officer manages the existing Park Road children's crossing after school finishes each day;
- the additional car parking proposed as part of the expansion complies with Brisbane City Plan 2014, TAPS Policy requirements;
- new car parking areas comply with TAPS Policy requirements;
- the additional bicycle parking proposed as part of the expansion complies with TAPS Policy requirements; and
- the development is not expected to significantly impact the operation of the surrounding road network including the Kedron Park Road / Park Road intersection.

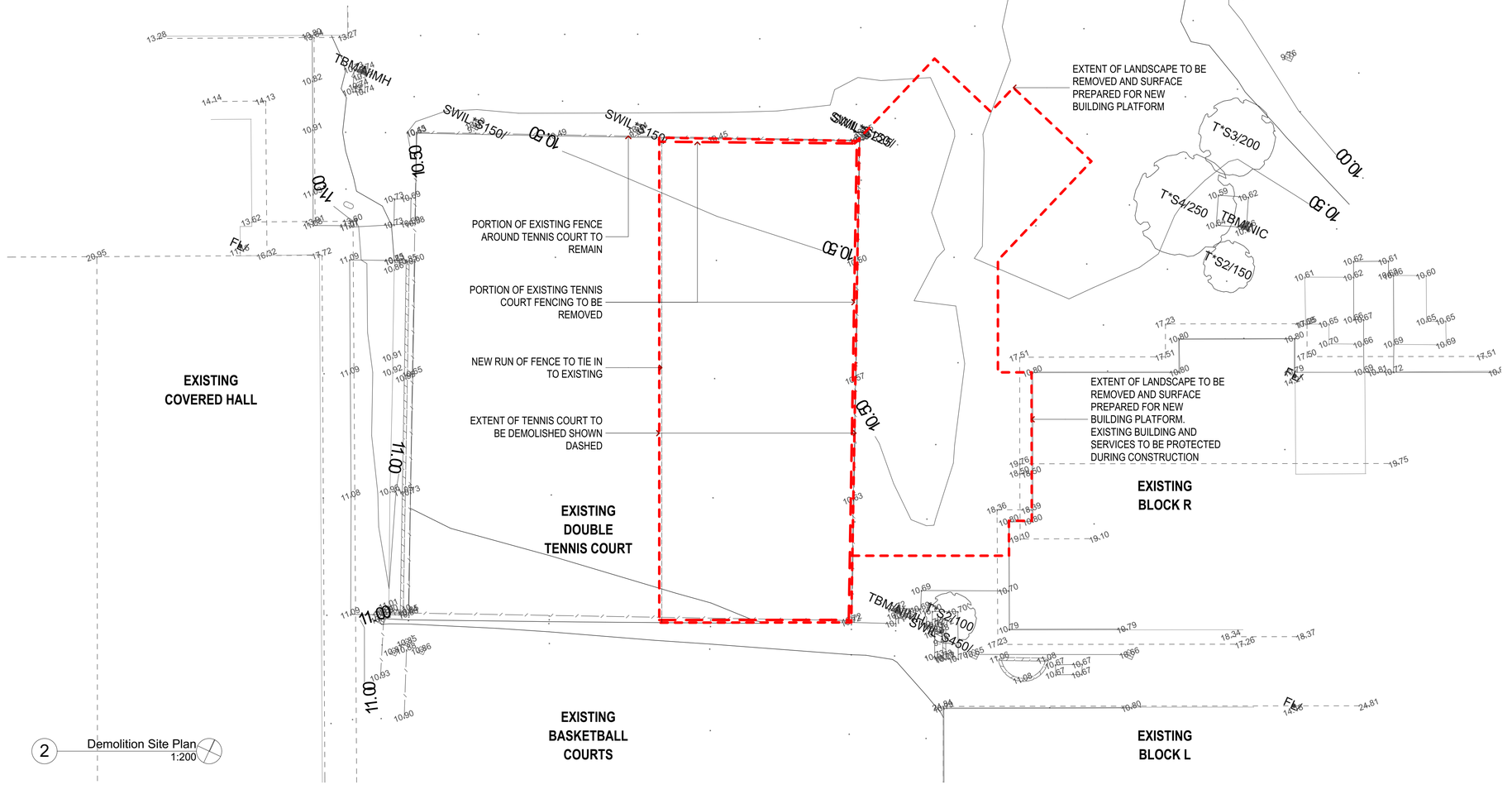
Based on the findings of this report, we believe there are no traffic engineering related matters to preclude the proposed expansion.

APPENDIX A

PROPOSED DEVELOPMENT PLANS



1 Demolition Plan: First Floor
1:200



2 Demolition Site Plan
1:200

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	27.04.18	ISSUE FOR MEETING WITH QS	RT
P2	01.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT

Notes
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK OR PREPARING WORKSHOP DRAWINGS, DO NOT SCALE DRAWING.

NOTE:
1.ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORK.
2.USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE DRAWINGS. READ IN CONJUNCTION WITH OTHER DRAWINGS.
3.READ IN CONJUNCTION WITH OTHER DRAWINGS, SPECIFICATION AND CONSULTANTS DOCUMENTATION.
4.REFER ANY DISCREPENCIES IMMEDIATELY TO THE SUPERINTENDENT'S REPRESENTATIVE, AND AWAIT WRITTEN INSTRUCTION.

rowilldesigngroup

S.G.	APRIL 2018
DRAWN	DATE
S.B.	APRIL 2018
TEAM LEADER	DATE
R.T.	APRIL 2018
AUTHORISED FOR ISSUE	DATE

DEPT OF EDUCATION

Kedron State High School
New Learning Centre

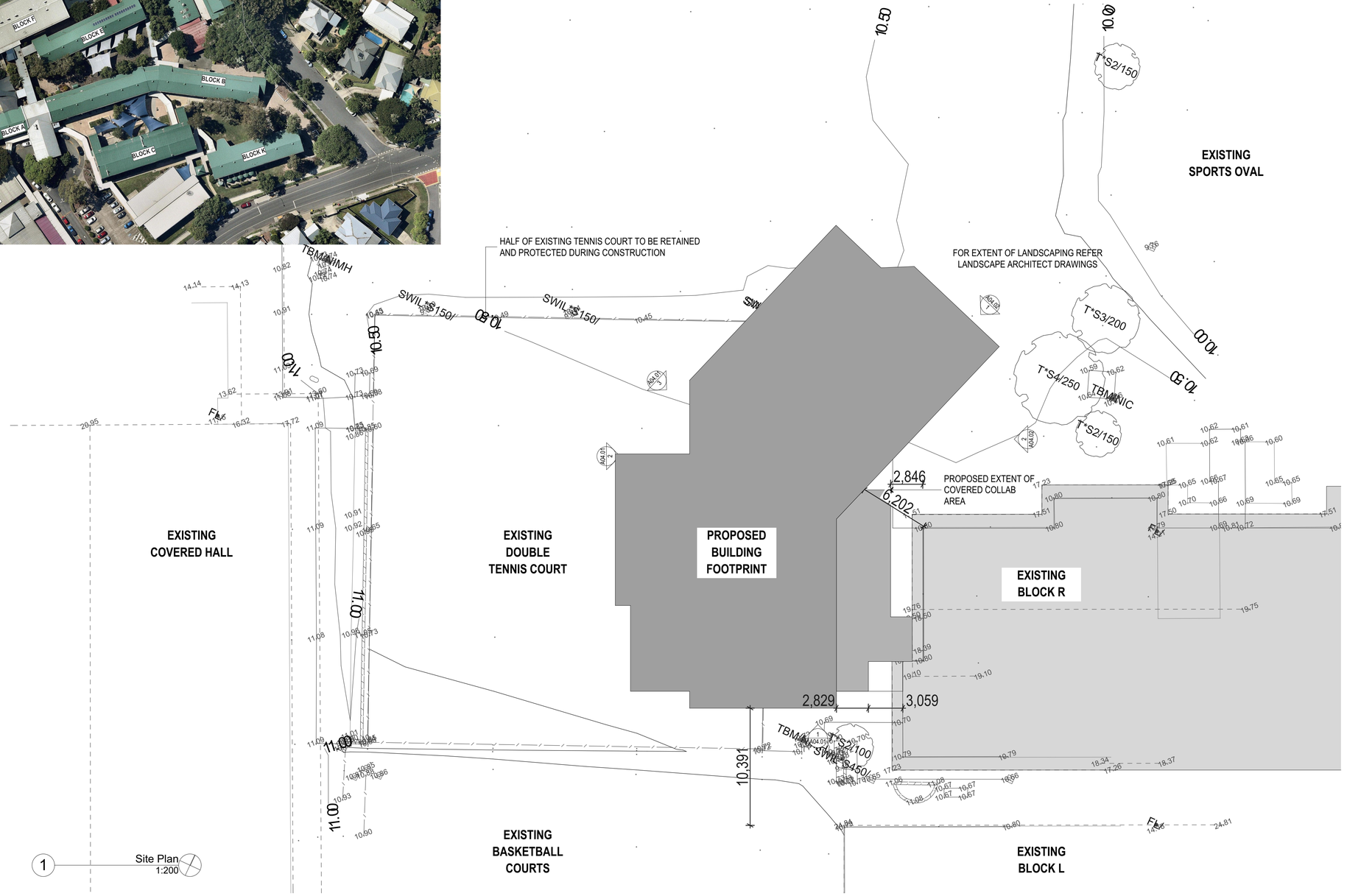
Demolition Plan_P2

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A01.00	**P2**	



1 Locality Plan 1:1000



1 Site Plan 1:200

NOT FOR CONSTRUCTION

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
P1	12.04.18	ISSUE FOR MINISTERIAL DESIGNATION	RT
P2	13.04.18	AMENDED ISSUE FOR MIN DES	RT
P3	18.04.18	PRESENTATION TO CLIENT	RT
P4	20.04.18	AMENDED PLANS TO CLIENT	RT
P5	27.04.18	ISSUED FOR MEETING WITH QS	RT
P6	01.05.18	ISSUE FOR SCHOOL & DoE REVIEW	RT

Notes
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK OR PREPARING WORKSHOP DRAWINGS, DO NOT SCALE DRAWING.

NOTE:
1.ALL DIMENSIONS TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORK.
2.USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE DRAWINGS. READ IN CONJUNCTION WITH OTHER DRAWINGS.
3.READ IN CONJUNCTION WITH OTHER DRAWINGS, SPECIFICATION AND CONSULTANTS DOCUMENTATION.
4.REFER ANY DISCREPENCIES IMMEDIATELY TO THE SUPERINTENDENT'S REPRESENTATIVE, AND AWAIT WRITTEN INSTRUCTION.

towilldesigngroup

D.T. DRAWN	APRIL 2018 DATE
S.B. TEAM LEADER	APRIL 2018 DATE
R.T. AUTHORISED FOR ISSUE	APRIL 2018 DATE

DEPT OF EDUCATION

Kedron State High School
New Learning Centre

Site Plan_P6

SCALE:	AT:
AS SHOWN ON PLANS	A1
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET #
A01.01	P6	

APPENDIX B

TRAFFIC SURVEY DATA

TDC
Traffic Data & Control

SURVEY INFORMATION

Site ID:	1			
Location:	Kedron Park Rd & Park Rd, Wooloowin			
Date:	18	/ April	/	2018
Time Period 1:	07:00	to	09:00	
Time Period 2:	15:00	to	18:00	

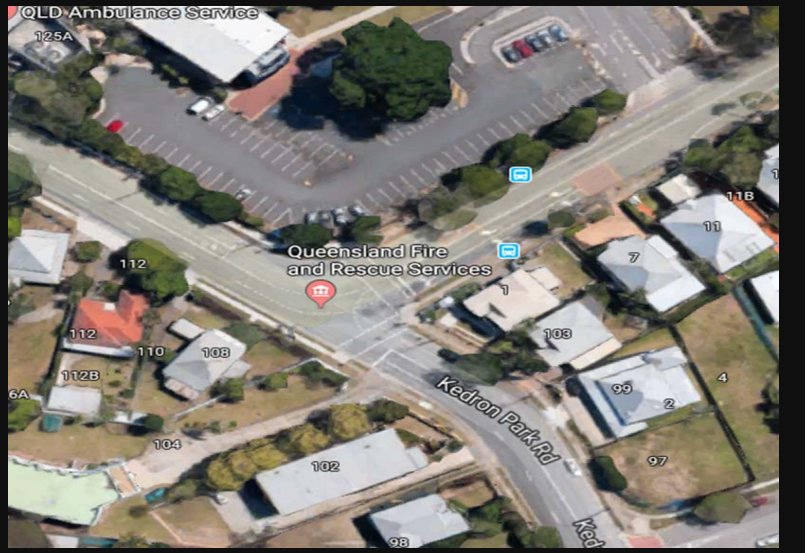
	Primary Classes:	Secondary Classes:
1	Light Vehicles	Pedestrians
2	Light Trucks (3-5)	None
3	Heavy Trucks (6-12)	
4	None	
5	None	

Weather Conditions 1: Fine **Weather Conditions 2:** Fine

Intersection Legs:		Ch	
	North	✓	Kedron Park Rd SB
	East	✓	Park Rd WB
	South	✓	Kedron Park Rd NB
	West		

Output time interval: 15 mins

MAP



Site ID: 1

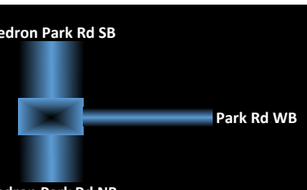
Location: Kedron Park Rd & Park Rd, Wooloowin

Date: 18-April-2018

Period 1 Time: 7:00 AM to 9:00 AM

Weather: Fine

Period 1 Peak Hour: 7:45 AM to 8:45 AM



TDC Traffic Data & Control

TOTALS AND PEAKS

Period 1 Total	815	20	2	906	12	3	0	0	0	0	52	1	0	633	31	2	0	0	0	80	445	3	1	255	11	0	0	0	0	33	3192	1758	719	715
Period 1 Peak Hr	452	10	2	463	7	2	0	0	0	0	28	1	0	358	12	2	0	0	0	68	241	2	0	169	4	0	0	0	0	26	1753	936	401	416

Time Starting	Kedron Park Rd SB Left Light Vehicles	Kedron Park Rd SB Left Light Trucks (3-5)	Kedron Park Rd SB Left Heavy Trucks (6-12)	Kedron Park Rd SB Through Light Vehicles	Kedron Park Rd SB Through Light Trucks (3-5)	Kedron Park Rd SB Through Heavy Trucks (6-12)	Kedron Park Rd SB U-turn Light Vehicles	Kedron Park Rd SB U-turn Light Trucks (3-5)	Kedron Park Rd SB U-turn Heavy Trucks (6-12)	Kedron Park Rd SB Cross 1 Pedestrians	Park Rd WB Left Light Vehicles	Park Rd WB Left Light Trucks (3-5)	Park Rd WB Left Heavy Trucks (6-12)	Park Rd WB Right Light Vehicles	Park Rd WB Right Light Trucks (3-5)	Park Rd WB Right Heavy Trucks (6-12)	Park Rd WB U-turn Light Vehicles	Park Rd WB U-turn Light Trucks (3-5)	Park Rd WB U-turn Heavy Trucks (6-12)	Park Rd WB Cross 1 Pedestrians	Kedron Park Rd NB Through Light Vehicles	Kedron Park Rd NB Through Light Trucks (3-5)	Kedron Park Rd NB Through Heavy Trucks (6-12)	Kedron Park Rd NB Right Light Vehicles	Kedron Park Rd NB Right Light Trucks (3-5)	Kedron Park Rd NB Right Heavy Trucks (6-12)	Kedron Park Rd NB U-turn Light Vehicles	Kedron Park Rd NB U-turn Light Trucks (3-5)	Kedron Park Rd NB U-turn Heavy Trucks (6-12)	Kedron Park Rd NB Cross 1 Pedestrians	GRAND TOTAL TOTALS	Kedron Park Rd SB TOTAL All Classes	Park Rd WB TOTAL All Classes	Kedron Park Rd NB TOTAL All Classes
07:00	80	2	0	112	0	0	0	0	0	0	6	0	0	53	2	0	0	0	0	2	32	0	0	19	1	0	0	0	0	1	**307**	194	61	52
07:15	103	2	0	123	2	1	0	0	0	0	4	0	0	60	5	0	0	0	0	1	42	0	0	24	1	0	0	0	0	0	**367**	231	69	67
07:30	113	2	0	123	2	0	0	0	0	0	5	0	0	73	5	0	0	0	0	4	57	1	1	19	3	0	0	0	0	3	**404**	240	83	81
07:45	91	4	1	137	3	0	0	0	0	0	5	0	0	72	5	1	0	0	0	8	64	2	0	45	1	0	0	0	0	3	**431**	236	83	112
08:00	100	2	0	127	0	1	0	0	0	0	7	0	0	87	2	0	0	0	0	10	63	0	0	31	1	0	0	0	0	5	**421**	230	96	95
08:15	146	4	1	109	3	0	0	0	0	0	5	0	0	98	1	0	0	0	0	22	60	0	0	49	1	0	0	0	0	8	**477**	263	104	110
08:30	115	0	0	90	1	1	0	0	0	0	11	1	0	101	4	1	0	0	0	28	54	0	0	44	1	0	0	0	0	10	**424**	207	118	99
08:45	67	4	0	85	1	0	0	0	0	0	9	0	0	89	7	0	0	0	0	5	73	0	0	24	2	0	0	0	0	3	**361**	157	105	99

Site ID: 1

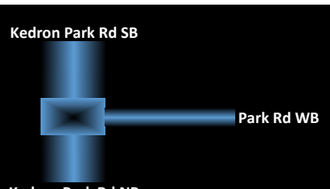
Location: Kedron Park Rd & Park Rd, Wooloowin

Date: 18-April-2018

Period 2 Time: 3:00 PM to 6:00 PM

Weather: Fine

Period 2 Peak Hour: 4:30 PM to 5:30 PM



TDC Traffic Data & Control

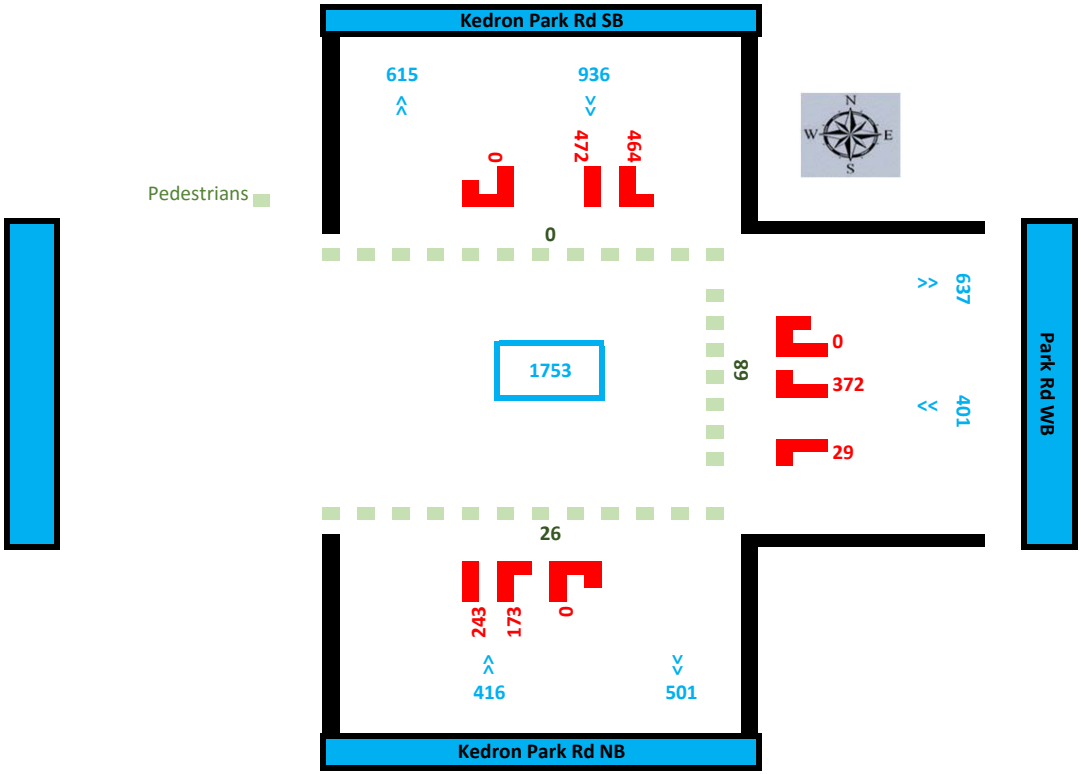
TOTALS AND PEAKS

Period 2 Total	786	22	5	690	7	0	0	0	0	1	77	2	0	1153	35	1	0	0	0	84	1089	6	0	162	13	0	1	0	0	30	4049	1510	1268	1271
Period 2 Peak Hr	283	4	2	241	1	0	0	0	0	1	36	0	0	388	5	0	0	0	0	19	425	2	0	57	5	0	0	0	0	5	1449	531	429	489

Time Starting	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Kedron Park Rd SB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Park Rd WB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	Kedron Park Rd NB	GRAND TOTAL	Kedron Park Rd SB	Park Rd WB	Kedron Park Rd NB
	Left	Left	Left	Through	Through	Through	U-turn	U-turn	U-turn	Cross 1	Left	Left	Left	Right	Right	Right	U-turn	U-turn	U-turn	Cross 1	Through	Through	Through	Right	Right	Right	U-turn	U-turn	U-turn	Cross 1		TOTAL	TOTAL	TOTAL
	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Pedestrians	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Pedestrians	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Light Vehicles	Light Trucks (3-5)	Heavy Trucks (6-12)	Pedestrians	TOTALS	All Classes	All Classes	All Classes
15:00	78	7	1	51	2	0	0	0	0	0	3	0	0	129	6	0	0	0	0	39	82	0	0	17	2	0	1	0	0	17	**379**	139	138	102
15:15	66	3	0	59	0	0	0	0	0	0	5	0	0	102	6	1	0	0	0	2	59	1	0	18	0	0	0	0	0	1	**320**	128	114	78
15:30	66	2	1	58	0	0	0	0	0	0	8	1	0	93	6	0	0	0	0	4	70	1	0	9	1	0	0	0	0	3	**316**	127	108	81
15:45	55	1	1	47	1	0	0	0	0	0	6	0	0	92	6	0	0	0	0	3	59	1	0	13	1	0	0	0	0	0	**283**	105	104	74
16:00	73	3	0	63	2	0	0	0	0	0	9	0	0	87	1	0	0	0	0	9	84	0	0	15	2	0	0	0	0	2	**339**	141	97	101
16:15	57	0	0	64	0	0	0	0	0	0	4	0	0	94	3	0	0	0	0	3	88	0	0	9	0	0	0	0	0	0	**319**	121	101	97
16:30	59	0	0	58	0	0	0	0	0	0	8	0	0	114	0	0	0	0	0	7	97	2	0	12	2	0	0	0	0	1	**352**	117	122	113
16:45	86	2	0	63	1	0	0	0	0	0	9	0	0	91	3	0	0	0	0	3	87	0	0	15	0	0	0	0	0	3	**357**	152	103	102
17:00	64	1	0	60	0	0	0	0	0	1	11	0	0	102	1	0	0	0	0	6	124	0	0	20	2	0	0	0	0	0	**385**	125	114	146
17:15	74	1	2	60	0	0	0	0	0	0	8	0	0	81	1	0	0	0	0	3	117	0	0	10	1	0	0	0	0	1	**355**	137	90	128
17:30	57	2	0	51	0	0	0	0	0	0	3	0	0	86	0	0	0	0	0	3	120	0	0	12	1	0	0	0	0	0	**332**	110	89	133
17:45	51	0	0	56	1	0	0	0	0	0	3	1	0	82	2	0	0	0	0	2	102	1	0	12	1	0	0	0	0	2	**312**	108	88	116

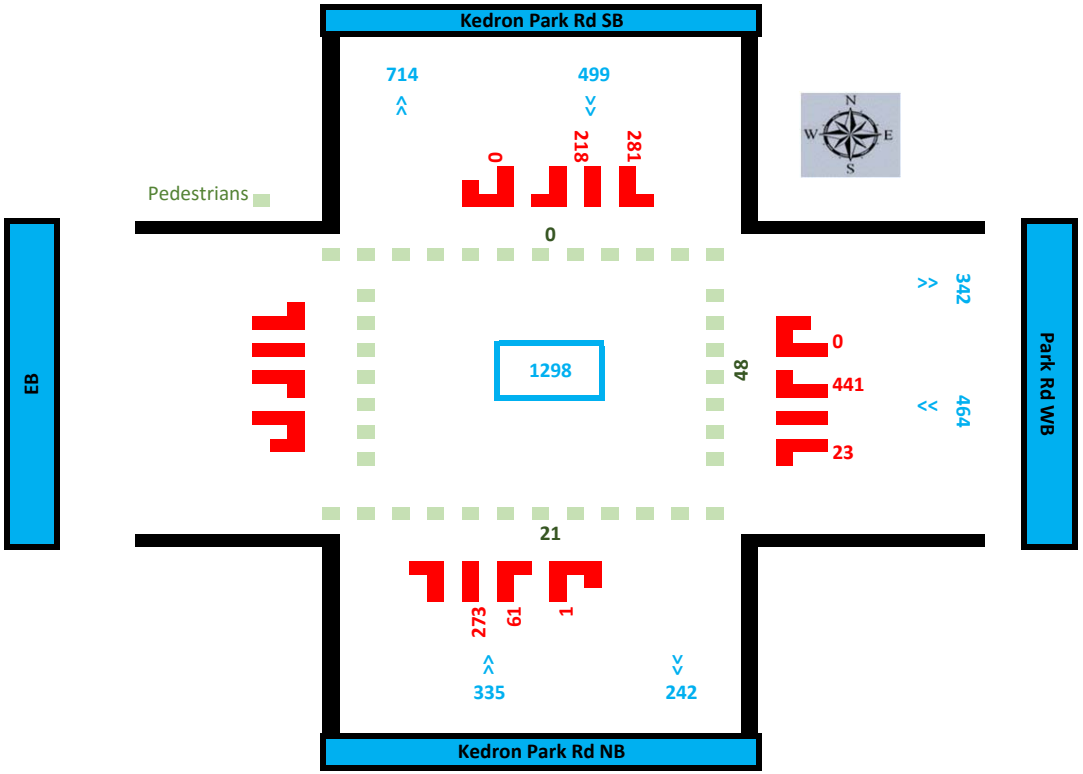
Turning Movement Count Summary

Site ID:	1
Location:	Kedron Park Rd & Park Rd, Wooloowin
Date:	18-April-2018
Surveyed Time:	7:00 AM to 9:00 AM
Weather:	Fine
Data for hour starting:	7:45 AM to 8:45 AM
Vehicle Class:	ALL VEHICLES



Turning Movement Count Summary

Site ID:	1
Location:	Kedron Park Rd & Park Rd, Wooloowin
Date:	18-April-2018
Surveyed Time:	3:00 PM to 6:00 PM
Weather:	Fine
Data for hour starting:	3:00 PM to 4:00 PM
Vehicle Class:	ALL VEHICLES



APPENDIX C

DESIGN TRAFFIC VOLUMES

Project Information	
Project Name:	Kedron State High School
Project Number:	P3604
Prepared By:	Christy Luk
Reviewed By:	Nathan Edwards
Prepared Date:	10/05/2018
Reviewed Date:	10/05/2018
File Path:	P:\P3604 Kedron State High School TIA\Technical Work\Traffic Gen\

Table 1: Development Yields

Land Use	Quantity	Unit
High School	199	enrolments

Table 2: Peak Period Traffic Generation Rates

Land Use	AM Peak	PM Peak	Unit	Source
High School	0.72	0.42	trips per enrolment	GTA Sydney School Traffic Gen Report

Table 3: Directional Traffic Distribution

Land Use	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
High School	60%	40%	100%	40%	60%	100%

Table 4: Traffic Generation

Land Use	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
High School	86	57	143	33	50	84
Total	**86**	**57**	**143**	**33**	**50**	**84**

Table 5: Driveway / Street Use

Driveway / Street	%
Gorman Street	30%
Main School Access	10%
Staff/Emergency Services QLD Access	20%
Park Road	40%
Total	**100%**

Table 6: Traffic Generation - Gorman Street

Land Use	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
High School	26	17	43	10	15	25
Total	**26**	**17**	**43**	**10**	**15**	**25**

Table 7: Traffic Generation - Main Access

Land Use	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
High School	9	6	14	3	5	8
Total	**9**	**6**	**14**	**3**	**5**	**8**

Table 8: Traffic Generation - Staff/Emergency Services QLD Access

Land Use	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
High School	17	11	29	7	10	17
Total	**17**	**11**	**29**	**7**	**10**	**17**

Table 9: Traffic Generation - Park Road

Land Use	AM Peak			PM Peak		
	IN	OUT	TOTAL	IN	OUT	TOTAL
High School	34	23	57	13	20	33
Total	**34**	**23**	**57**	**13**	**20**	**33**

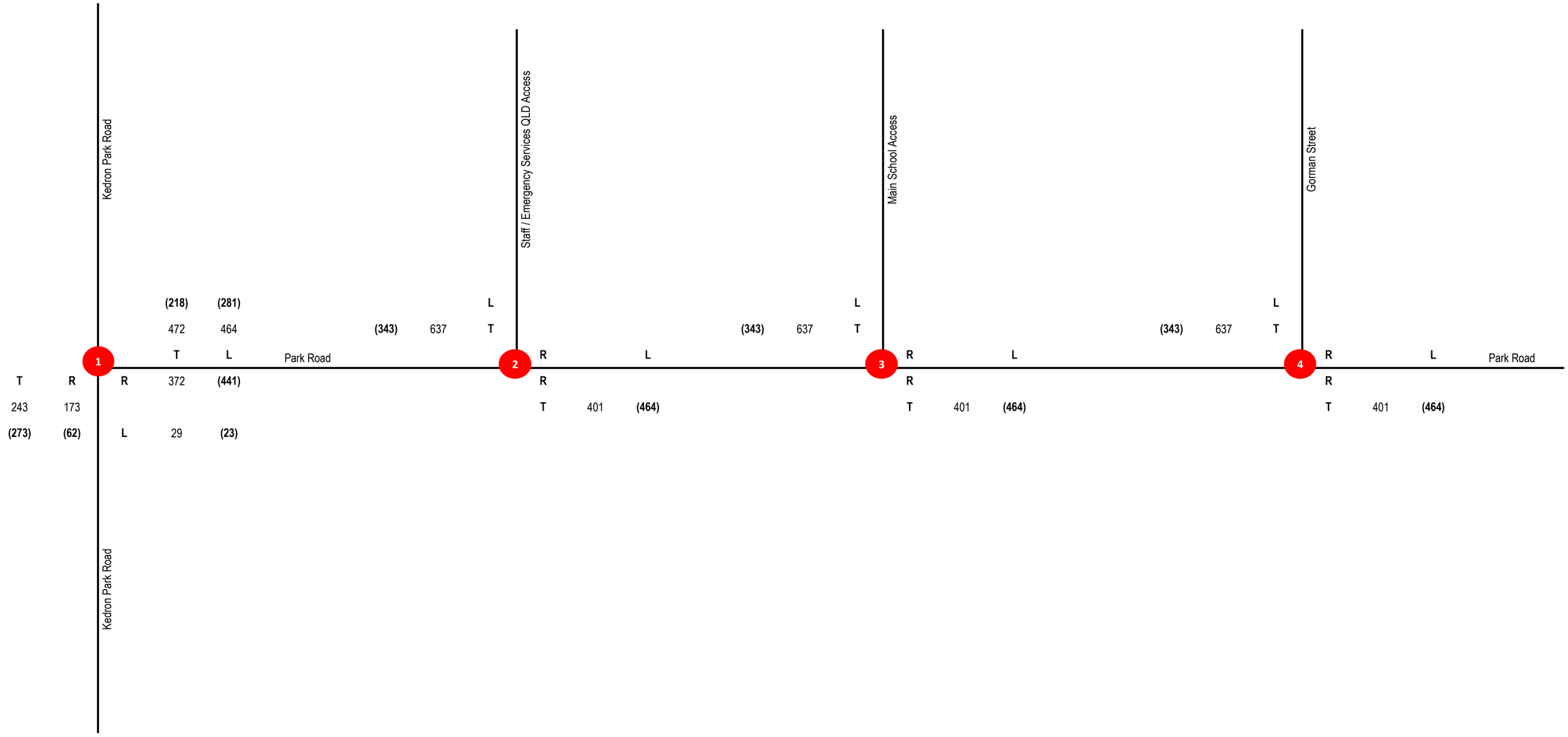
Table 6: External Traffic Distribution

Direction	Via	%
North	Kedron Park Road	40%
East	Park Road	30%
South	Kedron Park Road	30%
West		
Total	**-**	**100%**

Table 6: Background Traffic Growth

Road	%	Survey Year	Year of Opening	Year of Opening Growth Factor	10 Year Horizon	10 Year Horizon Growth Factor	Note
Kedron Park Road	2.0%	2018	2020	1.04	2030	1.24	Linear Growth
Park Road	2.0%	2018	2020	1.04	2030	1.24	
Gorman Street	0%	2018	2020	1	2030	1	

TRAFFIC SURVEY VOLUMES



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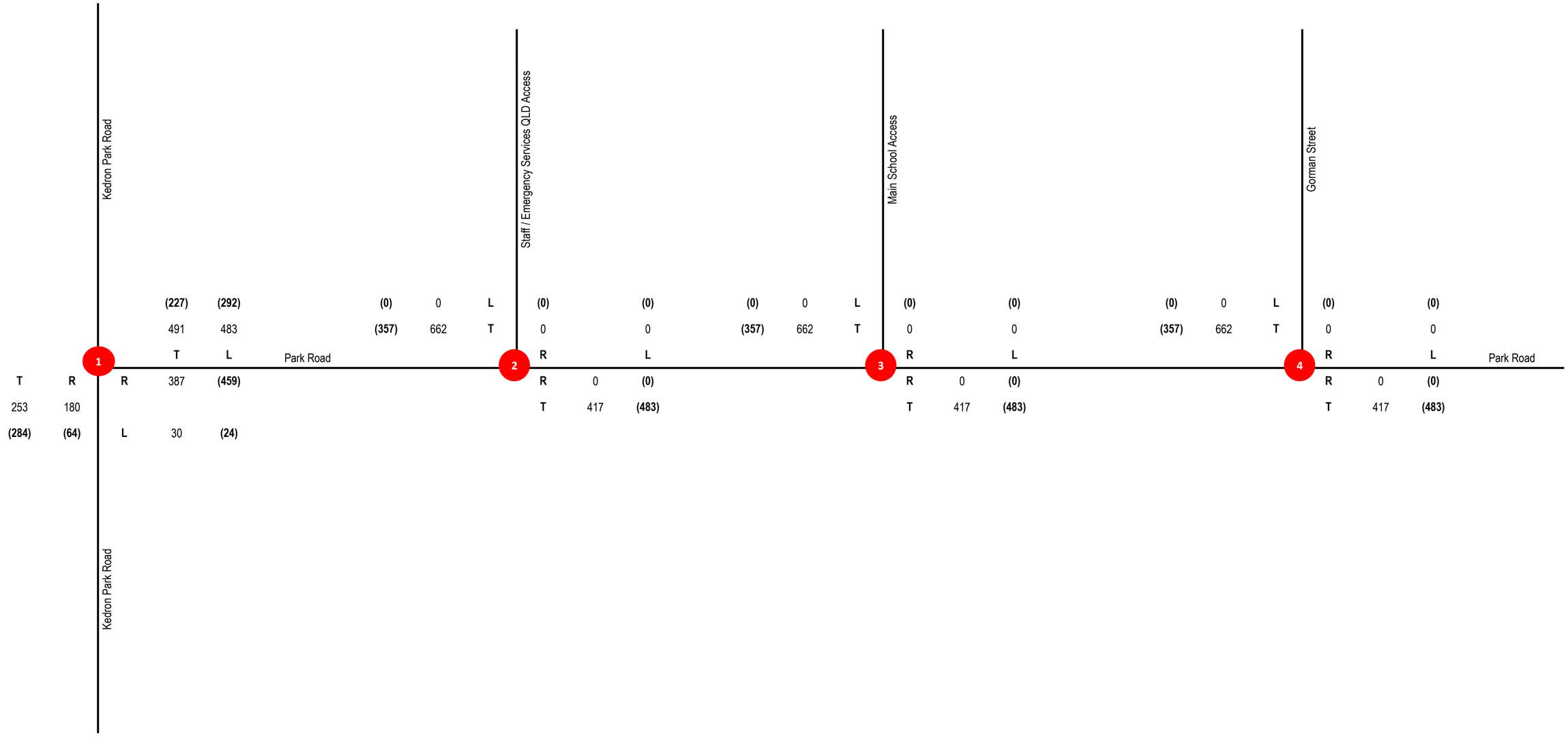
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Job Name:	Kedron State High School	**Reviewed By:**	Nathan Edwards	**Reviewed Date:**	10/05/2018
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LEGEND

##	AM Peak Hour Volumes	**T**	Through Turn Movement	**L**	Left Turn Movement
(##)	PM Peak Hour Volumes	**R**	Right Turn Movement	**U**	U-Turn Movement
1	Intersection ID				

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2020 BACKGROUND TRAFFIC VOLUMES



DOCUMENT CONTROL

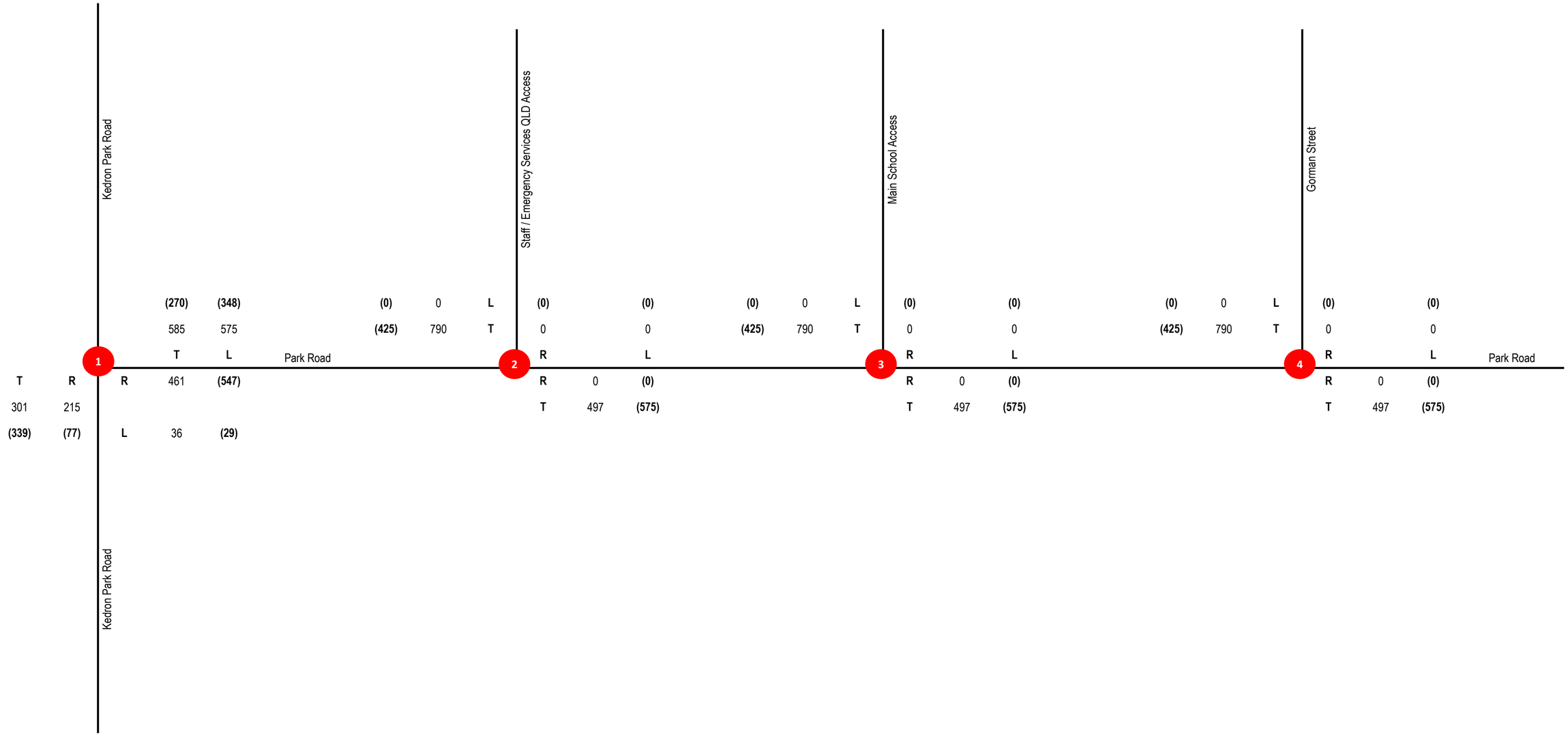
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Job Name:	Kedron State High School	**Reviewed By:**	Damien Scutt	**Reviewed Date:**	10/05/2018
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LEGEND

##	AM Peak Hour Volumes	**T**	Through Turn Movement	**L**	Left Turn Movement
(##)	PM Peak Hour Volumes	**R**	Right Turn Movement	**U**	U-Turn Movement
1	Intersection ID				

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2030 BACKGROUND TRAFFIC VOLUMES



DOCUMENT CONTROL

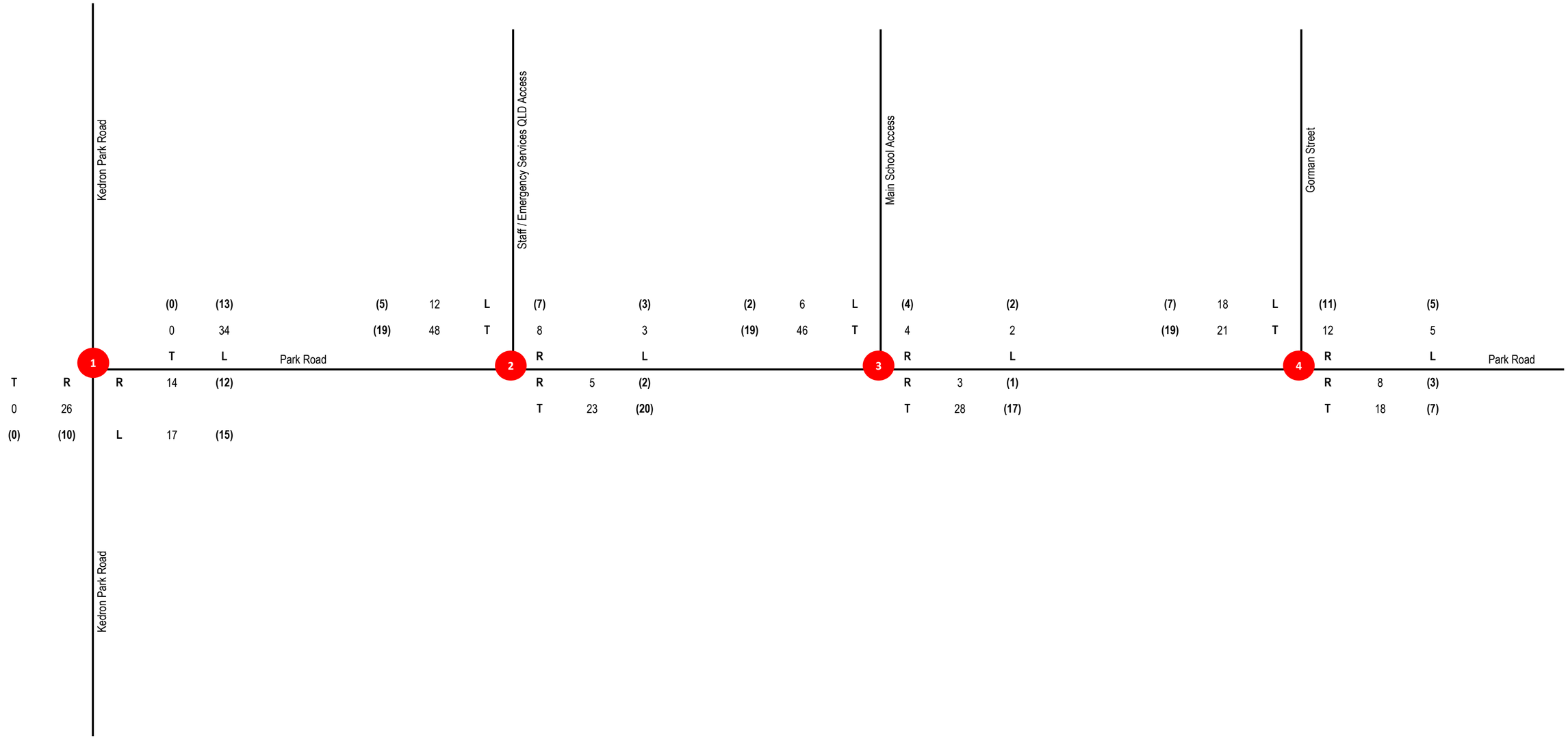
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Job Name:	Kedron State High School	**Reviewed By:**	Damien Scutt	**Reviewed Date:**	10/05/2018
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LEGEND

##	AM Peak Hour Volumes	**T**	Through Turn Movement	**L**	Left Turn Movement
(##)	PM Peak Hour Volumes	**R**	Right Turn Movement	**U**	U-Turn Movement
1	Intersection ID				

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DEVELOPMENT TRAFFIC VOLUMES



DOCUMENT CONTROL

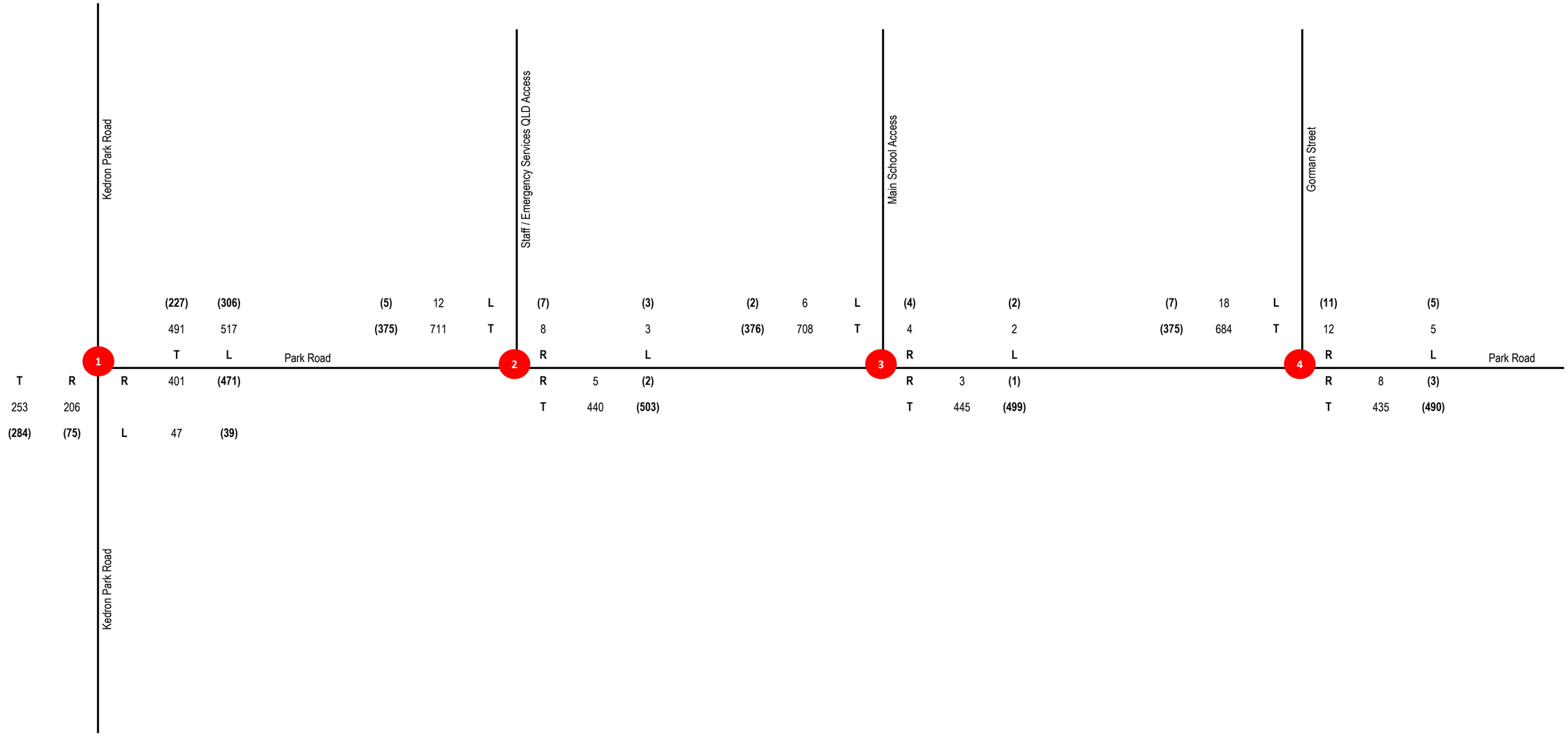
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Job Name:	Kedron State High School	**Reviewed By:**	Damien Scutt	**Reviewed Date:**	10/05/2018
File Path:	P:\P3604 Kedron State High School TIA\Technical Work\Traffic Gen\				

LEGEND

##	AM Peak Hour Volumes	**T**	Through Turn Movement	**L**	Left Turn Movement
(##)	PM Peak Hour Volumes	**R**	Right Turn Movement	**U**	U-Turn Movement
1	Intersection ID				

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2020 BACKGROUND + DEVELOPMENT TRAFFIC VOLUMES



DOCUMENT CONTROL

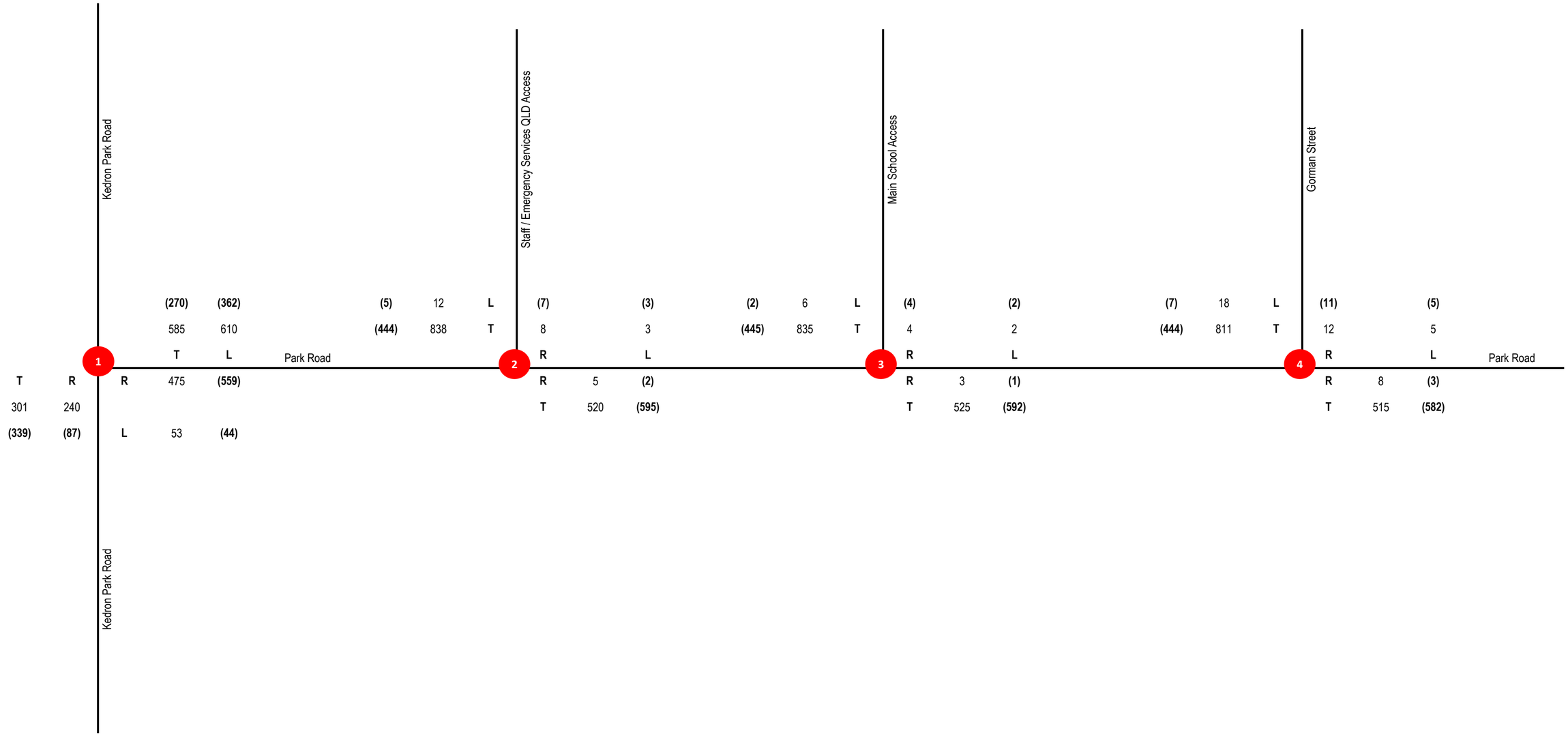
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Job Name:	Kedron State High School	**Reviewed By:**	Damien Scutt	**Reviewed Date:**	10/05/2018
File Path:	P:\P3604 Kedron State High School TIA\Technical Work\Traffic Gen\				

LEGEND

##	AM Peak Hour Volumes	**T**	Through Turn Movement	**L**	Left Turn Movement
(##)	PM Peak Hour Volumes	**R**	Right Turn Movement	**U**	U-Turn Movement
1	Intersection ID				

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2030 BACKGROUND + DEVELOPMENT TRAFFIC VOLUMES



DOCUMENT CONTROL

Job Number:	P3604	**Prepared By:**	Damien Scutt	**Prepared Date:**	10/05/2018
Job Name:	Kedron State High School	**Reviewed By:**	Damien Scutt	**Reviewed Date:**	10/05/2018
File Path:	P:\P3604 Kedron State High School TIA\Technical Work\Traffic Gen\				

LEGEND

##	AM Peak Hour Volumes	**T**	Through Turn Movement	**L**	Left Turn Movement
(##)	PM Peak Hour Volumes	**R**	Right Turn Movement	**U**	U-Turn Movement
1	Intersection ID				

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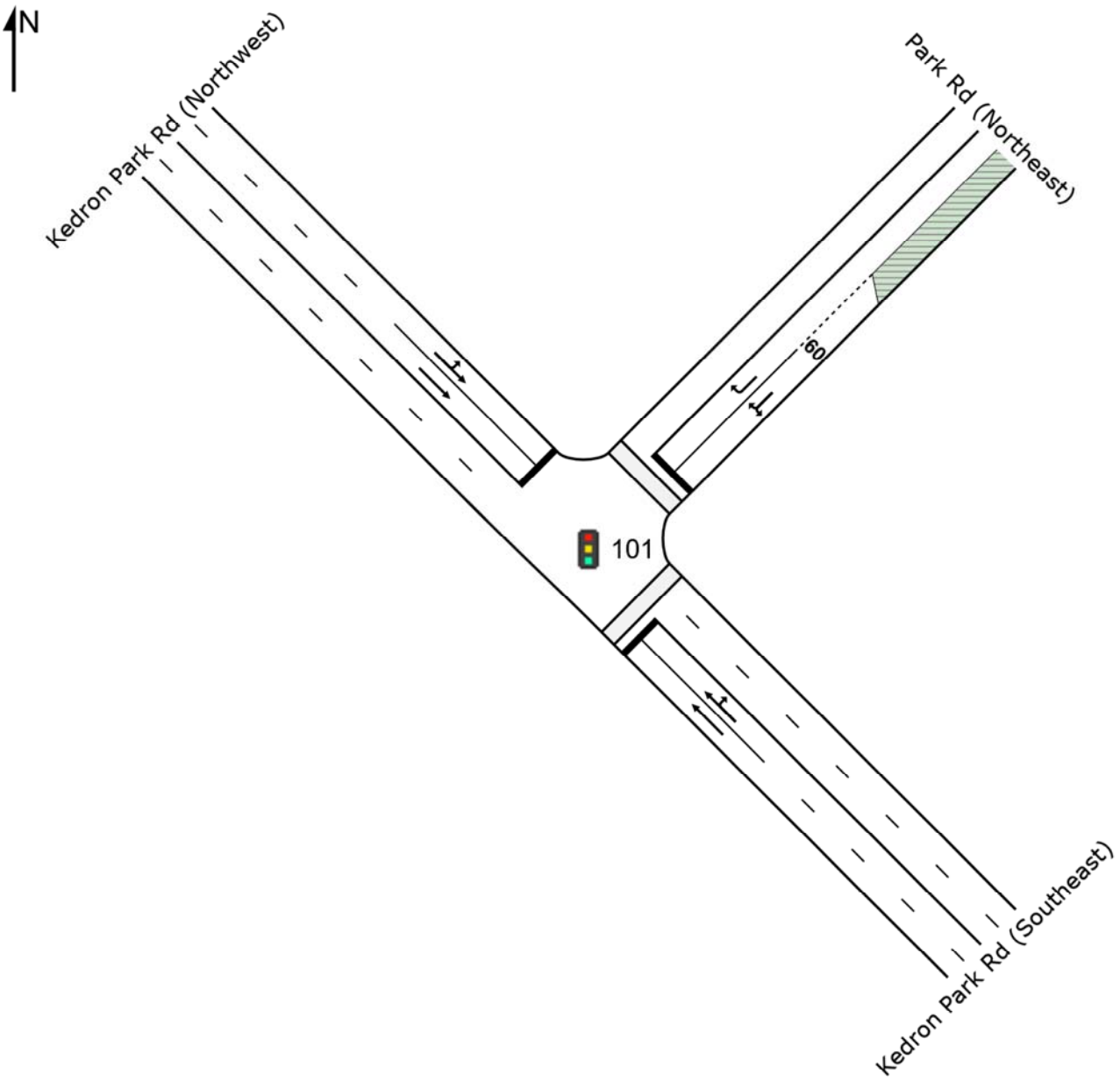
APPENDIX D

SIDRA ANALYSIS OUTPUTS

SITE LAYOUT

Site: 101 [2018_AM_Survey]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated



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MOVEMENT SUMMARY

Site: 101 [2018_AM_Survey]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Kedron Park Rd (Southeast)											
22	T1	264	3.0	0.257	14.4	LOS B	7.8	56.2	0.55	0.47	37.8
23	R2	188	3.0	0.582	54.7	LOS D	10.3	73.7	0.97	0.82	22.9
Approach		452	3.0	0.582	31.2	LOS C	10.3	73.7	0.72	0.62	27.7
NorthEast: Park Rd (Northeast)											
24	L2	32	3.0	0.663	55.1	LOS E	3.3	23.8	1.00	0.85	22.3
26	R2	404	3.0	0.663	40.1	LOS D	18.2	130.4	0.90	0.83	25.4
Approach		436	3.0	0.663	41.2	LOS D	18.2	130.4	0.91	0.83	25.1
NorthWest: Kedron Park Rd (Northwest)											
27	L2	504	3.0	0.732	35.1	LOS D	27.6	198.0	0.89	0.85	27.9
28	T1	513	3.0	0.732	37.4	LOS D	27.6	198.0	0.94	0.84	23.5
Approach		1017	3.0	0.732	36.3	LOS D	27.6	198.0	0.91	0.85	26.1
All Vehicles		1905	3.0	0.732	36.2	LOS D	27.6	198.0	0.87	0.79	26.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	31.6	LOS D	0.1	0.1	0.73	0.73
P6	NorthEast Full Crossing	53	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		105	32.0	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

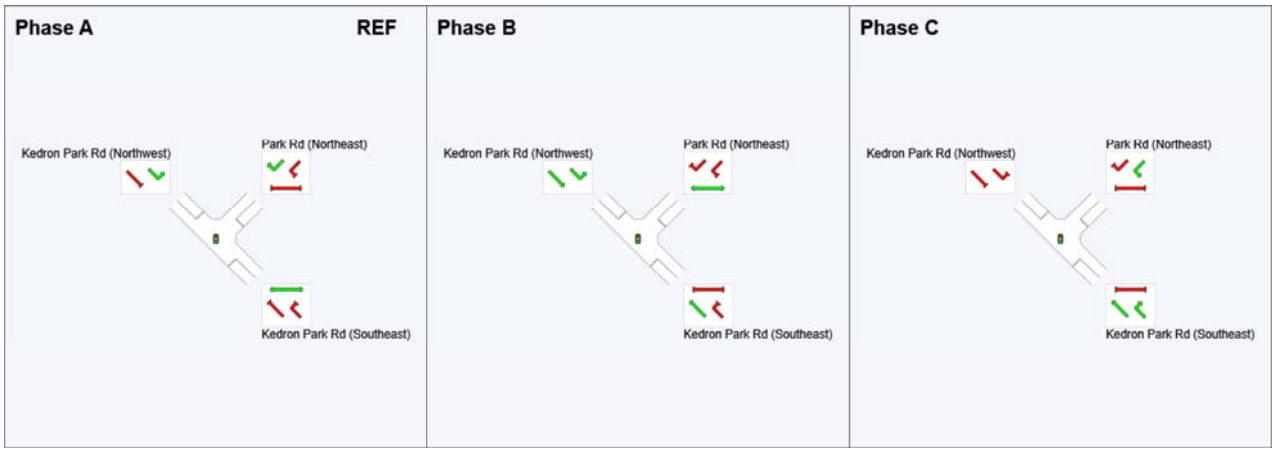
Site: 101 [2018_AM_Survey]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Phase Times specified by the user
Sequence: Variable Phasing
Reference Phase: Phase A
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	47	92
Green Time (sec)	41	39	22
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	47	45	28
Phase Split	39%	38%	23%



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class Running	Other Movement Class Stopped
Mixed Running & Stopped Movement Classes	
Undetected Movement	Phase Transition Applied

MOVEMENT SUMMARY

Site: 101 [2018_PM_Survey]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Kedron Park Rd (Southeast)											
22	T1	303	4.0	0.274	16.9	LOS B	8.4	60.9	0.58	0.50	35.2
23	R2	69	4.0	0.274	50.6	LOS D	4.6	33.6	0.90	0.75	24.0
Approach		372	4.0	0.274	23.1	LOS C	8.4	60.9	0.64	0.55	31.1
NorthEast: Park Rd (Northeast)											
24	L2	26	4.0	0.817	59.1	LOS E	2.8	19.9	1.00	0.92	21.5
26	R2	490	4.0	0.817	46.6	LOS D	26.2	189.6	0.96	0.91	23.8
Approach		516	4.0	0.817	47.3	LOS D	26.2	189.6	0.96	0.91	23.7
NorthWest: Kedron Park Rd (Northwest)											
27	L2	312	4.0	0.298	34.2	LOS C	16.4	119.0	0.81	0.81	28.3
28	T1	242	4.0	0.298	31.4	LOS C	16.4	119.0	0.80	0.70	25.8
Approach		554	4.0	0.298	33.0	LOS C	16.4	119.0	0.80	0.76	27.4
All Vehicles		1442	4.0	0.817	35.5	LOS D	26.2	189.6	0.82	0.76	26.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	31.6	LOS D	0.1	0.1	0.73	0.73
P6	NorthEast Full Crossing	53	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		105	32.0	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

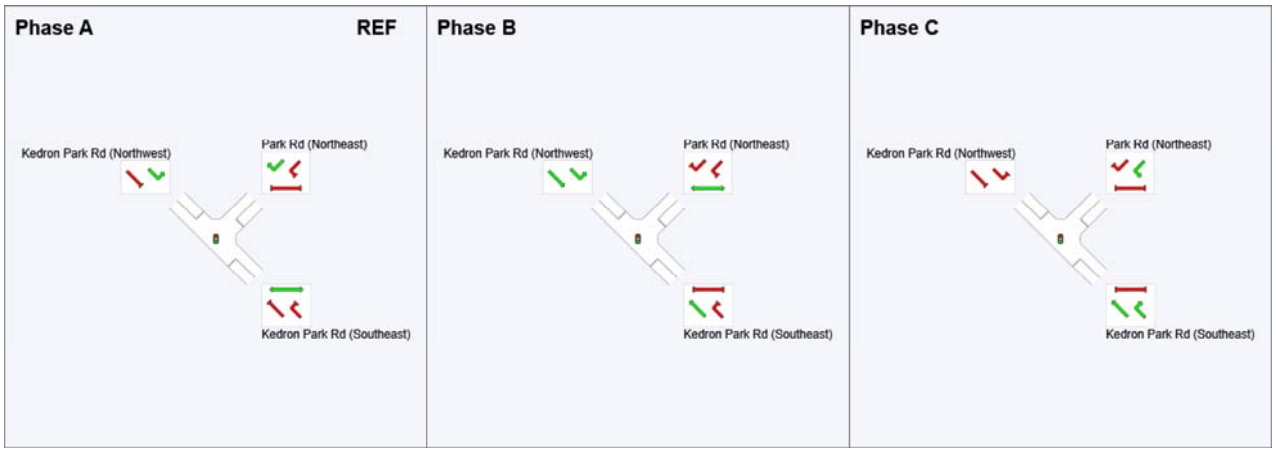
Site: 101 [2018_PM_Survey]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Phase Times specified by the user
Sequence: Variable Phasing
Reference Phase: Phase A
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	47	92
Green Time (sec)	41	39	22
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	47	45	28
Phase Split	39%	38%	23%



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class Running	Other Movement Class Stopped
Mixed Running & Stopped Movement Classes	
Undetected Movement	Phase Transition Applied

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MOVEMENT SUMMARY

Site: 101 [2020_AM_Background]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Kedron Park Rd (Southeast)											
22	T1	275	3.0	0.267	14.5	LOS B	8.2	58.9	0.55	0.48	37.7
23	R2	196	3.0	0.606	55.0	LOS D	10.7	77.1	0.97	0.82	22.8
Approach		471	3.0	0.606	31.3	LOS C	10.7	77.1	0.73	0.62	27.7
NorthEast: Park Rd (Northeast)											
24	L2	33	3.0	0.694	57.6	LOS E	3.2	23.2	1.00	0.88	21.8
26	R2	421	3.0	0.694	40.6	LOS D	19.4	139.5	0.91	0.84	25.3
Approach		453	3.0	0.694	41.8	LOS D	19.4	139.5	0.92	0.84	25.0
NorthWest: Kedron Park Rd (Northwest)											
27	L2	525	3.0	0.761	35.7	LOS D	29.3	210.2	0.91	0.86	27.7
28	T1	534	3.0	0.761	38.8	LOS D	29.3	210.2	0.95	0.86	23.0
Approach		1059	3.0	0.761	37.3	LOS D	29.3	210.2	0.93	0.86	25.8
All Vehicles		1983	3.0	0.761	36.9	LOS D	29.3	210.2	0.88	0.80	25.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	31.6	LOS D	0.1	0.1	0.73	0.73
P6	NorthEast Full Crossing	53	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		105	32.0	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

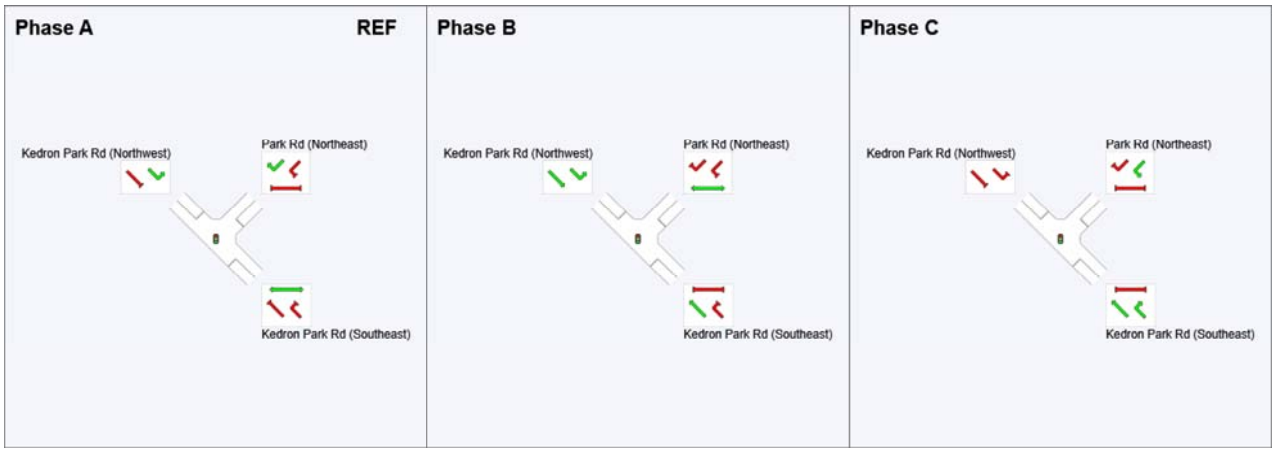
Site: 101 [2020_AM_Background]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Phase Times specified by the user
Sequence: Variable Phasing
Reference Phase: Phase A
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	47	92
Green Time (sec)	41	39	22
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	47	45	28
Phase Split	39%	38%	23%



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class Running	Other Movement Class Stopped
Mixed Running & Stopped Movement Classes	
Undetected Movement	Phase Transition Applied

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MOVEMENT SUMMARY

Site: 101 [2020_PM_Background]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Kedron Park Rd (Southeast)											
22	T1	316	4.0	0.285	17.1	LOS B	8.8	63.7	0.59	0.51	35.1
23	R2	71	4.0	0.285	50.7	LOS D	4.8	35.0	0.90	0.76	24.0
Approach		387	4.0	0.285	23.3	LOS C	8.8	63.7	0.64	0.55	31.0
NorthEast: Park Rd (Northeast)											
24	L2	27	4.0	0.850	61.3	LOS E	2.9	21.0	1.00	0.95	21.1
26	R2	510	4.0	0.850	50.2	LOS D	28.7	208.1	0.97	0.94	23.0
Approach		537	4.0	0.850	50.7	LOS D	28.7	208.1	0.97	0.94	22.9
NorthWest: Kedron Park Rd (Northwest)											
27	L2	324	4.0	0.310	34.5	LOS C	17.3	125.1	0.81	0.81	28.2
28	T1	252	4.0	0.310	31.6	LOS C	17.3	125.1	0.80	0.70	25.7
Approach		577	4.0	0.310	33.2	LOS C	17.3	125.1	0.81	0.76	27.3
All Vehicles		1500	4.0	0.850	36.9	LOS D	28.7	208.1	0.83	0.77	25.8

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

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	31.6	LOS D	0.1	0.1	0.73	0.73
P6	NorthEast Full Crossing	53	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		105	32.0	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

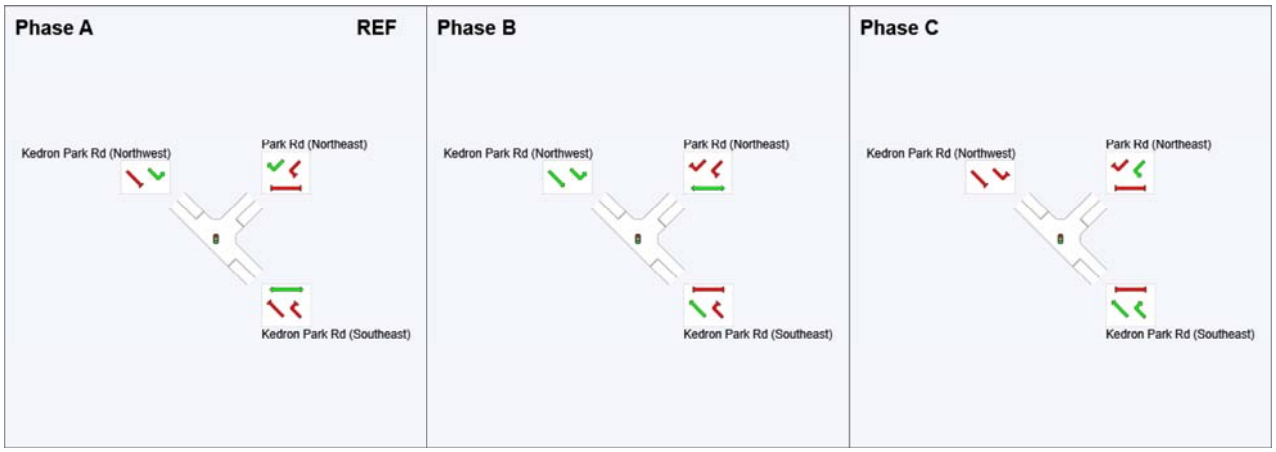
Site: 101 [2020_PM_Background]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Phase Times specified by the user
Sequence: Variable Phasing
Reference Phase: Phase A
Input Sequence: A, B, C
Output Sequence: A, B, C

Phase Timing Results

Phase	A	B	C
Phase Change Time (sec)	0	47	92
Green Time (sec)	41	39	22
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	47	45	28
Phase Split	39%	38%	23%



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class Running	Other Movement Class Stopped
Mixed Running & Stopped Movement Classes	
Undetected Movement	Phase Transition Applied

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MOVEMENT SUMMARY

Site: 101 [2020_AM_Background + Expansion]

Int: Kedron Park Road / Park Road
Project Number: P3604
Project: Kedron Park State High School TIA
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Kedron Park Rd (Southeast)											
22	T1	275	3.0	0.267	14.5	LOS B	8.2	58.9	0.55	0.48	37.7
23	R2	224	3.0	0.693	56.7	LOS E	12.7	91.1	0.99	0.85	22.5
Approach		499	3.0	0.693	33.5	LOS C	12.7	91.1	0.75	0.64	27.0
NorthEast: Park Rd (Northeast)											
24	L2	51	3.0	0.668	66.6	LOS E	4.4	31.3	0.66	0.76	20.3
26	R2	436	3.0	0.668	41.5	LOS D	20.4	146.6	0.90	0.84	25.0
Approach		487	3.0	0.668	44.1	LOS D	20.4	146.6	0.87	0.83	24.4
NorthWest: Kedron Park Rd (Northwest)											
27	L2	562	3.0	0.760	36.0	LOS D	31.8	228.7	0.93	0.88	27.6
28	T1	534	3.0	0.760	38.7	LOS D	31.8	228.7	0.96	0.86	23.0
Approach		1096	3.0	0.760	37.3	LOS D	31.8	228.7	0.94	0.87	25.8
All Vehicles		2082	3.0	0.760	38.0	LOS D	31.8	228.7	0.88	0.81	25.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P5	SouthEast Full Crossing	53	31.6	LOS D	0.1	0.1	0.73	0.73
P6	NorthEast Full Crossing	53	32.3	LOS D	0.1	0.1	0.73	0.73
All Pedestrians		105	32.0	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
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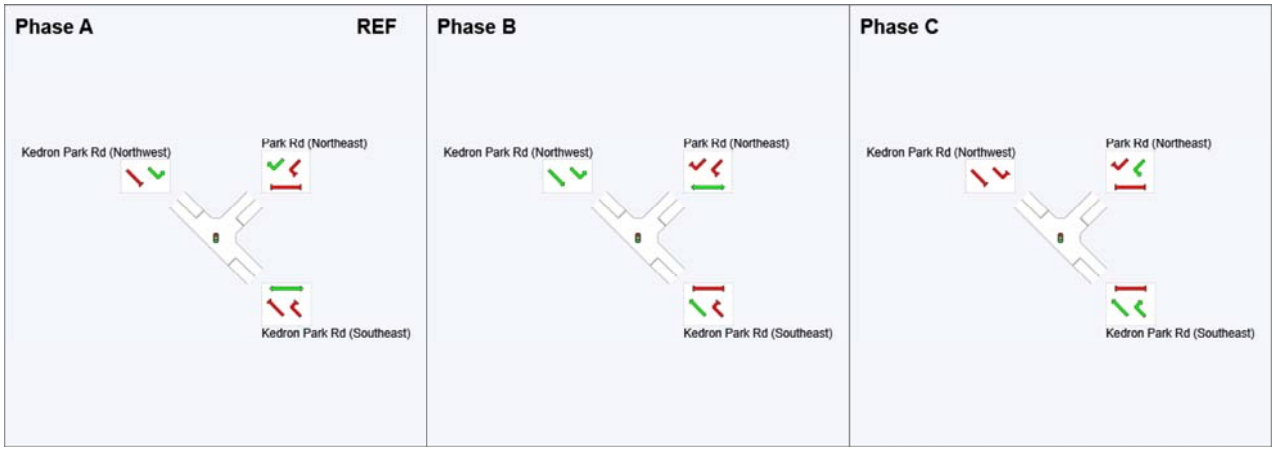
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Mixed Running & Stopped Movement Classes	
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Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Kedron Park Rd (Southeast)											
22	T1	316	4.0	0.295	16.1	LOS B	9.2	66.5	0.58	0.50	36.0
23	R2	83	4.0	0.295	50.9	LOS D	4.9	35.6	0.90	0.77	23.8
Approach		399	4.0	0.295	23.4	LOS C	9.2	66.5	0.65	0.56	31.0
NorthEast: Park Rd (Northeast)											
24	L2	43	4.0	0.868	65.9	LOS E	4.7	33.9	0.77	1.01	20.4
26	R2	523	4.0	0.868	53.1	LOS D	29.3	212.1	0.95	0.96	22.5
Approach		567	4.0	0.868	54.1	LOS D	29.3	212.1	0.94	0.97	22.3
NorthWest: Kedron Park Rd (Northwest)											
27	L2	340	4.0	0.318	33.1	LOS C	17.4	125.7	0.80	0.81	28.6
28	T1	252	4.0	0.318	31.4	LOS C	17.4	125.7	0.80	0.70	25.8
Approach		592	4.0	0.318	32.4	LOS C	17.4	125.7	0.80	0.76	27.7
All Vehicles		1558	4.0	0.868	38.0	LOS D	29.3	212.1	0.81	0.78	25.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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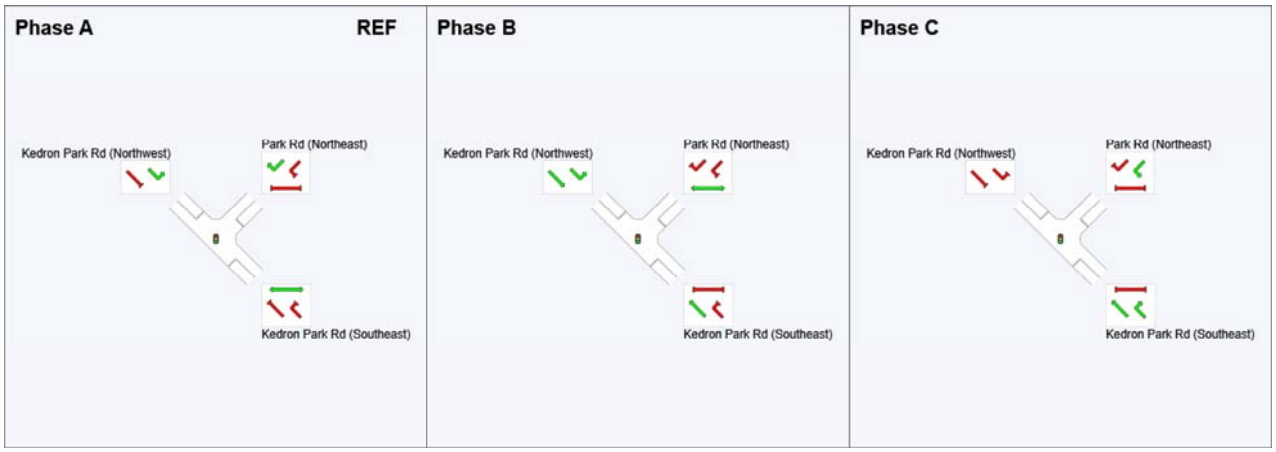
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APPENDIX E

CODE RESPONSES

State code 1: Development in a state-controlled road environment

Table 1.2.1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	
Buildings and structures		
PO1 The location of buildings, structures, infrastructure, services and utilities does not create a safety hazard in a state-controlled road, or cause damage to, or obstruct road transport infrastructure.	**AO1.1** Buildings, structures, infrastructure, services and utilities are not located in a state-controlled road. AND	**Complies with AO1.1** No new buildings, structures, infrastructure, services and utilities are proposed to be located in a state-controlled road.
	AO1.2 Buildings, structures, infrastructure, services and utilities can be maintained without requiring access to a state-controlled road.	**Complies with AO1.2** Access to a state-controlled road will not be required to maintain new buildings, structures, infrastructure, services and utilities.
PO2 The design and construction of buildings and structures does not create a safety hazard by distracting users of a state-controlled road.	**AO2.1** Facades of buildings and structures facing a state-controlled road are made of non-reflective materials. OR	Please refer to the architectural report.
	AO2.2 Facades of buildings and structures do not reflect point light sources into the face of oncoming traffic on a state-controlled road. AND	Please refer to the architectural report.
	AO2.3 External lighting of buildings and structures is not directed into the face of oncoming traffic on a state-controlled road and does not involve flashing or laser lights. AND	Please refer to the architectural report.
	AO2.4 Advertising devices visible from a state-controlled road are located and designed in accordance with the Roadside Advertising Guide, Department of Transport and Main Roads, 2013.	N/A

Performance outcomes	Acceptable outcomes	
PO3 Road, pedestrian and bikeway bridges over a state-controlled road are designed and constructed to prevent projectiles from being thrown onto a state-controlled road.	**AO3.1** Road, pedestrian and bikeway bridges over a state-controlled road include throw protection screens in accordance with section 4.9.3 of the Design Criteria for Bridges and Other Structures Manual, Department of Transport and Main Roads, 2014.	N/A
Filling, excavation and retaining structures		
PO4 Filling and excavation does not interfere with, or result in damage to, infrastructure or services in a state-controlled road. Note: Information on the location of services and public utility plants in a **state-controlled road** can be obtained from the Dial Before You Dig service. Where development will impact on an existing or future service or public utility plant in a **state-controlled road** such that the service or public utility plant will need to be relocated, the alternative alignment must comply with the standards and design specifications of the relevant service or public utility provider, and any costs of relocation are to be borne by the developer. Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	Please refer to the civil engineering report.
PO5 Filling, excavation, building foundations and retaining structures do not undermine, or cause subsidence of, a state-controlled road. Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment, prepared in accordance with the Road Planning and Design Manual 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016, is provided. Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.	No acceptable outcome is prescribed.	Please refer to the civil engineering report.

Performance outcomes	Acceptable outcomes	
PO6 Filling, excavation, building foundations and retaining structures do not cause ground water disturbance in a state-controlled road. Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment, prepared in accordance with the Road Planning and Design manual 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016, is provided. Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.	No acceptable outcome is prescribed.	Please refer to the civil engineering report.
PO7 Excavation, boring, piling, blasting or fill compaction during construction of a development does not result in ground movement or vibration impacts that would cause damage or nuisance to a state-controlled road, road transport infrastructure or road works. Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment, prepared in accordance with Road Planning and Design Manual 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016, is provided. Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.	No acceptable outcome is prescribed.	Please refer to the civil engineering report.
PO8 Development involving the haulage of fill, extracted material or excavated spoil material exceeding 10,000 tonnes per year does not damage the pavement of a state-controlled road. Note: It is recommended a pavement impact assessment is provided. Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, and the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a pavement impact assessment.	**AO8.1** Fill, extracted material and spoil material is not transported to or from the development site on a state-controlled road.	N/A

Performance outcomes	Acceptable outcomes	
PO9 Filling and excavation associated with the construction of vehicular access to a development does not compromise the operation or capacity of existing drainage infrastructure for a state-controlled road. Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	Please refer to the civil engineering report.
PO10 Fill material used on a development site does not result in contamination of a state-controlled road. Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO10.1** Fill material is free of contaminants including acid sulfate content. Note: Soils and rocks should be tested in accordance with AS 1289.0 – Methods of testing soils for engineering purposes and AS 4133.0-2005 – Methods of testing rocks for engineering purposes. AND	Please refer to the civil engineering report.
	AO10.2 Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes.	Please refer to the civil engineering report.
PO11 Filling and excavation does not cause wind-blown dust nuisance in a state-controlled road. Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO11.1** Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes. AND	Please refer to the civil engineering report.
	AO11.2 Dust suppression measures are used during filling and excavation activities such as wind breaks or barriers and dampening of ground surfaces.	Please refer to the civil engineering report.
Stormwater and drainage		
PO12 Development does not result in an actionable nuisance, or worsening of, stormwater, flooding or drainage impacts in a state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	Please refer to the storm water report.

Performance outcomes	Acceptable outcomes	
PO13 Run-off from the development site is not unlawfully discharged to a state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO13.1** Development does not create any new points of discharge to a state-controlled road. AND	Please refer to the storm water report.
	AO13.2 Stormwater run-off is discharged to a lawful point of discharge. Note: Section 3.4 of the Queensland Urban Drainage Manual, Department of Energy and Water Supply, 2013, provides further information on lawful points of discharge. AND	Please refer to the storm water report.
	AO13.3 Development does not worsen the condition of an existing lawful point of discharge to the state-controlled road.	Please refer to the storm water report.
PO14 Run-off from the development site during construction does not cause siltation of stormwater infrastructure affecting a state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO14.1** Run-off from the development site during construction is not discharged to stormwater infrastructure for a state-controlled road.	Please refer to the storm water report.
Vehicular access to a state-controlled road		
PO15 Vehicular access to a state-controlled road that is a limited access road is consistent with government policy for the management of limited access roads. Note: Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO15.1** Development does not require new or changed access to a limited access road. Note: Limited access roads are declared by the transport chief executive under section 54 of the *Transport Infrastructure Act 1994* and are identified in the DA mapping system. OR	**Complies with AO15.1** Please refer to Section 2 of the Traffic Impact Assessment (TIA). No changes to the existing access arrangements are proposed.
	AO15.2 A new or changed access to a limited access road is consistent with the limited access policy for the state-controlled road. Note: Limited access policies for limited access roads declared under the *Transport Infrastructure Act 1994* can be obtained by contacting the relevant Department of Transport and Main Roads regional office. AND	N/A

Performance outcomes	Acceptable outcomes	
	AO15.3 Where a new or changed access is for a service centre, access is consistent with the Service centre policy, Department of Transport and Main Roads, 2013 and the Access policy for roadside service centre facilities on limited access roads, Department of Transport and Main Roads, 2013, and the Service centre strategy for the state-controlled road. Note: The Service centre policy, Department of Transport and Main Roads, 2013, Access policy for roadside service centre facilities, Department of Transport and Main Roads, 2013 and the relevant Service centre strategy for a state-controlled road can be accessed by contacting the relevant Department of Transport and Main Roads regional office.	N/A
PO16 The location and design of vehicular access to a state-controlled road (including access to a limited access road) does not create a safety hazard for users of a state-controlled road or result in a worsening of operating conditions on a state-controlled road. Note: Where a new or changed access between the premises and a state-controlled road is proposed, the Department of Transport and Main Roads will need to assess the proposal to determine if the vehicular access for the development is safe. An assessment can be made by Department of Transport and Main Roads as part of the development assessment process and a decision under section 62 of *Transport Infrastructure Act 1994* issued. Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO16.1** Vehicular access is provided from a local road.	**Complies with AO16.1** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed.
	OR all of the following acceptable outcomes apply: **AO16.2** Vehicular access for the development is consistent with the function and design of the state-controlled road. AND	**Complies with AO16.2** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed.
	AO16.3 Development does not require new or changed access between the premises and the state-controlled road. Note: A decision under section 62 of the *Transport Infrastructure Act 1994* outlines the approved conditions for use of an existing vehicular access to a **state-controlled road**. Current section 62 decisions can be obtained from the relevant Department of Transport and Main Roads regional office. AND	**Complies with AO16.3** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed.

Performance outcomes	Acceptable outcomes	
	AO16.4 Use of any existing vehicular access to the development is consistent with a decision under section 62 of the *Transport Infrastructure Act 1994*. Note: The development which is the subject of the application must be of an equivalent use and intensity for which the section 62 approval was issued and the section 62 approval must have been granted no more than 5 years prior to the lodgement of the application. AND	**Complies with AO16.4** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed.
	AO16.5 On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles do not queue in a road intersection or on the state-controlled road.	**Complies with AO16.5** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed.
Vehicular access to local roads within 100 metres of an intersection with a state-controlled road		
PO17 The location and design of vehicular access to a local road within 100 metres of an intersection with a state-controlled road does not create a safety hazard for users of a state-controlled road. Note: Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO17.1** Vehicular access is located as far as possible from the state-controlled road intersection. AND	N/A
	AO17.2 Vehicular access is in accordance with parts, 3, 4 and 4A of the Road Planning and Design Manual, 2nd Edition: Volume 3, Department of Transport and Main Roads, 2016. AND	N/A
	AO17.3 On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles do not queue in the intersection or on the state-controlled road.	N/A
Public passenger transport infrastructure on state-controlled roads		
PO18 Development does not damage or interfere with public passenger transport infrastructure, public passenger services or pedestrian or cycle access to public passenger transport infrastructure and public passenger services.	**AO18.1** Vehicular access and associated road access works are not located within 5 metres of existing public passenger transport infrastructure. AND	**Complies with AO18.1** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed. Vehicular accesses are not located within 5 metres of public passenger transport infrastructure.

Performance outcomes	Acceptable outcomes	
Note: Refer to the SDAP Supporting Information: Vehicular access to a state-controlled road, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO18.2** Development does not necessitate the relocation of existing public passenger transport infrastructure. AND	**Complies with AO18.2** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed. The development does not necessitate the relocation of existing public passenger transport infrastructure.
	AO18.3 On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles using a vehicular access do not obstruct public passenger transport infrastructure and public passenger services or obstruct pedestrian or cycle access to public passenger transport infrastructure and public passenger services. AND	**Complies with AO18.3** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed.
	AO18.4 The normal operation of public passenger transport infrastructure or public passenger services is not interrupted during construction of the development.	**Complies with AO18.4** It is not expected that the normal operation of public passenger transport infrastructure or public passenger services will be interrupted during construction.
Planned upgrades		
PO19 Development does not impede delivery of planned upgrades of state-controlled roads.	**AO19.1** Development is not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a state-controlled road. Note: Land required for the planned upgrade of a state-controlled road is identified in the DA mapping system. OR	**Complies with AO19.1** Please refer to Section 2.3.1 of the TIA. A review of the Queensland Transport and Roads Investment Program (QTRIP) 2017-18 to 2020-21, published by TMR, indicated that no upgrades are planned for the existing road, active transport or public transport networks adjacent to the site.
	AO19.2 Development is sited and designed so that permanent buildings, structures, infrastructure, services or utilities are not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a state-controlled road.	N/A

Performance outcomes	Acceptable outcomes	
	OR all of the following acceptable outcomes apply: **AO19.3** Structures and infrastructure located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a state-controlled road are able to be readily relocated or removed without materially affecting the viability or functionality of the development. AND	N/A
	AO19.4 Vehicular access for the development is consistent with the function and design of the planned upgrade of the state-controlled road. AND	N/A
	AO19.5 Development does not involve filling and excavation of, or material changes to, land required for a planned upgrade to a state-controlled road. AND	N/A
	AO19.6 Land is able to be reinstated to the pre-development condition at the completion of the use.	N/A
Network impacts		
PO20 Development does not result in a worsening of operating conditions on the state-controlled road network. Note: To demonstrate compliance with this performance outcome, it is recommended that an RPEQ certified traffic impact assessment is provided. Please refer to the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	**Complies with PO20** Please refer to Section 2.2.13 of the TIA. The traffic analysis, completed in accordance with the Guide to Traffic Impact Assessment (GTIA), Department of Transport and Main Roads, 2017 indicates that the development will not have a significant impact on the operation of the state-controlled road network i.e. average intersection delays are **not** expected to increase by more than 5%.
PO21 Development does not impose traffic loadings on a state-controlled road which could be accommodated on the local road network.	**AO21.1** The layout and design of the development directs traffic generated by the development to the **local road** network.	N/A

Performance outcomes	Acceptable outcomes	
PO22 Upgrade works on, or associated with, a state-controlled road are built in accordance with Queensland road design standards.	**AO22.1** Upgrade works required as a result of the development are designed and constructed in accordance with the *Road Planning and Design Manual*, 2nd edition, Department of Transport and Main Roads, 2016. Note: Road works in a state-controlled road require approval under section 33 of the *Transport Infrastructure Act 1994* before the works commence.	N/A

Table 1.2.2: Environmental emissions

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with table 2.2.2: Environmental emissions in State code 2: Development in a railway environment.

Refer to the SDAP Supporting Information: Environmental emissions in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcomes in Table 1.2.2.

Performance outcomes	**Acceptable outcomes**	
Noise		
Accommodation activities		
PO23 Development involving an accommodation activity or land for a future accommodation activity minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in habitable rooms.	**AO23.1** A noise barrier or earth mound is provided which is designed, sited and constructed: 1. to meet the following external noise criteria at all facades of the building envelope: a. ≤60 dB(A) L_{10} (18 hour) façade corrected (measured L_{90} (8 hour) free field between 10pm and 6am ≤40 dB(A)) b. ≤63 dB(A) L_{10} (18 hour) façade corrected (measured L_{90} (8 hour) free field between 10pm and 6am >40 dB(A)) 2. in accordance with chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state-controlled road	N/A

Performance outcomes	Acceptable outcomes	
	environment, Department of Transport and Main Roads, 2017. If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used. In some instances, the design of noise barriers and mounds to achieve the noise criteria above the ground floor may not be reasonable or practicable. In these instances, any relaxation of the criteria is at the discretion of the Department of Transport and Main Roads.	
	OR all of the following acceptable outcomes apply: **AO23.2** Buildings which include a habitable room are setback the maximum distance possible from a state-controlled road or type 1 multi-modal corridor. AND	N/A
	AO23.3 Buildings are designed and oriented so that habitable rooms are located furthest from a state-controlled road or type 1 multi-modal corridor. AND	N/A
	AO23.4 Buildings (other than a relevant residential building or relocated building) are designed and constructed using materials which ensure that habitable rooms meet the following internal noise criteria: 1. ≤35 dB(A) L_{eq} (1 hour) (maximum hour over 24 hours). Note: Noise levels from a state-controlled road or type 1 multi-modal corridor are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise. To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017. **Habitable rooms** of **relevant residential buildings** located within a **transport noise corridor** must comply with the Queensland Development Code MP4.4 Buildings in a transport noise corridor, Queensland Government, 2015. **Transport noise corridors** are mapped on the State Planning Policy interactive mapping system.	N/A

Performance outcomes	Acceptable outcomes	
PO24 Development involving an accommodation activity or land for a future accommodation activity minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in outdoor spaces for passive recreation.	**AO24.1** A noise barrier or earth mound is provided which is designed, sited and constructed: 1. to meet the following external noise criteria in **outdoor spaces for passive recreation**: a. ≤57 dB(A) L_{10} (18 hour) free field (measured L_{90} (18 hour) free field between 6am and 12 midnight ≤45 dB(A)) b. ≤60 dB(A) L_{10} (18 hour) free field (measured L_{90} (18 hour) free field between 6am and 12 midnight >45 dB(A)) 2. in accordance with chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice – Volume 1 Road Traffic Noise, Department of Transport and Main Roads, 2013. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017 OR	N/A
	AO24.2 Each dwelling has access to an outdoor space for passive recreation which is shielded from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure. AND	N/A
	AO24.3 Each dwelling with a balcony directly exposed to noise from a state-controlled road or type 1 multi-modal corridor has a continuous solid gap-free balustrade (other than gaps required for drainage purposes to comply with the Building Code of Australia).	N/A

Performance outcomes	Acceptable outcomes	
Childcare centres and educational establishments		
PO25 Development involving a: 1. childcare centre; or 2. educational establishment minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in indoor education areas and indoor play areas.	**AO25.1** A noise barrier or earth mound is provided which is designed, sited and constructed: 1. to meet the following external noise criteria at all facades of the building envelope: a. ≤58 dB(A) L_{10} (1 hour) façade corrected (maximum hour during normal opening hours) 2. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017. If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used.	Please refer to the noise assessment report.
	OR all of the following acceptable outcomes apply: **AO25.2** Buildings which include indoor education areas and indoor play areas are setback the maximum distance possible from a state-controlled road or type 1 multi-modal corridor. AND	Please refer to the noise assessment report.
	AO25.3 Buildings are designed and oriented so that indoor education areas and indoor play areas are located furthest from the state-controlled road or type 1 multi-modal corridor. AND	Please refer to the noise assessment report.

Performance outcomes	Acceptable outcomes	
	AO25.4 Buildings are designed and constructed using materials which ensure indoor education areas and indoor play areas meet the following internal noise criteria: 1. ≤35 dB(A) L_{eq} (1 hour) (maximum hour during opening hours). Note: Noise levels from a state-controlled road or type 1 multi-modal corridor are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise. To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.	Please refer to the noise assessment report.
PO26 Development involving a: 1. childcare centre; or 2. educational establishment minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in outdoor education areas and outdoor play areas.	**AO26.1** A noise barrier or earth mound is provided which is designed, sited and constructed: 1. to meet the following external noise criteria in each outdoor education area or outdoor play area: a. ≤63 dB(A) L_{10} (12 hour) free field (between 6am and 6pm) 2. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017. OR	Please refer to the noise assessment report.

Performance outcomes	Acceptable outcomes	
	AO26.2 Each outdoor education area and outdoor play area is shielded from noise generated from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure.	Please refer to the noise assessment report.
Hospitals		
PO27 Development involving a hospital minimises noise intrusion from a state-controlled road or type 1 multi-modal corridor in patient care areas.	**AO27.1** Hospitals are designed and constructed using materials which ensure patient care areas meet the following internal noise criteria: 1. ≤35 dB(A) L_{eq} (1 hour) (maximum hour during opening hours). Note: Noise levels from a state-controlled road or type 1 multi-modal corridor are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise. To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with the SDAP Supporting Information: Environmental emissions in a state controlled road environment, Department of Transport and Main Roads 2017.	N/A
Vibration		
Hospitals		
PO28 Development involving a hospital minimises vibration impacts from vehicles using a state-controlled road or type 1 multi-modal corridor in patient care areas.	**AO28.1** Hospitals are designed and constructed to ensure vibration in the treatment area of a patient care area does not exceed a vibration dose value of $0.1m/s^{1.75}$. AND	N/A
	AO28.2 Hospitals are designed and constructed to ensure vibration in the ward area of a patient care area does not exceed a vibration dose value of $0.4m/s^{1.75}$. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified vibration assessment report is provided.	N/A

Performance outcomes	Acceptable outcomes	
Air and light		
PO29 Development involving an accommodation activity minimises air quality impacts from a state-controlled road or type 1 multi-modal corridor in outdoor spaces for passive recreation.	**AO29.1** Each dwelling has access to an outdoor space for passive recreation which is shielded from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure.	Please refer to the air quality assessment report.
PO30 Development involving a: 1. childcare centre; or 2. educational establishment minimises air quality impacts from a state-controlled road or type 1 multi-modal corridor in outdoor education areas and outdoor play areas.	**AO30.1** Each outdoor education area and outdoor play area is shielded from a state-controlled road or type 1 multi-modal corridor by a building, solid gap-free fence, or other solid gap-free structure.	Please refer to the air quality assessment report.
PO31 Development involving an accommodation activity or hospital minimises lighting impacts from a state-controlled road or type 1 multi-modal corridor.	**AO31.1** Buildings for an accommodation activity or hospital are designed to minimise the number of windows or transparent/translucent panels facing a state-controlled road or type 1 multi-modal corridor. OR	Please refer to the air quality assessment report.
	AO31.2 Windows facing a state-controlled road or type 1 multi-modal corridor include treatments to block light from a state-controlled road or type 1 multi-modal corridor.	Please refer to the air quality assessment report.

Table 1.2.3: Development in a future state-controlled road environment

Performance outcomes	Acceptable outcomes	
PO32 Development does not impede delivery of a future state-controlled road.	**AO32.1** Development is not located in a future state-controlled road. OR	**Complies with AO32.1** The development is not located in a future state-controlled road.
	AO32.2 Development is sited and designed so that permanent buildings, structures, infrastructure, services or utilities are not located in a future state-controlled road.	N/A
	OR all of the following acceptable outcomes apply: **AO32.3** Structures and infrastructure located in a future state-controlled road are able to be readily relocated or removed without materially affecting the viability or functionality of the development. AND	N/A
	AO32.4 Development does not involve filling and excavation of, or material changes to, a future state-controlled road. AND	N/A
	AO32.5 Land is able to be reinstated to the pre-development condition at the completion of the use.	N/A
PO33 Vehicular access to a future state-controlled road is located and designed to not create a safety hazard for users of a future state-controlled road or result in a worsening of operating conditions on a future state-controlled road. Note: Where a new or changed access between the premises and a future state-controlled road is proposed, the Department of Transport and Main Roads will need to assess the proposal to determine if the vehicular access for the development is safe. An assessment can be made by Department of Transport and Main Roads as part of the development assessment process and a decision under section 62 of *Transport Infrastructure Act 1994* issued.	**AO33.1** Development does not require new or changed access between the premises and a future state-controlled road. AND	N/A
	AO33.2 Vehicular access for the development is consistent with the function and design of the future state-controlled road.	N/A

Performance outcomes	Acceptable outcomes	
PO34 Filling, excavation, building foundations and retaining structures do not undermine, or cause subsidence of, a future state-controlled road. Note: To demonstrate compliance with this performance outcome, it is recommended that an RPEQ certified geotechnical assessment is provided, prepared in accordance with the Road Planning and Design Manual, 2nd edition: Volume 3, Department of Transport and Main Roads, 2016. Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome and prepare a geotechnical assessment.	No acceptable outcome is prescribed.	N/A
PO35 Fill material from a development site does not result in contamination of land for a future state-controlled road. Note: Refer to the SDAP Supporting Information: Filling, excavation and retaining structures in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO35.1** Fill material is free of contaminants including acid sulfate content. Note: Soil and rocks should be tested in accordance with AS1289 – Methods of testing soils for engineering purposes and AS4133 2005 – Methods of testing rocks for engineering purposes. AND	N/A
	AO35.2 Compaction of fill is carried out in accordance with the requirements of AS1289.0 2000 – Methods of testing soils for engineering purposes.	N/A
PO36 Development does not result in an actionable nuisance, or worsening of, stormwater, flooding or drainage impacts in a future state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	N/A

Performance outcomes	Acceptable outcomes	
PO37 Run-off from the development site is not unlawfully discharged to a future state-controlled road. Note: Refer to the SDAP Supporting Information: Stormwater and drainage in a state-controlled road environment, Department of Transport and Main Roads, 2017, for further guidance on how to comply with this performance outcome.	**AO37.1** Development does not create any new points of discharge to a future state-controlled road. AND	N/A
	AO37.2 Stormwater run-off is discharged to a lawful point of discharge. Note: Section 3.4 of the Queensland Urban Drainage Manual, Department of Energy and Water Supply, 2013, provides further information on lawful points of discharge. AND	N/A
	AO37.3 Development does not worsen the condition of an existing lawful point of discharge to the future state-controlled road.	N/A

State code 6: Protection of state transport networks

Table 6.2.2: All development

Performance outcomes	Acceptable outcomes	Response
Network impacts		
PO1 Development does not result in a worsening of the safety of a state-controlled road. Note: To demonstrate compliance with this performance outcome, it is recommended that a Registered Professional Engineer of Queensland (RPEQ) certified road safety audit or road safety assessment (as applicable) is provided. Further information on determining whether a road safety audit or road safety assessment is required is provided in section 9 of the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017.	No acceptable outcome is prescribed.	**Complies with PO1** Please refer to Section 2 of the Traffic Impact Assessment (TIA). No changes to the existing access arrangements are proposed. The traffic analysis, completed in accordance with the 'Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017' (GTIA) indicates that the development will not have a significant impact on the operation of the state-controlled road network i.e. average intersection delays are **not** expected to increase by more than 5%.
PO2 Development does not result in a worsening of the infrastructure condition of a state-controlled road or road transport infrastructure. Note: To demonstrate compliance with this performance outcome, it is recommended that a RPEQ certified traffic impact assessment and pavement impact assessment are provided. Further information on how to prepare a traffic impact assessment and pavement impact assessment is provided in the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017.	No acceptable outcome is prescribed.	**Complies with PO2** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed. The traffic analysis completed in accordance with the GTIA indicates that the development will not have a significant impact on the operation of the state-controlled road network i.e. average intersection delays are **not** expected to increase by more than 5%.
PO3 Development does not result in a worsening of operating conditions on a state-controlled road or the surrounding road network. Note: To demonstrate compliance with this performance outcome, it is recommended that an RPEQ certified traffic impact assessment is provided. Further information on how to prepare a traffic impact assessment is provided in the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017.	No acceptable outcome is prescribed.	**Complies with PO3** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed. The traffic analysis completed in accordance with the GTIA indicates that the development will not have a significant impact on the operation of the state-controlled road network i.e. average intersection delays are **not** expected to increase by more than 5%.

Performance outcomes	Acceptable outcomes	Response
PO4 Development does not impose traffic loadings on a state-controlled road which could be accommodated on the local road network.	**AO4.1** The layout and design of the development directs traffic generated by the development to the local road network.	N/A
PO5 Upgrade works on, or associated with, a state-controlled road are built in accordance with relevant design standards.	**AO5.1** Upgrade works on a state-controlled road are designed and constructed in accordance with the Road Planning and Design Manual, 2nd edition, Department of Transport and Main Roads, 2016.	N/A
PO6 Development involving the haulage of fill, extracted material or excavated spoil material exceeding 10,000 tonnes per year does not damage the pavement of a state-controlled road. Note: It is recommended that a transport infrastructure impact assessment and pavement impact assessment are provided. Further information on how to prepare a traffic impact assessment is provided in the Guide to Traffic Impact Assessment, Department of Transport and Main Roads, 2017.	**AO6.1** Fill, extracted material and spoil material is not transported to or from the development site on a state-controlled road.	N/A
PO7 Development does not adversely impact on the safety of a railway crossing. Note: It is recommended that a traffic impact assessment be prepared to demonstrate compliance with this performance outcome. An impact on a level crossing may require an Australian Level Crossing Assessment Model (ALCAM) assessment to be undertaken. Section 2.2 – Railway crossing safety of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this performance outcome.	**AO7.1** Development does not require a new railway crossing. OR	N/A
	AO7.2 A new railway crossing is grade separated.	N/A
	OR all of the following acceptable outcomes apply: **AO7.3** Upgrades to a level crossing are designed and constructed in accordance with AS1742.7 – Manual of uniform traffic control devices, Part 7: Railway crossings and applicable rail manager standard drawings. Note: It is recommended a traffic impact assessment be prepared to demonstrate compliance with this acceptable outcome. An impact on a level crossing may require an Australian Level Crossing Assessment Model (ALCAM) assessment to be undertaken. Section 2.2 – Railway crossing safety of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this acceptable outcome	N/A

Performance outcomes	Acceptable outcomes	Response
	AND	
	AO7.4 Access points achieve sufficient clearance from a level crossing in accordance with AS1742.7 – Manual of uniform traffic control devices, Part 7: Railway crossings by providing a minimum clearance of 5 metres from the edge running rail (outer rail) plus the length of the largest vehicle anticipated on-site. Note: Section 2.2 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this acceptable outcome. AND	N/A
	AO7.5 On-site vehicle circulation is designed to give priority to entering vehicles at all times.	N/A
PO8 Development does not result in a worsening of the infrastructure condition of a railway or rail transport infrastructure.	No acceptable outcome is prescribed.	N/A
PO9 Development does not result in a worsening of operating conditions of a railway	No acceptable outcome is prescribed.	N/A
Stormwater and drainage		
PO10 Development does not result in an actionable nuisance, or worsening of, stormwater, flooding or drainage impacts in a state transport corridor.	No acceptable outcome is prescribed.	Please refer to the storm water report.
PO11 Run-off from the development site is not unlawfully discharged to a state transport corridor.	**AO11.1** Development does not create any new points of discharge to a state transport corridor. AND	Please refer to the storm water report.
	AO11.2 Stormwater run-off is discharged to a lawful point of discharge. Note: Section 3.4 of the Queensland Urban Drainage Manual, Department of Energy and Water Supply, 2013, provides further information on lawful points of discharge. AND	Please refer to the storm water report.

Performance outcomes	Acceptable outcomes	Response
	AO11.3 Development does not worsen the condition of an existing lawful point of discharge to a state transport corridor.	Please refer to the storm water report.
PO12 Run-off from the development site does not cause siltation of stormwater infrastructure affecting a state transport corridor.	**AO12.1** Run-off from the development site is not discharged to stormwater infrastructure for a state transport corridor.	Please refer to the storm water report.
Planned upgrades		
PO13 Development does not impede delivery of planned upgrades of state transport infrastructure.	**AO13.1** Development is not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of state transport infrastructure. Note: Land required for the planned upgrade of state transport infrastructure is identified in the DA mapping system. OR	**Complies with AO13.1** Please refer to Section 2.3.1 of the TIA. A review of the Queensland Transport and Roads Investment Program (QTRIP) 2017-18 to 2020-21, published by TMR, indicated that no upgrades are planned for the existing road, active transport or public transport networks adjacent to the site.
	AO13.2 Development is sited and designed so that permanent buildings, structures, infrastructure, services or utilities are not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of state transport infrastructure.	N/A
	OR all of the following acceptable outcomes apply: **AO13.3** Structures and infrastructure located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of state transport infrastructure are able to be readily relocated or removed without materially affecting the viability or functionality of the development. AND	N/A
	AO13.4 Vehicular access for the development is consistent with the function and design of the planned upgrade of state transport infrastructure.	N/A

Performance outcomes	Acceptable outcomes	Response
	AND	
	AO13.5 Development does not involve filling and excavation of, or material changes to, land required for a planned upgrade to a state transport infrastructure. AND	N/A
	AO13.6 Land is able to be reinstated to the predevelopment condition at the completion of the use.	N/A

Table 6.2.3: Public passenger transport infrastructure

Performance outcomes	Acceptable outcomes	Response
Public passenger transport infrastructure		
PO14 Development does not damage or interfere with public passenger transport infrastructure, public passenger services or pedestrian or cycle access to public passenger transport infrastructure and public passenger services.	**AO14.1** Vehicular access and associated road access works are not located within 5 metres of public passenger transport infrastructure. AND	**Complies with AO15.1** Please refer to Section 2 of the Traffic Impact Assessment (TIA). No changes to the existing access arrangements are proposed. Vehicular accesses are not located within 5 metres of public passenger transport infrastructure.
	AO14.2 Development does not necessitate the relocation of existing public passenger transport infrastructure. AND	**Complies with AO14.2** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed. The development does not necessitate the relocation of existing public passenger transport infrastructure.

Performance outcomes	Acceptable outcomes	Response
	AO14.3 Development does not obstruct pedestrian or cyclist access to public passenger transport infrastructure or public passenger services. AND	**Complies with AO14.2** Please refer to Section 2 of the TIA. No changes to the existing access arrangements are proposed. The development does not obstruct pedestrian or cyclist access to public passenger transport infrastructure or public passenger services.
	AO14.4 The normal operation of public passenger transport infrastructure or public passenger services is not interrupted during construction of the development.	**Complies with AO18.4** It is not expected that the normal operation of public passenger transport infrastructure or public passenger services will be interrupted during construction.
PO15 Upgraded or new public passenger transport infrastructure is provided to accommodate the demand for public passenger transport generated by the development. Note: To demonstrate compliance with this performance outcome, it is recommended a public transport impact assessment be prepared in accordance with appendix 1 of the State Development Assessment Provisions Supporting Information – Public Passenger Transport Infrastructure, Department of Transport and Main Roads, 2017. New or upgraded public passenger transport infrastructure provided should be in accordance with the Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015. Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	No acceptable outcome is prescribed.	**Complies with PO15** Please refer to Section 3 of the TIA. No changes to existing public transport infrastructure are considered to be required.

Performance outcomes	Acceptable outcomes	Response
PO16 Development is designed to ensure the location of public passenger transport infrastructure prioritises and enables efficient public passenger services. Note: Chapters 2 and 5 of the Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015 provides guidance on how to comply with this performance outcome. Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	No acceptable outcome is prescribed.	N/A
PO17 Development enables the provision or extension of public passenger services to the development and avoids creating indirect or inefficient routes for public passenger services. Note: Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	No acceptable outcome is prescribed.	N/A
PO18 New or modified road networks are designed to enable development to be serviced by public passenger services. Note: Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	**AO18.1** Roads catering for buses are arterial or sub-arterial roads, collector or their equivalent. AND	N/A
	AO18.2 Roads intended to accommodate buses are designed and constructed in accordance with Road Planning and Design Manual 2nd edition, Volume 3: Guide to Road Design, Department of Transport and Main Roads, 2016. Note: Guidance on how to meet the acceptable outcome is available in the Road Planning and Design Manual 2nd edition, Volume 3: Guide to Road Design, Department of Transport and Main Roads, 2016: 1. Part 3: a. 4.2 Traffic lanes b. 4.8 Bicycle lanes c. 4.9 High occupancy vehicle (HOV) lanes d. 4.12 Bus stops e. 7 Horizontal alignment f. 7.7 Super elevation g. 7.9 Curve widening	N/A

Performance outcomes	Acceptable outcomes	Response
	2. Part 4: a. 6.3 Bus Facilities b. 5.6 Design vehicle swept path 3. Part 4A: a. 5 Auxiliary lanes 4. Part 4B: Roundabouts: a. 4 Geometric design b. 4.6 Circulating carriageway. AND	
	AO18.3 Traffic calming devices are not installed on roads used for buses. Note: Chapter 2 of the Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015 provides guidance on how to comply with this acceptable outcome. AND	N/A
	AO18.4 Where road humps are installed on roads used for buses, the road humps are designed in accordance with the Manual of Uniform Traffic Control Devices, Department of Transport and Main Roads, 2016. Note: Guidance on how to meet the acceptable outcome is available in the Manual of Uniform Traffic Control Devices, Part 13: 1. Local Area Traffic Management, section 2.4 – Road humps 2. Supplement part 13: Local Area Traffic Management – 2.4.2-1 Hump profiles for bus routes.	
PO19 Development provides safe, direct and convenient pedestrian access to existing and future public passenger transport infrastructure. Note: Chapter 3 of the Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015 provides guidance on how to comply with this performance outcome. In particular, it is recommended that a pedestrian demand analysis be provided to demonstrate compliance with the performance outcome. Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	No acceptable outcome is prescribed.	**Complies with PO19** Please refer to Section 4 of the TIA. No changes to existing pedestrian access arrangements are considered to be required.

Performance outcomes	Acceptable outcomes	Response
PO20 On-site vehicular circulation ensures the safety of both public passenger transport services and pedestrians. Note: Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	**AO20.1** The location of on-site pedestrian crossings ensures safe sight distances for pedestrians and public passenger services. AND	N/A
	AO20.2 On-site circulation is designed and constructed so that public passenger services can enter and leave in a forward gear at all times. AND	N/A
	AO20.3 Development does not result in public passenger services movements through car parking aisles.	N/A
PO21 Taxi facilities are provided to accommodate the demand generated by the development. Note: Guidance on how to meet the performance outcome are available in chapter 7 of the Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015. Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	No acceptable outcome is prescribed.	N/A
PO22 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers. Note: Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	**AO22.1** A taxi facility is provided parallel to the kerb and adjacent to the main entrance. AND	N/A
	AO22.2 Taxi facilities are designed in accordance with: 1. AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access –	N/A

Performance outcomes	Acceptable outcomes	Response
	new building work 2. AS1742.11–1999 Parking controls – manual of uniform traffic control devices 3. AS/NZS 2890.6–2009 Parking facilities – offstreet parking for people with disabilities 4. Disability standards for accessible public transport 2002 made under section 31(1) of the *Disability Discrimination Act 1992* 5. AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements.	
PO23 Educational establishments are designed to ensure the safe and efficient operation of public passenger services and pedestrian access. Note: Refer to the SDAP Supporting Information: Public passenger transport infrastructure, Department of Transport and Main Roads, 2017, for further guidance on how to comply with the performance outcome.	**AO23.1** Educational establishments are designed in accordance with the provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011.	**Complies with AO23.1** Please refer to the TIA. The development involves a relatively minor expansion to the existing school. No changes to existing arrangements are considered required.

Performance outcomes	Acceptable outcomes	Response
PO1 Development is designed: (a) to include a technically competent and accurate response to the transport and traffic elements of the development; (b) in accordance with the standards in the Transport, access, parking and servicing planning scheme policy; (c) to ensure the efficient operation and safety of the development and its surrounds. Note—The acceptable outcome and performance outcome can be demonstrated through a development application that: ▪ is accompanied by sufficient information, including computer modelling input and output data, to allow the proposed development to be properly assessed against the requirements of this code and the standards and guidelines of the Transport, access, parking and servicing planning scheme policy; ▪ is certified by a Registered Professional Engineer Queensland that all plans, documents and dimensioned drawings comply with the requirements of this code and the standards and guidelines of the Transport, access, parking and servicing planning scheme policy; ▪ ensures that any computer modelling input and output data are accurate, reasonable and carried out in accordance with sound traffic engineering practices.	**AO1** Development complies with the standards in the Transport, access, parking and servicing planning scheme policy.	**Complies with Performance Outcome** **Access** Refer **Sections 2** and **5.2** of the Traffic Report. No amendments to the existing crossovers are proposed or considered warranted. As such, no further assessment is required. **Parking** Refer **Section 5.3** of the Traffic Report. 25 car parking spaces are required by the TAPS Policy for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion. **Servicing** Refer **Section 5.6** of the Traffic Report. Existing servicing arrangements are proposed to be maintained as part of the expansion. Whilst the expansion may mean that the subject site needs to be serviced more frequently, additional servicing areas are not considered necessary. **Qualifications** The traffic report has been prepared and reviewed by a suitably qualified traffic engineers.
PO2 Development of a major size incorporates on-site provision for integration with the public transport network and the management of vehicles, public transport, pedestrians and cyclists, including providing appropriate pedestrian and cyclist linkages to adjoining uses, public areas and the transport	**AO2** No acceptable outcome is prescribed.	**Not Applicable.** Development is not of a major size.

Performance outcomes	Acceptable outcomes	Response
network consistent with the planning by the State Government and Council.		
PO3 Development provides vehicle access that is located and designed so as to have no significant impact on the safety, efficiency, function, convenience of use or capacity of the road network.	**AO3.1** Development provides site access that is located and designed in compliance with the standards in the Transport, access, parking and servicing planning scheme policy. **AO3.2** Development provides an easement for a vehicular access benefiting all adjoining landowners and the Council if the vehicular access services more than an individual development or premises.	**Complies with Performance Outcome** Refer **Sections 2** and **5.2** of the Traffic Report. No amendments to the existing crossovers are proposed or considered warranted. As such, no further assessment is required. Furthermore, the results of the SIDRA analysis undertaken at the Kedron Park Road / Park Road intersection indicates that the proposed expansion will have negligible operational impacts. Therefore, no external road infrastructure upgrades are considered to be required to support the expansion.
PO4 Development provides walking and cycle routes through the site which: (a) link to the external network and pedestrian and cyclist destinations such as schools, shopping centres, open space, public transport stations, shops and local activity centres along the safest, most direct and convenient routes; (b) encourage walking and cycling; (c) encourage walking and cycling; (d) provide a direct and legible network; Note—The Infrastructure design planning scheme policy provides additional guidance on how to comply with this performance outcome.	**AO4.1** Development provides walking and cycle routes which are constructed on the carriageway or through the site to: (a) create a walking or cycle route along the full frontage of the site; (b) connect to public transport and existing cycle and walking routes at the frontage or boundary of the site. **AO4.2** Development provides walking and cycle routes that are constructed in compliance with the standards in the Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy.	**Can Comply with Performance Outcome** Refer **Sections 4** and **5.5** of the Traffic Report. The site already has active transport connections to the external road network, as well as bicycle parking facilities. No amendments to the existing arrangements are proposed or considered warranted. 40 bicycle parking spaces are required by the TAPS Policy for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion.

Performance outcomes	Acceptable outcomes	Response
	AO4.3 Development provides walking and cycle routes which do not include a potential entrapment area, blind corner or sudden change in level that restrict sightlines.	
PO5 Development provides secure and convenient bicycle parking which: (a) for visitors is obvious and located close to the building's main entrance; (b) for employees is conveniently located to provide secure and convenient access between the bicycle storage area, end-of-trip facilities and the main area of the building; (c) is easily and safely accessible from outside the site; (d) does not impact adversely on visual amenity; (e) does not impede the movement of pedestrians or other vehicles; (f) is designed to comply with a recognised standard for the construction of bicycle facilities. Note—For a performance outcome relating to the number of bicycle parking spaces provided, the application must demonstrate how the needs of the intended users of the site differ from the standard rates in the Transport, access, parking and servicing planning scheme policy.	**AO5.1** Development provides on-site bicycle parking spaces in compliance with the standards in the standards in the Transport, access, parking and servicing planning scheme policy.	**Can Comply with Performance Outcome** Refer **Section 5.5** of the Traffic Report. 40 bicycle parking spaces are required by the TAPS Policy for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion.
	AO5.2 Development provides bicycle parking spaces for employees which are co-located with end-of-trip facilities (shower cubicles and lockers) in compliance with the Transport, access, parking and servicing planning scheme policy and AS 2890.3-1993 Bicycle parking facilities.	
	AO5.3 Development ensures that the location of visitor bicycle parking is discernible either by direct view or using signs from the street.	
	AO5.4 Development provides visitor bicycle parking which does not impede pedestrian movement.	
	AO5.5 Development provides bicycle parking which is constructed in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.	
PO6 Development provides shower cubicles and lockers in sufficient numbers to meet the needs and volume of predicted	**AO6** Development provides shower cubicles and lockers for pedestrians and cyclists in compliance with the standards	**Not Applicable** It is understood that the site already has showers and lockers in sufficient number to support the expansion.

Performance outcomes	Acceptable outcomes	Response
pedestrian and cyclist users. Note—For a performance outcome the application must demonstrate how the needs of the intended users of the site differ from the standard rates in the Transport, access, parking and servicing planning scheme policy.	in the Transport, access, parking and servicing planning scheme policy.	
PO7 Development provides pedestrian and cyclist access to the site which is designed to provide safe movement and avoid unnecessary conflict between pedestrians, cyclists and motor vehicles.	**AO7** Development provides pedestrian and cycle access that is designed and constructed in compliance with the site access design guidelines, pedestrian facilities standards and cyclist facilities standards in the Transport, access, parking and servicing planning scheme policy.	Refer **Section 4** of the Traffic Report. The site already provides active transport connections within the site. No amendments to the existing arrangements are proposed or considered warranted.
PO8 Development provides pedestrian and cyclist access to and from the site which is located to take advantage of safe crossing points of the adjacent road system, key destinations and public transport facilities.	**AO8** No acceptable outcome is prescribed.	**Refer to response to PO7**
PO9 Development provides access driveways in the road area that are located, designed and controlled to: (a) minimise adverse impacts on the safety and operation of the transport network, including the movement of pedestrians and cyclists; (b) ensure the amenity of adjacent premises, from impacts such as noise and light.	**AO9.1** No acceptable outcome for access is prescribed, for a major development (as described in the Transport, access, parking and servicing planning scheme policy).	**Complies with Performance Outcome** Refer **Sections 2** and **5.2** of the Traffic Report. No amendments to the existing crossovers are proposed or considered warranted. As such, no further assessment is required.
	AO9.2 Development which is not a major development (as described in the Transport, access, parking and servicing planning scheme policy) provides a single site access driveway in the road area to the lowest order road to which the site has frontage.	
	AO9.3 Development ensures that sight distances to and from all proposed access driveways in the road area and	

Performance outcomes	Acceptable outcomes	Response
	intersections are in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.	
	AO9.4 Development provides access driveways in the road area which (a) are located, designed and controlled in compliance with the standards in the Transport, access, parking and servicing planning scheme policy; (b) are not provided through a bus stop, taxi rank or pedestrian crossing or refuge.	
	AO9.5 Development makes provision for shared access arrangements particularly where it is necessary to limit access points to a major road.	
PO10 Redevelopment provides for: (a) the closure of all access driveways in the road area that no longer comply with the standards in the Transport, access, parking and servicing planning scheme policy; (b) the reinstatement of adjacent footpaths.	**AO10** No acceptable outcome is prescribed.	**Not Applicable** Refer **Sections 2** and **5.2** of the Traffic Report. No amendments to the existing crossovers are proposed or considered warranted. As such, no further assessment is required.
PO11 Development provides that an internal approach to an access driveway in the road area is designed and located to provide for the safety of pedestrians and cyclists using paths adjacent to the frontage of the site, and motorists.	**AO11.1** Development provides sight distances to and from all proposed access driveways in the road area and intersections which are in compliance with the standards in the Transport, access, parking and servicing planning scheme policy.	Refer **Sections 2** and **5.2** of the Traffic Report. No amendments to the existing crossovers are proposed or considered warranted. As such, no further assessment is required.
	AO11.2 Development ensures that convex mirrors are only used in a site:	

Performance outcomes	Acceptable outcomes	Response
	(a) as a secondary support at access driveways; (b) in addition to acceptable sight splays that comply with the sight distances standards in the Transport, access, parking and servicing planning scheme policy.	
PO12 Development in the City core and City frame as identified in Figure a provides car parking spaces at rates to discourage private car use and encourage walking, cycling and the use of public transport.	**AO12** Development in the City core and City frame as identified in Figure a provides maximum car-parking rates in compliance with the standards in the Transport, access, parking and servicing planning scheme policy. Note—For self-assessable development including an existing premises, no reduction to existing car parking is required to comply with a maximum car-parking rate in the Transport, access, parking and servicing planning scheme policy.	**Not Applicable** The site is not located in the City core or City frame.
PO13 Development outside of the City core and City frame as identified in Figure a provides on-site car parking spaces to accommodate the design peak parking demand without any overflow of car parking to an adjacent premises or adjacent street.	**AO13** Development outside of the City core and City frame as identified in Figure a: (a) provides on-site car parking spaces in compliance with the standards in the Transport, access, parking and servicing planning scheme policy; or (b) for self-assessable development does not result in on-street car parking if no parking standard is identified in the Transport, access, parking and servicing planning scheme policy. Note—For self-assessable development including an existing premises, no reduction to existing car parking is required to comply with a maximum car-parking rate in the Transport, access, parking and servicing planning scheme policy.	**Can Comply with Performance Outcome** Refer **Section 5.3** of the Traffic Report. 25 car parking spaces are required by the TAPS Policy for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion.
PO14 Development ensures that the number of car parking spaces and design of the car parking area:	**AO14.1** Development provides a number of car parking spaces on site equalling the sum of the maximum design peak parking demand for the individual uses at any point in	**Can Comply with Performance Outcome** Refer **Section 5.3** of the Traffic Report. 25 car parking spaces are required by the TAPS Policy

Performance outcomes	Acceptable outcomes	Response
(a) meet the combined design peak parking demand for residential, visitor and business parking; (b) allow for the temporal sharing of car-parking spaces for uses with different peak parking demands. Note—In order to demonstrate that adequate car parking is provided, a traffic impact assessment prepared in compliance with the Transport, access, parking and servicing planning scheme policy is to identify the appropriate number of car parking spaces to be provided.	time. **AO14.2** Development involving mixed use provides a non-residential car parking area with shared parking for all the businesses in the development.	for the proposed expansion. It is recommended that these spaces are provided on-site to accommodate additional demand associated with the expansion.
PO15 Development provides a car park layout which allows for on-site vehicle parking that: (a) is clearly defined, safe and easily accessible; (b) is designed to contain potential adverse impacts within the site; (c) does not detract from the aesthetics or amenity of an area; (d) discourages on-street parking if parking has an adverse traffic management safety or amenity impact; (e) is consistent with safe and convenient pedestrian and cyclist movement.	**AO15** Development provides parking bays, queue areas and manoeuvring areas which are designed for the design service vehicle to the standards in the Transport, access, parking and servicing planning scheme policy.	**Not Applicable** No new car parking areas are proposed.
PO16 Development creates a safe environment by incorporating the key elements of crime prevention through environmental design.	**AO16** Development incorporates the key elements of crime prevention through environmental design in its layout, building and structure design and landscaping by: (a) facilitating casual surveillance opportunities and including good sightlines to publicly accessible areas such as car parks, pathways, public toilets and communal areas; (b) defining different uses and ownerships through design and restricting access from non-residential	**Not Applicable**

Performance outcomes	Acceptable outcomes	Response
	uses into private residential dwellings; (c) promoting safety and minimising opportunities for graffiti and vandalism through exterior building design and orientation of buildings and use of active frontages; (d) ensuring publicly accessible areas such as car parks, pathways, public toilets and communal areas are well lit; (e) including way-finding cues; (f) minimising predictable routes and entrapment locations near public spaces such as car parks, public toilets, ATMs and communal areas. Note—For guidance in achieving the key elements of crime prevention through environmental design, refer to the Crime prevention through environmental design planning scheme policy.	
PO17 Development minimises the potential for graffiti and vandalism through access control, canvas reduction and easy maintenance selection.	**AO17** Development incorporates graffiti and vandalism prevention techniques in its layout, building and structure design and landscaping, by: (a) denying access to potential canvas through access control techniques; (b) reducing potential canvases through canvas reduction techniques; (c) ensuring graffiti can be readily and quickly removed through easy maintenance selection techniques. For guidance on graffiti and vandalism prevention techniques, refer to the Graffiti prevention planning scheme policy.	**Not Applicable**
PO18 Development is serviced by an adequate number and size of service vehicles.	**AO18** Development ensures that the number and size of design service vehicles selected for the site is in compliance with the standards in the Transport, access, parking and	**Complies with Performance Outcome** Refer **Section 5.6** of the Traffic Report. Existing servicing arrangements are proposed to be maintained as part of the expansion. Whilst the

Performance outcomes	Acceptable outcomes	Response
	servicing planning scheme policy.	expansion may mean that the subject site needs to be serviced more frequently, additional servicing areas are not considered necessary.
PO19 Development layout provides for services which: (a) are wholly within the site; (b) are clearly defined, safe and easily accessible; (c) are designed to contain potential adverse impacts of servicing within the site; (d) do not detract from the aesthetics or amenity of the surrounding area.	**AO19.1** Development ensures that a service bay provided on site: (a) is provided and designed to comply with the design vehicle table and service area design standards in the Transport, access, parking and servicing planning scheme policy; (b) is located away from street frontages and screened from adjoining premises.	**Complies with Performance Outcome** Refer **Section 5.6** of the Traffic Report. Existing servicing arrangements are proposed to be maintained as part of the expansion. Whilst the expansion may mean that the subject site needs to be serviced more frequently, additional servicing areas are not considered necessary.
	AO19.2 Development provides on-site servicing facilities and associated on-site vehicle manoeuvring areas which are designed in compliance with the service area design standards in the Transport, access, parking and servicing planning scheme policy.	
	AO19.3 Development provides service areas for refuse collection in compliance with the standards in the Refuse planning scheme policy, Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy.	
PO20 Development provides service vehicle access routes to and from the site which minimise the impact on: (a) amenity and safety in residential areas; (b) streets not constructed to a standard that accommodate increased heavy vehicle movements.	**AO20** Development ensures that service vehicles use the shortest and most direct route to the major road network in compliance with the heavy vehicle standards in the Transport, access, parking and servicing planning scheme policy.	**Complies with Performance Outcome** Refer **Section 5.6** of the Traffic Report. Existing servicing arrangements are proposed to be maintained as part of the expansion. Whilst the expansion may mean that the subject site needs to be serviced more frequently, additional servicing areas are not considered necessary.

Performance outcomes	Acceptable outcomes	Response
If for development which is required to be serviced by a b-double (Austroad class 10 vehicle), multi-combination vehicle, over-dimensioned vehicle or any on vehicle identified by the Queensland Government as requiring a permit to operate on the road (freight-dependent development)		
PO21 Development which is freight-dependent development ensures that the traffic generated by the development does not impact on: (a) the operation of the transport network; (b) the safety and amenity of a residential area; (c) a road not constructed to accommodate a non-standard vehicle such as a road only constructed to accommodate a vehicle that has a legal right of access to all roads including Austroads vehicles classes 1–9.	**AO21.1** Development which is freight-dependent development is located on a site which: (a) has frontage to or direct access to the freight network in the Road hierarchy overlay via roads in a zone in the Industry zones category; or (b) can be serviced by a route that can act as a primary freight access route and connect to an existing primary freight route without impacting on the safe operation of the road network in compliance with the heavy vehicle standards in the Transport, access, parking and servicing planning scheme policy.	**Not Applicable** Site will not require B-Double access.
	AO21.2 Development which is freight-dependent development provides any necessary upgrade to a road used as an access route in compliance with the Infrastructure design planning scheme policy.	

Appendix 13

Geotechnical Report

Department of Housing and Public Works

Queensland Government

SOIL SURVEYS

GEOTECHNICAL INVESTIGATION

PROJECT NO. 1-20275

APRIL, 2018

CADENCE AUSTRALIA PTY LTD

NEW SCHOOL BUILDING

KEDRON STATE HIGH SCHOOL –
PARK ROAD, WOOLOOWIN

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TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 SCOPE OF GEOTECHNICAL SERVICES 1
3.0 SITE DESCRIPTION 2
4.0 GEOTECHNICAL INVESTIGATION 4
4.1 Field Investigation 4
4.2 Laboratory Testing 4
5.0 GEOTECHNICAL MODEL 4
5.1 Subsurface Profile 4
5.2 Groundwater 6
6.0 ENGINEERING ASSESSMENT 7
6.1 Trafficability – Light Weight Construction Vehicles 7
6.2 Earthworks 8
6.2.1 Subgrade Preparation 8
6.2.2 Material Usage 8
6.2.3 Compaction Procedures & Specifications 9
6.2.4 Earthworks Supervision 9
6.3 Site Classification 10
6.4 Building Foundations 11
6.4.1 Site Reactivity 11
6.4.2 Trees 11
6.4.3 Foundations 11
6.4.4 Earthquake Design 12
6.4.5 Adjacent Feature/Excavation Considerations 12
6.4.6 Inspections 13
6.5 Articulation and Detailing 13
6.6 Site Management 13
7.0 ACID SULFATE SOIL ASSESSMENT 14
8.0 DISCUSSION OF RESULTS 15
8.1 Net Acidity 15
8.2 Action Criteria 15
9.0 LIMITATIONS 16

Appendices

Appendix A
Notes Relating to this report
Appendix B
Borehole Record Sheets
Appendix C
Laboratory Test Certificate
Appendix D
Site Plan

1.0 INTRODUCTION

This report presents the results of the geotechnical investigation carried out by Soil Surveys Engineering Pty Limited for the proposed New School Building development at Kedron State High School – Park Road, Wooloowin.

This study was commissioned by Kris van Vuuren on behalf of Cadence Australia Pty Ltd.

Design drawings have not been provided however it has been advised that a two storey structure is proposed.

Based on the above it is expected that large domestic type building loadings would apply.

Earthworks are expected to be limited to minor levelling to form the building pad.

2.0 SCOPE OF GEOTECHNICAL SERVICES

The scope of geotechnical services provided by Soil Surveys Engineering Pty Limited was directed towards evaluating the following items as detailed in our proposal 1-20275 dated 29th of March, 2018:-

- Investigation of the subsurface profile by drilling, sampling and insitu testing.
- Laboratory testing on selected samples to assess engineering properties of the subsurface material.
- Engineering analysis of site investigation and laboratory test results to evaluate:-
    - Earthworks recommendations
        - trafficability
        - subgrade preparation
        - compaction standards
        - excavatability
        - suitability of cut for use as fill
    - Foundation recommendations
        - recommended foundation type
        - bearing capacity
        - skin friction
        - site classification (AS 2870)
    - Earthquake Subsoil Classification
    - Retaining wall design recommendations
    - Site management recommendations
    - Acid Sulfate Soil Assessment

3.0 SITE DESCRIPTION

The site of the proposed development is located within the northern section of Kedron State High School at 34 Park Road, Wooloowin (refer Figure 1).



FIGURE 1 - SITE LOCATION

The site is an operating school with features typical of a school environment (school buildings, walkways, sportsfields/courts etc.) found across the site. At the location of the proposed development the major features were the exiting fenced sports court to the south west of the site and the existing school building east of the site.

Vegetation comprised a few small to medium sized trees with a ground cover comprising short grass typical of a school playing field.

Photographs 1 and 2 indicate typical site conditions.



PHOTOGRAPH 1 - BOREHOLE 4 LOCATION LOOKING SOUTH



PHOTOGRAPH 2 - BOREHOLE 2 LOCATION LOOKING EAST

4.0 GEOTECHNICAL INVESTIGATION

4.1 Field Investigation

The subsurface profile was investigated by:-

- Deep Boreholes - Two boreholes (BH1 and BH6) were drilled using a truck mounted drilling rig to depths of 21.00m. In situ testing in the form of Standard Penetrometer Tests (SPT's) was carried out in these boreholes at regular intervals.
- Shallow Boreholes - Two boreholes (BH4 and BH5) were drilled using a 4WD mounted drilling rig to depths of 4.50m. Dynamic Cone Penetrometer (DCP) tests were carried out adjacent these boreholes.
- Hand Augered Boreholes - Two boreholes (HA2 and HA3) were drilled using hand augering techniques to refusal depths of depths of 1.70m and 1.50m respectively, internal to the existing sports courts, where access for our drilling rig was unavailable. Dynamic Cone Penetrometer (DCP) test were carried out adjacent these boreholes.

The soil classification descriptions, field and laboratory testing were carried out in general accordance with the following Australian Standards:-

- AS 1726-2017 'Geotechnical Site Investigations'
- AS 1289 'Methods of Testing Soils for Engineering Purposes'
- Queensland Acid Sulfate Soil Investigation Team, Dept. of Natural Resources, 'Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS) in Queensland, 1998' (Oct. 1998, Revision 4.0).
- The State Planning Policy Guideline: State interest - emissions and hazardous activities - Guidance on acid sulfate soils, December, 2013.

A description of the investigation method, borehole records, and a site plan showing investigation locations are included in the Appendices. Borehole coordinates were recorded using a hand held GPS device, with accuracy consistent with such devices.

4.2 Laboratory Testing

A laboratory Shrink/Swell test was carried out on a selected sample (BH4 @ 0.5m) retrieved from the site investigation program and was directed towards assessing the reactivity of the subsurface material.

An Iss result of 0.2% was recorded.

5.0 GEOTECHNICAL MODEL

5.1 Subsurface Profile

Subsurface conditions can be broadly grouped into five material types:-

- Fill Material
- Upper Level Clay Soils
- Upper Level Granular Soils

- Lower Level Clay Soils
- Lower Level Granular Soils
- Weathered Sandstone

Fill Material

Fill material encountered at all borehole locations to depths between 0.25m and 0.80m, was variable in nature, and comprised loose and medium dense silty sand, loose sandy gravel and stiff to very stiff sandy clay.

Ash fill was encountered at HA2 between 0.50m and 0.70m, and within the silty sand fill material in BH1 (0.05m to 0.30m).

The fill stratum is considered to be uncontrolled.

Upper Level Clay Based Soils

Natural firm to hard clay based soils were encountered at all borehole locations, underlying the fill material to depths between 2.40m and 4.90m.

Upper Level Granular Soils

Natural granular soils were encountered underlying the upper level clays to depths between 5.20m and 6.90m, and comprised medium dense clayey sand and sand.

Lower Level Stratum

At the location of Boreholes 1 and 6 (deeper boreholes), generally stiff to very stiff clay soils were encountered below the sand strata. A thin gravel and silty sand layer was encountered with the clay stratum.

Weathered Rock

Weathered rock was encountered in Boreholes 1 and 6 at depths of 17.10m and 17.60m respectively, and continued to the borehole termination depths at 21.00m. The weathered rock was described as extremely weathered, very low strength siltstone overlying distinctly weathered, low strength sandstone.

* * *

Refer Borehole records for a detailed subsurface profile description.

A summary of the subsurface profile is presented in Table 1.

TABLE 1 SUBSURFACE PROFILE

Location	Fill Material (m)	Upper Level Clay Soils (m)	Upper Level Granular Soils (m)	Lower Level Clay Soils (m)	Lower Level Granular Soils (m)	Weathered Siltstone/ Sandstone (m)	Termination Depth (m)
BH 1	0.00-0.80	0.80-4.90	4.90-6.90	6.90-13.10 13.80-17.10	13.10-13.80	17.10-TD	21.00
HA 2	0.00-0.70	0.70-TD	NE	NE	NE	NE	1.70[3]
HA 3	0.00-0.70	0.70-TD	NE	NE	NE	NE	1.60[3]
BH 4	0.00-0.25	0.25-3.80	3.80-TD	NE	NE	NE	4.50
BH 5	0.00-0.40	0.40-3.70	3.70-TD	NE	NE	NE	4.50
BH 6	0.00-0.30	0.30-2.40	2.40-5.20	5.20-8.30 9.10-17.60	8.30-9.10	17.60-TD	21.00

Notes:-
1. NE – Not Encountered; TD - Termination Depth.
2. All depths below existing ground surface level as of date of investigation.
3. Hand auger refusal.

5.2 Groundwater

Groundwater was encountered at BH1 (8.66m) and HA2 (0.50m) locations at the time of the investigation.

Borehole1 was bailed upon completion and the groundwater level was recorded 2 hours post bailing. A groundwater depth of 7.95m was recorded.

Whilst groundwater was not encountered at other boreholes at the time of the investigation, it should be noted that groundwater may be present; however, due to the relatively short time that observations are able to be made during drilling of the boreholes, and the possible effect of smear on the sides of the boreholes, groundwater was not identified.

Seepage may be encountered, particularly within the fill material and at the fill/natural and soil/rock interfaces. It should also be noted that groundwater levels can vary both seasonally and with prevailing weather conditions.

6.0 ENGINEERING ASSESSMENT

6.1 Trafficability – Light Weight Construction Vehicles

Trafficability conditions were considered to be fair at the time of the investigation.

However, the soils on site are sensitive to repetitive vehicle loading and water (i.e. they will lose strength through repetitive vehicle loading or if they become overly moist or wet). Further, seepage may also result in a subsequent loss of strength. This may limit trafficability for light weight construction vehicles and create difficulties for construction. This situation would be more pronounced if rainfall followed demolition, clearing, stripping, etc.

Problems may also arise from disturbance of the upper level soil fabric with removal of existing structures, services, vegetation, etc. Depressions could be formed resulting in water traps and potential softening of adjacent and underlying soils.

Partial or complete removal of upper level soils and placement of a bridging layer, may be required to allow access for light weight construction vehicles should these soils become saturated and weakened at the time of construction. We recommend that the earthworks contract includes a PC item to account for the partial and complete removal scenario.

It is recommended that after demolition, stripping, clearing, etc., the exposed surface in the construction area be proof rolled (where appropriate) to assist in identifying weak areas and to improve trafficability for light weight construction vehicles.

Maintaining adequate drainage conditions is essential. It should be ensured that runoff is diverted away from the construction area to prevent ponding of water. In addition, the earthworks pad should be "sealed" at the completion of each day and in the event of rain.

Nevertheless, the contractors (earthworks, building, etc.) should fully inform themselves of the ground conditions on site prior to commencement of construction. This requirement should be explicit in any specifications or contract.

Demolition and Clearing Activities

Extreme care should be exercised during the demolition/clearing phase to ensure that excessive subgrade disturbance is not caused during removal of existing structures, trees, services, etc.

Working Platforms For Tracked Plant and Heavy Construction Vehicles

The scope of Soil Surveys Engineering's study **DOES NOT** include the design of a working platform for heavy construction vehicles or heavy tracked plant.

Detailed design of a working platform should be carried out considering the operation of actual machinery proposed to be used. This is particularly important when considering the use of **heavy** piling rigs and **heavy** cranes - the piling/crane contractor should be consulted regarding their requirements.

6.2 Earthworks

It is understood that earthworks will be limited to minor levelling of the building pad in conjunction with some possible works to treat in situ fill material.

Earthwork procedures should be carried out in a responsible manner in accordance with AS 3798-2007 'Guidelines on Earthworks for Commercial and Residential Developments', incorporating the following recommendations:-

6.2.1 Subgrade Preparation

Subgrade preparation procedures should include the following:-

- Clearing, stripping and grubbing should be carried out in areas subject to earthworks (as trafficability conditions allow). Also all soils containing organic matter should be stripped from the construction area; this material is not considered suitable for use as structural fill.
- Depressions formed by the removal of existing structures, vegetation, underground elements etc. should have all disturbed weakened soil cleaned out and be backfilled with compacted select material.
- The subgrade should be proof rolled (where appropriate) under the supervision of Soil Surveys Engineering in accordance with methods and equipment as per Clause 5.5 of AS 3798-2007. Areas demonstrating excessive movement should be treated (dried and recompacted) or removed and replaced with compacted fill. Treatment should be to a standard sufficient so that the subgrade passes proof rolling and that compaction can be achieved in the first layer of fill.
- Any fill material encountered should be considered uncontrolled and requiring treatment (i.e. excavate/condition/replace/compact as required).

6.2.2 Material Usage

- Due to the water sensitive nature of the silty sand soils (**it is recommended that insitu silty sand NOT be used as structural fill.**
- Due to the reactive nature of the insitu clays, **it is recommended that insitu clays NOT be used as structural fill.**
- **Imported GENERAL fill** material (if required) is recommended for filling. This material should be cohesive and non-dispersive in nature, and be a good quality low plasticity (Liquid Limit of less than 45%, Plasticity Index of less than 15%, Iss of less than 0.5%) select fill material with a Soaked CBR >10%, a maximum particle size of 75mm with at least 80% passing the 19mm sieve.
- Quality testing to confirm imported fill quality should be carried out prior to delivery to site; frequency of testing is subject to assessment by Soil Surveys Engineering, however, a sufficient number of tests should be carried out so that all parties are confident of material characteristics. Quality test results should be reviewed by Soil Surveys Engineering prior to construction.
  Contractors should submit details of their proposed fill source (with quality certificates) with their tender submission. The proposed fill source should be reviewed by Soil Surveys Engineering prior to awarding the earthworks contract.

6.2.3 Compaction Procedures & Specifications

- Provided the placement moisture content of the imported fill or select insitu material approximates the optimum moisture content for compaction, suitable compaction should be achievable using typical compaction machinery. Fill material should be compacted in layers not exceeding 250mm, loose thickness. However, layer thicknesses will be dependent on the compaction plant type and size, use of vibration, material type and condition. Final maximum placement layer thicknesses will need to be determined when compaction plant as well as material type and conditions are known. Fill batters should be overfilled and cut-back.

- Fill placed in the area of the buildings should be compacted in layers (approximately 250mm loose thickness) to a density not less than 98% of maximum dry density in accordance with AS 1289 5.1.1 (Standard Compaction).
- Field density testing should be carried out to check the standard of compaction achieved and the placement moisture content. The frequency and extent of testing should be as per guidelines in AS 3798-2007, Section 8.0.
- Backfilling for service trenches, etc. should use good quality material. The backfill should be placed in uniform layers over the full width of the excavations with the layers not exceeding 200mm thickness, loosely placed using wheeled plant and 100mm loose thickness using hand held vibrating plates. The backfill material should be compacted to the specifications outlined above for insitu or imported cohesive material.
- Soils encountered on site (to borehole depths) should be within the excavation limits of a small dozer (e.g. Cat D4 or similar) in bulk earthworks and a medium sized backhoe (e.g. Case 580 or similar) in trench excavations.
- Shoring of trench excavations is recommended. Suitable precautions to satisfy Health & Safety requirements must be adopted. Construction procedures (i.e. operation of plant, storage of materials, etc.) should also consider the nature of the site soils.

6.2.4 Earthworks Supervision

Engineering supervision of the earthworks operations by Soil Surveys Engineering Pty Limited is recommended.

Following production of AS 3798-2007, the terms "Level 1 and 2 Supervision" have been adopted in earthworks specifications to describe what could also be termed Engineering Supervision. Whilst there is no particular problem with using these terms, there does not seem to be wide agreement as to what Level 1 or 2 Supervision actually means or entails.

Regardless of terminology, it should be made clear in any earthworks specification as to what is actually required in terms of engineering certification.

It is recommended that the following objectives (as a minimum) be incorporated into the earthworks specification:-

- Engineering certification that all general earthworks operations (i.e. stripping, proof rolling of subgrade, subgrade treatment, etc.) have been carried out in accordance with the earthworks specification.

- Engineering certification that fill has been placed and compacted to the required minimum density in accordance with the earthworks specification.
- Engineering certification that the controlled fill material is suitable to support a conventional slab on ground floor.
- Engineering certification that the quality of any imported fill complies with the earthworks specification requirements.

Engineering certification should be provided by a Registered Professional Engineer of Queensland.

Please note that Soil Surveys Engineering in our role as Earthworks Supervisor (under normal circumstances) cannot authorise variations to the contract or the use of provisional items. If the Contractor considers that any recommendation/instruction issued by Soil Surveys Engineering is a variation to the contract, the Contractor should advise the Superintendent and obtain written approval before proceeding with Soil Surveys Engineering's recommendation/instruction.

6.3 Site Classification

While a site classification in accordance with AS 2870 'Residential Slabs and Footings' relates to residential type construction and is not directly applicable for this development, it is, however, a valuable method of classification.

In assessing the site classification, the following has been considered:-

- The subsurface profile (as per borehole records).
- Laboratory test results associated with this study.
- Other geotechnical data held by Soil Surveys Engineering.
- That the site is subject to abnormal moisture conditions due to the presence of trees (on the building site and adjacent sites) and proposed removal of trees (as per Clause 1.3.3 of AS 2870-2011).
- That the site is subject to abnormal moisture conditions due to the presence of existing buildings (as per Clause 1.3.3 of AS 2870-2011).
- The presence of uncontrolled fill deeper than 0.4m.

Considering the above, and other factors, the site is classified Class 'P'.

* * *

It is recommended that the designer satisfy themself that the use of AS 2870 is applicable for the proposed design.

6.4 Building Foundations

6.4.1 Site Reactivity

If this reactive site had been assessed to be subject to ground surface movement predominantly due to soil reactivity **under normal moisture conditions**, a characteristic surface movement (ys) within the Class 'M' range could be calculated (considering the proposed development, existing subsurface profile as per boreholes records, laboratory test results, and taking into account other relevant geotechnical data held by Soil Surveys Engineering); please note that tree induced movement would be additional to this value (refer Section 6.4.2).

However, this reactive site has been assessed to be subject to abnormal moisture conditions and the site is classified Class 'P' (refer Section 6.3).

6.4.2 Trees

Trees can greatly affect ground surface movement (greater movements than what would be expected may occur), and subsequently negatively impact structures.

The footing system should be designed for the effect of trees, with the Designer (Soil Surveys Engineering are not the Designer) considering the following cases:-

- Existing trees are left in place.
- Existing trees are removed prior to construction/development.
- New trees are subsequently planted.

AS 2870-2011 includes an informative section (refer Appendix H) on the design of footings for trees and in particular the calculations of the maximum potential surface movement due to the tree-induced suction change (that is in addition to the normal design suction profile). The Designer should refer to AS 2870-2011 for detailed discussion on this matter.

Regardless, it is recommended that the site be maintained at "stable moisture conditions", with "extremes of wetting and drying prevented" – refer AS 2870-2011, Appendix B. This includes attention to such matters including limitations on gardens and restrictions on trees and shrubs.

6.4.3 Foundations

It is recommended that a high level raft footing system, designed to accommodate the anticipated ground surface movement (refer Section 6.4.1 and 6.4.2), founded in competent natural ground be adopted.

A stiffened raft comprises perimeter and internal beams.

Our recommendation is that footings be founded at a minimum depth of 500mm below platform level and at least 200mm into natural stiff to very stiff (or better) clays.

Footings founded in the stiff to very stiff clays (or better) may be dimensioned for an allowable bearing pressure of at least 150kPa.

For economy of construction in areas of fill, or in order to extend the footings through firm/stiff clay, footings may be constructed over mass concrete filled, backhoe excavated pedestals or short bored piers.

Field and laboratory test results indicate that the existing natural soils, along with any controlled fill, are suitable for slab on ground construction provided that earthworks are carried out in accordance with Section 6.2 and that appropriate engineering certification is provided (refer Section 6.2.4). However, existing fill material as encountered is not considered suitable for slab support. In areas of uncontrolled fill, the slab on ground floor should be supported on piers/pedestals.

6.4.4 Earthquake Design

With respect to structure design, the following would apply in accordance with AS 1170.4-2007:-

- Earthquake Hazard Factor 0.09 (refer Figure 3.2 [F] of AS 1170.4-2007).
- Site Subsoil Class - Class 'Ce', Shallow Soil Site (refer Section 4.2 of AS 1170.4-2007).

6.4.5 Adjacent Feature/Excavation Considerations

Where proposed or existing footings/piers are located adjacent to proposed or existing feature/excavations (e.g. retaining walls, underground service trenches, footing excavations, etc.), the effect of the feature/excavation on proposed or existing footings/piers must be carefully considered. Deepening of proposed footings/piers is expected to be required in such circumstances.

Soil Surveys Engineering and the Structural Engineer should be consulted on this matter prior to construction.

For underground service trenches (as a general guide) proposed footings should extend to base a minimum of 500mm below the feature/excavation base level for a distance of 1.0m out from the feature/excavation. Beyond 1.0m the footings should be taken a minimum of 500mm below an imaginary line (influence line) drawn up at 45˚ (2H:1V) from the feature/excavation base level. Note that actual depths (Soil Surveys Engineering should be consulted on this matter prior to construction) below the influence line will depend on footing/pier capacity, footing/pier load and possible uplift considerations. Figure 2 refers.

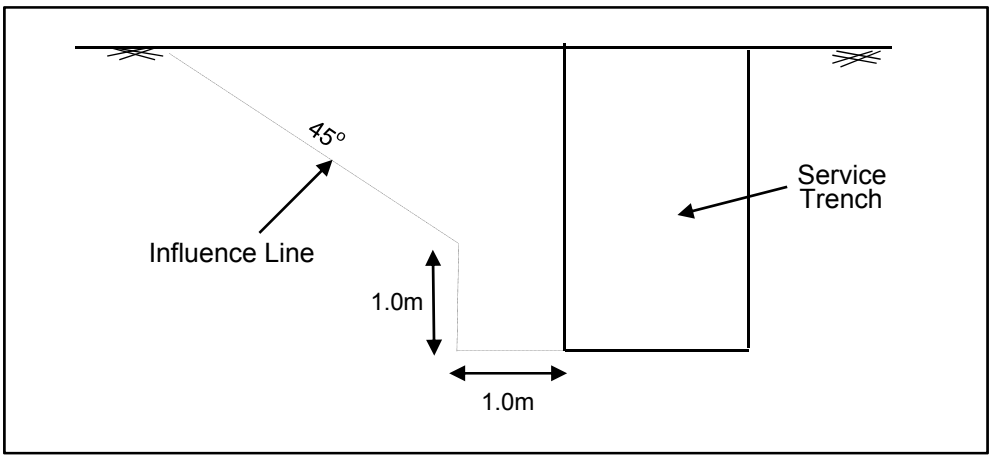


FIGURE 2

For all other feature types, Soil Surveys Engineering and the Structural Engineer should be consulted prior to construction.

For existing footings/piers that are located adjacent to a proposed feature/excavation, Soil Surveys Engineering and the Structural Engineer should also be consulted prior to construction.

6.4.6 Inspections

It is recommended that inspections be undertaken by an experienced and qualified geotechnical engineer from Soil Surveys Engineering during footing and pier excavations to confirm the adequacy of the founding material. Inspections should be carried out prior to placement of reinforcing steel and ordering of concrete.

6.5 Articulation and Detailing

It is recommended that any masonry walls be articulated. This articulation may be achieved by the use of full height (footings to eaves) openings or vertical construction joints at regular intervals. Guidelines on articulation are contained in the Cement and Concrete Association's Technical Note 61, 'Articulated Walling'.

6.6 Site Management

It is important that proper site management methods be observed for the existing soil conditions by both the builder at the time of the construction and the owner(s) throughout the life of the proposed development.

Particular reference to site management matters is set out in AS 2870-2011, particularly Appendix B of this Australian Standard. It should be noted that where proper site management, particularly with respect to change in moisture conditions, is not followed, the foundation recommendations contained in this report could be considered void.

The following are some general comments with respect to site management. However, the reader is directed to AS 2870-2011 (particularly Appendix B) and the CSIRO publication, “Foundation Maintenance and Footing Performance: A Homeowners Guide” (Building Technology File 18), for a complete discussion and further information on foundation performance and maintenance:-

- It is important that the site be well drained. The ground around the structure should slope away at 1 in 50 and then fall to the stormwater system to prevent ponding of water against or near to the structures.
- Roof downpipes and garden taps should not be allowed to wet founding soils.
- It is recommended that service trenches under the building be minimised as disruption or breakage of these service lines could lead to saturation of the under slab material resulting in an increase to moisture condition. If this were to occur, all footing recommendations contained within this report would be void.
- Footings should be placed with minimal delay after excavation to avoid desiccation or wetting of the founding soils. If footings cannot be poured on the same day as excavation, a blinding layer of 75mm thickness is recommended. Piers should be poured immediately.
- Do not let the slab subgrade "dry out" prior to casting.

- It is recommended that the site be maintained at "stable moisture conditions", with "extremes of wetting and drying prevented" - refer AS 2870-2011, Appendix B. This includes attention to such matters including limitations on gardens and restrictions on trees and shrubs.

7.0 ACID SULFATE SOIL ASSESSMENT

Samples were collected for the purposes of testing for the presence of acid sulfate soils.

A staged testing program was carried out on recovered soil samples; Table 2 refers:-

TABLE 2 LABORATORY TESTING

Test Method	Test Objective
pH_F, pH_{FOX} and Reaction to HCl & H_2O_2	Qualitative screening
ANC (Acid Neutralising Capacity)	Quantitative - acid trail
TAA (Total Actual Acidity)	Quantitative - acid trail
SCr (Chromium Reducible Sulfur)	Quantitative - sulfur trail
S-NAS (Retained Acidity)	Quantitative - sulfur trail

Samples were screened by Soils Surveys Engineering as part of this study to assess field pH (pH_F) and pH after oxidation (pH_{FOX}) using 30% hydrogen solution buffered to between pH 4.5 to pH 5.5.

The pH_F/pH_{FOX} screening method consists of two steps. In the first step, the field pH of a 1:5 soil/water suspension is measured (pH_F). In the second step, a 30% Hydrogen Peroxide solution is added to the sample which is then heated to accelerate the oxidation of the sample. The pH after oxidation (pH_{FOX}) is then measured. A significant difference between the pH_F and pH_{FOX} result is indicative of PASS; however, test results may be affected by other inclusions such as shell material and organics.

Samples were also subject to quantitative analysis by the Chromium Reducible Sulfur suite in accordance with appropriate laboratory procedures.

The Chromium Reducible Sulfur suite had been adopted by QASSIT in Queensland for the testing of ASS in Queensland. This method includes analysis of 'inherent buffering capacity' from naturally occurring alkaline materials (i.e. calcite, coral debris, fine shell fragments) and 'retained acidity' which includes sulfur held in stable oxidation minerals such as 'jarosite' and allows for calculation of 'net acidity'. The Chromium Reducible Sulfur test method was selected in preference to the Suspension Peroxide Oxidation Combined Acidity & Sulfur (SPOCAS) method as it is gives more accurate indications of pyrite content where significant amounts of organic matter (and organic derived acidity) are present in the soil samples.

An overall acid-base accounting method was used to calculate a 'net acidity' value which is used to qualify analytical test results and calculate liming rates. This equation is given by:

Net Acidity = Actual Acidity (as TAA) + Retained Acidity (as S_{NAS}) + Potential Acidity (as S_{CR}) - insitu Acid Neutralising Capacity (ANC).

Laboratory test results are included in Appendix C.

8.0 DISCUSSION OF RESULTS

8.1 Net Acidity

Table 3 presents calculated net acidity considering quantitative test results.

TABLE 3 NET ACIDITY

BH No.	Material	Depth (m)	Net Acidity (mole H^+/t)
BH 1	Sandy Clay Fill	1.50-1.95	24
BH 1	Sandy Clay Fill	0.60-0.80	26

8.2 Action Criteria

Indicator or action levels considering quantitative test results are used as a guide to assess the need for an ASSMP. Indicator or action levels are presented in Table 4 (reference: QASSIT - Nov, 2002, Revision 3.8).

TABLE 4 ACTION CRITERIA - (QASSIT OCT. 1998 TABLE 4.0)

Texture Range/Classification	Approximate Clay Content (%)	Action Criteria 1-1000 tonnes disturbed		Action Criteria >1000 tonnes disturbed	
		S_{pos} (%)	TPA (mole H^+/t)	S_{pos} (%)	TPA (mole H^+/t)
Coarse / Sands to Loamy Sands	≤5	0.03	18	0.03	18
Medium / Sandy Loams to Light Clays	5-40	0.06	36	0.03	18
Fine / Medium to Heavy Clays and Silty Clays	≥40	0.1	62	0.03	18

Examination of test results indicate that the onsite soils exceed action levels for > 1,000 tonne disturbed and therefore an ASSMP may be required if this action criteria is achieved. However the test results recorded indicate that there is a low environmental risk posed by ASS disturbance. TAA values were recorded which are identified as actual acidity within the soils which are possibly naturally occurring acidity levels and not Acid Sulfate Soils.

9.0 LIMITATIONS

We have prepared this report for the use of **Cadence Australia Pty Ltd**, for design purposes in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has not been prepared for use by parties other than **Cadence Australia Pty Ltd**; it may not contain sufficient information for purposes of other parties or for other uses. Please note that any third party relying on the information contained in this report for any purpose whatsoever does so entirely at its own risk, and any duty of care to that third party is excluded.

Any interpretation or recommendation given by Soil Surveys Engineering shall be understood to be based on judgement and experience and not on greater knowledge of the facts than the reported investigations would imply. The interpretation and recommendations are therefore opinions provided for our Client's sole use in accordance with the specific brief. As such they do not necessarily address all aspects of ground behaviour on the subject site. Information provided by others has been taken in good faith, but no liability can be accepted for information provided by others.

Your attention is drawn to 'Appendix A', 'Notes Relating to this Report'. Interpretation of factual data given in this report is based on judgement, not a greater knowledge of facts other than those reported.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing and depth of boreholes, the method of drilling, the frequency of sampling and testing and the possibility of other than "straight line" variations between the boreholes. Subsurface conditions between and below boreholes may vary significantly from conditions encountered at the borehole locations.

Please note, if following detailed design, the founding depth of any footings or piers/piles is within 3B (B = footing width/pier diameter) above the termination depth of the boreholes/pits/CPTU or if any excavations extend below the borehole/pit/CPTU termination levels, then Soil Surveys Engineering should be contacted immediately.

If the above were to occur then the geotechnical data in this report should be considered preliminary only; additional investigation is likely to be required.

In the event that conditions encountered on site during construction appear to vary from those expected from the information contained in the report, the Company strongly recommends that it immediately be notified. Most problems are more readily resolved when conditions are exposed than at some later stage, after the event. Should Soil Surveys Engineering not be notified or if this notification is delayed, then Soil Surveys can not be held responsible for the effect that any variation has on any aspect of the development.

Soil Surveys Engineering consider that a documentation review service (during the design phase and prior to construction) to verify that the intent of geotechnical recommendations is properly reflected in the design, along with construction inspections, forms a very important component of the geotechnical engineering design service/process.

The geotechnical review ensures geotechnical risks to our Client and their project are minimised at the design and tender stage of the project. Further, with Soil Surveys Engineering being commissioned to carry out geotechnical construction inspections, an opportunity at the time of construction to confirm any assumptions made in the preparation of the report and allow

the effect of any normally occurring variation in ground conditions to be assessed with respect to construction becomes available.

The above statements are not intended to reduce the level of responsibility accepted by Soil Surveys Engineering in accordance with our commission, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in doing so and the risks they accept should they decline to have Soil Surveys Engineering carry out a geotechnical documentation review and geotechnical construction inspections.

It is highly recommended that the Client avail themselves of these review and inspection services; our standard rates will apply.

S.R. COTTLE
ASSOCIATE

C.P. JOHNSON (RPEQ 7052)
PRINCIPAL ENGINEER

for and on behalf of
SOIL SURVEYS ENGINEERING PTY LIMITED

APPENDICES

APPENDIX A

NOTES RELATING TO THIS REPORT

INTRODUCTION

These notes are provided by Soil Surveys Engineering Pty Limited (the Company) to complement the geotechnical report in regard to classification methods and field procedures. Not all notes are necessarily relevant to all reports.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Geotechnical engineering involves gathering and assimilating limited information about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such information obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and at the time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

Soils - The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726-1993 (Geotechnical Site Investigations), where appropriate. In general, descriptions cover the following properties - soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geotechnical practice.

Soil types are described according to the dominant particle size and behaviour as set out in AS 1726-1993.

Cohesive soils are classified on the basis of strength (consistency) either by use of hand penetrometer, shear vane, laboratory testing or engineering examination. The strength terms are defined in AS1726-1993 Table A4.

Non-cohesive soils are classified on the basis of relative density usually based on insitu testing or engineering examination (see AS1726-1993 Table A5).

Rocks - Rock types are classified by their geological names (AS1726-1993 Table A6), together with descriptive terms regarding weathering (AS1726-1993 Table A9), strength (refer Table 1 below), defects (AS1726-1993 Table A10), etc. Where strength testing (ie Point Loads) is carried out, AS1726-1993 Table A8 is used. Where relevant, further information regarding rock classification is attached.

Table 1 Estimated strength descriptions given to rock based on engineering examination

Strength Term	Approximate Qu (MPa)
Extremely Weak	< 1.0
Very Weak	1.0 - 5.0
Weak	5.0 - 25
Medium Strong	25 - 50
Strong	50 - 100
Very Strong	100 - 250
Extremely Strong	> 250

Ref ISRM "Suggested Methods for the Quantitative Description of Discontinuities in Rock Masses"

SAMPLING

Sampling is carried out during drilling or from other excavations to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on plasticity, grain size, colour, moisture content, minor constituents and, depending upon sample disturbance, (information on strength and structure).

Undisturbed samples are taken by pushing a thin walled sample tube, usually 50mm diameter (U50), into the soil and withdrawing it with a sample of the soil contained in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength, volume change potential and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling used are given on the attached logs.

TEST LOCATIONS

Test locations (e.g. boreholes, CPT's, test pits etc.) were based on available access at the time of testing (access may need to be provided "by others"). Test locations may have been shifted if access was not suitable.

Unless noted otherwise, accuracy of test locations are to the accuracy of hand held GPS equipment.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application.

Test Pits - These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for an excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling - A borehole of 50 to 100mm diameter is advanced by manually operated equipment. Refusal of the augers can occur on a variety of materials such as hard clay, gravel or rock fragments and does not necessarily indicate rock level.

Continuous Spiral Flight Augers - The borehole is advanced using 75 to 300 mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling or insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the augers. Information from the drilling (as distinct from specific sampling) is of relatively lower reliability due to remoulding, inclusion of cuttings from above or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table has a lower reliability than augering above the water table. Various drill bits are attached to the base of the augers during the drilling. The depth of refusal of the different bit types can provide information as to the strength of the material encountered. Generally two different bit types are used. The 'V' bit is a V shaped steel bit and the 'TC' bit is a tungsten carbide tipped screw type bit.

Wash Boring - The borehole is usually advanced by a rotary bit with water or fluid pumped down the hollow drill rods and returned up in the space between the rods and the soil or casing, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from "feel" and rate of penetration. More accurate information on soil strata is gained by regular testing and sampling using the Standard Penetration Test (SPT) and undisturbed thin walled tube samples (U50).

Mud Stabilized Drilling - Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilize the borehole. The term "mud" encompasses a range of products ranging from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is only possible from regular intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling - A continuous core sample is obtained using a diamond or tungsten carbide tipped core barrel. Provided full core recovery is achieved (which is not always possible in very weak rocks and granular soils), this technique provides a very reliable method of investigation. In rocks, NMLC coring (nominal 52 mm diameter) is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as CORE LOSS. The location of losses is determined on site by the supervisor. If the location of the loss is uncertain, it is placed at the top end of the run, when the core is placed in a storage tray and recorded on the log.

Standard Penetration Tests - Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" - Test 6.3.1.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm, the upper 150 mm being neglected due to possible disturbance from the drilling method. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued at a reduced penetration.

In the case where full penetration is obtained with successive blow counts for each 150 mm of, say 4, 6 and 7 blows, the record shows,

4, 6, 7 N = 13

In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm, the record shows:

15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

Occasionally, the drop hammer is used to drive 50mm diameter thin walled sample tubes (U50) in clays. In such circumstances, it is noted on the borehole logs.

A modification to the SPT test is where the same driving system is used with a solid 60^0 tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid SPT are shown as "N_c" on the borehole logs, together with the number of blows per 150 mm penetration.

Cone Penetration Tests - Test Method - Cone Penetration Tests (CPT) are carried out in accordance with AS 1289 Test 6.5.1-1977, using an electrical friction-cone penetrometer.

The test essentially comprises the measurement of resistance to penetration of a cone of 35.7 mm diameter pushed into the soil at a rate of 10-20 mm per second by hydraulic force. The resistance to penetration is recorded in terms of pressure on the end area of the cone (cone resistance, q_c, in MPa) and friction on the side of the 135 mm long sleeve immediately above the top of the cone (friction resistance, f_s, in kPa). These forces are measured by electrical transducers (strain gauges) within the cone device. The ratio between friction resistance and cone resistance is also calculated as a percentage, ie.-

$$Friction\ Ratio\ (FR) = \frac{Friction\ Resistance, f_s\ (kPa) \times 100}{cone\ resistance,\ q_c\ (kPa)}$$

The friction ratio, FR, is generally low in sands (less than 1% or 2%) and generally higher in clays (say 3% or more). The interpretation of sandy clays, clayey sands and material with a high silt content is more difficult, but intermediate values (between 1% and 3%) would be expected. Highly organic clays and peats generally have a friction ratio in excess of 5%.

Static cone data is recorded in the field on disc for later presentation using computer aided drafting.

The equipment can be operated from any conventional drill rig. A total applied load in the range of 4 to 10 tonnes is required for practical purposes, although lighter loads may be used. The cone penetrometers are available with various capacities of cone resistance ranging up to 100 MPa for general purpose investigations, while a range of 0 to 10 MPa can be used where more sensitive investigations of soft clay are required.

The cone resistance value provides a continuous measure of soil strength or density, and together with the friction ratio, provide very useful indications of the presence of narrow bands of geotechnically significant layers such as thin, soft clay layers or lenses of sand which might otherwise be missed using conventional drilling methods.

The lithology of the encountered soils is interpreted from static cone data and is generally presented on the static cone log sheets.

It is important to note that the lithology is interpreted information and is based on research by Schmertmann (1970), Sanglerat (1972), Robinson and Campinalli (1986), modified to suit local conditions as indicated by borehole information and laboratory testing.

As soils generally change gradually it is sometimes difficult to accurately describe depths of strata changes, although greater accuracy is obtained with the static cone compared with conventional drilling. In addition, friction ratios decrease in accuracy with low cone resistance values, and in desiccated soils. As a result, some overlap and minor discrepancies may

exist between static cone and nearby borehole information.

Portable Dynamic Cone Penetrometers - Portable Dynamic Cone Penetrometer (DCP) tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows for successive 100mm increments of penetration.

The DCP comprises a Cone of 20 mm diameter with 30 degree taper attached to steel rods of smaller section.

The cone end is driven with a 9 kg hammer falling 510 mm (AS. 1289 Test 6.3.2). The test was developed initially for pavement subgrade investigations, and empirical correlations of the test results with California Bearing Ratio have been published by various Road Authorities. The Company has developed their own correlations with Standard Penetration tests and Density Index tests in sands.

LOGS

The borehole or test pit logs presented herein are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The attached explanatory notes define the terms and symbols used in preparation of the logs.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than "straight line" variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems.

- Although groundwater may be present in lower permeability soils, it may enter the hole slowly or perhaps not at all during the time the hole is open.
- A localized perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be bailed out of the bore and mud must be washed out of the hole or "reverted" if water observations are to be made.

More reliable measurements can be made by use of standpipes which are read after stabilizing at periods ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc.) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably determine the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density, strength and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse engineering characteristics or behaviour. If the volume and quality of fill is important to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing is normally carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes". Details of the test procedure used are given on the individual report forms and the attached explanatory notes summarize important aspects of the Laboratory Test Procedures adopted.

ENGINEERING REPORTS

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. The information provided in Soil Surveys Engineering reports is opinion and interpretation and not factual. The client/contractor increases their risk by not retaining the person who authored the geotechnical report, to carry out site inspection and review (overseeing role) during construction, to confirm opinion and interpretation expressed in the report is accurate. Where the report has been prepared for a specific design proposal the information and interpretation may not be relevant if the design proposal is changed. If this happens, the Company will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical aspects and recommendations or suggestions for design and construction. Since the test sites in any exploration represent a very small proportion of the total site and since the exploration only identifies actual ground conditions at the test sites, even under the best circumstances actual conditions may vary from those inferred to exist. No responsibility is taken for:-

- Unexpected variations in ground and/or groundwater conditions.
- Changes in policy or interpretation of policy by statutory authorities.
- The actions of other persons.
- Any work where the company is not given the opportunity to supervise the construction using the Companies designs/recommendations.

If differences occur, the Company will be pleased to assist with investigation or advice to resolve any problems occurring.

SITE ANOMALIES

In the event that conditions encountered on site during construction appear to vary from those expected from the information contained in the report, the Company requests that it immediately be notified. Most problems are more readily resolved when conditions are exposed than at some later stage, well after the event.

Extreme events including but not limited to the results of climate change, eg. flood levels above previously identified levels, beach scour or erosion beyond normal expectations (as identified by local authorities) extreme rainfall events, war, espionage, sabotage may result in different conditions between time of investigation and time of construction.

REPRODUCTION OF INFORMATION FOR CONTRACTUAL PURPOSES

Attention is drawn to the document “Guidelines for the Provision of Geotechnical Information in Construction Contracts (1987)”, published by the Institution of Engineers, Australia. Where information obtained from this investigation is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances, where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

REVIEW OF DESIGN

Where major civil or structural developments are proposed or where only a limited investigation has been completed or where the geotechnical conditions/ constraints are quite complex, it is prudent to have a joint design review which involves a senior geotechnical engineer. We would be happy to assist in this regard as an extension of our investigation commission. Construction drawings should be reviewed by Soil Surveys Engineering, with sufficient time to allow changes if required, prior to inspections.

Otherwise Soil Surveys Engineering reserves the right to refuse to carry out inspections.

SITE INSPECTION

The Company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related.

i) Site visits during construction to confirm reported ground conditions

ii) Site visits to assist the contractor or other site personnel in identifying various soil/rock types such as appropriate footing or pier founding depths, the stability of a filled or excavated slope; or

iii) Full-time engineering presence on site.

In the vast majority of cases it is advantageous to the principal for the geotechnical engineer who wrote the investigation report to be involved in the construction stage of the project.

The geotechnical engineer cannot take responsibility for variations in encountered conditions, where he is not given the opportunity to review plans for the proposed development with sufficient time to allow review and make changes to the proposed development if required, and where he is not given the opportunity to inspect the site and oversee construction methods with regard to site conditions with sufficient time to observe all relevant site conditions and operations.

RESPONSIBLE USE OF GEOTECHNICAL INFORMATION

Recommendations in our report are for design purposes only and provided on the basis that inspections are carried out to allow finalisation of opinions and recommendations contained in our report.

The geotechnical investigation consisting of field and laboratory testing has been carried out to indicate typical conditions by indicating conditions and parameters at the specific locations of boreholes/test pits. Subsurface conditions are indicated at these locations only and the inference of conditions between or away from these locations (interpolation and extrapolation) involves a certain degree of risk. Persons inferring such conditions or carrying out such inferences should do so with a degree of caution and conservatism which is commensurate with the consequences of the risk of error.

Estimates of volumes based on our findings require interpolation and extrapolation between test locations and as such may be significantly different from actual volumes.

APPENDIX B

BOREHOLE RECORD SHEETS

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SOIL SURVEYS

BOREHOLE RECORD SHEET

Location Number: BH 01

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 11/04/2018

Easting: 503916 Northing: 6967732 RL:
Logger: BM Operator: BM Machine: Scout 1

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	Samples and Remarks
	0.05		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, moist.	
	0.30		FILL Silty SAND (SC) Medium dense, fine to medium grained, light brown, high plasticity clay fines, with ash, moist.	
	0.50		FILL Sandy CLAY (CH) Stiff to very stiff, high plasticity, brown, fine to medium grained sand, moist.	
	0.80		FILL Sandy CLAY (CH) Stiff to very stiff, high plasticity, brown, fine to medium grained sand, wet.	U50 PP=200 Rec = 100%
	1.30		NATURAL Silty CLAY (CH) Stiff to very stiff, high plasticity fines, yellow brown, moist.	
	1.0		Silty CLAY (CH) Stiff to very stiff, high plasticity fines, grey yellow brown, moist.	SPT 3, 3, 3 N=6
	2.0			
	2.20		Silty CLAY (CH) Very stiff, high plasticity fines, brown, trace of fine to medium grained sand, moist.	
	3.0			
	3.00		Silty CLAY (CH) Hard, high plasticity, light grey yellow brown, moist.	U50 PP=430 Rec = 98%
	4.0			
	4.90		Clayey SAND (SC) Medium dense, fine to medium grained, brown, high plasticity fines, with fine to medium sized gravel, moist.	SPT 5, 13, 13 N=26
	5.0			
	6.0			SPT 10, 9, 10 N=19
	6.90		Sandy CLAY (CH) Stiff, high plasticity, light grey, fine to coarse grained sand, moist.	
	7.0			U50 Rec = 0%
	8.0			
	8.20		Sandy CLAY (CH) Stiff, high plasticity, light grey, fine to coarse grained sand, moist.	
	9.0			SPT 4, 4, 5 N=9
	9.90			
	10.0			

1/04/18 16:00

Comments:
1. Groundwater noted at 8.66m.
2. Borehole bailed to 20.00m upon completion of drilling.
3. Steady water depth recorded at 7.95m, 2 hours post bailing.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

SOIL SURVEYS 2.00 LIB 2017-07-13.GLB Log SOIL SURVEY AUGER LOG2 1-20275 GINT.GPJ <<DrawingFile>> 30/04/2018 16:27 10.0.000 Developed by Datgel

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SOIL SURVEYS

BOREHOLE RECORD SHEET

Location Number: BH 01

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 11/04/2018

Easting: 503916 Northing: 6967732 RL:
Logger: BM Operator: BM Machine: Scout 1

Drilling Method TC	WB	RR	NMLC	Casing	Depth	Graphic	Description	Samples and Remarks
							Silty CLAY (CH) Stiff, high plasticity, light grey yellow brown, moist. *(continued)*	SPT 3, 3, 3 N=6
					11.0			
					11.30		Silty CLAY (CH) Stiff, high plasticity, light grey yellow brown, with fine to coarse grained sand, moist.	
					12.0			
					13.0			
					13.10		Sandy GRAVEL (GP) Medium dense, fine to medium sized, multicoloured, fine to medium grained sand, moist.	SPT 11, 13, 17 N=30
					13.80		Sandy CLAY (CH) Very stiff, high plasticity, yellow brown, fine to medium grained sand, moist.	
					14.0			
					15.0			SPT 12, 11, 15 N=26
					16.0			
					16.20		Sandy CLAY (CH) Hard, high plasticity, yellow brown, fine to medium grained sand, with fine to coarse sized gravel, moist.	SPT 24, 23, 18 N=41
					17.0			
					17.10		SANDSTONE (XW) Extremely weathered, very low strength, dark grey.	
					18.0			SPT 30/125mm N=R
					19.0			SPT 20, 30/130mm N=R
					20.0			

Comments:
1. Groundwater noted at 8.66m.
2. Borehole bailed to 20.00m upon completion of drilling.
3. Steady water depth recorded at 7.95m, 2 hours post bailing.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

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BOREHOLE RECORD SHEET

Location Number: BH 01

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 11/04/2018

Easting: 503916 Northing: 6967732 RL:
Logger: BM Operator: BM Machine: Scout 1

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	Samples and Remarks
WB	20.70		SANDSTONE (XW) Extremely weathered, very low strength, dark grey. *(continued)*	
WB	21.0 21.00		SANDSTONE (DW) Distinctly weathered, very low strength, yellow brown grey mottled, fine to medium grained.	
			BOREHOLE BH 01 TERMINATED AT 21.00 m	SPT 30/85mm N=R

Comments:
1. Groundwater noted at 8.66m.
2. Borehole bailed to 20.00m upon completion of drilling.
3. Steady water depth recorded at 7.95m, 2 hours post bailing.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

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SOIL SURVEYS

HAND AUGER RECORD SHEET

Location Number: HA 02

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 19/04/2018

Easting: 503883 Northing: 6967729 RL:
Logger: RH Operator: RH Machine: Hand Auger

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	DCP Test (blows/100mm) 0 6 12 18 24 30	Samples and Remarks
	0.10		Concrete.		
	0.15		FILL Sandy GRAVEL (GP) Loose, fine to medium sized, dark brown, fine to coarse grained sand, moist.		D
	0.50 ▽				
	0.70		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, with low plasticity clay fines, moist.		D
	1.0		FILL ASH, loose to medium dense, dark grey black, wet.		
	1.20		NATURAL Silty CLAY (CH) Firm, high plasticity, dark brown, with fine grained sand, moist.		
	1.40		Silty CLAY (CH) Stiff, high plasticity, dark brown, with fine grained sand, moist.		
	1.70		Silty CLAY (CH) Very stiff, high plasticity, dark brown, with fine grained sand, moist.		
	2.0		HAND AUGER HA 02 TERMINATED AT 1.70 m		
	3.0				
	4.0				
	5.0				
	6.0				
	7.0				
	8.0				
	9.0				
	10.0				

Comments:
1. Groundwater noted at 0.50m.
2. DCP refusal at 2.89m.
3. Hand auger refusal at 1.70m.

▽ Water First Noted ▼ Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

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HAND AUGER RECORD SHEET

Location Number: HA 03

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 19/04/2018

Easting: 503888 Northing: 6967742 RL:
Logger: RH Operator: RH Machine: Hand Auger

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	Samples and Remarks
	0.10		Concrete.	
	0.15		FILL Sandy GRAVEL (GP) Loose, fine to medium sized, dark brown, fine to coarse grained sand, moist.	
	0.70		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, with low plasticity clay fines, trace of ash, moist.	D
	1.0		NATURAL Silty CLAY (CH) Stiff, high plasticity, dark brown, with fine grained sand, moist.	
	1.20		Silty CLAY (CH) Very stiff, high plasticity, dark brown, with fine grained sand, moist.	
	1.60		HAND AUGER HA 03 TERMINATED AT 1.60 m	
	2.0			
	3.0			
	4.0			
	5.0			
	6.0			
	7.0			
	8.0			
	9.0			
	10.0			

Comments:
1. Groundwater not encountered.
2. DCP refusal at 3.19m.
3. Hand auger refusal at 1.60m.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

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BOREHOLE RECORD SHEET

Location Number: BH 04

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 08/04/2018

Easting: 503901 Northing: 6967753 RL:
Logger: RH Operator: RH Machine: EVH1750

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	DCP Test (blows/100mm) 0 6 12 18 24 30	Samples and Remarks
	0.10		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, trace of low to medium plasticity clay fines, with organics, moist.		
	0.25		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, trace of low to medium plasticity clay fines, moist.		U50 PP=240 Rec = 92%
	1.0		NATURAL Sandy CLAY (CI-CH) Very stiff, medium to high plasticity, dark brown mottled dark grey, fine to medium grained sand, moist.		
	1.10		Sandy CLAY (CL-CI) Hard, low to medium plasticity, dark brown mottled dark grey, fine to medium grained sand, moist.		
	1.60		Sandy CLAY (CI-CH) Hard, medium to high plasticity, mottled dark grey dark brown, fine grained sand, moist.		U50 PP>600 Rec = 85%
	2.0				
	3.0				
	3.00		Sandy CLAY (CI-CH) Hard, medium to high plasticity, mottled dark grey dark brown, fine to medium grained sand, with bands of silty sand, moist.		
	3.80		SAND (SP) Medium dense, fine to medium grained, light brown, moist.		
	4.0				
	4.50		BOREHOLE BH 04 TERMINATED AT 4.50 m		
	5.0				
	6.0				
	7.0				
	8.0				
	9.0				
	10.0				

Comments:
1. Groundwater not encountered.
2. DCP refusal at 1.39m.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

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BOREHOLE RECORD SHEET

Location Number: BH 05

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 08/04/2018

Easting: 503877 Northing: 6967770 RL:
Logger: RH Operator: RH Machine: EVH1750

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	DCP Test (blows/100mm) 0 6 12 18 24 30	Samples and Remarks
	0.12		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, with organics, moist.		
	0.20				
	0.40		FILL Silty SAND (SM) Loose, fine to medium grained, dark brown, moist.		
	0.80		FILL Sandy CLAY (CL-CI) Very stiff, low to medium plasticity, dark brown, fine to medium grained sand, some ash present, moist.		U50 PP>600 Rec = 92%
	1.0				
	1.60		NATURAL Sandy CLAY (CH) Very stiff, high plasticity, dark brown mottled dark grey, fine to medium grained sand, moist.		
	2.0				
	2.10		Sandy CLAY (CL-CI) Hard, low to medium plasticity, dark brown mottled dark grey, fine to medium grained sand, moist.		
			Sandy CLAY (CI-CH) Hard, medium to high plasticity, mottled dark grey dark brown, fine to coarse grained sand, moist.		
	2.80		Sandy CLAY (CI-CH) Very stiff, medium to high plasticity, mottled dark grey dark brown, fine to coarse grained sand, moist.		
	3.0				U50 PP>600 Rec = 96%
			Sandy CLAY (CI-CH) Hard, medium to high plasticity, mottled dark grey dark brown, fine to coarse grained sand, with bands of silty sand, moist.		
	3.70		SAND (SP) Medium dense, fine to medium grained, light brown, moist.		
	4.0				D
	4.50		BOREHOLE BH 05 TERMINATED AT 4.50 m		
	5.0				
	6.0				
	7.0				
	8.0				
	9.0				
	10.0				

Comments:
1. Groundwater not encountered.
2. DCP refusal at 3.09m.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

SOIL SURVEYS 2.00 LIB 2017-07-13.GLB Log SOIL SURVEY AUGER LOG2 1-20275 GINT.GPJ <<DrawingFile>> 30/04/2018 16:27 10.0.000 Developed by Datgel

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SOIL SURVEYS

BOREHOLE RECORD SHEET

Location Number: BH 06

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 11/04/2018

Easting: 503902 Northing: 6967777 RL:
Logger: BM Operator: BM Machine: Scout 1

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	Samples and Remarks
	0.05		FILL Silty SAND (SM) Loose, fine to medium grained, brown, moist.	
	0.10		FILL Silty SAND (SC) Loose, fine to medium grained, brown, high plasticity fines, moist.	
	0.30		FILL Silty SAND (SC) Loose, fine to medium grained, brown, high plasticity fines, with fine to coarse sized gravel, moist.	
	1.0			
	1.10		NATURAL Silty CLAY (CH) Stiff to very stiff, high plasticity, grey yellow brown, moist.	
			Sandy CLAY (CH) Very stiff, high plasticity, orange brown, fine to medium grained sand, dry.	
	2.0			
	2.40			
			Clayey SAND (SC) Medium dense, fine to coarse grained, brown, high plasticity fines, with fine to medium sized gravel, moist.	
	3.0			SPT 4, 7, 8 N=15
	4.0			
	5.0			
	5.20			
			Silty CLAY (CH) Very stiff, high plasticity, light grey yellow brown mottled, moist.	
	5.90			
	6.0		Silty CLAY (CH) Very stiff to hard, high plasticity, light grey yellow brown mottled, moist.	U50 PP>600 Rec = 72%
	7.0			
	8.0			
	8.30			
			Silty SAND (SM) Medium dense, fine to medium grained, light grey, moist.	
	9.0			
	9.10			
			Silty CLAY (CH) Stiff, high plasticity, light grey yellow brown mottled, moist.	SPT 3, 2, 3 N=5
	9.60			
			Silty CLAY (CH) Stiff, high plasticity, light grey yellow brown mottled, moist.	
	10.0			

Comments:
1. Groundwater not encountered.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

SOIL SURVEYS 2.00 LIB 2017-07-13.GLB Log SOIL SURVEY AUGER LOG2 1-20275 GINT.GPJ <<DrawingFile>> 30/04/2018 16:27 10.0.000 Developed by Datgel

Soil Surveys Engineering Pty. Limited
Specialist in Applied Geotechnics
PO Box 317, Paddington, 4064
+61 7 3369 6000
info@soilsurveys.com.au
www.soilsurveys.com.au
SOIL SURVEYS

BOREHOLE RECORD SHEET

Location Number: BH 06

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 11/04/2018

Easting: 503902 Northing: 6967777 RL:
Logger: BM Operator: BM Machine: Scout 1

Drilling Method (TC / WB / RR / NMLC / Casing)	Depth	Graphic	Description	Samples and Remarks
			Silty CLAY (CH) Stiff, high plasticity, light grey yellow brown mottled, moist. *(continued)*	
	11.0			
	12.0			U50 PP=130 Rec = 100%
	13.0			
	13.20		Sandy CLAY (CH) Very stiff, high plasticity, yellow brown, fine to medium grained sand, moist.	
	13.90		Sandy CLAY (CH) Very stiff, high plasticity, yellow brown, fine to medium grained sand, with fine to medium sized gravel, moist.	
	14.0			
	15.0			SPT 6, 10, 15 N=25
	15.30		Sandy CLAY (CH) Very stiff, high plasticity, light grey, fine to medium grained sand, moist.	
	16.0			
	17.0			
	17.20		Sandy CLAY (CH) Hard, high plasticity, dark grey, fine to medium grained sand, moist.	
	17.60		SILTSTONE (XW) Extremely weathered, very low strength, grey.	
	18.0			SPT 30/100mm N=R
	19.0			
	19.80			SPT 25, 30/90mm N=R
	20.0			

Comments:
1. Groundwater not encountered.

Water First Noted Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

SOIL SURVEYS 2.00 LIB 2017-07-13.GLB Log SOIL SURVEY AUGER LOG2 1-20275 GINT.GPJ <<DrawingFile>> 30/04/2018 16:27 10.0.000 Developed by Datgel

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SOIL SURVEYS

BOREHOLE RECORD SHEET

Location Number: BH 06

Project Number: 1-20275
Project Name: New School Building
Location: Kedron State High School
Client: Cadence Australia Pty Ltd
Date: 11/04/2018

Easting: 503902 Northing: 6967777 RL:
Logger: BM Operator: BM Machine: Scout 1

Drilling Method TC	WB	RR	NMLC	Casing	Depth	Graphic	Description	Samples and Remarks
	■				21.0 21.00		SANDSTONE (DW) Distinctly weathered, very low strength, yellow brown grey mottled, fine to medium grained. *(continued)*	
							BOREHOLE BH 06 TERMINATED AT 21.00 m	SPT 30/50mm N=R

22.0
23.0
24.0
25.0
26.0
27.0
28.0
29.0
30.0

Comments:
1. Groundwater not encountered.

▽ Water First Noted ▼ Water Steady Level

Weathering Grades
RS - Residual Soil
XW - Extremely weathered
HW - Highly weathered
DW - Distinctly weathered
MW - Moderately weathered
SW - Slightly weathered
FR - Fresh

Rock Strength
RS - Residual Soil
VL - Very low
L - Low
M - Medium
H - High
VH - Very high
EH - Extremely high

Samples
U50
SPT
Disturbed Sample
Bulk Sample

Approved: CPJ
Date: 30/04/2018

SOIL SURVEYS 2.00 LIB 2017-07-13.GLB Log SOIL SURVEY AUGER LOG2 1-20275 GINT.GPJ <<DrawingFile>> 30/04/2018 16:27 10.0.000 Developed by Datgel

APPENDIX C

LABORATORY TEST CERTIFICATES

SOIL SURVEYS ENGINEERING P/L

Gold Coast

8/140 Millaroo Dr, Helensvale, QLD. 4212.
Phone: (07) 5502 6795; Fax: (07) 5502 6724

NATA
WORLD RECOGNISED ACCREDITATION

Chromium Reducible Sulfur Suite Test Results

CLIENT: Cadence Australia Pty Ltd
ADDRESS: C/O 2/19 Finchley Street, Milton, QLD, 4064
PROJECT: New School Building
LOCATION: Kedron State High School

Job Number: 1 - 20275

NATA Accreditation number 15301

Accredited for Compliance with ISO/IEC 17025-Testing

Certificate Number : WHL18-0370-S1-S8 CrS

Issue Number 1

Date : 02-May-18

Sample Number	Identification/...				Excluded Material		Moisture as Received (85oC)	Init. pH	ANC - bt	a - ANC - bt	s - TAA	TAA	S - HCl	S - KCl	S - NAS	s - S - NAS	SCr	
	Borehole/ Testpit	from (m)	to (m)	Date Sampled	Shell (%d.w.)	Gravel (%d.w.)	AS4969.1	AS4969.2 (1M KCl)	AS4969.13 (%CaCO3 Eq.)	AS4969.13 (eq. mol. H+/t)	AS 4969.2 (%S Eq.)	AS4969.2 (mol. H+/t)	AS4969.8	AS4969.4 (% S)	AS4969.11	AS4969.11 (eq. mol. H+/t)	AS4969.7 (% S)	AS4969.7 (eq. mol. H+/t)
S1	1	0.60	1.05	20-Apr-18	0.0	0.0	22.5	4.75	n/a	n/a	0.03	18	n/a	n/a	n/a	n/a	<0.01	0
S2	1	1.50	1.95	20-Apr-18	0.0	0.2	22.7	4.60	n/a	n/a	0.04	22	n/a	n/a	n/a	n/a	<0.01	2
S3	1	3.00	3.45	20-Apr-18	0.0	0.0	14.4	5.83	n/a	n/a	0.01	4	n/a	n/a	n/a	n/a	<0.01	0
S4	1	4.50	4.95	20-Apr-18	0.0	0.4	16.9	5.80	n/a	n/a	0.00	3	n/a	n/a	n/a	n/a	<0.01	0
S5	5	0.60	0.85	20-Apr-18	0.0	0.0	17.3	4.66	n/a	n/a	0.04	22	n/a	n/a	n/a	n/a	<0.01	4
S6	5	3.00	3.25	20-Apr-18	0.0	0.0	13.7	5.96	n/a	n/a	0.00	3	n/a	n/a	n/a	n/a	<0.01	0
S7	6	3.00	3.45	20-Apr-18	0.0	0.0	13.0	6.06	n/a	n/a	0.00	2	n/a	n/a	n/a	n/a	<0.01	4
S8	6	6.00	6.45	20-Apr-18	0.0	0.0	13.2	5.02	n/a	n/a	0.01	7	n/a	n/a	n/a	n/a	<0.01	6

Samples Received: 24-Apr-18

Tests Completed: 02-May-18

Approved Signatory: Signed: _____ for and on behalf of Soil Surveys Engineering P/L

Craig Ferguson-Hannah BSc - Laboratory Supervisor - Acid Sulfate Soils and Waters

1 Samples supplied by SSE

2 Samples tested in 'as received' condition

3 Tests herein were performed according to Soil Surveys Engineering Quality Management System. This report shall not be reproduced, except in full.

4 AS4969.4,8,11 Are not covered by this laboratories current scope of accreditation

5 AS4969.13 Includes a safety factor of 1.5

6 n/a denotes 'not applicable'.

Form Number: REP-CRS-01 V4

Gold Coast
Unit 8, 140 Millaroo Drive
Helensvale QLD 4212
Australia
Ph:+61 7 5502 6795
Fax:+61 7 5502 6724

Report No: SSI:WHL18-0369-S1
Issue No: 1

Shrink Swell Index Report

Client: Cadence Australia Pty Ltd
C/O 2/19 Finchley Street
Milton QLD 4064

Project: New School Building

Project Location: Kedron State High School

Project Number: 1-20275

Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number: 15301

Approved Signatory: C.Ferguson-Hannah (Senior Technician)
Date of Issue: 26/04/2018

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details

Sample ID:	WHL18-0369-S1	**Sampling Method:**	As Supplied
Field ID:	N/A	**Material:**	N/A
Date Sampled:	N/A	**Source:**	Borehole
Date Submitted:	N/A	**Specification:**	N/A
Project Location:	Kedron State High School		
Sample Location:	BH4, 0.5m		
Borehole Number:	N/A		
Borehole Depth (m):	N/A		

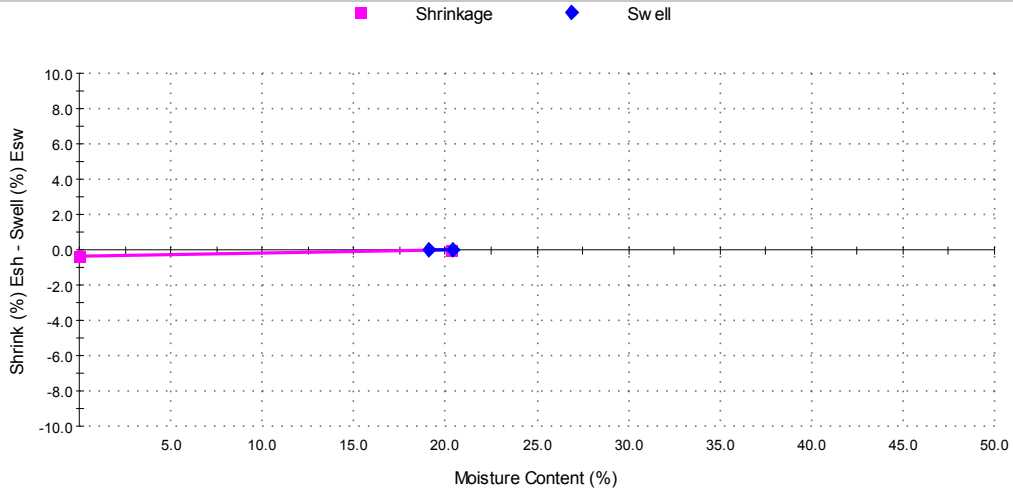
Swell Test — AS 1289.7.1.1

Swell on Saturation (%):	0.0
Moisture Content before (%):	19.1
Moisture Content after (%):	20.4
Est. Unc. Comp. Strength before (kPa):	N/A
Est. Unc. Comp. Strength after (kPa):	N/A

Shrink Test — AS 1289.7.1.1

Shrink on drying (%):	0.4
Shrinkage Moisture Content (%):	20.3
Est. inert material (%):	0
Crumbling during shrinkage:	N/A
Cracking during shrinkage:	Slight

Shrink Swell



Shrink Swell Index - Iss (%): 0.2

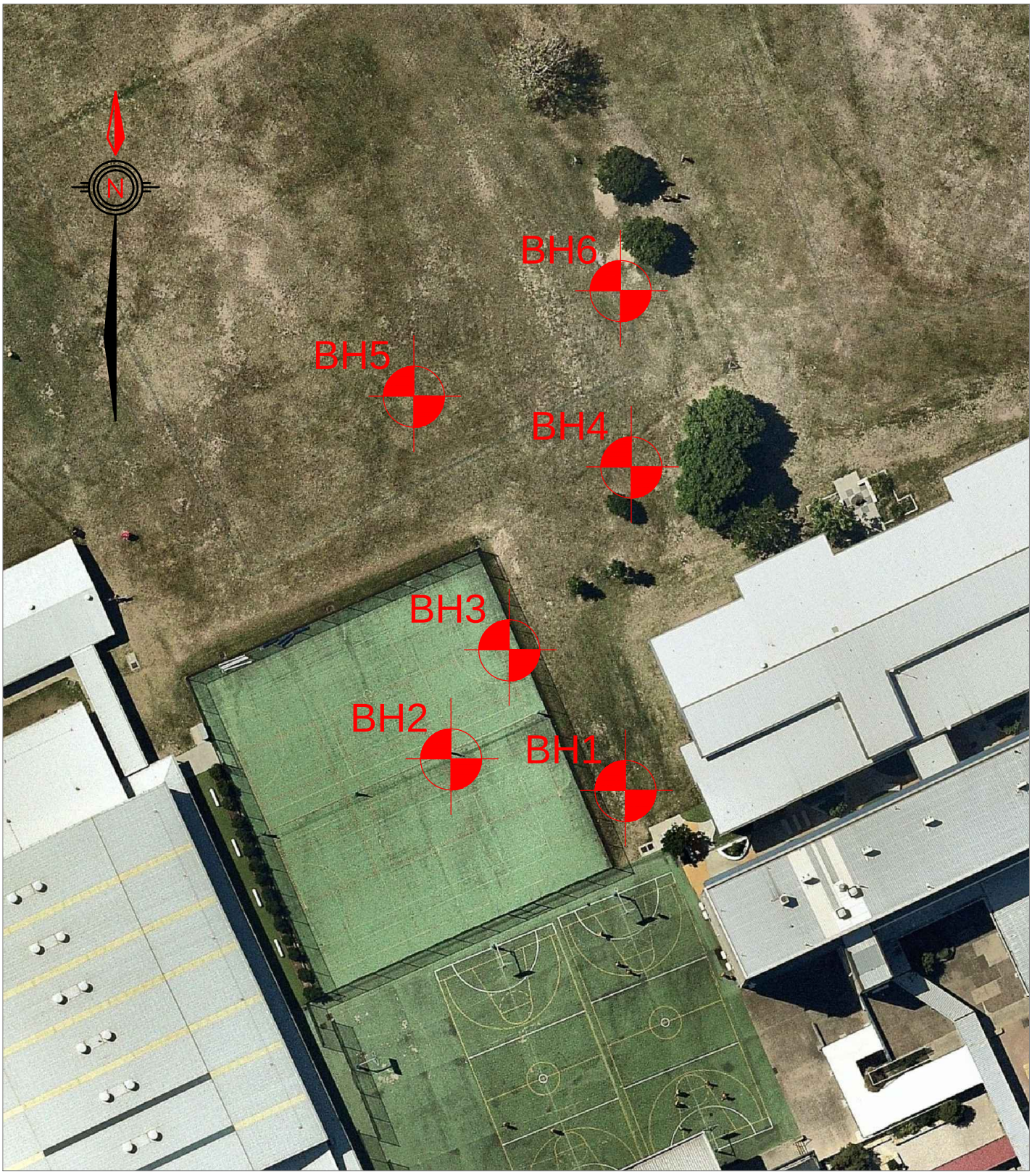
Comments

DESCRIPTION: SILTY CLAY(CL) BROWN
UNIT WEIGHT: 1.99 t/m3

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APPENDIX D

SITE PLAN



CLIENT
CADENCE AUSTRALIA PTYT LTD

LOCATION
KEDRON STAE HIGH SCHOOL

TITLE
New School Building

BOREHOLE LOCATION PLAN

SCALE 1:600

10 0 20 30m

A4	DRAWING NO.	DATE	CHECKED
	118-20275-01	18/04/2018	SC

Soil Surveys
SOIL SURVEYS ENGINEERING PTY.LTD.
CONSULTING GEOTECHNICAL ENGINEERS

Appendix 14

Koala Self-Assessable Management Plan

Department of Housing and Public Works

Queensland Government

KOALA SELF-ASSESSABLE MANAGEMENT PLAN

KEDRON STATE HIGH SCHOOL
ADDITIONAL ACCOMMODATION

FOR

DEPARTMENT OF EDUCATION

APRIL 2018

PN: 84274
SN: 21625

DOCUMENT CONTROL

Koala Self-Assessable Management Plan

Project:	Additional Accommodation	Project number:	84274
Site:	Kedron State High School	Site number:	21625

Version	Date	Status	Key changes	Author/s	Reviewer/s	Approver
Rev 0	16/04/2018	Initial Issue	-	Annie Jin	Norman WONG	Norman WONG

TABLE OF CONTENTS

DOCUMENT CONTROL		1
1.0	INTRODUCTION	3
2.0	SITE DESCRIPTION AND PROPOSED DEVELOPMENT	4
3.0	COMMUNITY INFRASTRUCTURE ASSESSMENT	1
4.0	KOALA HABITAT AND CONNECTIVITY VALUE ASSESSMENT	3

1.0 INTRODUCTION

The *State Government Supported Community Infrastructure Koala Conservation Policy 2017* (The Policy) regulates the planning and delivery of all Queensland Government supported infrastructure projects, as listed under Schedule 5 of the *Planning Regulation 2017*, within the South East Queensland Koala Protection Area (SEQKPA)[1] which result in:

- The clearing of native vegetation that will result in a total cleared area of less than 500m^2
- A new building and any reasonably associated infrastructure with a total development footprint of less than 500m^2
- An extension to an existing building and any reasonably associated infrastructure if the extension results in a total development footprint of less than 500m^2
- Extracting gravel, rock or sand from an area of less than 5000m^2
- Excavating or filling an area of less than 5000m^2

This Koala Self-Assessment and Management Plan, details actions that must be implemented in order to meet the requirements and outcomes of The Policy. The responsibilities of Government supported Community Infrastructure providers under The Policy are:

- Self-assess their obligations under this policy and in accordance with any associated guidelines;
- Maintain accurate records of self-assessment appropriate for assessment and reporting purposes;
- Provide access to those records and any other relevant information used in the self-assessment of infrastructure requirements under the policy for the purposes of an annual review and assessment process;
- Provide environmental offsets as specified in the Environmental Offsets Offset Policy; and
- Where offsets are provided by planting new koala trees, ensure plantings are secured in a way consistent with section 29 of *Environmental Offsets Act 2014*.

This management plan provides strategies to address the objectives and intended outcomes of The Policy, taking into consideration the Koala habitat and connectivity values as determined under Schedule 2 of The Policy. This management plan must be considered in all relevant phases of the project and a copy of the document must be provided to relevant people involved in the project including project managers, principal design consultants, landscape architects and construction contractors. Records to demonstrate implementation of measures are to be kept

[1] The SEQKPA includes the following local government areas:

- Sunshine Coast Regional Council
- Moreton Bay Regional Council
- Brisbane City Council
- Redland City Council
- Ipswich City Council
- Logan City Council
- Gold Coast City Council
- Noosa Shire Council

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

The site is consisted of an irregular shaped allotment located within Brisbane City Council local government area, suburb of Kedron. The site is bound by Kedron Brook Bikeway to the north, Kedron Park Road to the south, Gorman Street and residential area to the west and Kedron Ambulance Service to the east (refer to Attachment A). The site is located at 34 Park Road, Kedron and is described as Lot 961 on SP250949.

The site is currently being utilized as Kedron State High School. Majority of the building is located at the south portion of the site, with the oval located at the north portion of the site. Vegetation is scattered across the site.

2.2 PROPOSED DEVELOPMENT

The Department of Education and Training is proposing to construct a new Learning Centre on the site. The following site works are proposed to support the proposed development:

a) Construct a new Learning Centre in one of the locations identified on the site map;
b) Option A location consideration – ensure no impact on the school's track and field oval (GOVL1);
c) Option B location consideration – relocation of volleyball and basketball courts will be required. The funding source will need to be determined in consultation with school and Region, as this does not currently meet the criteria of this program. An alternate platform, being Option A, is available;
d) Consider linkage to upper Block R (39) to alleviate the need for additional lift provision and provide a continuance of the upper level connectivity through the majority of the school site;
e) Provide a covered link access from the new building to the spine of the school;
f) Consider repurposing of Block A rooms 13 and 14 from undersized kitchens to GLA's. This work may form part of this project should the budget permit. Alternatively consider SIE, Minor Works or School project.

3.0 COMMUNITY INFRASTRUCTURE ASSESSMENT

The proposed works will have a total development footprint of more than 500 square metres (m^2), therefore, the development is regulated by The Policy and requires assessment against the criteria listed in Table 1 of that Policy with consideration given to the Koala Habitat in South East Queensland Map (SEQ) (State Planning Policy (SPP) Mapping).

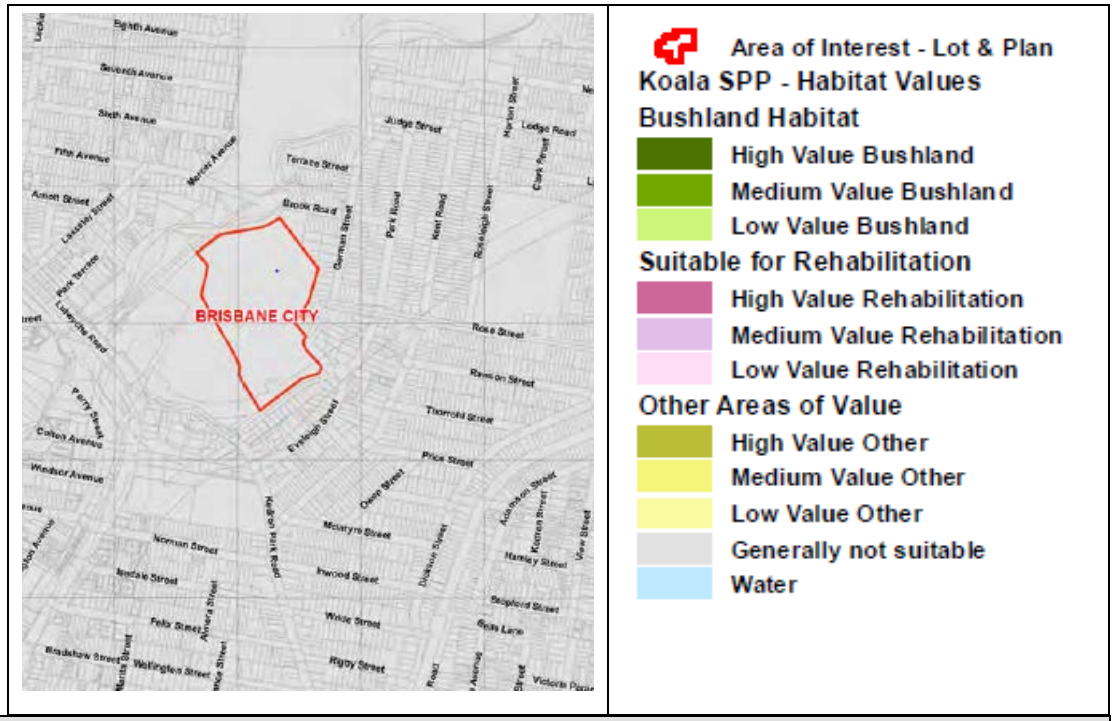
Criteria	Outcome
1. Site design must avoid clearing Non-juvenile Koala Habitat Trees (NJKHTs) in areas of bushland habitat, high value rehabilitation habitat, and medium value rehabilitation, with any unavoidable clearing minimised and offset: - The size and other characteristics of the offset must be as required by the Environmental Offset Policy; and - Where an offset is delivered as a land-based offset, the site must be secured as a legally secured offset area as defined by Section 29 of the *Environmental Offsets Act 2014*.	• The proposed development site is mapped as 'Generally not suitable' for Koala. • Site is heavily disturbed and is an established school site. • Under the *Environmental Offsets Act 2014*, offsetting is not required in the 'Generally not suitable' for koala area. Clearing of NJKHTs within this area would not trigger offset requirements.
2. Site design provides safe Koala-movement opportunities, including Koala-movement infrastructure, as appropriate to the development type and habitat connectivity values of the site determined by reference to the factors for consideration in Schedule 3 of the Community Infrastructure Policy.	• There is no mapped bushland habitat tree within 1km from the site. Koala movement opportunities however are not possible as the mapped values are separated by roads and other structures. • The site is heavily disturbed and surrounded by urban area.
3. Native vegetation clearing is undertaken as sequential clearing and under the guidance of a Koala spotter where the native vegetation is a NJKHT.	• Trees to be retained should be clearly marked and signs erected to avoid accidental clearing. • Brisbane City Council local government area is within District A Koala Habitat under *Nature Conservation (Koala) Conservation Plan 2017*. Tree clearing in this area should be carried out in compliance with sequential clearing conditions meaning all of the following: a) clearing of the koala habitat trees is carried out in a way that ensures koalas on the area being cleared (the clearing site) have enough time to move out of the clearing site without human intervention, including, in particular, for clearing sites with an area of more than 3ha, by— i. carrying out the clearing in stages; and ii. ensuring not more than the following is cleared in any 1 stage— A. for a clearing site with an area of 6ha or less—50% of the site's area; B. for a clearing site with an area of more than 6ha—3ha or 3% of the site's area, whichever is the greater; and iii. ensuring that between each stage and the next there is at least 1 period of 12 hours starting at 6p.m. on a day and ending at 6a.m. on the following day during which no trees are cleared on the site;

	b) clearing of the koala habitat trees is carried out in a way that ensures, while the clearing is carried out, appropriate habitat links are maintained within the clearing site and between the site and its adjacent area, to allow koalas living on the site to move out of the site; c) no koala habitat tree in which a koala is present, and no koala habitat tree with a crown overlapping a tree in which a koala is present, is cleared.
4. During construction phases: • Measures are taken in construction practices to not increase the risk of death or injury to Koalas; and • Native vegetation that is cleared and, in an area, intended to be retained for safe Koala movement opportunities is progressively restored and rehabilitated.	• In case of vegetation clearing, the measures described in this report are to be implemented during the construction phase including: - Vegetation that does not require removal must be clearly identified and protected from construction activities; - Immediately prior to any vegetation clearing activity on the site (and no more than 24 hours before clearing commences), a QPWS licenced fauna spotter/catcher in possession of a valid Rehabilitation Permit, must inspect vegetation for the presence of Koalas and other fauna. The QPWS fauna spotter/catcher must continue to monitor vegetation for fauna for the duration of clearing activities; - Vegetation should be cleared towards areas of mature vegetation that may be suitable as refuge to allow fauna in residence time to move from the proposed development portion of the site; and - Vegetation should be cleared towards areas of mature vegetation that may be suitable as refuge to allow fauna in residence time to move from the proposed development portion of the site.
5. Landscaping activities provide food, shelter and movement opportunities for Koalas consistent with the site design (if applicable).	• Landscaping included in project designs to consider the inclusion of Koala habitat tree species (including any species from the genus Eucalyptus, Corymbia, Angophora, Lophostemon and Melaleuca); • Advice should be sought from the appointed ecologist regarding optimal planting location and species. Planting across the site may provide a connection between the mapped areas of bushland habitat;

4.0 KOALA HABITAT AND CONNECTIVITY VALUE ASSESSMENT

This section has been prepared to in accordance with Schedule 2 of The Policy, using the Koala Habitat in SEQ Map. The figure below is an excerpt from the Koala Habitat in SEQ Map which indicates the site is mapped as 'Generally not suitable' for Koalas.

The table below has been developed to determine the habitat connectivity values of the site, taking into account factors described under Schedule 2 of The Policy:



The Site's location with regards to the following:		
Criteria	Condition Assessment	Management Strategy
a. areas of vegetation that are a koala habitat type—with particular focus on bushland habitat, high value rehabilitation habitat, and medium value rehabilitation habitat	The site is heavily disturbed, located within an established urban area, and is surrounded by residential use.	Prior to the commencement of construction, prepare a Construction Management Plan (CMP) which addresses the requirements of the Environmental Checklist Report prepared for the site by BAS Town Planning and Environment Team. Vegetation removal should be avoided and limited to minimum areas required for development. The design and development layout should be altered where possible to allow for the retention of as much native vegetation, particularly NJKHTs.

b. areas that are remnant or regulated regrowth regional ecosystems where koalas are known to occur	None identified (attached Vegetation Management Report)	The site does not support areas of mapped regulated vegetation and is improved by the Kedron State High School.
c. areas of ecological significance	None identified on site.	Prior to the commencement of construction, prepare a Construction Management Plan (CMP) which addresses the requirements of the Environmental Checklist Report prepared for the site by BAS Town Planning and Environment Team.
d. waterway and ecological corridors.	None identified on site.	Extra care such as erosion and sediment control measures should be in place to ensure there are no impacts on these environmental values as the result of the proposed development.
The attributes of the site, including the following:		
Criteria	Condition Assessment	Management Strategy
a. presence of koalas	The site is an established school and there are no records indicating the presence/observation of koala on the site.	Before work begins, identify the contact details of: - The nearest qualified veterinary clinic that has experience in handling and treating Koalas. The practice must have a valid Rehabilitation Permit, issued under the *Nature Conservation Act 1992* by Department of Environment and Science, and must comply with established standards for the rehabilitation and release of Koalas; and - A QPWS licensed fauna spotter/catcher. If a Koala (or other fauna) is present on the site: - The tree in which a Koala is present cannot be cleared, and no tree with a crown overlapping the tree can be cleared; - Works are to cease, and the Koala is to be allowed to move away from the development site of its own accord; - No clearing is to be undertaken for a period of at least 12 hours (starting at 6pm on a day and finishing at 6 am on the following day);

		- The QPWS fauna spotter/catcher must be consulted regarding further actions required for any Koala identified on the site; and - The QPWS fauna spotter/catcher must be consulted regarding any actions required in regard to the relocation of any other resident fauna species; and - If a Koala is injured, the QPWS fauna spotter/catcher is to provide direction on how the animal is to be taken to the veterinary practice identified.
b. condition of the habitat	Low	All management measures listed in Section 3 of this report should be implemented prior to vegetation clearing on site. vegetation clearing should be carried out in compliance with sequential clearing conditions and towards the site boundary and vegetated areas as detailed in Section 3.
c. the presence of any of the following on the site: i. waterway and ecological corridors ii. areas that are remnant or regulated regrowth regional ecosystems where koalas are known to occur.	None identified on site.	Prior to the commencement of construction, prepare a Construction Management Plan (CMP) which addresses the requirements of the Environmental Checklist Report prepared for the site by BAS Town Planning and Environment Team. Extra care such as erosion and sediment control measures should be in place to ensure there are no impacts on these environmental values as the result of the proposed development.
Any factors which diminish the site's habitat connectivity value for koala movement, including:		
Criteria	Condition Assessment	Management Strategy
a. edge effects and other indirect impacts of development on ecological features	All surrounding within 1 km is mapped as 'Generally not suitable' for koalas.	All management measures listed in Section 3 of this report should be implemented prior to vegetation clearing on site. vegetation clearing should be carried out in compliance with sequential clearing conditions and towards the site boundary and vegetated areas as detailed in Section 3.
b. the presence of infrastructure and services, such as roads, which present barriers for koala movement and dispersal.	The site is bound by serval road and the area is separated from the closest environmentally significant areas by roads and existing disturbed areas, hence no connectivity with the surrounding environmental values identified.	

ATTACHMENT A - Site Information

– Aerial Photos

- Title

CURRENT TITLE SEARCH

DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND

Request No: 27942736
Search Date: 09/02/2018 15:51 **Title Reference: 50902727**
Date Created: 09/01/2013

Previous Title: 50152478

REGISTERED OWNER

Dealing No: 714872424 07/01/2013

THE STATE OF QUEENSLAND
(REPRESENTED BY DEPARTMENT OF EDUCATION AND TRAINING)

ESTATE AND LAND

Estate in Fee Simple

LOT 961 SURVEY PLAN 250949
Local Government: BRISBANE CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 40008239 (Lot 959 on CP SL9515)

2. EASEMENT IN GROSS No 602824408 (A1563) 25/03/1982
   Burdening
   THE LAND
   TO BRISBANE CITY COUNCIL
   OVER EASEMENT A ON CP SL9515

3. EASEMENT No 702050186 24/06/1997 at 11:55
   burdening the land to
   LOT 1182 ON CROWN PLAN SL9293
   OVER EASEMENT B ON CROWN PLAN 896849

4. EASEMENT No 702050191 24/06/1997 at 11:56
   benefiting the land over
   EASEMENT A ON CROWN PLAN 896849

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

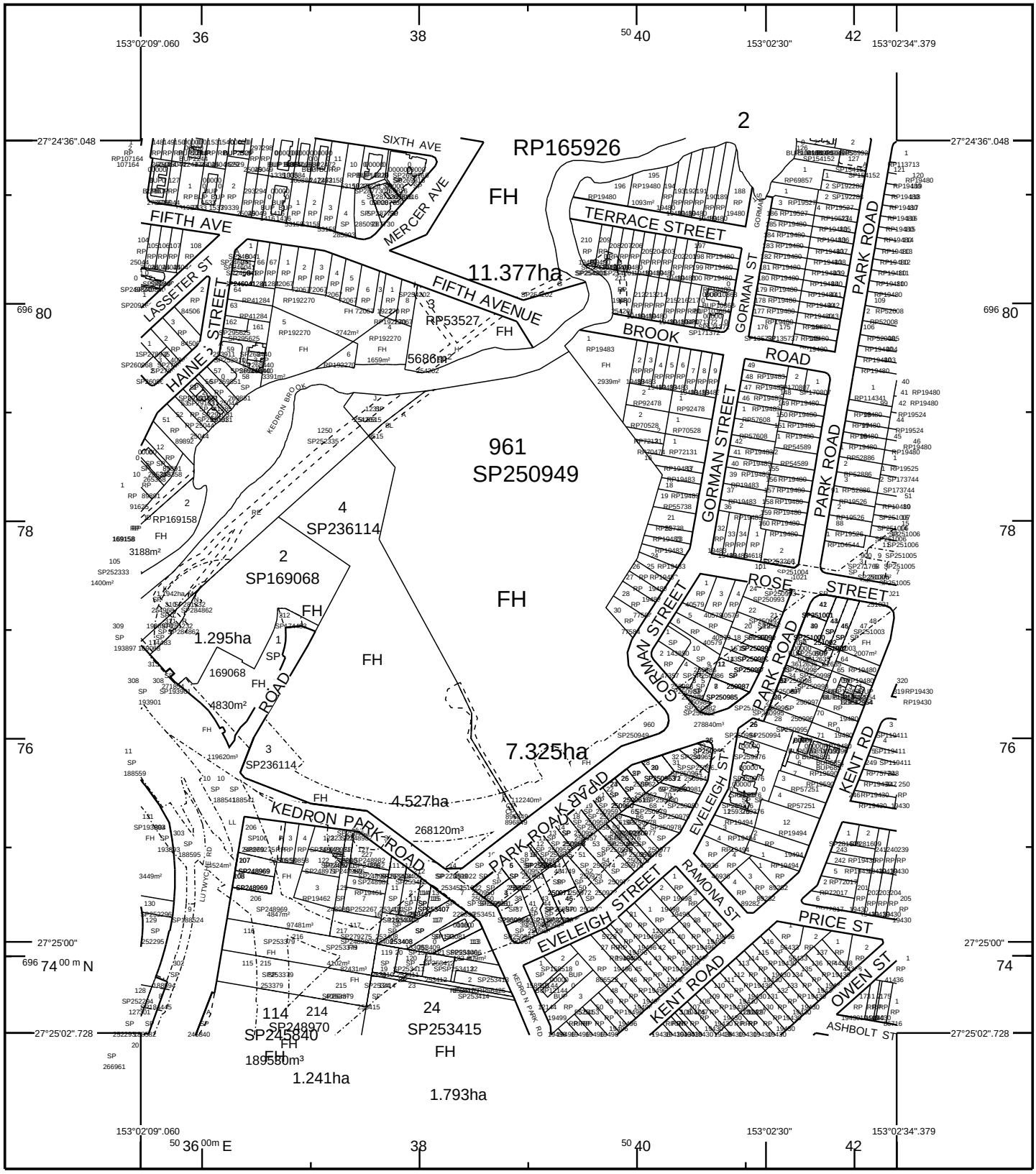
CERTIFICATE OF TITLE ISSUED - No

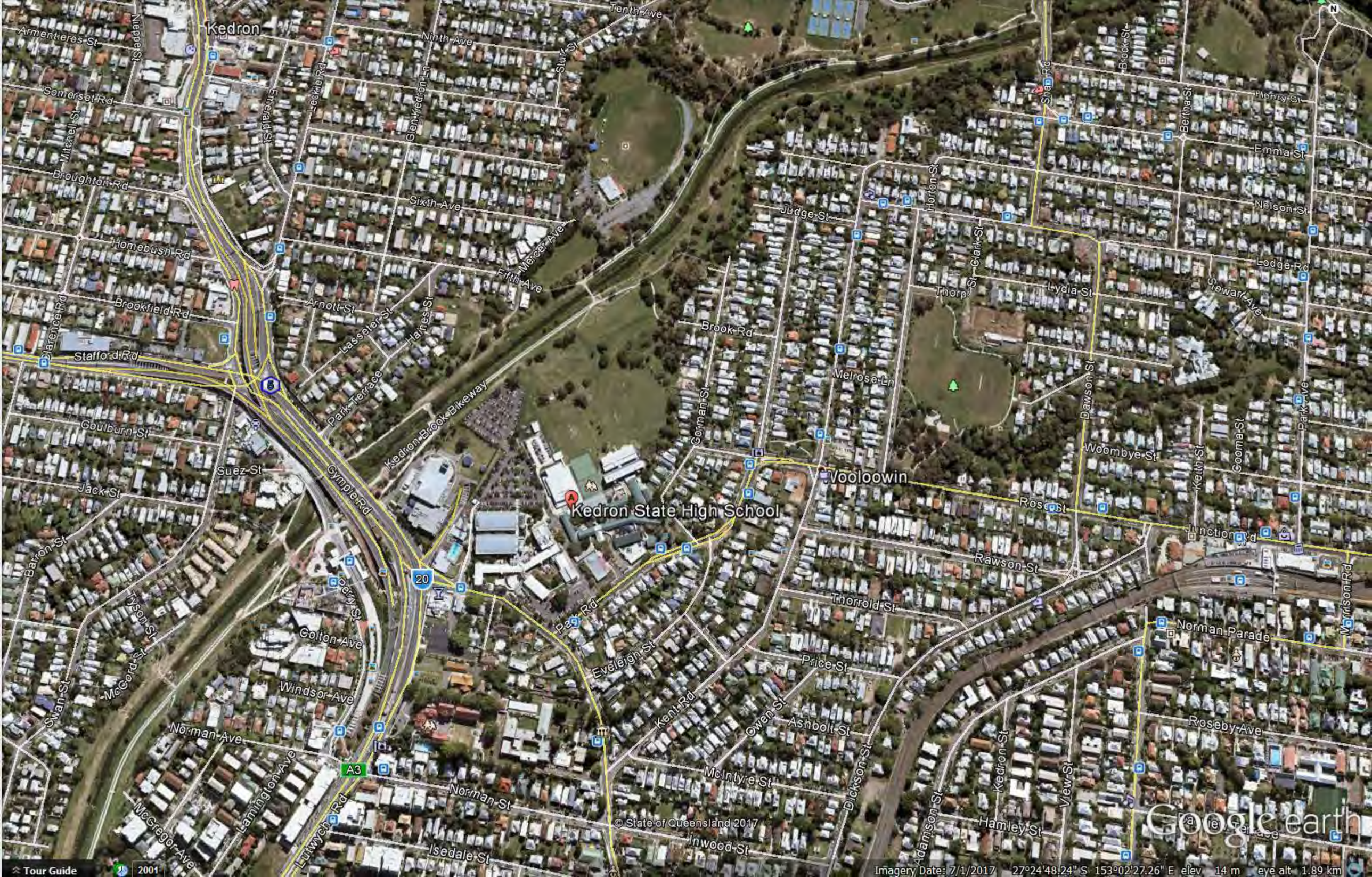
Corrections have occurred - Refer to Historical Search

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

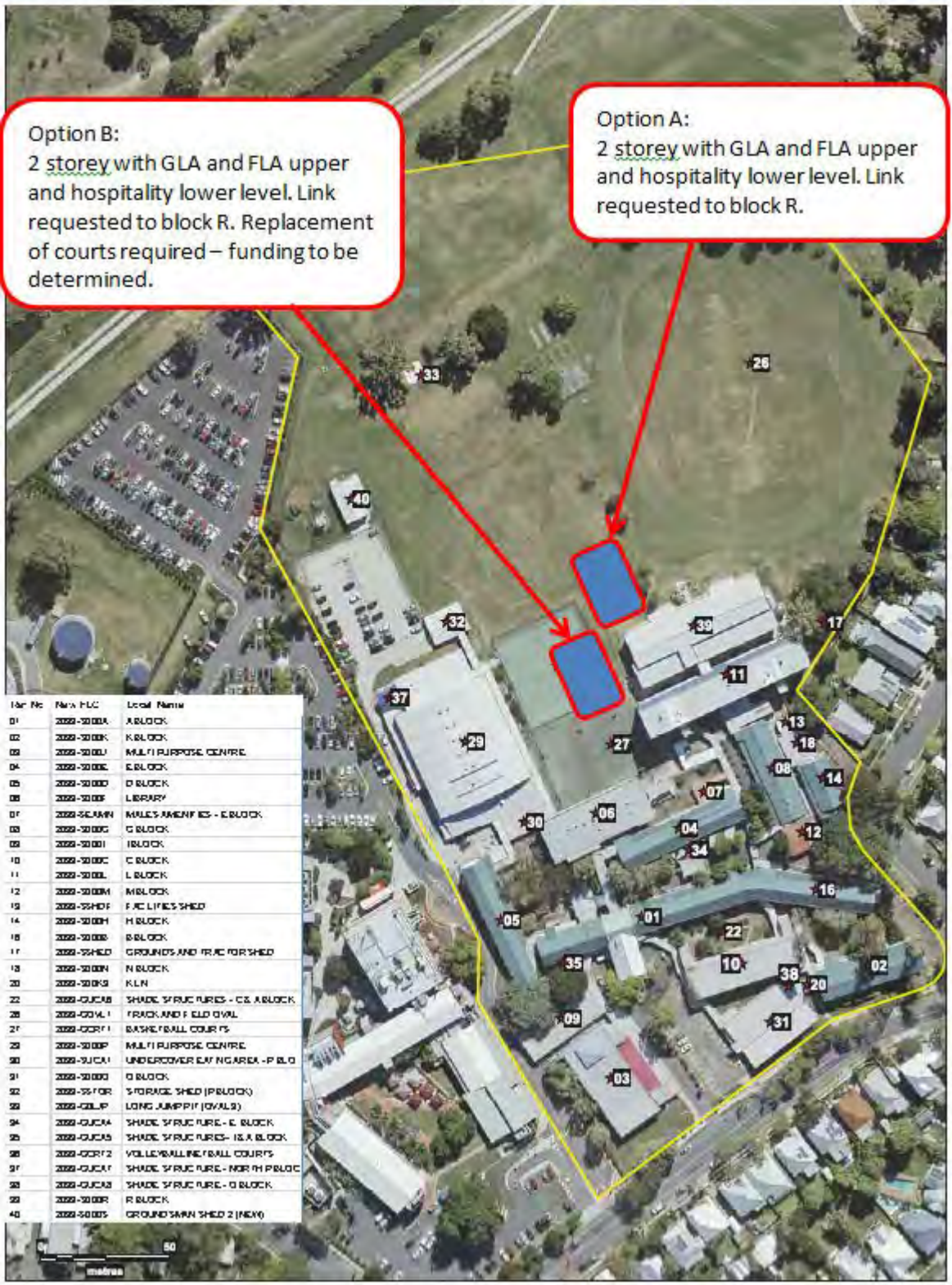
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Requested By: SMIS .


153°02'09".060
153°02'30"
153°02'34".379
27°24'36".048
27°25'00"
27°25'02".728
RP165926
961
SP250949
11.377ha
FH
5686m²
RP53527
4
SP236114
2
SP169068
1.295ha
169068
4830m²
3
SP236114
7.325ha
4.527ha
268120m³
114
SP248970
214
SP245840
189580m³
1.241ha
24
SP253415
1.793ha
FIFTH AVE
SIXTH AVE
MERCER AVE
FIFTH AVENUE
TERRACE STREET
LASSETER ST
HAINE STREET
KEDRON BROOK
GORMAN STREET
PARK ROAD
ROSE STREET
KENT RD
EVELEIGH STREET
RAMONA ST
PRICE ST
OWEN ST
KENT ROAD
ASHBOLT ST
KEDRON PARK ROAD
LUTWYCHE RD
RP169158
3188m²
RP192270
RP41284
RP53527
RP57608
RP54589
RP70528
RP72131
RP92478
RP19483
RP19480
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RP19476
RP19477
RP19478


Kedron
Armentieres St
Neptune St
Somerset Rd
Mitchell St
Broughton Rd
Homebush Rd
Clarence Rd
Brookfield Rd
Stafford Rd
Goulburn St
Jack St
Suez St
Barron St
Tyson St
McGord St
Swan St
Norman Ave
Lamington Ave
McGregor Ave
Lytwych Rd
Isedale St
Gympie Rd
Kedron Brook Bikeway
Park Terrace
Ninth Ave
Tenth Ave
Emerald St
Lecke Rd
Glenkedon Ln
Sixth Ave
Fifth Ave
Mercer Ave
Arnott St
Lasseter St
Haines St
Colton Ave
Windsor Ave
Perry St
Kedron State High School
Vooloowin
Rose St
Rawson St
Thorrold St
Price St
Owen St
Kent Rd
Eveleigh St
Ashbolt St
McIntyre St
Dickson St
Norman Parade
Roseby Ave
Hamley St
Inwood St
Adamson St
Kedron St
View St
Woombye St
Keith St
Gooma St
Dawson St
Junction Rd
Morrison Rd
Park Ave
Brook St
Henry St
Bertha St
Emma St
Nelson St
Lodge Rd
Stewart Ave
Lydia St
Thorp St
Clark St
Horton St
Judge St
Snar Rd
Brook Rd
Melrose Ln
Gorman St
A3
20
© State of Queensland 2017
Google earth
Tour Guide
2001
Imagery Date: 7/1/2017 27°24'48.24" S 153°02'27.26" E elev 14 m eye alt 1.89 km


Lassiter St
Haines St
Brook Rd
Melrose Ln
Roseleigh St
Kent Rd
Rose St
Rawson St
Thorrold St
Gorman St
Kedron Brook Bikeway
Kedron State High School
Gympie Rd
A3
20
Park Rd
Eveleigh St
© State of Queensland 2017
Google earth
Tour Guide
2001
Imagery Date: 7/1/2017 27°24'49.97" S 153°02'25.06" E elev 15 m eye alt 723 m

Kedron State High School (2039)



Ref No	New FLC	Local Name
01	2039-2000A	A BLOCK
02	2039-2000K	K BLOCK
03	2039-2000J	MULTI PURPOSE CENTRE
04	2039-2000E	E BLOCK
05	2039-2000D	D BLOCK
06	2039-2000F	LIBRARY
07	2039-SEAMN	MALES AMENITIES - E BLOCK
08	2039-2000G	G BLOCK
09	2039-2000I	I BLOCK
10	2039-2000C	C BLOCK
11	2039-2000L	L BLOCK
12	2039-2000M	M BLOCK
13	2039-SSHDF	FAC LITIES SHED
14	2039-2000H	H BLOCK
16	2039-2000B	B BLOCK
17	2039-SSHED	GROUNDS AND TRUC FOR SHED
18	2039-2000N	N BLOCK
20	2039-2000K2	KILN
22	2039-SUCA8	SHADE STRUCTURES - C& A BLOCK
26	2039-SOVL1	TRACK AND FIELD OVAL
27	2039-SCRT1	BASKETBALL COURTS
29	2039-2000P	MULTI PURPOSE CENTRE
30	2039-SUCA1	UNDERCOVER SEATING AREA - P BLO
31	2039-2000Q	Q BLOCK
32	2039-SSTOR	STORAGE SHED (P BLOCK)
33	2039-SSLJP	LONG JUMP PIT (OVAL 2)
34	2039-SUCA4	SHADE STRUCTURE - E BLOCK
35	2039-SUCA5	SHADE STRUCTURES - I& A BLOCK
36	2039-SCRT2	VOLLEYBALL NETBALL COURTS
37	2039-SUCA7	SHADE STRUCTURE - NORTH P BLOC
38	2039-SUCA3	SHADE STRUCTURE - G BLOCK
39	2039-2000R	R BLOCK
40	2039-SSHD5	GROUND SMAN SHED 2 (NEW)

ATTACHMENT B – Flora and Fauna

- Vegetation Management Report
- Wildlife Online Report
- SEQ Koala Conservation Assessable Development Areas Map
- Koala Habitat Map

Department of Natural Resources, Mines and Energy



Vegetation management report

For Lot: 961 Plan: SP250949

Current as at 09/02/2018

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources, Mines and Energy.

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Overview

IMPORTANT INFORMATION- As a result of the new *Planning Act 2016*, which commenced on 3 July 2017, there are a number of changes to the Vegetation Management Framework. These changes include;

- Exemptions from the Vegetation Management Framework, commonly known as exemptions and detailed in the Sustainable Planning Regulations 2012, are now known as "exempt clearing works", and are detailed in the Planning Regulations Schedule 21; and
- Self-assessable vegetation clearing codes are now known as "accepted development vegetation clearing codes". However, as there are 15 self-assessable vegetation clearing codes available for use that will not be re-named as a result of the recent changes, the term self-assessable vegetation clearing code will be used throughout this report.

Vegetation clearing is predominantly regulated under the *Vegetation Management Act 1999* (VMA) and the *Planning Act 2016* (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 an self-assessable vegetation clearing code or an area management plan (AMP). Other activities may require you to apply for a development permit under the *Planning Act 2016*. The requirements for a development permit depend on the type of vegetation, the land tenure (e.g. freehold or leasehold land), the location, and the extent and purpose of the proposed clearing.

Please be aware that other requirements for clearing and managing vegetation may apply, even if the activity is not regulated by the Vegetation Management framework. Prior to commencing the clearing of vegetation, it is important to confirm that no other requirements apply under other legislation, including:

- Local laws in your local government area;
- Other State legislation, such as Protected Plants under the *Nature Conservation Act 1992* (NCA);
- The Commonwealth Government's *Environmental Protection and Biodiversity Act 1999* (EPBC).

Please see section 6 for contact details of other agencies you should confirm requirements with before commencing vegetation clearing.

Please note that the requirements for clearing Category C or Category R areas are located in the self-assessable vegetation clearing codes (SAVCC) for managing Category C and Category R vegetation respectively.

The information in this report will assist you to determine the options for managing vegetation on your property. Based on the lot on plan details you have supplied, this report provides the following detailed information:

- *Vegetation management framework* - an explanation of the options that may be available to manage vegetation on your property.
- *Property details* - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s), catchment(s), coastal or non coastal status, and any applicable area management plans associated with your property.
- *Vegetation management details for the specified Lot on Plan* - specific information about your property including vegetation categories, regional ecosystems, watercourses, wetlands, essential habitat, land suitability and protected plants.
- *Contact information.*
- *Maps* - a series of colour maps to assist in identifying regulated vegetation on your property including:
  - regulated vegetation management map;
  - vegetation management supporting map;
  - land suitability map;
  - coastal/non coastal map;
  - protected plants map.
- *Other legislation contact information.*

Table of Contents

1. Vegetation management framework . . . 5
   1.1 Exempt Clearing Work . . . 5
   1.2 Self-assessable vegetation clearing codes . . . 6
   1.3 Area management plans . . . 6
   1.4 Development permits . . . 6
2. Property details . . . 7
   2.1 Tenure . . . 7
   2.2 Property location . . . 7
3. Vegetation management details for Lot: 961 Plan: SP250949 . . . 8
   3.1 Vegetation categories . . . 8
   3.2 Regional ecosystems . . . 9
   3.3 Watercourses . . . 9
   3.4 Wetlands . . . 9
   3.5 Essential habitat . . . 9
      3.5.1 Category A and/or Category B . . . 10
      3.5.2 Category C . . . 10
   3.6 Land suitability . . . 10
   3.7 Protected plants (administered by the Department of Environment and Science (DES)) . . . 10
   3.8 Emissions Reduction Fund (ERF) . . . 11
4. Contact information for DNRME . . . 11
5. Maps . . . 13
   5.1 Regulated vegetation management map . . . 14
   5.2 Vegetation management supporting map . . . 15
   5.3 Land suitability map . . . 16
   5.4 Coastal/non coastal map . . . 17
   5.5 Protected plants map administered by DES . . . 18
6. Other relevant legislation contacts list . . . 19

1. Vegetation management framework

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2012, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework. This framework regulates the management and clearing of assessable vegetation in Queensland.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenure types as defined under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA.

Managing or clearing vegetation may require permits under these laws.

The information provided in Sections 2 and 3 of this report, as well as the maps provided in Section 5, will assist you to determine whether your proposed clearing is:

- exempt clearing works;
- requires notification and compliance with a self-assessable vegetation clearing code or area management plan;
- requires a development permit; and/or
- in a high risk area and is therefore subject to the protected plants legislative framework (see section 3.7 of this report).

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem prescribed under the VM Regulation 2012; and
- a mangrove.

Although vegetation management laws may allow clearing, there may be other state, local or Commonwealth laws that apply, such as the Queensland Government's *Nature Conservation Act 1992* (see Protected Plants) and the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act regulates matters of national environmental significance, such as threatened species and ecological communities. You may need to obtain approval under the EPBC Act if your proposed clearing could have a significant impact on matters of national environmental significance. Further details are available at www.environment.gov.au.

1.1 Exempt Clearing Work

The vegetation management framework allows clearing for certain purposes without approval, known as an exempt clearing work. Exempt clearing work provisions under the *Planning Act 2016* were formerly called exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 5.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work, or exempt from the VMA. For all other land tenures, contact DNRME before commencing clearing to ensure that the proposed activity is exempt clearing work. Please see Section 4 for DNRME's contact details.

A range of routine property management activities are considered exempt clearing work. A list of these is available at https://www.qld.gov.au/environment/land/vegetation/exemptions/.

Although vegetation management laws may allow clearing as exempt clearing work, there may be other state, local or Commonwealth laws that apply. For example, a clearing permit under the *Nature Conservation Act 1992* may be required for clearing protected plants. These requirements apply irrespective of the classification of the vegetation under the vegetation management framework. In addition, clearing that is exempt clearing work may not apply in an area subject to a development permit, a covenant, an environmental offset, an Exchange Area, a Restoration Notice, or an area mapped as Category A. Landholders considering clearing in any of these areas should contact DNRME prior to clearing to clarify if any conditions apply in the area that affect the use of the provisions for exempt clearing work.

1.2 Self-assessable vegetation clearing codes

Some clearing activities can be undertaken using a self-assessable vegetation clearing code and notification process. The codes can be downloaded at
https://www.qld.gov.au/environment/land/vegetation/codes/

If you intend to clear vegetation under a self-assessable vegetation clearing code, you must notify DNRME before commencing. The information in this report will assist you to complete the online notification form.

Please note that a self-assessable vegetation clearing code cannot be used in an area mapped as Category A.(see section 5.1)

You can complete the online form at
https://apps.dnrm.qld.gov.au/vegetation/

1.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

If an area management plan applies to your property, it will be listed in Section 2.2 of this report.

To clear under an existing AMP, you must notify the DNRME before clearing starts and follow the conditions listed in the AMP. You can download the area management plan notification form and obtain a copy of the relevant AMP at
https://www.qld.gov.au/environment/land/vegetation/area-plans/

1.4 Development permits

If your proposed clearing is not exempt clearing work, or is not permitted under a self-assessable vegetation clearing code, or an AMP, you may be able to apply for a development permit. Information on how to apply for a development permit is available at
https://www.qld.gov.au/environment/land/vegetation/applying/

2. Property details

2.1 Tenure

All of the lot, plan and tenure information associated with property Lot: 961 Plan: SP250949 (Calculated area in Hectares - 7.37ha), including links to relevant Smart Maps, are listed in Table 1. The tenure of the property (whether it is freehold, leasehold, or other) may be viewed by clicking on the Smart Map link(s) provided.

Table 1: Lot, plan and tenure information for the property

Lot	Plan	Tenure	Link to property on SmartMap
961	SP250949	Freehold	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=961\SP250949
A	SL9515	Easement	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=A\SL9515
B	CP896849	Easement	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=B\CP896849
960	SP250949	Freehold	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=960\SP250949

The tenure of the land may affect whether the clearing is considered exempt clearing work.

Some self-assessable vegetation clearing codes apply only to freehold and leasehold land granted for grazing and agricultural purposes.

2.2 Property location

Table 2 provides a summary of the locations for property Lot: 961 Plan: SP250949, in relation to natural and administrative boundaries.

Local Government(s)
Brisbane City

Bioregion(s)	Subregion(s)
Southeast Queensland	Burringbar - Conondale Ranges

Catchment(s)
Pine

For the purposes of the Self-assessable vegetation clearing codes and the State Development Assessment Provisions (SDAP), this property is regarded as *
Coastal

*See also Map 5.4

Area Management Plan(s): Nil

3. Vegetation management details for Lot: 961 Plan: SP250949

3.1 Vegetation categories

Vegetation categories are shown on the regulated vegetation management map in section 5.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property. Total area: 7.37ha

Vegetation category	Area (ha)
Category X	7.37

Table 4

Category	Colour on Map	Description	Requirements
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	There may be special conditions that apply in a Category A area. Before clearing, contact DNRME to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Clearing may be considered exempt clearing work, or can be undertaken after notifying under a self-assessable vegetation clearing code or an Area Management Plan, or may require a Development Permit.
C	light blue	High-value regrowth areas	Clearing may be considered exempt clearing work, or can be undertaken after notifying under the self-assessable vegetation clearing code for Managing Category C Regrowth vegetation.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the priority reef catchment areas	Clearing may be considered exempt clearing work, or can be undertaken after notifying under the self-assessable vegetation clearing code for Managing Category R Regrowth vegetation.
X	white	Clearing is considered accepted development on freehold land, indigenous land and leasehold land for agriculture and grazing purposes. Contact DNRME to clarify whether a development permit is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A Development Permit may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

This report does not confirm if a Property Map of Assessable Vegetation (PMAV) exists on a lot. To confirm whether or not a PMAV exists on a lot, please check the PMAV layer on the Queensland Globe2, or contact DNRME on 135 834.

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 5.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
non-rem	None	X	7.37	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work
- self assessable vegetation clearing codes
- performance outcomes in State Development Assessment Provisions (SDAP).

Some clearing purposes are limited to a particular group of regional ecosystems (e.g. encroachment) and some self-assessable vegetation clearing codes allow clearing only in certain regional ecosystems.

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 5.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA), and includes endangered or vulnerable wildlife.

Essential habitat identifies areas in which species of wildlife that are Endangered or Vulnerable under the *Nature Conservation Act 1992* for which suitable habitat occurs on the lot, or where they have been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 5.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map as assessable vegetation -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are

comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

3.5.1 Category A and/or Category B

Table 6: Essential habitat in Category A and/or Category B

No records

3.5.2 Category C

Table 7: Essential habitat in Category C

No records

3.6 Land suitability

Land suitability mapping and information is required if you are applying to clear vegetation for high-value or irrigated high-value agriculture. Land suitability assessment addresses the capacity of land to sustain specific land uses such as cropping, irrigated agriculture and forestry.

A land suitability map for this property is provided in section 5.3. The map provides detailed land suitability, agricultural land classification, or soil and land resource mapping data where it is available.

The land suitability project that applies to this property is shown in Table 8 and Table 9.

Table 8: Land suitability project details for this property

Project name	Project code	Start date	Scale
Soil Landscapes of Brisbane and South East Environs (ZAA)	ZAA	1987-01-01 00:00:00	100000

Table 9: Available land suitability project reports for this property

Project name	Availability of report
Soil Landscapes of Brisbane and South East Environs (ZAA)	CSIRO report. Available at www.publications.qld.gov.au

3.7 Protected plants (administered by the Department of Environment and Science (DES))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA), with clearing of protected plants in the wild regulated by the Nature Conservation (Wildlife Management) Regulation 2006. These requirements apply irrespective of the classification of the vegetation under the *Vegetation Management Act 1999*.

Prior to clearing, if the plants proposed to be cleared are in the wild (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') and the exemptions under the Nature Conservation (Wildlife Management) Regulation 2006 are not applicable to the proposed clearing, you must check the flora survey trigger map to determine if any

part of the area to be cleared is within a high risk area. The trigger map for this property is provided in section 5.5. The exemptions relate to:

- imminent risk of death or serious injury (refer s261A)
- imminent risk of serious damage to a building or other structure on land, or to personal property (refer s261B)
- *Fire and Emergency Service Act 1990* (refer 261C)
- previously cleared areas (refer s261ZB)
- maintenance activities (refer s261ZC)
- firebreak or fire management line (refer s261ZD)
- self-assessable vegetation clearing code (refer s261ZE)
- conservation purposes (refer s261ZG)
- authorised in particular circumstances (refer s385).

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) from the *Vegetation Management Act 1999* (i.e. listed in the Planning Regulations 2017) while some are different.

If the proposed area to be cleared is shown as blue (i.e. high risk) on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken in accordance with the flora survey guidelines. The main objective of a flora survey is to locate any endangered, vulnerable or near threatened plants (EVNT plants) that may be present in the clearing impact area.

If a flora survey identifies that EVNT plants are not present within the clearing impact area or clearing within 100m of EVNT plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of Environment and Science, with a copy of the flora survey report, at least one week prior to clearing. The clearing must be conducted within two years after the flora survey report was submitted.

If a flora survey identifies that EVNT plants are present in, or within 100m of, the ara to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the application form clearing permit.

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that EVNT plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

Further information on protected plants is available at
http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/

For assistance on the protected plants flora survey trigger map for this property, please contact the Department of Environment and Science at palm@ehp.qld.gov.au.

3.8 Emissions Reduction Fund (ERF)

The ERF is an Australian Government scheme which offers incentives for businesses and communities across the economy to reduce emissions.

Under the ERF, farmers can earn money from activities such as planting (and keeping) trees, managing regrowth vegetation and adopting more sustainable agricultural practices.

The purpose of a project is to remove greenhouse gases from the atmosphere. Each project will provide new economic opportunities for farmers, forest growers and land managers.

Further information on ERF is available at https://www.qld.gov.au/environment/land/state/use/carbon-rights/.

4. Contact information for DNRME

For further information on vegetation management:
Phone 135VEG (135 834)
Email vegetation@dnrme.qld.gov.au
Visit www.dnrme.qld.gov.au/our-department/contact-us/vegetation-contacts to submit an online enquiry.

For contact details for other State and Commonwealth agencies, please see the "Other relevant legislation contacts list" in Section 6.

5. Maps

The maps included in this report may also be requested individually at:

https://www.dnrme.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form
and
http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/map-request.php

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Land suitability map

The land suitability map assists with identifying the land suitability category under the high value and irrigated high value agriculture vegetation clearing purpose.

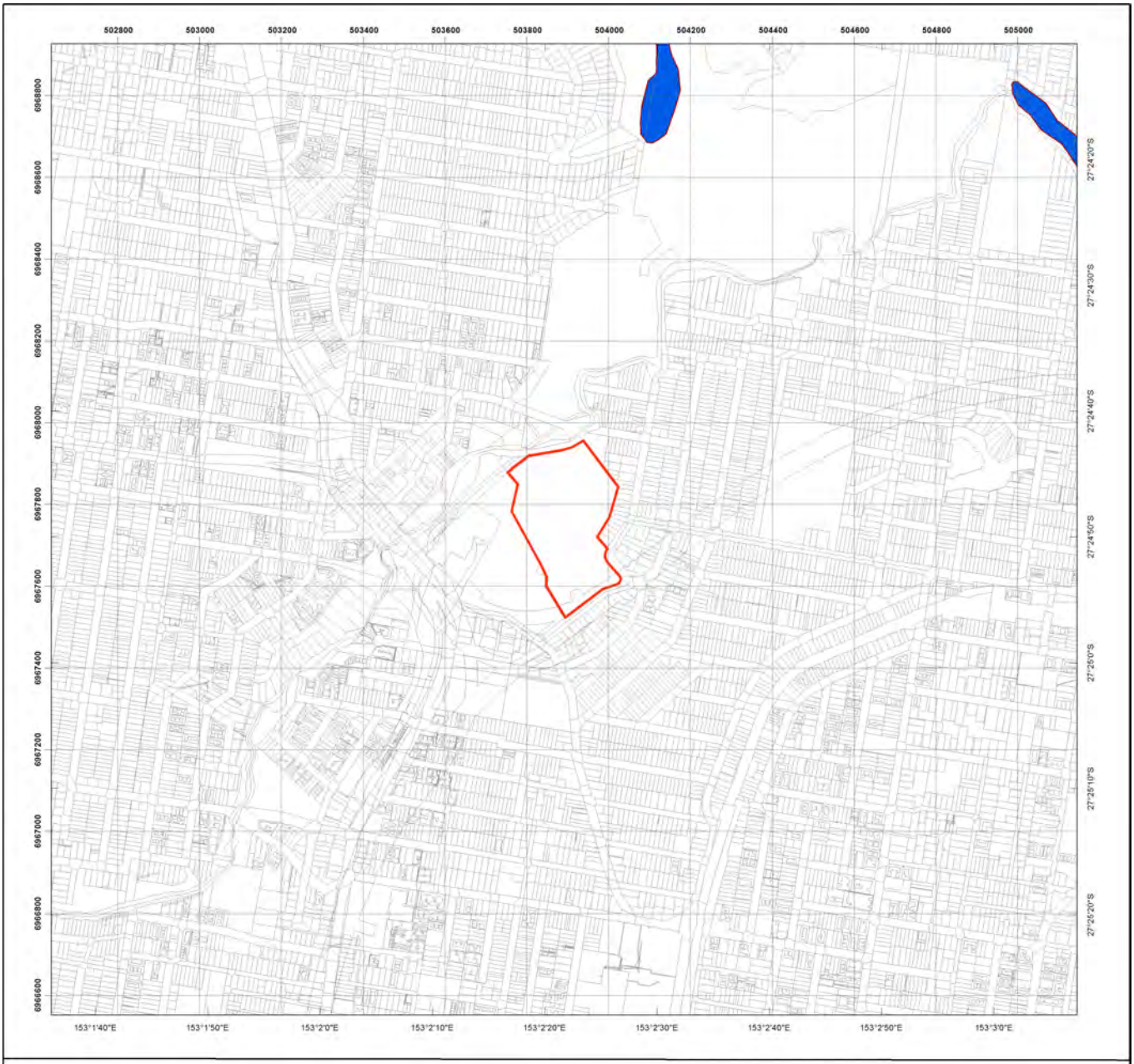
Coastal/non coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the self-assessable vegetation clearing codes and the State Development Assessment Provisions (SDAP).

Protected plants map

The protected plants map shows areas where particular provisions of the *Nature Conservation Act 1992* apply to the clearing of protected plants.

5.1 Regulated vegetation management map

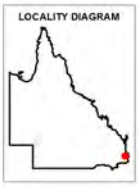


Regulated Vegetation Management Map

Legend

- Lot and Plan
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
- Water
- Area not categorised
- Cadastral line
  Property boundaries shown are provided as a locational aid only

LOCALITY DIAGRAM



N

0 130 260 390 520 650 m

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources, Mines and Energy makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incurr as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrme.qld.gov.au or contact the Department of Natural Resources, Mines and Energy.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

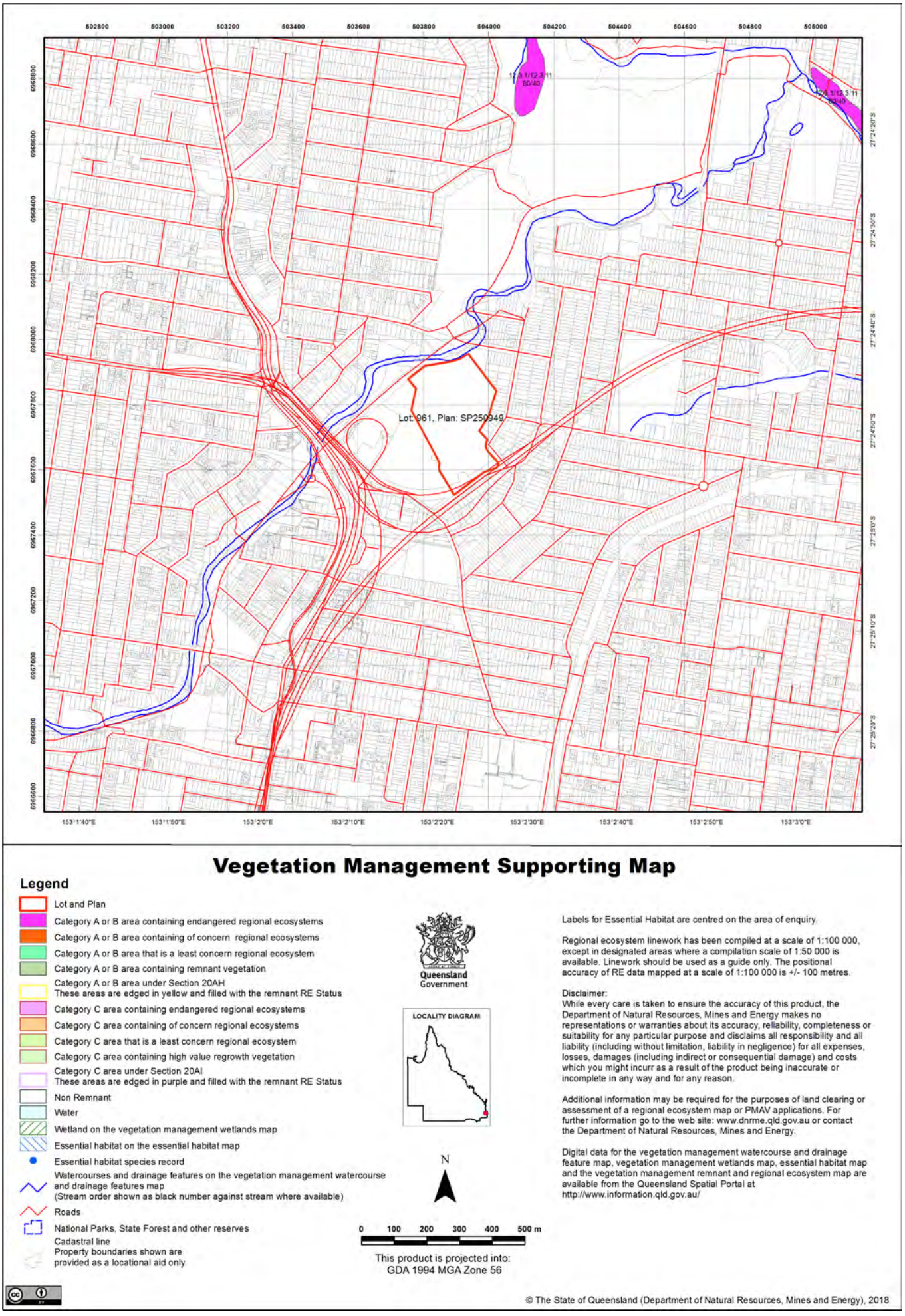
This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

Queensland Government

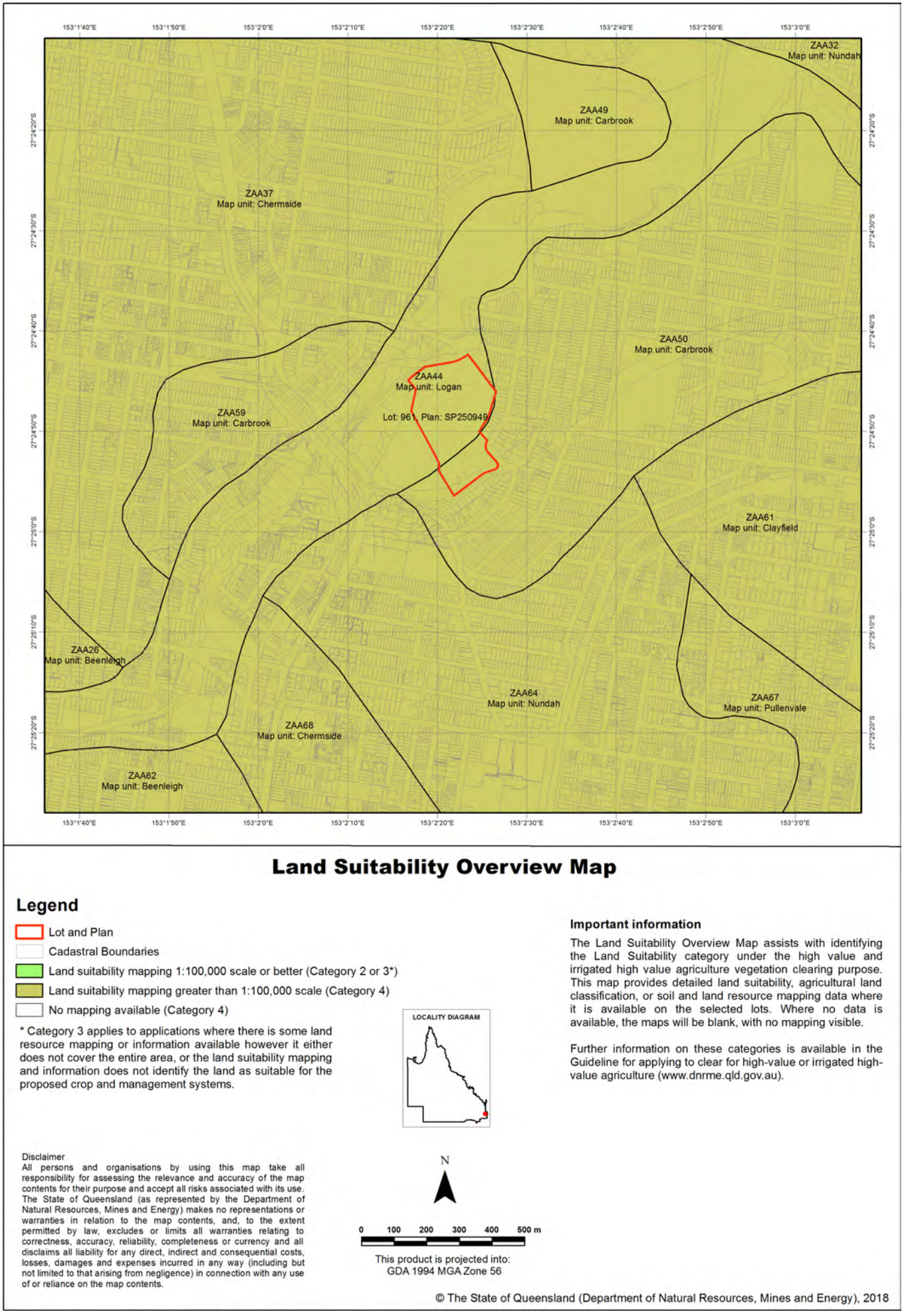
This product is projected into:
GDA 1994 MGA Zone 56

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5.2 Vegetation management supporting map



5.3 Land suitability map



Land Suitability Overview Map

Legend

- Lot and Plan
- Cadastral Boundaries
- Land suitability mapping 1:100,000 scale or better (Category 2 or 3*)
- Land suitability mapping greater than 1:100,000 scale (Category 4)
- No mapping available (Category 4)

* Category 3 applies to applications where there is some land resource mapping or information available however it either does not cover the entire area, or the land suitability mapping and information does not identify the land as suitable for the proposed crop and management systems.

LOCALITY DIAGRAM

Important information

The Land Suitability Overview Map assists with identifying the Land Suitability category under the high value and irrigated high value agriculture vegetation clearing purpose. This map provides detailed land suitability, agricultural land classification, or soil and land resource mapping data where it is available on the selected lots. Where no data is available, the maps will be blank, with no mapping visible.

Further information on these categories is available in the Guideline for applying to clear for high-value or irrigated high-value agriculture (www.dnrme.qld.gov.au).

Disclaimer
All persons and organisations by using this map take all responsibility for assessing the relevance and accuracy of the map contents for their purpose and accept all risks associated with its use. The State of Queensland (as represented by the Department of Natural Resources, Mines and Energy) makes no representations or warranties in relation to the map contents, and, to the extent permitted by law, excludes or limits all warranties relating to correctness, accuracy, reliability, completeness or currency and all disclaims all liability for any direct, indirect and consequential costs, losses, damages and expenses incurred in any way (including but not limited to that arising from negligence) in connection with any use of or reliance on the map contents.

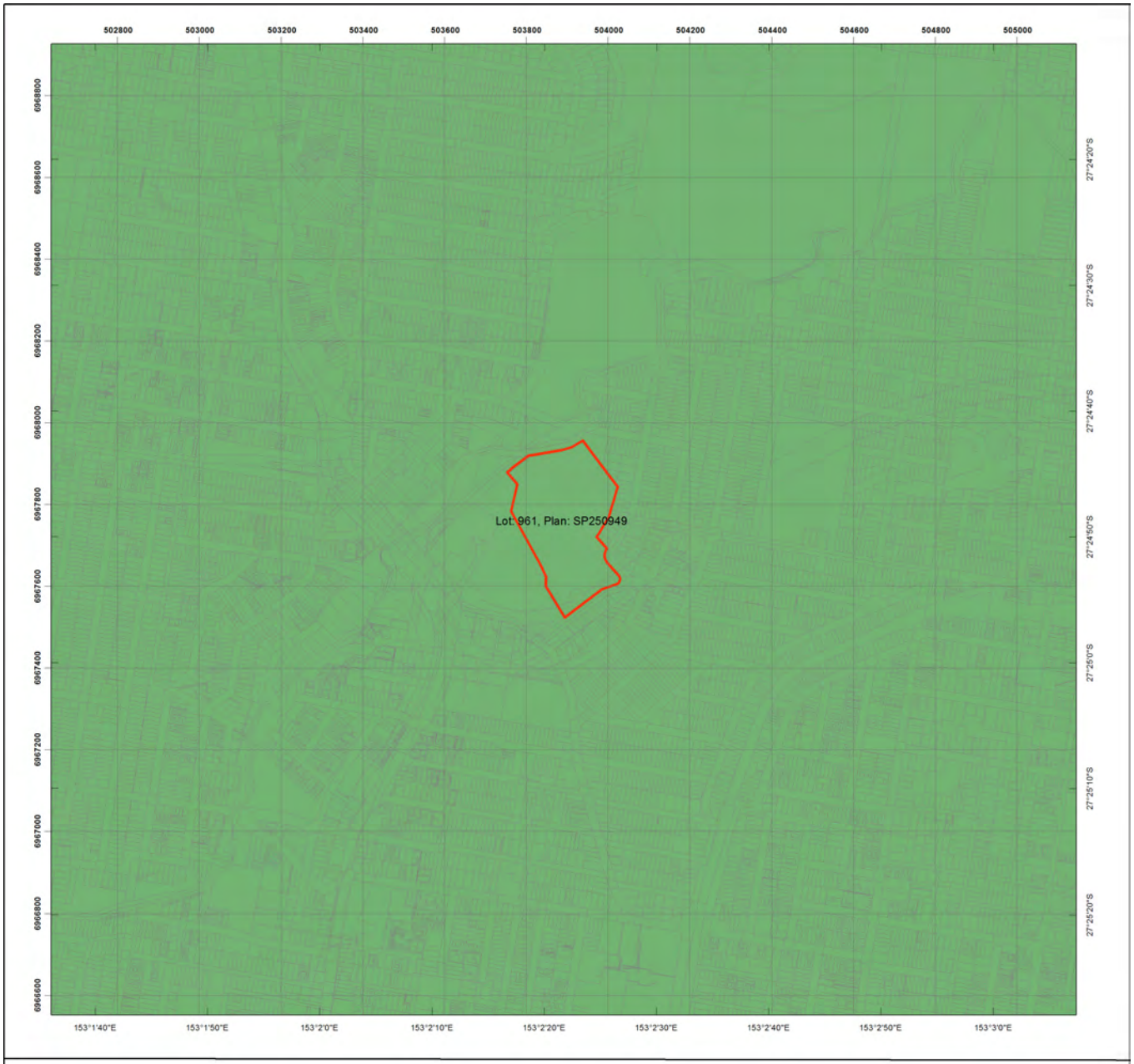
N

0 100 200 300 400 500 m

This product is projected into:
GDA 1994 MGA Zone 56

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5.4 Coastal/non coastal map



Coastal/Non Coastal Map

Legend

- Lot and Plan
- Coastal
- Non Coastal
- Cadastral line
  Property boundaries shown are provided as a locational aid only

LOCALITY DIAGRAM



Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources, Mines and Energy makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

N

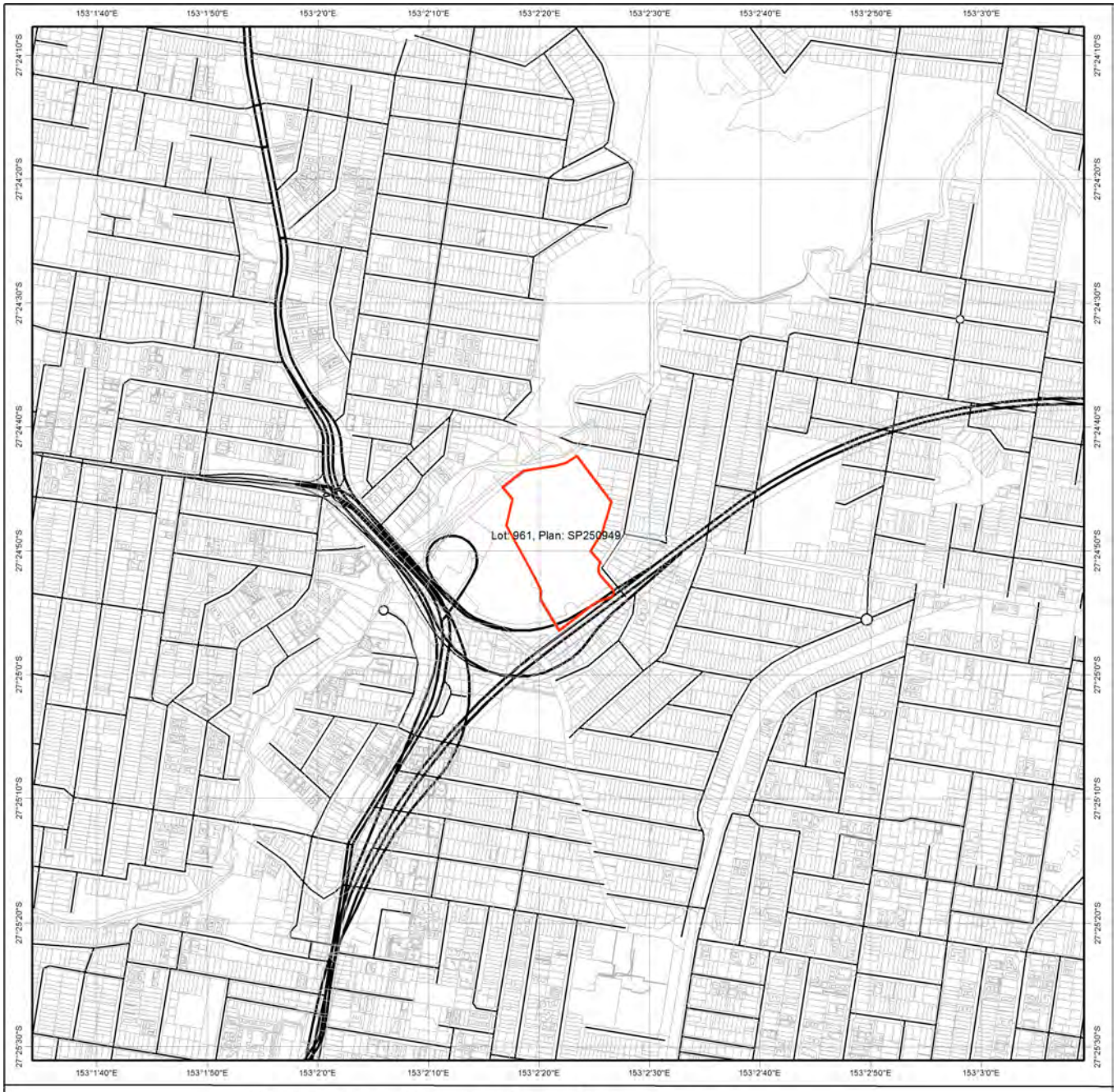
0 130 260 390 520 650 m

Queensland Government

This product is projected into:
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5.5 Protected plants map administered by DES



Protected Plants Flora Survey Trigger Map

Legend

- Lot and Plan
- High risk area
- Cadastral line
  Property boundaries shown are provided as a locational aid only
- Freeways / motorways / highways
- Secondary roads / streets

LOCALITY DIAGRAM



This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@ehp.qld.gov.au

N

0 100 200 300 400 500 m

This product is projected into:
GDA 1994 MGA Zone 56

Disclaimer:
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6. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow Earthworks, significant disturbance	*Water Act 2000* *Soil Conservation Act 1986*	Department of Natural Resources, Mines and Energy (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dnrme.qld.gov.au
Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Department of Aboriginal and Torres Strait Islander Partnerships (Queensland Government)	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues Protected plants and protected areas [1]	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992* *Nature Conservation Act 1992*	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.ehp.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	*Fisheries Act 1994* *Forestry Act 1959* [2]	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
Development and planning processes	*Planning Act 2016*	Department of State Development, Manufacturing, Infrastructure and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au
State Development	*State Development and Public Works Organisation Act 1971*	Department of State Development, Manufacturing, Infrastructure and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au
Local government requirements	*Local Government Act 2009*	Local government	Contact your relevant local government office

1. In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992*, which endeavours to ensure that protected plants (whether whole plants or protected plants parts) are not illegally removed from the wild, or illegally traded. Prior to clearing, you should check the flora survey trigger map to determine if the clearing is within a high-risk area by visiting www.ehp.qld.gov.au. For further information or assistance on the protected plants flora survey trigger map for your property, please contact the Department of Environment and Science on 13QGOV (13 74 68) or email palm@ehp.qld.gov.au.

2. Contact the Department of Agriculture and Fisheries before clearing:

- Any sandalwood on state-owned land (including leasehold land)
- On freehold land in a 'forest consent area'
- More than five hectares on state-owned land (including leasehold land) containing commercial timber species listed in parts 2 or 3 of Schedule 6 of the Vegetation Management Regulation 2012 and located within any of the following local government management areas-Banana, Bundaberg Regional, Fraser Coast Regional, Gladstone Regional, Isaac Regional, North Burnett Regional, Somerset Regional, South Burnett Regional, Southern Downs Regional, Tablelands Regional, Toowoomba Regional, Western Downs Regional.

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: -27.41
Longitude: 153.04
Distance: 1
Email: annie.jin@hpw.qld.gov.au
Date submitted: Friday 09 Feb 2018 16:10:01
Date extracted: Friday 09 Feb 2018 16:20:03

The number of records retrieved = 166

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			11/7
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		1
animals	birds	Acanthizidae	*Gerygone mouki*	brown gerygone		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		2
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		2
animals	birds	Anatidae	*Aythya australis*	hardhead		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		1
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		6
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		6
animals	birds	Anatidae	*Anas platyrhynchos*	northern mallard	Y			2
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		2
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		SL		1
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		8
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		4
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		1
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		2
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		4
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		3
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		17
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		17
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		2
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		13
animals	birds	Cacatuidae	*Cacatua tenuirostris*	long-billed corella	Y	C		1
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		12
animals	birds	Cacatuidae	*Cacatua sanguinea*	little corella		C		2
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		4
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		19
animals	birds	Charadriidae	*Vanellus miles novaehollandiae*	masked lapwing (southern subspecies)		C		5
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		2
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		4
animals	birds	Columbidae	*Streptopelia chinensis*	spotted dove	Y			22
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		10
animals	birds	Columbidae	*Columba livia*	rock dove	Y			14
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		3
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		1
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		24
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		7
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		1
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		3
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		16
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		3
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			1
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		1
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		1
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		2
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		12
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		2
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		1
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		9
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		1
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		8
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		10
animals	birds	Meliphagidae	*Manorina melanophrys*	bell miner		C		1
animals	birds	Meliphagidae	*Melithreptus lunatus*	white-naped honeyeater		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		5
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		14
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		6
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		4
animals	birds	Meliphagidae	*Anthochaera chrysoptera*	little wattlebird		C		1
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		1
animals	birds	Meliphagidae	*Caligavis chrysops*	yellow-faced honeyeater		C		1
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		2
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		18
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		2
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		14
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		8
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		4
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		14
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			17
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		3
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		6
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		5
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		4
animals	birds	Psittacidae	*Parvipsitta pusilla*	little lorikeet		C		1
animals	birds	Psittacidae	*Platycercus elegans*	crimson rosella		C		1
animals	birds	Psittacidae	*Platycercus eximius*	eastern rosella		C		1
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		19
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		14
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		20
animals	birds	Psophodidae	*Psophodes olivaceus*	eastern whipbird		C		2
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		6
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		5
animals	birds	Rallidae	*Gallirallus philippensis*	buff-banded rail		C		1
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		25
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		5
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		7
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		2
animals	birds	Sturnidae	*Sturnus vulgaris*	common starling	Y			15
animals	birds	Sturnidae	*Acridotheres tristis*	common myna	Y			3

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		5
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		4
animals	birds	Timaliidae	*Zosterops lateralis*	silvereye		C		23
animals	insects	Nymphalidae	*Euploea corinna*	common crow				9
animals	insects	Nymphalidae	*Tirumala hamata hamata*	blue tiger				3
animals	insects	Nymphalidae	*Vanessa kershawi*	Australian painted lady				1
animals	insects	Nymphalidae	*Danaus plexippus*	monarch				6
animals	insects	Papilionidae	*Graphium choredon*	blue triangle				1
animals	insects	Pieridae	*Delias argenthona argenthona*	scarlet jezebel				1
animals	insects	Pieridae	*Catopsilia pomona*	lemon migrant				3
animals	insects	Pieridae	*Eurema hecabe*	large grass-yellow				4
animals	insects	Pieridae	*Pieris rapae*	cabbage white				2
animals	mammals	Muridae	*Rattus rattus*	black rat	Y			1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		8
animals	mammals	Pseudocheiridae	*Pseudocheirus peregrinus*	common ringtail possum		C		8
animals	mammals	Pteropodidae	*Pteropus sp.*					1
animals	mammals	Pteropodidae	*Pteropus poliocephalus*	grey-headed flying-fox		C	V	2
animals	mammals	Pteropodidae	*Pteropus alecto*	black flying-fox		C		2
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		SL		1
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		1
animals	ray-finned fishes	Anguillidae	*Anguilla reinhardtii*	longfin eel				1
animals	ray-finned fishes	Eleotridae	*Hypseleotris compressa*	empire gudgeon				1
animals	ray-finned fishes	Poeciliidae	*Gambusia holbrooki*	mosquitofish	Y			3
animals	ray-finned fishes	Poeciliidae	*Xiphophorus hellerii*	swordtail	Y			1
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		2
animals	reptiles	Boidae	*Morelia spilota*	carpet python		C		3
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1/1
animals	reptiles	Colubridae	*Dendrelaphis punctulatus*	green tree snake		C		1/1
animals	reptiles	Scincidae	*Cryptoblepharus pulcher pulcher*	elegant snake-eyed skink		C		7
animals	reptiles	Scincidae	*Lampropholis delicata*	dark-flecked garden sunskink		C		6/2
animals	reptiles	Scincidae	*Anomalopus verreauxii*	three-clawed worm-skink		C		2/2
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		3
fungi	club fungi	Basidiomycota	*Chlorophyllum molybdites*	green-spored parasol		C		1/1
fungi	sac fungi	Lichen	*Lichen*			C		1/1
plants	ferns	Blechnaceae	*Doodia caudata*			C		1/1
plants	ferns	Lindsaeaceae	*Lindsaea fraseri*			C		1/1
plants	ferns	Thelypteridaceae	*Christella dentata*	creek fern		C		1/1
plants	higher dicots	Acanthaceae	*Dyschoriste depressa*		Y			1/1
plants	higher dicots	Acanthaceae	*Justicia betonica*		Y			2/2
plants	higher dicots	Acanthaceae	*Ruellia simplex*		Y			1/1
plants	higher dicots	Araliaceae	*Astrotricha latifolia*			C		1/1
plants	higher dicots	Asteraceae	*Solenogyne bellioides*			C		1/1
plants	higher dicots	Brassicaceae	*Rapistrum rugosum*		Y			1/1
plants	higher dicots	Droseraceae	*Drosera spatulata var. spatulata*			C		1/1
plants	higher dicots	Ericaceae	*Monotoca scoparia*	prickly broom heath		C		1/1
plants	higher dicots	Fabaceae	*Daviesia umbellulata*			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Malvaceae	*Sida cordifolia*		Y			1/1
plants	higher dicots	Mimosaceae	*Calliandra haematocephala*		Y			1/1
plants	higher dicots	Myrsinaceae	*Lysimachia arvensis*		Y			1/1
plants	higher dicots	Myrtaceae	*Eucalyptus fibrosa subsp. fibrosa*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia citriodora subsp. variegata*			C		1/1
plants	higher dicots	Myrtaceae	*Melaleuca salicina*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus carnea*			C		2/2
plants	higher dicots	Myrtaceae	*Eucalyptus seeana*	narrow-leaved red gum		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus resinifera*	red mahogany		C		1/1
plants	higher dicots	Myrtaceae	*Angophora woodsiana*	smudgee		C		1/1
plants	higher dicots	Myrtaceae	*Corymbia intermedia*	pink bloodwood		C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus tindaliae*	Queensland white stringybark		C		1/1
plants	higher dicots	Oleaceae	*Notelaea ovata*	forest olive		C		2/2
plants	higher dicots	Phyllanthaceae	*Glochidion ferdinandi*			C		1/1
plants	higher dicots	Rubiaceae	*Richardia stellaris*		Y			1/1
plants	higher dicots	Solanaceae	*Solanum ellipticum*	potato bush		C		1/1
plants	higher dicots	Solanaceae	*Cestrum nocturnum*		Y			1/1
plants	higher dicots	Solanaceae	*Solanum chrysotrichum*		Y			1/1
plants	higher dicots	Stylidiaceae	*Stylidium debile*	frail trigger plant		C		1/1
plants	monocots	Burmanniaceae	*Burmannia disticha*			C		1/1
plants	monocots	Iridaceae	*Gladiolus*			C		1/1
plants	monocots	Laxmanniaceae	*Lomandra hystrix*			C		1/1
plants	monocots	Orchidaceae	*Acianthus fornicatus*	pixie caps		C		1/1
plants	monocots	Orchidaceae	*Arthrochilus prolixus*			C		1/1
plants	monocots	Orchidaceae	*Pterostylis ophioglossa*			C		1/1
plants	monocots	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			1/1
plants	monocots	Poaceae	*Phragmites australis*	common reed		C		1/1
plants	monocots	Poaceae	*Paspalum notatum*	bahia grass	Y			1/1

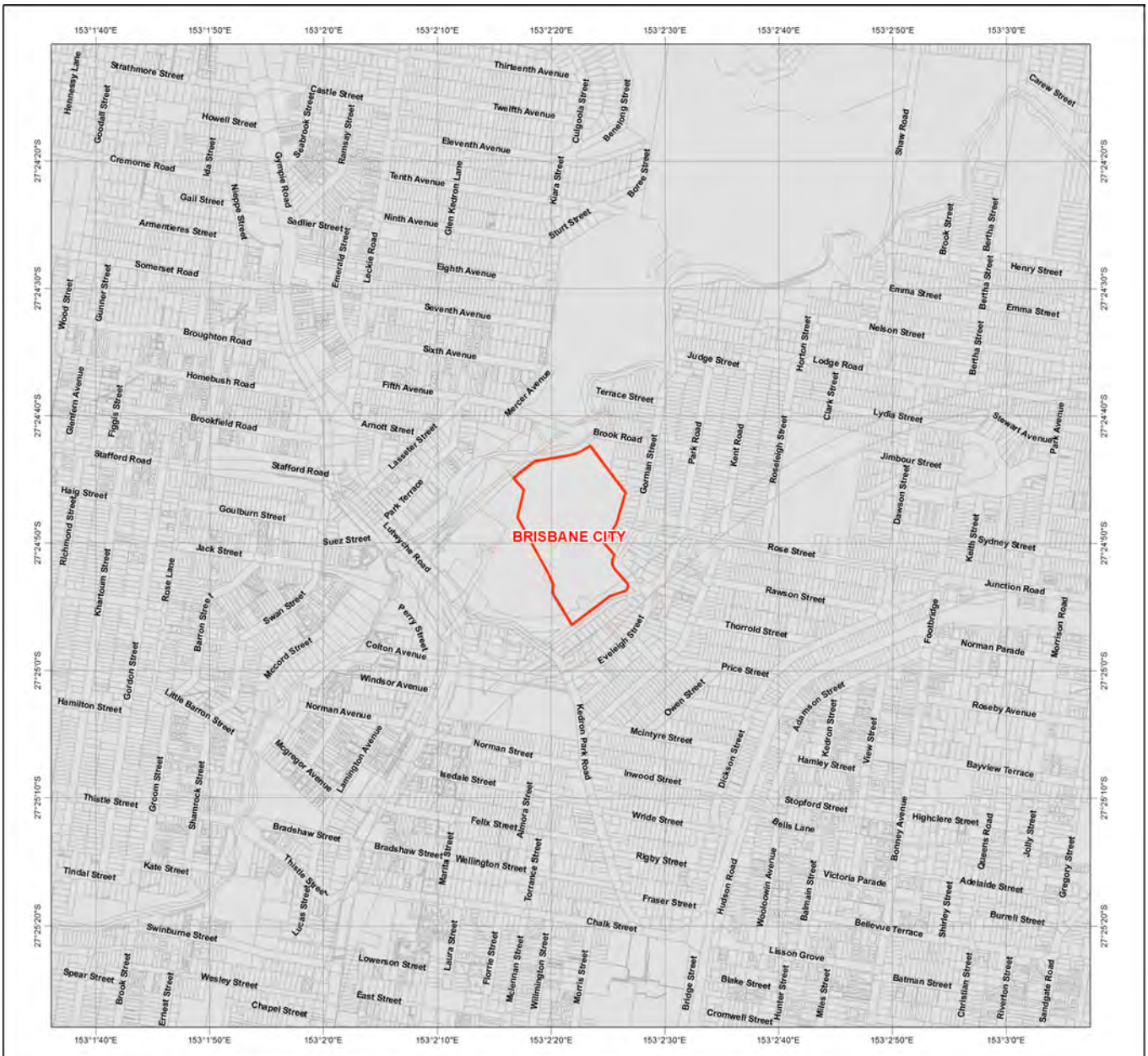
CODES

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 in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.



Koala Habitat in South East Queensland

Lot and Plan

Koala SPP - Habitat Values

Bushland Habitat
- High Value Bushland
- Medium Value Bushland
- Low Value Bushland

Suitable for Rehabilitation
- High Value Rehabilitation
- Medium Value Rehabilitation
- Low Value Rehabilitation

Other Areas of Value
- High Value Other
- Medium Value Other
- Low Value Other
- Generally not suitable
- Water

South East Queensland Koala Habitat Values western SEQ
- Bushland Habitat
- Suitable for rehabilitation
- Other areas of value
- Generally not suitable
- Water
- Cadastral Boundaries
- Local Government Boundaries



N

0 130 260 390 520 650 m

This product is projected into GDA 1994 MGA Zone 56

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Queensland Government

ATTACHMENT C – Koala Fencing Guidelines

– Koala Sensitive Design Guideline

Koala-sensitive Design Guideline

A guide to koala-sensitive design measures for planning and development activities

November 2012



Great state. Great opportunity.

Queensland Government

Prepared by:

Koala Conservation Unit, Department of Environment and Heritage Protection

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November 2012

Contents

1. Explanatory statement 1

1.1 Purpose of guideline 1

1.2 Koala-sensitive design principles 1

1.3 Use of guideline 1

2. Development planning, design and layout principles 1

2.1 Threats to koalas 1

2.2 Habitat connectivity value for koala movement 2

2.3 Planning, design and layout principles for koala conservation 3

3. Design guide for koala safety and movement 5

3.1 Koala-friendly fencing 5

3.2 Koala-safe road design and placement 6

3.3 Koala-safe pools 6

3.4 Mitigation of threats from domestic dogs 6

3.5 Community awareness 6

3.6 How to implement koala-safe movement solutions 6

4. Definitions 30

1. Explanatory statement

1.1 Purpose of guideline

The Koala-sensitive Design Guideline provides advice and information for managers, land-use planners, infrastructure providers and development proponents to determine appropriate measures to help avoid and minimise the impact of development and land-use planning on koala populations.

The guideline also provides information on what is needed to meet the requirements of the South East Queensland Koala Conservation State Planning Regulatory Provisions (SPRP) in relation to:

- managing risks to koalas on-site during construction phases and ensuring that koala safety and movement are maximised through design and layout of development
- ensuring koala safety and movement are maximised through design and layout of development.

1.2 Koala-sensitive design principles

Measures in this guideline are based on koala sensitive design principles that help development:

- retain and protect koala habitat values in their natural state to allow koalas to feed, rest and move around
- achieve permeability for koalas through the landscape to ensure the safe movement of koalas within and across a site
- reduce threats to resident and transient koalas.

1.3 Use of guideline

This guideline can be used to:

- identify threats that development activities have on safe koala movement
- identify appropriate koala-sensitive design measures to avoid and minimise those threats
- provide principles and techniques to inform the planning, design and layout stages of development for retaining koala populations and providing for koala safety and movement
- apply the SPRP outcomes for assisting the retention of viable koala populations and providing koala safe movement opportunities.

2. Development planning, design and layout principles

2.1 Threats to koalas

The movement of individual koalas to different populations and territories allows important genetic exchange which is essential for koala population viability. High rates of development in South East Queensland (SEQ) are removing and fragmenting koala habitat and increasingly threatening the safe movement of koalas across the landscape. Koala mortality can be a direct result of human-induced threats from urbanisation and development. Specific threats to koalas from urban development activities include:

- loss of habitat
- habitat fragmentation
- vehicle strike (koala injury or death)
- domestic dog attacks (koala injury or death)
- increased prevalence of disease (increased susceptibility to disease due to stress caused by the above mentioned threats).

2.2 Habitat connectivity value for koala movement

Koala habitat connectivity value for koala movement should be determined and used in development planning, design and layout. Schedule 2 of the SPRP outlines the factors to be taken into consideration to determine the habitat connectivity values of a development site to provide for koala movement through the site and wider landscape.

In summary, the site's location and attributes—with regard to the presence of koalas, location and condition of habitat, waterways and ecological corridors and any factors impacting on these values—should be taken into consideration for planning and development.

An assessment for koala habitat connectivity value should include:

- the use or potential use of the site and adjacent to the site by koalas
- a plan of koala habitat (including bushland, groups of trees or individual trees)
- a plan of movement corridors (connectivity) including regional and local-scale movement corridors and existing and potential links between koala habitat within and external to the site.

Figures 1 to 4 below provide examples of considerations for assessing koala habitat and habitat connectivity value for a given parcel of land and of koala habitat features to incorporate into development design.

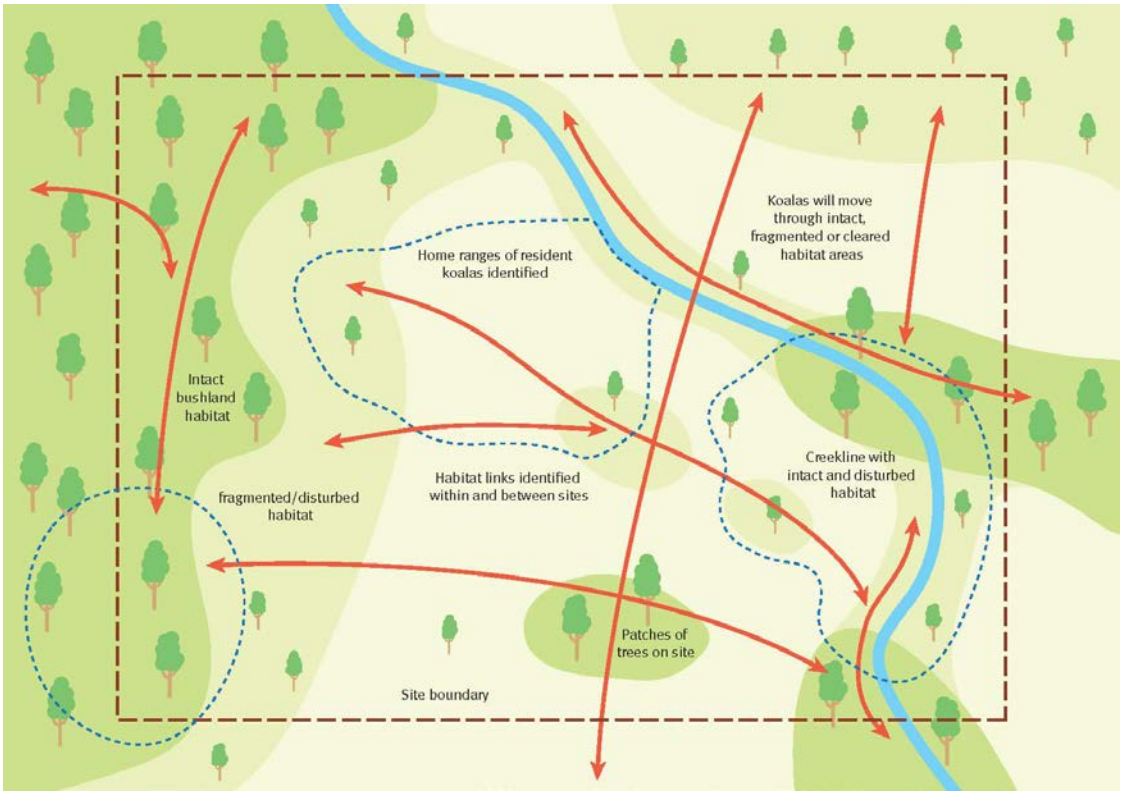


Figure 1. Example of determining koala habitat and connectivity value for koala movement

2.3 Planning, design and layout principles for koala conservation

Following an assessment of koala habitat and habitat connectivity values, the planning, design and layout of the development should incorporate the following principles:

- Ensure areas of koala habitat values and habitat connectivity are protected and enhanced by:
    - retaining, enhancing or creating large contiguous patches of koala habitat
    - avoiding clearing non-juvenile koala habitat trees on the site, including individual, isolated trees
    - linking on-site koala habitat to koala habitat located external to the site
    - identifying rehabilitation areas on site and revegetating consistent with densities, composition and distribution of native vegetation based on the pre-clearing regional ecosystems
    - securing the long-term conservation of koala habitat areas through the use of covenants or other private or public ownership arrangements.
- Locate and design the development to avoid adverse impacts on koalas, koala habitat values and habitat connectivity by:
    - selecting sites that will have least impact on koalas if developed, such as cleared land that has low koala habitat connectivity value
    - minimising the size and scale of the developable area in the development footprint and of individual buildings (e.g. higher densities, multi-storey buildings)
    - using development envelopes that are shaped and located to:
        i. co-locate all associated activities, infrastructure and access strips
        ii. be within the least valued area of koala habitat on the lot
        iii. minimise the footprint of the development envelope area
        iv. minimise edge effects to areas external to the development envelope
    - ensuring sufficient area is maintained between development buildings and koala habitat trees to ensure trees will not be removed for safety (fire and falling).
- Locate and design transport routes (roads and rail lines) to avoid fragmentation and clearing of koala habitat and to retain connectivity, including:
    - ensuring transport routes do not traverse through large contiguous areas of koala habitat or cleared land with potential as koala habitat through rehabilitation
    - using speed reduction devices such as speed bumps and speed warning sign on roads
    - incorporating koala crossings (over and underpasses) and using koala exclusion fencing to ensure koalas are funnelled towards koala crossings and away from busy transport routes.
- Use native vegetation in landscaping activities that provides food, shelter and movement opportunities for koalas.

Figure 2 illustrates how these planning, design and layout principles for koala conservation can be incorporated to enable efficient use of available land and infrastructure that is sensitive to koala habitat and connectivity.

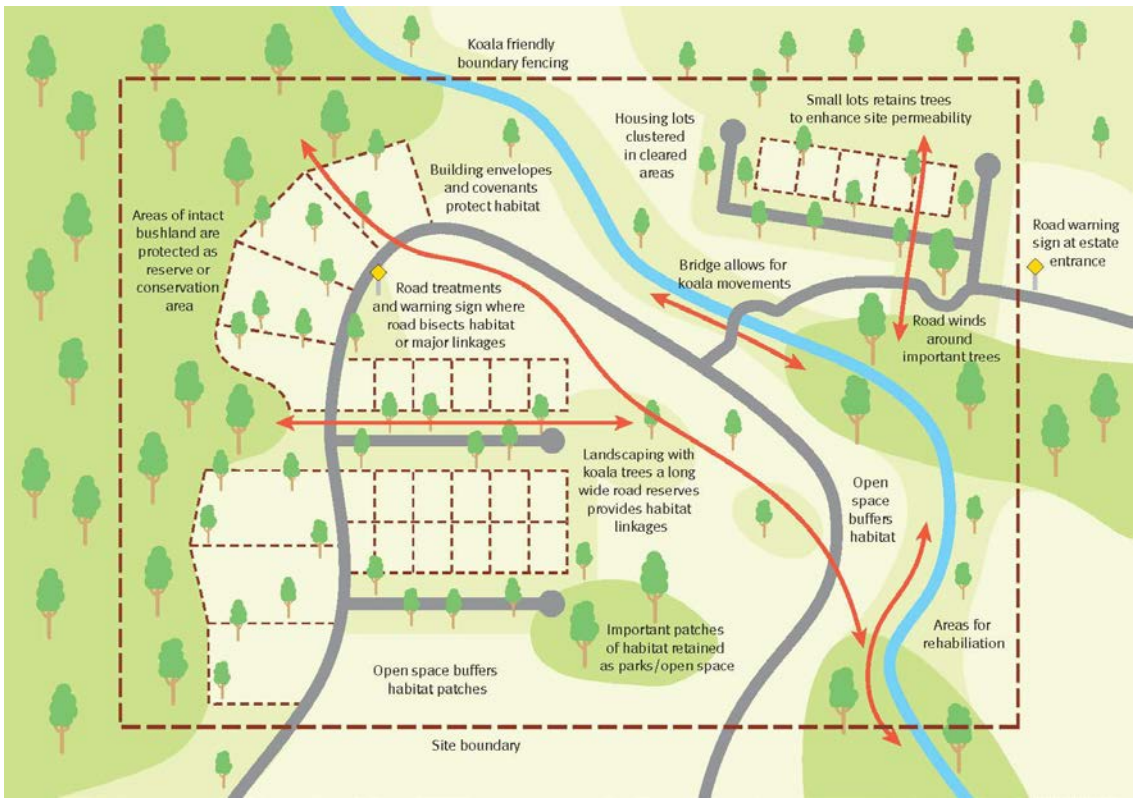


Figure 2. Koala-sensitive urban development

Figures 3 and 4 illustrate two options on how the koala-sensitive planning, design and layout principles above can be used at a lot scale for standard single dwelling housing.

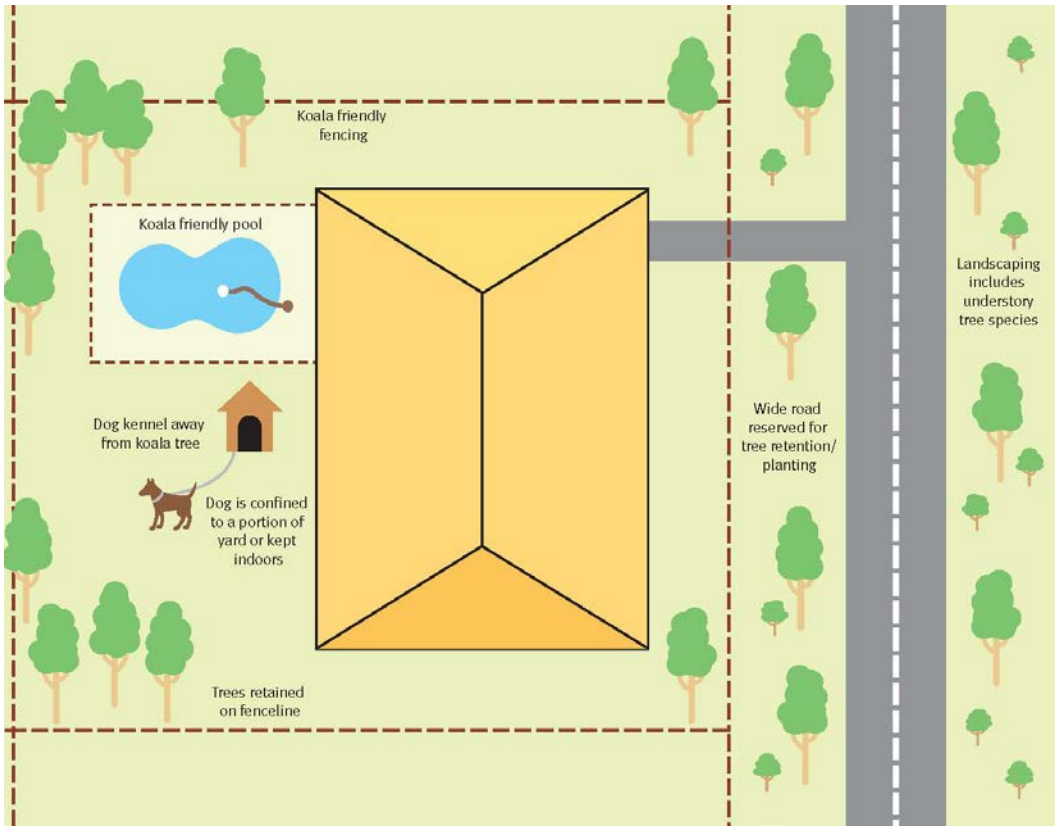


Figure 3. Use of koala-friendly fencing

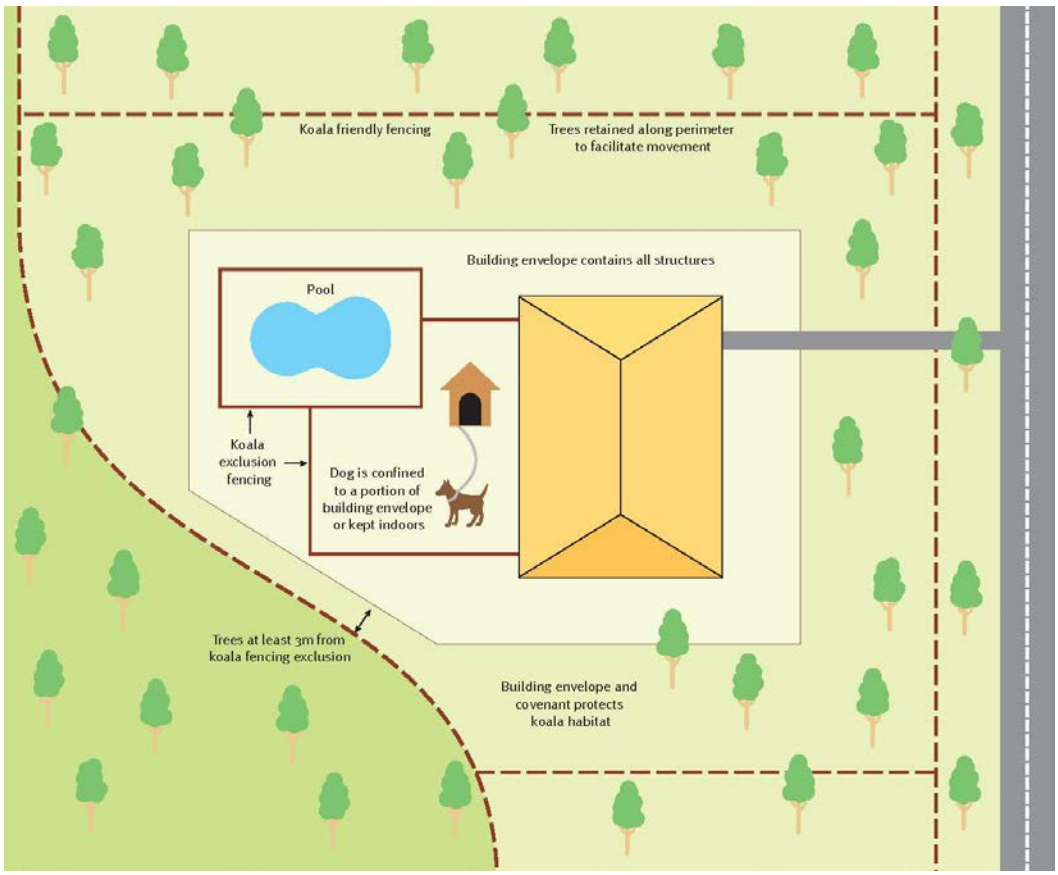


Figure 4. Use of a development envelope and koala exclusion fencing

3. Design guide for koala safety and movement

This guideline describes measures which can be used to avoid, minimise and mitigate the impacts of development on koalas and allow safe koala movement. These are:

1. koala-friendly fencing
2. koala-safe road design and placement
3. koala-safe pools
4. mitigation of threats from dogs
5. community awareness.

Where applicable, combinations of measures should be used to maximise koala safety and movement solutions into the design and layout of development. The five koala safety and movement design and layout measures are outlined in this section.

3.1 Koala-friendly fencing

Development that incorporates koala-friendly fencing helps koala movement and dispersal within and across the development site. Inappropriate fencing reduces koala permeability across the landscape. Koala-friendly fencing can be used to allow koala movement between areas of habitat and can be built within properties or on lot boundaries.

In some cases, the use of koala exclusion fencing may be appropriate to prevent koalas from entering an area that poses a threat, such as across busy roads. Exclusion fencing is often used to guide koalas towards koala-safe crossing points such as fauna movement underpasses or overpasses.

3.2 Koala-safe road design and placement

Correct road design and placement can reduce the threat of vehicle strike and habitat fragmentation to koalas. Traffic flow design (number of vehicles and speed) as well as the location and design of roads are critical to avoid or minimise the fragmentation of habitat and allow koalas to safely move throughout the landscape. In areas of high traffic flow where risks to koalas are high, koala crossing infrastructure provides for safe koala movement.

3.3 Koala-safe pools

Development that incorporates koala-sensitive pool design helps reduce the number of koalas drowning in pools. This includes features that allow koalas to easily exit the pool or prevents koalas accessing the pool.

3.4 Mitigation of threats from domestic dogs

Development that reduces the threat to koalas from domestic dogs requires measures to limit the interaction between dogs and koalas. Threats and risks from dogs include injury and deaths caused by dog attacks and increased stress on koalas.

3.5 Community awareness

Community education and cooperation is required to successfully protect koalas. Community awareness and support can help protect koala habitat and prevent disease caused by stress. Community awareness can also help reduce the number of koalas killed on roads, attacked by dogs and drowned in backyard swimming pools.

3.6 How to implement koala-safe movement solutions

The following section contains guidance on how to implement koala safe movement solutions.

Table 1 is the design guide for koala safety and movement solutions. It provides details on how to apply different options for koala safe movement. These options are relevant to a range of development types and can be implemented at the strategic and/or site level.

Table 1: Guide to Koala Sensitive Design

Koala safety and movement solution	Design specification	Additional supporting information
Koala-friendly fencing	**Koala-friendly fencing material** **Option A** Allow koalas to easily climb through or under a fence: 1. Build using minimal materials such as post and rail with a minimum gap of 300 mm between rails (Figure 1).  **Figure 1. Koala-friendly fencing** 2. Other fencing material that has holes or gaps of a minimum of 300 mm in diameter, and the first gap is flush with the ground or no more than 400 mm from the ground. 3. Solid fencing material that cannot be climbed by koalas but with a minimum gap of 300 mm between the ground and the start of the fence.	Koalas try to go through, under and then around a structure before attempting to climb over. Fencing raised off the ground is the best option for koalas. Koalas can become trapped in fencing as they try to squeeze through palings and rails. Fence design needs to ensure that gaps in the fence are: • large enough to allow easy access to pass through • of a size (less than 10 cm) to allow koalas to climb over, but prevent koalas climbing through the fence.

Koala safety and movement solution	Design specification	Additional supporting information
	Option B Allow koalas to easily climb over a fence: 1. Use rails or slats that have spaces of at least 10 mm between vertical slats and 20 mm between horizontal rails that koalas can climb (Figure 2 and Figure 3).  **Figure 2. Koala-friendly fencing**  **Figure 3. Koala-friendly fencing**	

Koala safety and movement solution	Design specification	Additional supporting information
	2. Choose materials such as timber posts or chain wire that a koala can easily grip and climb (Figure 4).  **Figure 4. Koala-friendly fencing**	
	Incorporate koala-friendly additions to fencing **Option C** Build the fence to incorporate existing vegetation or trees (Figure 5).  **Figure 5. Koala-friendly fencing**	Incorporate structures or designs in association with fencing material that provide a means for koalas to climb over fences, retaining walls or other structures.

Koala safety and movement solution	Design specification	Additional supporting information
	Option D Leave vegetation on either side of the fence with canopies or trunks extending beyond the height of the fence and where canopies are connected or tree trunks are less than 1 m apart (Figure 6).  **Figure 6. Koala-friendly fencing** **Option E** Install a timber post or log (of at least 125 mm in width or diameter) leaning against the top of the fence but positioned at an angle to the fence so that the log is not flush with the fence (i.e. the space between the base of the log and the bottom of the fence is at least 400 mm (Figure7)).	

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 7. Koala-friendly fencing additions** **Option F** Install ladders of the following dimensions and design: 1. Ladder rungs are timber and at least 300 mm in width, 50–100 mm in height and a minimum of 20 mm in depth to provide grip for koalas 2. Rungs are spaced horizontally with a 150–300 mm gap between rungs for ease of climbing. 3. Attachment material is webbed or latticed to provide additional footholds for koalas. **Option G** Install a simple koala bridge (particularly suited to security fences) using timber logs of at least 125 mm in diameter of the following design (Figure 8): 1. Timber logs are positioned adjacent to and within 1 m of each other on either side of the fence and extend for at least 1m above the fence. 2. A cross piece of similar diameter to the logs connects the two vertical timber posts that are within 1–4 m of each other on either side of the fence.	Ladder rungs need to be solid and firmly attached to the structure.

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 8. Koala-friendly fencing additions** **Additional requirements for options C to G** If installing koala-friendly fencing additions as described under options (c) to (g) they should be used at the following frequencies: 1. At least once within a backyard to allow animals to exit a property. 2. At least once every 50 m where the length of the impassable barrier or fencing is greater than 200 m.	
	Koala exclusion fencing **Option H** Install fencing material that is unclimbable such as brick (Figure 9), metal sheeting (Figure 10), perspex or timber fencing without gaps between palings.	

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 9. Koala exclusion fencing**  **Figure 10. Koala exclusion fencing**	Koala exclusion fencing stops the movement of koalas and reduces the permeability of a site or area. It should only be used where koalas face a direct threat to their safety if they enter an area. The following situations are suitable for the use of koala exclusion fencing: 1. Domestic dog enclosures within larger properties greater than or equal to 800 m^2. Smaller properties should adopt other measures to reduce dog and koala interactions. 2. High speed/volume roads or train lines. Koalas can be funnelled to safe crossing structures (fauna underpasses or overpasses). 3. Swimming pools where pool design is unsafe for koalas. 4. Areas where construction activities may cause harm to koalas such as pits or trenches (Figure 13). Temporary fencing that prohibits access to koalas would be appropriate.  **Figure 13. Fence post holes can be a trap for koalas**

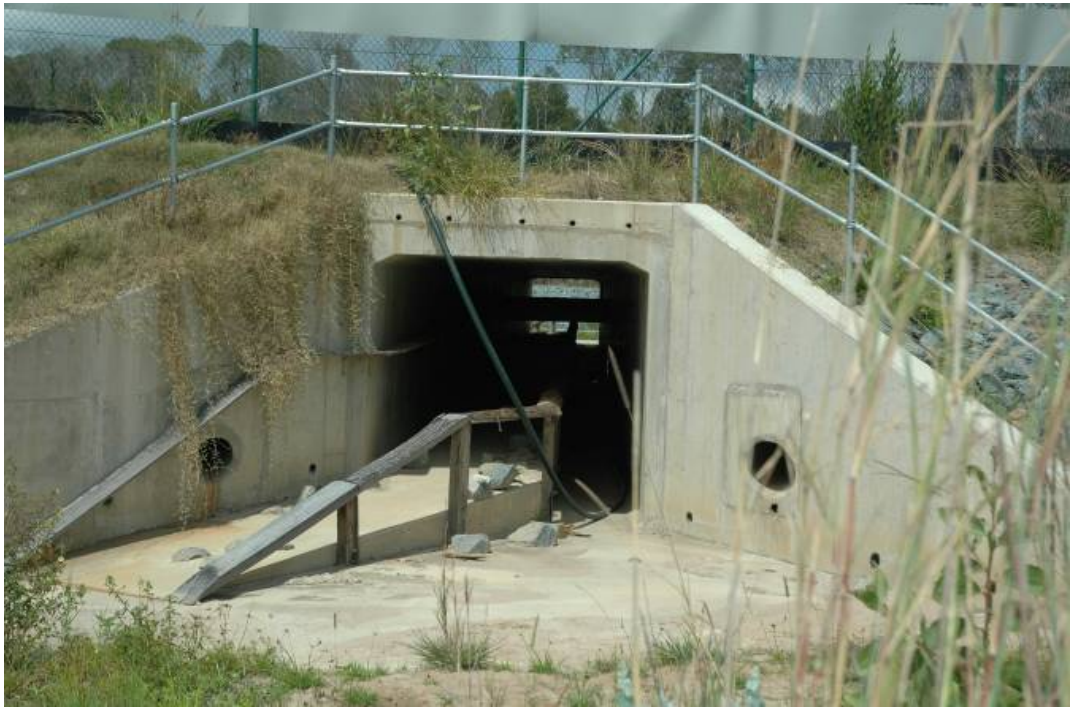
Koala safety and movement solution	Design specification	Additional supporting information
	Option I Install fencing material that is chain wire with a floppy top that falls in the direction that the koala will attempt to climb the fence (Figure 11).  **Figure 11. Koala exclusion fencing** **Option J** Install fencing material that is climbable but incorporates a floppy top design, or smooth metal or perspex sheets of at least 600 mm in width on the top of the fence (including posts and supports) (Figure 12).	

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 12. Koala exclusion fencing** **Additional requirements for Options H to J** 1. Fence bracing or supports are on the inside of the fence, away from koala access. 2. The top of the unclimbable section of fencing is at least 1.5 m from the ground to prevent koalas jumping up from the ground and gripping the top of the fencing. 3. Fencing should extend to ground level with regard for uneven or undulating ground. 4. Vegetation adjacent to the fence is regularly maintained to: a. exclude trees and shrubs from within 3 m of the fence b. keep canopies of trees trimmed to remove links to tree canopies on the other side of the fence c. remove fallen branches and vines growing on the fence which koalas may use to climb over the fence.	

Koala safety and movement solution	Design specification	Additional supporting information
Koala-safe road design and placement	**Road siting and design** **Option A** 1. Design roads near identified koala crossing points and limit traffic speeds by incorporating the following 'go slow' features: a. narrowing roads (Figure 14)  **Figure 14. Koala-safe road design**	High-visibility along roadsides is key to limiting and preventing vehicle strike causing death or serious injury to koalas. Appropriate road alignment and design mitigates threats to koala movement by considering and planning for the following: 1. The location of koala habitat and habitat linkages to ensure that significant habitat areas are not dissected or further fragmented. 2. Minimising the loss of habitat. 3. Impacts on koala movement considered in relation to: • the number of vehicles likely to use the proposed road • anticipated vehicle speeds • the likely volumes of traffic between 6 pm and 6 am. 4. Locating koala road crossing points in reduced speed zones, ideally 40 km/h. 5. Lighting roads at identified or potential koala crossing points. Koalas are most active between dusk and dawn and can move over 1 km per night. 6. Planning road construction to avoid the koala breeding season (August to December) when koalas are most active.

Koala safety and movement solution	Design specification	Additional supporting information
	b. curving roads (Figure 15)  **Figure 15. Koala-safe road design** c. incorporating speed reduction or other traffic calming structures to slow vehicles, such as speed bumps. 2. Allow minor deviations in roads and driveways to retain important koala habitat trees. 3. Avoid road alignment that intersects or fragments significant koala habitat areas. 4. Incorporate lighting in new and existing roads, particularly at identified or potential koala crossing points, to reduce koala and vehicle collisions.	

Koala safety and movement solution	Design specification	Additional supporting information
	5. Increase the visibility of koalas entering the roadway through managing vegetation and landscaping through: a. mowing grassy road edges regularly b. trimming lower branches of vegetation within median strips or within 2 m of the road above 60 cm so that koalas are visible entering the road way c. not planting dense bushes and shrubs to the edge of the roadway that hinder a koala's exit off the road. 6. Incorporate trees within traffic islands (particularly at 'go slow' points) and streetscapes (in association with wide road reserves), such as areas designated for slow points—these trees may or may not be koala food trees. 7. Retain or create interlocking tree canopies over roads. 8. Install koala crossing warning signs (Figure 16).  **Figure 16. Koala crossing warning sign**	

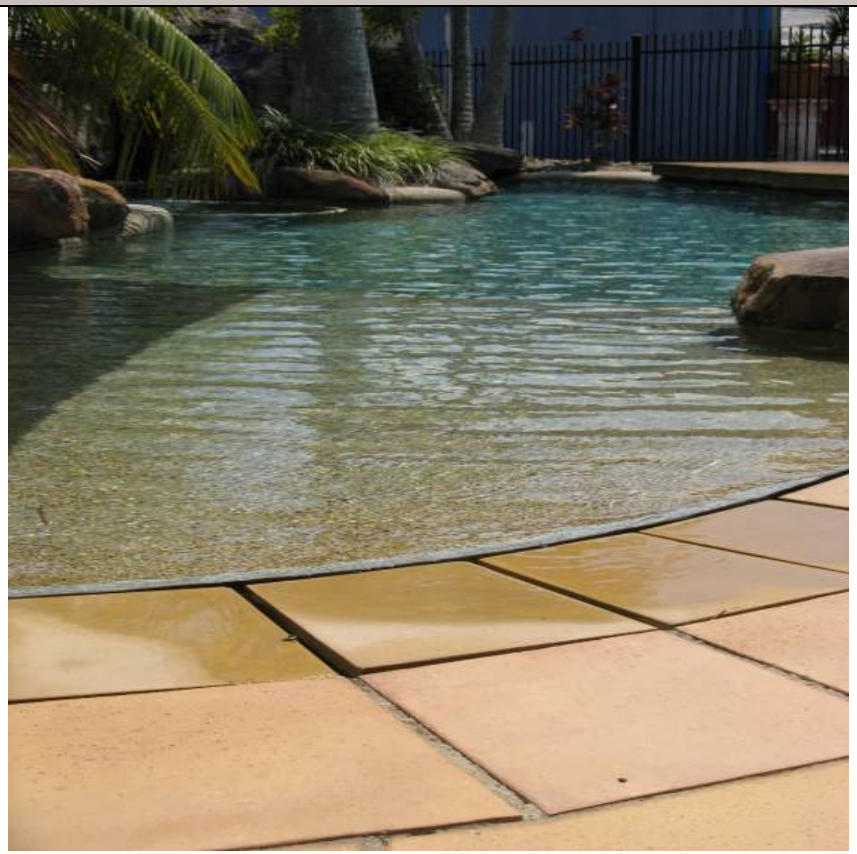
Koala safety and movement solution	Design specification	Additional supporting information
	Option B State-controlled roads minimise the risk to koalas crossing roads and habitat loss by conforming with the State Government Supported Community Infrastructure Koala Conservation Policy or Memorandum of Understanding.	
	Crossing structure—underpass **Option C** Install one or multiple underpasses to facilitate the safe crossing of koalas between habitat on either side of a road (Figure 17).  **Figure 17. Fauna underpass with furniture** **Additional requirements for Option C** 1. Ensure the underpass is of an appropriate dimension for the width of the road to allow natural night time light filtration into the structure.	Underpasses (e.g. culverts, pipes and bridges or raised structures that allow wildlife movement beneath a road) that are greater than 20 m in length have been found to be less effective than those of less than 20 m in length. Longer underpasses deter koalas from using them due to a lack of natural light. New or upgraded roads requiring koala movement underpasses should be designed to avoid lengthy underpasses, for example, by using split carriageways. The dimension of underpasses should be: • box culvert of 3 m (H) x 3 m (W) – especially for four lanes or more • box culvert of 1.5 m (H) x 1.5 m (W) as a minimum for a single or dual carriageway (this size may include koala furniture).

Koala safety and movement solution	Design specification	Additional supporting information
	2. Place ‘koala furniture’ in the crossing structure to facilitate koala movement (Figure 18).  **Figure 18. Fauna underpass with furniture** a. horizontal logs are placed as high off the ground as possible for koalas to avoid predators with a minimum space of 600 mm between the top of the horizontal log and the structure’s roof b. horizontal logs are supported by vertical logs at regular intervals (approximately 2–3 m) along the underpass for koalas to ascend or descend the koala furniture as required c. logs are greater or equal to 150 mm in diameter, or horizontal planks are greater or equal to 150 mm in width d. koala furniture extends beyond the underpass into koala habitat. 3. Design underpass floors to remain dry at all times except tin significant rain events where the structure quickly dries out, or incorporate ledges or koala furniture in the underpass to provide a dry path for movement. 4. Retain vegetation up to the entrance and exit of the underpass without obstructing access to, or view of, the structure.	

Koala safety and movement solution	Design specification	Additional supporting information
	5. Install koala exclusion fencing to funnel koalas to the underpass.	
	Crossing structure – overpass **Option D** Install one or multiple overpasses to facilitate the safe crossing of koalas between habitat on either side of a road (Figure 19).  **Figure 19. Fauna overpass** **Additional requirements for Option D** 1. Construct the overpass as wide as possible, with a minimum width of 60 cm to comfortably accommodate the crossing of koalas. 2. Build the overpass with stable, rigid or semi rigid materials. 3. Incorporate vegetation or refuge poles if the overpass (particularly if this is a land bridge) is accessible by predators.	Overpasses (e.g. land bridges) provide a more natural avenue for koalas to cross roads and negate the lighting and flooding issues associated with underpasses. The substrate should resemble forest floor; however, koalas will go across unnatural substrates such as cement. Overpass designs should conform to road safety standards and prevent koalas and other animals from falling from the overpass onto the roadway and oncoming traffic. Overpasses should be designed exclusively for wildlife movement and therefore prohibit dual uses such as pedestrian or cyclist crossings.

Koala safety and movement solution	Design specification	Additional supporting information
	4. Incorporate koala exclusion fencing to funnel koalas to the crossing structure.	
	Natural crossing points under bridge **Option E** Design one or multiple under-bridge crossings to facilitate the safe crossing of koalas between habitat on either side of a road. **Additional requirements for Option E** 1. Set back bridge footings from the creek edge to provide koalas with natural movement opportunities across unsubmerged or non-waterlogged land beneath the bridge. 2. Manage vegetation along creek lines to reduce weeds or overgrown areas that will restrict movement between habitat areas. 3. Incorporate koala exclusion fencing to funnel koalas to the natural crossing point.	Natural crossing points are usually associated with pedestrian and vehicle bridges where koalas can move along the ground while traffic is diverted above the habitat.
	Additional requirements for crossing structure – Options C to E 1. Locate crossing structures at regular intervals along sections of road adjacent to koala habitat or habitat linkages, at a maximum distance of one structure every 2 km. 2. Locate crossing structures where koala exclusion fencing of adequate length (a minimum of 150 m) can be incorporated on either side of the crossing structure. 3. Design fencing that has a return at the end of the koala exclusion fencing to encourage koalas to move back into habitat and not directly onto the road. 4. Incorporate additional features, such as escape poles (Figure 20), koala gates or other designs on the road side of the koala exclusion fencing to allow koalas trapped in the road corridor to exit to habitat.	Structures to facilitate safe and unimpeded koala movement across roads should be incorporated into road design and layout where roads intersect or fragment koala habitat and major habitat linkages. Crossing structures should be designed and installed for the specific purpose of facilitating koalas (and other wildlife which have similar requirements) across or under roads and not for dual purposes, such as underpasses used for drainage. The installation of crossing structures more frequently than one every 2 km will reduce the impact on the resident koalas that may have used both sides of a road.

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 20. Escape pole** 5. Vegetated habitat linkages are retained or established by securing habitat on either side of the road.	
	Road construction work Roads can be fitted with a range of measures to reduce koala and vehicle collisions, particularly at identified or potential koala crossing points.	
Koala-safe pools	**Koala-friendly pool design** **Option A** Design pools with a shallow lagoon-style entry where the pool water is level with part of the surrounding pavement (Figure 21).	

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 21. Koala-friendly pool design – graduated shallow edge** **Option B** Incorporate a rope with a floatation device on the end in the pool (Figure 22). The rope should be: • a minimum diameter of 10 cm • anchored securely to a point beyond the pool and close to the ground • long enough to float at least 2 m into the pool.	Floatation devices on lengths of rope allow koalas to better find the rope in the pool, while the rope's diameter and its position on the ground allows the koala to easily grip the rope and climb out of the pool.

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 22. Koala-friendly pool design – escape rope**	
	Koala exclusion pool design **Option C** Use koala exclusion fencing around the pool, for example, glass or perspex that has negligible gaps at the bottom and between panels and the gate. **Additional requirement for Option C** Use appropriate landscaping that prohibits koalas entering the pool area on properties where exclusion fencing is used.	Koalas drowning in pools can be avoided by preventing them from accessing the pool area. Pool fencing must also comply with Australian Standards and relevant state and local government requirements. See AS 1926.1 – 1993 Swimming pool safety Part 1: Fencing for swimming pools. If exclusion fencing is used without other koala-friendly design features, landscaping and garden maintenance should ensure that plants and structures do not allow koalas to enter the pool area. (See Koala exclusion fencing – additional requirements for Option H – J, (4)).
Mitigate threats from dogs	**Dog free development** **Option A** Designate a development dog-free by using a covenant (as part of a condition of approval) to prohibit dogs being kept on the property in perpetuity.	Dog-free development avoids domestic dog and koala encounters and thereby reduces koala deaths.

Koala safety and movement solution	Design specification	Additional supporting information
	Dog confinement **Option B** Dedicate an area of the yard on lots greater than 2000 m^2 as a dog enclosure/dog run where dogs are confined between 6 pm and 6 am. **Additional requirements for Option B** 1. Use koala exclusion fencing around the dog's enclosure (but not the property boundary) to prohibit koala access to the dog's area. 2. Manage vegetation adjacent to fencing to ensure koala exclusion fencing effectiveness (see Koala exclusion fencing – additional requirements for Option H – J). **Option C** Have dogs tethered or on a run (with access to water and shelter) or confined to the house or veranda/patio between 6 pm and 6 am on lots less than 2000 m^2 (Figure 23).  **Figure 23. Dog confinement**	Domestic dog and koala encounters can be minimised though the confinement of dogs to the house or part of the yard during peak koala activity periods, e.g. between 6 pm and 6 am. Koalas are most vulnerable to dog attack at night, however, koalas may travel through backyards during daylight hours at any time of the year.

Koala safety and movement solution	Design specification	Additional supporting information
	Additional requirements for Options B and C 1. Locate the dog enclosure away from koala habitat trees, known koala movement paths or habitat linkages. 2. Use koala-friendly fencing to facilitate koala movement through the rest of the backyard (i.e. the dog free areas).	Domestic dog and koala encounters can be minimised through the use of appropriate fencing. Refer to koala fencing section above.
	Signage **Option D** Use signs in public spaces to inform of koala presence and the need to restrain dogs, particularly between the hours of 6 pm and 6 am (Figure 24).  **Figure 24. Koala awareness signage**	
Community awareness	**Education** **Option A** Install signs to inform residents and the community that koalas are present in an area and of actions that can be taken to protect koalas (Figure 25).	Measures should be incorporated to educate residents about what things they can do to support koala populations in their area. This may include establishing local area committees to assist with the implementation and monitoring of koala sensitive design objectives.

Koala safety and movement solution	Design specification	Additional supporting information
	 **Figure 25. Koala awareness signage** **Option B** Use interpretative signage to identify koala habitat, koala food trees or other koala-friendly features. **Option C** Inform home buyers/builders/site managers/tenants about the koala-friendly features included in the development and make them aware of their obligations to achieve these koala-friendly objectives.	

Table 2 assists in the identification of the most appropriate koala safety and movement solution relative to the development type.

Table 2: Decision support tool for koala safety and movement solution versus the development type

Development type	Koala safety and movement solutions	Design specification - recommended option (refer to Table 1)
Rural residential	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property (e.g. dog run)
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	Any option/s
	Mitigate threats from dogs	Options A, B or C
	Community awareness	Any one or more option/s where practicable
Greenfield commercial/industrial	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property (e.g. relevant to guard dogs)
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	N/A
	Mitigate threats from dogs	Options A, B or C
	Community awareness	Any one or more option/s where practicable
Greenfield residential	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	Any option/s
	Mitigate threats from dogs	Options A, B or C
	Community awareness	Any one or more option/s where practicable
Infill commercial/industrial	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property (e.g. relevant to guard dogs)
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	N/A
	Mitigate threats from dogs	Options A, B or C
	Community awareness	Any one or more option/s where practicable

Infill residential	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	Any option/s
	Mitigate threats from dogs	Options A, B or C
	Community awareness	Any one or more option/s where practicable
Community infrastructure	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	Any option/s where relevant
	Mitigate threats from dogs	N/A
	Community awareness	Any one or more option/s where practicable
Extractive industries	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property (e.g. relevant to guard dogs)
	Koala safe road design and placement	Options A, C, D and E
	Koala safe pools	N/A
	Mitigate threats from dogs	Options A, B or C
	Community awareness	Any one or more option/s where practicable
Construction	Koala-friendly fencing	Any one or more of options A to G for perimeter fencing Any options H to J for exclusion areas within the property
	Koala safe road design and placement	All options
	Koala safe pools	N/A
	Mitigate threats from dogs	N/A
	Community awareness	Any one or more option/s where practicable

4. Definitions

Safe koala movement opportunity is a measure that is intended to:

b. minimise threats to resident and transient koalas; or

c. achieve permeability to provide for the safe movement of koalas within and across a site; or

d. provide food or refuge sources for koalas.

Koala safe infrastructure means infrastructure that provides for safe movement either above or below an area that poses a risk to safe koala movement, such as a fauna overpass or underpass with koala safety fencing associated with a road.

'Go slow' point is an area where koalas are expected to cross a road and features have been incorporated to reduce vehicle speed.

Koala furniture are structures that are placed within, or used in association with, road crossing structures that increase the ability of koalas to move through an area. For example, for example, a log may be placed horizontally within a culvert to encourage koalas to pass under a road rather than across it where they may be hit by a car.

Urban purpose means urban purpose as defined in the Sustainable Planning Regulation 2009.