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**LOGAN CITY COUNCIL**

**APPROVED DOCUMENT**

This is an approved document for Development Application

**MCUI/56/2023**

Childcare Centre

2-6 Lancewood Street, Park Ridge

DEVELOPMENT ASSESSMENT ENGINEERING REPORT AND  
STORMWATER MANAGEMENT PLAN








**of onefin**

ONEFIN OPS PTY LTD

STP23-0779

REV 6

## Document Status

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## 1. Introduction

Onefin Ops Pty Ltd has engaged STP Consultants to produce a Development Assessment Engineering Report and Stormwater Management Plan as supporting documentation for a Development Application for a Material Change of Use for a Childcare Centre.

Level information is derived from Logan City Council Interactive Mapping and As Constructed Drawings. All level and location data should be verified by ground survey prior to any design work.

## 2. Site Description

The site is located at 2-6 Lancewood Street, Park Ridge and comprises one lot described as Lot 3 on RP227158 with a land area of 5,015m<sup>2</sup>. The site is zoned Low-Density Residential within the Logan City Council local government area. The site is currently occupied by a single dwelling and ancillary buildings.

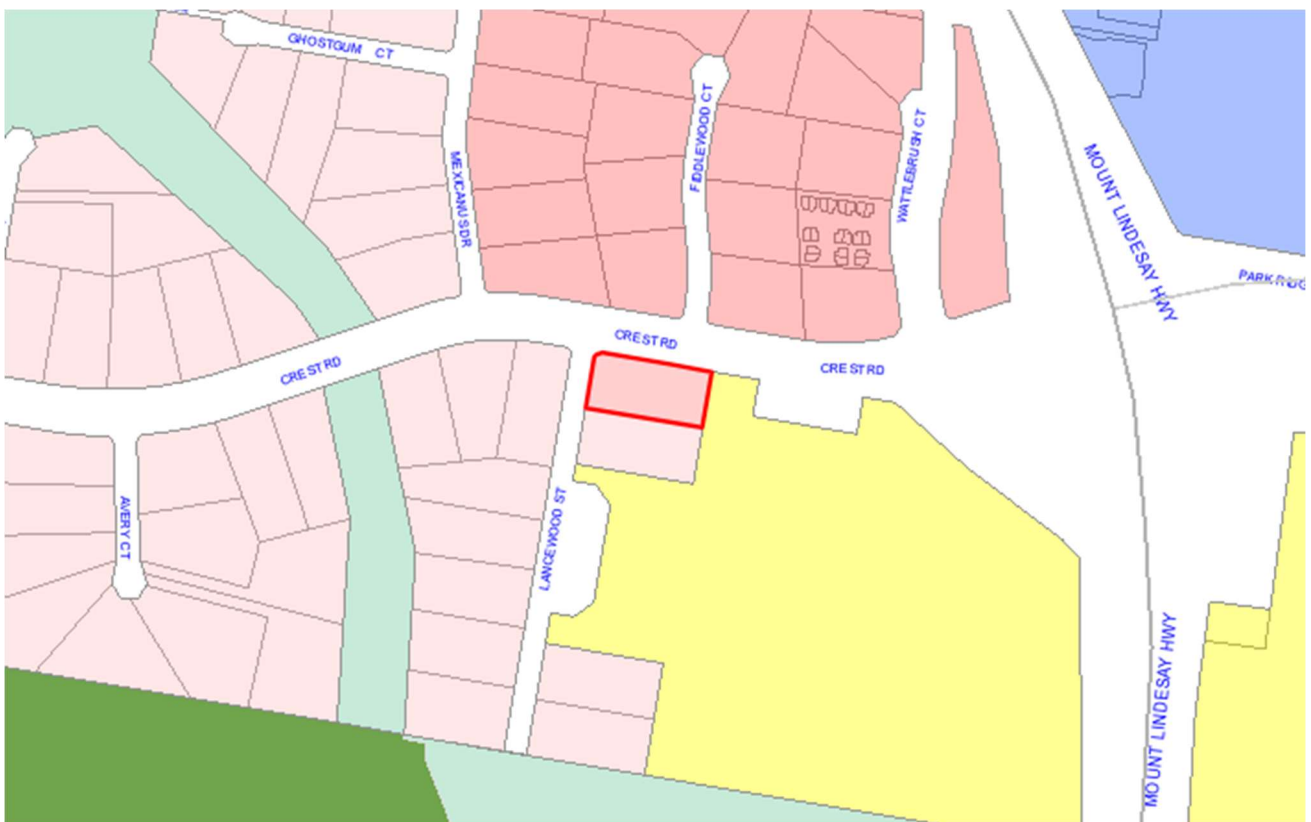


Figure 2.1 – Locality plan and zoning (LCC Mapping)

### 2.1 EASEMENTS AND RESUMPTIONS

There are currently no easements or proposed resumptions over the lot.

### 2.2 PROPOSED DEVELOPMENT

The proposed development consists of the construction of a childcare centre with associated car parking and landscaping. A preliminary layout is shown in Figure 2.2.

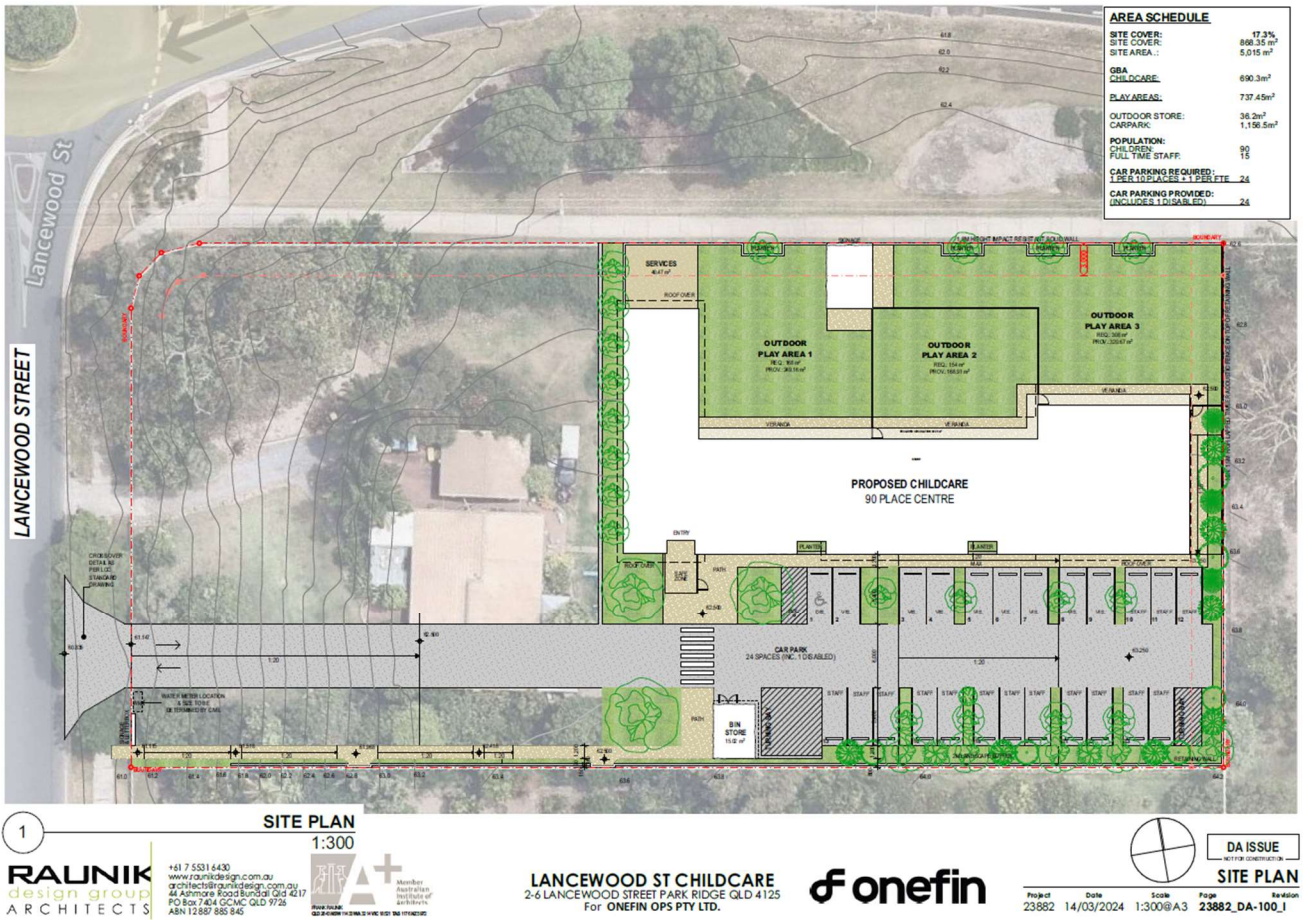


Figure 2.2 – Proposed site layout (Raunik Architects)



Figure 2.3 – Cadastral plan (Qld Globe)

### 3. Stormwater Management

#### 3.1 FLOOD STUDIES

As shown in Figure 3.1, the site is not affected by the AEP 1% flood event nor contained within the Flood Hazard Overlay. Proposed building floor levels should be set at or above 300mm above the adjacent road crown or top of kerb level.

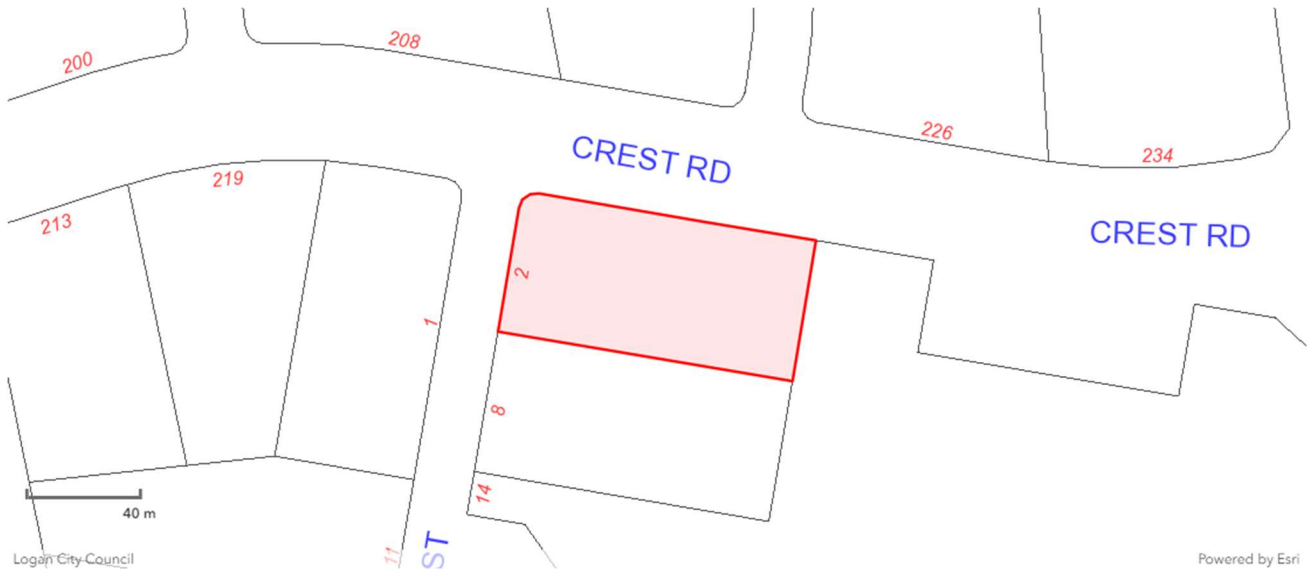


Figure 3.1 – Flood Hazard Overlay (LCC Interactive Mapping)

#### 3.2 EXISTING STORMWATER INFRASTRUCTURE

As shown in Figure 3.2, the site currently discharges directly to the kerb in Lancewood Street and is collected in a gully pit located approximately 30m south of the site boundary.

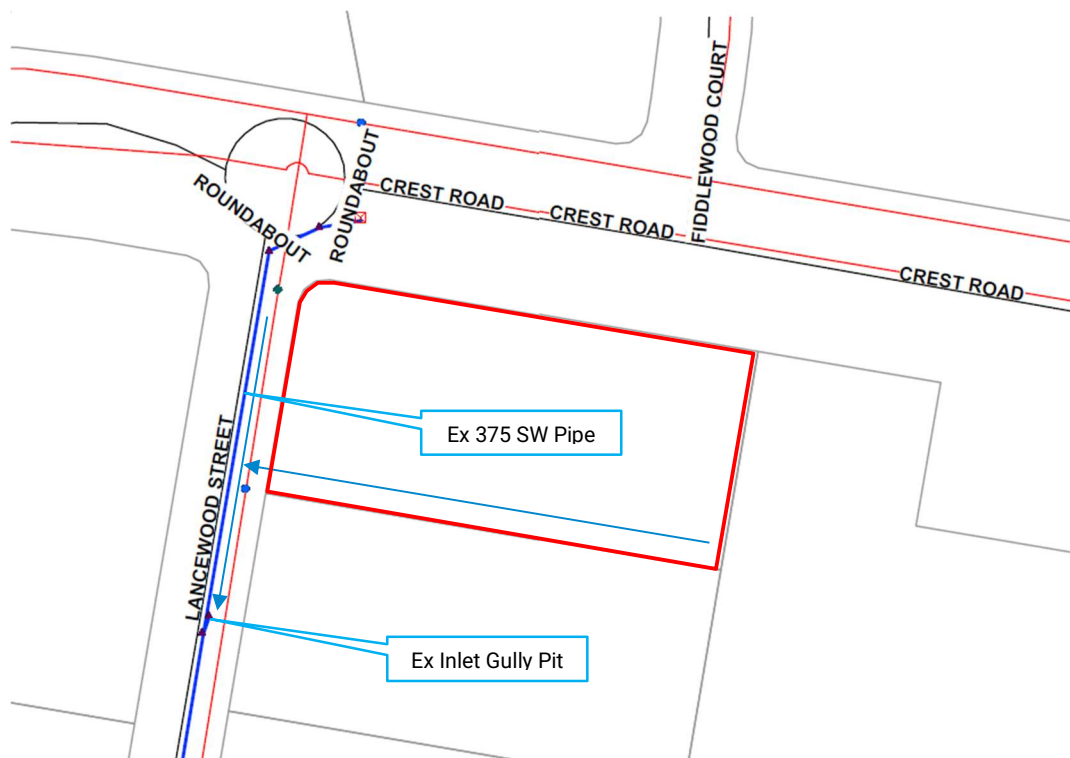


Figure 3.2 – Existing stormwater infrastructure (LCC DBYD)

### 3.3 STORMWATER DETENTION

The site is currently occupied by a single dwelling and ancillary buildings with an impervious fraction of 10%. In accordance with SC3.6 of the LCC City Plan, stormwater detention should be provided in order to mitigate developed flows to pre-development levels. The proposed layout has an impervious fraction of 4%. Pre- and post-development runoff calculations are shown in Table 3.1 below. Times of concentration have been calculated using the principles outlined in QUDM Section 4.6.

Pre-development  $T_C = (4.6.5) \text{ Roof Travel Time} + (4.6.6) \text{ Overland Flow Time} = 5 + 3 = 8 \text{ mins}$

Post-development  $T_C = (4.6.5) \text{ Roof Travel Time} + (4.6.6) \text{ Overland Flow Time} = 5 + 1 = 6 \text{ mins}$

Calculation of detention storage volume using the Mass-Flow Equation in QUDM indicates that 32kL will be required in order to limit discharge from the site to pre-development volumes. Inflow-Outflow-Storage calculations are shown in Figure 3.3 below. Orifice discharge plate calculations are included in Table 3.2 below.

PRE-DEVELOPMENT							POST-DEVELOPMENT						
Area (m <sup>2</sup> )	(ha)	Impervious Area (%)	C <sub>10</sub>	Time of Concentration (min)			Area (m <sup>2</sup> )	(ha)	Impervious Area (%)	C <sub>10</sub>	Time of Concentration (min)		
5015	0.502	10	0.65	8			5015	0.502	40	0.72	6		
C <sub>1</sub>	C <sub>2</sub>	C <sub>5</sub>	C <sub>10</sub>	C <sub>20</sub>	C <sub>30</sub>	C <sub>100</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>5</sub>	C <sub>10</sub>	C <sub>20</sub>	C <sub>30</sub>	C <sub>100</sub>
0.52	0.5525	0.6175	0.65	0.6825	0.7475	0.78	0.576	0.612	0.684	0.72	0.756	0.828	0.864
I <sub>1</sub>	I <sub>2</sub>	I <sub>5</sub>	I <sub>10</sub>	I <sub>20</sub>	I <sub>30</sub>	I <sub>100</sub>	I <sub>1</sub>	I <sub>2</sub>	I <sub>5</sub>	I <sub>10</sub>	I <sub>20</sub>	I <sub>30</sub>	I <sub>100</sub>
97.8	111	151	179	205	239	266	105	119	163	193	222	260	290
Q <sub>1</sub>	Q <sub>2</sub>	Q <sub>5</sub>	Q <sub>10</sub>	Q <sub>20</sub>	Q <sub>30</sub>	Q <sub>100</sub>	Q <sub>1</sub>	Q <sub>2</sub>	Q <sub>5</sub>	Q <sub>10</sub>	Q <sub>20</sub>	Q <sub>30</sub>	Q <sub>100</sub>
0.071	0.085	0.130	0.162	0.195	0.249	0.289	0.084	0.101	0.155	0.194	0.234	0.300	0.349

Table 3.1 – Pre- and post-development catchment runoff calculations

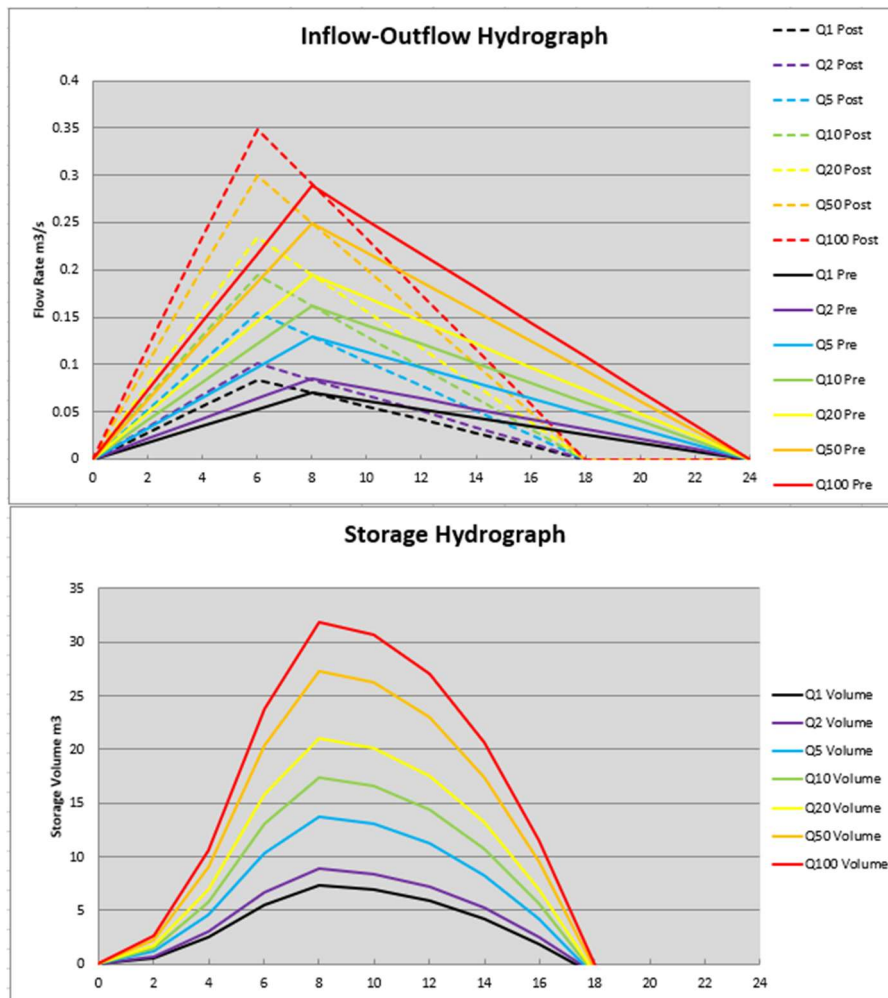


Figure 3.3 – Inflow-Outflow-Storage Hydrographs

ARI (yr)	Design Q (m <sup>3</sup> /s)	Diameter (m)	Area (m <sup>2</sup> )	Invert level (m)	WSL (m)	h (m)	Orifice Q (m <sup>3</sup> /s)	Total Q (m <sup>3</sup> /s)
Q100	0.289	0.100	0.0079	0.900	1.000	0.050	0.006	0.275
Q50	0.249	0.175	0.0241	0.700	0.900	0.113	0.029	0.247
Q20	0.195	0.025	0.0005	0.620	0.700	0.068	0.000	0.193
Q10	0.162	0.100	0.0079	0.510	0.620	0.060	0.007	0.162
Q5	0.130	0.150	0.0177	0.350	0.510	0.085	0.018	0.129
Q2	0.085	0.050	0.0020	0.290	0.350	0.035	0.001	0.084
Q1	0.071	0.250	0.0491	0.000	0.290	0.165	0.071	0.071

Table 3.2 – Orifice discharge plate configuration calculations

### 3.4 STORMWATER QUALITY

As the proposed development exceeds the threshold criteria as described in State Planning Policy, stormwater quality treatment will be required prior to discharging from the site.

- Site area exceeds 2,500m<sup>2</sup>.

A Stormwater Quality Management Plan is included as Appendix A to this report.

### 3.5 SITE EARTHWORKS AND FINISHED LEVELS

Site levels currently rise from RL64.2mAHD at the south-east corner to RL61.3mAHD at the western boundary frontage at Lancewood Street. Site contours obtained from Logan City Council are shown in Figure 3.4. Floor levels should be set at a minimum of 225mm above the finished ground surface level. Earthworks will be necessary to achieve a uniformly level building pad and accessible grades from the car park to the building. Retaining walls may be necessary for this development depending on the final site layout and adopted levels. The proposed extent of civil works is illustrated in Figure 3.5 and in Appendix B.

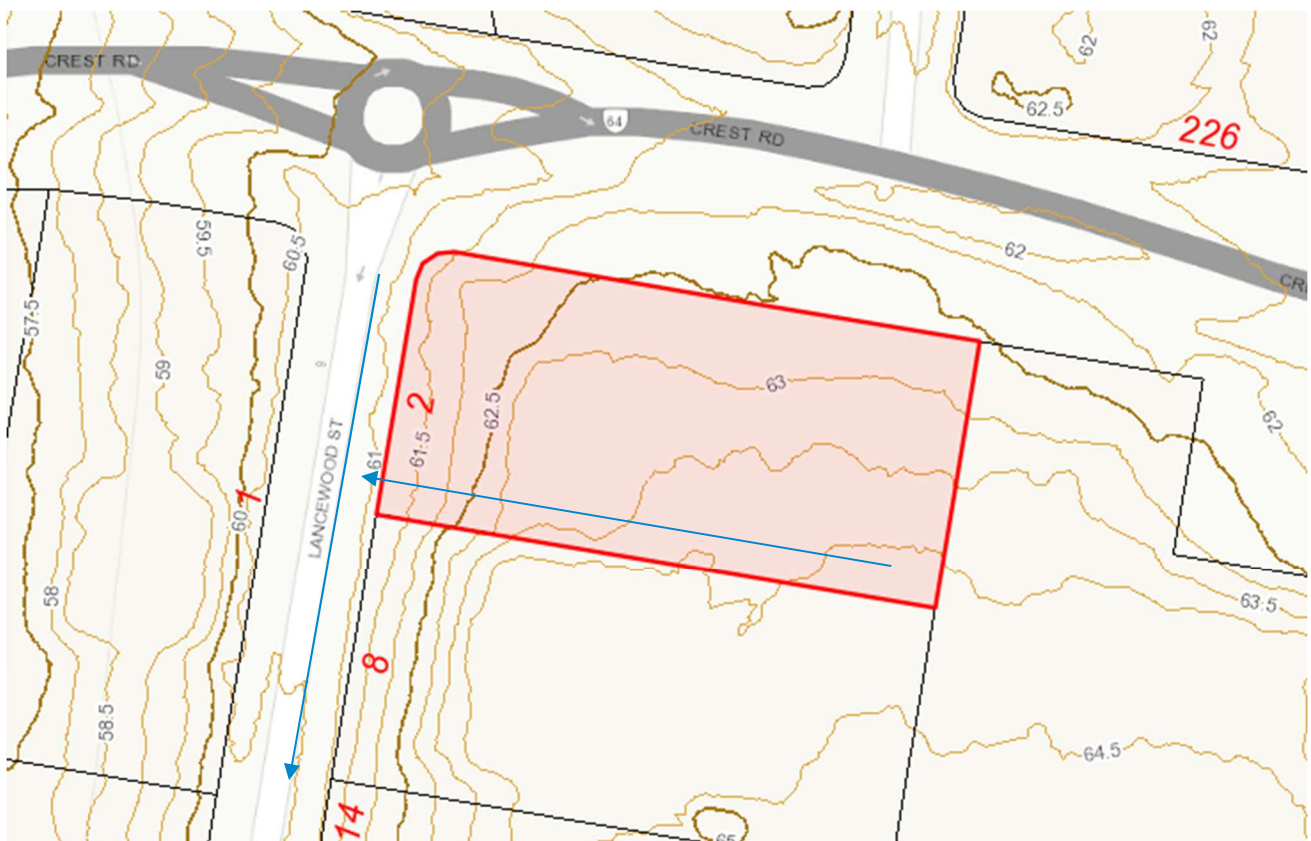


Figure 3.4 –Existing contours (LCC Interactive Mapping)



Figure 3.5 –Preliminary earthworks layout

### 3.6 SITE STORMWATER DRAINAGE

Roofwater and surface runoff will be collected in grated inlet pits and conveyed to the stormwater treatment as described in the Stormwater Quality Management Plan in Appendix A. All surfaces should be designed to ensure positive drainage without ponding. A schematic civil works design for the proposed development is illustrated in Figure 3.6 and Appendix B.

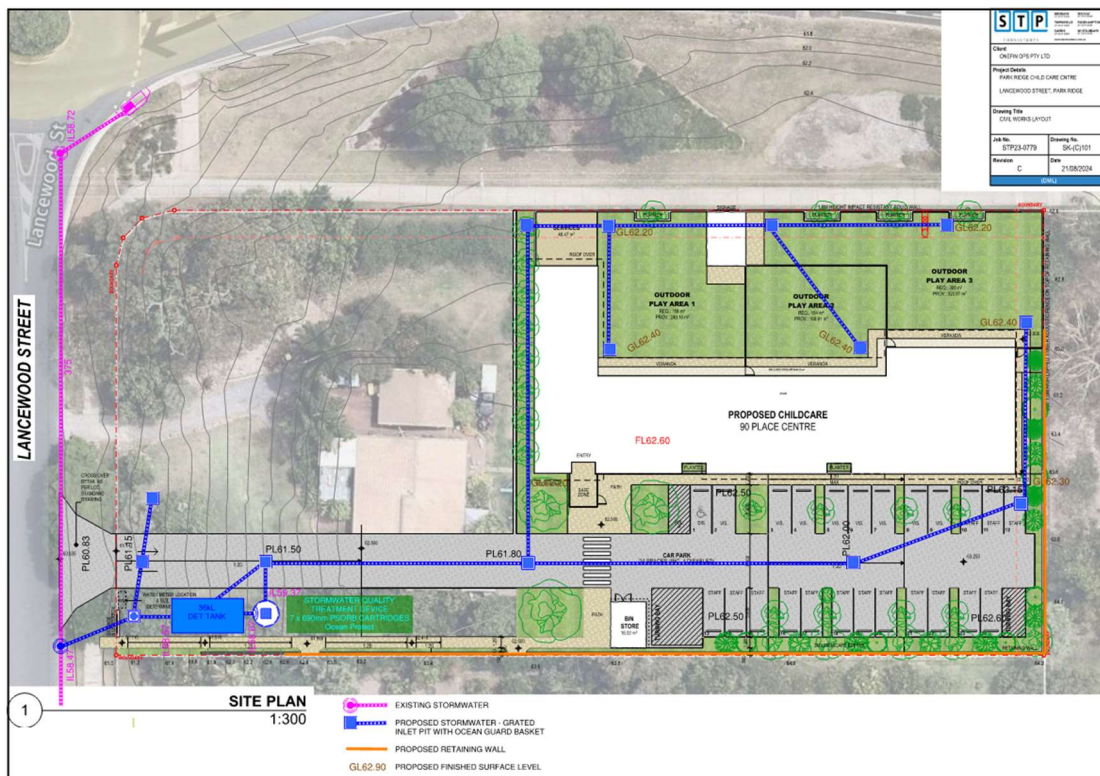


Figure 3.6 –Schematic civil stormwater layout

## 4. Traffic, Parking and Access

### 4.1 ACCESS FROM LANCEWOOD STREET

A 6m width crossover is proposed for access from Lancewood Street to be designed and constructed in accordance with IPWEA standard drawing RS-051.

### 4.2 INTERNAL PARKING

The proposed patronage of the facility is for 90 children and 15 full-time staff. In accordance with Section 9.4.7 of the Logan City Planning Scheme, parking spaces should be provided for a Childcare Centre at the rate of ONE per full-time employee plus ONE per 10 children, requiring 24 parking spaces. 24 spaces, including one PWD space, are currently proposed.

Based on the proposed number of spaces, a minimum queuing length of two car lengths (12m) is required for the access driveway. As the proposed driveway is over 60m long, this requirement is satisfied.

## 5. External Services

### 5.1 WATER SUPPLY

The site is currently serviced by a 100mm main at the road frontage in Lancewood Street. Flow and pressure testing will need to be undertaken to determine if sufficient flow and pressure are available for fire services over this lot, if required. A fire hydrant is located directly at the site frontage at the south-west corner. The site is currently serviced by a 20mm meter appropriate to the existing residential development. An application for quotation for connection of a new meter can be made directly to Logan Water based on the hydraulic consultant’s design for site demand.

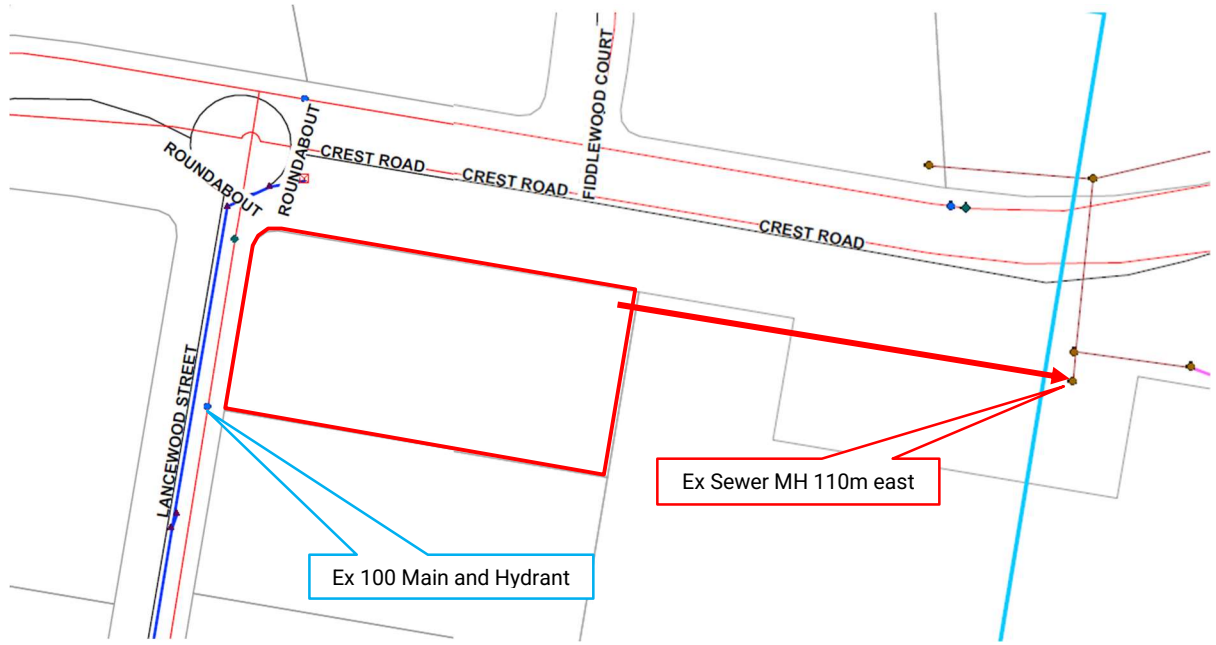


Figure 5.1 – Existing reticulated water and sewer services (LCC DBYD)

### 5.2 RETICULATED SEWER

The nearest sewer main is located approximately 110m to the east of the site, in Crest Road. As the level of the MH is approximately 4m lower than the site levels, it is possible to extend a new main parallel to Crest Road within the school land and road reserve car park to connect the site to the reticulated sewer. The site is located within the current sewerage service catchment. The alternative is to provide on-site sewage treatment.

### 5.3 WATER & SEWER DEMAND

Given the size and scale of the development in comparison to the allowable residential demand for the same area, the existing network is expected to have sufficient capacity to service the development.

Comparisons between the demand generated by standard low-density residential, commercial development, and educational facilities, according to WSA-02 Table B1, is tabulated below. Specifically, the demand from educational establishments may be estimated at the rate of 0.2EP per staff and students. For the proposed use by 90 students and 15 staff, the estimated EP is  $105 \times 0.2 = 21\text{EP}$  which is less than the residential demand.

Development Type	EP per Unit	Total EP
Low-density residential	50 per Gross Hectare	25
Commercial	75 per Gross Hectare	38
Educational	0.2 per Student/Staff	21

## 6. Electricity and Communications

### 6.1 ELECTRICAL SUPPLY

The proposed site has an existing connection to the Energex network consisting of a single LV house connection. This will likely need to be upgraded to service the proposed development. The surrounding network is above ground, so any required extensions to the network to service the site may require the provision of additional poles and infrastructure subject to detailed design by Energex. It is recommended that a Supply Availability Query and Connection Application are lodged with Energex prior to commencing detailed design as the existing loading/capacity of the surrounding network has not been investigated. Dependent on total site load and the capacity of the existing network, a new padmount transformer may be required to service the site. Local infrastructure is illustrated in Figure 6.1 below.

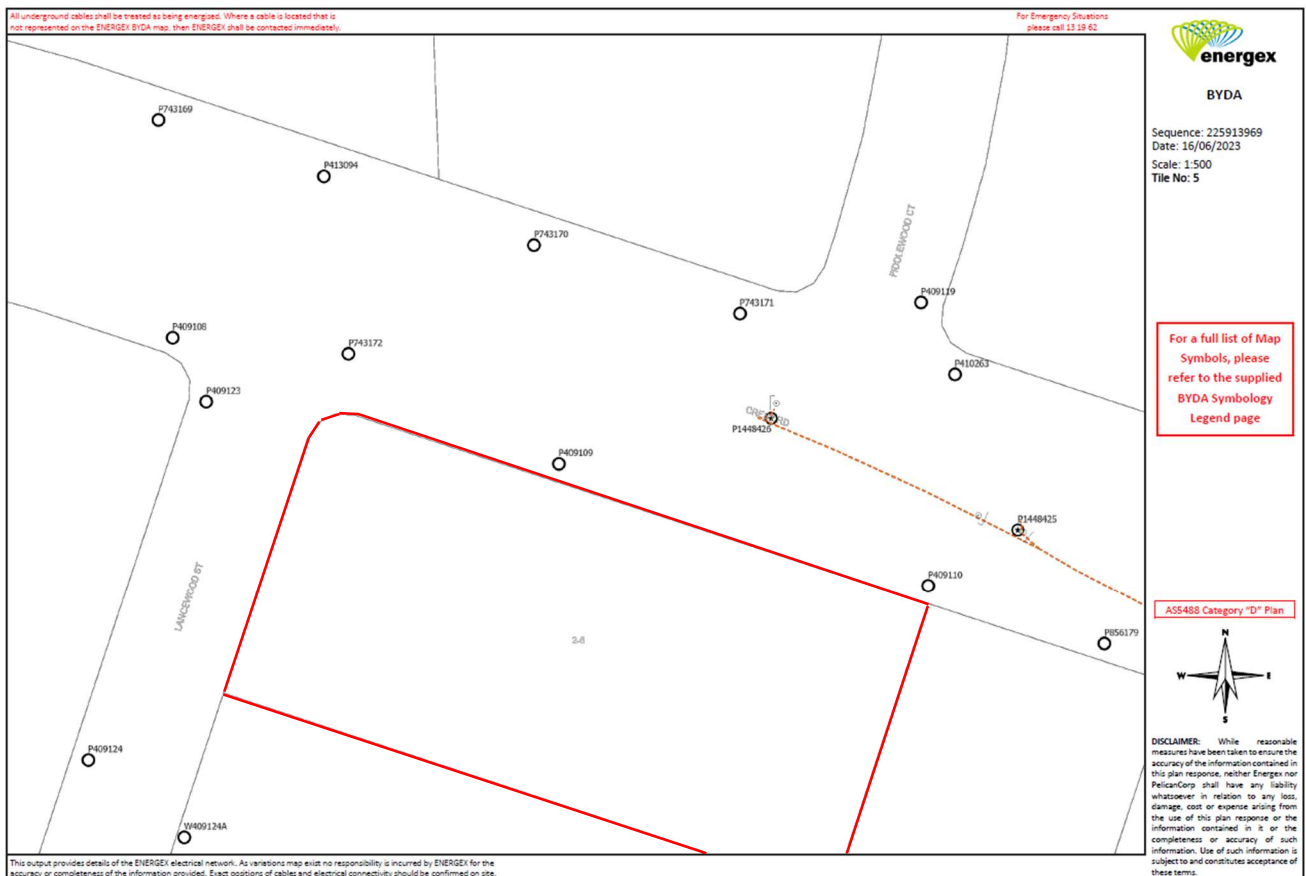


Figure 6.1 – Existing electrical infrastructure (Energex)

### 6.2 TELSTRA & NBN INFRASTRUCTURE

Preliminary investigations indicate that a telecommunications supply to the site is available through a Telstra service. It is recommended that a development application is lodged with NBN Co. at the commencement of the detailed design phase. Existing Telstra and NBN infrastructure is located as shown in Figures 6.2 and 6.3 below.

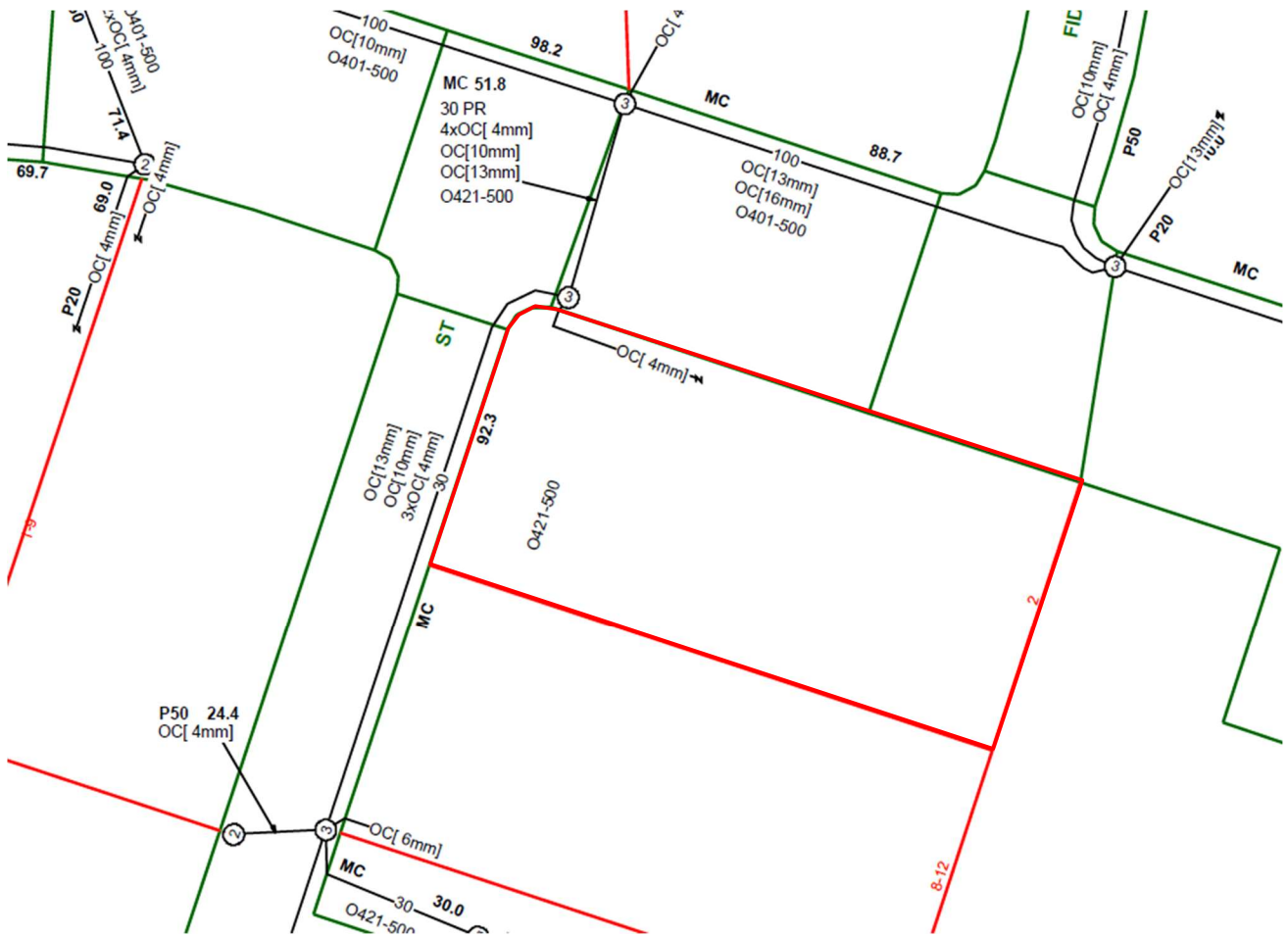


Figure 6.2 – Existing communication infrastructure (Telstra)

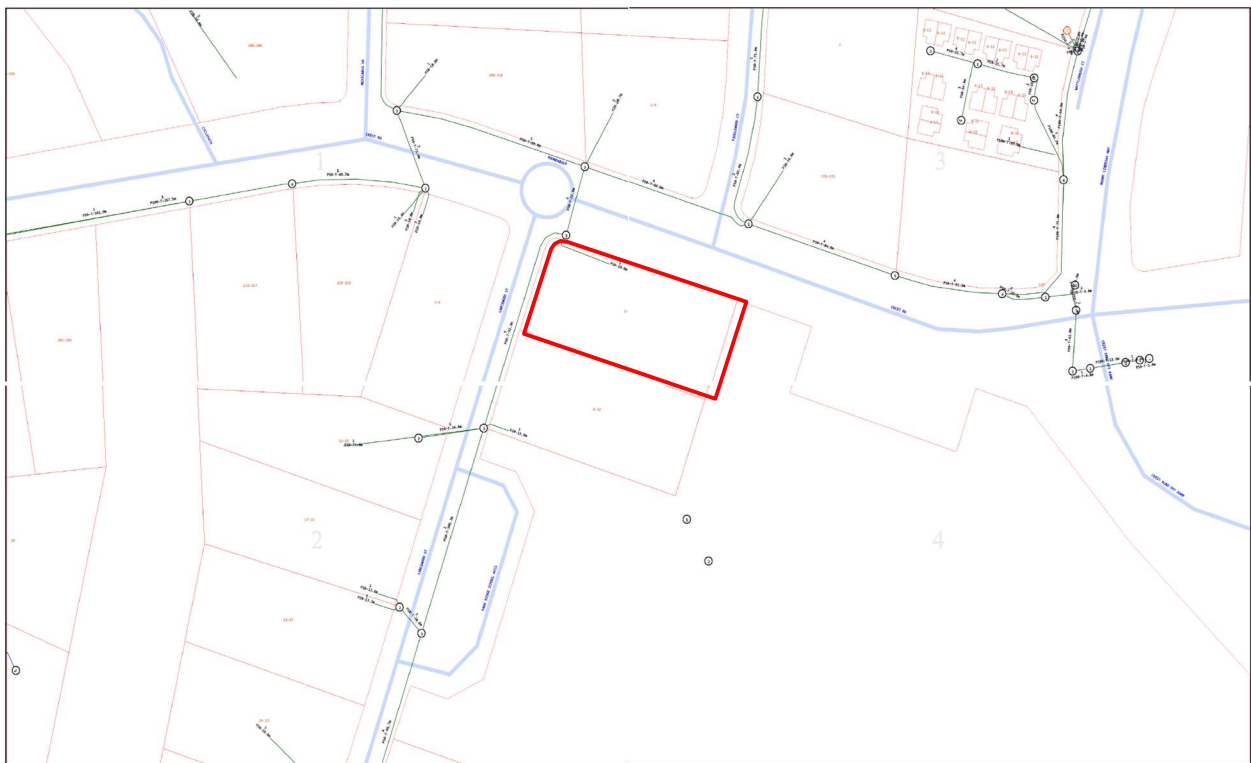


Figure 6.3 – Existing communication infrastructure (NBN)

## 7. APPENDIX A – Stormwater Quality Management Plan

### 7.1 Pollutants of Concern

The South-East Queensland Stormwater Quality Guidelines provide guidance on the types of pollutants likely to be generated from different developments. The Water Quality Objectives for Logan City are listed in Table 7.2. The pollutants most likely to be of concern for Residential and Commercial developments are identified in Table 7.1 below.

Pollutant	Development Phase	
	Construction	Operation
Litter	✓	✓
Sediment	✓	unlikely
Hydrocarbons (including oil and grease)	✓	✓
Toxic materials (e.g. cement slurry, asphalt primer, solvents)	✓	unlikely
pH altering substances (e.g. cement slurry and wash waters)	✓	unlikely
Oxygen demanding substances (organic and chemical matter)	possibly	unlikely
Nutrients (nitrogen and phosphorus)	✓	✓
Pathogens / Faecal coliforms (bacteria and viruses)	possibly	unlikely
Heavy metals (often associated with fine sediment)	unlikely	unlikely
Surfactants (e.g. detergents from car washing)	unlikely	possibly
Thermal pollution (heat)	unlikely	unlikely

Table 7.1 – Pollutants Likely to be of Most Concern

### 7.2 Design Objectives for Water Management

The Environmental Protection (Water) Policy 1997 provides a framework for identifying environmental values and associated water quality objectives; this framework is consistent with the efficient use of resources and best practice environmental management and involves the community through consultation and consideration of economic and social impact assessment. Environmental Values (EV) are a reflection of the qualities of a catchment that the community believes to be important. As such, environmental values are established through community consultation rather than through a scientific process. Once EV are established for a catchment, Water Quality Objectives (WQO) can be defined, which are meant to protect these values.

While load based reduction targets focus on performance of a stormwater quality management system within the urban footprint, concentration based WQO's are concerned with median flow concentrations as they enter downstream receiving water.

Parameter	Statistic	Load Based Reduction	Water Quality Objectives
Total Suspended Solids (TSS)	Mean Range	80%	Less than 5mg/L
Total Phosphorous (TP)	Mean Range	60%	Less than 0.01 to 0.05mg/L
Total Nitrogen (TN)	Mean Range	45%	Less than 0.2 to 0.5mg/L
PH	Mean Range	-	Between 7 and 8
Dissolved Oxygen	Mean	-	Greater than 80% saturation during daytime
Gross Pollutants	-	90%	Retention of litter greater than 50mm for flows up to the 3-month ARI peak flow
Coarse sediment	-	-	Retention of sediment coarser than 0.125mm for peak flows up to the ARI 3-month peak flow

Table 7.2 – Water Quality Objectives for South-East Queensland

### 7.3 Proposed Stormwater Treatment Train Analysis

The proposed development site has sufficient area available to dedicate to stormwater treatment devices. Roof water will discharge via downpipes directly to the in-ground stormwater. The landscaped areas and pavements will discharge directly to field inlet pits. All grated field inlets (13 total) will be fitted with Ocean Guard filter baskets for removal of gross pollutants. The total catchment then discharges to the existing Lawful Point of Discharge via a Stormfilter unit (or equivalent). The Ocean Protect Stormfilter (7 x 690mm PSorb cartridges) has been used for modelling purposes but may be substituted by another SQIDEP approved proprietary product with similar performance characteristics.

### 7.4 Music Modelling

#### Model Parameters

Input	Data Used
Rainfall Station	40659 GREENBANK THOMPSON ROAD
Rainfall Period	01/01/1980 – 31/12/1989
Mean Annual Rainfall (mm)	784mm
Evapotranspiration	1426mm
Model Timestep	6 minutes
Rainfall Runoff Parameters*	Commercial
Pollutant Parameters*	Commercial (Split)

Table 7.3 – Basic MUSIC Model Parameters

Logan City Council (west)	40659	Greenbank Thompson Rd	1/1/1980– 31/12/1989	784	181	139	137	102	72	62	63	81	108	138	159	184
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## Rainfall & Runoff Parameters

Parameter	Roof/ Road/Ground Level
Rainfall Threshold (mm/day)	1
Soil Storage Capacity (mm)	18
Soil Initial Storage (% of Capacity)	10
Field Capacity (mm)	80
Infiltration Capacity coefficient - a	243
Infiltration Capacity exponent - b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Daily Deep Seepage Rate (%)	0

Table 7.4 – Water by Design MUSIC Quantity Parameters for South-East Queensland (Commercial)

## Pollutant Generation

In MUSIC, stormwater quality is characterized by event mean concentrations (EMC) for storm flows and base flows. In this study, the EMC were adapted from the Water by Design MUSIC Modelling Guidelines. The pollutants of concern that were assessed include total suspended solids (TSS), total phosphorous (TP) and total nitrogen (TN). The quality of stormwater runoff is characterised by inputting event mean concentrations (EMC) for storm flow and base flow conditions as well as the standard deviation of each EMC.

Pollutant concentrations are based on Commercial land use parameters.

Flow Type	Surface Type	TSS (log <sub>10</sub> values)		TP (log <sub>10</sub> values)		TN (log <sub>10</sub> values)	
		Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
Baseflow	Roof	0.00	0.00	0.00	0.00	0.00	0.00
	Roads	0.78	0.39	-0.60	0.50	0.32	0.30
	Ground level	0.78	0.39	-0.60	0.50	0.32	0.30
Stormflow	Roof	1.30	0.38	-0.89	0.34	0.37	0.34
	Roads	2.43	0.38	-0.30	0.34	0.37	0.34
	Ground level	2.16	0.38	-0.39	0.34	0.37	0.34

Table 7.5 – Water by Design MUSIC Modelling Parameters - Commercial Split Catchment (SEQ)

## Results

The indicative layout of the MUSIC model and results are shown below in Figure 7.1 and Table 7.6.

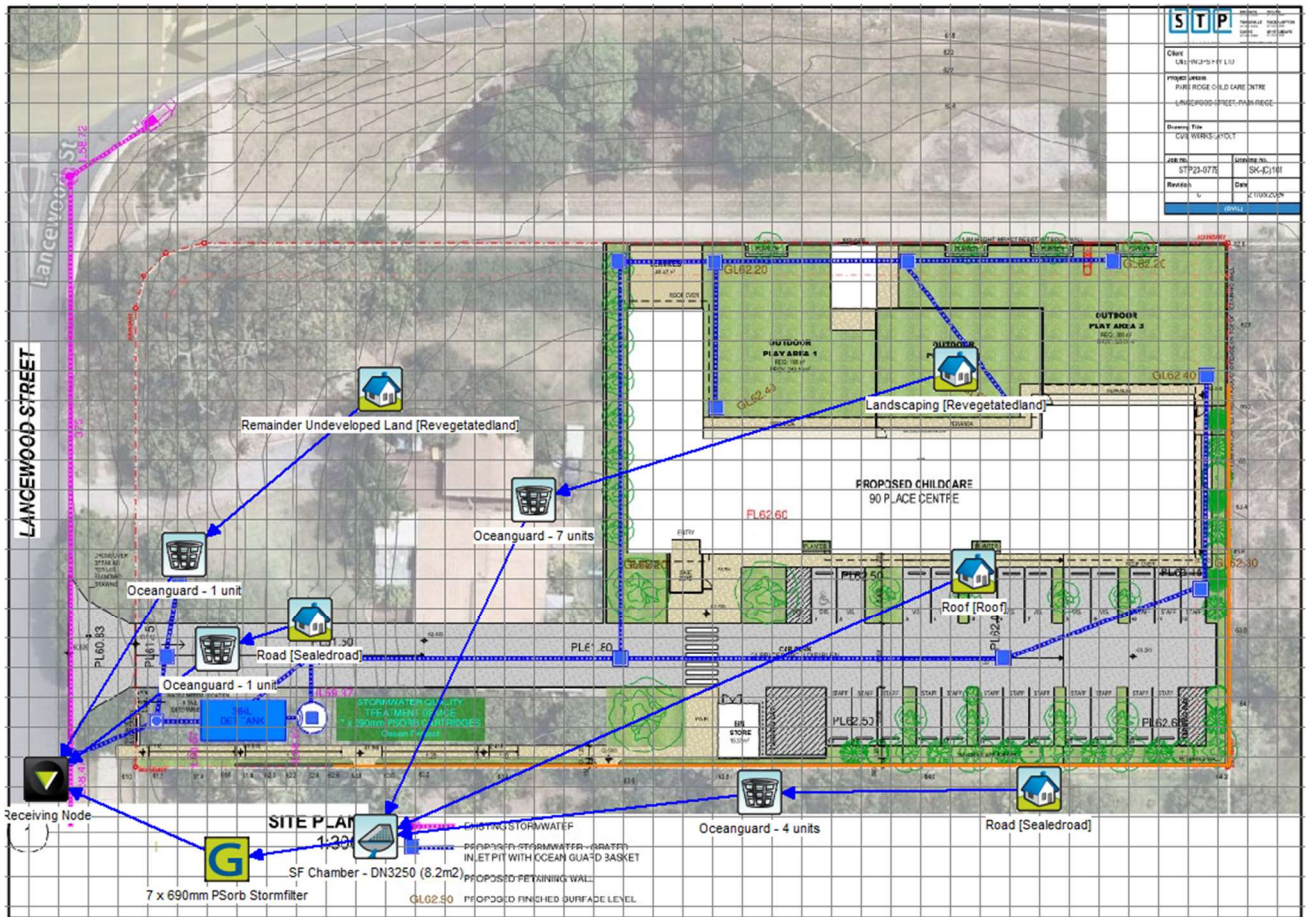


Figure 7.1 – MUSIC Model Treatment Train

	Sources	Residual Load	% Reduction
<b>Flow (ML/yr)</b>	1.94	1.94	0
<b>Total Suspended Solids (kg/yr)</b>	443	39.7	91.1
<b>Total Phosphorus (kg/yr)</b>	0.954	0.318	66.7
<b>Total Nitrogen (kg/yr)</b>	6.22	3.36	46
<b>Gross Pollutants (kg/yr)</b>	34.3	0	100

Table 7.6 – MUSIC Modelling Results

As demonstrated, the proposed treatment train will reduce pollutant loadings to the extent specified by the Logan City Council Stormwater Quality Guidelines.

## 8. APPENDIX B – Proposed Civil Works Layout

<b>STP</b> CONSULTANTS	
Client ONEFIN OPS PTY LTD	
Project Details PARK RIDGE CHILD CARE CENTRE LANCEWOOD STREET, PARK RIDGE	
Drawing Title CIVIL WORKS LAYOUT	
Job No. STP23-0779	Drawing No. SK-(C)101
Revision C	Date 21/08/2024
(CIVIL)	



**1**

**SITE PLAN**  
1:300

- EXISTING STORMWATER
- PROPOSED STORMWATER - GRATED INLET PIT WITH OCEAN GUARD BASKET
- PROPOSED RETAINING WALL
- GL62.90 PROPOSED FINISHED SURFACE LEVEL



<b>STP</b> CONSULTANTS	
Client ONEFIN OPS PTY LTD	
Project Details PARK RIDGE CHILD CARE CENTRE LANCEWOOD STREET, PARK RIDGE	
Drawing Title EARTHWORKS LAYOUT	
Job No. STP23-0779	Drawing No. SK-(C)102
Revision B	Date 18/03/2024
(CIVIL)	

## 9. APPENDIX C – Planning Scheme Compliance

## 9.1 9.4.2 Filling and Excavation Code

Performance outcomes	Acceptable outcomes	Comments
<b>For accepted development (subject to requirements) and assessable development</b>		
<b>Protection of natural processes and ecosystems</b>		
<b>P01</b> The discharge of sediments and pollutants from filling or excavation does not adversely affect a waterway or the stormwater network.	<b>A01</b> The discharge of sediments and pollutants to a waterway or stormwater network complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	RPEQ designed Soil Erosion & Sediment Control measures will be implemented during the construction and operational phases of this development. Appendix A to this report includes MUSIC modelling for the prescribed reduction of sediments and nutrients in site runoff.
<b>P02</b> Topsoil and spoil stockpiled on the premises do not adversely affect natural processes and ecosystems.	<b>A02</b> Topsoil and spoil are stockpiled to comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	Stockpile locations will be identified in the Soil Erosion & Sediment Control Plan to be included with the Operational Works drawing issue.
<b>P03</b> Filling is carried out using stable, solid and clean earth, free of organic and putrescible waste, rubbish and refuse material.	<b>A03</b> Filling complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	All site filling will be undertaken in compliance with the requirements of AS3798.
<b>Protection of existing and planned infrastructure</b>		
<b>P04</b> Filling or excavation works do not adversely affect infrastructure, including any services.	<b>A04</b> Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	No public infrastructure has been identified within the site boundaries. Minimal earthworks associated with the construction of a driveway access are proposed within the adjacent road verges.
<b>Protection and enhancement of personal health and safety and premises</b>		
<b>P05</b> Filling or excavation works do not adversely affect personal health and safety.	<b>A05</b> Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	Dust suppression measures will be identified in the Soil Erosion & Sediment Control Plan to be included with the Operational Works drawing issue.
<b>Surface water flow</b>		
<b>P06</b> Surface water drainage does not cause any of the following: a. ponding on any premises; or b. a hazard or adversely affect personal health and safety and premises; or c. diversion or concentration of flow from or onto adjoining premises or infrastructure.	<b>A06</b> Surface water drainage complies with part 3.3 - Filling or excavation standards in Planning scheme policy 5 - Infrastructure.	As identified in Section 3.5 of this report, runoff from the site and all adjacent sites continues towards their individual Lawful Points of Discharge without hindrance.
<b>Batters</b>		
<b>P07</b> A batter:	<b>A07</b>	Minimal battering will be employed on this site, mostly located along the

<ul style="list-style-type: none"> <li>a. does not adversely affect the natural physical processes and ecosystems;</li> <li>b. protects existing and planned infrastructure;</li> <li>c. is safe, stable and easily maintained;</li> <li>d. is landscaped to enhance visual amenity.</li> </ul>	<p>A batter is designed and constructed to comply with the standards specified in 3.3.6 - Batters and retaining walls in Planning scheme policy 5 - Infrastructure.</p>	<p>northern portion of the site to integrate the finished surface to the natural surface. As all works in this area will be contained totally within the site boundary there will be no impact on existing infrastructure or ecosystems, Detailed landscaping plans will be included in the Operational Works drawing issue.</p>
<p><b>Retaining walls</b></p>		
<p><b>P08</b> A retaining wall:</p> <ul style="list-style-type: none"> <li>a. is not constructed of timber and is not located on existing or proposed lot boundaries, or movement networks;</li> <li>b. does not adversely affect the natural physical processes and ecosystems;</li> <li>c. is located to avoid conflict with adjoining premises;</li> <li>d. is located such that existing and planned infrastructure is not adversely affected;</li> <li>e. protects the visual amenity of adjoining premises or a public open space;</li> <li>f. is located within the premises that is being filled;</li> <li>g. is located within the premises that is cut and is designed to take any surcharge loading allowable on the uphill lot;</li> <li>h. is safe and stable;</li> <li>i. enables easy access for maintenance.</li> </ul>	<p><b>A08</b> A retaining wall is designed and constructed to comply with the standards specified in section 3.3.6.2 - Retaining walls in Planning scheme policy 5 - Infrastructure.</p>	<p>A retaining wall up to 1.5m in height is proposed along part of the southern and eastern boundaries as identified in Appendix B.</p> <p>The proposed wall will be constructed of reinforced concrete block and offset a minimum of 300mm inside the boundary for the provision of subsoil drainage and minimal disturbance to the adjacent property.</p> <p>The proposed wall will not be located near any existing infrastructure and will not be visible from the adjoining uphill properties.</p> <p>The proposed wall will be fully accessible from the proposed car park for ease of maintenance and being over 1m in height will be designed and certified by an RPEQ engineer.</p>
<p><b>Filling of a dam</b></p>		
<p><b>P09</b> The filling of a dam:</p> <ul style="list-style-type: none"> <li>a. does not adversely affect the natural physical processes and ecosystems;</li> <li>b. creates a safe and stable surface;</li> <li>c. is integrated into the landscape.</li> </ul>	<p><b>A09</b> The filling of a dam complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.</p>	<p>Not applicable to this development.</p>

## 9.2 9.4.3 Infrastructure Code

Performance outcomes	Acceptable outcomes	Comments
<b>For accepted development (subject to requirements) and assessable development</b>		
<b>Provision, design, construction and location of infrastructure</b>		
<p><b>P01</b> Development is demonstrated to be capable of being serviced by necessary infrastructure.</p>	<p><b>A01</b> Reports, plans and drawings are provided in accordance with part 2 of Planning scheme policy 5 - Infrastructure.</p>	<p>Sections 3, 4, 5 &amp; 6 of this report detail the availability of infrastructure services adjacent or near to this development.</p>
<p><b>P02</b> Development:</p> <ol style="list-style-type: none"> <li>a. provides necessary infrastructure to service the development;</li> <li>b. provides that the design, construction and location of necessary infrastructure: <ol style="list-style-type: none"> <li>i. protects existing and planned infrastructure networks;</li> <li>ii. services proposed development;</li> <li>iii. integrates with existing and planned infrastructure networks;</li> <li>iv. delivers a standard of service that is efficient and equitable;</li> <li>v. minimises the cost to the community for the life of the infrastructure by providing a suitable design life, ease of maintenance and ease of replacement;</li> <li>vi. protects personal health, safety and premises;</li> <li>vii. protects environmental values.</li> </ol> </li> </ol>	<p><b>A02</b> Development:</p> <ol style="list-style-type: none"> <li>a. in a water supply service area connects to the water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code;</li> <li>b. not in a water supply service area provides a tank with a minimum storage capacity of 45,000 litres;</li> <li>c. in a sewerage supply service area connects to the wastewater network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code;</li> <li>d. not in a sewerage supply service area complies with part 1 of the Queensland Plumbing and Wastewater Code;</li> <li>e. provides stormwater infrastructure in accordance with part 3.6 of Planning scheme policy 5 - Infrastructure;</li> <li>f. provides a movement network infrastructure in accordance with part 3.4 of Planning scheme policy 5 - Infrastructure;</li> <li>g. provides parks in accordance with part 3.12 of Planning scheme policy 5 - Infrastructure;</li> <li>h. provides road lighting in accordance with part 3.5 of Planning scheme policy 5 - Infrastructure;</li> <li>i. provides electricity reticulation in accordance with part 3.8 of Planning scheme policy 5 - Infrastructure;</li> <li>j. provides gas and telecommunications reticulation in accordance with part 3.9 of Planning scheme policy 5 - Infrastructure.</li> <li>k. is consistent with the general planning layouts in part 7.2 of Planning scheme policy 5 - Infrastructure.</li> </ol> <p>Editor's note - The delivery of any part of a network identified in the plans for trunk infrastructure is governed by Part 4 - Local government infrastructure plan.</p>	<p>Sections 3, 4, 5 &amp; 6 of this report detail the availability of infrastructure services adjacent or near to this development.</p> <p>Additional trunk infrastructure in the form of an extension to the existing sewerage network may be necessary for full servicing of this development.</p>

Location of development		
<p><b>P03</b> Development is located to protect trunk infrastructure networks.</p>	<p><b>A03</b> Development is located outside a network identified in Local government infrastructure plan map LGIP-03.00 to 08.00 Plans for trunk infrastructure in Schedule 3 - Local government infrastructure plan mapping and tables.</p>	<p>The development will not impact on the existing trunk infrastructure networks.</p>
Fire fighting		
<p><b>P04</b> Development in a water service area accessed by common private title provides:</p> <ol style="list-style-type: none"> <li>fire hydrant infrastructure;</li> <li>unimpeded access for emergency services vehicles.</li> </ol> <p>Editor's note - The term common private title refers to areas such as access roads in community title developments or strata title unit access, which are private and under group or body corporate control.</p>	<p><b>A04</b> Development in a water service area involving a material change of use or reconfiguring a lot where, or to be, accessed by common private title ensures that fire hydrant placement and technical requirements for streets and access ways are in accordance with:</p> <ol style="list-style-type: none"> <li>Australian Standard (AS) 2419.1 - 2005 <i>Fire hydrant installations</i>;</li> <li>QFES: <i>Fire Hydrant and vehicle access guidelines for residential, commercial and industrial lots</i>.</li> </ol>	<p>There will be no changes to the existing access or location of fire hydrant infrastructure as a result of this development.</p>
<p><b>P05</b> Development not in a water service area provides sufficient water storage with adequate pressure, volume and flow to service development for firefighting purposes.</p>	<p><b>A05</b> Development:</p> <ol style="list-style-type: none"> <li>is connected to a reticulated water supply scheme that has sufficient flow and pressure characteristics for firefighting purposes at all times with a minimum pressure and flow of 10 litres per second at 200kPa; or</li> <li>has on-site water storage in accordance with Table 9.4.3.3.2 - Water storage for firefighting, dedicated or retained for firefighting purposes that is made of fire-resistant materials and is: <ol style="list-style-type: none"> <li>a separate tank; or</li> <li>a reserve section in the bottom part of the main water supply tank.</li> </ol> </li> </ol> <p>Editor's note - The requirement in A05 is:</p> <ul style="list-style-type: none"> <li>- in addition to the requirement for potable water supply/storage in A02 in Table 9.4.3.3.1 - Infrastructure code: accepted development (subject to requirements) and assessable development;</li> <li>- reflected in A05 in Table 8.2.3.3.1 - Bushfire hazard overlay code: accepted development (subject to requirements) and assessable development.</li> </ul>	<p>Not applicable as the development is located within a water service area.</p>
Waste management		
<p><b>P06</b> Development provides refuse and recycling collection and storage</p>	<p><b>A06.1</b> Development provides refuse and recycling collection and storage</p>	<p>The development provides ample area for refuse storage and collection facilities.</p>

facilities that are located and managed so that adverse impacts on building occupants, neighbouring properties and the public realm are minimised.	<p>facilities in accordance with Planning scheme policy 9 - Waste management.</p> <p><b>A06.2</b> Development ensures that the location and design of refuse and recycling collection and storage facilities does not have any adverse impact including odour, noise or visual impacts on the amenity of land uses within or adjoining the development.</p> <p>Note - Planning scheme policy 9 - Waste management provides guidance on how to achieve this outcome.</p>	
<b>Disposal of trade waste</b>		
<p><b>P07</b> The disposal of trade waste in a sewerage supply service area does not adversely affect the sewerage network.</p>	<p><b>A07</b> The disposal of trade waste in a sewerage supply service area complies with the sewer admission standards in section 3.2.6 - Sewer admission standards in Planning scheme policy 3 - Environmental management.</p>	Not applicable to this development.
<b>Roof water drainage and surface water drainage</b>		
<p><b>P08</b> Development provides stormwater infrastructure for the drainage of the premises so as not to cause any of the following:</p> <ol style="list-style-type: none"> <li>ponding of stormwater on the premises;</li> <li>a hazard to personal health and safety;</li> <li>damage to premises;</li> <li>an increased risk of flooding to premises within the catchment.</li> </ol>	<p><b>A08</b> Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>As identified in Section 3.5 of this report, internal stormwater is planned to adequately drain the development in accordance with the principles in QUDM.</p> <p>Fully detailed design will be included in the Operational Works drawing issue.</p>
<b>Natural flow of surface water</b>		
<p><b>P09</b> Development provides that the natural flow of surface water is:</p> <ol style="list-style-type: none"> <li>not altered so as to cause a risk to personal health and safety or damage to property;</li> <li>not increased in intensity, velocity or frequency;</li> <li>not concentrated onto adjoining premises.</li> </ol>	<p><b>A09</b> Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>As identified in Section 3.5 of this report, runoff from the site and all adjacent sites continues towards their individual Lawful Points of Discharge without hindrance.</p>
<b>Water sensitive urban design</b>		
<p><b>P010</b> Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to:</p>	<p><b>A010</b> Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.</p>	<p>MUSIC modelling for WSUD is included in Appendix A to this report.</p> <p>It is proposed to connect the development to the sewerage network.</p>

<ul style="list-style-type: none"> <li>a. protecting existing natural features and ecological processes;</li> <li>b. protecting the natural hydrologic behaviour of catchments;</li> <li>c. protecting the existing natural flow and water quality regimes of waterways;</li> <li>d. protecting water quality of surface and ground waters;</li> <li>e. minimising demand on the water network;</li> <li>f. minimising sewage discharges to the natural environment;</li> <li>g. integrating water into the landscape to enhance visual and ecological values.</li> </ul>		
<b>Movement network</b>		
<p><b>P011</b> The projected traffic levels for a use do not adversely affect the planned standards of service for a road or intersection.</p>	<p><b>A011</b> Development does not cause or contribute to projected traffic levels:</p> <ul style="list-style-type: none"> <li>a. exceeding the maximum vehicle trips per day in Table 3.4.1.4.2 in Planning scheme policy 5 - Infrastructure; or</li> <li>b. exceeding the maximum control delays through intersections in peak periods in Table 3.4.1.4.3 in Planning scheme policy 5 - Infrastructure.</li> </ul>	<p>Section 4 of this report indicates that the projected traffic generated by this development does not exceed the prescribed requirements.</p>
<b>Integrated movement concept report</b>		
<p><b>P012</b> Development which generates more than 3,000 vehicle trips per average weekday is designed to integrate the movement network to minimise the transportation costs required to service the use.</p>	<p><b>A012</b> Development which generates more than 3,000 vehicle trips per average weekday provides an integrated movement concept report which integrates the planning of the movement network in accordance with part 2 and 3 of Planning scheme policy 5 - Infrastructure.</p>	<p>Not applicable to this development.</p>
<b>For assessable development only</b>		
<b>Land use and transport integration</b>		
<p><b>P013</b> Development within 400 metres of existing or future public passenger transport facilities where the total site area is 5,000m<sup>2</sup> or more:</p> <ul style="list-style-type: none"> <li>a. supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future public passenger transport facilities;</li> <li>b. enhances connectivity between existing and future public passenger transport facilities and other transport modes;</li> </ul>	<p><b>A013</b> No acceptable outcome provided.</p>	<p>A bus route is currently available on Crest Road, directly adjacent to the development. No additional facilities are planned as a result of this development.</p>

<p>c. optimises the walkable catchment to existing and future public passenger transport facilities;</p> <p>d. provides for direct and safe access to and use of existing or future public passenger transport facilities.</p> <p>Note - SPP code: Land use and transport integration in Appendix 4 of the state planning policy provides guidance to achieve this outcome.</p>		
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