



Local Government Infrastructure Plan 2017

Extrinsic Material Report

Stormwater Network

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1.0 Background

Redland City Council has prepared a Local Government Infrastructure Plan (LGIP) in accordance with the *Sustainable Planning Act 2009*. The LGIP will replace the Priority Infrastructure Plan (PIP) and identifies the type, scale, location and timing of development within the local government area for the period 2016-2031.

The Redland City Council LGIP includes the following trunk infrastructure networks:

- Water supply network
- Sewerage network
- Transport network
- Stormwater network
- Parks and land for community facilities network

Redland City Council's LGIP will form Part 4 of the Redland City Plan.

1.1 Purpose of report

This report provides the background information for the Stormwater network to support the development of the Redland City Council LGIP.

2.0 Network planning

Redland City Council commissioned ENGEMY Water Management consultants to carry out stormwater assessment for the 8 catchment areas expected to experience high growth in order to plan the required trunk stormwater infrastructure for the LGIP. The stormwater assessments were for quantity and/ or quality:

1. Cleveland CBD
2. Kinross Road Precinct
3. Lower Tingalpa Creek
4. Native Dog Creek
5. Thornlands Catchment (including SE Thornlands Precinct)
6. Torquay Creek
7. Upper Eprapah Creek
8. Weinam Creek

The stormwater quantity included assessment considerations such as the following:

- Catchment hydrology;
- Hydrologic model validation;
- Critical storm duration;
- Hydraulic modelling;
- Assessment of existing drainage systems.

The stormwater quality included assessment considerations such as the following:

- MUSIC modelling;
- Typical treatment train;
- Gross pollutant traps (GPT's);
- Stormwater quality management strategies.

The ENGEMY technical reports that form the basis of the network planning and modelling are outlined as follows:

- Stormwater Infrastructure Plan for Cleveland CBD Catchment (May 2013 Rev O);
- Kinross Road Structure Plan – Stormwater Infrastructure Concept Plan (June 2011 Rev 2);
- Lower Tingalpa Creek Stormwater Infrastructure Plan (May 2013 Rev O);
- Native Dog Creek and Torquay Creek – Integrated Waterways Planning Report (May 2010 Rev 2);
- Thornlands Catchment Study (May 2013 Rev O) (Including SE Thornlands Structure Plan – Stormwater Infrastructure Concept Plan (October 2010 Rev 01));
- Stormwater Quality Infrastructure Plan for Upper Eprapah Creek Catchment – Water Quality Analysis (May 2013 Rev O);
- Weinam Creek Stormwater Quality Infrastructure Plan (May 2013 Rev O).

3.0 Demand assumptions

3.1 Planning assumptions

The planning assumptions state the assumptions about population and employment growth, and the type, scale, location and timing of development. Table 1 outlines the demand assumptions used to undertake catchment planning for stormwater. The impervious percentage values from the catchment reports inform the assumptions for the zoning of the Redland City Plan.

Table 1: Stormwater demand assumptions

Column 1 Service Catchment	Column 2 Existing and projected demand (imp ha)			
	2016	2021	2026	Ultimate development
Cleveland CBD	121.88	132.88	143.23	156.00
Lower Tingalpa Creek	34.61	36.66	38.69	45.00
Native Dog Creek	28.79	33.22	34.95	34.95
Kinross Road Precinct	28.36	32.54	37.11	44.48
SE Thornlands Precinct	20.25	23.24	26.51	31.77
Torquay Creek	27.36	29.83	33.08	35.73

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Upper Eprapah Creek	30.43	30.93	31.75	34.44
Weinam Creek	58.01	63.25	70.13	75.76

Land use	Impervious Percentage %
Detached dwelling	50%
Attached dwelling	90%
Retail	90%
Commercial	90%
Industrial	90%
Community purposes	90%
Road	90%

4.0 Desired standard of service

- (1) The desired standard of service for the stormwater network is to:
 - (a) Collect and convey stormwater flows for both major (100yr ARI) and minor flood events from existing and future land use in a manner that protects life and does not cause nuisance or inundation of habitable rooms.
 - (b) Design the stormwater network to comply with Planning Scheme Policy 2 – Infrastructure Works.
 - (c) Design stormwater quality treatment devices to comply with Planning Scheme Policy 2 – Infrastructure Works.
 - (d) Design road crossing structures to provide an appropriate level of flood immunity in accordance with Planning Scheme Policy 2 – Infrastructure Works and any other applicable codes or standards in a local planning instrument.
 - (e) Meet water quality objectives for receiving waters at all times.
 - (f) Maintain environmental flows post development.

5.0 Infrastructure planning

The infrastructure works and construction cost estimates for trunk stormwater infrastructure identified in the ENGENY reports assisted in forming part of the Schedule of Works (SOW) for the LGIP stormwater network. On costs and contingencies identified in the construction cost estimates have not been applied or included in the base costs inputted into the SOW model. Existing trunk assets have been costed using their replacement value from the asset register.

6.0 Stormwater network schedule of works

Column 1 Item ID	Column 2 Map Sheet Number	Column 3 Description	Column 4 Infrastructure Type	Column 5 Estimated timing	Column 6 Establishment Cost
SW-P-3		South East Thornlands GPT D	Gross pollutant trap		\$43,216
SW-P-8		Kinross GPT D	Gross pollutant trap		\$49,511
SW-P-16		South East Thornlands Scour Protection Works	Gross pollutant trap		\$14,241
SW-P-25		Kinross GPT C	Gross pollutant trap		\$35,740
SW-P-26		Kinross GPT J	Gross pollutant trap		\$35,740
SW-L-6		Middle Street (Police Stn) Pipe Duplication	Stormwater Pipe		\$42,979
SW-L-7		Russell Street and Lexen Street Pipe Upgrade / Replacement	Stormwater Pipe		\$112,041
SW-L-8		Waterloo Street Pipe Upgrade / Replacement	Stormwater Pipe		\$19,889
SW-L-9		Ross Court Pipe Duplication	Stormwater Pipe		\$32,819
SW-L-10		Yarrow Court Pipe Duplication	Stormwater Pipe		\$66,116
SW-L-11		Russell Street (east) Pipe Duplication and Upgrade / Replacement	Stormwater Pipe		\$84,059
SW-L-12		Shore Street West Pipe Duplication	Stormwater Pipe		\$84,863
SW-L-14		Fitzroy Street Pipe Duplication	Stormwater Pipe		\$123,582
SW-L-15		Channel Street Pipe Duplication	Stormwater Pipe		\$116,641
SW-L-16		Middle Street (Wharf St Intersection) Pipe Duplication	Stormwater Pipe		\$105,610
SW-L-17		South East Thornlands Drainage System 1 (pipes, pits & headwall)	Stormwater Pipe		\$846,365
SW-A-184		Bioretention A	Bio-Retention Basin	2031	\$176,849
SW-A-185		Wetland A	Wetland	2031	\$1,600,257
SW-A-186		Wetland B	Wetland	2031	\$497,934
SW-A-187		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-188		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-189		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-190		Bioretention C	Sediment Basin	2031	\$39,025
SW-A-191		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-192		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-193		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-194		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-195		Bioretention C	Bio-Retention Basin	2031	\$39,025
SW-A-196		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-197		Bioretention B	Bio-Retention Basin	2031	\$14,705
SW-A-198		Wetland System	Wetland	2021	\$1,003,462
SW-A-199		Wetland System	Wetland	2017	\$1,560,644
SW-A-200		Bioretention Basin System	Bio-Retention Basin	2026	\$261,142

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Column 1 Item ID	Column 2 Map Sheet Number	Column 3 Description	Column 4 Infrastructure Type	Column 5 Estimated timing	Column 6 Establishment Cost
SW-A-201		Bioretention Basin System	Bio-Retention Basin	2026	\$238,466
SW-A-202		Bioretention Basin System	Bio-Retention Basin	2026	\$523,865
SW-A-203		Bioretention C	Bio-Retention Basin	2031	\$23,515
SW-A-204		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-205		Bioretention C	Bio-Retention Basin	2031	\$23,515
SW-A-206		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-207		Bioretention E	Bio-Retention Basin	2031	\$39,642
SW-A-208		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-209		Bioretention E	Bio-Retention Basin	2031	\$39,642
SW-A-210		Bioretention E	Bio-Retention Basin	2031	\$39,642
SW-A-211		Bioretention E	Bio-Retention Basin	2031	\$39,642
SW-A-212		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-213		Bioretention E	Bio-Retention Basin	2031	\$39,642
SW-A-214		Bioretention C	Bio-Retention Basin	2031	\$23,515
SW-A-215		Bioretention C	Bio-Retention Basin	2031	\$23,515
SW-A-216		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-217		Bioretention H	Bio-Retention Basin	2031	\$18,646
SW-A-218		Bioretention H	Bio-Retention Basin	2031	\$18,464
SW-A-219		Bioretention H	Bio-Retention Basin	2031	\$18,646
SW-A-220		Bioretention H	Bio-Retention Basin	2031	\$18,646
SW-A-221		Bioretention H	Bio-Retention Basin	2031	\$18,646
SW-A-222		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-223		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-224		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-225		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-226		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-227		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-228		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-229		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-230		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-231		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-232		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-233		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-234		Bioretention C	Bio-Retention Basin	2031	\$23,515
SW-A-235		Bioretention D	Bio-Retention Basin	2031	\$30,536
SW-A-236		Bioretention I	Bio-Retention Basin	2031	\$31,276
SW-A-237		Bioretention H	Bio-Retention Basin	2031	\$18,464
SW-A-238		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-239		Bioretention G	Bio-Retention Basin	2031	\$48,558
SW-A-240		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-241		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-242		Bioretention F	Bio-Retention Basin	2031	\$31,147

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Column 1 Item ID	Column 2 Map Sheet Number	Column 3 Description	Column 4 Infrastructure Type	Column 5 Estimated timing	Column 6 Establishment Cost
SW-A-243		Bioretention G	Bio-Retention Basin	2031	\$48,558
SW-A-244		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-245		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-246		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-247		Bioretention F	Bio-Retention Basin	2031	\$31,147
SW-A-248		Bioretention H	Bio-Retention Basin	2031	\$18,646
SW-A-249		Wetland	Wetland	2026	\$545,798
SW-A-250		Sediment Basin	Sediment Basin	2026	\$176,273
SW-A-251		Bioretention J	Bio-Retention Basin	2031	\$20,218
SW-A-252		Bioretention J	Bio-Retention Basin	2031	\$20,218
SW-A-253		Bioretention J	Bio-Retention Basin	2031	\$20,218
SW-A-254		Bioretention J	Bio-Retention Basin	2031	\$20,218
SW-A-255		Bioretention J	Bio-Retention Basin	2031	\$20,218
SW-A-256		Bioretention J	Bio-Retention Basin	2031	\$20,218
SW-A-257		Bioretention A	Bio-Retention Basin	2017	\$340,080
SW-A-258		Infiltration Bioretention B	Infiltration Bio-retention Basin	2017	\$76,284
SW-A-262		Infiltration Bioretention A	Infiltration Bio-retention Basin	2017	\$186,268
SW-A-263		Infiltration Bioretention A	Infiltration Bio-retention Basin	2017	\$186,268
SW-A-264		Infiltration Bioretention A	Infiltration Bio-retention Basin	2017	\$186,268
SW-A-266		Infiltration Bioretention B	Infiltration Bio-retention Basin	2017	\$76,284
SW-A-267		Infiltration Bioretention B	Infiltration Bio-retention Basin	2017	\$76,284
SW-A-268		Infiltration Bioretention B	Infiltration Bio-retention Basin	2017	\$76,284
SW-A-269		Bioretention C	Bio-Retention Basin	2017	\$62,358
SW-A-272		Bio retention Basin D	Bio-Retention Basin	2017	\$77,786
SW-A-275		Wetland C (including inlet pond)	Wetland	2021	\$2,072,123
SW-A-279		Bioretention Basin D	Bio-Retention Basin	2017	\$635,735
SW-A-287		Kinross	Detention Basin	2017	\$481,098
SW-A-294		Bio-retention basin - Native Dog Creek	Bio-Retention Basin		\$310,499
SW-A-297		Bio-retention basin - Native Dog Creek	Bio-Retention Basin		\$189,000
SW-A-302		Bio-retention basin - Native Dog Creek	Bio-Retention Basin		\$317,174
SW-A-303		Bio-retention basin - Native Dog Creek	Bio-Retention Basin		\$317,174
SW-A-304		Bio-retention basin - Thornlands	Bio-Retention Basin		\$317,174
SW-A-305		Bioretention Basin C	Bio-Retention Basin		\$146,256
SW-A-306		Bioretention Basin J	Bio-Retention Basin		\$537,106