

Local Government Infrastructure Plan

Stormwater Quantity Network Extrinsic Material Report

29/04/2024 – Rev 5

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1.0 Background

Redland City Council has prepared a Local Government Infrastructure Plan (LGIP) in accordance with the *Planning Act 2016* (PA) and associated rules. The LGIP identifies the type, scale, location and timing of development within the local government area for a ten (10) year period between 2021 and 2031. It also identifies trunk infrastructure to service that growth at the desired standard of service.

- (a) The following trunk infrastructure networks are included within the LGIP:
- (b) Water supply network
- (c) Sewerage network
- (d) Transport network
- (e) Stormwater quantity network**
- (f) Public parks and land for community facilities network.

The Redland City Council LGIP is Part 4 and Schedule 3 of the Redland City Plan 2018.

1.1 Purpose of report

This extrinsic material report has been prepared to assist in the interpretation of the Redland City Council LGIP. The report summarises the inputs and methodology used to prepare the **stormwater quantity network** component of the LGIP and references all background studies and reports relevant to its preparation.

2.0 Planning assumptions

2.1 Development projections

Projections of residential and non-residential development provide a basis for determining the timing of stormwater network infrastructure within each service (planning) catchment.

Development projections for the Redland City Council local government area were undertaken in January 2022 and are documented in the report titled Development Projections Modelling Prepared for Redland City Council completed by PIE Solutions.

2.2 Demand assumptions

Demand in the stormwater network is expressed in impervious hectares (Imp Ha) and is based on an assumption about the percentage of impervious area (fraction impervious) that is expected within particular zones of the Redland City Plan 2018. Assumptions about runoff (fraction impervious) for particular categories of development were prepared having regard to recommended rates shown in the *Queensland Urban Drainage Manual, 2013*.

The assumptions about impervious fraction for each zone within the planning scheme are shown in Table 1. The existing and forecast demand (expressed as impervious Ha) for each service catchment are shown in Table 2.

Table 1: Fraction impervious assumptions for zones within the planning scheme

Column 1 Area classification	Column 2 LGIP development types	Column 3 Stormwater network planned demand generate rate (Imp ha/net dev ha)
Residential Development		
Character residential zone	Detached dwelling	0.5
Emerging community zone	Detached dwelling, Attached dwelling	0.6
Low density residential zone	Detached dwelling	0.5
Precinct LDR1 Large lot residential	Detached dwelling	0.3
Precinct LDR2 Park residential	Detached dwelling	0.2
Precinct LDR3 Point Lookout residential	Detached dwelling	0.5
Precinct LDR4 Kinross Road	Detached dwelling	0.3
Low-medium density residential zone	Detached dwelling, Attached dwelling	0.6
Precinct LMDR1 SE Thornlands	Detached dwelling, Attached dwelling	0.6
Precinct LMDR2 Kinross Road	Detached dwelling, Attached dwelling	0.6
Medium density residential zone	Attached dwelling	0.8
Precinct MDR1 Park living, Capalaba	Attached dwelling	0.8
Precinct MDR2 Mount Cotton Road, Capalaba	Attached dwelling	0.8
Precinct MDR3 Shore Street East, Cleveland	Attached dwelling	0.8
Precinct MDR4 Cleveland	Attached dwelling	0.8
Precinct MDR5 Esplanade, Redland Bay	Attached dwelling	0.8
Precinct MDR6 SE Thornlands	Attached dwelling	0.8
Precinct MDR7 Erapah Creek, SE Thornlands	Attached dwelling	0.8
Precinct MDR8 Kinross and Boundary Roads	Attached dwelling	0.8
Precinct MDR9 Kinross Road	Attached dwelling	0.8
Tourist accommodation zone	Attached dwelling	0.8
Non-Residential Development and Mixed Development		

Column 1 Area classification	Column 2 LGIP development types	Column 3 Stormwater network planned demand generate rate (Imp ha/net dev ha)
Local centre zone	Commercial, Retail, Attached dwelling	1.0
District centre zone	Commercial, Retail, Attached dwelling	1.0
Major centre zone (Victoria Point)	Commercial, Retail	1.0
Mixed use zone	Retail	0.9
Principal centre zone (Cleveland)	Commercial, Retail, Attached dwelling	1.0
Principal centre zone (Capalaba)	Commercial, Retail, Attached dwelling	1.0
Specialised centre zone (Redland Hospital)	Commercial, Retail, Community purpose (Hospital)	0.9
Low impact industry zone	Retail, Industrial (low impact)	0.9
Medium impact industry zone	Retail, Industrial (medium impact)	0.9
Waterfront and marine industry zone	Retail, Industrial	0.9
Precinct CF1 cemeteries and crematoria	Community purpose	0.1
Precinct CF2 community facilities	Community purpose	0.5
Precinct CF3 educational establishments	Community purpose (secondary school/college/primary school)	0.5
Precinct CF4 emergency services	Community purpose	0.9
Precinct CF5 places of worship	Community purpose	0.5
Precinct CF6 infrastructure	(no density outcome nominated)	-
Precinct CF7 future transport/green space/trail corridors	(no density outcome nominated)	-
Precinct CF8 Commonwealth facilities	Community purpose	0.1
Precinct CF9 passenger ferry terminals	Community purpose	0.9

Table 2: Existing and future demand (Imp Ha) for each stormwater service catchment

Column 1 Service Catchment	Column 2 Existing and future demand (imp ha)			
	2021 (base date)	2026	2031	Ultimate development
Cleveland CBD	132.88	143.23	151.04	156.00
Kinross Road Precinct	32.54	37.11	40.24	44.48
Lower Tingalpa Creek	36.66	38.69	40.69	45.00
Native Dog Creek	33.22	34.95	34.95	34.95
SE Thornlands Precinct	23.24	26.51	28.74	31.77
Torquay Creek	29.83	33.08	35.15	35.73
Upper Erapah Creek	30.93	31.75	32.11	34.44
Weinam Creek	63.25	70.13	74.52	75.76
Redlands Balance	2,215.39	2,359.80	2,667.37	3,531.35

3.0 Desired standards of service

Planning of the stormwater network required the Desired Standards of Service (DSS) to be applied to the forecast demand (Imp Ha) in each service catchment. The desired standards of service for the stormwater network are:

- a) collect and convey stormwater flows for both major flood events (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 the water quality objectives for receiving waters at all times;
- f) maintain environmental flows post development.

4.0 Stormwater network planning

The types of infrastructure listed in Table 3 may be considered to be trunk stormwater infrastructure for the purpose of LGIP planning.

Table 3: Trunk stormwater infrastructure types

Trunk stormwater infrastructure types
Trunk infrastructure for the stormwater network being land and work limited to the following items: (a) stormwater infrastructure with capacity to service multiple premises not subject to the same or related development approval; (b) piped drainage necessary to service an upstream post development urbanised catchment greater than 1ha in size and associated manholes, culverts, inlets, outlets, and scour protection; and (c) regional stormwater quality improvement devices, retention basins, detention basins and gross pollutant traps.

Planning for the stormwater network includes land acquisition where this is an integral part of a project. Planning undertaken for the area to be serviced with a stormwater network is documented in the following reports:

- Redland City Council Capital Works Prioritisation Project and Works Scoping Study prepared by EnGenY Management Pty Ltd and dated October 2009.
- LGIP Stormwater Project Review prepared by Cardno (QLD) Pty Ltd and dated June 2022.

5.0 Infrastructure costs

The PA defines establishment cost of trunk infrastructure to be-

- (a) *For existing infrastructure –*
 - i. *The current replacement cost of the infrastructure as reflected in the relevant local government asset register; and*
 - ii. *The current value of the land acquired for the infrastructure*
- (b) *For future infrastructure – all the costs of land acquisition, financing, and design and construction, for the infrastructure*

The establishment cost of trunk stormwater infrastructure has been calculated as follows.

5.1 Cost of land

The establishment cost of existing land used for trunk stormwater infrastructure was obtained from Redland City Council's asset register.

Where land is required for future trunk stormwater infrastructure, the establishment cost is derived from an assessment provided by Redland City Council's Property Services Team.

5.2 Cost of works

The establishment cost of existing trunk stormwater infrastructure (works) was obtained from Council's asset register.

The establishment cost of future trunk stormwater infrastructure (works) was calculated using pricing of infrastructure from 2016 as a baseline, the cost of projects has been updated to current estimates for the year 2022. This has been undertaken through the application of indexation and PPI to reflect the change in cost of construction over time. The methodology for calculating the updated costing trunk stormwater infrastructure are documented in the report titled LGIP Stormwater Project Review prepared by Cardno (QLD) Pty Ltd and dated June 2022.

5.3 On-cost allowance

On-costs represent the owner's project costs and may include master planning, survey, geotechnical investigations, design, project management, contract administration and environmental investigations. An on-cost allowance of:

- 18% has been applied to future projects within the stormwater network that are identified as Infrastructure provider (Council) delivered in the schedule of works model. This is consistent with the on-cost allowances used by Councils Project Delivery Group.
- 11% has been applied to future projects within the stormwater network that are identified as Developer delivered in the schedule of works model. This is consistent with the maximum on-costs stated in the Redland City Council Adopted Infrastructure Charges Resolution (No. 3.2) 2023.

No on-cost allowance was applied to land costs within the stormwater network.

5.4 Contingency allowance

A contingency allowance is included in the establishment cost of future trunk infrastructure to deal with known risks. A contingency allowance of:

- 15% has been applied to future projects within the stormwater network that are to be delivered within 1-5 years.
- 25% has been applied to future projects within the stormwater network that are to be delivered within 6-10 years.

No contingency allowance was applied to land costs within the stormwater network.

6.0 Stormwater network schedule of works

Table 4 provides a list of trunk infrastructure planned for the stormwater network and included in the LGIP.

Table 4: Future trunk stormwater infrastructure included in LGIP

Column 1 Map reference	Column 2 Trunk infrastructure	Column 3 Estimated timing	Column 4 Establishment cost ¹
SW-A-262	Bio-retention Weinam Creek	2026-2028	\$2,173,583
SW-A-199	Wetland System Upper Eprapah Creek Wetland	2030-2032	\$3,990,691
SW-A-258	Bio-retention Weinam Creek	2028-2030	\$766,867
SW-A-269	Bio-retention C Weinam Creek	2030-2032	\$159,454
SW-A-249	Wetland Lower Tingalpa Creek	2030-2032	\$1,395,650
SW-A-250	Sediment Basin Lower Tingalpa Creek	2032-2034	\$450,743
SW-A-Rachow	Rachow Street Overland Flow Channel (Wetland and Trunk Stormwater Works)	2023-2028	\$1,282,977
SW-L-17	South East Thornlands Drainage System 1 (pipes, pits & headwall)(Pipe, Wetland and Trunk Stormwater Works)	2023-2028	\$2,035,837
SW-A-275	Wetland C (including inlet pond) Upper Eprapah Creek	2023-2028	\$4,015,953
SW-P-16	South East Thornlands Scour SE Thornlands Precinct (Wetland and Trunk Stormwater Works)	2023-2028	\$53,546
TOTAL			\$16,325,301

¹ The establishment cost is expressed in cost terms as at the base date (July 2021).

