

Part 4 - Local government infrastructure plan

4.1 Preliminary

- (1) This local government infrastructure plan has been prepared in accordance with the requirements of the *Sustainable Planning Act 2009*.
- (2) The purpose of the local government infrastructure plan is to:
 - (a) integrate infrastructure planning with the land use planning identified in the planning scheme;
 - (b) provide transparency regarding a local government's intentions for the provision of trunk infrastructure;
 - (c) enable a local government to estimate the cost of infrastructure provision to assist its long term financial planning;
 - (d) ensure that trunk infrastructure is planned and provided in an efficient and orderly manner;
 - (e) provide a basis for the imposition of conditions about infrastructure on development approvals.
- (3) The local government infrastructure plan:
 - (a) states in Section 4.2 (planning assumptions) the assumptions about future growth and urban development including the assumptions of demand for each trunk infrastructure network;
 - (b) identifies in Section 4.3 (priority infrastructure area) the prioritised area to accommodate urban growth up to 2027;
 - (c) states in Section 4.4 (desired standards of service) for each trunk infrastructure network the desired standard of performance;
 - (d) identifies in Section 4.5 (plans for trunk infrastructure) the existing and future trunk infrastructure for the following networks:
 - (i) water supply;
 - (ii) sewerage;
 - (iii) stormwater;
 - (iv) transport;
 - (v) parks and land for community facilities.
- (4) provides a list of supporting documents that assist in the interpretation of the local government infrastructure plan in the Editor's note – Extrinsic material at the end of Part 4.

4.2 Planning assumptions

- (1) The planning assumptions state the assumptions about:
 - (a) population and employment growth;
 - (b) the type, scale, location and timing of development including the demand for each trunk infrastructure network.
- (2) The planning assumptions together with the desired standards of service form a basis for the planning of the trunk infrastructure networks and the determination of the priority infrastructure area.
- (3) The planning assumptions have been prepared for:
 - (a) the base date (2016), ultimate development and the following projection years to accord with future Australian Bureau of Statistics census years:
 - (i) mid 2021;
 - (ii) mid 2026;
 - (iii) mid 2031;
 - (b) the LGIP development types in column 2 that include the uses in column 3 of Table **Error! No text of specified style in document..2**—Population and employment assumptions summary;
 - (c) the projection areas identified on Local Government Infrastructure Plan Map LGIP-01 in Schedule 3—Local government infrastructure plan mapping and tables.

Table Error! No text of specified style in document..1—Relationship between LGIP development categories, LGIP development types and uses

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
Residential development	Attached dwelling	Community residence Dual occupancy Dwelling unit Multiple dwelling Nature-based tourism Relocatable home park Residential care facility Resort complex Retirement facility Rooming accommodation Short-term accommodation Tourist park
	Detached dwelling	Caretaker’s accommodation Dwelling house Home based business Rural workers’ accommodation

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
Non-residential development	Commercial	Office
	Community purpose	Cemetery Child care centre Community care centre Community use Crematorium Detention facility Emergency services Educational establishment Funeral parlour Health care services Hospital Park Place of worship
	Industry	High impact industry Low impact industry Marine industry Medium impact industry Port services Research and technology industry Rural industry Special industry Transport depot Warehouse
	Other	Air services Animal husbandry Animal keeping Aquaculture Cropping Environment facility Extractive industry Indoor sport and recreation Intensive animal husbandry Intensive horticulture Landing Major electricity infrastructure Major sport, recreation and entertainment facility Motor sport facility Permanent plantation Roadside stall

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Substation Telecommunications facility Utility installation Wholesale nursery Winery
	Retail	Adult store Agricultural supplies store Bar Brothel Car wash Club Bulk landscape supplies Food and drink outlet Function facility Garden centre Hardware and trade supplies Hotel Nightclub entertainment facility Market Outdoor sales Parking station Sales office Service industry Service station Shop Shopping centre Showroom Theatre Tourist attraction Veterinary services

- (4) Details of the methodology used to prepare the planning assumptions are stated in the extrinsic material.

4.2.1 Population and employment growth

- (1) A summary of the assumptions about population and employment growth for the planning scheme area is stated in Table Error! No text of specified style in document..2Table Error! No text of specified style in document..2—Population and employment assumptions summary.

Table Error! No text of specified style in document..2—Population and employment assumptions summary

Column 1 Description	Column 2 Assumptions				
	Base date (2016)	2021	2026	2031	Ultimate development
Population	153,666	163,418	174,346	180,923	188,413
Employment	37,554	39,909	42,654	45,294	50,599

- (2) Detailed assumptions about growth for each projection area and LGIP development type category are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:
 - (a) for population, Table SC3.1.1—Existing and projected population;
 - (b) for employment, Table SC3.1.2—Existing and projected employees.

4.2.2 Development

- (1) The developable area is land zoned for urban purposes not affected by the development constraints stated in Table Error! No text of specified style in document..3—Development constraints.

Table Error! No text of specified style in document..3—Development constraints

Column 1 Development constraint	Column 2 Applicable components
Coastal protection (erosion prone areas) overlay	Erosion prone areas
Environmental significance overlay	Matter of state environmental significance areas Matter of local environmental significance areas
Flood and storm tide hazard overlay	Drainage constrained land* Defined storm tide event* Defined flood event* Note—* except where the land is zoned for residential, commercial or industrial purposes.
Landslide hazard overlay	Very high hazard High hazard

Regional infrastructure corridors and substations overlay	Water supply pipeline buffer Water quality facility buffer
Waterway corridors and wetlands overlay	Waterway corridors and wetlands

- (2) The planned density for future development is stated in Table SC 3.1.3—Planned density and demand generation rate for a trunk infrastructure network in Schedule 3—Local government infrastructure plan mapping and tables.
- (3) A summary of the assumptions about future residential and non-residential development for the planning scheme area is stated in Table Error! No text of specified style in document..4—Residential dwellings and non-residential floor space assumptions summary.

Table Error! No text of specified style in document..4—Residential dwellings and non-residential floor space assumptions summary

Column 1 Description	Column 2 Assumptions				
	Base date (2016)	2021	2026	2031	Ultimate development
Residential dwellings	53,838	58,192	63,272	71,879	76,883
Non-residential floor space (m2 GFA)	2,827,943	2,977,978	3,159,356	3,340,403	3,692,591

- (4) Detailed assumptions about future development for each projection area and LGIP development type are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:
 - (a) for residential development, Table SC 3.1.4—Existing and projected residential dwellings;
 - (b) for non-residential development, Table SC 3.1.5—Existing and projected non-residential floor space.

4.2.3 Infrastructure demand

- (1) The demand generation rate for a trunk infrastructure network is stated in Column 4 of Table SC 3.1.3 in Schedule 3 Local government infrastructure plan mapping and tables.
- (2) A summary of the projected infrastructure demand for each service catchment is stated in:
 - (a) for the water supply network, Table SC 3.1.6—Existing and projected demand for the water supply network;
 - (b) for the sewerage network, Table SC 3.1.7—Existing and projected demand for the sewerage network;
 - (c) for the stormwater network, Table SC 3.1.8—Existing and projected demand for the stormwater network;

- (d) for the transport network, Table SC 3.1.9—Existing and projected demand for the transport network;
- (e) for the parks and land for community facilities network, Table SC 3.1.10—Existing and projected demand for the parks and land for community facilities network.

4.3 Priority infrastructure area

- (1) The priority infrastructure area identifies the area prioritised for the provision of trunk infrastructure to service the existing and assumed future urban development up to 2027.
- (2) The priority infrastructure area is identified on Local Government Infrastructure Plan Map LGIP-01—Priority infrastructure area and projection areas map.

4.4 Desired standards of service

- (1) This section states the key standards of performance for a trunk infrastructure network.
- (2) Details of the standard of service for a trunk infrastructure network are identified in the extrinsic material.

4.4.1 Water supply network

- (1) The desired standard of service for the water supply network is to:
 - (a) ensure drinking water complies with the National Health and Medical Research Council Australian Drinking Water Guidelines 2004 drinking water guidelines for colour, turbidity and microbiology;
 - (b) convey potable water from the South East Queensland Water Grid supply points to premises in accordance with the Water Act 2000 and Water Supply (Safety and Reliability) Act 2008;
 - (c) minimise non-revenue water loss;
 - (d) design the water supply network in accordance with:
 - (i) the South East Queensland Water Supply and Sewerage Design and Construction Code 2013;
 - (ii) the key standards stated in Table Error! No text of specified style in document..5—Key standards for the water supply network.

Table Error! No text of specified style in document..5—Key standards for the water supply network

Column 1 Description of standard	Column 2 Standard
Average day demand	215 L/EP/day plus 15L/EP/day non-revenue water
Minimum service pressure – Operating conditions (PH)	22m at the property boundary
Maximum service pressure	55m at the property boundary
Fire flow (Urban)	Detached Res (<= 3 stories): 15Ls for 2hrs w background demand Multi storey Res (=> 4 levels): 30L/s for 4 hours w background demand Commercial/Industrial buildings: 30L/s for 4 hours w background demand

Column 1 Description of standard	Column 2 Standard
	Risk Hazard Buildings – assessed on needs basis
Fire flow (Rural and Small Communities)	Rural Residential only: 7.5L/s for 2 hours Rural Commercial: 15L/s for 2 hours

4.4.2 Sewerage network

- (1) The desired standard of service for the sewerage network is to:
- (a) provide a reliable network that collects, stores, treats and releases sewage from premises;
 - (b) design the sewerage network in accordance with:
 - (i) the South East Queensland Water Supply and Sewerage Design and Construction Code 2013;
 - (ii) the key standards stated in Table Error! No text of specified style in document..6—Key standards for the sewerage network.

Table Error! No text of specified style in document..6—Key standards for the sewerage network

Column 1 Description of Standard	Column 2 Standard
Average dry weather flow (ADWF)	210L/EP/day
Peak dry weather flow (PDWF)	$C2 \times \text{ADWF}$ where $C2 = 4.7 \times (\text{EP})^{-0.105}$
Peak wet weather flow (PWWF) for RIGS	5 x ADWF
Minimum velocity	0.75m/s
Maximum velocity	3m/s
Preferred velocity	1.0-1.5m/s

4.4.3 Stormwater network

- (1) The desired standard of service for the stormwater network is to:
- (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.

4.4.4 Transport network

4.4.4.1 Roads

- (1) The desired standard of service for the trunk road network is to:
 - (a) provide a functional urban and rural hierarchy of roads that supports settlement patterns, commercial and economic activities, and freight movement;
 - (b) plan and design the network to ensure the operation of a trunk road or intersection is no worse than level of service C;
 - (c) design the local road network to comply with Council's adopted standards identified in Planning Scheme Policy 2 – Infrastructure Works;
 - (d) design road crossing structures to provide an appropriate level of flood immunity in accordance with Council's adopted standards identified in Planning Scheme Policy 2 – Infrastructure Works;
 - (e) transport corridors are planned to provide for future capacity needs.

Editor's Note— Level of service C has been adopted as the minimum required level of service for major collector and arterial road infrastructure in urban conditions. Level of service C reflects volume to capacity ratio in the range of 0.55 to 0.70. This level of service has been used in the assessment of trunk road network deficiencies and the identification of required network improvements.

4.4.4.2 Cycleways

- (1) The desired standard of service for the cycleway network is to:
 - (a) provide a cycleway and shared path network that is safe, attractive and convenient, which links residential areas to major activity nodes, employment centres and public transport interchanges, thereby encouraging walking and cycling as acceptable travel alternatives;
 - (b) design the cycleway network to comply with Council's adopted standards identified in Planning Scheme Policy 2 – Infrastructure Works;
 - (c) ensure a minimum width of:
 - (i) for the Moreton Bay Cycleway, 3 metres;
 - (ii) for on-road trunk cycle lanes, 1.5 metres;
 - (iii) for other trunk cycleways or shared paths, 2.5 metres;
 - (d) provide lighting along paths to meet Council's adopted standards identified in Planning Scheme Policy 2 – Infrastructure Works to ensure visibility, safety and security;
 - (e) design concrete or sealed cycleways or shared paths to provide an appropriate level of flood immunity in accordance with Council's adopted standards identified in Planning Scheme Policy 2 – Infrastructure Works;
 - (f) ensure the grade on shared paths and exclusive cycleways are kept to a minimum but are not less than 0.4%. Grades greater than 8% are undesirable over an extended path length;

- (g) ensure sealed shoulders intended for bicycle lanes are continuous through intersections.

4.4.4.3 Public transport (bus stops)

- (1) The desired standard of service for the public transport (bus stops) network is to:
 - (a) provide public transport (bus stops) infrastructure to support future mode share in accordance with the Planning Scheme Part 3 Strategic framework – Theme: liveable communities and housing, Part 9 Development codes – Transport, servicing, access and parking code, and Zone codes;
 - (b) provide bus stops including bus stations, bays, shelters, seating and transport information in accordance with the Department of Transport and Main Roads' Public Transport Infrastructure Manual 2016;
 - (c) provide a public transport stop within approximately 400m of each dwelling in an urban area;
 - (d) provide an electrical connection to all new bus stops;
 - (e) gutter mesh is required for all new bus stops;
 - (f) ensure public transport infrastructure complies with the Disability Standards for Accessible Public Transport 2002 (Transport Standards).

4.4.5 Public parks and land for community facilities network

- (1) The desired standard of service for public parks and land for community facilities network is to:
 - (a) provide a connected and accessible network of public parks, recreational facilities and community purpose land that meet the needs of residents through the implementation of the Redland Open Space Strategy 2026;
 - (b) design the public parks and land for community facilities network to comply with Council's adopted standards identified in Planning Scheme Policy 2 – Infrastructure Works;
 - (c) new public parks will not be acceptable if they:
 - (i) have an overland drainage function;
 - (ii) predominately lie below the defined flood event level;
 - (iii) are wholly below 2.4m AHD;
 - (iv) have road frontage of less than 50% of the perimeter;
 - (v) are contaminated land;
 - (vi) are adjacent or close to noxious or noisy activities;
 - (vii) are less than 100m wide;
 - (viii) have a gradient greater than 20% (recreation parks);
 - (ix) comprise less than 60% flat to gentle slope (sports parks);
 - (x) are the common property common property for a community titles scheme under the *Body Corporate and Community Management Act 1997*; or
 - (xi) are constrained by environmental protection through a planning instrument.

- (d) ensure public parks and land for community facilities meet the following standards:
- (i) minimum public park land size and accessibility standards stated in Table **Error! No text of specified style in document..7**—Minimum public park land size and accessibility standards;

Table Error! No text of specified style in document..7—Minimum public park land size and accessibility standards

Column 1 Park type	Column 2 Minimum public park land size (ha)	Column 3 Accessibility standard (km)
Recreation park T1 – Destination	5.0 – 20.0 ha	5.0 – 10.0 km
Recreation park T2 - Community	2.0 – 10.0 ha	2.5 – 5.0 km
Recreation park T3 – Neighbourhood	0.5 – 2.0 ha	0.5 – 0.8 km
Recreation park T4 – Meeting place	Location specific	0.5 km
Recreation park T5 – Civic	Location specific	0.5 km
Sport park	5.0 – 20.0 ha	5.0 – 10.0 km

- (ii) rate of provision for public parks stated in Table **Error! No text of specified style in document..8**—Rate of provision for public parks;

Table Error! No text of specified style in document..8—Rate of provision for public parks

Column 1 Park type	Column 2 Rate of provision (ha per 1,000 persons)
Recreation park T1 – Destination	0.25
Recreation park T2 - Community	1.2
Recreation park T3 – Neighbourhood	1.2
Sport park	1.65

- (iii) land size and rate of provision for land for community facilities stated in Table **Error! No text of specified style in document..9**—Land size and rate of provision for land for community facilities standards;

Table Error! No text of specified style in document..9—Land size and rate of provision for land for community facilities standards

Column 1 Hierarchy	Column 2 Community facility	Column 3 Rate of provision (facility per persons)	Column 4 Land size (ha)
Local	Community meeting space	1:10,000	0.3
District	Multi-purpose community centre	1:30,000	1
	Branch library	1:35,000	0.5
	Arts and cultural space	1:50,000	0.5
Regional	Swimming pool	1:80,000	1

- (iv) embellishment standards for public parks and land for community facilities identified in Table **Error! No text of specified style in document..10—** Embellishment standards for public parks and land for community facilities.

Table Error! No text of specified style in document..10—Embellishment standards for public parks and land for community facilities

Column 1 Embellishment type	Column 2 Recreation park					Column 3 Sport park	Column 4 Land for community facilities
	T1	T2	T3	T4	T5		
Barbecues (electric)	✓	✓		✓			
Bicycle racks	✓	✓	✓	✓	✓	✓	
Bins	✓	✓		✓	✓		
Bus parking and turnaround	✓					✓	
Car parking	✓	✓		✓		✓	
Community Garden			✓				
Community sport infrastructure		✓					
Cultural – historic	✓	✓	✓	✓	✓		
Dog off-leash park		One in each catchment	✓				
Fencing or bollards and lock rail	✓	✓	✓	✓	✓	✓	
Festivals and events space	There will be at least one festival and event space in each service catchment				✓		
Fields / Courts						✓	
Fields / Courts lighting						✓	
Footpaths (see also Paths)	✓	✓	✓	✓	✓	✓	

Column 1 Embellishment type	Column 2 Recreation park					Column 3 Sport park	Column 4 Land for community facilities
	T1	T2	T3	T4	T5		
Goal posts / Line marking						✓	
Internal roads	✓					✓	
Irrigation	✓	✓				✓	
Kick-about space	✓	✓	✓				
Landscaping	✓	✓	✓	✓	✓	✓	
Lighting	✓	✓	If required		✓	✓	
Natural heritage	Across all park types heritage trees or other important natural heritage items (fauna and flora) will be provided						
Paths (see also Footpaths)	✓	✓	✓	✓	✓	✓	
Physical Activity Stations—dynamic or static		✓					
Playspace—primary school level	✓	✓			✓	✓	
Playspace—secondary school level	✓	✓	✓		✓		
Playspace—toddler	✓	✓	✓		✓		
Public toilet	✓	✓			✓	✓	
Ramp park		✓					
Seating and tables	✓	✓	✓	✓	✓		
Shade	✓	✓	✓	✓	✓		
Signage	✓	✓	✓	✓	✓	✓	
Spectator seating						✓	
Storage facilities						✓	
Water connection	✓	✓	✓	✓	✓	✓	✓
Wedding space		A limited number of event spaces will be provided					

4.5 Plans for trunk infrastructure

- (1) The plans for trunk infrastructure identify the trunk infrastructure networks intended to service the existing and assumed future urban development at the desired standard of service up to 2027.

4.5.1 Plans for trunk infrastructure maps

- (1) The existing and future trunk infrastructure networks are shown on the following maps in Schedule 2—Mapping:
 - (a) Local Government Infrastructure Plan Map LGIP-02 Plan for trunk water supply infrastructure;
 - (b) Local Government Infrastructure Plan Map LGIP-03 Plan for trunk sewerage infrastructure;
 - (c) Local Government Infrastructure Plan Map LGIP-04 Plan for trunk stormwater infrastructure;
 - (d) Local Government Infrastructure Plan Map LGIP-05 Plan for trunk transport infrastructure;
 - (e) Local Government Infrastructure Plan Map LGIP-06 Plan for trunk parks and land for community facilities infrastructure.
- (2) The State infrastructure forming part of transport trunk infrastructure network has been identified using information provided by the relevant State infrastructure supplier.

4.5.2 Schedules of works

- (1) Details of the existing and future trunk infrastructure networks are identified in the electronic Excel schedule of works model which can be viewed here: <https://www.redland.qld.gov.au/>.
- (2) The future trunk infrastructure is identified in the following tables in section SC3.2 Schedules of works in Schedule 3—Local government infrastructure plan mapping and tables:
 - (a) for the water supply network, Table SC 3.2.1—Water supply network schedule of works;
 - (b) for the sewerage network, Table SC 3.2.2—Sewerage network schedule of works;
 - (c) for the stormwater network, Table SC 3.2.3—Stormwater network schedule of works;
 - (d) for the transport network, Table SC 3.2.4—Transport network schedule of works;
 - (e) for the parks and land for community facilities network, Table SC 3.2.5—Parks and land for community facilities network schedule of works.

Editor's note – Extrinsic material

The below table identifies the documents that assist in the interpretation of the local government infrastructure plan and are extrinsic material under the *Statutory Instruments Act 1992*.

List of extrinsic material

Column 1 Title of document	Column 2 Date	Column 3 Author
Background report on the planning assumptions for the Redland City Council Local Government Infrastructure Plan	March 2017	Redland City Council
Population, Dwelling and Employment Forecasts Redland City Council	May 2016	Urbis
Redland City Land Supply Review	November 2012	Urbis
Redland Water: Water Supply Master Plan 2016	October 2016	Redland Water
Redland Water: Sewer Network Master Plan 2016	August 2016	Redland Water
Redland City Council Road Infrastructure Planning: Traffic Forecasts and Assessments 2014	October 2014	Veitch Lister Consulting
Redlands Transport Plan 2016: Cycling and Pedestrian Strategy Technical Report	May 2004	Redland City Council
Redland Open Space Strategy 2026	December 2012	Redland City Council
Community Facilities Infrastructure Report 2013	September 2013	Redland City Council
Redland Sport Land Demand Study 2016	August 2016	Redland City Council
Extrinsic Material Report: Stormwater Network 2017	February 2017	Redland City Council
Kinross Road Structure Plan: Stormwater Infrastructure Concept Plan	June 2011	ENGENY Water Management
Lower Tingalpa Creek Stormwater Infrastructure Plan	May 2013	ENGENY Water Management
Native Dog Creek and Torquay Creek – Southern Redland Bay Catchment (Part 22): Integrated Waterways Planning Report	May 2010	ENGENY Water Management
SE Thornlands Structure Plan: Stormwater Infrastructure Concept Plan	October 2010	ENGENY Water Management

Column 1 Title of document	Column 2 Date	Column 3 Author
Stormwater Infrastructure Plan for Cleveland CBD Catchment	May 2013	ENGENY Water Management
Stormwater Quality Infrastructure Plan for Upper Eprapah Creek Catchment: Water Quality Analysis	May 2013	ENGENY Water Management
Weinam Creek Stormwater Quality Infrastructure Plan	May 2013	ENGENY Water Management
Redland City Council local infrastructure plan land value unit rates (letter)	4 November 2015	Harvey, Ehlers and Associates
Technical Note 1 - Trunk Infrastructure Costing Methodology Redland City Council Local Government Infrastructure Plan	12 April 2017	Redland City Council