# Brisbane City Plan 2014

# Local Government Infrastructure Plan

# Extrinsic Material

# Schedule of works model

# December 2021

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## Addendum

Council has undertaken to make an interim amendment to the Local Government Infrastructure Plan to ensure that it accurately reflects Council’s trunk infrastructure priorities. As an interim amendment, the changes are limited in nature and only affect the infrastructure schedules and related costings.

Details on the interim amendment process can be found in the Interim Amendment Extrinsic Material document.

The Schedule of Works Model Extrinsic Material document was prepared in June 2018 and has been updated to reflect the changes made as part of the interim amendment to schedule of works models.

## Introduction

### Background

Brisbane City Plan 2014 is Council’s planning scheme prepared under the *Sustainable Planning Act 2009* (SPA) and in accordance with the *Planning Act 2016*. The planning scheme sets a framework for managing development in Brisbane. In accordance with legislation Council is required to prepare a Local Government Infrastructure Plan (LGIP) to guide the planning of trunk infrastructure over a 10 year horizon. The LGIP forms part of the planning scheme in Part 4 and Schedule 3.

The following documents are extrinsic material and contain supporting material used to draft the LGIP:

1. Public parks and land for community facilities network;
2. Transport network;
3. Stormwater network;
4. Planning assumptions; and
5. Schedule of works model.

This document (extrinsic material) provides supporting material for the Schedule of works model.

### Purpose

The purpose of this report is to:

1. Detail the inputs to the LGIP SOW models
2. Explain the calculation methodology the SOW models uses
3. Summarise the outputs of the SOW models

### Definitions and abbreviations

In this extrinsic material report the following abbreviations are used:

|  |  |
| --- | --- |
| **BSTM** | Brisbane Strategic Transport Model |
| **CPI** | Consumer price index |
| **DSS** | Desired standards of service |
| **ET** | Equivalent tenement |
| **LGIP** | Local Government Infrastructure Plan |
| **NPV** | Net present value |
| **PIA** | Priority infrastructure area |
| **PPI** | Producer price index |
| **SOW** | Schedule of works |
| **SPA** | *Sustainable Planning Act 2009* |
| **WACC** | Weighted average costs of capital |

In this extrinsic material report the following definitions apply:

|  |  |
| --- | --- |
| **Desired Standards of Service (DSS)** | see the *Minister’s Guidelines and Rules* (Chapter 5, part 4, section 21.2). |
| **Equivalent Tenement (ET)** | means the demand unit which is represented by a single detached dwelling. |
| **Establishment Cost** | see the *Planning Act 2016* (Schedule 2). |
| **Gross Floor Area** | see Schedule 1 of the planning scheme. |
| **Link** | means the road segment between two intersections. |
| **Local government infrastructure plan** | see the *Planning Act 2016* (Schedule 2). |
| **Plans for Trunk Infrastructure (PFTI)** | Plans for trunk infrastructure identify the existing and planned trunk infrastructure networks intended to service urban development. Refer to Section 4 for further information. |
| **Priority infrastructure area** | see the *Planning Act 2016* (Schedule 2). |
| **SPA** | means *Sustainable Planning Act [Qld] 2009*. |
| **LGIP Statutory Guideline 03/14** | means the *Statutory guideline 03/14 Local government infrastructure plans* prepared by the State Government Department of State Development, Infrastructure and Planning (June 2014). |
| **Transport Plan** | means the Transport Plan for Brisbane 2008-2026. |

## Legislative requirements

Under the *Planning Act 2016*, a local government that wishes to levy infrastructure charges or impose conditions about trunk infrastructure is required to prepare a local government infrastructure plan (LGIP).

The LGIP was prepared in accordance with the *Statutory guideline 03/14 Local government infrastructure plans* dated 12 June 2014. The guideline sets out the minimum requirements that must be followed by a local government for preparing or amending an LGIP, in accordance with section 117 of the SPA.

An LGIP must comprise the following sections:

1. assumptions about growth, type, scale, location and timing of development;
2. priority infrastructure area (PIA);
3. desired standards of service (DSS);
4. plans for trunk infrastructure (PFTI) supported by schedule of works; and
5. extrinsic material.

Section 724 of the SPA stipulates that a local government must keep available for inspection and purchase, all supporting material used to draft the LGIP. All supporting material forms part of the extrinsic material within the Brisbane City Plan 2014 LGIP.

## Inputs

### General inputs (base date and financial modelling term)

For the purposes of the LGIP SOW financial modelling, a base date of 30 June 2016 was used. All demand and trunk infrastructure costs that occur before 30 June 2016 are considered existing, and all demand and trunk infrastructure costs that occur after 30 June 2016 are considered future. All existing and future infrastructure costs are valued as at the base date, and all escalated future infrastructure costs are discounted to the base date as an NPV.

This LGIP has a financial modelling term of 10 years, from 1 July 2016 to 30 June 2026.

### Financial modelling inputs (escalation rates and discount rates)

For the cost summary schedule and cash flow projections, the total LGIP cost is used to assess the financial sustainability and averaging servicing cost of the trunk infrastructure networks. In order to compare costs of projects being delivered at different point in the 10 year financial modelling term, the costs are converted to a NPV at the base date. Each trunk infrastructure project cost is escalated from the base year cost to the estimated year of completion. This is done by escalating land values using CPI (2.5%) and construction costs using PPI (1.87%). In order to convert the future costs to a NPV, a nominal WACC discount rate of 5.91% was used. CPI and WACC rates were not calculated using the model, but rather provided by Councils Corporate Finance Branch as the corporately endorsed current rates. The PPI rate was calculated by using five years’ worth of rolling three year average PPI values, from June 2011 to June 2016. The use of rolling three year average values is in line with statutory guidelines for calculating PPI, and the use of five years of data is more reflective of current trends.

### Current and projected infrastructure demand

For the purposes of the SOW financial model, the demand on infrastructure is calculated for all networks based on the planning assumptions and the demand conversion rates reported in part four of the planning scheme. The demand tables in part four of the planning scheme provide the existing and projected demand for each network at 2016 and 2026 respectively which are key demand inputs into the model. The demand is entered into the “Input – Time Series” tab, and is then broken down into existing and future demand. All future demand is then discounted back to the LGIP base date using the WACC of 5.91%. These figures, being existing and NPV future demand, are utilised in the calculation for the servicing cost (detailed in section 4.2).

### Infrastructure cost data (unit rates, cost and allocation of existing and future infrastructure)

The establishment cost of both existing and future trunk infrastructure included in the SOW model is costed within the model environment. These costs form an input to the network financial models and the revenue forecasting and cash flows model.

1.

#### Existing infrastructure

Existing trunk infrastructure has been identified and valued according the methods outlined in the network Extrinsic Material Reports. Existing trunk infrastructure, both land and works, have been calculated at the base date of the LGIP. The existing trunk network costs are located in the “Existing Trunk Asset” tab. This data is used by the “Summary Cost Schedule” tab, in order to assign existing costs to the relevant service catchments.

#### Future infrastructure

For future infrastructure, unit costs were used to determine the direct construction cost, and a combination of land rates and individual valuation were used to determine the land cost for the applicable networks. A detailed summary of the costs for each network, as well as a detailed methodology on their application, are detailed in the relevant network extrinsic material.

A copy of the schedule of works table has been included in the SOW models in the ”Future Trunk Asset” tab. The columns include the LGIP identifier, a description of the infrastructure, location (service catchment) and a breakdown of the establishment cost. This information is used by the “Summary Cost Schedule” tab, which summarises the demand and the apportionment of costs to service catchments. Generally, the key information in the “Future Trunk Asset” tab for future infrastructure is:

1. LGIP ID
2. Project description
3. Apportionment to service catchment(s) (1)
4. Land cost
5. Direct construction cost
6. Estimated timing (2)

Notes:

(1) The apportionment of costs to service catchments is detailed in section 3.5

(2) The estimated timing for trunk infrastructure is shown as a 5 year range in the SOW tables (2016 – 2021, 2021 – 2026). For the purpose of financial modelling, the midpoint of these ranges (30 June 2019 or 30 June 2024) was selected as the year to escalate costs to in order to represent an estimate of the cost at the time of delivery.

### Cost allocation of existing and future infrastructure

Costs for existing and future infrastructure items are allocated to service catchments, based on where the demand for that item is coming from. For example, if an item is fully allocated to a service catchment, the input for that catchment will be 100%, with all other catchments being 0%. If the item is serving two catchments equally, the input for those two catchments for that item will be 50%.

Because growth places demand on each infrastructure network differently, the method for allocating costs to service catchment varies for each network. The method undertaken for each network is detailed below.

* 1.

#### Stormwater

For the existing and future stormwater network, all items and costs are allocated to the service catchment that it physically sits within. This is due to the fact that the service catchments for the stormwater network are based on creek catchments and all infrastructure services only the catchment that it is within.

The service catchments for the stormwater network have been defined by the area within the PIA. Existing infrastructure outside the PIA and demand from outside the PIA have not been included in determining the service cost.

#### Land for community facilities

For the existing and future land for community facilities network, costs were allocated to service catchments based on their hierarchy. As local facilities only service the urban catchments and not the fringe, the cost of all local facilities were apportioned to the general urban catchment that they physically sit within. District and metropolitan facilities service both the urban catchments and the fringe catchment, so the cost of all district and metropolitan facilities are apportioned to all catchments based on the distribution of ET demand at the end of the planning period. See Table 3.5.1 for how these district and metropolitan costs were allocated to each service catchment.

Table . – Percentage of costs apportioned to service catchments based on EP demand

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | Urban East | Urban North | Urban South | Urban West | Fringe | Total |
| EP demand at end of planning period | 282,831 | 413,567 | 395,232 | 250,728 | 20,305 | 1,362,663 |
| % of district/metropolitan costs allocated | 21% | 30% | 29% | 18% | 1% | 100% |

#### Public parks

The costs of the existing and future public parks network have been allocated based on hierarchy. For local parks, the costs have been allocated to the service catchment that it physically sits within, as it is assumed that these will service the demand from within that catchment. For district and metropolitan parks (including urban commons), the costs have been allocated Brisbane wide, as these parks service all demand equally across the city.

Therefore the model produces a servicing cost for each service catchment for local parks (based on demand from inside the local recreation need), and a Brisbane wide servicing cost for district and metropolitan parks (including urban commons). In order to show the total servicing cost for each service catchment, the relevant local servicing cost for that service catchment should be added to the Brisbane wide district and metropolitan servicing cost. The formula to work this out is stated below:

Equation - Average servicing cost for the public parks network

$$SC=\left(\frac{EV^{L}+FV^{L}}{ED^{LR}+FD^{LR}}\right)+\left(\frac{EV^{DM}+FV^{DM}}{ED^{BW}+FD^{BW}}\right)$$

Where:

SC is the average servicing cost for providing trunk infrastructure

EV is the existing trunk infrastructure value

FV is the future trunk infrastructure value, in a NPV (30 June 2016)

L is the local park network

DM is the district and metropolitan park network (including urban commons)

ED is the existing demand

FD is the future demand, in a NPV (30 June 2016)

LR is the local recreation need area

BW is the Brisbane wide area, comprising the area inside and outside the local recreation need area

The general formula and background of servicing costs which applies to all networks is further explained in section 4.2.

#### Roads

For the existing and future road network, all items and costs are allocated to a service catchment based on outputs from the BSTM. This transport model calculates the number of vehicle trips per day (both destination trip ends and origin trip ends) for each link of the trunk network generated by transport zones across the city assuming the planning assumptions of the planning scheme at 2026. Trips are costed based on the capacity they consume of the road links they travel through. The BSTM is used to aggregate all link capacity consumption costs, for all trips on the network, to the appropriate origin and destination zone of these trips. These transport zone costs are then aggregated into 17 road service catchments based on a combination of geography and similarity in the service cost/vehicle trip for each zone.

The roads SOW model utilises the BSTM outputs of apportioned cost and demand to determine a service cost per catchment as a NPV.

The BSTM incorporates demand to and from outside the local government area as well as public transport trips.

The cost of existing trunk infrastructure physically located in each service catchment is also reported in a work sheet in the roads SOW model. Note that the BSTM does not calculate the service cost based on the physical location of trunk roads in service catchments but on the cost of the capacity consumed of trunk roads based on the trips using the roads. The costs are allocated to the zones they are generated by and generated from which are then aggregated to service catchments.

#### Pathways

The pathway network operates as an open network and includes off road pathways on Council land and Riverwalk. For the existing and future pathways network, all items and costs are allocated to one citywide service catchment equivalent to the local government area (excluding islands). In the absence of pathways modelling to indicate different areas of pathway use, one service catchment has been adopted for the pathways service catchment.

#### Ferry terminals

The ferry terminal network operates as an open network and includes terminal construction only, with no land component. For the existing and future ferry terminal network, all items and costs are allocated to one citywide service catchment equivalent to the local government area (excluding islands). In the absence of ferry terminal modelling to indicate different areas of infrastructure use, one service catchment has been adopted for the pathways service catchment.

## Calculation methodology

### Escalated and discounted values for future infrastructure

Each network SOW model calculates the nominal (escalated) value, and the NPV (discounted) value for each trunk infrastructure item. Both the nominal and NPV values are used for different purposes in the LGIP revenue and cash flows model.

1.

#### Nominal cost

As explained in section 3.4.2, the “Future Trunk Asset” tab assigns a year of delivery for each infrastructure item. Based on this attribute, the costs are escalated to the year of delivery for each item. This escalation is represented in the tables that show the modelling years (years 1 – 10). The land component of the establishment cost is escalated using CPI, and the works component of the cost is escalated using PPI. The applicable CPI and PPI rates are detailed in section 3.2. The nominal cost is used in the cash flow analysis, representing the planned expenditure at the estimated time of delivery. These calculations are undertaken for land and constructed assets in separate tables (and grants/subsidies where applicable).

#### NPV cost

Once an infrastructure item has been assigned a nominal cost based on the estimated year of completion, the cost is then discounted back to the LGIP base date of 30 June 2016 a WACC rate of 5.91%. This represents the present value of the escalated infrastructure value. This calculation is also done in the “Future Trunk Asset” tab. The NPV is used in producing the servicing cost for each network, as well as the cumulative cash flow total of the 10 year LGIP.

### Cost schedule summary

An average servicing cost is produced in the “Summary Cost Schedule” tab. This tab draws information from the demand forecast and existing and future trunk asset tabs and calculates the cost per unit demand per network and per service catchment. The model produces an average servicing cost per service area using the following formula:

Equation – Average servicing cost

$$SC^{C}=\frac{EV^{C}+FV^{C}}{ED^{C}+FD^{C}}$$

Where:

SC is the average servicing cost for providing trunk infrastructure in catchment C

EV is the existing trunk infrastructure value allocated to catchment C

FV is the future trunk infrastructure value allocated to catchment C, in a NPV (30 June 2016)

ED is the existing demand for catchment C

FD is the future demand for catchment C, in a NPV (30 June 2016)

## In order to summarise existing and NPV future expenditure into service catchments, the model multiplies and summarises the costs of every item by the percentage input against each service catchment in the “Future Trunk Asset” tab. Please refer to section 6.3 for a summary of the servicing cost by network.

### Cash flow projections

The LGIP cash flow projection shows Councils ability to fund future expenditure on trunk infrastructure with infrastructure charges levied on development. The cash flow graphs these two sets of values and in doing so identifies whether the expected capital expenditure is able to be fully funded by charges, or if there is a gap in funding that needs to be made up by other sources.

* 1.

#### 4.3.1 Forecast revenue through infrastructure charges

The ‘LGIP revenue and cash flows model’ produces a revenue forecast by aligning expected growth with Councils current charging document. At the time of drafting this LGIP, the most current document was *Brisbane Adopted Infrastructure Charges Resolution (No.5) 2015* (the resolution).

The growth data is based on the data used to form the LGIP planning assumptions, and is detailed in the planning assumptions extrinsic material report. The development types used in the model are as follows:

1. For residential growth
	1. Attached Dwelling
	2. Detached Dwelling
	3. Short term accommodation
	4. Long term accommodation
2. For non-residential growth
	1. Food Services, Arts & Recreation
	2. Community - Education
	3. Community - Health
	4. Community - Other
	5. Industry - General
	6. Industry - Heavy
	7. Industry - Light
	8. Industry - Other
	9. Office
	10. Retail
	11. Showroom, Retail Warehouse & Bulky Goods
	12. Warehouse, Bulk Stores & Logistics
	13. Rural
3. For stormwater growth
	1. Non-residential stormwater impervious area

Where the growth data is grouped into the LGIP development categories for the purposed of the LGIP planning assumptions, for the revenue forecast, the data was instead grouped into categories best suitable to uses defined in the resolution. Aligning growth categories with the resolution resulted in a more accurate forecast of revenue. Table 6.1.1 shows the applicable adopted charge for each development type.

For modelling purposes, adjustments were made to the residential, non-residential and stormwater growth data. All growth data from the planning assumptions has been accounted for, but adjustments are necessary to better reflect an accurate charge revenue estimate.

For attached dwellings and detached dwellings, census data was used to determine the percentage split between dwellings with 1 and 2 bedrooms and dwellings with 3 or more bedrooms. These splits were extracted at a SA2 level, and applied to the relevant dwellings for each SA2 before being aggregated to a Brisbane wide figure for modelling purposes.

Short and long term accommodation growth data was extracted from the non-residential GFA growth planning assumptions and represented as suites, as these uses are charged by rooms or suites under Councils current resolution, not by GFA. The split of suite and bedroom types were based on current development trends for these types of land uses.

As Council’s resolution only charges for an increase in non-residential impervious area, not all stormwater demand has been included in the charge revenue calculation. All demand associated with a residential or mixed use zone has been excluded, as it is assumed that the stormwater component of the revenue will be incorporated into the residential charge.

The model then applies the assigned charge to the expected growth for each year for each development type. This produces the forecast revenue to be collected based on planned growth. The “Adopted Charge Revenue Forecast” tab of the model shows a table and graph detailing the expected revenue from each of the growth categories (residential, non-residential and stormwater), as well the net present value of all charges collected over the 10 year LGIP timeframe. The data is shown as a Brisbane wide figure, as all development types are charged the same regardless of location in the city.

As Council does not escalate charges, no charge escalation rate has been applied, meaning that growth is charged the same rate consistently across the 10 year LGIP.

#### 4.3.2 Future trunk infrastructure expenditure

The projected LGIP capital expenditure is based on the escalated costs of each of the trunk infrastructure networks. Links to each of the individual network future costing models are available in the Modelling inputs sheet. The cost of each infrastructure item has been escalated to the estimated timing of completion using the rates outlined in section 3.2. The NPV of each item has been calculated by discounting the escalated cost back to the LGIP base date using the WACC rate detailed in section 3.2.

### Terminal values

The application of terminal values account for spare capacity in the planned network which will provide for demand outside of the assumed LGIP demand. Where necessary, an adjustment should be made to the future network costs that are allocated to service catchment for the purpose of calculating a servicing cost.

In order to identify whether a terminal value adjustment should be made to an infrastructure item, for each service catchment, the following formula was applied to all networks (excluding roads, as the demand from the BSTM model includes an adjustment for spare capacity):

Equation - Terminal value test to determine spare capacity

$$Spare capacity= \frac{(D^{U}-D^{P})}{D^{P}}$$

Where:

DU is the ultimate network demand

DP is the assumed LGIP network demand 2026

Where the spare capacity was less than 30%, no adjustment to the future infrastructure costs were made. Where spare capacity was greater than 30%, an adjustment was made to future items based on their timing and share of network cost. This percentage adjustment is made under the ‘capacity’ section of the “Input – Infra” tab. Adjustments were only made to items that have an estimated completion date of 2021 – 2026, and only if that items value exceeds 20% of the total network value in that time period.

These infrastructure projects were adjusted to reduce their total value by the spare capacity percentage worked out by the formula above. These percentages are taken into account in the “Nominal cost (Ave)” tab, or in the “Recoverable Cost” tab for the Ferry terminal network and the Pathways network. A breakdown of service catchment spare capacity calculations for each network is detailed in section 6.2.

## Outputs

### Summary table of infrastructure costs, infrastructure demand and infrastructure servicing cost

The infrastructure costs (NPV), catchment demand and infrastructure servicing costs are contained within each of the network specific SOW models. A summary of these outputs is provided in section 6.3.

### Projections of forecast capital expenditure, revenue and net cash flow

Forecast capital expenditure, revenue and net cash flow are contained within the LGIP revenue and cash flows model. The summary output cash flow graph has been included in section 6.4.

## Attachments/References

### Application of charges to growth categories

The following table identifies the uses and adopted charges from Councils resolution which have been used to estimate charges revenue. It should be noted that due to the level of detail available in the development types a number of uses under the resolution may be applicable, and a use has been chosen as a best fit. Although a growth category may have a number of uses that could be applied, the adopted charge itself is constant across these uses.

Table . – assumed resolution uses and charges applied to development types

| **LGIP development type** | **Adjusted development type for modelling purposes** | **Assumed resolution use** | **Applied adopted charge (1)** |
| --- | --- | --- | --- |
| Residential |
| Multiple dwelling | Attached Dwelling - Number of dwellings: 1 or 2 bedroom dwelling | Residential (Material Change of Use/Building Work) - Dwelling house - 1 or 2 bedroom dwelling | $10,000 |
| Attached Dwelling - Number of dwellings: 3 or more bedroom dwelling | Residential (Material Change of Use/Building Work) - Dwelling house - 3 or more bedroom dwelling | $14,000 |
| Dwelling house | Detached Dwelling - Number of dwellings: 1 or 2 bedroom dwelling | Residential (Material Change of Use/Building Work) - Multiple dwelling - 1 or 2 bedroom dwelling | $10,000 |
| Detached Dwelling - Number of dwellings: 3 or more bedroom dwelling | Residential (Material Change of Use/Building Work) - Multiple dwelling - 3 or more bedroom dwelling | $14,000 |
| Retail (2) | Short term accommodation - Number of bedrooms: Bedroom that is not within a suite | Residential Accommodation (short term) - Hotel (residential component) - Bedroom that is not within a suite | $4,000 |
| Short term accommodation - Number of suites: Suite with 1 or 2 bedrooms | Residential Accommodation (short term) - Hotel (residential component) - Suite with 1 or 2 bedrooms | $4,000 |
| Short term accommodation - Number of suites: Suite with 3 or more bedrooms | Residential Accommodation (short term) - Hotel (residential component) - Suite with 3 or more bedrooms | $6,000 |
| Long term accommodation - Number of bedrooms: Bedroom that is not within a suite | Residential Accommodation (long term) - Community residence - Bedroom that is not within a suite | $8,000 |
| Long term accommodation - Number of suites: Suite with 1 or 2 bedrooms | Residential Accommodation (long term) - Community residence - Suite with 1 or 2 bedrooms | $8,000 |
| Long term accommodation - Number of suites: Suite with 3 or more bedrooms | Residential Accommodation (long term) - Community residence - Suite with 3 or more bedrooms | $12,000 |
| Non-residential |
| Retail | Retail - m2 GFA | Non-Residential Commercial (retail) - Shop | $144 |
| Food Services, Arts & Recreation - m2 GFA | Non-Residential Commercial (retail) - Food and drink outlet | $144 |
| Showroom, Retail Warehouse & Bulky Goods - m2 GFA | Non-Residential Commercial (bulk goods) - Showroom | $104 |
| Commercial | Office - m2 GFA | Non-Residential Commercial (office) - Office | $104 |
| Industrial | Industry - General - m2 GFA | Non-Residential Industry - Medium impact industry | $14 |
| Industry - Heavy - m2 GFA | Non-Residential High impact industry - High impact industry | $30 |
| Industry - Light - m2 GFA | Non-Residential Industry - Low impact industry | $14 |
| Industry - Other - m2 GFA | Non-Residential Industry - Low impact industry | $14 |
| Warehouse, Bulk Stores & Logistics - m2 GFA | Non-Residential Industry - Warehouse | $14 |
| Community Purpose (3) | Community - Education - m2 GFA | Non-Residential Education facility except an educational establishment for the Flying Start for Children program - Educational establishment except an educational establishment for the Flying Start for Children program | $104 |
| Community - Health - m2 GFA | Non-Residential Essential services - Health care services | $104 |
| Community - Other - m2 GFA | Non-Residential Places of assembly - Community use | $34 |
| Other | Rural - m2 GFA | Non-Residential Low impact rural - Animal husbandry | $0 |
| Stormwater |
| Impervious hectares | Non-residential Stormwater Impervious Area - Impervious area in m2 | Non-Residential Stormwater - Stormwater impervious area | $10 |

Note:

(1) The selected adopted charge is applied to the unit of demand specified in column 2 (Adjusted development type for modelling purposes)

(2) For the purposes of revenue modelling, short and long term accommodation were extracted from retail GFA and converted into suites, as this better aligns with the Resolution.

(3) Based on available information and assumptions derived from recent development trends, residential care (non-private dwellings) was converted to GFA and included in the Community Purposes development type, as this better aligns with the Resolution.

### Summary table of spare capacity by network

The following tables identify the service catchment spare capacity calculations for each network (excluding roads).

Table . – Spare capacity calculations for the stormwater network

|  |  |  |
| --- | --- | --- |
| Service catchment | Existing and projected demand (impervious hectares) | Spare capacity |
| **2016** | **2021** | **2026** | **2031** | **2036** | **Ultimate** |
| Cabbage Tree Creek | 1,506 | 1,553 | 1,644 | 1,696 | 1,753 | 2,076 | 26% |
| Nundah Downfall Creek | 1,527 | 1,561 | 1,594 | 1,621 | 1,651 | 1,978 | 24% |
| Kedron Brook | 3,424 | 3,515 | 3,608 | 3,683 | 3,759 | 4,464 | 24% |
| Breakfast Creek | 1,420 | 1,449 | 1,475 | 1,496 | 1,519 | 1,791 | 21% |
| Albion | 67 | 69 | 70 | 72 | 74 | 89 | 27% |
| ATCN | 842 | 867 | 935 | 984 | 1,029 | 1,262 | 35% |
| INES | 436 | 446 | 453 | 470 | 477 | 546 | 21% |
| Pashen Creek LSMP | 206 | 213 | 217 | 220 | 223 | 276 | 27% |
| Perrin | 393 | 404 | 416 | 423 | 430 | 491 | 18% |
| ATC South (a) | 497 | 520 | 544 | 566 | 581 | 675 | 24% |
| Toowong Creeks | 898 | 915 | 927 | 937 | 948 | 1,084 | 17% |
| Cubberla Creek | 297 | 304 | 310 | 314 | 318 | 378 | 22% |
| Moggill Creek | 153 | 156 | 160 | 162 | 165 | 190 | 19% |
| Fig Tree Pocket | 159 | 163 | 167 | 168 | 175 | 241 | 44% |
| Graceville LSMPS | 89 | 91 | 93 | 94 | 95 | 105 | 13% |
| Graceville | 124 | 127 | 129 | 131 | 133 | 147 | 14% |
| BBnePrec3 | 661 | 676 | 687 | 697 | 707 | 829 | 21% |
| West End (a) | 27 | 29 | 30 | 31 | 32 | 34 | 13% |
| West End (b) | 29 | 30 | 30 | 30 | 31 | 32 | 7% |
| Norman Creek | 1,545 | 1,580 | 1,608 | 1,635 | 1,661 | 1,949 | 21% |
| ATC South (b) | 292 | 302 | 313 | 322 | 332 | 489 | 56% |
| ATC South (c) | 158 | 163 | 169 | 175 | 180 | 210 | 24% |
| Wynnum West (a) | 44 | 45 | 47 | 48 | 49 | 58 | 23% |
| Wakerley (a) | 111 | 113 | 116 | 117 | 120 | 149 | 28% |
| Wakerley (b) | 110 | 113 | 115 | 117 | 121 | 145 | 26% |
| Lota | 135 | 138 | 141 | 143 | 145 | 173 | 23% |
| Tingalpa Creek | 1 | 1 | 1 | 1 | 1 | 1 | 0% |
| Scrubby Creek | 390 | 403 | 422 | 430 | 442 | 509 | 21% |
| Calamvale | 282 | 293 | 309 | 313 | 320 | 427 | 38% |
| Oxley Creek | 4,497 | 4,611 | 4,753 | 4,876 | 4,992 | 5,585 | 18% |
| Pullen Pullen Creek | 86 | 88 | 90 | 90 | 91 | 96 | 7% |
| Farm | 924 | 946 | 967 | 982 | 997 | 1,119 | 16% |
| Wolston | 297 | 302 | 307 | 312 | 316 | 357 | 16% |
| Richlands (a) | 291 | 301 | 310 | 322 | 335 | 381 | 23% |
| Richlands (b) | 172 | 179 | 189 | 202 | 210 | 233 | 23% |
| Richlands (c) | 222 | 227 | 233 | 239 | 245 | 269 | 15% |
| Richlands (d) | 112 | 118 | 129 | 143 | 160 | 258 | 100% |
| Richlands (e) | 145 | 146 | 151 | 152 | 159 | 251 | 66% |
| Doolandella | 101 | 110 | 114 | 118 | 120 | 179 | 57% |
| Rochedale (a) | 41 | 41 | 67 | 69 | 75 | 120 | 79% |
| Rochedale (b) | 62 | 67 | 83 | 98 | 158 | 183 | 120% |
| Rochedale (c) | 18 | 18 | 29 | 29 | 33 | 43 | 48% |
| Rochedale (d) | 71 | 75 | 85 | 91 | 137 | 229 | 169% |
| Rochedale (e) | 4 | 4 | 4 | 4 | 4 | 4 | 0% |
| Wynnum | 566 | 578 | 590 | 599 | 608 | 690 | 17% |
| Wynnum West (b) | 154 | 158 | 165 | 168 | 170 | 199 | 21% |
| Wynnum West (c) | 38 | 40 | 41 | 42 | 42 | 47 | 15% |
| Bald Hills Creek | 876 | 894 | 915 | 934 | 960 | 1,093 | 19% |
| BBnePrec1 | 164 | 168 | 178 | 180 | 181 | 196 | 10% |
| Bulimba Creek | 3,426 | 3,506 | 3,607 | 3,678 | 3,756 | 4,326 | 20% |
| Western Creeks LSMPS | 423 | 431 | 438 | 444 | 452 | 519 | 18% |

Table . – Spare capacity calculations for the parks network

|  |  |  |
| --- | --- | --- |
| Service catchment | Cumulative demand (EP) | Spare capacity |
| **2016** | **2021** | **2026** | **2031** | **2036** | **Ultimate** |
| East (local) | 270,851  | 284,157  | 295,506  | 307,871 | 325,640 | 366,322  | 24% |
| North (local) | 209,421  | 226,381  | 242,582  | 254,535 | 266,868 | 295,457  | 22% |
| South (local) | 338,944  | 357,387  | 371,770  | 395,334 | 418,422 | 459,705  | 24% |
| West (local) | 318,557  | 330,422  | 338,173  | 349,083 | 361,431 | 397,696  | 18% |
| Brisbane wide | 1,168,689  | 1,231,139  | 1,286,469  | 1,351,040 | 1,419,079 | 1,571,284  | 22% |

Table . – Spare capacity calculations for the land for community facilities network

|  |  |  |
| --- | --- | --- |
| Service catchment | Cumulative demand (EP) | Spare capacity |
| **2016** | **2021** | **2026** | **2031** | **2036** | **Ultimate** |
| Fringe | 18,971 | 19,762 | 20,305 | 21,481 | 21,425 | 22,125 | 9% |
| Urban East | 261,140 | 269,823 | 282,831 | 291,232 | 306,014 | 347,425 | 23% |
| Urban North | 364,760 | 390,211 | 413,567 | 435,381 | 456,561 | 513,297 | 24% |
| Urban South | 348,928 | 374,505 | 395,232 | 429,036 | 459,171 | 515,102 | 30% |
| Urban West | 242,606 | 247,828 | 250,728 | 255,513 | 261,614 | 284,638 | 14% |

Table . – Spare capacity calculations for the ferry terminal network

|  |  |  |
| --- | --- | --- |
| Service catchment | Cumulative demand (person trips) | Spare capacity |
| **2016** | **2021** | **2026** | **2031** | **2036** | **Ultimate** |
| Citywide | 89,178  | 95,637  | 102,026  | 108,623  | 115,217  | 143,275  | 40% |

Table . – Spare capacity calculations for the pathways network

|  |  |  |
| --- | --- | --- |
| Service catchment | Cumulative demand (person trips) | Spare capacity |
| **2016** | **2021** | **2026** | **2031** | **2036** | **Ultimate** |
| Citywide | 2,886,302 | 3,095,529 | 3,302,455 | 3,516,137 | 3,729,726 | 4,638,511 | 40% |

### Summary table of average servicing cost calculations

The following tables summarise the information used to calculate the average servicing cost for each network. Refer to the individual network SOW models for more detail.

Table . – Servicing cost summary for the stormwater network

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service catchment | Existing demand (Imp. Ha) | Future demand (Imp. Ha) | Total demand (Imp. Ha) | Existing cost ($) | Future cost ($) | Total cost ($) | Servicing cost ($/ Imp. Ha) |
| Albion | 67 | 2 | 69 | $4,839,445 |  $ 6,889,437  |  $ 11,728,881  |  $ 169,192  |
| ATC South (a) | 497 | 35 | 532 | $13,748,650 |  $ 1,372,888  |  $ 15,121,538  |  $ 28,443  |
| ATC South (b) | 292 | 15 | 307 | $4,382,918 |  $ 47,446  |  $ 4,430,364  |  $ 14,412  |
| ATC South (c) | 158 | 8 | 166 | $4,627,592 |  $ 47,446  |  $ 4,675,037  |  $ 28,159  |
| ATCN | 842 | 64 | 906 | $24,575,286 |  $ 1,671,150  |  $ 26,246,437  |  $ 28,963  |
| Bald Hills Creek | 876 | 29 | 905 | $48,826,731 |  $ 47,446  |  $ 48,874,176  |  $ 54,034  |
| BBnePrec1 | 164 | 10 | 174 | $6,639,879 |  $ 47,446  |  $ 6,687,325  |  $ 38,496  |
| BBnePrec3 | 661 | 20 | 681 | $42,912,073 |  $ 3,395,659  |  $ 46,307,731  |  $ 68,036  |
| Breakfast Creek | 1,420 | 41 | 1,461 | $114,616,291 |  $ 2,710,789  |  $ 117,327,079  |  $ 80,308  |
| Bulimba Creek | 3,426 | 132 | 3,558 | $200,167,882 |  $ 1,036,717  |  $ 201,204,599  |  $ 56,557  |
| Cabbage Tree Creek | 1,506 | 97 | 1,603 | $90,006,195 |  $ 47,446  |  $ 90,053,641  |  $ 56,165  |
| Calamvale | 282 | 19 | 301 | $13,911,882 |  $ 5,351,482  |  $ 19,263,363  |  $ 63,907  |
| Cubberla Creek | 297 | 10 | 307 | $13,736,352 |  $ 47,446  |  $ 13,783,798  |  $ 44,940  |
| Doolandella | 101 | 10 | 111 | $3,084,407 |  $ 3,166,663  |  $ 6,251,069  |  $ 56,247  |
| Farm | 924 | 32 | 956 | $33,877,156 |  $ 47,446  |  $ 33,924,602  |  $ 35,490  |
| Fig Tree Pocket | 159 | 6 | 165 | $2,240,140 |  $ 113,449  |  $ 2,353,588  |  $ 14,272  |
| Graceville | 124 | 4 | 128 | $7,873,049 |  $ 47,446  |  $ 7,920,495  |  $ 61,975  |
| Graceville LSMPS | 89 | 3 | 92 | $6,125,078 |  $ 47,446  |  $ 6,172,524  |  $ 67,124  |
| INES | 436 | 13 | 449 | $57,156,434 |  $ 19,767,176  |  $ 76,923,609  |  $ 171,367  |
| Kedron Brook | 3,424 | 136 | 3,560 | $223,150,331 |  $ 3,589,833  |  $ 226,740,163  |  $ 63,695  |
| Lota | 135 | 4 | 139 | $3,299,758 |  $ 47,446  |  $ 3,347,203  |  $ 24,005  |
| Moggill Creek | 153 | 5 | 158 | $6,742,760 |  $ 47,446  |  $ 6,790,206  |  $ 42,957  |
| Norman Creek | 1,545 | 47 | 1,592 | $108,518,294 |  $ 5,252,671  |  $ 113,770,964  |  $ 71,451  |
| Nundah Downfall Creek | 1,527 | 50 | 1,577 | $94,756,932 |  $ 4,224,029  |  $ 98,980,961  |  $ 62,780  |
| Oxley Creek | 4,497 | 186 | 4,683 | $235,918,045 |  $ 22,525,114  |  $ 258,443,158  |  $ 55,184  |
| Pashen Creek LSMP | 206 | 8 | 214 | $29,680,470 |  $ 7,864,777  |  $ 37,545,247  |  $ 175,079  |
| Perrin | 393 | 17 | 410 | $24,096,635 |  $ 47,446  |  $ 24,144,081  |  $ 58,903  |
| Pullen Pullen Creek | 86 | 3 | 89 | $9,505,089 |  $ 47,446  |  $ 9,552,534  |  $ 107,384  |
| Richlands (a) | 291 | 14 | 305 | $13,386,587 |  $ 2,638,990  |  $ 16,025,577  |  $ 52,517  |
| Richlands (b) | 172 | 12 | 184 | $9,086,920 |  $ 796,705  |  $ 9,883,625  |  $ 53,643  |
| Richlands (c) | 222 | 8 | 230 | $23,107,776 |  $ 352,361  |  $ 23,460,136  |  $ 101,989  |
| Richlands (d) | 112 | 12 | 124 | $1,547,546 |  $ 3,673,040  |  $ 5,220,586  |  $ 42,088  |
| Richlands (e) | 145 | 4 | 149 | $4,845,359 |  $ 47,446  |  $ 4,892,805  |  $ 32,835  |
| Rochedale (a) | 41 | 16 | 57 | $1,122,285 |  $ 47,446  |  $ 1,169,731  |  $ 20,351  |
| Rochedale (b) | 62 | 14 | 76 | $1,470,588 |  $ 280,678  |  $ 1,751,265  |  $ 22,933  |
| Rochedale (c) | 18 | 7 | 25 | $1,366,605 |  $ 47,446  |  $ 1,414,051  |  $ 56,627  |
| Rochedale (d) | 71 | 10 | 81 | $614,702 |  $ 4,499,402  |  $ 5,114,103  |  $ 63,359  |
| Rochedale (e) | 4 | 0 | 4 | $0 |  $ 47,446  |  $ 47,446  |  $ 11,861  |
| Scrubby Creek | 390 | 23 | 413 | $25,811,227 |  $ 47,446  |  $ 25,858,673  |  $ 62,609  |
| Tingalpa Creek | 1 | 0 | 1 | $0 |  $ 47,446  |  $ 47,446  |  $ 47,446  |
| Toowong Creeks | 898 | 22 | 920 | $59,864,105 |  $ 190,284  |  $ 60,054,388  |  $ 65,279  |
| Wakerley (a) | 111 | 4 | 115 | $12,698,714 |  $ 47,446  |  $ 12,746,160  |  $ 111,232  |
| Wakerley (b) | 110 | 4 | 114 | $3,919,574 |  $ 47,446  |  $ 3,967,019  |  $ 34,859  |
| West End (a) | 27 | 2 | 29 | $2,029,384 |  $ 1,451,936  |  $ 3,481,320  |  $ 118,724  |
| West End (b) | 29 | 1 | 30 | $1,955,347 |  $ 6,070,218  |  $ 8,025,564  |  $ 268,912  |
| Western Creeks LSMPS | 423 | 11 | 434 | $57,540,512 |  $ 47,446  |  $ 57,587,958  |  $ 132,632  |
| Wolston | 297 | 7 | 304 | $10,154,360 |  $ 47,446  |  $ 10,201,806  |  $ 33,515  |
| Wynnum | 566 | 18 | 584 | $16,183,615 |  $ 676,561  |  $ 16,860,175  |  $ 28,883  |
| Wynnum West (a) | 44 | 2 | 46 | $1,021,289 |  $ 47,446  |  $ 1,068,734  |  $ 23,177  |
| Wynnum West (b) | 154 | 8 | 162 | $7,248,114 |  $ 47,446  |  $ 7,295,559  |  $ 45,086  |
| Wynnum West (c) | 38 | 2 | 40 | $1,981,433 |  $ 47,446  |  $ 2,028,878  |  $ 50,316  |

Note:

All costs and demand figures are represented as a NPV, at the base date 30 June 2016

Table . – Servicing cost summary for the parks network

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service catchment | Existing demand (EP) | Future demand (EP) | Total demand (EP) | Existing cost ($) | Future cost ($) | Total cost ($) | Servicing cost ($/EP) |
| East (Local) | 270,851 | 18,430 | 289,281 | $445,870,052 | $ 29,878,964  | $ 475,749,016  | $ 1,645  |
| North (Local) | 209,421 | 24,591 | 234,012 | $287,880,562 | $ 33,109,889  | $ 320,990,451  | $ 1,372  |
| South (Local) | 338,944 | 24,691 | 363,635 | $494,693,920 | $ 58,832,120  | $ 553,526,040  | $ 1,522  |
| West (Local) | 318,557 | 14,933 | 333,490 | $558,218,316 |  $ 6,685,149  |  $ 564,903,465  |  $ 1,694  |
| Brisbane wide (district & metro) | 1,168,689 | 87,808 | 1,256,497 | $5,703,353,575 |  $ 333,715,845  |  $ 6,037,069,420  |  $ 4,805  |

Note:

All costs and demand figures are represented as a NPV, at the base date 30 June 2016.

For the total servicing cost of each service catchment, add the relevant catchment servicing cost to the citywide servicing cost.

Table . – Servicing cost summary for the land for community facilities network

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service catchment | Existing demand (EP) | Future demand (EP) | Total demand (EP) | Existing cost ($) | Future cost ($) | Total cost ($) | Servicing cost ($/EP) |
| Urban East | 261,140 | 15,577 | 276,717 |  $ 25,094,533  |  $ 4,943,116  |  $ 30,037,649  |  $ 109  |
| Urban North | 364,760 | 36,297 | 401,057 |  $ 29,860,388  |  $ 10,685,019  |  $ 40,545,407  |  $ 101  |
| Urban South | 348,928 | 34,737 | 383,665 |  $ 28,076,946  |  $ 9,208,230  |  $ 37,285,176  |  $ 97  |
| Urban West | 242,606 | 6,248 | 248,854 |  $ 24,742,502  |  $ 4,382,043  |  $ 29,124,545  |  $ 117  |
| Fringe | 18,971 | 1,012 | 19,983 |  $ 1,158,168  |  $ 354,876  |  $ 1,513,044  |  $ 76  |

Note:

All costs and demand figures are represented as a NPV, at the base date 30 June 2016

Table . – Servicing cost summary for the ferry terminal network

| **Service catchment** | **Existing demand (Trips)** | **Future demand (Trips)** | **Total demand (Trips)** | **Existing cost ($)** | **Future cost ($)** | **Total cost ($)** | **Servicing cost ($/Trip)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Citywide | 89,178 | 9,504 | 98,682 | $136,452,500 |  $ 91,484,723  |  $ 227,937,223  |  $ 2,310  |

Note:

All costs and demand figures are represented as a NPV, at the base date 30 June 2016

Table . – Servicing cost summary for the pathway network

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service catchment | Existing demand (Trips) | Future demand (Trips) | Total demand (Trips) | Existing cost ($) | Future cost ($) | Total cost ($) | Servicing cost ($/Trip) |
| Citywide | 2,886,302 | 307,845 | 3,194,147 | $217,143,170 |  $172,031,037  |  389,174,207  |  $122 |

Note:

All costs and demand figures are represented as a NPV, at the base date 30 June 2016

Table . – Servicing cost summary for the road network

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service catchment | Existing demand (trips) | Future demand (trips) | Total demand (trips) | Existing cost ($) | Future cost ($) | Total cost ($) | Servicing cost ($/Trips) |
| Catchment 1 | 400,068 | 13,366 | 413,434 |  **$** 359,814,059 | **-**$ 90,991 |  $ 359,723,067 | $ 892  |
| Catchment 2 | 76,888 | 2,851 | 79,739 |  $ 69,936,680  |  $ 1,651,307  |  $ 71,587,987  |  $ 901  |
| Catchment 3 | 296,785 | 41,262 | 338,047 |  $ 248,636,725  |  $ 63,540,356  |  $ 312,177,082  |  $ 809  |
| Catchment 4 | 268,520 | 2,849 | 271,369 |  $ 420,143,573  |  $ 40,601,117  |  $ 460,744,690  |  $ 1,534  |
| Catchment 5 | 239,216 | 23,286 | 262,502 |  $ 426,307,051  |  $ 51,033,149  |  $ 477,340,200  |  $ 1,700  |
| Catchment 6 | 428,682 | 24,328 | 453,010 |  $ 257,122,315  |  $ 10,747,282  |  $ 267,869,597  |  $ 620  |
| Catchment 7 | 560,299 | 31,963 | 592,262 |  $ 688,440,085  |  $ 69,511,981  |  $ 757,952,066  |  $ 1,256  |
| Catchment 8 | 1,111,403 | 121,863 | 1,233,266 |  $ 1,922,202,795  |  $ 324,451,764  |  $ 2,246,654,559  |  $ 1,599  |
| Catchment 9 | 214,720 | 22,737 | 237,457 |  $ 264,056,757  |  $ 64,648,231  |  $ 328,704,988  |  $ 1,154  |
| Catchment 10 | 430,033 | 47,634 | 477,667 |  $ 300,047,893  |  $ 45,584,530  |  $ 345,632,423  |  $ 687  |
| Catchment 11 | 209,368 | 7,772 | 217,140 |  $ 303,840,277  |  $ 28,795,448  |  $ 332,635,725  |  $ 1,387  |
| Catchment 12 | 132,327 | 1,682 | 134,009 |  $ 287,368,992  |  $ 24,121,871  |  $ 311,490,863  |  $ 2,153  |
| Catchment 13 | 204,861 | 12,143 | 217,004 |  $ 282,154,880  |  $ 19,462,319  |  $ 301,617,199  |  $ 1,374  |
| Catchment 14 | 381,068 | 22,733 | 403,801 |  $ 516,973,973  |  $ 45,423,575  |  $ 562,397,548  |  $ 1,221  |
| Catchment 15 | 526,197 | 12,207 | 538,404 |  $ 486,955,243  |  $ 28,484,935  |  $ 515,440,177  |  $ 904  |
| Catchment 16 | 701,732 | 97,965 | 799,697 |  $ 850,520,725  |  $ 187,296,454  |  $ 1,037,817,179  |  $ 1,158  |
| Catchment 17 | 71,445 | 224 | 71,669 |  $ 63,210,736  |  $ 436,856  |  $ 63,647,592  |  $ 864  |

Note:

All costs and demand figures are represented as a NPV, at the base date 30 June 2016

### Summary of forecast capital expenditure, revenue and net cash flow



Figure 6.4‑1 – Cash flow projection based on estimated expenditure and forecast revenue