



Roma Street

Cross River Rail Priority Development Area

Infrastructure Plan Background Report

July 2021

Acknowledgement of Country

*We acknowledge the Traditional Owners of the land on which we live and work
We pay our respects to the Elders, past and present*

*Throughout time, Brisbane, the land by the river, has been a path of transport for all people
A place of connection, a place of many tracks*

*The Ancestors and Elders travelled this terrain long ago
Following tracks that we follow today
We recognise their connection to this country, the waterways and community*

*As we build this path through Country
While we tunnel deep beneath our river
Laying tracks for greater connection, creating new places for the future
We acknowledge the rich traditions and stories of the past
At the many places we are working to bring this Project to life
Across Brisbane, the Gold Coast, and greater South-East Queensland*

*With an open heart and mind, we hope to learn from the traditions, stories, customs and practices of Australia's First Nations people
Together, as we build this track for the future.*

The Department of State Development, Infrastructure, Local Government and Planning improves productivity and quality of life in Queensland by leading economic strategy, industry development, infrastructure and planning, for the benefit of all.

Copyright

This publication is protected by the *Copyright Act 1968*.

Licence

This work, except as identified below, is licensed by the Department of State Development, Infrastructure, Local Government and Planning under a Creative Commons Attribution (CC BY) 4.0 Australia licence. To view a copy of this licence, visit: <http://creativecommons.org.au/>.

You are free to copy, communicate and adapt this publication, as long as you attribute it as follows:

© State of Queensland, Department of State Development, Infrastructure, Local Government and Planning, July 2021.

Third party material that is not licensed under a Creative Commons licence is referenced within this document. All content not licensed under a Creative Commons licence is all rights reserved. Please contact the Department of State Development, Infrastructure, Local Government and Planning / the copyright owner if you wish to use this material.

The Queensland Government is committed to providing accessible services to Queenslanders of all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on 13 14 50 and ask them to contact the Department of State Development, Infrastructure, Local Government and Planning on 07 3452 7100.

Disclaimer

While every care has been taken in preparing this publication, to the extent permitted by law, the State of Queensland accepts no responsibility and disclaims all liability (including without limitation, liability in negligence) for all expenses, losses (including direct and indirect loss), damages and costs incurred as a result of decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained within. To the best of our knowledge, the content was correct at the time of publishing.

Any references to legislation are not an interpretation of the law. They are to be used as a guide only. The information in this publication is general and does not take into account individual circumstances or situations. Where appropriate, independent legal advice should be sought.

Copies of this publication are available on our website at www.dsdmip.qld.gov.au and further copies are available upon request to:

Cross River Rail Delivery Authority

PO Box 15476, Brisbane City East, QLD 4002
Phone: 1800 010 875
Email: info@crossriverrail.qld.gov.au
Web: www.crossriverrail.qld.gov.au

Economic Development Queensland

Department of State Development, Infrastructure, Local Government and Planning
GPO Box 2202, Brisbane Queensland 4002.
1 William Street Brisbane Qld 4000 (Australia)
Phone: 13 QGOV (13 74 68)
Email: edg@dsdmip.qld.gov.au
Web: www.edg.qld.gov.au

Table of Contents

1 Background	1
1.1 Purpose of Infrastructure Plan Background Report	2
2 Growth projections	3
2.1 Introduction	3
2.2 Growth projection years	3
2.3 Existing development demand	3
2.4 Potential development capacity	3
2.5 Development constraints	3
2.6 Growth rates	3
2.7 Growth projections summary	4
3 Demand projections	5
4 Desired standard of service	6
4.1 Water supply	6
4.2 Wastewater	6
4.3 Stormwater	6
4.4 Transport	6
4.5 Parks and community facilities	6
5 Infrastructure planning	7
5.1 Purpose	7
5.2 Planning horizon	7
5.3 Water supply	7
5.4 Wastewater	7
5.5 Stormwater	8
5.6 Transport	8
5.7 Parks and community facilities	8
5.8 Infrastructure summary & categories	9
6 Infrastructure costs	12
6.1 Cost of land	12
6.2 Cost of the works	12
6.2.1 Water	12
6.2.2 Wastewater	12
6.2.3 Stormwater	12
6.2.4 Transport	12
6.2.5 Parks and community facilities	12
6.3 On-cost allowances	13
6.4 Contingency allowances	13
7 Development charges	14
8 Trunk infrastructure cost schedules	15

Appendices

Appendix A	PDA boundary map
Appendix B	Development yields and reference scheme
Appendix C	Demand generation rates
Appendix D	Demand projections
Appendix E	Technical memorandums / network summary reports
Appendix F	Future Trunk Infrastructure network plans
Appendix G	Future Trunk Infrastructure Cost Schedules
Appendix H	Future Infrastructure Network Plans

List of Tables

Table 2-1: Future residential dwellings and non-residential floor space projections	4
Table 2-2: Future population and employment projections	4
Table 5-1: Infrastructure summary table and categories	9
Table 6-1: On-cost allowance	13
Table 6-2: Contingency allowance	13

List of Figures

Figure 1-1: Roma Street PDA Boundary	2
--------------------------------------	---

Document Control

Document:	Roma Street Priority Development Area
File Location:	\\aubnfsv006.sjgroup.local\Urban\$\Projects\30032260\100 Concept-Feasibility\105 Deliverables\01 Roma St\Infrastructure Plan Background Report\Rev 06
Project Name:	Cross River Rail Delivery Authority Infrastructure Plan Background Report
Project Number:	30032260
Revision Number:	07

Issue Register

DISTRIBUTION LIST	DATE ISSUED	NUMBER OF COPIES
Cross River Rail Delivery Authority	25 June 2021	Electronic issue

SMEC Company Details

Approved by:	Gustavo Pereira		
Signature:			
Address:	Level 6, 480 St Pauls Tce, Fortitude Valley, QLD, 4006		
Tel:	07 3324 7813	Fax:	
Email:	Gustavo.Pereira@smec.com	Website:	www.smec.com

The information within this document is and shall remain the property of: Cross River Rail Delivery Authority (CRRDA).

1 Background

The Queensland Government's Cross River Rail Precincts Delivery Strategy (the strategy) sets a vision for each Cross River Rail (CRR) Station precinct that is aligned to the Government's policy priorities. The strategy sets out a vision for Roma Street Precinct to be an extension of the Central Business District (CBD) and Brisbane's gateway to jobs, tourism and recreation.

To facilitate the realisation of this potential, the Roma Street precinct focus will be on:

- The key arrival destination for the central CBD, and the western gateway to the City's premier cultural, leisure and entertainment offerings including a Potential Major Entertainment Arena (PMEA).
- Improved public realm and active transport connections to improve pedestrian movement and connections.
- Significant upgrades to State-owned station interchange for CRR, Metro and bus services, including realignment of the Inner Northern Busway.

The Strategy sets out a Roma Street Precinct Intent, located at one of Brisbane's most significant city centre arrival points, that has the opportunity to become a key economic and community hub through major redevelopment, reinvigorating heritage places, new public spaces and developing strong connections to nearby major parklands and facilities.

To support the Government's vision for the precinct, the Roma Street CRR Priority Development Area (PDA) was declared on 13 December 2019 and an Interim Land Use Plan (ILUP) given effect. Roma Street is one of the new underground stations with associated PDAs. The PDA was declared to assist with the delivery of the CRR Project's broader objectives.

The Roma Street CRR PDA is approximately 32 hectares and is located on the outer edge of Brisbane's city centre. The PDA includes state-owned land holdings, state transport corridors and roads, and other land in and around the rail station. It is approximately bound by College Road, Parkland Boulevard and Parkland Crescent to the north, Wickham Terrace, Albert Street and Emma Miller Place to the east, Roma Street, North Quay and Upper Roma Street to the south and Countess Street to the west (Refer Figure 1-1 and Appendix A).

The PDA declaration provides the opportunity to reconnect the area with the city centre, Spring Hill and Petrie Terrace, and with the Brisbane River and Kurilpa Bridge. The Roma Street CRR PDA regulates development on land within the Roma Street CRR PDA. The Minister for Economic Development Queensland (MEDQ) has delegated certain functions and powers under the Economic Development Act 2012 (the ED Act) to the Cross River Rail Delivery Authority (CRRDA) including plan, carry out, promote or coordinate activities to facilitate economic development and development for community purposes.

The Roma Street CRR PDA Development Scheme (the development scheme) is applicable to development on land within the boundaries of the Roma Street CRR PDA. From the date of gazettal, the development scheme replaces the Roma Street Cross River Rail PDA ILUP which commenced upon declaration.

The development scheme consists of the following:

1. a land use plan that regulates development in the PDA (section 2)
2. an infrastructure plan that describes infrastructure required to support achievement of the land use plan (section 3)
3. an implementation strategy that describes objectives and actions that complement the land use plan and infrastructure plan to achieve the main purpose of the ED Act (section 4).

The development scheme was prepared under delegation by the CRRDA in collaboration with Economic Development Queensland, State agencies, and other key stakeholders.

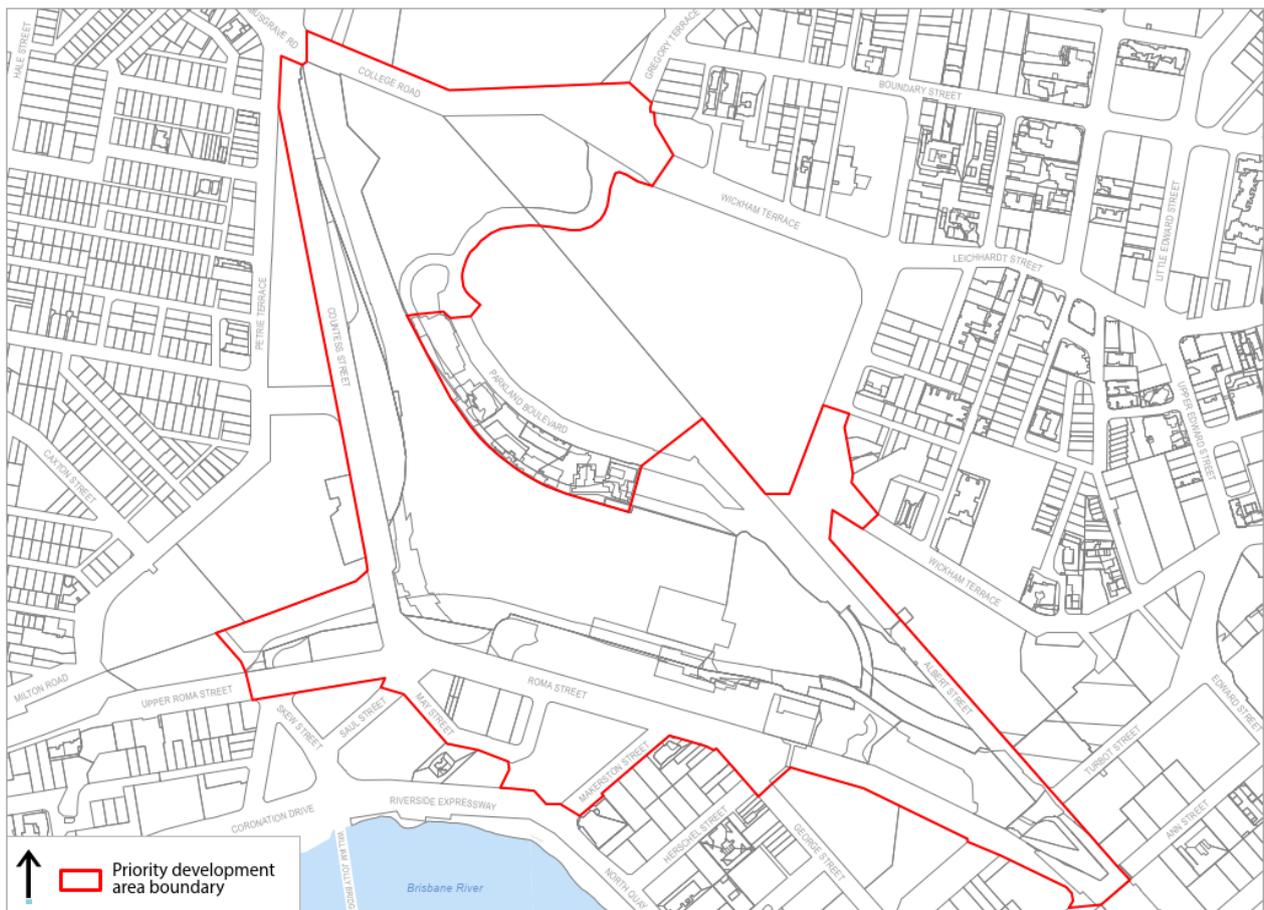


Figure 1-1: Roma Street PDA Boundary (Source: CRRDA Roma Street Interim Land Use Plan Dec 19)

The Roma Street CRR PDA Development Charges and Offset Plan (DCOP) provides a mechanism to facilitate the funding and delivery of trunk infrastructure to service the land uses and development yields assumed to be realised in the PDA, for the water supply, wastewater, stormwater, transport, parks and community facilities networks. The DCOP provides the MEDQ policy guidance to support the development scheme and sets out the development charge rates, schedule of works for trunk infrastructure and mapping which identifies trunk infrastructure upgrades or new trunk infrastructure necessary to be delivered in the PDA to 2041. The DCOP also sets out matters relevant to calculating development charges, credits, offsets and refunds for the provision of trunk infrastructure.

1.1 Purpose of Infrastructure Plan Background Report

This Infrastructure Plan Background Report (IPBR) documents information relevant to preparing the infrastructure plan and DCOP for the Roma Street CRR PDA. The report will assist users of the infrastructure plan within the development scheme and the DCOP to understand how infrastructure planning was undertaken and how development charges were determined.

Additionally, Section 4 of this report outlines the Desired Standard of Service (DSS) for infrastructure for the Roma Street CRR PDA. The DSS is a summary of the trunk and non-trunk design standards used to inform the planning of the infrastructure networks in the area. These standards also provide guidance to future development applicants of the form, type and arrangement of infrastructure that is likely to be acceptable to the MEDQ in the Roma Street CRR PDA.

2 Growth projections

2.1 Introduction

The rate of growth projected for the Roma Street CRR PDA is based on the potential residential and non-residential development in the area and forms the basis for the planning of the infrastructure services. The following sections detail the development and associated growth envisaged for the area.

2.2 Growth projection years

The Roma Street PDA growth projections were prepared for the following years:

- The base date 2020 (prior to the demolition of the Brisbane Transit Centre (BTC) and Hotel Jen) and the following projection years:
 - year of opening of the new Roma Street CRR Station 2025
 - 2025 - 2026
 - 2026 – 2031
 - 2032 - 2041
 - Ultimate development at 2041

2.3 Existing development demand

The Gross Floor Area (GFA) of existing buildings within the Roma Street CRR PDA were estimated to form a demand on infrastructure at 2020, prior to the demolition of the BTC and Hotel Jen.

2.4 Potential development capacity

The vision for the Roma Street CRR PDA is to facilitate a mix of short term accommodation, residential, commercial, entertainment, community and education land uses in the Precinct. A Baseline Potential Development Scenario – Reference Scheme (the reference scheme) was adopted to forecast future servicing demand. The ultimate potential development capacity that may be achieved on premises within the PDA was calculated based on the type and density of development allowable under the reference scheme (the planned density), considering impacting factors such as existing development, land tenure and plot size to determine a likely development outcome.

Following calculation of the potential development yield (in GFA per m²), these areas were then distributed between various land uses (commercial, retail, industrial and residential), in accordance with the development yields and reference scheme table (Appendix B).

The plot ratios and dwelling size assumptions are averages and they recognise that development may occur in individual circumstances at higher or lower densities. Appendix B states the plot ratios and GFA distribution assumptions assumed for land within each future development site within the PDA.

2.5 Development constraints

The projected growth for the PDA has been calculated taking into consideration known development constraints which may limit the potential yield of land. Absolute constraints (such as flooding, transport infrastructure, parkland, etc.) were addressed as part of the reference scheme.

2.6 Growth rates

The rate of growth for residential and non-residential development in the PDA was determined by the CRRDA having regard to the anticipated timing of government land becoming available for development, the anticipated staging of future development, market analysis and industry engagement.

2.7 Growth projections summary

The growth projections for the PDA are summarised in Table 2-1 and Table 2-2.

Table 2-1: Future residential dwellings and non-residential floor space projections

DEVELOPMENT TYPE	PROJECTIONS BY YEAR					
	2020 ¹	2020-2025 ²	2025 ² -2026 ³	2026 ³ - 2031	2032-2041	2041 (ultimate)
Residential Dwellings	-	-	-	1,245	1,894	1,894
Short Term Accommodation (Dwelling)	191		-	357	357	357
Non-residential floor space (m ² GFA)	99,440	55,748	248,800	346,248	481,948	481,948

Table 2-2: Future population and employment projections

DEVELOPMENT TYPE	PROJECTIONS BY YEAR					
	2020 ¹	2020-2025 ²	2025 ² -2026 ³	2026 ³ - 2031	2032-2041	2041 (ultimate)
Residents	344	-	-	2,884	4,052	4,052
Employees	4,444	2,508	11,749	14,221	18,939	18,939

¹ Prior to demolition of the BTC and Hotel Jen.

² Year of completion of the Roma Street Cross River Rail Station, Herschel Street Pocket Park and Station Arrival Plaza.

³ Assumed commencement of use of the first Future Over Station Development (FOSD) on the former BTC site.

3 Demand projections

Growth projections are converted into demand projections to enable infrastructure planning to be undertaken.

Different infrastructure networks express infrastructure demand using different demand units. The demand units used by each local network in the PDA are as follows:

- for the water supply network, equivalent persons (EP)
- for the wastewater network, equivalent persons (EP)
- for the stormwater quantity network, impervious area expressed in hectares (Imp Ha)
- for the transport network, trips per day (trips)
- for the parks and community facilities network, persons.

The demand generation rates used by each network to convert growth projections into demand are stated in Appendix C.

The demand projections for each network are stated in Appendix D.

4 Desired standard of service

4.1 Water supply

The Desired Standards of Service (DSS) for the water supply network is consistent with:

- the design standards for the water supply network stated in the South East Queensland Design and Construction Code, as may be amended from time to time.

The latest DSS can be accessed on the SEQ Water Supply and Sewerage Design and Construction Code website.

4.2 Wastewater

The DSS for the wastewater network is consistent with:

- the design standards for the wastewater network stated in the South East Queensland Design and Construction Code, as may be amended from time to time.

The latest DSS can be accessed on the SEQ Water Supply and Sewerage Design and Construction Code website.

4.3 Stormwater

The DSS for the stormwater network is consistent with the Brisbane City Plan 2014, Schedule 6, Chapter 7 for the trunk infrastructure network and supporting policy, as may be amended from time to time.

The latest DSS can be accessed on the Brisbane City Council (BCC) website.

4.4 Transport

The desired standard of service for the road network is as follows:

- design the road network to comply with the following:
 - the standard road cross-sections in BCC's Infrastructure Design Planning Scheme Policy (IDPSP)
 - transport corridors are planned to cater for 2041 planning horizon.
 - active transport routes must always be publicly accessible, or a suitable alternative route must be provided during the operation of events.

CRRDA have adopted BCC's DSS, as per the Brisbane City Plan 2014 Local Government Infrastructure Plan (LGIP), for all transport networks as outlined in Roma Street Priority Development Area – Transport Report prepared by SMEC. However, where BCC's DSS conflicts with the following standards, the standards listed below prevail:

- The Department of Transport and Main Roads Technical Note 128 Selection and Design of Cycle Tracks.

The latest DSS can be accessed on the BCC website.

4.5 Parks and community facilities

The DSS for the parks and land for community facilities network is consistent with the BCC LGIP and supporting policy, as may be amended from time to time. Refer to the following sections of the Brisbane City Plan 2014 for the relevant DSS:

- Part 4 (LGIP)
- Public Parks and Land for Community Facilities Network – extrinsic material
- Planning Assumptions – extrinsic material.

The latest DSS can be accessed on the BCC website.

5 Infrastructure planning

5.1 Purpose

As described in section 3.1 of the development scheme, the purpose of the infrastructure plan is to ensure that the PDA vision is achieved through:

1. integrating infrastructure planning with land use planning identified in the development scheme
2. identifying the infrastructure requirements which may be delivered by the relevant infrastructure provider such as state government, BCC, Urban Utilities or applicants
3. providing a basis for imposing conditions on development approvals
4. responding to the increased demand on the relevant infrastructure networks.

This IPBR should be read in conjunction with the development scheme infrastructure plan (Section 3) and the DCOP. Section 3.2 of the development scheme identifies the various infrastructure networks and Section 3.3 describes three PDA infrastructure categories: trunk, non-trunk and other which inform future funding arrangements.

5.2 Planning horizon

The infrastructure plans for the Roma Street CRR PDA have a planning horizon of 2041. This horizon was chosen to align with the anticipated staging of future development and the realisation of ultimate development in the Roma Street CRR PDA. The PDA is assumed to be fully developed by 2041.

5.3 Water supply

The Roma Street PDA Precinct is currently generally well serviced in terms of water supply pressure and flow. Assessment of the existing external water supply infrastructure indicated that no upgrades of the existing water infrastructure will be required to service the future development demands within the PDA.

There is an existing large diameter trunk watermain running through the Parkland. This trunk main will be required to be protected during the works.

Further details relating to the planning of water supply infrastructure for the PDA is documented in Appendix E:

- Water Supply & Wastewater Technical Note – Technical Memo prepared by SMEC.

Refer to Appendix F and G for planned trunk infrastructure project mapping and cost schedules (where applicable).

A summary of whether the identified infrastructure may be trunk, non-trunk or other infrastructure is provided in Table 5-1.

5.4 Wastewater

The Roma Street PDA is generally divided into two main catchments. The south-west catchment of the PDA discharges into the existing wastewater infrastructure located at Roma Street, that continues through Makerston Street and North Quay, before connecting into a large trunk main at Turbot Street. The capacity of this infrastructure is constrained and will require upgrades inside and outside of the Roma Street PDA to adequately service the demand generated by the potential future development. This may involve upgrade works of the wastewater infrastructure in Makerston Street.

Planning of wastewater infrastructure for the PDA is documented in Appendix E:

- Water Supply & Wastewater Technical Note – Technical Memo prepared by SMEC.

Refer to Appendix H for an overall existing and future Wastewater Infrastructure Network Plan identifying non-trunk, trunk and other infrastructure as may be applicable.

Refer to Appendix F – Map 02 Wastewater - Future Trunk Infrastructure Plan and Appendix G for the planned trunk infrastructure project cost schedules.

A summary of whether the identified infrastructure may be trunk, non-trunk or other infrastructure is provided in Table 5-1.

5.5 Stormwater

The stormwater network around the Roma Street area is known to be significantly under capacity and does not currently manage a 10% Annual Exceedance Probability (AEP) storm event flow. The ultimate developed conditions of the Roma Street CRR PDA development do not contribute significant additional flows that would worsen the stormwater performance in the area however, the development does provide the opportunity to address some of the existing drainage issues for the overall catchment and is anticipated to introduce additional land use activities and densities into the precinct.

Modelling indicates that the PDA catchment area is responsible for 57% of the flow for recommended stormwater network upgrade ST01 and 38% of the flow for recommended stormwater network upgrade ST02 (refer Appendices E, F and G for recommended infrastructure network upgrades). In the interests of apportioning the costs of mitigating an existing stormwater issue between existing and future users, government entities and PDA and non-PDA drainage origins, indicative costs have been apportioned accordingly between future PDA development and BCC.

Further details relating to the planning of stormwater infrastructure for the PDA is documented in Appendix E:

- *Roma Street Precinct Stormwater Management – Technical Memo* prepared by SMEC.

Refer to Appendix H for an overall existing and future Stormwater Infrastructure Network Plan identifying non-trunk, trunk and other infrastructure as may be applicable.

Refer to Appendix F – Map 03 Stormwater - Future Trunk Infrastructure Plan and Appendix G for the planned trunk infrastructure project cost schedules.

A summary of whether the identified infrastructure may be trunk, non-trunk or other infrastructure is provided in Table 5-1.

5.6 Transport

Planning of transport infrastructure to service the development within the PDA is documented in Appendix E:

- *Roma Street Priority Development Area – Transport Report* prepared by SMEC.

Refer to Appendix H for overall existing and future Transport Infrastructure Network Plans identifying non-trunk, trunk and other infrastructure as may be applicable.

Refer to Appendix F - Map 04a Transport (Road) - Future Trunk Infrastructure Plan and Map 04b Transport (Active) – Future Trunk Infrastructure Plan and Appendix G for the planned trunk infrastructure project cost schedules.

Trunk infrastructure is represented by roads and intersections of higher-order road hierarchies, including Motorway, Arterial, Suburban, District roads. These road hierarchies are demonstrated in the Road Hierarchy Overlay contained within the Brisbane City Plan 2014. Within the road corridor, trunk infrastructure includes the formation, carriageway, footpaths, street trees and furniture, cycleways, bridges, in-road drainage and intersections with at least three arms of trunk roads or where the MEDQ considers that the future project is considered on balance to have wider transport network benefits (e.g. car, pedestrian, cycle) and will service multiple future development sites.

Where transport upgrades required for the PDA intersect with other planned trunk infrastructure or development infrastructure (as per BCC's or Urban Utilities infrastructure planning policies), the transport upgrade is to provide for or accommodate the efficient delivery of all planned infrastructure. This may include the provision of other planned trunk infrastructure or development infrastructure where the delivery of that additional infrastructure is determined to be the most efficient and cost-effective solution.

A summary of whether the identified infrastructure may be trunk, non-trunk or other infrastructure is provided in Table 5-1.

5.7 Parks and community facilities

With respect to the provision of parks, whilst there are the high levels of quality park and open space areas provided by Roma Street Parkland along with BCC's proposed enhancements to Victoria Park and Green Spine, there is an identified very low level of supply of trunk Local recreation park. The PDA proposes to substantially increase supply through the provision of College Road Park (name to be confirmed) which would provide 10,931m² of trunk Local recreation park complemented by adjacent publicly accessible open green space in Precinct 3 of the PDA. Additional public realm

enhancements would be provided through the PMEA forecourt urban commons, the TSD Roma Street Station Plaza and potential expansion, Roma Street streetscape improvements and Herschel Street Pocket Park.

It is recommended that there be ongoing engagement of BCC and City Parkland Services regarding the interface between the PDA boundary and surrounding parks including Roma Street Parkland, Wickham Park, Emma Miller Place and Hardgrave Park.

Regarding community facilities, it is recommended that the opportunity be provided in the PDA for the inclusion of dedicated space for further community facilities infrastructure. It is recommended that the specific form of community facility be informed by the network planning for the community facilities network being undertaken by BCC. It is further recommended that the facility be in a visible and highly accessible location with potential site options including the re-purposing of the Roma Street Heritage Station Building or within the new College Road Park (name to be confirmed). The trigger for provision of the facility is residential growth within the PDA of (capacity for) an additional 2,500 residents, which is planned to occur by 2031.

Planning of parks and community facilities infrastructure to service development within the PDA was informed by the following reports in Appendix E:

- *Roma Street CRR Precinct Community Infrastructure Assessment - Technical Memo* prepared by SMEC.

This includes an overall existing and future Community Infrastructure Network Plan identifying non-trunk, trunk and other infrastructure as may be applicable.

A summary of whether the identified infrastructure may be trunk, non-trunk or other infrastructure is provided in Table 5-1.

Refer to Appendix F – Map 05 Parks and Community Facilities - Future Trunk Infrastructure Plan, and Appendix G for the planned trunk infrastructure project cost schedules.

5.8 Infrastructure summary & categories

A summary of whether the identified infrastructure may be trunk, non-trunk or other infrastructure is provided in Table 5-1. Refer to sections 3.3 and 3.4 of the development scheme infrastructure plan for additional information regarding the relevant infrastructure categories and funding arrangements.

Table 5-1: Infrastructure summary table and categories

INFRASTRUCTURE IDS	INFRASTRUCTURE NETWORKS	INFRASTRUCTURE DETAILS (REFER APPENDIX E, F, G & H)	INFRASTRUCTURE CATEGORY	POTENTIAL FUNDING
N/A	Water supply	Internal servicing mains - various	Non-trunk	Developer
SEW-01A	Wastewater	Makerston St Sewer - Gravity Main	Trunk	Development charges
N/A		Gravity Main (inside PDA) - various	Non-trunk	Developer
SEW-01B		North Quay Sewer - Gravity Main (outside PDA)	Trunk	Development charges
N/A		Private pump station - tbd	Non-trunk	Developer
N/A		Alternative treatment - tbd	Non-trunk	Developer
SW 1-12	Stormwater	Stormwater pipes / culverts – various under Garrick St, May St & Roma St	Trunk	Partially development charges & Other entity tbd ¹
N/A		Stormwater pipe/culvert - tbd	Non-trunk	Developer
N/A		On-site retention/detention - tbd	Non-trunk	Developer
I01	Transport	Garrick Street / Roma Street Intersection	Trunk	Development charges
I06		College Road / Parkland Blvd Intersection	Trunk	Partially development

INFRASTRUCTURE IDS	INFRASTRUCTURE NETWORKS	INFRASTRUCTURE DETAILS (REFER APPENDIX E, F, G & H)	INFRASTRUCTURE CATEGORY	POTENTIAL FUNDING
				charges & Other entity tbd ¹
I07		Intersection	Non-trunk	Developer
I02, I03, I04, I05, I08		Intersections – various (Potential Arena)	Other	Other entity tbd ¹
RD01		Garrick Street intersection works - road corridor	Non-trunk	Developer
RD02		Parkland Blvd road corridor	Non-trunk	Developer
AT01		Pathway - widening Inner Northern Bikeway from College Road to Parkland Crescent	Trunk	Partially development charges & Other entities tbd ¹
AT02		Pathway - widening and public realm enhancements to Parkland entrance from Parkland Kiosk to Albert Street (Potential Arena)	Other	Other entity tbd ¹
AT03		Pathway - New pedestrian / cycle overpass spanning over Roma Street (Potential Arena)	Other	Other entity tbd ¹
AT04		Pathway - New pedestrian / cycle skywalk parallel to Roma St (Potential Arena)	Other	Other entity tbd ¹
AT05		Pathway - New pedestrian / cycle bridge spanning over Roma Street rail lines	Trunk	Developer charges
AT08		A new pedestrian skyway from Roma Street Future Over Station Development over Countess Street to 'The Barracks' development	Other	Other entity tbd ¹
AT09		Pathway - Upgrade to Courts Precinct path from Roma Street to George Street (Potential Arena)	Other	Other entity tbd ¹
AT10		Pathway - New pedestrian / cycle access connecting Roma Street overpass (AT03) to Albert Street (Potential Arena)	Other	Other entity tbd ¹
AT11		Pathway - New pedestrian skywalk connecting Western Future Over Station Development (FOSD) to existing Barracks pedestrian bridge to Lang Park	Trunk	Partially development charges & Other entities tbd ¹
AT12		Pathway - Parkland Boulevard 'Cycle Street' enhancements - Inner Northern Bikeway Parkland Crescent to Ramp	Trunk	Partially development charges & Other entities tbd ¹
N/A		Pathway/Pathway bridge - tbd	Non-trunk	Developer
N/A		On road facilities - tbd	Tbd	Tbd ¹
AT15		Vertical Transport – Wickham Terrace Connection Link – Bridge Connection and Lift	Trunk	Partially development charges & Developer ²

INFRASTRUCTURE IDS	INFRASTRUCTURE NETWORKS	INFRASTRUCTURE DETAILS (REFER APPENDIX E, F, G & H)	INFRASTRUCTURE CATEGORY	POTENTIAL FUNDING
PC01		Herschel Street Pocket Park (CRR TSD)	Other	CRR TSD
PC02		Roma Street Station Arrival Plaza (CRR TSD)	Other	CRR TSD
PC03		Emma Miller Place enhancements (Potential Arena)	Trunk	Partially development charges & Other entities tbd ¹
PC04		Multi-purpose community space- potential site options include but not limited to the Roma Street Heritage Building or the new College Road Park	Other	Other entities tbd ¹
PC05		Expanded Roma Street Station Arrival Plaza – Urban Common	Trunk	Partially development charges & Other entities tbd ¹
PC06 (N)		Roma Street Streetscape improvements (west)	Non-trunk & Other	Developer & CRR TSD
PC06 (S)		Roma Street Streetscape improvements (west)	Non-trunk	Developer
PC07	Parks and community facilities	Albert Street Green Spine (Potential Arena)	Other	Other entity tbd ¹
PC08		Potential Entertainment Arena	Other	Other entity tbd ¹
PC09		Roma Street Streetscape improvements (east) (Potential Arena)	Other	Other entity tbd ¹
N/A		Public open space (streetscape / public realm) tbd	Non-trunk	Developer
PC10		College Road Local Recreation Park	Trunk	Partially development charges & Other entities tbd ¹
PC11		Publicly accessible parkland space- Precinct 3 – Sub Area 3B	Non-trunk	Developer

¹ To be determined (Funding arrangements and potential contributions to be discussed with relevant State Government Departments, local government, and water distributor-retailer)

² The Vertical Transport infrastructure is to be offset to 50% of the total value for construction of the Bridge Connection and Lift components. The remainder of costs are to be borne by the developing entity.

6 Infrastructure costs

The cost of infrastructure has been determined as follows.

6.1 Cost of land

The assumptions regarding the cost of future infrastructure (land) was determined for each network as follows:

- No additional private land is proposed to be acquired for the infrastructure necessary to support the Roma Street CRR PDA
- If it is identified that a land value is required to provide an offset value for trunk infrastructure land, the value is to be based on the Valuer-General's annual valuation rate (rate per m² basis, in accordance with the land Valuation Act 2010) that is current at the time the offset is granted.

6.2 Cost of the works

The cost of future infrastructure (works) was determined for each network as detailed in the following sections.

6.2.1 Water

No future trunk infrastructure works was identified.

6.2.2 Wastewater

Wastewater cost estimates were prepared by SMEC. These costs are provided as lump sum costs per infrastructure item and are based on a detailed cost calculation adopting industry rates at FY2020/2021. The Future Trunk Infrastructure Cost Schedules (Appendix G) identifies the specific base cost for each infrastructure item.

6.2.3 Stormwater

Stormwater cost estimates were prepared by SMEC. These costs are provided as lump sum costs per infrastructure item and are based on a detailed cost calculation adopting industry rates at FY2020/2021. The Future Trunk Infrastructure Cost Schedules (Appendix G) identifies the specific base cost for each infrastructure item.

6.2.4 Transport

Future trunk infrastructure works for the transport network are based on several sources. These include:

- For trunk intersection works – Intersection upgrade costs (including indirect costs, locational factors, and relocation allowance costs) within the BCC LGIP Extrinsic Material documents at FY2016/17
- For trunk pathway, pathway bridge and vertical transport costs:
 - Unit rates for similar projects provided by Rider Levett Bucknall (RLB) at FY2018/219
 - Unit rates for similar projects provided by SMEC at FY2019/20
 - Average unit rates for similar projects (between RLB and SMEC)
 - Nominal unit rates provided by Integran, where necessary.

The schedule of works (Appendix G) identifies the specific base cost for each infrastructure item.

6.2.5 Parks and community facilities

Future trunk infrastructure works for the parks and community facilities networks are based on the following sources:

- Recreation park and urban common embellishment:
 - Local recreation park unit rates within the BCC LGIP Extrinsic Material documents at FY2016/17, calculated as a rate per square metre based on BCC's preferred park size (including indirect costs), with higher cost inclusions for shade trees, shade structures and site preparation to align with the intended design outcomes and the difficult terrain.
 - Urban common unit rates within the BCC LGIP Extrinsic Material documents at FY2016/17, calculated as a rate per square metre based on BCC's preferred park size (including indirect costs), with higher cost inclusions for shade trees, shade structures and site preparation to align with the intended design outcomes.

The schedule of works (Appendix G) identifies the specific base cost for each infrastructure item.

6.3 On-cost allowances

On-costs represent the owner's project costs and may include:

- survey for the work
- geotechnical investigations for the work
- strategic planning
- detailed design for the work
- project management, procurement and contract administration
- environmental investigations for the work, and
- portable long service leave payment for a construction contract for the work.

The on-costs allowances that have been applied to infrastructure costs in the PDA are stated in Table 6-1.

Table 6-1: On-cost allowances

NETWORK	ON-COSTS ALLOWANCES
Wastewater	14% applied to the Base Cost (inclusive of cost factors)
Stormwater	17% applied to the Base Cost (inclusive of cost factors)
Transport (Road / Intersection)	13% applied to the Base Cost (inclusive of cost factors)
Transport (Active)	17% applied to the Base Cost (inclusive of cost factors)
Parks and Community Facilities	13 to 17% applied to the Base Cost (inclusive of cost factors)

6.4 Contingency allowance

A contingency allowance is included in the cost of future infrastructure works to deal with known risks. The contingency allowance typically reduces in accordance with the level of planning undertaken for the infrastructure item. The level of contingency allowance applied for infrastructure works in each network are stated in Table 6-2.

Table 6-2: Contingency allowances

NETWORK	CONTINGENCY ALLOWANCES
Wastewater	15% applied to the Base Cost (inclusive of on-costs and cost factors)
Stormwater	15% applied to the Base Cost (inclusive of on-costs and cost factors)
Transport (Road / Intersection)	15% applied to the Base Cost (inclusive of on-costs and cost factors)
Transport (Active)	15% applied to the Base Cost (inclusive of on-costs and cost factors)
Parks and Community Facilities	15 to 25% applied to the Base Cost (inclusive of on-costs and cost factors)

7 Development charges

Development Charges have been adopted consistent with current Adopted Infrastructure Charges currently levied by BCC and Urban Utilities

8 Trunk infrastructure cost schedules

Detailed cost schedules were prepared for each trunk infrastructure item identified in the DCOP.

Refer to Appendix G for further details.

