Moreton Bay Regional Council

Local Government Infrastructure Plan (LGIP) Interim Amendment No. 1

Transport (Roads) Extrinsic Material

Consultation version August 2021

Moreton Bay Regional Council

Extrinsic material and background reports

The Local Government Infrastructure Plan (LGIP) is supported by a suite of reports available on the Moreton Bay Regional Council website.

An extrinsic material report is provided for each of the following trunk infrastructure networks:

- Transport (roads)
- Transport (active)
- Stormwater (quality and quantity)
- Public parks
- Land for community facilities.

An extrinsic material report is provided for each of the following:

- Planning assumptions
- Schedule of works model.

A background report is provided for each of the following:

- Active transport
- Parks catchment analysis
- Community facilities network
- Stormwater quantity
- Stormwater quality
- Land valuations.

Note: *The first local government infrastructure plan for Moreton Bay Regional Council came into effect in 2017 and is referred to as LGIP 2017 in all extrinsic materials. The term LGIP refers to the proposed Local Government Infrastructure Plan (LGIP) Interim Amendment No. 1 – Consultation version 2021.*

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Glossary

Type	Description
Demand matrices	A matrix of origins and destinations representing transport demand.
Demand responsive public transport	A public transport service in areas of low passenger demand where a regular bus service is not considered to be financially viable. Services may also be provided for particular types of passengers.
High-occupancy vehicles	Private vehicles carrying multiple passengers.
LOS	Level of Service (LOS) is a qualitative measure representing road users' perceptions of the quality of service such as delay, freedom to manoeuvre and safety.
Mode share	The percentage share to travel made by each mode - car, public transport, active transport.
OESR	Office of Economic and Statistical Research - now Government Statistician's Office (GSO).
Person trips	Total number of trips made by a person either for work or personal reasons.
Road-based public transport	Typically timetabled buses in Moreton Bay.
Road hierarchy	A method of defining how roads function in a network or their intended future function.
Vehicle trips	Total number of trips by vehicles.
Zoning system	The system of small areas used to break down demographic and employment data.

1 LGIP introduction

1.1 Purpose

The Local Government Infrastructure Plan (LGIP) identifies Council's plans for trunk road infrastructure for effective and financially sustainable future growth. In May 2021 Council resolved to undertake an interim amendment to its LGIP to implement the most recent trunk infrastructure network planning for the Moreton Bay Region in accordance with the *Planning Act 2016* and Minister's Guidelines and Rules (MGR 2020).

This report provides the extrinsic material for the transport roads network. A separate extrinsic material report is supplied for the active transport network.

1.2 Background

Moreton Bay is one of the fastest growing regions in Queensland, with a population projected to grow from 444,385 in 2016 to 622,925 by 2036[1] (See Table 1 below). Employment is forecast to grow from 118,925 jobs in 2016 to 180,762 in 2036.

	Actual	Forecast				
	2016	2021	2026	2031	2036	Ultimate development
Population	444,385	491,444	537,198	582,512	622,925	823,816
Employment	118,925	139,309	154,767	168,054	180,762	236,184

Table 1: Actual and forecast population and employment

Source; Moreton Bay Regional Council[2]

This projected population growth will result in additional demands on the road network, resulting in a growing number of car, bus, train and active transport trips. To ensure that the demand for travel is well managed, the road network must be progressively upgraded to ensure that sufficient capacity is available to keep the region moving.

This document forms the extrinsic material for the road network (referred to as transport (road)) component of Part 4 of the Moreton Bay Regional Council (MBRC) Planning Scheme - Local Government Infrastructure Plan[3]. It will identify the road transport infrastructure requirements within Council's managed trunk network from 2021 to 2036. This report also sits alongside other corresponding extrinsic material reports for public parks, land for community facilities, stormwater, and active transport.

[1] Moreton Bay Regional Council, 2021 Local Government Infrastructure Plan (LGIP) Interim Amendment No 1.Planning Assumptions Extrinsic Material.

[2] Moreton Bay Regional Council, 2021 Local Government Infrastructure Plan (LGIP) Interim Amendment No 1.Planning Assumptions Extrinsic Material.

[3] *Moreton Bay Regional Council - Planning Scheme - Schedule 3 - Local Government Infrastructure Plan Mapping and Tables.*

1.3 Why is the transport network important?

The Moreton Bay Region transport network is used daily by many of its residents, whether for the daily commute to work, going to the shops, accessing critical services like hospitals and medical facilities, or taking children to school. Without a well-functioning, connected, and resilient transport system, the region stops.

Roads are the largest single infrastructure component within the region's transport system, and are used by private vehicles, buses, road freight and emergency services. This road system likely started as a series of small tracks and unpaved roads which were later sealed with the expansion of the urban boundary. These were gradually upgraded as increased dwellings and intensity of use required a higher standard of service. As an example of this growth, the equivalised value of Australia's road system grew approximately four-fold over the last 50 years, driven largely by the pavement of existing roads[4]. This process will continue with the expansion of these sealed roads to allow for additional traffic through growth, or formation of new roads in unserviced areas.

The road network is a complex system where demands and congestion change based on the aggregation of people's choices. Collective decisions by drivers result in traffic, which can change from day to day or hour to hour. Additionally, road upgrades may result in changes to demand elsewhere due to drivers' changing behaviours and route choices.

For this reason, road upgrades need to be planned and investigated to understand their effect and ensure that proactive measures can be implemented before our community is negatively impacted by traffic congestion. It is this planning, along with the need to provide for our residents, which drives Council's future roads projects and investments.

1.4 Existing strategies

Council released the *Moreton Bay Region Community Plan 2011-2021*[5] in 2011, prepared in partnership with community groups, businesses, state government agencies and residents.

The plan identifies the need to provide diverse transport options, resulting in a region that will consist of well-connected places and residents who embrace more sustainable travel choices and behaviours (*pp.4*). This Community Plan and its vision have been used to develop a broad policy framework to support a series of subsequent strategies, including those that guide the development of the region's transport systems.

These strategies are shown in Figure 1: MBRC strategy hierarchy below and discussed in the following sections.

[4] Department of Infrastructure, Transport, Regional Development and Communication. Growth in the Australian road system, August 2017

[5] Refer to *Moreton Bay Regional Council - Community Plan 2011-2021*: www.moretonbay.qld.gov.au/Services/Reports-Policies/Community-Plan

Figure 1: MBRC strategy hierarchy

1.4.1 Integrated Local Transport Strategy 2012-2031

Council's *Integrated Local Transport Strategy*[6] is a blueprint for the delivery of initiatives encompassing all transport modes and sets the vision for the overall transport system. It identifies broad policy objectives that flow through to detailed transport policy that relates to networks and corridors, public transport, travel demand management, freight and active transport. These are reflected in individual strategies which are discussed in the sections below.

1.4.2 Transport Networks and Corridors Strategy 2012-2031

The *Transport Networks and Corridors Strategy 2012-2031*[7] is the primary driver for Council's planning and delivery of road infrastructure and programs to meet the region's needs to 2031. The strategy's vision informs other subsequent strategies and planning scheme policies:

> *"The transport networks and corridors support transport and land use in the context of their place type, to enhance the quality of places, and to ensure the efficient and effective movements of people and freight." (p. 11)*

The strategy's principles also guide existing and future development which include a transport network which is:

- integrated, multi-functional and accessible
- safe
- delivers on user needs
- affordable
- sustainable
- delivering solutions through partnerships
- attractive and appealing to use.

1.4.3 Other strategies and policies

Council has developed the following transport-related strategies which are guided by the *Integrated Local Transport Strategy 2012-2031*:

[6] *Moreton Bay Regional Council Integrated Local Transport Strategy 2012-2031:* www.moretonbay.qld.gov.au/Services/Reports-Policies/Integrated-Local-Transport-Strategy
[7] *Moreton Bay Regional Council Transport Networks and Corridor Strategy 2012-2031:* www.moretonbay.qld.gov.au/Services/Reports-Policies/Transport-Networks-and-Corridors-Strategy

- *Travel Demand Management Strategy 2012-2031*[8]
- *Public Transport Strategy 2012-2031*[9]
- *Active Transport Strategy 2012-2031*[10].

These strategies were referenced to develop the Planning Scheme Policy - Integrated Design. It includes *Integrated Design - Appendix A, Streets, roads and utilities* which provides a step-by-step process to determine the appropriate road and street design standards and requirements for utility provision in new roads, streets and new developments. including material change of use and reconfiguration of lot, providing an important reference for applicants.

Council seeks to model industry best practice when planning infrastructure by incorporating ecologically sustainable siting, avoidance, mitigation and offset principles. Alternative alignments may be considered for identified projects delivering infrastructure in high value areas. These principles align with the MBRC Planning Scheme.

1.5 Delivering the strategies

Each strategy sets goals and recommendations for respective elements of the transport network and have informed the planning discussed in this report. In line with the requirement to review the LGIP every five years, the LGIP 2021 network planning exercise and this report will build on the transport strategies' recommendations and revise Council's priorities to reflect the continually changing transport network.

[8] Moreton Bay Regional Council Travel Demand Management Strategy 2012-2031: www.moretonbay.qld.gov.au/Services/Reports-Policies/Travel-Demand-Management-Strategy
[9] Moreton Bay Regional Council Public Transport Strategy 2012-2031: www.moretonbay.qld.gov.au/Services/Reports-Policies/Public-Transport-Strategy
[10] Moreton Bay Regional Council Active Transport Strategy 2012-2031: www.moretonbay.qld.gov.au/Services/Reports-Policies/Active-Transport-Strategy

2 Road transport facilities and existing trunk road infrastructure

The road transport infrastructure network is intended to service development consistent with the Planning Scheme. It prioritises the priority infrastructure area (PIA) at the desired standard of service (DSS) in a coordinated, efficient and financially sustainable manner and comprises development infrastructure that meets the criteria discussed below. A trunk road network meets the provisions of both hierarchy and function.

2.1 Trunk roads by road hierarchy

The Planning Scheme defines road classifications for Council-controlled roads in the *Road hierarchy overlay map* [11]. For the purposes of the LGIP, transport network trunk infrastructure includes land and/or works where they are located on road alignments referenced within Council's *Road hierarchy overlay map* as existing or proposed Council arterial, sub-arterial or district collector.

2.2 Trunk roads by function

A road must primarily service demand occurring within the PIA to be considered trunk infrastructure. This demand will use roads outside the PIA as part of typical daily travel patterns. To capture this use, a buffer reflecting the urban zones in the Planning Scheme has been identified around the PIA (shown in Figure 2 as the urban boundary). The purpose of this buffer is to identify and value the existing trunk network.

Note: This buffer is different from the PIA boundary and the urban footprint identified in the *Shaping SEQ South East Queensland Regional Plan 2017*.

[11] *Moreton Bay Regional Council - Planning Scheme - SC 2.1 Map index* for relevant version: www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/v4/mbrc-planning-scheme-schedule-2.pdf

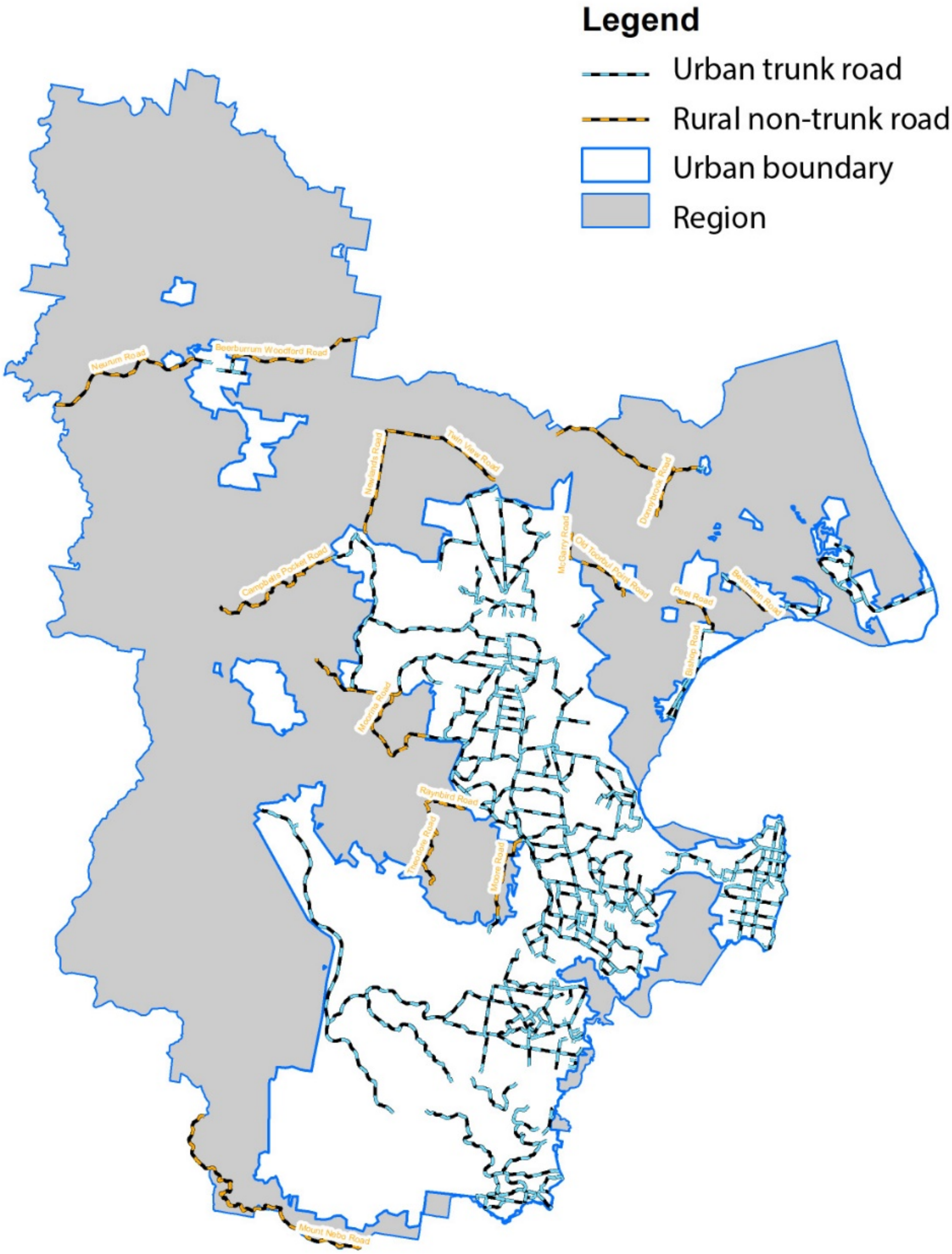

Figure 2: Extent of urban road network and urban boundary

2.3 Trunk road network elements

The road trunk infrastructure network is intended to service development consistent with the assumptions in the LGIP by providing the DSS in a coordinated, efficient and financially sustainable manner.

The road trunk infrastructure network comprises development infrastructure which:

(a) Includes only the following:

- (i) district collector, sub-arterial and arterial roads within the urban boundary
- (ii) all road carriageway elements, including land or works, necessary to directly support transport movements within a road reserve outlined in Sections 2.1 and 2.2, and other infrastructure that supports the ongoing operation of the trunk network, including but not limited to:
  - pavement
  - line marking
  - traffic islands, medians and other traffic management infrastructure
  - traffic signals, signs and other traffic control devices
  - pedestrian crossings and other pedestrian and cycling interfaces
  - intersections
  - intelligent transport system infrastructure
  - retaining walls and retaining structures
  - services, where required to be relocated to support the above.
- (iii) fauna crossings
- (iv) parking bays
- (v) road, pedestrian and crossing lighting
- (vi) stormwater, kerb, channel and culverts where required to support the relevant road infrastructure
- (vii) bridges
- (viii) bus infrastructure associated with the road corridor, including indents and platforms (concrete slabs). Shelters, signs and services are excluded
- (ix) pedestrian facilities and cyclist facilities (both on and off road)
- (x) basic landscaping and streetscaping where required to support the relevant road infrastructure
- (xi) land required to provide for above mentioned works is also considered to be trunk.

(b) Excludes the following:

- (i) works and land on, and adjacent to, road corridors that do not meet the requirements of Sections 2.1, 2.2 and 2.3 (a)
- (ii) works and land on road corridors and infrastructure controlled and managed by other jurisdictions such as state-controlled roads managed by the state government, or roads managed by adjacent local governments
- (iii) works and land required for other infrastructure networks not listed above that exist within the road corridor
- (iv) traffic calming devices
- (v) works and land for the active transport network. This network is included in the LGIP and is described in the corresponding Active Transport Extrinsic Material Report [12]

[12] Refer to *Moreton Bay Regional Council Planning Scheme - Background Reports - Extrinsic Materials*. Document available here: https://www.moretonbay.qld.gov.au/Services/Building-Development/Planning-Schemes/MBRC/Background-Studies

(vi) works and land for accesses to service single uses and private dwellings
(vii) local accesses where works are required to connect premises to the trunk network
(viii) infrastructure which relocates or replaces (but does not exceed) the existing capacity or function of existing transport infrastructure
(ix) for infrastructure provided under a development permit:
  - works and land on trunk roads associated with private or public road access
  - infrastructure on trunk roads associated with maintaining the safety and efficiency of the network.

3 Desired standard of service

The performance and design of the road system will comply with established codes and standards. The urban road network will deliver a connected, efficient network for vehicles and freight, and promote safe, accessible and convenient walking and cycling connections, and effective public transport operations as part of an integrated and cohesive movement network.

The DSS specifies the requirements for the performance and design of the region's trunk road, pedestrian/cycling and public transport systems. The network is assessed against the DSS to determine where deficiencies exist and upgrades are required.

The DSS consists of:

- requirements to reflect road hierarchy, design standards, and guidelines
- place type categories for network planning
- network capacity and performance requirements
- speed requirements
- access control requirements
- intersection and turning provision requirements
- parking provisions
- active transport requirements for non-trunk active transport facilities
- public transport requirements.

3.1 Road network design and planning standards

The DSS sets service levels appropriate to the relevant place types which form the basis for the Planning Scheme's Strategic Framework. The place types for the Planning Scheme are grouped into three categories/types to reflect the broad type of access and transport integration intended for each area across the region. This will assist to achieve key strategic outcomes for the Moreton Bay Regional Council area, including integrated movement networks, streets that prioritise pedestrian and cyclists' needs, embracing more sustainable travel behaviour, and ensuring a transport network that meets other road users' needs in appropriate locations.

Consistent with the highly urbanised environment within activity centres, a lower level of service (LOS) for motor vehicles and freight is considered acceptable to promote an improved walking and cycling environment and increased use of public passenger and active transport modes. In comparison, a higher level of service is considered acceptable in place types 2 and 3 where the balance of users requires a greater need to ensure movement across the network for other traffic, including freight.

The low LOS for residential place types also reflects the relative difficulty of providing higher capacity infrastructure given the prevalence of conflicts with adjacent uses and limitations on the space available.

The place type groupings are shown in Table 2: Desired standard of service place type categories for the transport network.

Place type category 1	Place type category 2	Place type category 3
Activity centres	Urban neighbourhoods Next generation suburban neighbourhoods Enterprise and employment areas Rural townships Coastal communities Suburban neighbourhoods	Rural residential Rural Mountain ranges, forests, waterways

Table 2: Desired standard of service place type categories for the transport network

Design criteria to be referenced in the planning and design of the road network include:

- Local government road design and development manual/standards/codes in planning scheme and Planning Scheme Policy Integrated Design Appendices A and F
- Department of Transport and Main Roads - Road Planning and Design Manual (2nd edition)
- Australian Standards
- AUSTROADS guides.

3.1.1 Transport (roads) network capacity requirements by category

The DSS for transport network capacity is defined by LOS, a qualitative measure representing road users' perceptions of the quality of service such as delay, freedom to manoeuvre and safety. Table 3 provides MBRC's road capacity DSS used to identify when road capacity upgrades should be considered.

Desired standard of service	Category type 1	Category type 2	Category type 3
Road link	Level of service E[3]	Level of service D[2]	Level of service C[1]
	Degree of saturation		
Arterial degree of saturation	0.95	0.85	0.65
Sub-arterial degree of saturation	0.95	0.80	0.65
District collector degree of saturation	0.90	0.80	0.60
Desired standard of service	Place type 1	Place type 2	Place type 3
Intersection	Level of service D[2]	Level of service D[2]	Level of service C[1]
	Degree of saturation		
Signalised degree of saturation	0.9	0.9	0.7
Roundabout degree of saturation	0.85	0.85	0.7
Priority degree of saturation	0.80	0.80	0.65

Table 3: Level of service (LOS) for roads/street per place type - for capacity

[1]LOS C describes stable operation. The ability to manoeuvre and change lanes at mid- segment locations is becoming restricted.

[2]LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections.

[3] LOS E is characterised by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing

3.1.2 Transport (roads) network speed requirements by category

Table 4 provides guidance regarding appropriate speed environments by the place type categories and the road hierarchy.

Desired standard of service (speed environment)		Place type category		
		Category type 1	Category type 2	Category type 3
Hierarchy	Arterial	To consider the pedestrian and cycle provision, adjacent land uses and overall environmental context	60-80 km/h	60-100 km/h
	Sub-arterial		60-80 km/h	60-80 km/h
	District collector		50-60 km/h	60 km/h

Table 4: Speed environment desired standard of service for trunk roads

3.1.3 Transport (roads) network access requirements by category

Table 5 below designates the access provisions for access by place type category and the road hierarchy.

Desired standard of service (access)		Place type category		
		Category type 1	Category type 2	Category type 3
Hierarchy	Arterial	Level of access provided to be commensurate with the environmental context of the road link	Intersections and limited commercial and industrial access	Intersections
	Sub-arterial		Intersections and limited commercial and industrial access	Intersections and frontages
	District collector		Intersections and limited commercial and industrial access	Intersections and frontages

Table 5: Access desired standard of service for trunk roads

3.1.4 Transport (roads) network intersection and turning provision by category

Table 6 below designates the intersection and turning traffic provisions by place type category and the road hierarchy.

Desired standard of service		Intersections	Turning traffic
Hierarchy	Arterial	C - 0.5 to 1.0 km	Protected acceleration and deceleration lanes
	Sub-arterial	C – 0.2 to 0.5 km	Protected acceleration and deceleration lanes
	District collector	C/P – 0.1/0.2 km	Localised protection

Note: C - Controlled intersections, P – Priority intersections

Table 6: Intersections and turning traffic provisions desired standards of service for trunk roads

3.1.5 Transport (roads) network parking provision by category

Table 7 below designates the parking provision by place type category and the road hierarchy.

Desired standard of service (parking)		Place type category		
		Category type 1	Category type 2	Category type 3
Hierarchy	Arterial	Limited/low provision	Limited / controlled	None
	Sub-arterial		Limited / controlled	Limited / controlled
	District collector		On-road / shared off-road	On-road

Table 7: Parking provision desired standard of service for trunk roads

3.1.6 Road corridor active transport provisions

Design of the network will comply with established codes and standards, promote networks that are functional and connected and reflect desire lines to key destinations, and meet appropriate standards of convenience, comfort and amenity. Design criteria which should be referenced include:

- Local government road design and development manual/standards/Planning Scheme and planning scheme policy codes
- Australian Standards
- AUSTROADS Guide to Road Design – Part 6A: Pedestrian and cycle paths
- Institute of Public Works Engineering Australasia Queensland (IPWEAQ) Complete streets.

3.1.7 Transport (roads) network off-road pathway provision by category

Table 8 below designates the pathway provisions for trunk roads by place type.

Desired standard of service (pathways)		Place type category		
		CategorytType 1	Category type 2	Category type 3
Hierarchy	State	Off-road: 2.5m (minimum) both sides. * **The LGIP active transport requirements apply if on the LGIP active transport network*		
	Arterial			
	Sub-arterial			
	District collector			

Table 8: Desired standard of service for shared pathways

3.1.8 Transport (roads) network on-road cycling provision by category

Table 9 designates the on-road cycling facility provisions for trunk roads by place type.

Desired standard of service (cycling provision)		Place type category		
		Category Type 1	Category Type 2	Category Type 3
Hierarchy	Arterial Sub-arterial	**On-road (cycle lanes)# ^** where: Speed (km/ph) – Cycle provision (metres) 60 – 1.5 80 – 2.0 100 – 3.5		
	District collector	**On-road (cycle lanes): # * ^** 1.5m both sides (minimum)		

Table 9: Desired standard of service for on-road cycling provision

 # Parking and safety strips (separating parking bays from cycle lanes) are in addition to these requirements.

** Contra-flow on-road facilities are not preferred, in exceptional circumstances and with approval these should have a minimum width of 1.8 metres and should only be provided on 60 km/ph roads or less.*

^ The greater of the two provisions is to be applied if on the active transport network.

3.1.9 Road corridor pedestrian provisions by category type

Table 10 below designates the crossing provisions for trunk roads by place category type.

Desired standard of service (crossings)		Place type category		
		Category type 1	Category type 2	Category type 3
Spacing of crossings		200 metres	400 metres	600 metres (max 800 metres)
Hierarchy	Arterial	Signalised crossing, zebra or refuge If > 2 lanes, signalised only		
	Sub-arterial	Signalised crossing, zebra or refuge, raised platform or shared zone If > 2 lanes, signalised only		
	District collector	Zebra or refuge, raised platform or shared zone Uncontrolled crossings only where sightlines are adequate		

Table 10: Desired standard of service for crossings

3.1.10 Public transport provisions

New urban development is designed to achieve safe and convenient walking distances to existing or potential bus stops, or existing or proposed demand-responsive public transport routes. The network promotes the provision of consistent public transport infrastructure across the movement network that is compatible with land uses, demand and is fully accessible.

Design criteria which should be applied include:

- local government design and development manual/standards/ Planning Scheme and planning scheme policy codes
- design accords with the performance criteria set by Department of Transport and Main Roads
- design accords with the performance criteria and guidance in TransLink's Public Transport Infrastructure Manual (PTIM)
- AUSTROADS guides for road-based public transport and high-occupancy vehicles.

4 Transport (road) modelling

This section outlines the approach to the transport modelling that has informed the transport road network planning exercise. An updated bespoke *LGIP 2021 model* has been developed which uses a combination of two modelling software packages:

1. Moreton Bay Regional Strategic Multimodal Transport Model (MBRSTM) is a 4-step model developed in the EMME package. This multimodal model forecasts transport demand in and around the Moreton Bay Region based on demographic inputs and land use assumptions.

2. MBRC Visum model has been developed with a refined zoning system and detailed network coding. This single model traffic model is mainly used for traffic assignment purposes.

For the purposes of this report, the combination of the two modelling programs are referred to as the *LGIP 2021 model.* Individually, they are referred to as the *MBRSTM* (EMME) and *MBRC Visum*. The adopted modelling scenarios are:

- 2021 baseline - A scenario of the projected network and demographics at the end of the 2020/2021 financial year.
- 2026, 2031 and 2036 reference - Scenarios of the projected network and demographics at the end of the 2025/2026, 2030/2031, and 2035/2036 financial years, respectively. This includes committed MBRC schemes and projected Department of Transport and Main Roads (TMR) schemes.
- 2026, 2031 and 2036 project - Scenarios of the projected network and demographics at the same times as above. This includes committed MBRC schemes, projected TMR schemes, and LGIP 2021 scheme.
- Ultimate - A scenario of the projected demographics at the full build out of the MBRC Planning Scheme land uses.

The LGIP 2021 model has been developed for the 2021 baseline and 2026, 2031, 2036 forecast years. The ultimate scenario has only been run in the MBRSTM as the LGIP reporting requires only the demand for ultimate to be reported.

4.1 Demography and land use

Two demographic and land use datasets were referenced in the development of the LGIP 2021 model:

- MBRC demographic and land use assumptions: This provided the demographic and land use assumptions of those zones located within the MBRC area. These assumptions are described in the *Planning Assumptions*[13].

- Outside MBRC demographic and land use assumptions: Data that TMR has incorporated in the development of the South-East Queensland Strategic Transport Model (SEQ-STM) have been used for transport modelled areas outside the MBRC local government area. This input was considered as the main source for estimating the demographic and land use assumptions of those zones outside the MBRC area.

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[13] Moreton Bay Regional Council, (2021) Local Government Infrastructure Plan (LGIP) Interim Amendment No 1. Planning Assumptions Extrinsic Material.

4.2 Transport network coding

The transport network coding for the transport model scenarios incorporates updates programmed for Council's road network and upgrades planned for the state transport network. Two sets of inputs were referenced for each horizon year:

- MBRC capital projects – MBRC upgrade projects approved within the capital works system for local roads and roads under MBRC control.
- Future state projects – Base and reference network projects exported from the SEQSTM for those roads under TMR control.

In addition, other amendments were made to improve the performance of the LGIP 2021 model, including procedures to adjust for anomalies within the network.

4.3 Mode share

In recognition of Council and state government initiatives to improve the use of public transport, the model was configured to reflect mode share change over time, using two methods:

- Trend method: Predicts the expected mode share by extrapolating current user behaviours and preferences.
- Policy method: Assumes an increased public transport service beyond that identified in the trend method, which will cause a higher mode shift from private car to public transport. The policy method assumes an increase in rail frequencies and some additional bus services to developed areas.

The methods have been applied to the modelled scenarios to best reflect when they are most likely to impact travel behaviour.

- **The trend method has been adopted to 2026** as there are no significant short-term public transport initiatives planned that are likely to impact travel behaviour within the next five years.
- After 2026, it is expected that implementation of Council's public transport strategy and advocacy could have a positive impact on travel behaviour with a higher take up of public transport use than forecast via the trend method.

4.4 Demand adjustments

The LGIP 2021 MBRSTM and MBRC Visum models have different zoning systems. MBRC Visum has a more detailed zoning system in and around the MBRC area compared to the MBRSTM. Demand matrices from the MBRSTM scenario model runs were adjusted for introduction into the MBRC Visum model's more refined zoning system.

Controls were applied to confirm consistency of the converted data for each input when adjusting the demand matrices from the MBRSTM to the MBRC Visum model. Minor differences in the demand have been observed that are insignificant in the overall modelling.

This process produced four modelled scenarios including the 2021 baseline and 2026, 2031 and 2036 reference case models which were used to inform the network planning process described in Section 5.

5 Network planning process

The development of the future trunk projects which form the SOW followed a six-step process.

5.1 Step 1: Identification of road capacity constraints

The DSS for road capacity was set within the LGIP 2021 reference case models as a parameter for assessing the performance of the network over each horizon year. The LGIP 2021 reference case models were run, and details of the performance of intersections and links throughout the MBRC network reported where it did not meet the DSS requirements.

This process was repeated at each phase and model run to assess the performance of proposed upgrades. This process is described further in the steps below.

5.2 Step 2: Initial network planning

Council transport planning representatives and the network owner undertook the initial network planning in response to the identified road capacity constraints (step 1). Workshop attendees reviewed each identified location from step 1 to determine if upgrades were warranted or if further tests and investigations were necessary.

The following considerations informed the workshop when deciding which locations would likely require upgrades:

- The comparative performance of each link and intersection against the DSS within the 2021 baseline and 2036 reference scenario.
- The location of the infrastructure and its strategic function. For example, locations were excluded from further investigation if they were considered to have little effect on the trunk network performance, and/or were local access issues.
- The constructability of upgrades and consequence on financial sustainability.
- How the current layout compares to the planned form of the links and intersections and if upgrades are achievable.
- Whether the scale of the upgrade required was relative to the impact of growth. For example, if grade separating an existing intersection was required to mitigate a minor movement exceeding capacity, this was considered excessive and not pursued.
- If minor interventions are available to resolve the issue that could be immediately implemented outside of LGIP considerations, eg line marking amendments.
- If the model parameters and assumptions were identified as influencing the results that could be resolved with minor adjustments to the model. For example, where the assumed signal phasing was adversely affecting the intersection performance.
- The location's proximity and network relationship to the PIA. If it was identified that the majority of the additional demand was being generated by growth outside of the PIA, these locations were excluded from further planning.

A list of locations for upgrades was identified for further testing from this process and were included in the draft project case transport model run which included location descriptions, proposed timing and the assumed upgrade where known.

5.3 Step 3: Additional network planning

Council officers reviewed and identified other projects for inclusion in the LGIP 2021 which are not guided by its DSS road capacity performance analysis model. These included:

- Road capacity projects included in the reference model. Each project was reviewed to determine its eligibility for inclusion as an LGIP project.
- Existing unprogrammed LGIP 2017 projects not included in the reference model. The need for those projects were assessed by a performance review of the relative intersection or link without the upgrade. If the respective intersections or links did not flag underperformance or did not fit the criteria of an LGIP 2021 project, these were not included in the project models.
- Existing programmed non-capacity projects not previously identified as LGIP projects but would potentially perform a DSS compatible upgrade function, such as programmed road widening to meet the DSS. Non-capacity projects were not modelled.

5.4 Step 4: Project definition

Council officers reviewed the consolidated list of projects from steps 2 and 3 against the DSS road capacity performance outputs from the LGIP 2021 model to determine what upgrades would be required. The following were considered in the project definition process:

- the overall performance of the intersection and link
- in the case of intersections, the movements triggering the DSS failure, and respective solutions
- the location and features adjacent to the intersection and link which may affect or constrain upgrade options
- alternative projects in the adjacent area which may mitigate the need for the upgrade.

The upgrade assumptions were then coded into the project case models for further analysis.

5.5 Step 5: Project timing

Council officers reviewed the reference case against the modelled DSS road capacity performance for each horizon year to determine the required timing for each project considering:

- The relevant performance of respective links and intersections by horizon year increment and when the DSS road capacity was exceeded.
- The proposed timing of existing programmed projects.
- Coordination with proposed adjacent LGIP 2021 projects and other capital projects.
- The timing of increased demands based on the planning assumptions.

5.6 Step 6: Revised modelling and project validations

The project model road network was updated to reflect the identified projects. Steps 3, 4 and 5 were then revisited to assess the success of the works program in mitigating the DSS road capacity underperformance in the 2036 horizon. Network planners, modellers and the transport network owner reviewed these outcomes for relevance and efficacy and adopted the draft road transport schedule of works (SOW).

6 Service catchments

The region has been divided into five transport catchments for the purpose of the LGIP. These catchments are designed to distinguish between urban and rural uses and take account of the unique servicing patterns across the region. The behaviours and distribution of trips will vary between rural and urban areas based on land use, employment types and availability of nearby destinations.

Each catchment type has been delineated into distinct location-based catchments based on their proximity to major centres (identified in Figure 3) and include: Urban North, Urban South, Urban East, Rural North, Rural South. These have been used to quantify demands and travel patterns in the model.

Further, the catchments were split by urban and rural areas in recognition of the different travel patterns and behaviours that occur between the two land uses. This has been completed to accurately reflect the nature of local trips, which will generally have destinations close to their origin points where the demand can be serviced locally.

Minor amendments have been made to the service catchments since the LGIP 2017. Some areas, now expected to be fully developed by 2036, have been bought into the urban catchments, where previously they were listed in the rural catchments.

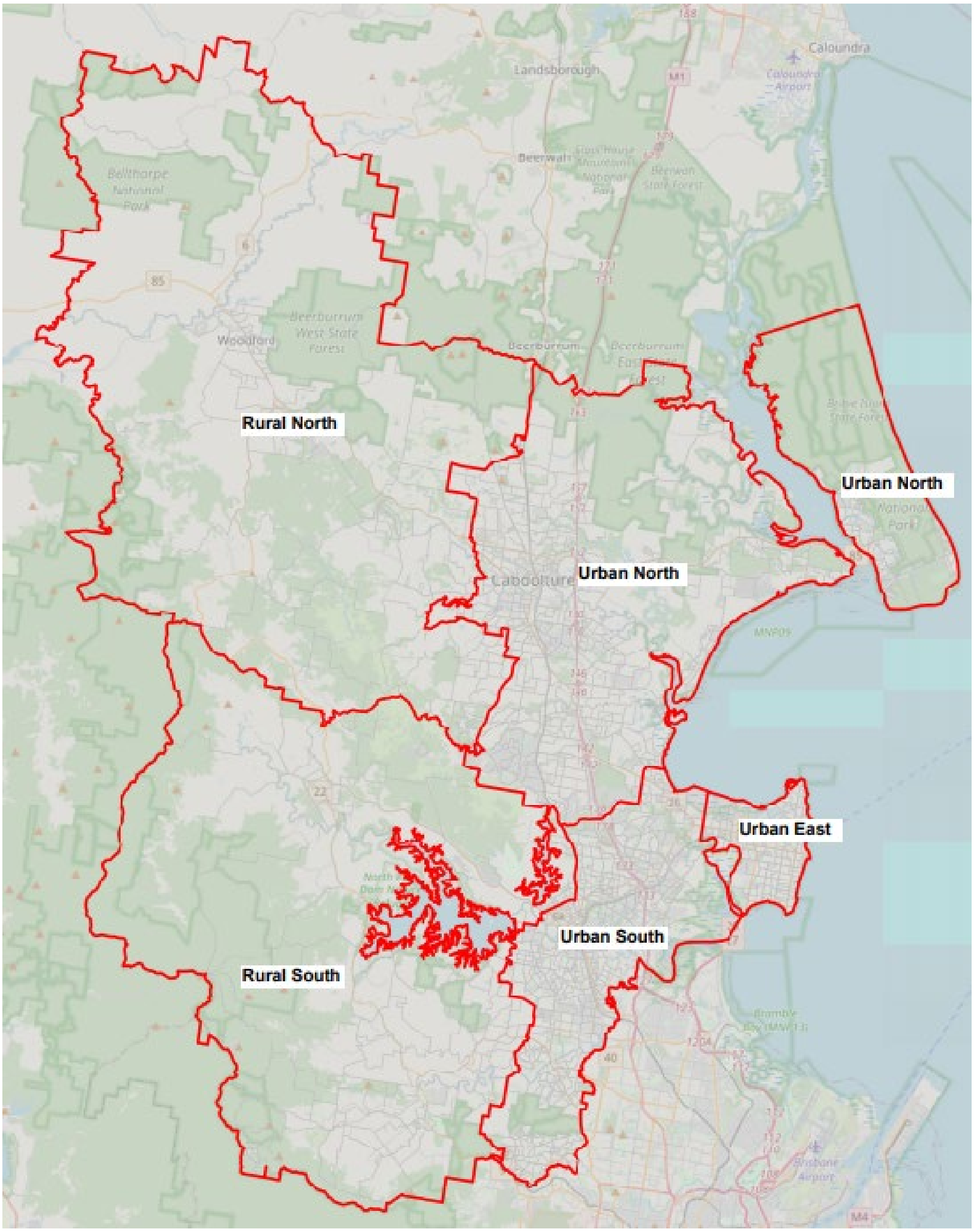

Figure 3: LGIP transport network service catchments

7 Demand assumptions

The following sections outline the results of the traffic modelling exercise and the assumptions used to inform planning of future road network infrastructure requirements.

Transport modelling is a complex process that cannot be summarised using a simple conversion from dwellings and employment to respective trip generation rates. For example, two similarly categorised land uses may generate different network demands based on their proximity to other land uses, access to public transport, access to the road network, etc. This should be kept in mind when interpreting the results in the following section.

Figure 4 below summarises the transport model process to generate demands and will assist in the interpretation of this section.

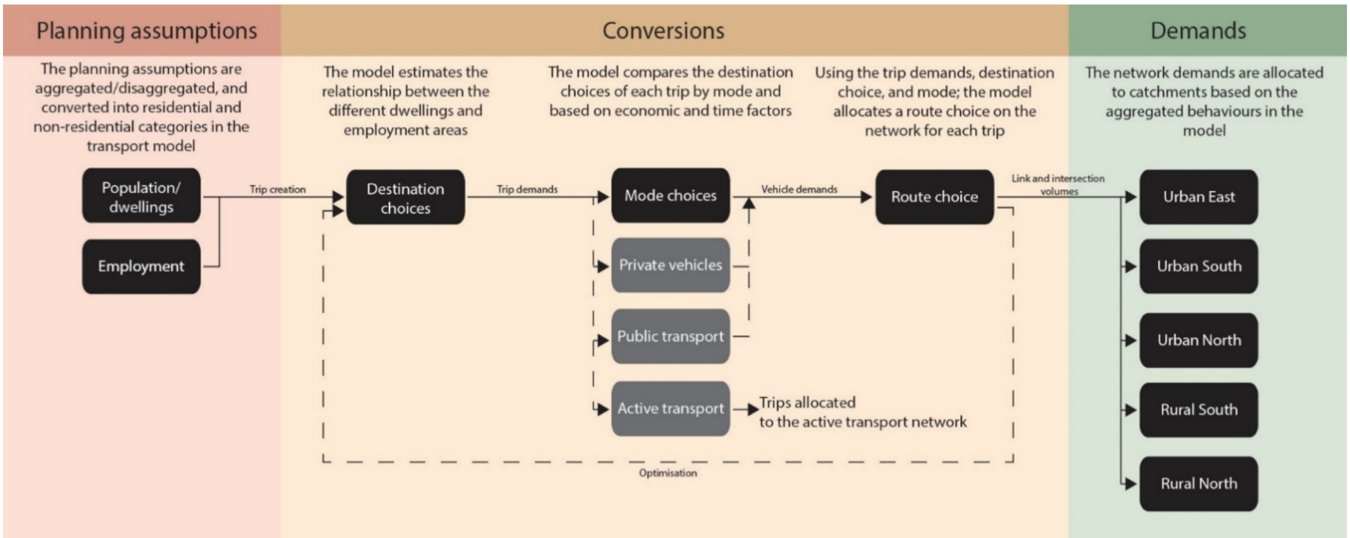

Figure 4: Transport modelling demand conversion

7.1 Planning assumptions

The population and dwellings assumptions used to identify demand assumptions for the transport (road) network have been extracted from the *Planning Assumptions* [14]. These population assumptions draw on several sources, including:

- existing and committed development
- planning intentions such as the SEQ Regional Plan
- strategic planning projects and the place types from the Strategic Framework
- growth forecasts such as the urban growth model
- approved development applications
- OESR population forecasts
- land suitability and compatibility to accommodate growth.

The assumptions used are shown below in tables 11 to 16 along with other inputs used in the transport model.

[14] Moreton Bay Regional Council, (2021) Local Government Infrastructure Plan (LGIP) Interim Amendment No 1. Planning Assumptions Extrinsic Material.

7.2 Demand and demand conversion factors

The *Planning Assumptions*[15] were used to undertake the transport modelling and develop the catchment demands shown below. The base year for the transport model is 2016, baseline year for planning is 2021, with a planning assumption horizon of 15 years to 2036, aligning with the latest ABS census data. The following tables identify existing and projected demand for the road network used for the development of the LGIP 2021, based on the catchments.

The following should be noted when interpreting these results:

- Daily vehicle trips include the sum of three trip categories:
  - Trips starting in the catchment
  - Trips ending in the catchment
  - Trips starting and ending in the catchment.
- Trips starting or ending outside the Moreton Bay region are included.
- The daily vehicle trips for each catchment include trips also counted for the other catchments. Summing the catchment daily vehicle trips to determine the MBRC total daily vehicle trips would result in double-counting.
- The MBRC total for daily vehicle trips accounts for all trips starting and/or ending within the region without double-counting.
- Demands are calculated using several push-and-pull factors within each catchment that are applied to the dwellings, employment and enrolment inputs. Because of this complexity, a standardised conversion factor for each catchment cannot be provided.
- The population, dwelling and employment figures will differ slightly from those in the *Planning Assumptions* report due to the estimation and disaggregation process completed by the transport model.

2016 demand conversion (base model)		Population	Dwellings	Employment	Enrolment	Car trips %	Daily vehicle trips
Catchments	**Urban east**	55,119	26,209	17,459	8,757	83%	152,431
	Urban south	142,849	57,649	37,002	24,451	88%	497,490
	Urban north	183,609	68,239	49,764	22,548	88%	329,504
	Rural south	28,545	9,684	4,782	1,840	95%	79,739
	Rural north	18,216	6,642	3,577	1,031	96%	44,106
	MBRC total	**428,338**	**168,423**	**112,584**	**58,627**	**87%**	**955,179**

Table 11: Demand conversions

2021 demand conversion (baseline planning model)		Population	Dwellings	Employment	Enrolment	Car trips %	Daily vehicle trips
Catchments	**Urban east**	61,035	27,393	20,297	9,755	84%	158,178
	Urban south	206,516	75,818	57,188	36,149	88%	522,992
	Urban north	163,164	63,991	42,995	28,377	90%	353,845
	Rural south	31,334	10,518	3,907	2,851	95%	82,073
	Rural north	21,131	7,442	4,220	935	97%	46,548
	MBRC total	**483,180**	**185,162**	**128,607**	**78,067**	**88%**	**1,006,734**

Table 12: 2021 demand conversion

[15] Moreton Bay Regional Council, (2021) Local Government Infrastructure Plan (LGIP) Interim Amendment No 1. Planning Assumptions Extrinsic Material.

2026 demand conversion		Population	Dwellings	Employment	Enrolment	Car trips %	Daily vehicle trips
Catchments	**Urban east**	67,623	30,803	21,898	9,990	84%	172,173
	Urban south	220,330	82,635	64,820	43,661	88%	563,729
	Urban north	185,030	72,634	48,774	33,959	90%	401,208
	Rural south	32,365	10,981	4,145	2,867	95%	84,592
	Rural north	23,748	8,439	4,663	1,494	97%	52,677
	MBRC total	**529,096**	**205,492**	**144,300**	**91,971**	**88%**	**1,096,427**

Table 13: 2026 demand conversion

2031 demand conversion		Population	Dwellings	Employment	Enrolment	Car trips %	Daily vehicle trips
Catchments	**Urban east**	72,825	28,559	22,877	10,177	85%	184,788
	Urban south	236,665	92,810	70,715	47,815	86%	596,070
	Urban north	205,804	80,707	54,147	37,430	88%	437,529
	Rural south	33,160	13,004	4,240	2,962	94%	86,700
	Rural north	25,671	10,067	5,202	1,798	95%	57,410
	MBRC total	**574,125**	**225,147**	**157,182**	**100,182**	**87%**	**1,171,069**

Table 14: 2031 demand conversion

2036 demand conversion		Population	Dwellings	Employment	Enrolment	Car trips %	Daily vehicle trips
Catchments	**Urban east**	81,394	38,226	23,991	10,652	84%	200,192
	Urban south	249,527	96,894	76,203	53,433	86%	631,190
	Urban north	221,209	87,503	59,305	44,646	88%	482,796
	Rural south	34,069	11,609	4,325	3,015	94%	88,595
	Rural north	28,009	10,077	6,099	2,361	95%	66,154
	MBRC total	**614,208**	**244,309**	**169,924**	**114,107**	**86%**	**1,260,754**

Table 15: 2036 demand conversion

Ultimate demand		Population	Dwellings	Employment	Enrolment	Car trips %	Daily vehicle trips
Catchments	**Urban east**	105,189	50,764	25,671	12,706	83%	246,561
	Urban south	292,076	116,181	89,330	56,182	85%	720,293
	Urban north	271,292	108,692	69,877	43,290	87%	589,918
	Rural south	36,565	12,419	4,141	2,729	94%	92,260
	Rural north	98,151	37,006	16,500	4,446	94%	191,291
	MBRC total	**803,272**	**325,062**	**205,518**	**119,353**	**86%**	**1,554,299**

Table 16: Ultimate demand conversion

7.3 Trip generation rates

Trip generation is the first step in a transport forecasting process and estimates the number of person trips generated or attracted by an area of interest.

Trips in the LGIP 2021 model are classified as produced (production) and attracted (attraction) trips. This is different to reporting trip origins and destinations and the data should be considered with this understanding.

Trip generation can also be represented by trip generation rates or the number of person trips generated per measurable unit that can be attributed to the land use, for example per 100m^2 or per employee.

For clarity and to recognise the duality of trip production and attraction, the trip generation rates in the tables below for home-based trips (home-based work, home-based shopping, and home-based other) have attributed 50% of the trip to the residential production, and 50% of the trip to the employment attraction. Tables 19 and 20 are provided only to demonstrate the varying trip generation rates by place and over time. **The rates shown shall not be applied for development assessment purposes or Integrated Transport Assessments.**

Place type	2016 base model	2021 reference model (trend)	2026 reference model (trend)	2031 reference model (trend & policy)	2036 reference model (trend & policy)	ultimate model (policy)
	Car	Car	Car	Car	Car	Car
Activity centre	7.61	6.23	5.96	6.63	5.34	5.37
Enterprise and employment area	6.47	5.08	5.14	5.52	5.23	6.97
Urban neighbourhood	5.54	5.52	5.25	5.48	5.07	4.90
Next generation neighbourhood	5.15	4.64	4.46	4.54	4.49	4.95
Suburban neighbourhood	6.06	5.76	5.62	5.33	5.59	5.96
Special area	7.36	7.82	8.00	7.49	7.86	6.60
Key extractive resource	4.92	4.31	4.26	4.24	4.45	6.41
Rural	6.36	5.12	4.85	4.30	4.81	5.34
Coast and riverlands	4.91	3.97	4.01	3.87	4.15	5.27
Coastal communities	4.28	3.96	3.96	4.11	4.17	4.50
Mountain ranges, forest and waterway	6.69	5.32	5.11	4.84	5.10	5.48
Rural residential	6.77	6.41	6.32	5.47	6.39	6.13
Rural townships	7.50	6.70	6.39	6.01	6.33	6.47
MBRC total	**6.04**	**5.51**	**4.47**	**4.37**	**4.31**	**6.26**

Table 17: Average daily residential trip generation rates by place type

Employment category	2016 base model	2021 reference model (trend)	2026 reference model (trend)	2031 reference model (trend and policy)	2036 reference model (trend and policy)	Ultimate model (policy)
	Car	Car	Car	Car	Car	Car
Retail	5.75	6.69	7.07	7.40	7.65	8.23
Service	0.89	1.09	1.22	1.32	1.41	1.69
Professional	2.21	2.43	2.57	2.69	2.80	3.15
Industry	1.02	1.21	1.36	1.48	1.59	1.98
Other	1.12	1.14	1.27	1.35	1.43	1.83
MBRC total	**2.44**	**2.19**	**2.36**	**2.50**	**2.62**	**3.00**

Table 18: Average daily trip generation rates per employee by employment category

8 Network costing and valuation methodology

The following section outlines the process used to value the existing trunk network and estimate the costs of the new and upgraded future trunk network.

8.1 Land valuation methodology

Road projects often require additional space on top of what is available in the existing road corridor. To reflect this, land valuation has been included in the costings for projects that will require acquisitions or land purchases to make them viable.

Land valuation consultants JLL prepared a report valuing land across the region for the purpose of the LGIP. See the *SOW Model Extrinsic Material Report* for additional details regarding land values by place type and suburb for 2016 and 2018 to devise a rate per square metre. Suburb land valuations were based on zones and the extent of any constraints.

8.2 Valuation of existing and future trunk road-reserve land

Existing road reserve was valued based on the total area of the trunk road corridors, and by applying an assumption that 100% of the land is constrained.

Land that is required for future trunk infrastructure that is not currently part of the road reserve was valued using the relevant land valuation rates, with the constrained land value applied to land that is subject to flooding.

Estimates of the required land for new and upgraded trunk infrastructure were developed using existing design data and acquisition plans where they were available for the respective projects. Where this was not available, site-based acquisition volume estimates were developed by applying a required road reserve width (based on Council's *Planning Scheme Policy*) with reference to the hierarchy of the road over aerial imagery of the site using Council's Geographic Information System.

8.3 Value of existing trunk road assets

The value of the existing trunk network was calculated by applying a standardised rate to the trunk road network based on the attributes of each link and intersection.

The attributes used to estimate intersections included:

1. The intersection type, eg signalised, roundabout, priority controlled
2. The intersection hierarchy, eg the greater of the legs being district collector, sub-arterial or arterial
3. The number of approach legs, eg three-way intersection, four-way intersection, etc
4. The number of approach lanes, eg a four-lane intersection having four lanes on two approaches, and two lanes on the remaining approaches.

The attributes for road links included:

1. The number of lanes in both directions, eg two-lane road, four-lane road
2. The topography, eg flat, undulating or hilly.

The relevant rates are show in tables 21 and 22 below. All costs are current as at 2020/2021.

	Roads ($) per lineal m.			Bridge ($) per lineal m.	Culvert ($) per lineal m.
Roads	Flat	Undulating	Hilly	Bridge	Culvert
6 lane	$7,210	$8,035	$9,680	$122,500	$84,000
4 lane	$6,040	$6,740	$8,150	$98,000	$64,000
2 lane	$4,050	$4,500	$5,405	$61,250	$44,000

Table 19: Rates applies for road links, bridges and culverts

Intersections	Unit rates per intersection ($)					
	6 lane	4 lane	2 lane	6 lane signalised	4 lane signalised	2 lane signalised
3 way - 6 lane	$2,720,000	$2,140,000	$1,780,000	$2,720,000	$2,140,000	$1,780,000
3 way - 4 lane	$2,140,000	$1,780,000	$1,420,000	$2,140,000	$1,780,000	$1,420,000
3 way - 2 lane	$1,780,000	$1,420,000	$980,000	$1,780,000	$1,420,000	$980,000
4 way - 6 lane	$4,000,000	$3,360,000	$2,880,000	$4,000,000	$3,360,000	$2,880,000
4 way - 4 lane	$3,360,00	$2,880,000	$1,840,000	$3,360,000	$2,880,000	$1,840,000
4 way - 2 lane	$2,880,000	$1,840,000	$1,200,000	$2,880,000	$1,840,000	$1,200,000

Table 20: Rates applied for road intersection upgrades

The rates from the tables above have been applied to existing trunk road infrastructure and are shown by catchment below.

Catchment	Land	Infrastructure
Urban north	$31,427,724	$635,281,688
Urban south	$33,637,820	$801,571,980
Urban east	$18,311,582	$239,476,440
Rural north	$1,121,842	$56,770,413
Rural south	$2,322,968	$111,632,195

Table 21: Value of existing trunk road infrastructure by catchment

No adjustment factors have been applied for non-fully-formed roads.

8.4 Costing of new and upgraded trunk infrastructure

The three methods to determine the value of new and upgraded trunk infrastructure are cost escalation, project owner's costs and contingency. Each is applied in the SOW model and described below.

8.4.1 Costing of projects using existing cost estimates

Where an existing design-based cost estimate was available, this has been used in the first instance.

Many of the projects have been subject to previous planning and design investigations by Council. Estimates based on designs are the best available information, they are more accurate as they have considered specific site considerations and reflect the volume of work required to deliver the respective project.

Most of the projects costed using this method were estimated in Council's Engineering, Construction and Maintenance - Estimate of Cost tool, which is regularly benchmarked against realised construction costs. The total value of construction from the respective cost estimates were adopted, which exclude project owner's costs and contingencies.

A small number of projects were costed using order of magnitude cost estimates provided in detailed planning reports.

8.4.2 Costing of projects using previous LGIP cost estimates

Projects with scopes that remained unchanged from those listed in LGIP 2017 but did not have a recent design-based cost estimate were estimated by adopting the establishment costs from the LGIP 2017.

8.4.3 Costing of projects using strategic cost estimate

Projects without recent design-based cost estimates or corresponding LGIP estimates were subject to a strategic cost estimation process. These were determined by establishing unit rates for individual infrastructure items using Council's internal infrastructure standards and unit rates. A breakdown of typical costs is shown in Section 8.3.

The following method was applied to determine the projected scope of works for each project:

1. The projects were split into phases to reflect elements that were required to be individually costed. For example, where a road corridor project included a bridge element, the project would be split into two phases: phase 1 - road corridor, and phase 2 - bridge.
2. The infrastructure class for each respective phase was identified as:
    a. road corridor
    b. road intersection
    c. culvert
    d. bridge.
3. The infrastructure type was then identified:
    a. Road corridors: the number of lanes.
    b. Road intersections, bridges and culverts: the number of approach legs and the control type.
4. Other features were identified using Council's Geographic Information System:
    a. Road corridors: the terrain types and cumulative length of the road corridor.
    b. Road intersections: the ultimate number of approach lanes.
    c. Culverts and bridges: the cumulative length of the structure identified using aerial imagery and flood mapping in Council's Geographic Information System.

Each of the above attributes were then applied to the typical cost breakdown to generate an establishment cost aggregated by the various phases.

9 Schedules of works

The SOW is a table that identifies the future trunk infrastructure for each infrastructure network based on the LGIP criteria and time period. It includes the information based on the excel model of works and costs (separately available). A summary of the SOW for this network is available below.

Plans for trunk infrastructure (PFTI) have been prepared for each of the networks in the LGIP and are located on the MBRC website. The information shown on these plans includes:

- existing trunk infrastructure
- the relevant network service catchment
- each of the projects shown in the SOW with the unique identifier
- a legend indicating the type of infrastructure item at the specified location.

The following items are identified for each network item:

- the LGIP identification code (this matches reference in the PFTI)
- the LGIP phase identification code
- estimated timing.

Table 22: Schedule of Works

LGIP ID	Map ref	Service catchment	Description	Hierarchy	Infrastructure class	Length (m)	Land acquisition (ha)	Delivery timeframe	Baseline cost (works)	Baseline cost (land)	Establishment cost (works)	Establishment cost (land)
TR - 1	LGIP-57 TN	Urban east	Klingner Road / Boardman Road intersection, Kippa-Ring upgrade to signalised intersection with road widening for additional approach lanes	Sub-arterial	Road intersection	-	-	2021-2026	$2,258,414	$0	$2,938,080	$0
TR - 2	LGIP-42 TN	Urban north	Oakey Flat Road duplication with median from Ashbrook Drive to Lakeview Road, Morayfield with intersection improvements and property acquisitions as required	Arterial	Road corridor	-	0.12	2021-2026	$10,432,921	$180,900	$13,572,690	$187,592
TR - 3	LGIP-55 TN	Urban south	Construction of the Mango Hill Ring Road as a median divided two lane road from Lamington Road to Anzac Avenue, Mango Hill	Sub-arterial	Road corridor	-	-	2021-2026	$1,323,470	$0	$1,721,766	$0
TR - 4	LGIP-55 TN	Urban south	Old Gympie Road upgrade to a four-lane divided arterial from Alma Road to Goodwin Road, Dakabin - including the signalisation of two intersections and property acquisition required at the Hughes Road East intersection	Arterial	Road corridor	-	0.09	2021-2026	$9,523,261	$21,800	$12,394,625	$22,200
TR - 5	LGIP-58 TN	Urban south	West Petrie bypass stage 1 - Youngs Crossing Road from Protheroe Road, Joyner to Dayboro Road, Petrie as a four-lane divided arterial road including a new flood-immune four lane bridge and property acquisition	Arterial	Road corridor	-	-	2021-2026	$27,779,636	$2,500,000	$36,139,867	$2,545,823
TR - 6	LGIP-55 TN	Urban south	Old Gympie Road upgrade to four-lane median divided arterial from Whitehorse Road to Alma Road, Kallangur with signalisation of Whitehorse Road intersection	Arterial	Road corridor	-	-	2021-2026	$7,550,378	$0	$9,826,898	$0
TR - 7	LGIP-55 TN	Urban north	Boundary Road / Old Gympie Road, Narangba upgrade to signalised intersection including additional approach traffic lanes for oversize heavy vehicle access including property acquisition on approaches	Arterial	Road intersection	-	0.14	2021-2026	$5,079,219	$4,400	$6,607,801	$4,646
TR - 8	LGIP-59 TN	Urban south	Old Gympie Road upgrade to four lanes from Highet Street to Nellies Lane, Kallangur with signalisation of both the Brickworks Road and Nellies Lane intersections and upgrade of Freshwater Creek crossing to improve flood immunity	Arterial	Road corridor, road intersection, road bridge	300	-	2021-2026	$11,706,500	$0	$15,946,235	$0
TR - 9	LGIP-64 TN	Urban south	Youngs Crossing Road upgrade to four-lane divided from Francis Road to Protheroe Road, Joyner with Todds Road, Protheroe Road and McIllwraith Road/Pine Valley Drive upgraded to signalised intersections	Arterial	Road corridor, road intersection, road bridge, culvert	1,366	-	2021-2026	$20,476,756	$0	$27,892,808	$0
TR - 10	LGIP-64 TN	Urban south	Youngs Crossing Road upgrade to four-lane divided from Oxford Street to Francis Road, Joyner and signalisation of the Oxford Street intersection	Arterial	Road corridor	-	-	2021-2026	$7,161,267	$0	$9,754,858	$0
TR - 11	LGIP-42 TN	Urban north	Oakey Flat Road upgrade to four-lane median divided from Lakeview Road to Clark Road, Morayfield with intersection improvements	Arterial	Road corridor, road intersection	260	-	2021-2026	$4,410,400	$0	$6,007,711	$0
TR - 12	LGIP-59 TN	Urban south	Old Gympie Road upgrade to four lanes from Viney Avenue to Highet Street, Kallangur with signalisation of the Ann Street intersection and minor acquisitions	Arterial	Road corridor	-	-	2021-2026	$10,744,409	$36,000	$13,977,919	$38,016
TR - 13	LGIP-59 TN	Urban south	Old Gympie Road upgrade to four lanes from Nellies Lane to Whitehorse Road, Kallangur including signalisation of the Macarthur Drive intersection	Arterial	Road corridor	-	-	2021-2026	$5,263,814	$0	$6,850,910	$0

LGIP ID	Map ref	Service catchment	Description	Hierarchy	Infrastructure class	Length (m)	Land acquisition (ha)	Delivery timeframe	Baseline cost (works)	Baseline cost (land)	Establishment cost (works)	Establishment cost (land)
TR - 14	LGIP-48 TN	Urban north	Burpengary Road / New Settlement Road intersection signalisation upgrade with additional approach lanes, Burpengary	Arterial	Road intersection	-	-	2021-2026	$13,255,000	$0	$18,055,554	$0
TR - 15	LGIP-76 TN	Urban south	South Pine Road intersections with Camelia Avenue, Pimelea Street and Montague Court, Everton Hills reconfiguration and upgrade with additional through lanes	Arterial	Road intersection	-	-	2021-2026	$2,376,000	$0	$3,236,514	$0
TR - 16	LGIP-76 TN	Urban south	South Pine Road and Plucks Road intersection signalised upgrade, Arana Hills	Sub-arterial	Road intersection	-	-	2021-2026	$594,000	$0	$809,129	$0
TR - 17	LGIP-65 TN	Urban south	Francis Road, Sparkes Road and Ellis Street intersection, Bray Park reconfiguration and signalisation with additional approach lanes and widening of Francis Road between Sparkes Road and West Dianne Street with property acquisition	Arterial	Road intersection	-	0.07	2021-2026	$5,688,790	$182,000	$7,400,822	$192,192
TR - 18	LGIP-55 TN	Urban north	Boundary Road / Diamond Jubilee Way intersection upgrade with additional through lanes on Boundary Road and road space reallocation on the Diamond Jubilee Way, Narangba	Arterial	Road intersection	-	-	2021-2026	$2,880,000	$0	$3,923,048	$0
TR - 39	LGIP-25 TN	Urban north	Henzell Road / Toohey Street / Watt Street intersection, Caboolture upgrade to signalised intersection with additional turning lanes and property acquisition	District collector	Road intersection	-	0.07	2021-2026	$3,311,396	$14,800	$4,309,817	$15,629
TR - 40	LGIP-61 TN	Urban east	MacDonnell Road / Victoria Avenue intersection, Margate upgrade to signalised intersection with additional approach lanes	Sub-arterial	Road intersection	-	-	2021-2026	$1,200,000	$0	$1,634,603	$0
TR - 43	LGIP-25 TN	Urban north	McKean Street / Pettigrew Street / Mewett Street intersection, Caboolture upgrade to signalised intersection with additional approach lanes	Sub-arterial	Road intersection	-	-	2021-2026	$1,200,000	$0	$1,634,603	$0
TR - 45	LGIP-54 TN	Urban south	Alma Road / Marsden Road intersection, Dakabin upgrade to signalised intersection	Sub-arterial	Road intersection	-	-	2021-2026	$1,200,000	$0	$1,634,603	$0
TR - 46	LGIP-54 TN	Urban south	Alma Road upgrade from Narangba Road to Thompson Road, Dakabin including the widening of Thompson Road with on-road bicycle lanes and an off-road shared path on the southern side including increasing rail underpass height clearance	Sub-arterial	Road corridor	-	-	2021-2026	$5,088,491	$0	$6,622,725	$0
TR - 48	LGIP-75 TN	Urban south	Gordon Road and Ferny Way intersection, Ferny Hills upgrade to signalised intersection to reduce delays and provide safety for pedestrians	Arterial	Road intersection	-	-	2021-2026	$1,954,217	$0	$2,542,335	$0
TR - 49	LGIP-73 TN	Urban south	Bunya Road / Woodhill Road intersection, Arana Hills upgrade to signalised intersection	Sub-arterial	Road intersection	-	-	2021-2026	$980,000	$0	$1,334,926	$0
TR - 50	LGIP-66 TN	Urban south	Henry Road and Dohles Rocks Road intersection, Griffin upgrade to reprioritise and increase flood immunity	Sub-arterial	Road intersection	-	-	2021-2026	$8,493,208	$0	$11,049,223	$0
TR - 19	LGIP-32 TN	Urban north	Mewett Street / Lee Street / Summerfields Drive intersection, Caboolture upgrade to signalised intersection with additional approach lanes	Sub-arterial	Road intersection	-	-	2026-2031	$220,000	$0	$320,585	$0
TR - 20	LGIP-75 TN	Urban south	Patricks Road / Gordon Road / Caesar Road intersection, Ferny Hills upgrade to align Gordon Road and Caesar Road with upgraded signals and property acquisitions	Sub-arterial	Road intersection	-	0.07	2026-2031	$2,770,475	$360,000	$4,037,148	$380,161
TR - 21	LGIP-57 TN	Urban east	Klingner Road / Ashmole Rd intersection, Redcliffe upgrade to signalised intersection	Sub-arterial	Road intersection	-	-	2026-2031	$1,840,000	$0	$2,681,256	$0

LGIP ID	Map ref	Service catchment	Description	Hierarchy	Infrastructure class	Length (m)	Land acquisition (ha)	Delivery timeframe	Baseline cost (works)	Baseline cost (land)	Establishment cost (works)	Establishment cost (land)
TR - 22	LGIP-32 TN	Urban north	Caboolture River Road upgrade to four-lane divided road from Morayfield Road to Grant Street, Upper Caboolture with three signalised intersections and property acquisitions	Arterial	Road corridor	-	-	2026-2031	$13,879,386	$680,000	$19,324,460	$718,081
TR - 23	LGIP-59 TN	Urban south	Old Gympie Road upgrade to four lanes from Anzac Avenue to Viney Avenue, Kallangur with service roads	Arterial	Road corridor, road intersection	630	-	2026-2031	$8,065,200	$0	$11,752,644	$0
TR - 24	LGIP-54 TN	Urban south	Boundary Road and Narangba Road intersection, Dakabin upgrade to signalised intersection with upgrade of the rail bridge to allow for an additional through lane	Arterial	Road intersection, road bridge	95	-	2026-2031	$7,238,750	$0	$10,548,338	$0
TR - 25	LGIP-55 TN	Urban south	Old Gympie Road upgrade to four lanes from Goodwin Road to Boundary Road including culvert upgrades	Arterial	Road corridor, culvert	900	-	2026-2031	$7,497,500	$0	$10,925,390	$0
TR - 26	LGIP-76 TN	Urban south	Park Road / Patricks Road intersection, Arana Hills upgrade to signalised intersection with property acquisitions	Sub-arterial	Road intersection	-	0.07	2026-2031	$1,100,949	$14,700	$1,532,204	$15,523
TR - 27	LGIP-57 TN	Urban east	Griffin Road / Newport Drive intersection, Newport upgrade to signalised intersection	Sub-arterial	Road intersection	-	-	2026-2031	$980,000	$0	$1,428,060	$0
TR - 28	LGIP-32 TN	Urban north	Walkers Road / Petersen Road intersection, Morayfield upgrade to approaches including duplication and bridge upgrade of Walkers Road with property acquisition	Sub-arterial	Road intersection, road corridor, road bridge	340	0.10	2026-2031	$9,607,200	$110,720	$13,999,654	$116,921
TR - 29	LGIP-58 TN	Urban south	Narangba Road and Marsden Road intersection, Kallangur upgrade to realign Marsden Road and create a new signalised intersection at Crest Street and property acquisition	Arterial	Road intersection, road corridor	200	0.10	2026-2031	$2,650,000	$643,200	$3,861,591	$679,220
TR - 30	LGIP-32 TN	Urban north	Buchanan Road upgrade to four-lane divided from Bruce Highway to Kirkcaldy Street, Morayfield with signalised intersections and widening approaches, land acquisition and culvert upgrades	Arterial	Road corridor, road intersection, culvert	1,775	6.48	2026-2031	$17,695,000	$1,233,600	$25,785,231	$1,302,684
TR - 32	LGIP-32 TN	Urban north	Weier Road upgrade to two lane sub-arterial road between Buchanan Road and the Cundoot Creek Bridge, Caboolture South with land acquisition	Sub-arterial	Road corridor, road intersection	680	1.82	2026-2031	$3,734,000	$10,080	$5,441,201	$10,644
TR - 34	LGIP-32 TN	Urban north	Buchanan Road, Morayfield grade-separated extension across the North Coast railway line to provide an all-weather road connection to Morayfield Road from Kirkcaldy Street with amendments to adjacent roads and land acquisitions	Arterial	Road corridor	-	-	2026-2031	$68,859,835	$1,727,232	$95,874,492	$1,823,960
TR - 41	LGIP-61 TN	Urban east	Victoria Avenue / Duffield Road intersection, Margate upgrade to signalised intersection and widening of intersection approaches	Sub-arterial	Road intersection	-	-	2026-2031	$1,200,000	$0	$1,748,645	$0
TR - 44	LGIP-59 TN	Urban south	Brays Road / Tesch Road intersection, Griffin reconfiguration and upgrading existing signals for higher capacity	Sub-arterial	Road intersection	-	-	2026-2031	$402,842	$0	$605,376	$0
TR - 47	LGIP-59 TN	Urban south	McClintock Drive / Goodfellows Road intersection, Murrumba Downs upgrade to signalised intersection	Sub-arterial	Road intersection	-	-	2026-2031	$557,488	$0	$776,198	$0
TR - 35	LGIP-54 TN	Urban north	Narangba East Bypass realignment of Burpengary Road from near Callaghan Road to south of McPhail Road including a rail overpass from Oakey Flat Road and new intersections and land acquisition	Arterial	Road corridor	-	24.61	2031-2036	$91,000,000	$24,609,600	$142,697,169	$25,987,785

LGIP ID	Map ref	Service catchment	Description	Hierarchy	Infrastructure class	Length (m)	Land acquisition (ha)	Delivery timeframe	Baseline cost (works)	Baseline cost (land)	Establishment cost (works)	Establishment cost (land)
TR - 36	LGIP-59 TN	Urban south	Halpine Drive / Linear Drive / Mango Hill Boulevard intersection, Mango Hill upgrade with additional approach lanes on the eastern and southern approaches and land acquisitions	Sub-arterial	Road intersection	-	0.10	2031-2036	$1,840,000	$27,200	$2,797,832	$28,723
TR - 37	LGIP-55 TN	Urban north	Old Gympie Road upgrade with an additional traffic lane in each direction from Boundary Road to McPhail Road, Narangba, signalisation of the McPhail Road intersection and culvert upgrades	Arterial	Road intersection, culvert, road corridor	275	-	2031-2036	$6,545,000	$0	$9,952,072	$0
TR - 38	LGIP-54 TN	Urban north	Burpengary Road upgrade to two-lane arterial from Narangba East Bypass to the proposed new Boundary Road rail overpass, Narangba including intersection upgrades	Arterial	Road corridor	680	-	2031-2036	$3,060,000	$0	$4,652,917	$0
TR - 51	LGIP-69 TN	Urban south	Leitchs Road, Brendale - This project is the first stage of an ultimate Leitchs Road deviation between Bult Drive / French Avenue intersection and Stanley Street / Livingstone Street intersection. Stage 1 includes the construction of a two-lane cul-de-sac connecting from the Nicol Way intersection following the proposed corridor to adjacent the northern extents of the Moreton Domain estate	Sub-arterial	Road corridor, road intersection	560	-	2031-2036	$5,222,400	$0	$7,940,978	$0
								TOTAL	$427,897,573	$32,356,232	$606,503,509	$34,069,802