Caboolture Morayfield Principal Activity Centre

Part 4: Transport Plan and Capital Works Plan

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Moreton Bay Regional Council

Queensland Government

Caboolture Morayfield Principal Activity Centre Master Plan
Part 4 – Transport Plan and Capital Works Plan

Moreton Bay Regional Council

Prepared By

Parsons Brinckerhoff Australia Pty Limited
ABN 80 078 004 798
Level 4, Northbank Plaza
69 Ann Street
BRISBANE QLD 4000
GPO Box 2907
BRISBANE QLD 4001
Australia
Telephone +61 7 3854 6200
Facsimile +61 7 3854 6500
Email brisbane@pb.com.au
Certified to ISO 9001, ISO 14001, AS/NZS 4801
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1. Introduction

This document is part of the Caboolture Morayfield Principal Activity Centre Master Plan (CMPAC) and should be read in conjunction with Part 1 – Master Plan and other companion parts (Figure 1.1). The document presents the proposed Transport Plan to support implementation of the CMPAC Master Plan.

Figure 1.1 CMPAC Master Plan structure

The CMPAC Transport Plan was developed with land use and transport integration as the overarching purpose in order to complement the CMPAC Master Plan. Building upon the 'Transport constraints and opportunities working paper' written in December 2009, the CMPAC Transport Plan was created through a review of policy and planning, analysis of future trip demand and was guided by the vision and desired environmental outcomes of the CMPAC. The Transport Plan is divided into the following sections.

1. Traffic and transport planning context: This section is an analysis of the policy and planning relevant to transport in the CMPAC. It details the projects proposed for the CMPAC and acts as a basis for future transport infrastructure upgrades.

2. Transport principles and strategies: In order to guide the future development of the transport network within the CMPAC, transport principles and strategies were developed.

3. Future trip demand: This section is an analysis of future traffic (road, parking, walking and cycling) demand within the CMPAC. This will detail mode split and will provide reasoning behind selected transport upgrades in the CMPAC.

4. Proposed transport network: This section provides detail on the proposed transport network which was developed with the preceding sections as key influencing factors.

5. Implementation/staging: This section outlines potential staging and triggers for the implementation of the transport strategy.

2. Traffic and transport planning context

2.1 South East Queensland Regional Plan 2009–2031

The purpose of the South East Queensland Regional Plan 2009–2031 (SEQ Regional Plan) is to manage regional growth and change in the most sustainable way to protect and enhance quality of life in the region. The SEQ Regional Plan places Caboolture–Morayfield as a Principle Activity Centre within this activity centres network. As such it states that:

> *'the Caboolture–Morayfield Principal Regional Activity Centre will be the focus for infill development within the northern growth corridor. Higher density development and mixed–use development will be located within the Caboolture CBD, particularly in the vicinity of Caboolture's Train Station.*
>
> *Other significant infill opportunities will be generated through efficient use of land close to the Brisbane–Sunshine Coast Rail Corridor, particularly the conversion of suitable rural residential lands and other remnant broad hectare lands at Narangba, and between Morayfield and Burpengary.'*

It is pertinent to note that the SEQ Regional Plan earmarks Caboolture West as an 'Identified Growth Area' located just outside to the Caboolture Urban Footprint. It states that Caboolture West is likely to be a high growth area in the future, but that significant development within Caboolture West is dependent on adequate road and public transport infrastructure among multiple other requirements.

These new development areas will have a significant impact on the transport network in the PAC, with north–south and east–west demand increasing.

2.2 Queensland Infrastructure Plan

The Queensland Infrastructure Plan (QIP) sets the strategic platform to guide the planning, prioritisation and sequencing of infrastructure. The plan provides a high level picture of the state's key infrastructure requirements to address growth in and across our regions.

From analysing the QIP, proposed infrastructure projects are limited to road upgrades and non–transport related infrastructure. Within the CMPAC, QIP has limited focus on public and active transport. The projects identified in the CMPAC that have transport significance are listed below:

- Caboolture Morayfield Heath Precinct ($21m funding estimate between 2010–2014)
- Burpengary–Caboolture Road upgrade – Bruce Highway to Gaffield Street ($150M funding estimate between 2010–2014)
- General Aviation Strategy – Caboolture Aerodrome ($1M funding estimate between 2010–2011)

Although located just outside of the CMPAC, the following projects will have an impact on vehicular flow into the area:

- East–west links: Caboolture to Bribie Island Road (no funding estimates between 2020–2026)
- Bruce Highway upgrade: Caboolture to Caloundra Road Investigation (no funding estimates: between 2014–2020)
- Bruce Highway intersection upgrades – Pumicestone Road, Boundary Road and Bribie Island Road ($200m funding estimate between 2010 – 2014).

2.3 Connecting SEQ 2031

The Connecting SEQ 2031 (Connecting SEQ 2031) is the Queensland Government's integrated regional transport plan for South East Queensland. In alignment with the SEQ Regional Plan, the document places a strong focus on developing Caboolture as a walkable town centre, while changing Morayfield from a car–oriented strip development with 'big box' retail to an area with a high intensity of employment and public and active transport use.

Connecting SEQ 2031 mode share targets for the entire Moreton Bay Regional Council (MBRC) are shown in Figure 2.1. Other than the reduction of private automobile trips, the greatest difference in mode share between 2006 and 2031 is the increase in cycling trips (an increase from 1.7% to 8%). Achieving the significant growth in active transport and reduced automobile usage will require a fundamental shift in trip making behaviours.

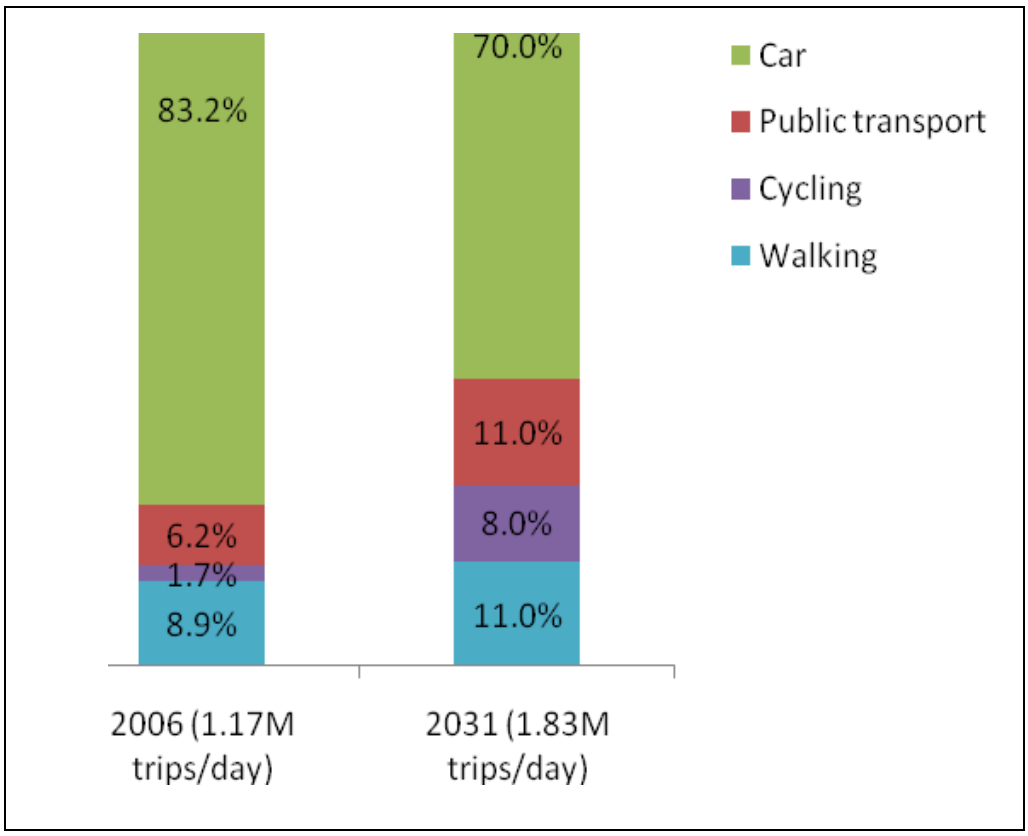


Figure 2.1 2031 mode share targets (overall percentage)

The issues identified for the Moreton Bay Regional Council area in Connecting SEQ 2031 are:

- heavy reliance on Bruce Highway
- current urban form of Caboolture–Morayfield not supporting public transport walking or cycling
- capacity constraints on peak express rail services to Brisbane.

The Connecting SEQ 2031 states that:

- Caboolture continues as the terminus for express rail services from Brisbane and is a District Hub for public transport
- King Street is identified as a future transit corridor (post 2021) which is an area along key public transport routes where mixed use, public transport supportive activities and development comprising 40 dwellings or about 80 jobs per hectare or higher are to occur.
- A new major Park 'n' Ride facility to be constructed north of Caboolture to support the long term redevelopment of the Caboolture CBD.
- Morayfield land use is not supportive of public or active transport so the strategy has no focus in increasing public transport services serving the area.

The intent to locate a major Park 'n' Ride east of the Caboolture Train Station contradicts the policy on Park 'n' Ride in Connecting SEQ 2031. The policy is that Park 'n' Ride facilities will be located away from centres and in areas where roads are less congested, 1–3 kilometres outside activity centres identified in the SEQ Regional Plan, away from areas identified for transit oriented development, transit hubs or identified as priority transit corridors.

Caboolture Station is South East Queensland's largest Park 'n' Ride station yet it is less than 1 kilometre from the Caboolture CBD with good opportunity for TOD, is adjacent to a future transit corridor and is a transit hub. Simply relocating the parking to one side is not compatible with the area's designation. The Department of Transport and Main Roads have indicated that due to public transport service and network constraints there would need to be Park 'n' Ride located at Caboolture Train Station within the timeframe of the Master Plan. The long term intent would however be to reduce Park 'n' Ride in the centre with the development of a major Park 'n' Ride north of Caboolture.

Morayfield road is identified as a proposed strategic bus corridor. This is contradicted by the statement that there will be no increase in public transport service along Morayfield Road.

The section below provides a breakdown of road, parking, public transport and active transport projects proposed in Connecting SEQ 2031. Where applicable, these projects have been assigned an ID number corresponding to the map of Connecting SEQ 2031 transport projects within the CMPAC (refer to Figure 2.2).

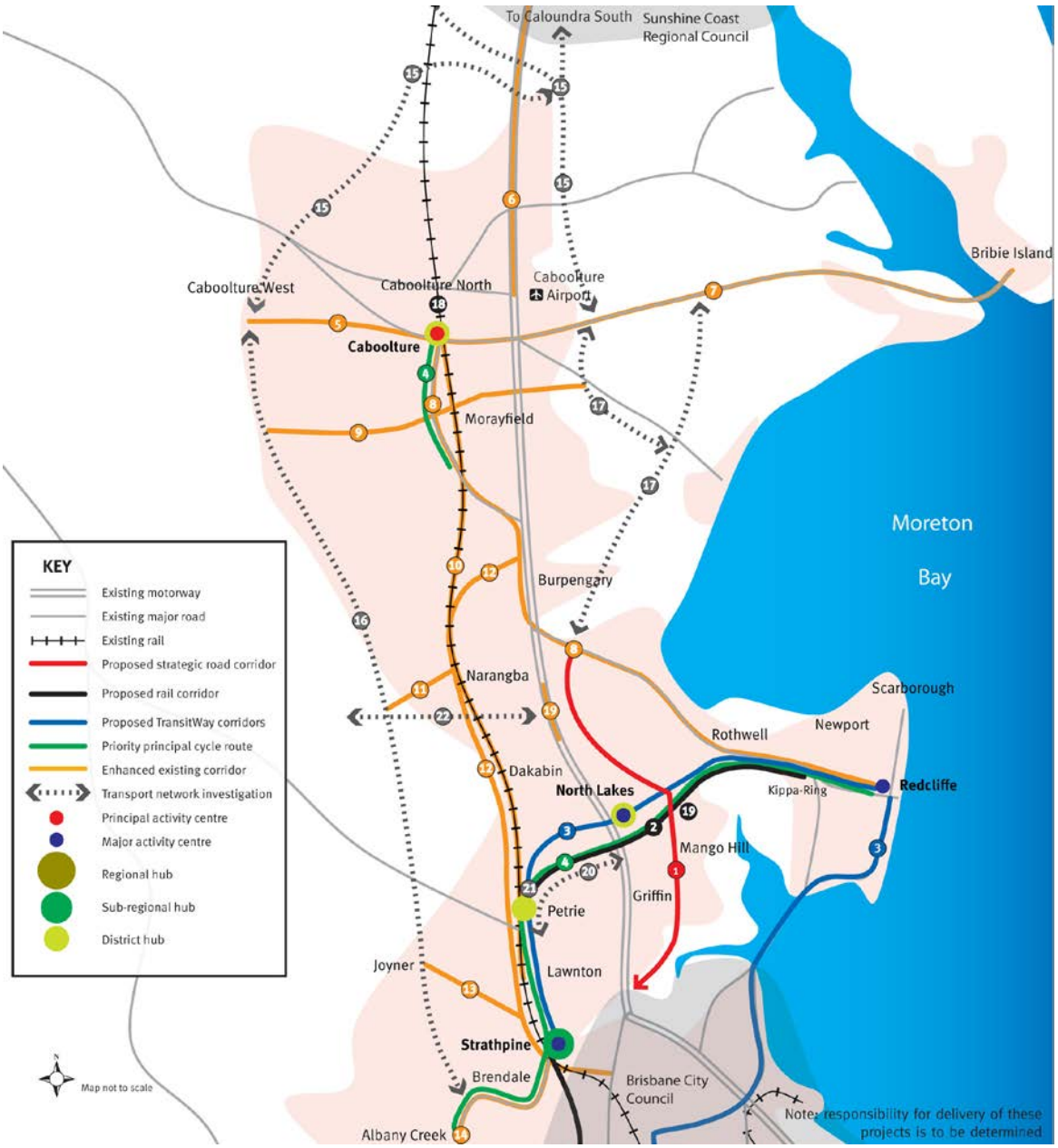


Figure 2.2 Connecting SEQ 2031 projects for Moreton Bay Regional Council

Roads

- ID 5 – Upgrade of Caboolture West connection (Bellmere Road).
- ID 8 – Upgrade Caboolture to Redcliffe corridor to multi-modal urban arterial.
- ID 9 – Upgrade road from Morayfield to Upper Caboolture to multi-modal urban arterial.
- ID16 – Investigate improved urban connections for local trips in new growth areas.
- ID 17 – Investigate east Moreton Bay urban arterial network.

Parking

- ID 18 – Investigate new rail station at Caboolture North with major Park ‘n’ Ride.

Public transport

- Implementation of CoastLink express (limited stops) between Caboolture and Petrie Train Stations.
- Upgrade rail line from Lawnton to Caboolture.
- ID 3 – Strategic bus/HOV priority corridors packaged with UrbanLink ‘turn up and go’ bus services. These will operate on Morayfield Road (connecting Caboolture with Morayfield and Redcliffe) and King Street/Lower King Street (connecting Caboolture West with the Caboolture Airport). The UrbanLink bus services are intended to be services with the following characteristics:
  - frequency of 15 minutes or better off–peak, 10 minutes or better during the peak
  - high–frequency all day (at least 6 am to 9 pm), seven days per week
  - quality shelters and information
  - simplified high–frequency network map with no need for a timetable
  - priority on strategic corridors
  - redesign of the bus network to provide effective feeder services to UrbanLink bus public transport corridors. This will mean a trunk and feeder system.

Active transport

Refer to Figure 2.3 to see the Connecting SEQ2031 active transport map.

- ID 4 – Strategic active transport corridors along Morayfield Road (from King Street to Oakey Flat Road).
- Develop a network of separated bikeways (Continue to develop bikeways that are separated from general traffic, including the ongoing implementation of the SEQ Principal Cycle Network Plan).
- Complete 5 (Prioritise completion of the principal cycle network within five kilometre catchment of activity centres).
- Connect 2 (Provide safe and convenient pedestrian and cycling access to public transport stops and stations).
- Educated Ways (Improve walking and cycling routes to schools and universities supported by school travel plans).

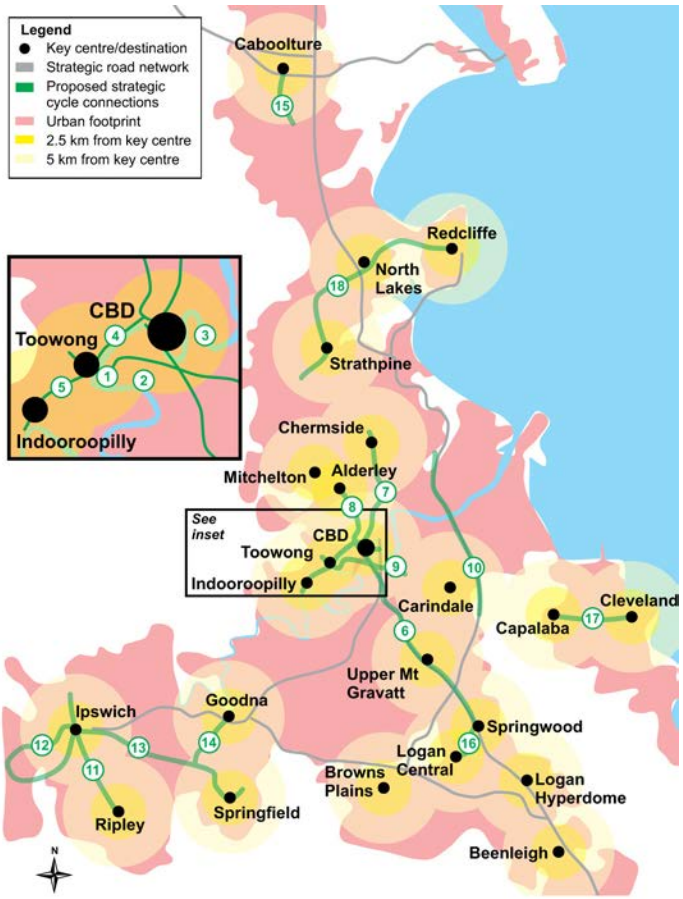
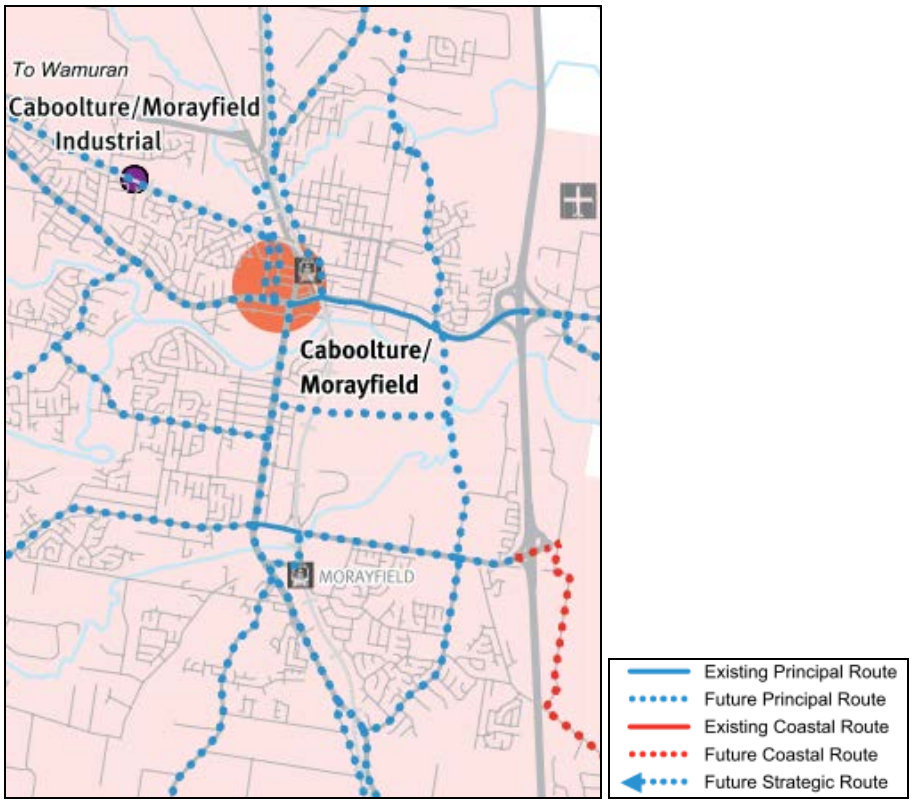


Figure 2.3 Strategic cycle network priorities for Greater Brisbane

2.4 Queensland Cycle Strategy 2011 – 2021

The SEQ Principle Cycle Network Plan provides a framework for future cycle network planning in the region. It identifies several principal cycle routes servicing the CMPAC. These are shown in Figure 2.4. Buchanans Road extension and Lower King Street are shown with existing cycle provision but this is incorrect. The Buchanans Road extension does not exist and there are no cycle facilities on the roads immediately adjacent.

Lower King Street has narrow shoulders but these are not marked or signed as cycle lanes and the pathways are too narrow to be adequate for cycling. There is also a ban on cyclists using footpaths in Lower King Street. Overall, the SEQ Principle Cycle Network Plan provides for east–west and north–south connectivity on the major road links. However, the document does not mention anything with regard to the provision of end of trip facilities for new development or transit stations.



Source: Southeast Queensland Principal Cycle Network Plan (Nov 2007)

Figure 2.4 Principal cycle network for the CMPAC

2.5 Moreton Bay Regional Council

MBRC has approved several road upgrades within the CMPAC area. Table 2.1 lists the road upgrades identified in the Caboolture Shire Planning Scheme Policy 21 B – Trunk Infrastructure Contributions – Trunk Roads and Pathways. These planned upgrades present opportunities for improved traffic flow and provision for pedestrians and cyclists.

Several road upgrades are likely to be the responsibility of MBRC as a result of proposed development. The development of a transport network within Precinct 4 will be the responsibility of the developer and the MBRC. Current development applications include both the internal road network and an east–west link crossing the North Coast Rail Line.

Table 2.1 Road upgrades for construction by MBRC for the study area

Project ID	Road	Upgrade description	Year
CPIPRD0007	Buchanan Road	Reserve widening and ultimate construction	2010
CPIPRD0010	Caboolture River Road	Reserve widening and ultimate construction	2011
CPIPRD0012	Cundoot Creek	Reserve widening and ultimate construction	2013
CPIPRD0015	Graham Road	Reserve widening and ultimate construction	2015

Project ID	Road	Upgrade description	Year
CPIPRD0016	Grant Road	Reserve widening and interim construction	2013
CPIPRD0018	Jensen Road	Reserve widening and interim construction	2017
CPIPRD0020	Lindsay Road	Reserve widening and interim construction	2019
CPIPRD0025	Mewett Street	Reserve widening and interim construction	2021
CPIPRD0026	Station Road – Morayfield	Reserve widening and interim construction	2019
CPIPRD0029	Oakey Flat Road	Reserve widening and ultimate construction	2015
CPIPRD0036	River Drive	Reserve widening and interim construction	2013
CPIPRD0040	Torrens Road	Reserve widening and interim construction	2013
CPIPRD0041	Visentin Road	Reserve widening and interim construction	2019
CPIPRD0043	William Berry Drive	Reserve widening and interim construction	2020
CPIPRD0048	Old Gympie Road	Reserve widening and interim construction	2016

At the time of writing, MBRC did not have publicly available planning policy or proposed projects for public or active transport. However, it has been recognised that MBRC are in the process of preparing an Active Transport Strategy.

It should also be noted that five projects located within the CMPAC were successful in receiving capital grants from the Cycle Network Program in 2008–09 and 2009–10. These are as follows:

- Centenary Lakes cycle and pedestrian bridge design
- Lagoon Creek cycle lanes and pedestrian bridge
- Lindsay Road, Morayfield cycle lanes
- Morayfield Road cycleway past the Morayfield Indoor Sports Centre
- Oakey Flat Road [Ridgegarden – Burbury].

3. Transport principles and strategies

Based upon the review of existing conditions, transport planning policy, proposed projects and analysis of future trip demand, an overall transport overview has been created. This overview identifies the major issues within the CMPAC Transport Network. In order to address these issues, a guiding transport principle has been developed. This is then supported by transport strategies for the roads, parking, public transport and active transport components.

3.1 Transport overview

The following is an overview of the transport network within the CMPAC:

- the CMPAC is dominated by 'big box' development and sprawling low density residential. This type of development promotes car use and results in environments that are uninviting to walking and cycling
- due to a limitation of alternate routes, the CMPAC relies on Morayfield Road for north–south vehicle movements and King Street/Lower King Street for east–west vehicle movements. This in turn funnels traffic through the centres of Caboolture and Morayfield. As a result, the centres of Caboolture and Morayfield are car dominated
- the majority of people movements are going out of the CMPAC in the morning peak. This is evidenced by a high resident population that commutes to Brisbane. As such, Caboolture Station is South East Queensland's largest Park 'n' Ride facility. It is also the seventh busiest station in South East Queensland based on number of passengers boarding and alighting in the morning and evening peak periods respectively
- Morayfield Road, the North Coast Rail Line and the Caboolture River currently act as major barriers to pedestrian and cyclist movement in the CMPAC
- bus services in the CMPAC operate at limited frequencies and most have circuitous routes due to the cul–de–sac style road network in residential areas
- the walking and cycling network is disjointed and limited. The cycle network is limited to discontinuous sections of cycle lanes and off–road shared pathways. Pathways are mostly narrow and the level of service for cyclists is poor.

The elements described above have contributed to high car dependency and limited use of public transport, walking and cycling. In order to address these issues, an overall transport principle and associated strategies have been created for the CMPAC.

3.2 Overall transport principle

The CMPAC requires a transport network that is integrated with major activity nodes, the open space network and residential areas to make it a successful and sustainable place. The network should support the development of a compact urban structure that will be environmentally sound, while fostering economic growth and social equity. The overall aim of the transport network is to facilitate the growth of the CMPAC while ensuring sustainable transport outcomes such as reduced automobile dependency and increased public transport, walking and cycling.

3.3 Transport strategies

3.3.1 Roads

The role of the road network in the CMPAC is to provide a road system that caters for and balances the needs of all road users, including private vehicles, freight, public transport, pedestrians and cyclists. To achieve this it needs to be a functional, permeable road network that allows sufficient route choice for local and through traffic. The key focus of the road network strategy is to increase the number of (and quality of existing) north–south and east–west road connections, to manage the flow of vehicle and people movements more efficiently. The structure of the road network will also support and integrate with the public transport and active transport elements to encourage healthy lifestyle options.

The key elements of the Road Network Strategy are shown in Figure 3.1. A summary of these elements is provided below:

- providing an alternate north–south road link, to link the Health and Education Precinct, Precinct 4 and Morayfield. It will provide relief to the Morayfield Road corridor and the Bruce Highway. This would connect Graham Road through to Mewett Street, including a new crossing of the Caboolture River, improving network resilience
- reduce the six traffic lane section of Morayfield Road to four traffic lanes plus two bus lanes (in conjunction with the alternative north–south road-link), to facilitate improved bus travel times and operation along Morayfield Road
- connecting the Precinct 4 site to the local and arterial road network through the provision of a new east–west sub–arterial link, this will also connect to the new north–south link.
- connect Mewett Street to the Pumicestone Road (and indirectly to the D'Aguilar Highway), via a new Brown Street Bridge, to allow the new north-south road link to function as an effective Morayfield-Caboolture town centre bypass
- apply speed management measures on key routes (Morayfield Road, King Street, Beerburrum Road) to provide a transport corridor that caters equally for all users, supporting the active transport and public transport vision for the Master Plan
- provide a new east–west arterial road along the Buchanan Road/Caboolture River Road corridor to provide improved connections to the new growth areas (Caboolture West) as well as reducing the growth in traffic through the CMPAC. A grade separated crossing of the rail line will be required, improving network resilience and safety
- extension of McKean Street through to Toohey Street/Watt Street will create a more direct connection across the rail line/Beerburrum Road to the residential area to the west of the CBD. The increased use of the McKean Road/Watt Street link will provide relief to King Street.
- connection of Graham Road to Anderson Road over the rail line will improve east-west linkages and reduce reliance on Morayfield Road for east-west movements. This link would require the construction of a new bridge over the rail line. The expense of this link may only make this link warranted in the long term
- Improve or create new connections of Eliot Street and Edward Street to King Street to improve east-west circulation through the CBD and reduce reliance on Kin Street.

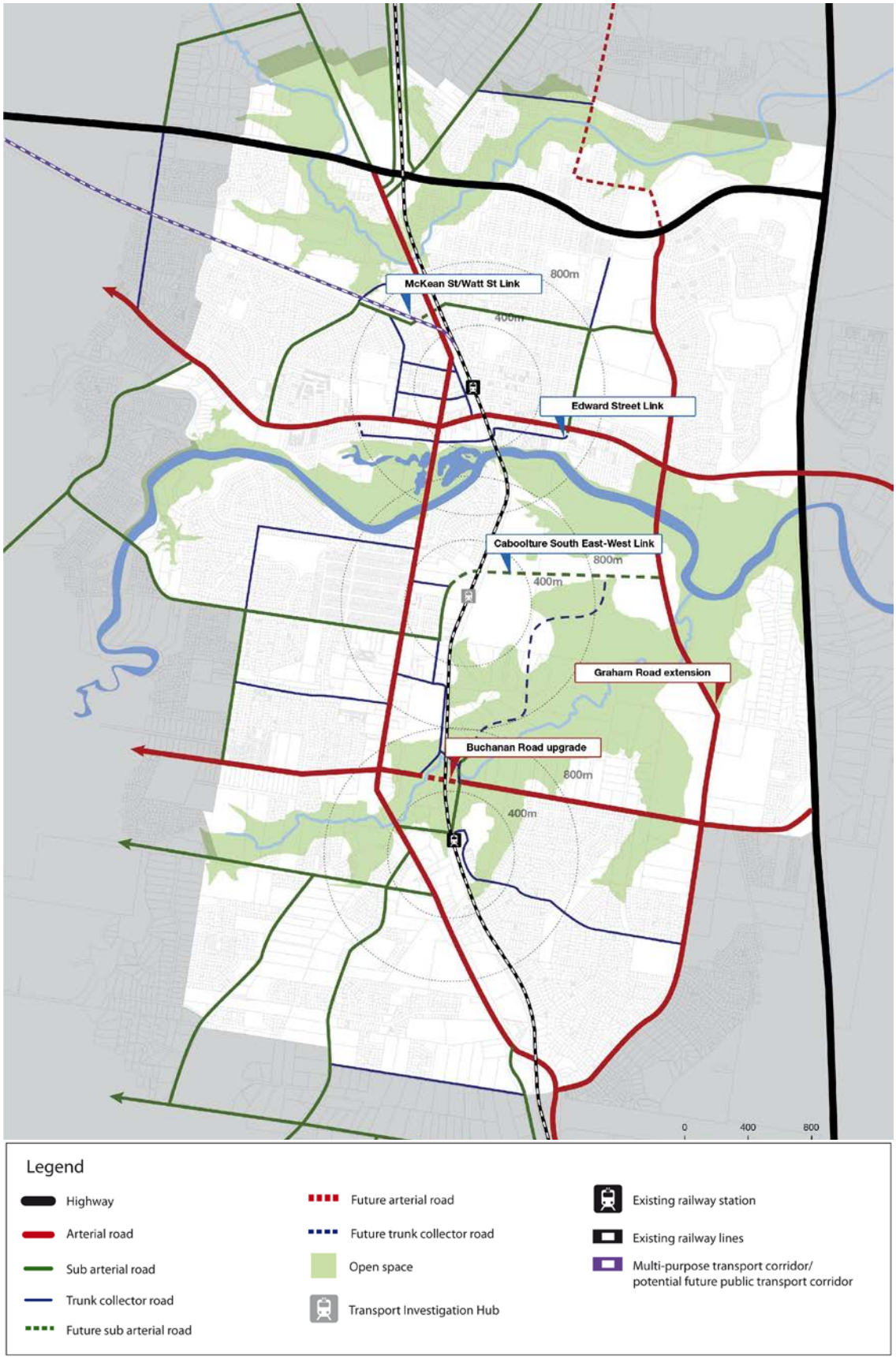


Figure 3.1 The CMPAC Road Network Strategy

3.3.2 Parking

The management of the parking demand, supply and location within the CMPAC is vital to ensure the function of the area as a place where the needs for all users are balanced. An oversupply of parking will encourage increased private vehicle use, whereas an under supply (or poor placement of parking spaces) may impact on the economic viability of the area.

In the case of park and ride facilities, an overabundance of spaces will encourage greater private vehicle use and will reduce the take up active transport and public transport modes to access the transit station. An under-supply of park and ride spaces will result in overflow parking that will impact on the viability of adjacent businesses.

Critical to the success of the management of the parking in the CMPAC will be the changes to Council policy relating to parking rates, conditions under which the parking requirements can be varied, and the alternatives available (in lieu contributions, works in lieu, consolidated parking schemes). Such changes need to be made through a staged implementation of a parking management strategy for the CMPAC that is part of an integrated Parking Management Strategy for the Moreton Bay Regional Council as a whole. Key features of the strategy include:

- changing the parking requirement in the centre from a minimum to an appropriately staged maximum parking requirement would provide greater opportunity to increase densities over time
- amending the parking rates for areas within walking distance of quality transit services, in recognition of the likely mode shift from private cars to public transport
- over time reduce the demand for park and ride at Caboolture Station by providing improved active transport and feeder public transport, with an major Park ‘n’ Ride at Caboolture North in accordance with Connecting SEQ 2031.
- manage the supply and use of parking within the CMPAC to support sustainable transport outcomes and economic growth. This may include the future implementation of parking charges for long-term parking in the Caboolture CBD and the design of parking facilities should allow for this
- park ‘n’ ride provided within the CMPAC will not be located directly adjacent to the rail stations and will be sited to maximise the opportunity for it to support the activation of development surrounding the station. The long term strategy is for the development of major Park ‘n’ Ride at Caboolture North.
- regulate the type and location of on–street parking supply in the commercial, retail and education precincts. This will discourage inappropriate long term (including rail commuter) parking
- investigate options to consolidate off–street parking supply, to allow better utilisation of commercial areas
- increased enforcement of short term parking supply, to maximise parking turnover. This includes targeting those areas surrounding the rail stations
- staged implementation of strategy appropriate for the stage of development of the PAC and in alignment with the strategy for the Region as a whole, and the provision of alternative access modes.

3.3.3 Public transport

The future role of public transport in the CMPAC is twofold. The North Coast Rail Line primarily serves inter–regional trips between the CMPAC and other activity centres on the rail line as access to the rail line is limited by long distances between stations. In the future there may be opportunity for rail to perform a greater role for local transport to and within the CMPAC if development along the rail corridor supports reduced station spacing and increased service frequencies.

The bus network primarily serves local trips to and within the CMPAC with King Street and Morayfield Road serving as priority transit corridors. Bus services are important feeder and distributor service to the North Coast Rail Line.

The central focus of the public transport strategy is to ensure that land use within walking distance of existing or Transport Investigation Hub and along key corridors in the CMPAC supports transit oriented development. This will be supported by the strengthening of bus services serving the CMPAC and integrating with rail along future priority transit corridors along Morayfield Road and King Street/Lower King Street.

The key elements of the Public Transport Strategy are shown in Figure 3.2. A summary of these elements is provided below:

- an improved local bus network that provide greater coverage to residential areas, especially in the south–west and areas north of the D'Aguilar Highway, that are currently not serviced by public transport. Services should be structured to facilitate the delivery of high frequency, 'turn–up–and–go' public transport along the King Street and Morayfield Road corridors by funnelling local bus services into these corridors

- upgrades to the Caboolture Train Station to increase rail capacity and facilitate its function as the nucleus of transit oriented development in Caboolture

- upgrade and relocation of the Caboolture Bus interchange to allow for expansion of the Caboolture Train Station. Its new location must align with its dual role to serve the CMPAC and integrate with the rail service. The station must provide high connectivity to the Caboolture CBD and allow for easy interchange with rail services. It must also minimise delay to buses passing through the interchange

- in the distant future a Transport Investigation Hub between the Caboolture and Morayfield stations could support an increased role for rail in the CMPAC if future land use in the area is supportive. Higher density residential, retail and commercial development must be favoured over industrial, warehousing and big box retail to provide the critical mass required for transit oriented development in Caboolture South

- an Transport Investigation Hub serving Precinct 4 and Caboolture South is unlikely within the next 20 years. To ensure the development of the Precinct 4 supports TOD and a possible future station it is essential that it be developed to be served by a bus service for the foreseeable future

- upgrade of cycle/pedestrian overpasses at train stations to allow for higher capacity people movements, to cater for mobility impaired and create more legible connections across the North Coast Rail Line

- develop Morayfield Road and King Street/Lower King Street as future priority transit corridors with bus lanes or bus priority at appropriate locations. This will allow for reduced delay and increased connectivity to population centres, particularly the growth area of Caboolture West. Bus stops along Morayfield Road and King Street/Lower King Street will have high quality bus shelters and real time bus scheduling displays

- new bus services that provide a very high degree of connectivity between the major trip generators in the CMPAC: Health and Education Precinct, Precinct 4, potential Caboolture South Transport Investigation Hub, Morayfield Shopping Centre, Morayfield retail precinct, Caboolture CBD and Caboolture Train Station

- the design of the Morayfield Bus Interchange and stops on Morayfield Road must be structured to minimise delay of bus services along Morayfield Road and allow for increased connectivity to the Caboolture South, while maintaining connectivity to Morayfield Shopping Centre.

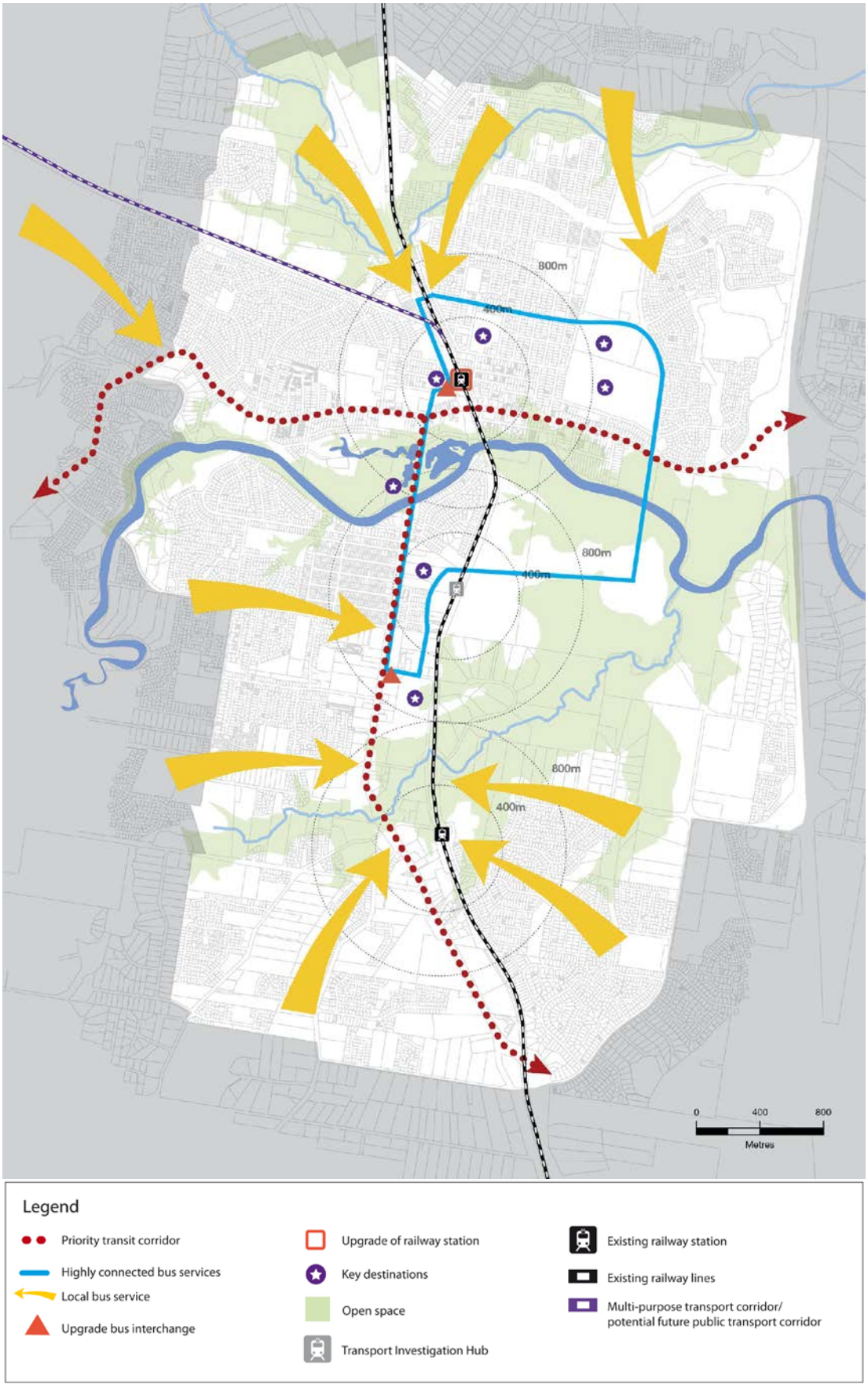


Figure 3.2 The CMPAC Public Transport Network Strategy

3.3.4 Active transport

The role of active transport in the CMPAC is vital in reducing car dominance, increasing the vibrancy of major activity nodes and activating currently underutilised open space areas such as the Caboolture River. The focus of the Active Transport Strategy is to develop a permeable, direct and interconnected walking and cycle network that also provides a safe and pleasant experience for the user. Of particular issue are pedestrian and cycle barriers posed by 'big box' development, North Coast Rail Line, Caboolture River and Morayfield Road.

The key elements of the Active Transport Strategy are shown in Figure 3.3. A summary of these elements is provided below:

- a 'greenway' network of wide, off–road paths for pedestrian and cyclists to cater for both recreational users and commuters using the Caboolture River, creeks and various reserves/easements. The 'greenway' network will connect to and activate the Caboolture River and other green spaces. The 'greenway' network will also connect with major activity nodes and adjacent suburbs. The 'greenway' network with be designed using CPTED principles, provide appropriate way–finding treatments, shading and shelter, drinking fountains and street furniture

- 'main streets' as active transport spines within the core of Caboolture and Morayfield. These will connect to major trip attractors, transit interchanges and 'greenways'. 'Main streets' will have a lower speed environment to increase safety of cyclists and pedestrians. 'Main streets' will be characterised by wide sidewalks, provision for cyclists, slower traffic, active frontages, awnings and shelter and high quality landscaping/built form elements that give the area a cohesive identity. 'Main streets' are essential in creating a vibrant and active pedestrian environment in the major activity centres or between precincts

- transit interchanges within the CMPAC are to provide safe and attractive end of trip facilities such as easily accessible and secure bicycle storage, lockers and showers. Synergy will result as it will serve both the needs of cycle access to rail, while also serving the activity centres around the rail station

- 'primary active transport routes' are the active transport spine on which the local active transport network is built. They are the arterial network for active transport and will include provision for high speed commuter cyclists. Facilities for pedestrians will be appropriate based on adjacent land uses and should include appropriate landscaping, street furniture and shade trees. These are strategic routes to ensure that pedestrians and cyclists have direct and attractive access to and through major trip generators/attractors

- 'supporting active transport routes' will provide fine grain permeability of the walking and cycling network by connecting residential and minor activity centres to 'primary active transport routes' and 'greenways'. These are the sub–arterial and collectors in the active transport network. These routes will feature appropriately wide footpaths and cycle lanes/priority

- all streets CMPAC Precincts must be active transport friendly streets providing a safe and attractive environment for pedestrians and cyclists. This ensures that all development within the CMPAC is easily accessible by active transport

- increased permeability of pathway network in the residential area immediately west of the Caboolture CBD to capitalise on its proximity to green spaces and activity nodes. This includes a cycle and pedestrian connection between Ruth Street and Mill Road.

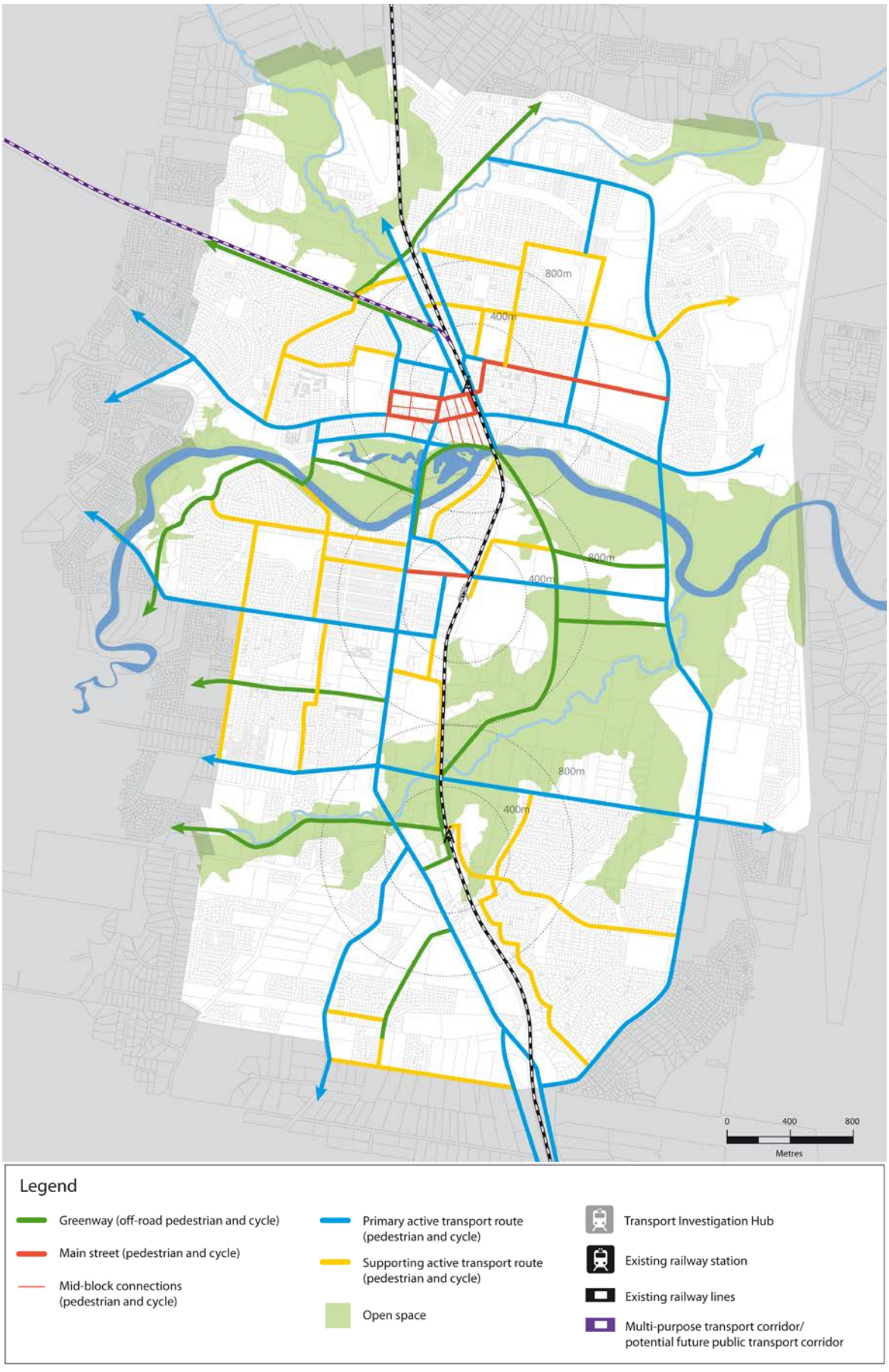


Figure 3.3 The CMPAC Active Transport Network Strategy

4. Future trip demand

4.1 Roads

2007 AADT data is available for a number of the key DTMR roads within the study area, namely Morayfield Road, Beerburrum Road, King Street, D'Aguilar Highway and the Bruce Highway. Road capacity limits for each of these road segments have been estimated using the method used in the development of the Brisbane Strategic Transport Model (BSTM).

A high level estimate of the future road network demand has been made by extrapolating the available traffic data to 2031 forecasts. These estimates are preliminary and would require further refinement using appropriate transport modelling.

The Connecting SEQ 2031 notes a growth in daily trips for MBRC residents from 165,000 trips in 2006 to 830,000 trips in 2031. This equates to an overall increase in daily trips of 403%. The document also states the mode share targets for the sub–region (refer to Section 2.3), with a decrease of private vehicle usage from 83.2% to 70% by 2031. This coincides with increases in mode share for active transport and public transport trips.

The direct application of the 403% increase in daily trips to the road network within the CMPAC is not considered appropriate, as a high proportion of the population growth will be in new development areas, with these generated trips not necessarily being seen on the road network within the CMPAC.

An alternate approach has been to apply the estimated growth in jobs for the CMPAC area to the 2007 road network volumes (where a direct correlation is assumed). Jobs figures (as developed for the Master Plan) are:

- current jobs (2009): 9,349
- future jobs (2031): 25,310
- growth in jobs (2009 To 2031): 15,961 (171%).

A reduction in the private vehicle use has been applied to the 2031 volumes, as per the Connecting SEQ 2031 targets (noted above). The resultant 2031 traffic volume estimates are shown below in Figure 4.1 through to Figure 4.4.

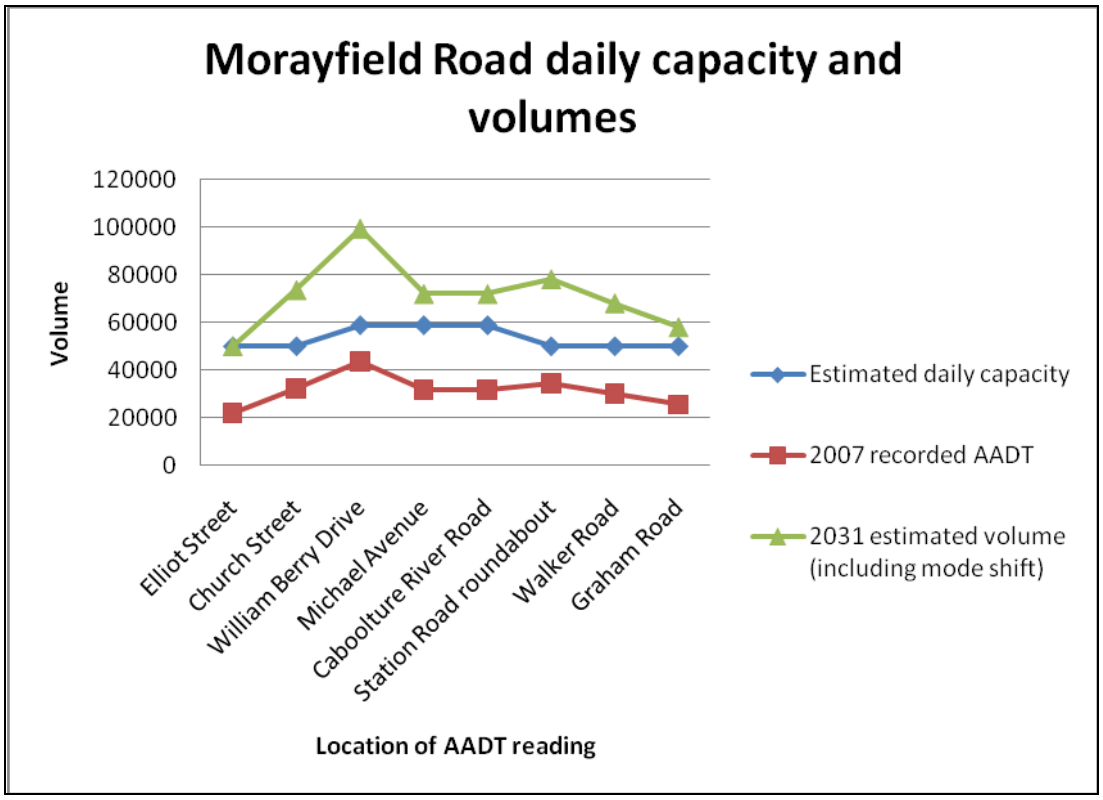


Figure 4.1 2031 volumes and capacities along Morayfield Road

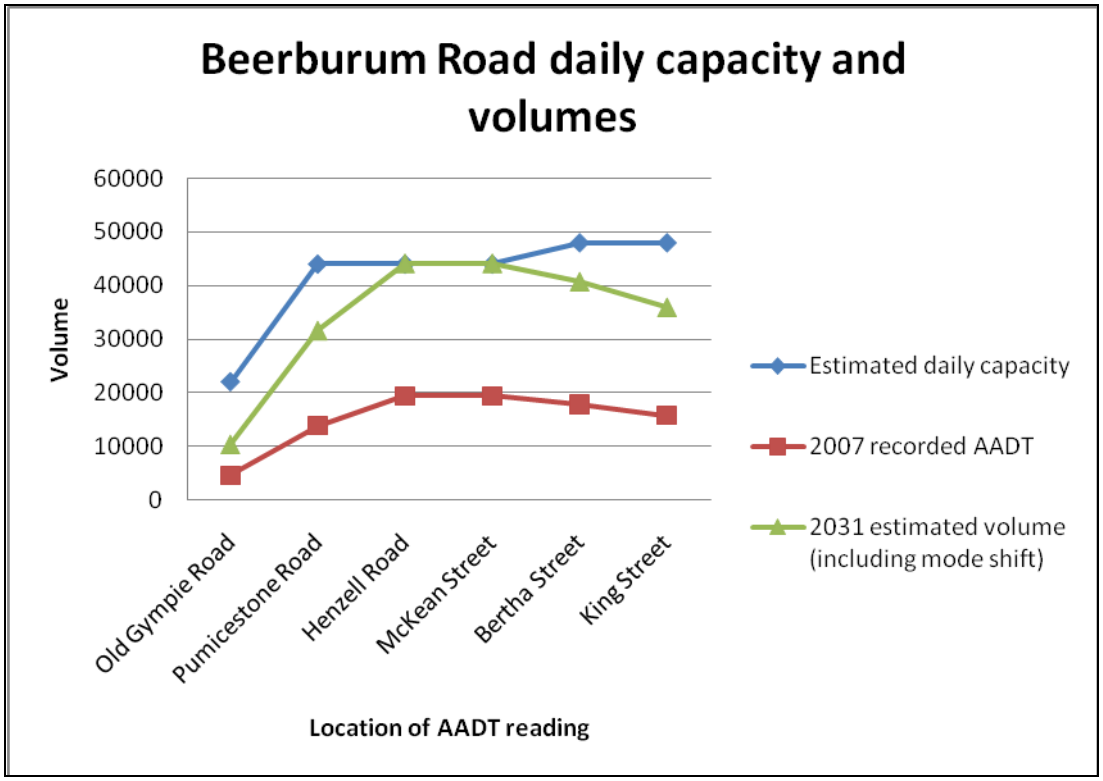


Figure 4.2 2031 volumes and capacities along Beerburrum Road

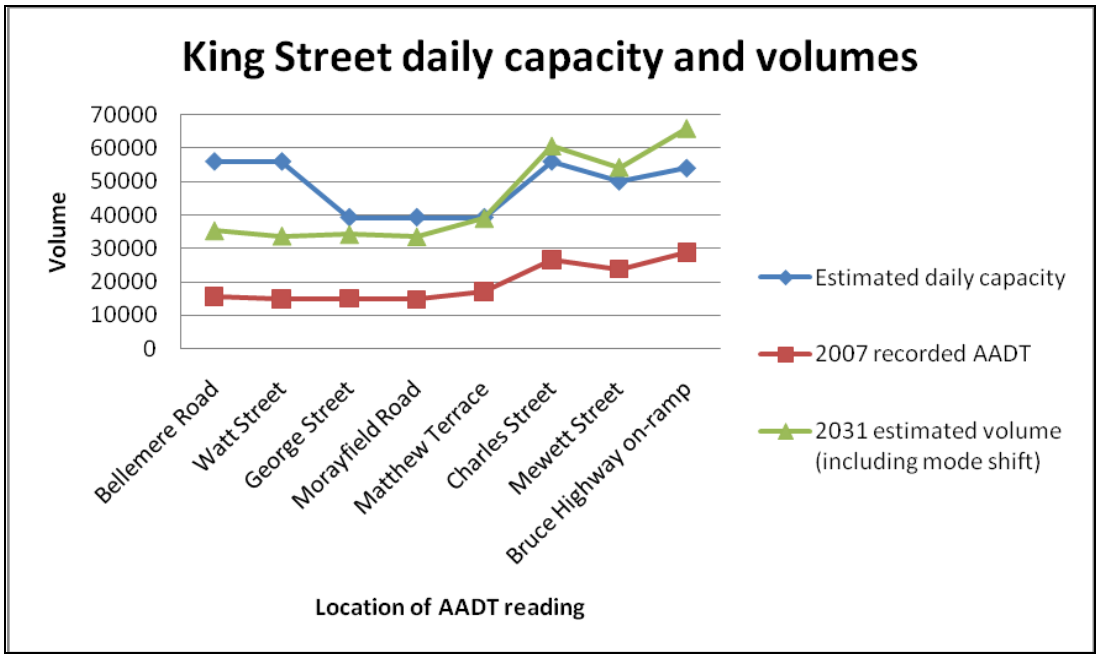


Figure 4.3 2031 volumes and capacities along King Street

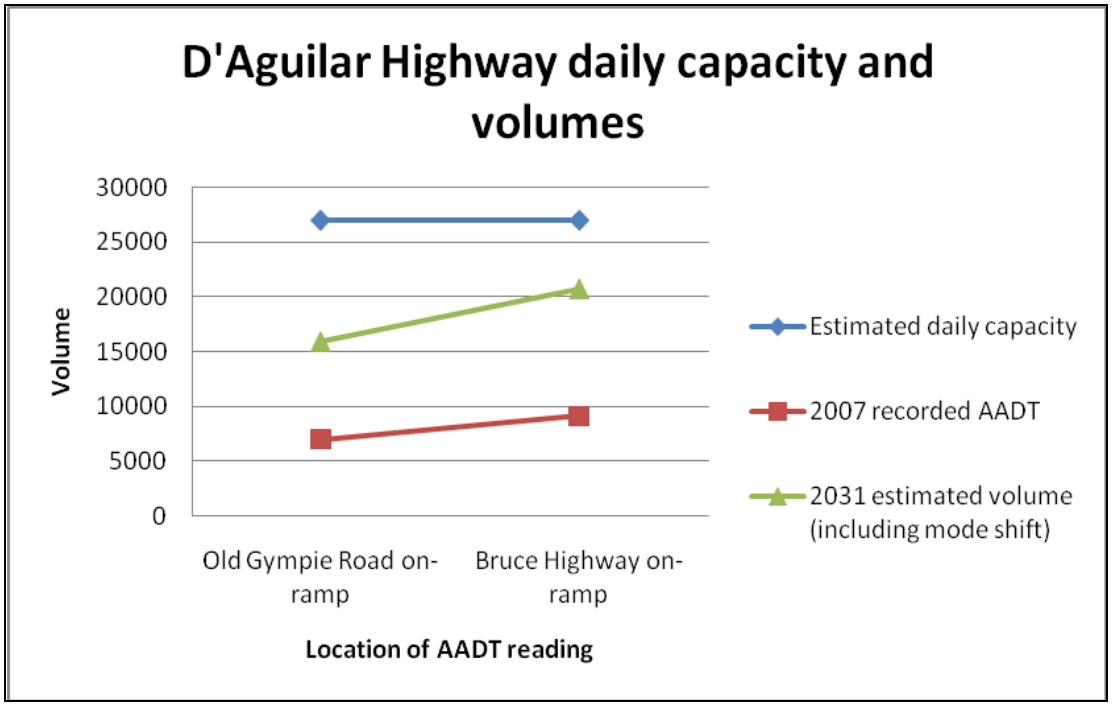


Figure 4.4 2031 volumes and capacities along D'Aguilar Highway

From the above figures it is clear that some road links within the CMPAC area will likely be subject to increased congestion in the future years in their current form, even with the increased shift to alternate travel modes (public transport, walking and cycling).

Section 3.3.1noted the recommendation to convert the third traffic lane on Morayfield Road to a kerbside bus lane, once the Graham Road extension is introduced. A revised chart has been produced for Morayfield Road 2031 volumes and capacities, shown below in Figure 4.5, which assumes a 30% shift in traffic volumes to the Graham Road extension, and also includes a reduced capacity to take into account a lane reduction from 6 to 4 lanes.

It indicates that for the majority of Morayfield Road, the shift in traffic to the Graham Road extension results in the road operating near or below the estimated daily capacity. The two locations where the estimated volume exceeds the capacity are at Station Road (which provides access to the Morayfield Station) and William Berry Drive (which provides access to the Morayfield Shopping Centre).

Through the implementation of the Buchanan Road upgrade (which will reduce traffic using Station Road) and the improvement of access to the shopping centre, the traffic volume at these locations could be further reduced, bringing them closer to the capacity limits.

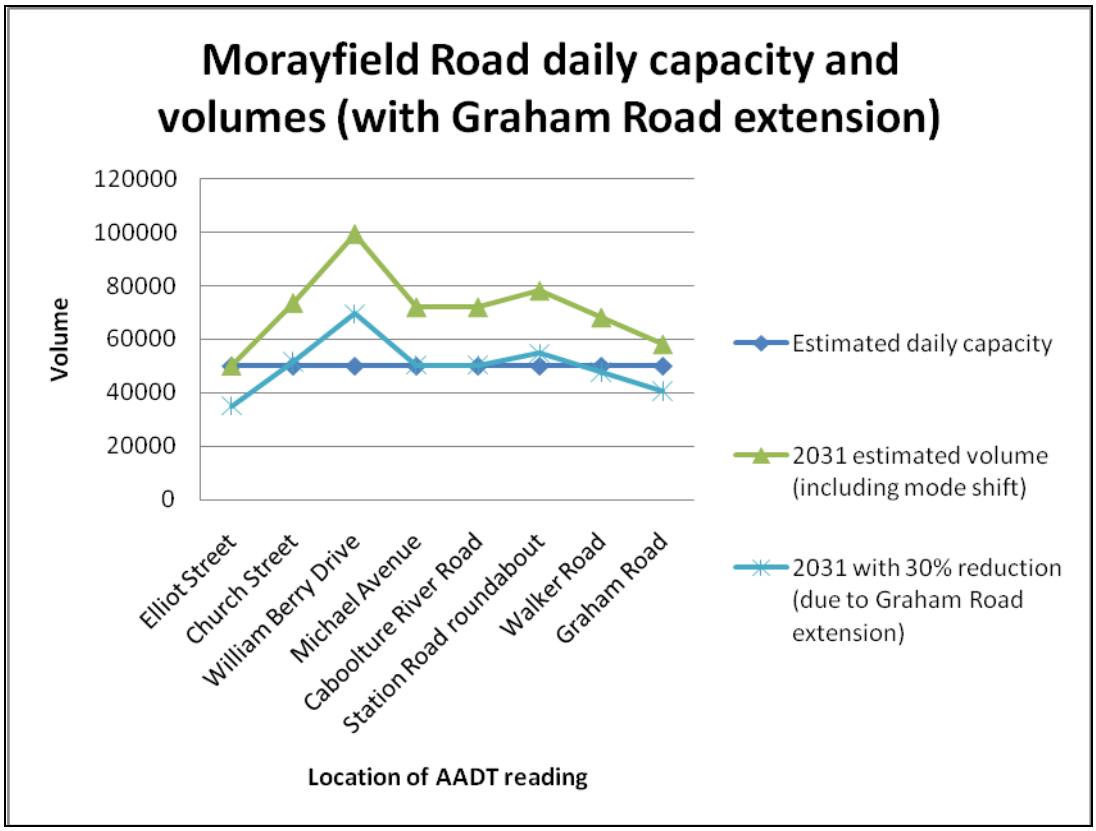


Figure 4.5 2031 volumes and amended capacities along Morayfield Road

The Graham Road extension is also likely to change traffic patterns along the King Street, where:

- traffic formerly using Morayfield Road to access the Caboolture CBD may use the Graham Road extension/King Street, resulting in an increase to volumes along the King Street link
- traffic using King Street to access Morayfield Road (say those vehicles travelling from the Caboolture–Bribie Island Road) may use the Graham Road extension instead, resulting in reduced volumes along the King Street Link.

Overall, the resultant change should be minimal.

4.2 Parking

The Caboolture CBD Parking Study (Bitzios Consulting, 2007) assessed the future parking demand for the Caboolture CBD area (including the Caboolture Rail Station precinct). The development of the future parking demand was influenced by:

- population and employment growth
- traffic growth through Caboolture CBD
- Caboolture rail patronage growth.

The outcome of this investigation was the parking demand forecasts for 2031 as shown in Table 4.1.

Table 4.1 Caboolture CBD 2031 parking demand forecast

Area	Existing supply	2031 demand	Parking shortfall
Caboolture CBD (excluding the rail precinct)	1233	1783	550
Caboolture rail precinct	675	1620	945

Although this parking study used employment projections that differ from those proposed under this Master Plan, it still demonstrates the future parking supply and demand issues that will be present in the Caboolture CBD, highlighting the need for an effective parking management strategy for the area.

The park and ride demand has been established through the application of current growth trends (relating to increases in rail boardings). Notably there has been no adjustment to the demand forecasts to take into account a change in mode of access to the rail station or any shift in park and ride to other stations. As with the CBD parking, it demonstrates the growing demand for parking spaces, highlighting a clear need for an effective management strategy.

High level long term parking demand projections for the CMPAC have been estimated based on the projected employment in the Master Plan and a 68% journey to work (JTW) mode share for cars. This mode share is based on the Connecting SEQ2031 JTW mode share target for public transport (22%), cycling mode share equivalent to the daily target (8%), and an increase in the JTW walking mode share by an equivalent precent as the daily mode share. These targets are region-wide and the PAC should have higher levels of use of alternative modes. These estimates are thus conservative. Setting mode share targets for the CMPAC is not within the scope of the Master Plan and the future projected parking demand would need to be further refined as part of the refinement of the broad parking strategy.

A projection of long term parking demand for the CMPAC in 2031 is in the region of 7,400 additional parking spaces to accommodate the additional employees within the CMPAC, even if aligned with the target mode shares for the region in Connecting SEQ2031. This does not include park ‘n ride demand which would require an additional 945 parking places, if allowed to continue on the current levels of mode of access.

4.3 Active transport

The Connecting SEQ 2031 sets future mode share targets for active transport. Within the MBRC, walking trips are to increase 24% from 8.9% of trips in 2006 to 11.0% of trips in 2031. Cycling trips are to increase by 371% from 1.7% of trips in 2006 to 8.0% of trips in 2031. Although these are not demand projections, this is an indication of significantly increased walking trips and even more significant increases in cycling trips. To meet this future mode share target major improvements to active transport infrastructure is required.

Based on the same assumptions as the parking demand projection, approximately 3,000 people would walk or cycle to work in 2031. This is more than a 10–fold increase in the number of people walking or cycling to work in the CMPAC. This does not include walking and cycling trips to rail stations within the CMPAC.

4.4 Public transport

Within the MBRC, the Connecting SEQ 2031 Strategy sets a public transport mode share targets of 11% of all trips and 22% of JTW trips by 2031. Currently the majority of public transport trips are from Caboolture to the greater Brisbane area. The increase in employment within the CMPAC will result in an increase in public transport trips with a destination in the CMPAC.

A high level estimate of the peak period public transport demand into the CMPAC has been determined by assuming that journeys to work in the CMPAC should have a public transport mode share of 22% in alignment with the target for the whole Moreton Bay Regional Council area. It is estimated, based on the proposed employment within the CMPAC, that public transport commuters to work in the PAC would increase from approximately 660 in 2009 to 5,600 in 2031. This equates to a 7–fold increase in patronage which will require an additional 82 full buses (60 passenger bus capacity) or five full trains (1,000 passenger train capacity) accessing the CMPAC area during the peak period.

This does not include people travelling to employment outside the CMPAC who use public transport to access the rail service.

Although this is not an accurate demand projection, it illustrates that there will be a much larger role for public transport in the future. In order to meet this future demand target, major improvements to public transport service and infrastructure are required. To achieve these targets would require a significant increase in bus service frequencies. The increase would better balance flows on the rail system and would thus improve capacity use.

5. Proposed transport network

This section will discuss the proposed transport network based on the transport principle and strategies discussed in the previous section. It will be divided in to the following components:

- roads
- parking
- public transport
- active transport.

5.1 Roads

The MBRC have committed to the construction of several of the road links described below (see Table 2-1). This section describes the need for and characteristics required of the road links to support the Master Plan.

5.1.1 Buchanan Road Upgrade

This link is included in the planning scheme policy. Removal of the 'dog-leg' (east of Morayfield Road intersection) will promote a stronger and more direct east-west connection between Upper Caboolture/Morayfield and the Bruce Highway, which may reduce pressure on the lower section of Morayfield Road and King Street. The link should include a grade separated crossing of the north coast rail line to increase the function and safety of the road link.

To support this links role as an Arterial Road, it is recommended that it ultimately comprise four traffic lanes. This link is likely to support bus services providing access to Northeast Business Park on the eastern side of the Bruce Highway.

There is a need for a primary active transport route along this road, and this should be considered within the road cross section.

5.1.2 Graham Road Extension

Connecting Graham Road through to the Mewett Street/Lower King Street intersection will provide an additional north-south connection, and will provide an alternate route to Morayfield Road and the Bruce Highway. To the north, Mewett Street passes across the Caboolture Bypass (D'Aguilar Highway). This road link is included in the Planning Scheme Policy. There may be further opportunity to extend the northern section of Mewett Street through to Pumicestone Road, which then connects to the Bruce Highway. This will further enhance the ability for this road link to function as a bypass and improve accessibility from regional areas to the Health and Education Precinct.

Providing a connection to the D'Aguilar Highway and/or Pumicestone Road would improve access to the health precinct and improve the function as a north-south bypass of Morayfield and Caboolture CBD without the need to use the Bruce Highway. A direct connection from Mewett Street to the D'Aguilar Highway is not possible as this would reduce intersection spacing below optimum levels.

This new road link will include a new crossing of the Caboolture River, improving network resilience. It also provides the opportunity to incorporate pedestrian and cycle links across the river.

To support this links role as an Arterial Road (as far north as Mewett Street) the link should comprise of 4 traffic lanes. The southern section of Graham Road currently comprises 2/4 lanes, and is identified in the Caboolture Shire Planning Scheme Policy 21 B – Trunk Infrastructure Contributions – Trunk Roads and Pathways for upgrade (widen remaining sections to four lanes) by 2015. This southern section should also be classified as an Arterial Road.

The northern section (Mewett Street) will have a lower order function until a connection to Pumicestone Road is made. It should therefore be classified as a Sub–Arterial Road, with two traffic lanes being sufficient. An upgrade in the classification to arterial and an additional traffic lane in each direction would be required if/when a connection is made to Pumicestone Road.

This road will be a primary active transport route. Provision for high standard pedestrian connections from Precinct 4 to Precinct 2 is required. Bus services between the Precinct 4and the Precinct 2 will use this link.

5.1.3 McKean Street/Watt Street Link

The extension of McKean Street through to Toohey Street/Watt Street will create a more direct connection across the rail line/Beerburrum Road to the residential area to the west of the CBD (Henzell Road currently provides access between George Street/Watt Street and Beerburrum Road, however this is approximately 250 m north of the McKean Street intersection).

This connection will result in a more direct link between the residential areas east and west of the rail line/Beerburrum Road, and will function as an alternate route to Lower King Street or Beerburrum Road when travelling between Mewett Street/Caboolture Hospital and King Street (west).

The function of this road link would be a Sub–Arterial. The current configuration of all link elements (McKean Street, Watt Street, George Street) is two lanes, however, there appears to sufficient corridor space (by utilising parking lanes) to accommodate an additional traffic lane if traffic demand warrants an upgrade (this would need to be further investigated). There are currently four lanes on McKean Street across the rail line.

The McKean Street crossing of the rail line should remain as an at–grade crossing in the short term to retain direct access to/from Beerburrum Road. Should the need arise for greater road network permeability/connectivity across the rail line between the Precinct 2 and Precinct 1, a grade separated crossing may be considered, however there are a number of issues that will need to be resolved before deeming this a feasible option. There is insufficient space between the rail corridor and Beerburrum Road for the rail crossing/bridge to be landed in this location; instead it would need to land somewhere west of Beerburrum Road corridor.

If the access from McKean Street to Beerburrum Road was removed (to allow for the grade separated crossing), the nearest alternate direct access across the rail corridor to Beerburrum Road would be Pumicestone Road, which is located more than 500 m north of McKean Street, and one kilometre north of the Caboolture CBD. New road connections would therefore be required to link the new rail bridge back to Beerburrum Road. The impact of such a crossing on pedestrians and cyclists would also need to be considered as it would reduce the ease with which these users can cross the rail line, although it does increase safety.

5.1.4 Caboolture South East–West Link

To service Precinct 4, and to increase network permeability/resilience, an additional east-west connector road between Morayfield Road and Weier Road (the Graham Road extension) is included in the Caboolture Shire Planning Scheme Policy 21 B – Trunk Infrastructure Contributions – Trunk Roads and Pathways. A good connection from Torrens Street to this planned link is proposed to ensure broader network connectivity and minimise traffic generated by the Precinct 4 on Morayfield Road.

The road link across the rail line will be the primary connection between the Precinct 4 and the Caboolture South. It will also provide key access to the possible future Caboolture South Transport Investigation Hub for all users. Alternate access across the rail line for pedestrians and cyclists should be incorporated into the Caboolture South Transport Investigation Hub, preferable to the south, closer to the Morayfield Shopping Centre and retail precinct.

This new road link will perform a Sub–Arterial function and should comprise two traffic lanes. The direct link to Morayfield Road on Market Drive will have a main street function. To support the active transport vision for the study area, this new link should incorporate provision for cyclists.

5.1.5 Caboolture South Centre

As this area is intended to be developed as a higher density development that would support the development of a Transport Investigation Hub the road network should be designed such that it supports Transit Oriented Development (TOD). It should provide for:

- permeable street networks to distribute local traffic through the network instead of into higher order roads
- short blocks with frequent intersections
- narrow road widths appropriate for lower speed environments (while still providing for buses, pedestrians and cyclists)
- activity on streets (active frontage to footpaths) to encourage a ‘busy’ environment and thus slow traffic
- traffic signals with short cycles (to allow for easy movement in all directions by both pedestrians and vehicles)

Achieving the above will enable the speed of vehicles through the site to be controlled, which is one of the more critical elements of a successful TOD. Amenity for all users should also be considered rather than a strict interpretation of traffic ‘level of service’ measures.

The recommended form will comprise a grid like network of streets providing access between the Caboolture South east–west link, the proposed Transport Investigation Hub and Morayfield Road, as well as providing permeability through the precinct for vehicles, pedestrians and cyclists. This will support the mixed use development and will encourage/promote active street frontage.

5.1.6 Morayfield Road

The generous road reserve (median, 4–6 traffic lanes, and a kerbside parking lane) results in a very wide, open space that does not create pedestrian amenity or connectivity across the

roadway. This does not encourage interaction between both sides of the road. Streetscaping initiatives and improvements to the active transport network will assist in creating a more attractive (and active) corridor.

The function of this road is to be retained as the primary arterial connection north–south serving the study area; however, Graham Road extension will relieve some demand. Recognising the importance of the road as a Primary Active Transport Route, the road should include cycle lanes, attractive pedestrian provision and activate street facing development. It is recommended that a speed management strategy be developed for this road link to minimise safety and amenity impacts.

Between Caboolture River Road and Torrens Road, the road corridor comprises 6 traffic lanes. The addition of the Graham Road extension (north–south link) will assist in drawing some through traffic away from Morayfield Road, providing the opportunity to more effectively use the road corridor. It is proposed that the third traffic lane be converted to a bus only lane, to facilitate improved bus travel times and operation along Morayfield Road. The road reserve/corridor width may allow extension of this further north to Oaklands Drive (by utilising the parking lane). Kerb side bus lanes will also promote a more high profile public transport system, which may encourage greater use. The bus lanes and appropriate priority treatments should ensure more efficient access to the Morayfield Bus Interchange.

5.1.7 Rowe Street/Lang Street connections

Extending these roads through to Hayes Street/McKean Street will increase the access to the Hayes Street precinct and create a more permeable road network in this location. The road links should include provision for cyclists and should be pedestrian friendly, as they will connect to the Hayes Street ‘Main Street’. Both new road links should be classified as Local Streets. Lang Street has a large open drain along its length which would limit the width of this link and may restrict its use for general traffic.

5.1.8 King Street/Lower King Street

This road link should remain as the primary east–west connector through the study site. The function of this road through the Caboolture CBD may conflict with the desired function of the corridor/frontage i.e. high traffic volumes conflict with the function as a potential bus priority corridor, as well as the high level of street activity and active frontage (pedestrians and cyclists).

It is acknowledged that there are limited options to decrease the traffic flow along this road section although the improved east–west arterial link along Buchanan Road will reduce some of the growth. Therefore the best outcome for the CMPAC area is to manage the traffic flow (speed management), which will help integrate the streetscape with the active transport and public transport intent and vision.

The road should retain its four lane configuration but should incorporate on–road cycle facilities as this is a Primary Active Transport Route.

5.1.9 Edward Street Extension

Providing a connection between Edward Street and the Charles Street/Lower King Street intersection will allow easier access to the area immediately north of the Caboolture River (from the north–east area of Caboolture). The Edward Street would retain its function and classification of a trunk collector road.

5.2 Parking

5.2.1 Parking provision guidelines to achieve desired outcomes

5.2.1.1 General principles for Caboolture and Caboolture South

Caboolture has high potential for developing as a TOD and the intent of the Master Plan is that Caboolture South would develop to support the future location of a Transport Investigation Hub within the precinct. Parking is one of the most challenging aspects of any TOD. Typical suburban development, with 50 to 75 percent of the site devoted to surface parking surrounding development, results in land use densities that are too low to support public transport service. By limiting parking demand and supply and moving parking from surface parking lots to on-street parking and parking structures, residents, shoppers and employees are encouraged to use active and public transport to get to the TOD and walk within the TOD. The supply and pricing of parking should discourage employees from driving to work within the TOD and encourage walking within the centre to access the mix of uses.

It is essential however that parking be managed as part of an integrated region-wide Travel Demand Management (TDM) Strategy that manages the demand for parking in an integrated approach throughout the region, and provides viable alternatives including active and public transport.

Parking in a TOD should consider three fundamental components, supply, location and design. Parking supply needs to be sufficient to meet car needs that cannot be satisfied by public transport or active transport. In areas with established office markets and high quality public transport service, office parking ratios for TOD are lower than conventional car parking ratios. In emerging centres, office TOD requires access to conventional ratios but mechanisms to reduce supply as the market matures should be considered. Shared parking between uses or a parking management district can reduce the need for parking significantly over conventional ratios depending on the mix of uses.

Parking facilities should be located so buildings, not the parked cars, are the dominant visual feature. As well as being integrated with the development, the design of parking needs to relate to the streetscape, circulation routes, and pedestrians.

Location for parking and parking policy determining use are critical components of successful TOD's and associated public transport use. In general there is a balancing act between providing adequate parking for the development, and an over–supply of parking which undermines public transport and the overall success of the TOD as a walkable and people friendly environment (not dominated by car use).

Similarly other kerbside uses such as loading bays, taxi ranks and bus stops need to be managed to balance the needs of businesses, users of the facility, and the creation of a walkable and people friendly environment.

There are often three competing parking elements which influence the success of a TOD:

- provision of parking for commercial activities reliant on car use. If over–supplied public transport will suffer as will the pedestrian environment. If undersupplied commercial viability of a centre can be challenged
- high parking rates and over–supply can undermine a public transport network's ability to service a TOD centre and associated activities. If public transport is far away from the

centre, or if the TOD is auto–oriented, public transport may only be able to provide a small role in trip provision

- park and ride facilities (where provided) need to be well placed at the edge of developments, with an appropriate level of supply, and management of overflow parking. Placement, total supplied amount, and management of overflow are critical factors.

Some general guidelines for parking management and provision in Precincts 1,2 and 3 include:

- parking rates in general for development within and surrounding the TOD should be maximum rates. As development progresses these maximum rates would transition to lower levels (particularly all day parking provisions) in conjunction with improved public transport and active transport alternatives serving the centre

- parking generally should not dominate the area surrounding the station and should encourage some walking from parking areas to the station via retail and/or civic spaces

- parking land ownership can be critical for encouraging future development. In some cases when owned by the public transport operator, with incentives for station area redevelopment (e.g. Bay Area Rapid Transit (BART) in San Francisco) redevelopment can be facilitated easier than if the parking site is privately owned. Essentially the key longer–term intent for park and ride areas is to provide incentive to transition the land to development (including parking) rather than as an 'eternal' carpark

- park and ride facilities should support the activation of the centre and not separate development and the station. (refer to the following section).

5.2.1.2 Caboolture and Morayfield Station Park 'n' Ride

To support the development of TOD in the Caboolture Principal Activity Centre, it is recommended that no additional Park 'n' Ride is provided at Caboolture Train Station. Any growth in demand for access to the station should be accommodated through improved public transport and facilities for walking and cycle access. Within the timeframe of the Master Plan existing Park 'n' Ride at Caboolture may be relocated to a major Park 'n' Ride north of Caboolture to allow for the development of sites adjacent to the station. Park 'n' Ride should not be located adjacent to train station but still be within an appropriate walking distance of the station with no net reduction in Park 'n' Ride facility in the short term. The long term vision will see the development of a major Park 'n' Ride at Caboolture North in accordance with Connecting SEQ 2031.

In the long term (outside the timeframe of the Master Plan) the majority of the Park 'n' Ride spaces at Caboolture should be transitioned to alternative, more appropriate locations. The shifting of the Park 'n' Ride spaces will need to the undertaken over time in conjunction improvements to the bus service frequency and coverage, so that it becomes a more attractive and viable mode of transport to and from the Caboolture Train Station. Improved pedestrian and cycle access will also reduce the reliance on private vehicle travel to the rail station (especially for trips shorter than 2km).

Park 'n' Ride provision in the CMPAC needs to be aligned with general parking provision for the centre and a Local Centre Parking Plan should be prepared for on and off-street parking within 400m of stations. This plan would need to ensure that park and ride provision does not skew the parking management strategy within the CMPAC.

5.2.1.3 Caboolture River high rise residential area

The location of this high density residential area is next to the CMPAC CBD and civic centre, and 500 m to 1 km from the Caboolture Train Station. It also fronts Lower King Street, which is identified as a transit corridor in the Connecting SEQ 2031. The proximity of this area to the commercial hub of Caboolture and the high quality rail/bus interchange provides the opportunity to reduce the car parking rates due to the increased likelihood of residents using alternate modes for travel (walking, cycling, public transport). High density residential development could also substitute several car parking spaces for a parking space for a car–share vehicle.

5.2.1.4 Caboolture residential area/residential infill/intensification

Parking rates to be amended so that maximum rates are specified for multiple dwelling units. All parking (including visitor bays) should be provided on site.

Where residential areas are located within 400 m of the commercial and retail precincts, on street parking (where permitted) should be restricted to short term (1–2 hours) or residential parking only during weekdays (day time). This will discourage long term parking by non-residents who may be using the parking area to access employment or shopping opportunities. A resident parking permit system may be appropriate where high levels of overflow parking is observed from employment or shopping areas.

5.2.1.5 Morayfield Retail Precinct

On street parking will need to be actively managed to reduce overflow long term parking impacting negatively on businesses and residents. Short term parking provided for customers should preferably be in structured parking shared by several businesses with limited street frontage. Businesses should maximise the active frontage on the road.

Where off–street parking is provided, it needs to be accessible and appropriately signed to ensure maximum usage.

5.2.1.6 Health and Education Precinct

Sufficient parking is to be provided on–site to reduce the instance of parking spilling into the neighbouring residential streets.

For the streets running through the residential area of this precinct, on street parking (where permitted) should be restricted to short term (1–2 hours) or residential parking only during weekdays (day time). This will discourage long term parking by non-residents who may be using the parking area to access employment or education.

The location of this precinct is 400 m to 1.5 km from the Caboolture train station, resulting in high level of access to quality public transport services, which may allow a reduction in the parking rates.

5.2.1.7 CMPAC CBD

The key findings from the Caboolture CBD Parking Study (Bitzios, 2007) are still relevant and should be considered with the development of the Parking Policy to support the Master Plan. However, the estimates for the future demand and resultant parking supply may need to be revisited due to the changes suggested by the Master Plan for this area.

The strategies recommended include:

- Strategy 1: Expand Park ‘n’ Ride facilities on eastern side of train line only.

Park ‘n’ Ride spaces at Caboolture should not be increased . The location of the park and ride spaces should be located to maximise the potential TOD.

- Strategy 2: Encourage rail commuters to use other rail stations.

This is supported.

- Strategy 3: Increase feeder bus frequency and service times.

Improving public transport services (service coverage and frequency) will reduce reliance on private vehicle for access to/from the rail station, reducing parking demand.

- Strategy 4: Discourage rail commuter parking in the CBD.

This strategy is of particular importance with the potential relocation of Park ‘n’ Ride provision at Caboolture Station to sites that are not adjacent to the station. Rail commuters using the CBD parking reduces the parking supply for workers and visitors. Possible strategies to deter rail commuter parking in the CBD may include:

  - stronger enforcement of short stay parking
  - development of major Park ‘n’ Ride North of Caboolture CBD
  - introduction of parking pricing schemes (including park and ride).

- Strategy 5: Consolidated parking.

The 2007 parking study identified that there will be a future demand for additional parking supply in the CBD (north short and long stay). As the CBD area is dominated by commercial use, there is the opportunity to provide a consolidated parking area which will cater for the parking needs of a number of development sites and uses (noting that an at–grade facility should be discouraged). This type of facility is a more efficient use of the parking supply, as it allows for ‘shared parking’ between developments/businesses. Opportunities should be pursued to maximise parking use through parking serving development with different staff working hours or business operating hours.

- Strategy 6: Manage demand for long stay parking.

A reduction in long term parking can only be implemented combined with an increase in public transport services. As additional public transport services are added (through additional rail services and by improved bus services and coverage), some long stay parking can be gradually allocated to short term parking, or the land can be converted to a more appropriate use.

- Strategy 7: Maximise on–street parking.

Short–term on–street parking will remain the most convenient form of parking for visitors to the CMPAC CBD, as it is the closet to the end destination. The provision of short–term on–street parking is essential to support the commercial and retail uses in the CBD. Where the supply of on–street parking does not meet the demand (due to competition for availability of kerb space to cater for loading zones, bus stops etc), off–street short term parking areas should be provided that are easily accessible and appropriately signed.

- Strategy 8: Enforcement.

Enforcement of the time restrictions for the parking supply is essential to manage the turnover of short stay parking supply and to minimise parking in restricted areas.

Additional to the eight strategies described above, additional measures should be considered:

- similar to the TOD sites, the CMPAC CBD should be subject to reduced parking rates to encourage greater use of public transport and allow greater development densities
- long term/all day parking within the CBD area should not be free (for non–residents). Pricing mechanisms should be investigated
- for the streets running through the residential area of this precinct, on street parking (where permitted) should be restricted to short term (1–2 hours) or residential parking only during weekdays (day time). This will discourage long term parking by non residents who may be using the parking area to access employment or commercial uses.

5.2.2 Required changes to current policy

5.2.1.8 Rates

Currently, the parking rates specified in the Caboolture ShirePlan – Transport, Access and Parking Code are minimum rates. Changing the parking requirement in the centres/core precincts from a minimum to a maximum parking requirement would provide greater opportunity to increase densities and will also allow developers to reduce parking provision over time.

Changes to the current parking rates within the Caboolture ShirePlan - Transport, Access and Parking Code are required to support TOD. The parking rates set out in the TOD Guidelines prepared by State Government are compared to the existing rates set in the planning scheme in Table 5-1.

The parking rates set out in the TOD Guidelines may be appropriate once the PAC is fully developed, however during the development of the TOD over the next 20 years there would need to be a staged reduction in parking rates from current levels. This reduction would need to be staged in alignment with economic drivers, the availability of viable transport alternatives, and other considerations.

A detailed investigation is required to refine the broad parking strategy of the Master Plan to develop a statutory Parking Policy and Implementation Plan that identifies the appropriate parking rates for the PAC and has a staged implementation strategy.

Table 5.1 Comparison of Caboolture and other planning schemes' parking requirements

Use	Current rate	Amended rate
Residential	1/du plus 1 visitor per 3 units	Maximum of 0.75 to 1 space per d/u, including visitor spaces*
Office and office	One (1) car park for every 20 to 25m^2 of net floor area	Maximum of one (1) car park for every 100 to 200 m^2 of net floor area*

The changes to the rates for those areas within the Precincts reflect those already specified in intense developed, inner city areas. The development of the CMPAC and the high density residential areas combined with the intense mixed use development surrounding the public transport nodes and corridors provides the opportunity for reduced parking provision, reflecting the potential increase in public and active transport mode share.

5.2.1.9 Circumstances under which parking rates could be relaxed/reduced

There may be a number of circumstances where Council chooses to relax/reduce the parking rates from the recommendations in Table 5.1 and those other rates contained in the planning scheme, such as:

- development is within 400 m of a high frequency bus service or 800 m of a rail station, which would lend itself the reduction in car usage (due to mode shift)
- the number of spaces prescribed can be reduced due to the ability for cross utilisation of spaces with a nearby multi–use development or one where peak demand differs with that of the proposed development
- council has decided that the number of parking spaces within the vicinity of the development site is sufficient to meet forecast demand, and that monetary contributions will be sought instead (refer to later section regarding use of these funds). Council may alternatively direct the developer to undertake works (such as streetscape improvements) equivalent to the in lieu contribution
- the developer provides additional parking spaces in the road reserve, and receives a credit for doing so
- car pooling spaces are provided as part of the development
- increased bicycle parking is provided, that may encourage a mode shift
- green star buildings are proposed as part of the development, where a reduction in parking provision forms part of the Transport category.

The above circumstances will not result in the demand for parking exceeding the supply, as they result in a lesser (or no change) demand for parking due to mode shift or efficient use of parking facilities.

Other circumstances where Council may choose to reduce the parking rates include:

- the development includes green initiatives i.e. preservation of trees etc. A credit could be granted per tree (or group of trees)
- council does not feel that parking provision can be achieved on the site (safety, access etc) and seeks monetary contributions instead (refer to later section regarding use of these funds).

However, the above may result in the parking demand of the development site not being met, which may place pressure on the existing parking supply.

5.2.1.10 Monetary contributions

If council seeks monetary contributions in lieu of parking provision, there are a number of options as to what can be done with the funding, these may include:

- increasing the supply of parking, with the pooled funding being used for the construction of an identified parking facility or upgrade of an existing facility when the need/demand arises
- reducing the demand for parking through improvements to the streetscape and public spaces, pedestrian or cycle facilities or public transport service.

In lieu contributions should be used for the provision of facilities within the precinct for which the funds were obtained in the first place (i.e. funds collected for Caboolture CBD should not be used to contribute to the provision of facilities in Morayfield).

Note that an appropriate method for the calculation of the in lieu contribution rate will need to be identified. Possible options include:

- cost of provision of a parking space (general rate)
- cost of provision of a parking space within an identified parking facility (where a Parking Study has been undertaken and identified the facility required to meet demand). May or may not include land purchase costs, as well as other project costs (project management, design, administration etc)
- different costs for on–street and off–street parking
- different costs per precinct of zone.

5.3 Public transport

5.3.1 Upgrades to the Caboolture Train Station

Improvements to the North Coast Rail Line between Caboolture and Petrie are expected to take place that will increase service frequency. This will also require the upgrading of existing rail stations within the CMPAC to include additional platforms.

As the Caboolture Train Station is designated to be the basis of the Caboolture TOD, it requires multiple improvements. There needs to be stronger pedestrian/cycle linkages to the surrounding area and improved connectivity across the rail line. Currently the crossing point across the train line is located at the centre of the train station and is not on a direct demand line from the CBD to the eastern residential areas. Improved connectivity over the train line is needed and this may require the relocation of the overpass to better align with James Street.

In order to improve the user's experience and safety, it is vital that the upgraded train station has real–time train schedule displays, high quality furniture and urban design, is designed with CPTED principles and has end of trip facilities for cyclists.

5.3.2 Transport Investigation Hub between Caboolture and Morayfield

Current spacing between the Caboolture and Morayfield Train Stations is appropriate for inter–regional rail services, not urban rail services. Current spacing between the Caboolture and Morayfield Stations is over 3 kilometres. This long distance spacing is characteristic of regional type services. Given the Principal Activity Centre status of Caboolture–Morayfield, it is suitable to add a Transport Investigation Hub to be identified between the existing stations to make efficient use of land close to the rail corridor. This hub will be the basis for transit oriented development at Caboolture South.

As current land use does not warrant an additional station, it is vital that future development in Caboolture South is carefully planned to provide the critical mass required for transit oriented development.

Higher density residential, retail and commercial development must be favoured over industrial, warehousing and big box retail in order to achieve this critical mass. For a new station to be viable, approximately 10,000 residents or jobs must be within an 800 m walking catchment of the station.

5.3.3 Morayfield Road and King Street/Lower King Street as bus spines

The bus network in the CMPAC predominantly serves local trips and acts as a feeder service to the North Coast Rail Line. One of the key improvements to the bus service is to develop Morayfield Road and King Street/Lower King Street as bus 'spines' with high frequency priority services on Morayfield Road. This is essential as Morayfield Road and King Street/Lower King Street are the primary connections to population centres, particularly Caboolture West, which is slated as an identified growth area in the South East Queensland Regional Plan.

Bus services should be structured such that anyone can access development along Morayfield Road and the Caboolture CBD without the need for transfers at either Caboolture or Morayfield. The structure of the bus network should focus routes into the Morayfield Road and King Street corridors to achieve high frequencies along these corridors, supporting transit oriented development and justifying the investment in priority treatments. This structure is illustrated in Figure 3.2.

In order to delineate Morayfield Road as a high frequency priority route, bus lanes and intersection priority will be implemented at appropriate locations. Based on the analysis of future trip demand, the section of Morayfield Road near William Berry Drive shows significant capacity constraints. As such, bus priority in this area would be essential.

High quality bus stops along Morayfield Road and King Street/Lower King Street will further enhance these corridors as bus spines. This includes an appropriately sized bus shelter, high quality street furniture and real time information displays. Figure 5.2 shows elements required in bus stops along Morayfield Road and King Street/Lower King Street.

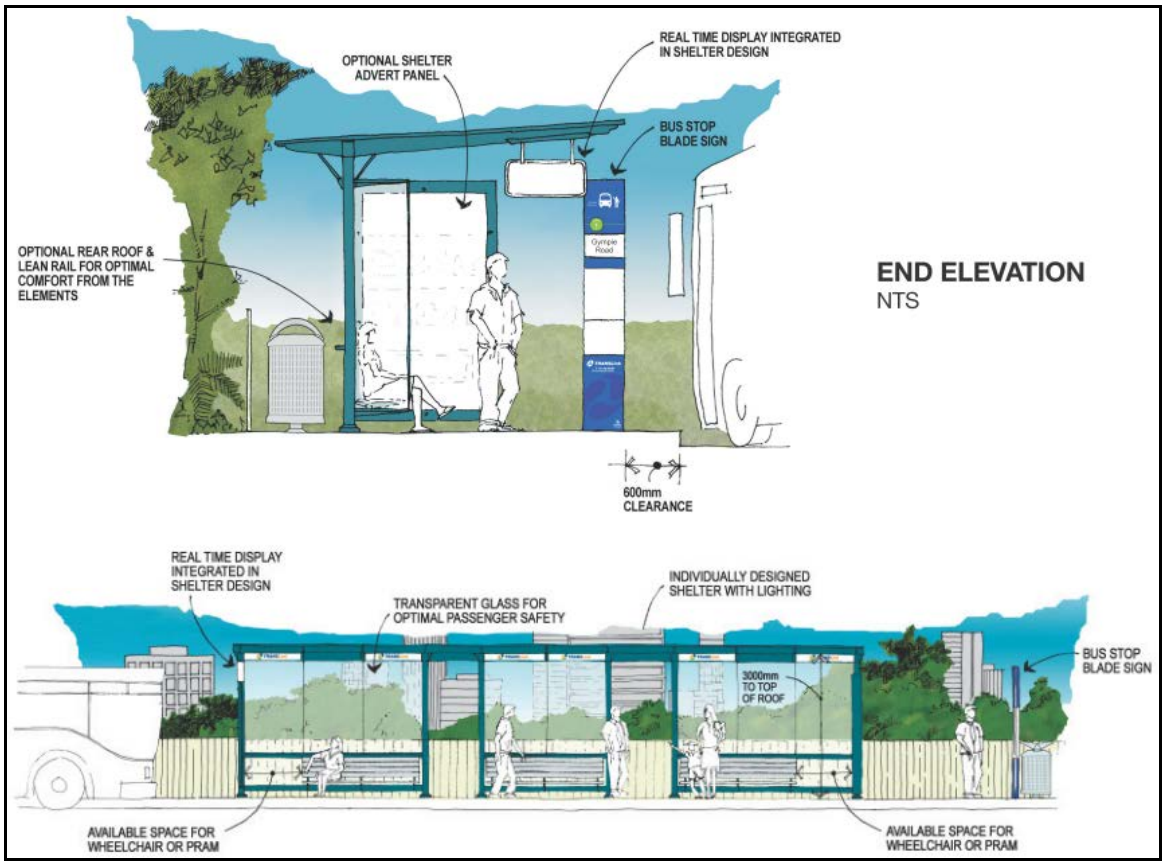


Figure 5.1 Example of a TransLink 'Signature' stop

5.3.4 Bus services connecting precincts

It is vital that high frequency bus connectivity is provided to service the development cluster of all precincts. A bus service is required that connects the Caboolture CBD, the Health and Education Precinct, Precinct 4, potential Caboolture South Transport Investigation Hub, and Morayfield Shopping Centre and retail precinct. This is illustrated in Figure 3.2.

5.3.5 Improved local bus network

The service coverage, frequency and directness of bus services connecting residential areas to the CMPAC must be improved. The current routes are circuitous due to the cul–de–sac route network in the residential areas. As a result bus frequency is limited, services are not direct and services 'double back' on themselves. Future routes are required to service the residential area in the south–west (there are currently no services here) and any new development.

5.3.6 Upgrade and relocation of the Caboolture Bus Interchange

The Department of Transport and Main Roads is undertaking the design of an improved Caboolture Train Station and Caboolture Bus Interchange. The upgrade should best serve both the Caboolture CBD and transfers to the train station. The station should therefore be designed to maximise the connection to the CBD while maintaining good connections with the rail station. It is vital that bus delay is minimised and that it is designed with CPTED principles, high quality design and real time bus scheduling information. It is essential that the bus interchange be integrated with surrounding development to maximise the commercial opportunities and activate the space to increase safety, especially after hours.

5.3.7 Morayfield Bus Interchange

The Morayfield Shopping Centre Bus Interchange is to be relocated. The location of the new interchange should best serve the land use development of Caboolture South, while still being connected to Morayfield Shopping Centre. It is vital that the bus interchange be designed to support the proposed structure of bus services and must minimise delays to services passing through the interchange.

This is even more pertinent as the future trip demand analysis shows road capacity constraints in the vicinity of the Morayfield Shopping Centre. The bus interchange should also be designed with CPTED principles to improve safety and provide high quality design and real time bus scheduling information to improve user experience.

5.4 Active transport

5.4.1 Greenways

In order to provide further detail on the 'greenways' strategy, Table 5–2 provides detailed information on the 'greenways' proposed for the CMPAC.

Table 5.2 Greenways summary

ID	Name	Description	Rationale	Details
1	Caboolture Riverlink	From East Moreton Bay Urban Arterial Bridge to River Drive	Activates the Caboolture River by enhancing pedestrian and cycle connections. This is also a major east–west active transport link which connects Precinct 4 with Precincts 1 and 2.	Requires upgrade of two river crossings: Rail Bridge (addition of cycle/pedestrian facilities to rail bridge) and Norfolk Esplanade/The Esplanade/Riverview Street pedestrian crossing (CPTED improvements).
2	Rail Trail	Using railway reserve in Caboolture West	Provides a major green link to Caboolture West and has high connectivity to Caboolture CBD and Lagoon Creek link.	Requires disposal of rail reserve by QR.
3	Lagoon Creek link	Runs parallel to Lagoon Creek	Activates Lagoon Creek to create a link to the north east of Caboolture. Provides good connectivity to Rail Trail.	This proposed link runs through very thick vegetation (potential CPTED issues) and requires an under/overpass at D'Aguilar Highway for pedestrians/cyclists.
4	Morayfield link	Uses easement/reserve of green space between Torrens Road and Michael Avenue	Provides active transport connectivity from Morayfield Shopping Centre and bus interchange to western residential areas.	Existing development along Morayfield Road will make it difficult to punch a connection directly onto Morayfield Road. This should be considered for future redevelopment near this point.
5	Sheep Station Creek West link	Runs parallel to Sheep Station Creek from Morayfield Train Station	Activates Sheep Station Creek and provides connectivity from Morayfield Train Station and nearby retail to western residential areas.	Requires upgrade and extension of existing facilities. The existing connection from the Morayfield Tran Station to the west is an underpass. This will require CPTED improvements.

ID	Name	Description	Rationale	Details
6	South–west creek link	Uses green space between Morayfield Park Leisure Centre and Supacentre Shopping Centre	Provides active transport connectivity from Morayfield Train Station and nearby retail to south–west residential areas and Morayfield Park Leisure Centre.	This link will traverse Morayfield Road, which is currently a major barrier for active transport due to its width and high traffic volumes. Requires new pedestrian and cycle connection to Morayfield Train Station from the south through existing properties. May require agreement with existing land owners or a requirement as part of the development of vacant land.
7	Sheep Station Creek East link	Runs parallel to Sheep Station Creek from Morayfield Train Station to Caboolture River	Activates Sheep Station Creek and provides connectivity from Precinct 4 to Morayfield Shopping Centre, Morayfield Train Station, and the Health and Precinct.	Alignment would be determined by the edge of the Precinct 4 development.
8	Precinct 4 links	One major north–south route and two major east–west routes through Precinct 4	Is the basis of active transport connectivity to and within the Precinct 4.	Final alignment is dependent on–road network within Precinct 4. These links will be on the edge of open space areas to activate and connect green areas.

5.4.2 Main Streets

In order to provide further detail on the 'main streets' strategy, Table 5–3 provides detailed information on the 'main streets' proposed for the CMPAC.

Table 5.3 Main Streets summary

ID	Name	Description	Rationale	Details
1	Caboolture	Caboolture CBD and surrounds	This will connect the Education/Hospital precinct with the Caboolture Train Station, Caboolture CBD, civic sub–precinct, Centenary Lakes Park and Caboolture River.	This will require an improved connectivity over the North Coast Rail Line, which currently acts as a barrier for east–west movement. Several mid–block crossings are required to provide improved connectivity within the CBD, to Centenary Park and the Caboolture River.
2	Morayfield	Morayfield retail precinct and	The north–south link will connect the Morayfield Shopping Centre through the rejuvenated Morayfield	This would require the overhaul of the existing road network and land use in Caboolture South and Morayfield. The final

ID	Name	Description	Rationale	Details
		TOD	retail precinct to Precinct 4 and the Transport Investigation Hub. The east–west link will link with the Precinct 4 and Caboolture South and Morayfield Road.	road network should be based on a grid network with opportunity for mid–block crossings for pedestrian cyclists.

End of trip facilities

The Caboolture and Morayfield Train Stations lack sufficient bicycle storage capacity and have no end of trip facilities. It is essential that these transit interchanges include high quality end of trip facilities. This includes physically attractive bicycle storage, lockers and shower facilities. The scale to which end of trip facilities are provided is dependent on the hierarchy of the train station. Table 5.4 is a hierarchy of end of trip facilities. Table 5.4 provides details on end of trip facilities.

Table 5.4 Hierarchy of end of trip facilities

ID	Name	Description	Rationale	Details
1	Comprehensive end of trip facilities	Caboolture Train Station	Comprehensive end of trip facilities are required to serve the Caboolture Train Station and the Caboolture CBD TOD.	The full suite of end of trip facilities will be provided at this location: bicycle storage, lockers and showers.
2	Future comprehensive end of trip facilities	Caboolture South Transport Investigation Hub	Comprehensive end of trip facilities are required to serve the Caboolture South development and a Transport Investigation Hub.	The full suite of end of trip facilities will be provided when this station is constructed.
3	Comprehensive end of trip facilities	Morayfield Train Station	Comprehensive end of trip facilities are required to serve Morayfield.	The full suite of end of trip facilities will be provided at this location: bicycle storage, lockers and showers.

It is vital that end of trip families are designed and operated to facilitate ease of use and promote the image of cycling. The current facilities provide secure facilities for those with leases but are not space efficient and do not serve the needs of irregular users.

Figure 5.2 is an example of high capacity bicycle storage at a rail station. The enclosed design protects bicycles from the weather, theft and vandalism, while the transparent material used increases user safety. Additionally, the increased visibility of the actual bicycles reinforces the presence and importance of active transport.

Figure 5.2 Bicycle storage appropriate for long term storage at interchanges (Source: Bike Arc 2010)

Figure 5.3 is of a 'Green Pod'. This is an integrated bicycle storage, locker room and shower facility that is modular and consumes the space of approximately one car park. This facility provides a free–standing end–of–trip facility that maximises access within a very small footprint.

(Source: Penny Farthings Pushbike parking 2010)

Figure 5.3 Innovative Green Pod: Modular bicycle storage with end of trip facilities (lockers and showers)

Primary and supporting active transport routes

The active transport routes will be provided in two tiers: primary routes and supporting routes. The primary routes provide for direct and attractive pedestrian and cycle access to the major trip generators/attractors. These act as the arterials for active transport. The secondary routes add a finer grain of connectivity and permeability. These act as the sub–arterial and collectors for active transport. The active transport routes reflect those identified in the Connecting SEQ 2031 and SEQ Principle Cycle Network Plan.

Increase permeability of road network adjacent to CBD

The residential area surrounding the CMPAC requires a permeable network of active transport routes to maximise the route choice and minimise the distance of active transport trips. This is especially relevant for residential development immediately to the west of the Caboolture CBD. Currently it is characterised by low density housing and a cul–de–sac style road network.

This is limiting access to the Caboolture CBD, multiple ‘greenways’ and public transport which are immediately adjacent to this area. Given the potential for this residential area to connect to the wider area, it is important to increase permeability of the active transport network through the area by providing additional pedestrian paths or road links. A pedestrian cycle link is proposed between Ruth Street and Mill Road. This will provide direct access to the CBD.

6. Implementation/staging

The transport network elements identified to support the CMPAC Master Plan all work together to help manage congestion and to actively encourage and allow for public transport and active transport uses. The following notes are provided regarding possible staging or triggers for the proposed elements:

- improved cycle routes to the Caboolture CBD, and the provision of increased secure cycle parking and end of trip facilities should be a short term priority in Caboolture to reduce demand for park and ride
- in the short to medium term, parking controls, including consolidated parking and parking charges need to be implemented within the Caboolture CBD. These would need to be done in conjunction with an increase in park ‘n ride capacity at other stations, improved public transport service, and improvements to the active transport network
- a grade separated crossing of the North Coast Rail Line will connect Precinct 4 to Morayfield Road, providing the primary connection to the site. There will need to be a secondary connection to Buchanans Road via Visentin Road to retain network resilience to ensure the site does not rely solely on one connection to the road network. This link need not have a high flood immunity. It is vital that bus services are provided to the Precinct 4 early to develop a base for public transport in the area
- as Precinct 4 develops, the need for the Caboolture South east–west link will emerge, with the northern portion of the Graham Road extension required at a minimum (to connect to King Street). The addition of the east–west and Graham Road extension will allow for the implementation of highly connected bus services that connect the Precinct 4 with major nodes to the north of the Caboolture River
- the timing of the Graham Road north–south extension will be required in alignment with the development of the Health and Education Precinct, the Precinct 4 and to relieve congestion on the Morayfield Road corridor. It will also be required when the kerbside lanes on Morayfield Road are converted to bus lanes
- the Buchanans Road upgrade will reduce traffic demand on King Street and will improve the traffic flow on Morayfield Road at the shopping centre. It will increase safety by reducing the use of the level crossing on Station Road. There is a need for this project to address current capacity and safety issues and it should be brought forward for implementation in the short term
- the McKean Street to Toohey Road/Watt Street extension should be linked to the development of the site in the vicinity of Lang and Rowe Street, as it will improve traffic flow through this area to the north of the Cabooltrure CBD. The project could also be brought forward in order to provide some relief to the King Street/Lower King Street corridor
- the redevelopment of the Morayfield Retail Sub- precinct away from ‘big box’ retail presents a major opportunity to develop a better pedestrian and cycle environment in the area. Its proximity to the Precinct 4 will also assist in developing a critical mass required for a Transport Investigation Hub at Caboolture South
- once a critical mass of development is reached at the Precinct 4 and the adjacent Caboolture South precinct, a potential Transport Investigation Hub will become viable.

7. References

Bike Arc (2010) *Products Page*, viewed 5 October 2010, http://www.bikearc.com/productsPage.html.

Penny Farthings Pushbike Parking (2010) *The Green Pod*, viewed on 5 October 2010, http://www.pushbikeparking.com/green–pod.