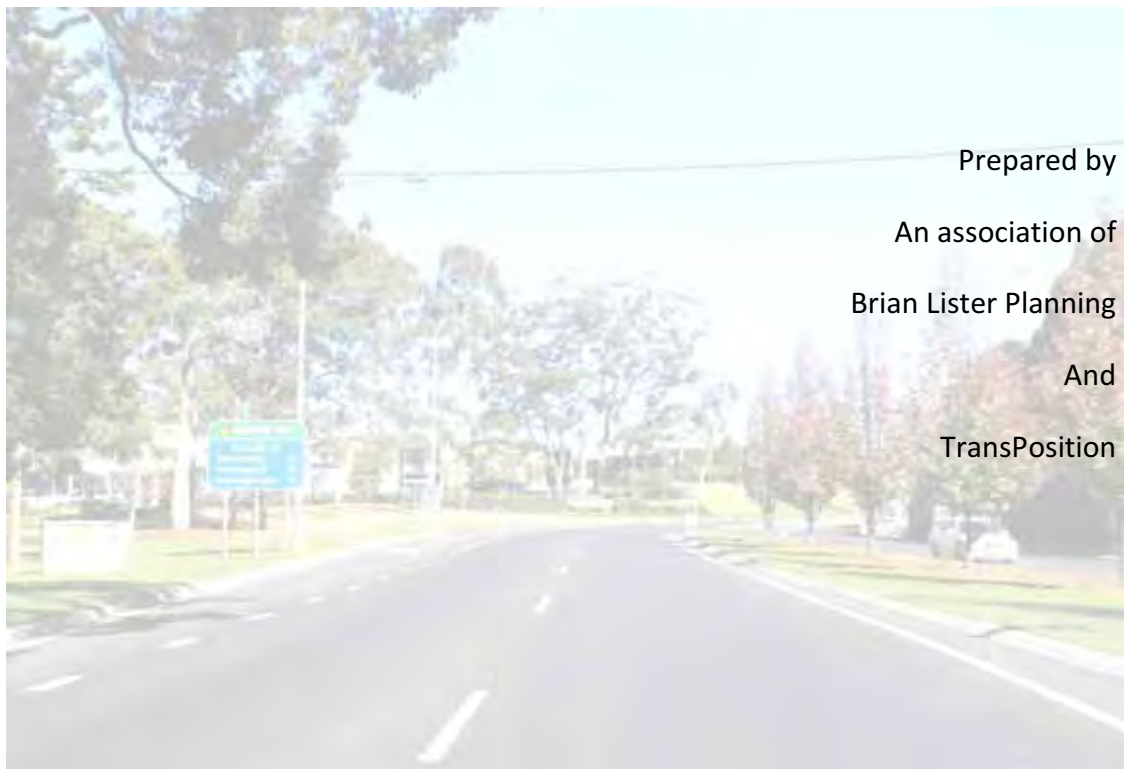


TOOWOOMBA REGIONAL COUNCIL

TRANSPORT STRATEGY PROPOSALS TO 2031



Prepared by

An association of

Brian Lister Planning

And

TransPosition

June 2010



This study was conducted by the following study team members:

Brian Lister – Brian Lister Planning

Nick Lister – Brian Lister Planning

Peter Davidson – TransPosition

Dr Ken Davidson - TransPosition

Paul Kidd - TransPosition

John Davidson – TransPosition

Document Control

Version	Date	Author		Reviewer	
1	22/4/2010	Brian Lister Peter Davidson Nick Lister Dr Ken Davidson	BL PD NL KD	Dr Ken Davidson	KD
2	30/6/2010	Brian Lister Peter Davidson Nick Lister Dr Ken Davidson	BL PD NL KD	Dr Ken Davidson	KD

© 2010 Brian Lister Planning and Transposition. All Rights Reserved.

Contents

Executive Summary.....	ix
Summary Findings and Transport Strategy Recommendations	ix
General Comments on Integrated Land use and Transport Findings.....	ix
A Transport Assessment of the Preferred Growth Pattern	x
Policies and Parameters for a Sustainable Transport Strategy	xii
Road Network Findings and recommendations	xiii
Active Transport findings and recommendations	20
Public Transport findings and recommendations.....	21
The Future Parking Strategy findings and Recommendations	25
Future Freight Considerations and recommendations.....	26
Other Policy Findings and recommendations.....	27
1 Introduction and Overview	28
1.1 Background.....	28
1.2 The Toowoomba Region in its functional context	30
1.2.1 Toowoomba City	30
1.2.2 The Regional Communities	30
1.3 The transport context	31
2 Existing Development, Travel and Issues of the Region in 2006	33
2.1 The Pattern of Development.....	33
2.2 Existing Travel Characteristics.....	35
2.2.1 Performance of the Road System Planning	36
2.2.2 The Rural Communities and Activities.....	44
2.2.3 Urban Communities and Activities	47
2.2.4 The Public Transport Network	50
2.2.5 Air Services.....	56

Transport Strategy Proposals to 2031

2.2.6	The Active Transport network	57
2.2.7	Car parking	58
2.2.8	Existing Travel Demands and Patterns	58
2.2.9	Integrated Land Use and Transport in the Toowoomba Region	64
3	A Sustainable Future Transport Strategy	70
3.1	Introduction.....	70
3.2	Implications on Sustainable Future Transport of National Emissions Targets 70	
3.2.1	Growth in TRC to 2031.....	71
3.2.2	Mode Share to active transport.....	71
3.2.3	Mode share to public transport.....	71
3.2.4	Future Engine efficiency	72
3.2.5	Vehicle occupancy.....	72
3.2.6	Land Use structure	72
3.2.7	Fuel efficient operating speeds	72
3.3	Summary Directions for a Sustainable Future Transport Strategy	72
3.3.1	Structure of activity centres based on viable economic growth	73
4	Future Transport Infrastructure Proposals and their Status	75
4.1	The road network plans	75
4.1.1	Toowoomba Transportation Study 1964 - 1985.....	76
4.1.2	Toowoomba Bypass and Range Crossing	76
4.1.3	New England Highway Relocation studies.....	78
4.1.4	Toowoomba Arterial Roads Study	81
4.1.5	Toowoomba Associated Road Network Study	81
4.1.6	Western Arterial: Drayton Wellcamp Road	82
4.2	Land Based Public Transport	83

Transport Strategy Proposals to 2031

4.2.1	Impact of Inland Railway.....	83
4.3	Other Public Transport Infrastructure	84
4.3.1	Possible Regional Public Transport Use of Existing Rail Infrastructure .	86
4.4	Air Services	86
4.5	Summary Conclusions	86
5	Future Land Use Pattern	88
5.1	Introduction.....	88
5.2	TRC Regional Plan: Base case development pattern	88
5.2.1	Future Development - Residential Distribution.....	89
5.2.2	Future Development - Non residential Distribution.....	90
6	Development of the Future Transport Strategy	92
6.1	Introduction.....	92
6.2	Principles for the Future Road System.....	92
6.2.1	National and State network.....	93
6.2.2	Developing the Regional Arterial Road Network.....	95
6.2.3	Developing the Sub Arterial Network	98
6.2.4	The Distributor Road Network.....	98
6.2.5	Proposed Future Changes in Road Functions	99
6.2.6	Operational provisions in the Functional Hierarchy.....	103
6.3	Directions for the Future Public Transport System.....	108
6.3.1	Opportunities for Inter Urban Rail.....	109
6.3.2	Opportunities for Urban/Suburban Rail	111
6.3.3	Opportunities for Regional Bus/Coach Services	113
6.3.4	Cranley Bus/Rail Interchange.....	116
6.3.5	Opportunities for Urban Bus Services	117
6.3.6	Central Busway	122

Transport Strategy Proposals to 2031	
6.3.7	Timetable Integration124
6.3.8	Active Transport Directions126
6.3.9	The Parking Strategy126
7	Testing the Performance of the Future Transport Strategy129
7.1	Integrated Land Use and Transport Outcomes.....130
7.1.1	Review of the proposed Development Pattern130
7.2	Testing the proposed Road Network Alternatives.....133
7.3	Testing the Opportunities for Active Transport Improvement.....138
7.4	testing the Potential for Increasing Public Transport Ridership144
7.4.1	Public Transport Patronage144
7.5	Summary Findings and Conclusions from Analysis149
7.5.1	Integrated Land Use and Transport Analysis.....149
7.5.2	Road Network Planning Analysis151
7.5.3	Active Transport Analysis.....152
7.5.4	Public Transport Analysis152
8	Summary Conclusions, Recommended Strategy and Strategy Priorities154
8.1	Summary of Major Existing Issues154
8.2	Sustainable Future Transport Strategy Parameters.....155
8.3	Recommended Elements of Transport Strategy156
8.3.1	Integrated Land Use and Transport156
8.3.2	The Road Network157
8.3.3	The Public Transport Network159
8.3.4	The Parking Strategy161
8.3.5	The Active Transport Network.....162
8.3.6	The Freight Network162
Appendix A:	Duel Mode Vehicle Brochure163

Transport Strategy Proposals to 2031

Table of Figures

FIGURE 1.1 - STUDY AREA	29
FIGURE 2.1 - STATE DECLARED ROADS IN TRC.....	36
FIGURE 2.2 - PRINCIPLES OF THE FUNCTIONAL ROAD HIERARCHY	38
FIGURE 2.3 - NEAR-COUNTRY ROAD ISSUES AND OPPORTUNITIES	46
FIGURE 2.4: URBAN ROAD ISSUES AND OPPORTUNITIES	49
FIGURE 2.5 - EXISTING URBAN PUBLIC TRANSPORT SERVICES	55
FIGURE 2.6 - 2006 JOURNEY TO WORK TRAVEL PATTERNS FOR TRC	61
FIGURE 2.7 - 2006 DAILY TRAFFIC FLOW ON THE TRC NETWORK (SOURCE TRTM)	62
FIGURE 2.8 - DAILY TRAFFIC FLOW V/C RATIOS ON TCC NETWORK (SOURCE TRSTN).....	63
FIGURE 2.9 - TOOWOOMBA REGIONAL ACCESSIBILITY IN 2006.....	66
FIGURE 2.10 - TOOWOOMBA CITY ACCESSIBILITY IN 2006.....	67
FIGURE 2.11 - TOOWOOMBA DENSITY/UTILITY RELATIONSHIP IN 2006	68
FIGURE 3.1 - IMPLICATIONS OF TRANSPORT OBJECTIVES ON PLAN	74
FIGURE 4.1 - TOOWOOMBA BYPASS AND SECOND RANGE CROSSING	78
FIGURE 4.2 - NEW ENGLAND HIGHWAY ALIGNMENT	80
FIGURE 6.1 – PROPOSED TOOWOOMBA RAILWAY STATION BUS/RAIL INTERCHANGE.....	97
FIGURE 6.2 - PROPOSED FUTURE ROAD NETWORK AND HIERARCHY	101
FIGURE 6.3 - PROPOSED FUTURE ROAD NETWORK AND HIERARCHY IN TSD	102
FIGURE 6.4 - PROPORTION OF POPULATION UNDER DRIVING AGE.....	113
FIGURE 6.5 - LOCATION OF HIGH UNEMPLOYMENT RATES IN TRC.....	114
FIGURE 6.6 - PROPOSED FUTURE REGIONAL (BUS) SERVICES	116
FIGURE 6.7 - CONCEPTUAL LAYOUT OF CRANLEY BUS/RAIL INTERCHANGE	117
FIGURE 6.8 - PROPOSED FUTURE ADDITIONAL URBAN BUS SERVICES	121
FIGURE 6.9 - PROPOSED LAYOUT OF CENTRAL BUSWAY.....	123
FIGURE 6.10 – SUGGESTED METHOD OF TIMETABLE INTEGRATION FOR LOCAL, REGIONAL AND BRISBANE SERVICES	125
FIGURE 6.11 - PARKING CONTROL AREAS	128
FIGURE 7.1 - 2031 ESTIMATED DAILY TRAFFIC FLOWS (WITHOUT RANGE CROSSING)	136
FIGURE 7.2 - 2031 ESTIMATED DAILY TRAFFIC FLOWS (PREFERRED NETWORK WITH RANGE CROSSING)	137

Transport Strategy Proposals to 2031

FIGURE 7.3 - ACTIVE TRANSPORT GROWTH IN TRC REGION BY 2031	139
FIGURE 7.4 - FUTURE WALKING DEMAND.....	142
FIGURE 7.5 - FUTURE CYCLE DEMAND.....	143

EXECUTIVE SUMMARY

SUMMARY FINDINGS AND TRANSPORT STRATEGY RECOMMENDATIONS

The proposed transport strategy is a high level direction for future transport in the Toowoomba Regional Council area, driven in part by the desire to achieve a sustainable transport future for the region. It needs to be seen as a framework of principles and policy within which the implementation of the various elements can be finessed and developed to reflect prevailing conditions. Supporting analysis has been undertaken and new infrastructure and service concepts developed to demonstrate that the strategy directions are feasible.

GENERAL COMMENTS ON INTEGRATED LAND USE AND TRANSPORT FINDINGS

The relationship between land use and transport is profound. So profound that land use policy is a significant vehicle for achieving a sustainable transport strategy and transport should be seen as a substantial policy for achieving desired development outcomes.

Accessibility analysis has been applied to the Toowoomba Regional Council (TRC) area to provide a single and simple index showing the performance of the combined land use /transport system. The accessibility concept has also been extended to explain the dynamic relationship that exists between the provision of non-residential activity, residential development activity and transport. Non-residential activity is expressed as employment, jobs being a surrogate for the measure of activity from which a utility can be derived.

In 2006, the population weighted mean net utility of TRC residents to total employment was \$37.23 per person per day. This reflects the net benefit that Toowoomba residents obtain from the opportunities provided by the city. Understandably, the rural and regional communities outside the Toowoomba Statistical Division (TSD) generally had a utility well below the TRC average while within Toowoomba City it was higher. Also small areas around Crows Nest, Oakey, Pittsworth and Millmerran experienced a level of utility that was close to the TRC mean.

Relative to Brisbane's accessibility relationship, Toowoomba would be placed in a location comparable to Forest Lake.

The strong relationship between accessibility and density that has been observed in other cities is present across the whole TRC region; as the accessibility increases the density increased exponentially. This analysis did identify some areas where there are opportunities to increase densities (based on high existing accessibility) and

other areas where growth will be more difficult to achieve. In these areas, increases in accessibility should be considered – this could be done through some combination of land use planning decisions and transport investment. The insights from this approach have been used to inform and modify the land use projections.

This standard accessibility analysis was modified to reflect the fact that there are areas of TRC that attract additional utility due to local conditions. It is understood for example, that locations on top of the escarpment attract additional value from the views and softer climate gained from that particular location. Rural community and rural lifestyle living also generate an additional utility for those residents that have a history of settlement in that location and new residents in search of this lifestyle. These additional qualities compensate, to some extent, for reduced accessibility in the trade-off between development character and proximity to activities.

The complexities of landforms in the region also make areas such as Highfields a special case in that it is the next available high, red soil plateau once the Toowoomba plateau is fully developed. So in this sense Highfields is contiguous to Toowoomba so should be considered as the next available extension of it. Any comparison of Highfields as a settlement opportunity with higher accessibility, nearer areas in other directions, needs to take these landform variations (and associated additional utilities) into account. This consideration offsets the apparent reduced perception of utility/development character for areas in which these extrinsic values exist. With this in mind, the suggested level of utility that existing Toowoomba City residents appear to enjoy over their Highfields counterparts is diluted to some extent by the extrinsic value attached to the red soil plateau attributes and the associated house construction cost advantage. Our analysis suggests that the 'red soil' qualities of the Toowoomba plateau and rural lifestyle increase the utility values in Toowoomba City, Highfields and the rural communities by 10%, 15% and 20% respectively.

So some caution needs to be exhibited in interpreting the accessibility/development relationship because, for a whole range of valid reasons, extrinsic values add an additional level of utility to what may appear to be poor accessibility locations. The corollary to this is that not all of Highfields and Meringandan West attract the additional utility of the 'red soil' characteristics as this appears to disappear in the western areas of Highfields.

A TRANSPORT ASSESSMENT OF THE PREFERRED GROWTH PATTERN

TRC is expected to grow by about 77,000 new residents between 2006 and 2031. The distribution of future development used in this study is what the Preferred Settlement Pattern, the Activity Centres Study and the Industrial Land Study undertaken for the TRC Planning Scheme project have produced.

Transport Strategy Proposals to 2031

The broad distribution of this residential growth places about 10,560 additional people in the regional areas outside the TSD (Toowoomba Statistical Division, an area somewhat larger than the old Toowoomba City) and locates 66,625 new residents within the TSD. Specific infill and re-development opportunities identified in the preferred development pattern account for about 22,000 new residents with the balance being accommodated through the general planning scheme and development opportunities in the balance area across TSD.

A total of about 30,000 new jobs will be needed across TRC by 2031 to maintain the current level of activity. In excess of 9,000 are new centres-related jobs of which a little over 50% are proposed for the Central City, the balance being distributed over 64 other centres across the region with a further 3,000 new jobs allocated to out of centres locations.

This is supported by a planned increase of 7,000 new industrial jobs located in traditional industrial precincts across TRC and a further 4,000 jobs have been located in Charlton-Wellcamp regional industrial area.

The two other major categories of employment growth are in health and education, with each receiving 4,000 and 3,200 new jobs respectively.

The TRC accessibility has been used to investigate how well the future proposed pattern of development and transport addresses the 2006 utility issues.

Under the preferred pattern of development proposed for the TRC Regional Planning scheme, the mean net utility in TRC increases by 6%. This is a good outcome given that under growth the cost of travel generally increases. Further efficiency improvements may be available through the review of residential growth opportunities in Toowoomba City.

Whilst the proposed settlement pattern provides an impetus for creating additional critical mass at key centres, thus increasing the residential densities and yields in those locations, it is quite probable that further iterative analysis and testing could further improve the overall efficiency of development whilst also delivering on some of the recommended transport policy directions. This iterative review has not been undertaken in this study.

The accessibility analysis generally supports those areas of residential growth identified in the Preferred Development Pattern, although the scale of density increase proposed may take longer than anticipated to realise, whilst a lesser density could be achieved sooner.

The utility/development relationship has also been used to identify those locations where high net utility and low residual trip lengths combine in the region and

locations where the opposite occurs. The former suggests further locations where additional residential development could be effectively provided and of course those latter areas where further residential development should be discouraged from a land use – transport efficiency viewpoint. This type of analysis also suggests a broader investigation of opportunities within the existing fabric of Toowoomba City for additional residential growth, whilst acknowledging the need to consider the constraints of the existing demolition control provisions of the Scheme.

In the rural communities there appears to be some limited opportunities for achieving additional densities but these are generally quite constrained to the existing ‘zoned’ urban footprints in these centres. Expanding beyond these limited areas could quickly introduce transport cost disbenefits.

POLICIES AND PARAMETERS FOR A SUSTAINABLE TRANSPORT STRATEGY

Some broad policy directions and associated parameters for a sustainable transport strategy have been derived from the National emission policy aimed at an absolute 25% reduction in green house gas emissions over 2002 levels; by 2026. It is proposed that a sustainable land-use and transport strategy should be able to deliver its share of this reduction. This position has been used to provide a ‘book end’ for policy development that supports this position.

This policy review has actually adopted a lesser target than proposed at the National level and indeed has proposed a 20% reduction across TRC over the period 2006 to 2031. This is not unreasonable because the reduction opportunities are in some ways a function of size; so a regional centre achieving 80% of national targets is probably about right, compared to what should be able to be achieved in an urban conurbation such as South East Queensland.

The policy areas that have been considered for achieving this emission reduction are:

- The level of active transport,
- The level of public transport usage,
- A targeted parking pricing, supply and management strategy integrated with public transport enhancements,
- Pursuing policy options for increasing private vehicle occupancy rates,
- A functional hierarchy of roads based on land use structure and aimed at achieving energy efficient speeds in the road network,
- A development form that reduces the private transport task, and

Transport Strategy Proposals to 2031

- An assumption that private vehicles will have 10% more energy efficient engines by 2031.

The policy instruments and levels that achieve the target reduction by 2031 are presented in Table A.

Table A – Target Future Policy Instrument Levels

Policy Measure	2006 Level	2031 Target
Active Transport Use	15%	15%
Public Transport Use	3%	10%
Parking Pricing	Limited Application	\$10 and \$6 per day in selected Centres
Car Occupancy	1.1	1.15
Private Vehicle Average Trip Length		Reduction of 20%

Mechanisms proposed for achieving these future levels of policy are provided in the relevant policy actions that follow.

We have seen earlier that a reduction in the scale of the balance private vehicle travel task can be assisted by locating new residential development in areas that have high locational utility to activities (realising maximum densities) and low car based mean trip lengths of travel. Opportunities and priorities for identifying these areas can be identified through the form of integrated land-use and transport accessibility analysis developed as part of this study.

ROAD NETWORK FINDINGS AND RECOMMENDATIONS

The Toowoomba Bypass and Range Crossing project will have a profound impact on how and when the subordinate TRC road network is developed. The project is critical for addressing the existing high order road network weaknesses throughout Toowoomba City and its environs. If this is not provided as a matter of some priority, achieving the City Centre development, associated amenity and environmental objectives could be jeopardized.

The planning and 'local' political momentum behind this project currently leads to acknowledging its eventual construction and this in turn strongly suggests that the planning for the future TRC road network should recognise its presence.

Notwithstanding this, the future road network proposes a future that could help in diluting the adverse impacts; should the Bypass project be delayed.

An absolutely key component of the future road system is to progressively develop the network around the principles of a functional hierarchy that reflects the structure of land use and the needs of bypass and circulating traffic. The functional

hierarchy of roads shown in Table B is proposed for TRC. The nomenclature can change but the principles should be pursued. An important characteristic of the principles is that function is not driven by traffic volume.

Table B - Functional Road Hierarchy Proposed in TRC

Land Use Element	Traffic Function	
	<i>Circulation</i>	<i>Access/Bypass</i>
TRC Region	Regional Arterial	Highway routes
CBD, regionally significant activities (airport, Base Hospital, USQ)	Sub Arterial	Regional Arterial
District level activities (District centres, groups of neighbourhoods, High Schools)	Distributor	Sub Arterial
Neighbourhoods, Local centres, primary schools	Collector, Local Access Street	Distributor

The elegance of this approach is that the functional and operational requirements can be tied directly to the hierarchy elements, promoting a range of utilisation, amenity and safety objectives. A detailed list of these can be found in Section 6.2.6, whilst Table C is an example of how the desirable operating levels of service can be defined to obtain the desired functioning across all levels of the network.

Table C - Indicative Levels of Service in the Road Hierarchy

Hierarchy Element	Indicative Volume/Capacity Ratios by General Location		
	Rural	Suburban	Inner urban
Highway	0.5	0.6	0.65
Regional Arterial	0.5	0.6	0.65
Sub Arterial	0.6	0.65	0.70
Distributor	0.65	0.70	0.75
Collector, Local Access	0.75	0.8	0.85

Achieving these operating service levels will encourage traffic onto the higher order network elements as early as possible. The important issue here is that whilst the indicative volume/capacity ratios may be set at a different level to those proposed in Table C, the relativity across the hierarchy should still be retained.

It is also important to recognise that the function is a desirable end state for which the network planning should strive and that at times these objectives may not always be achieved.

The network therefore needs to be developed around the prospect of the earliest possible provision of the Toowoomba Bypass and Range Crossing project. All endeavours must be made to secure this project as it is the key to addressing a range of existing road network weaknesses across TRC. Benefits of the bypass and range crossing project are not limited to the road system, but through its provision, triggering the opportunity (for example the Boundary Street corridor to and around Highfields) to build much needed subordinate routes that create the opportunity for new and efficient bus services. This is therefore an extremely high priority project without which the many benefits of a functional hierarchy and longer term development objectives are unlikely to be realised.

The following road provision is proposed to be leveraged off this key network improvement:

- Creating a western bypass of Toowoomba City through emphasising the long term future highway function of the Drayton Connection Road in preference to the New England Highway through a longer term (highway level) link of this corridor via the Drayton – Wellcamp Road to the Warrego Highway/Toowoomba Bypass interchange. In the longer term making use of the southern section of Boundary Street at Westbrook, and extending further south east to the Drayton Connection Road (via the northern section of the Toowoomba/Karara Road),
 - But in the short term creating this function in a regional arterial formed by extending the Drayton Connection Road through the Canning Street Corridor through Greenwattle and Euston Streets to the Drayton Wellcamp Road corridor.
- Developing the Boundary Street corridor northward to a potential interchange with the future Toowoomba Bypass as a high priority and northwards as a slightly lesser priority around Highfields to meet Meringandan Road. It is proposed this should follow as far as possible, the Old Goombungee Road corridor. The far northern section would have a lesser priority than the central or southern sections of the corridor.
- Developing a direct route linking Oakey, Kingsthorpe, Gowrie Junction and Toowoomba, basically along the railway line so traffic between them does not need to use the Warrego Highway or its junctions and so as to provide a good route for a regional bus service. It would connect with the Boundary Road corridor.
- As a second order of priority, develop the Old Goombungee Road to Mort Street as a regional arterial connection to the Toowoomba City Centre,

replacing the bridge over Gowrie Creek. Again this leverages off the potential interchange opportunity between Mort Street and the Toowoomba Bypass.

- As a third order of priority tied to the establishment of the City Centre Outer Circulating Road, extend Bridge Street south through the railway corridor land to connect with both Chalk Street and Russell Street. This could be accelerated in response to developing the Toowoomba PT interchange at the Toowoomba Railway Station.
- A third order priority exists for the general improvement in alignment of the western extension of the Yalangur- Lillyvale Road to Oakey in order to develop a good quality connection between Oakey and Highfields.
- This improved link creates the opportunity for a further 'regional' crossing of the range to the north of Highfields by developing a route between Cabarlah and Murphy's Creek and Postman's Ridge using the Costello – Fernbank Road corridor to link with the Toowoomba Bypass. This has longer term network planning benefits and could provide some short term relief in the City Centre prior to the bypass being provided.
- A similar level of priority is attached to persuading the State to continue to upgrade sections of the Clifton – Gatton Road necessary to provide a more useable south eastern bypass of Toowoomba.
- The Oakey – Pittsworth Road through Springside, Rossvale and Purrawunda (a State controlled road) is attracting heavy commercial vehicles as a surrogate for a western bypass of Toowoomba between the Gore and New England Highways and is as a consequence in need of some alignment and pavement attention.
- Outside the Toowoomba City environs where the Highway functions are to be retained by the network, capacity and operating deficiencies need attention including the removal of isolated one lane sections of road (bridges and culverts) and duplication where capacity warrants and safety issues exist.
- For both Public transport and tourism some priority should be given to road alignment rationalisation, pavement improvements and general upgrading in the Clifton – Feltham, Clifton – Greenmount, Toowoomba-Karara corridors between Clifton and Wyreema (to Toowoomba) and in extending the work commenced on the Greenmount/Eltonvale Road corridor between Greenmount and the New England Highway.

-

Transport Strategy Proposals to 2031

Developing priorities will also emerge for the arterial, sub arterial and distributor road systems as development progresses in Charlton-Wellcamp, Torrington and Glenvale growth areas.

The road hierarchy that emerges is functionally based and related to the preferred long term structure of land use and is shown in Figure A and Figure B.

Figure A - Proposed Future Road Hierarchy in Region

Figure A – Future Road Hierarchy in Region

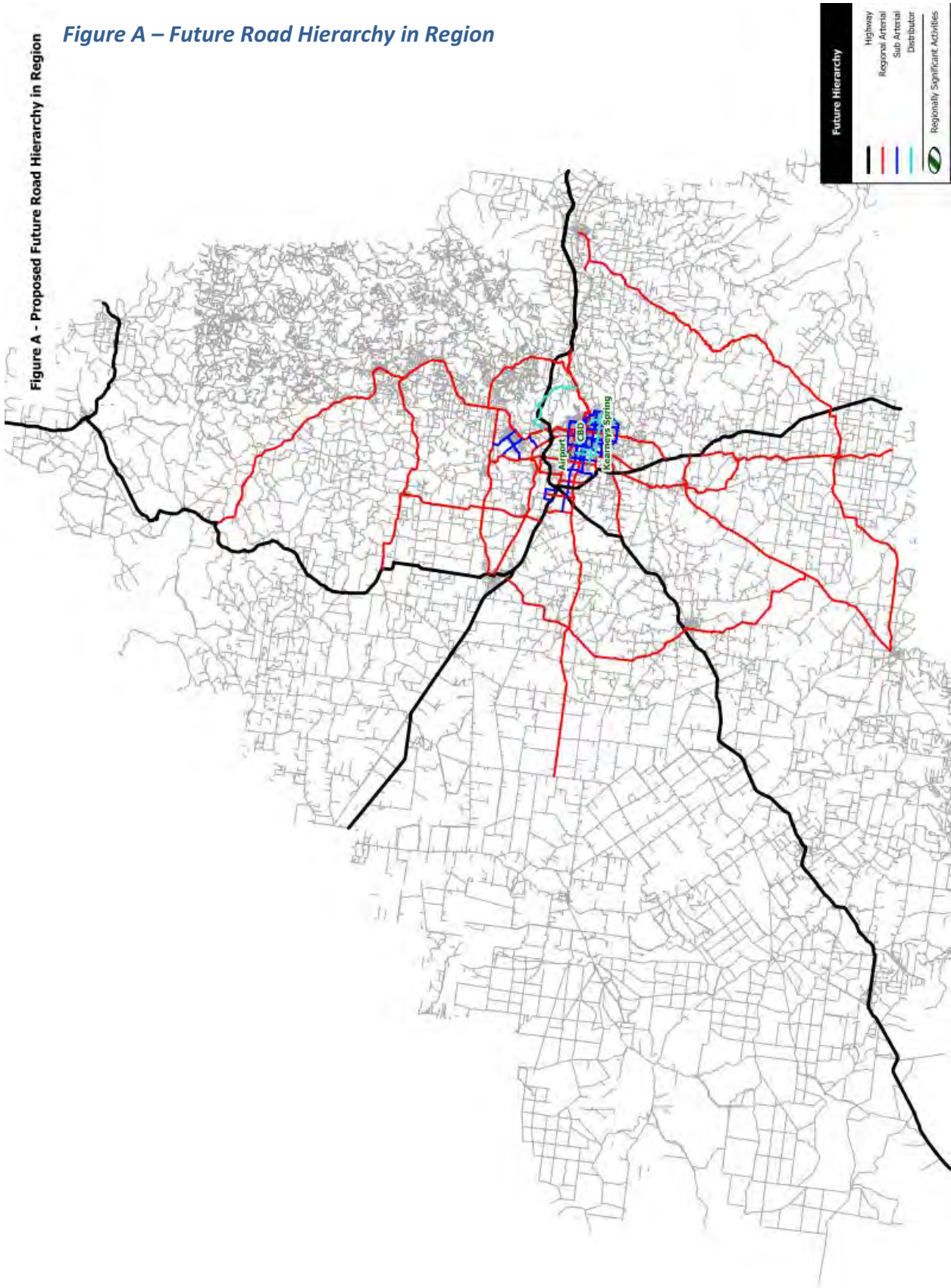
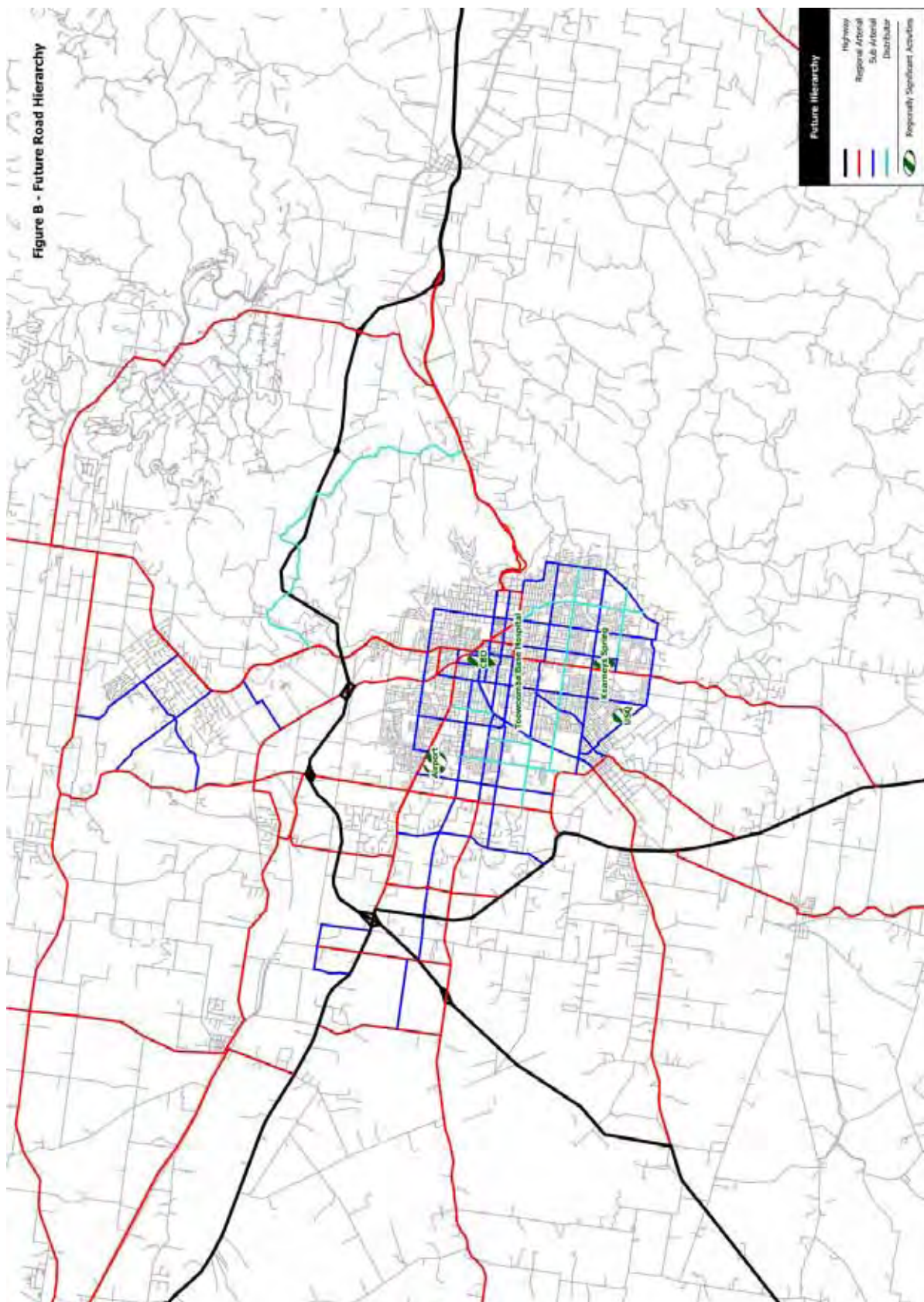


Figure B – Future Road Hierarchy in TSD



ACTIVE TRANSPORT FINDINGS AND RECOMMENDATIONS

To some extent the parking pricing regime has assisted in generating increased levels of active transport through those areas in which the regime has been introduced. Increased active transport due in part to the parking pricing regime is not always accompanied by the desired increase in the general level of utility. In these areas where this occurs, the utility needs to be enhanced by further public transport improvement.

Appropriate levels of active transport can be realised through:

- Focusing additional non-residential development in key centres to increase the critical mass of these locations to deliver compactness and increased residential densities that in turn generally promote more cycling and walking.
- This will be supported by investment in completing the path network where gaps currently exist and enhancing the path network in those locations in which higher walk and cycling is predicted to occur, in particular in:
 - The growth areas associated with the City Centre and within its associated residential inner city environs,
 - Kearneys Springs and surrounding residential areas,
 - Wilsonton and surrounding residential areas,
 - The Village, Highfields and surrounding residential areas, and
 - In the urbanized footprints of the rural centres, and
 - Finally the target centres in which this action will be pursued are those that will be the subject of the parking pricing regime.

Substantial increases in cycle and walk usage appears in James Street, Kitchener Street, Herries Street, and Chalk Drive and on Ruthven Street through the City Centre, and indicates the need to ensure adequate path widths are available on these corridors.

Anzac Avenue and West Street retain their pedestrian and cycle significance, indicating some support for the completion of the West Creek path system, including the provision of the path through the Golf Course.

Regional areas and centres need well developed path networks within road corridors, particularly in the urbanized footprints, in order to maximise on the level of self-containment these centres offer. Again, in areas outside TSD, recreational

walk and cycle path provisions need to be made; linking attractions such as schools, playing fields and recreational parks.

PUBLIC TRANSPORT FINDINGS AND RECOMMENDATIONS

Improving levels of public transport can be achieved through focusing additional non-residential development in key centres to increase the critical mass of these locations to deliver increased residential densities that in turn generally create the opportunity for generating increased public transport patronage, directly leading to competitive and cost effective bus services.

‘Carrot’ type policies of effective bus routes and services generate some additional patronage, but findings indicate this is not enough to achieve the target mode share objectives without some additional ‘stick’ policy intervention. An integrated package of bus route service improvement and parking restrictions and pricing in key activity centres can achieve the overall objectives.

An important and high priority recommendation for public transport is to reverse the current State position on not supporting rail passenger services in the new rail range crossing project so that:

- When the new Toowoomba Range railway is built (as part of the Inland Railway or otherwise), introducing direct Toowoomba-Brisbane interurban rail services to replace the short term coordinated service via Helidon (see below) and timetabling local and regional bus services to coordinate with them, and
- Encouraging TransLink to extend its area of interest to include Toowoomba and to provide the same level of planning and subsidy support provided to areas in SEQ (such as Nambour).

In the short term introducing an inter-urban service through:

- Persuading the State government to introduce new inter-urban express and semi-express diesel rail services between Helidon station and Brisbane City, Ipswich City and Brisbane Airport in conjunction with:
 - A new coordinated express bus connection between Helidon Railway corridor land station and the Toowoomba bus station (ultimately the Toowoomba Railway Station) and perhaps other destinations such as USQ and Highfields.

The TRC future public transport strategy can then leverage off the Toowoomba – Brisbane passenger rail services as this provides an important physical and timetabling focus for:

Transport Strategy Proposals to 2031

- A Toowoomba City – Hospital – USQ loop service,
- Moving the bus interchange to the Toowoomba Railway Station to allow full coordination with eventual rail services and to provide better bus routes and linkages,
 - With revised road and bus connections to the surrounding network and
 - Extending the busway from Ruthven Street/Chalk Drive beside the South Western Railway alignment with stops at Grand Central and the Markets, then to the Toowoomba Base Hospital main entrance then, possibly along the hospital's southern perimeter, to West Street. This enables the USQ (and other) services to bypass city congestion,
- A new Oakey – Toowoomba City service using the Oakey – Gowrie corridor upgrade, Boundary Street and Bridge Street
- The introduction of a new Highfields – USQ service via Cranley and Boundary Street,
- A new cross country service between Oakey and Highfields, particularly to serve commuters,
- Progressively rationalising the structure and frequencies on key existing urban bus routes,
- Introducing new 'regional' express services to the Toowoomba bus station at one hour peak frequencies, reducing to two services in each direction in the inter-peak with pulsed connecting schedules from:
 - Clifton (Warwick),
 - Millmerran – Pittsworth,
 - Oakey, and
 - Crows Nest
- These services to be timetabled in such a way as to connect with each other; and with the Brisbane rail service and making provision for park-n-ride facilities at the terminals and key stops on the regional express routes.

The opportunity exists to utilise infrastructure and capacity in the existing South Western rail line as the basis for a dual mode vehicle to supply the Clifton (and possibly Warwick)– Toowoomba City regional express service identified above.

When the new Toowoomba Range railway is in place, building at the western tunnel portal at Cranley a bus/rail interchange for Toowoomba-Oakey and Highfields-USQ bus services and a park-and-ride station. To maximise on this opportunity by ensuring:

- Adequate land and road access needs are made available and protected for a possible new commercial centre, interchange, park 'n' ride and appropriate road and PT access.

The new services proposed are, initially, to be laid over the top of the existing urban bus routes currently in place with the progressive rationalisation of the existing services to be undertaken, over time.

The proposed new regional and urban bus routes are shown in Figures C and D respectively. New urban bus services are recommended initially at 30 minute frequencies, all day. This set of new routes is supported generally by frequency improvements on the existing competitive routes.

In the south eastern suburbs, distances are adequate to develop direct express services to deliver higher utility than the existing indirect structure. In the north eastern suburbs, distances to the Central City are too short for this to be effective and so it is proposed to introduce dial 'a' bus services through these areas from the Central City. These are proposed to replace existing route services over time.

The capital and operating cost of the new services and supporting infrastructure will not be insignificant. To assist with this provision it is recommended that TRC investigate the opportunity for introducing a Public Transport levy to the region, similar to that introduced in the Gold and Sunshine Coasts.

In addition, it is recommended that parking revenues are also channelled in to supporting the provision of bus services.

It is likely that a fare structure having a low 'flag fall' component of around \$0.50 and a distance based charge of about \$0.10 per kilometre will, in concert with other mechanisms, provide the means to achieving the mode split objectives. Some additional financial assistance is likely to be needed to achieve this.

Figure C – Proposed Regional Bus Routes

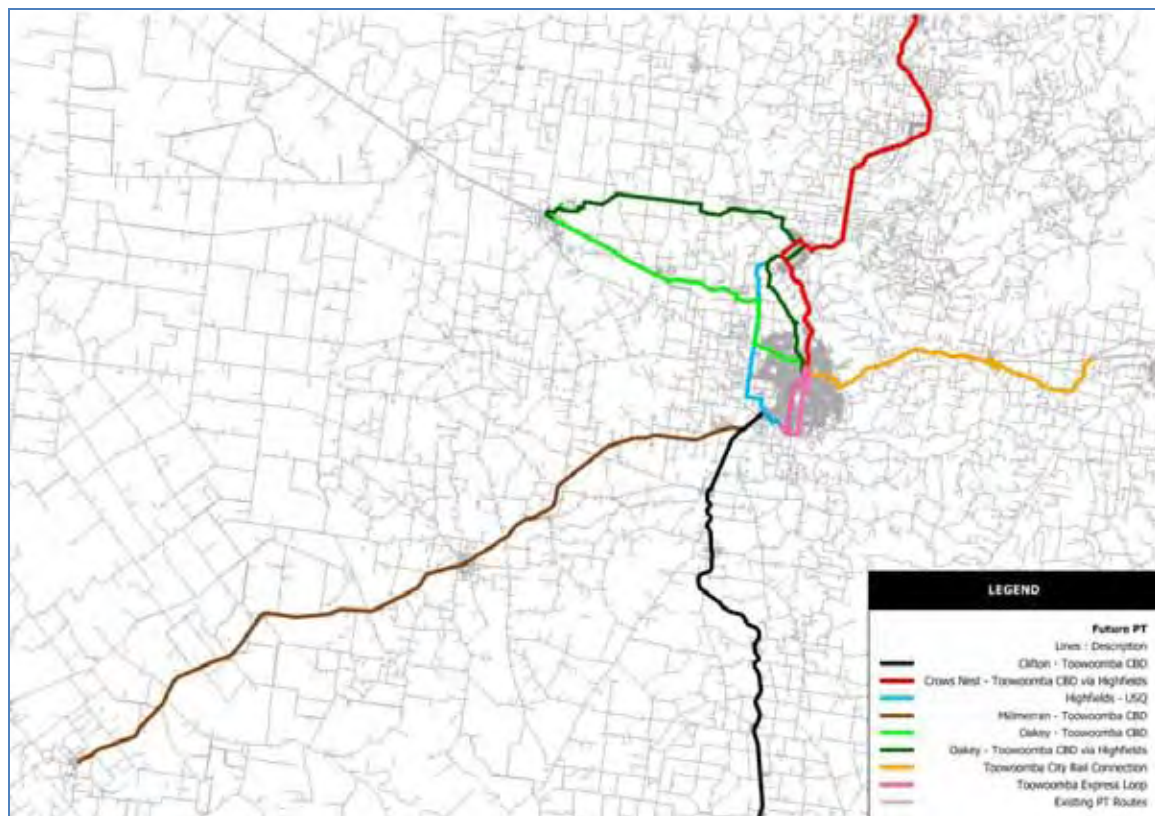
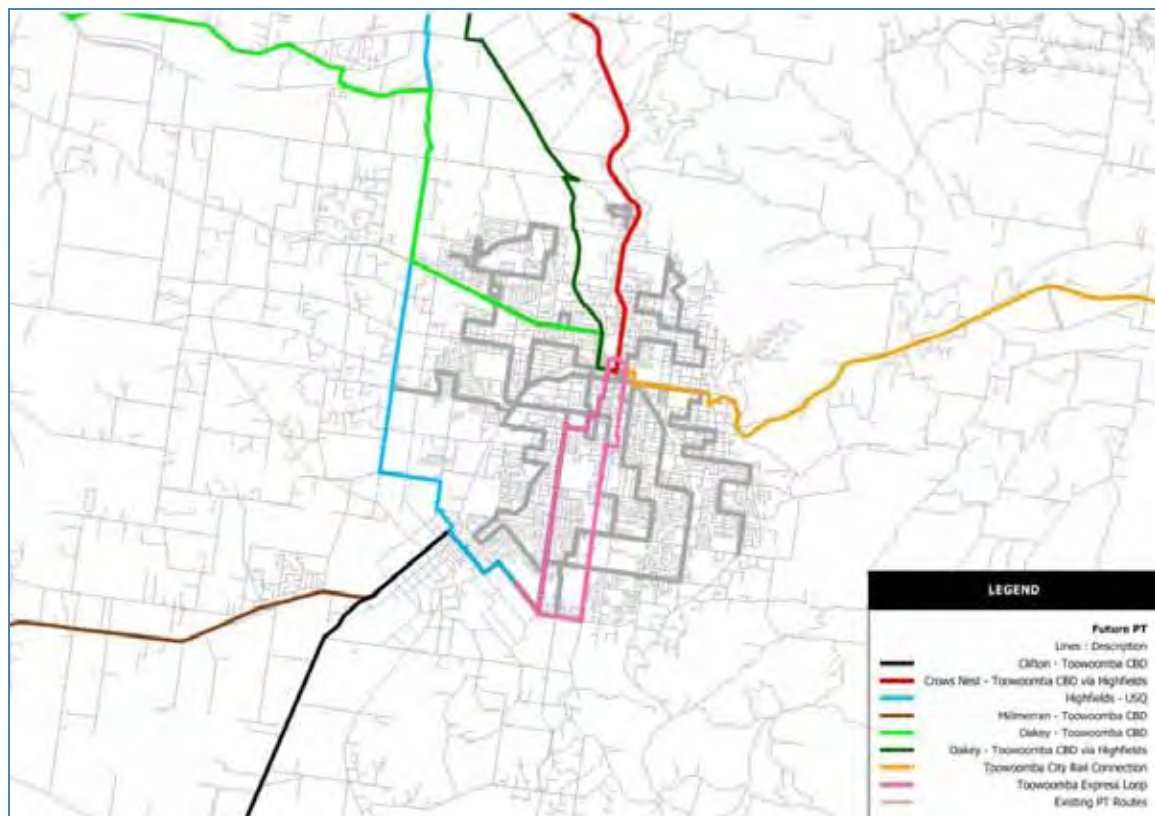


Figure D – Proposed Urban Bus Routes



THE FUTURE PARKING STRATEGY FINDINGS AND RECOMMENDATIONS

Council does not currently control or exert influence over a high enough proportion of parking for it to be an effective transport policy instrument, with the Central City the highest proportion controlled at 25%. The target should desirably be increased to 50% in key activity centres such as the Central City, Kearneys Springs, Wilsonton and USQ.

It is proposed to deliver this level of control over time through a coordinated set of strategy elements where:

- The Planning Scheme establishes Key Centre Parking Control Areas within which the Scheme will influence the provision and management of parking
- For new development in these centres, the Planning Scheme specifies a maximum on-site parking provision rate that supplies essential operational parking only. This to be implemented through the Planning Scheme provisions and codes,
 - And Council collects a monetary contribution to the balance parking requirement of the development, that Council will then accommodate at a location and in time to meet the parking demand of the

development. The contribution will reflect a lesser level of parking demand brought about by dual use or shared parking stock,

- Council will manage the short and long stay balance of public parking to meet PT objectives and capacity, through:
 - Progressively extending the existing parking pricing regime over 10 years, in key activity centres that takes the price of parking to at least \$10 per day in the key Centre parking Control Areas by 2031, that is integrated with the parking rate provision and increased bus capacity provisions , and
 - A possible resident parking permit scheme introduced in a 500 metre parking restriction zone around the 'Key Centre Parking Control Areas', and
 - The introduction of greater enforcement of illegal and informal parking in the centres and their environs.

This policy will be coordinated with the provision of appropriate bus services and capacity.

FUTURE FREIGHT CONSIDERATIONS AND RECOMMENDATIONS

The essence of the freight strategy is in improved high order road network provision based on functional hierarchy principles, commencing with the earliest possible provision of the Toowoomba Bypass Project.

This allows a '*highway*' network to be developed onto which can be attracted major through freight movements and external freight to and from TRC. A major freight distribution facility is planned for the northern part of the Charlton Wellcamp regional industrial area at which external and internal road and rail freight requirements can be integrated and linked to the highway and regional arterial networks.

This then forms the basis of a subordinate road network that allows freight traffic to be carried on a regional arterial and sub arterial system of roads at efficient travel speeds whilst minimizing or being affected by congestion, adverse safety and amenity impacts.

OTHER POLICY FINDINGS AND RECOMMENDATIONS

The sustainable future strategy direction also indicates the benefit of increasing car occupancy levels. Analysis indicates that achieving car occupancy levels above 1.2 to 1.25 could be a result of transferring passengers away from public transport and this should be avoided.

Actions that encourage car-pooling either formally or informally, ride-sharing and parking pricing can all result in increasing car occupancy and should be supported.

1 INTRODUCTION AND OVERVIEW

1.1 BACKGROUND

The Toowoomba Regional Council Area (TRC) is a recent amalgamation of eight previous local government jurisdictions embracing:

- Cambooya Shire,
- Clifton Shire,
- Crows Nest shire,
- Rosalie Shire,
- Jondaryan Shire,
- Pittsworth Shire,
- Millmerran Shire and
- Toowoomba City.

It sits at the top of the Toowoomba Range, and is located principally on the plateau behind the range.

For most of area, the TRC region is sitting over part of the Surat Basin - an area of significant coal and gas resources. It also forms part of the catchment of the Condamine River, a headwater of the Murray-Darling system and as such is a catchment where water preservation through management is of the utmost significance and importance.

Both these factors have major potential impacts for both development and transport in the region.

The overall area, together with the individual prior jurisdictions, is defined in Figure 1.1.

Figure 1.1 - Study Area



Toowoomba is Australia's largest inland city apart from Canberra. Close comparative sized communities are Ballarat and Albury/Wodonga and some of the characteristics of these are worth bearing in mind as the transport system plan is developed.

Historically Toowoomba was well served by transport. It had a railway before Brisbane (the first railway in Queensland was between Ipswich, the most westerly point reachable by water, and Toowoomba which was reached in 1875). Until 1932 it was on the only rail link between Brisbane and Sydney via a gauge change at Wallangarra; and it was an important railway junction with railways that served the whole of south west Queensland.

It had a bitumen road to Brisbane much earlier than the coastal cities did. It was then Queensland's second largest city and the centre of the Darling Downs, regarded as Queensland's food bowl.

Yet today Toowoomba is probably the worst set-up of any major city in Australia in a transport sense.

Toowoomba faces a number of significant transport and development issues as it grapples with the prospect of growth in its population and its economic activity given its strategic location and resources.

This transport strategy strives to address these needs in the context of developing a sustainable future transport outcome for the region – one that will facilitate urban and economic growth, and provide the strategic framework within which the detailed policy and network provisions can be determined and the implementation strategy refined. Elements of the strategy have therefore been examined to demonstrate the feasibility of the principles rather than to supply definitive detail.

1.2 THE TOOWOOMBA REGION IN ITS FUNCTIONAL CONTEXT

1.2.1 TOOWOOMBA CITY

Toowoomba City itself is the second largest (to Canberra) inland City in Australia. It has a population of 100,000 people and an estimated employment base of about 44,000 jobs. It contains about 65% of the 152,000 residents of the region whilst it contains 75% of the total estimated job provision of the region, making the City itself a net attractor of workers from the surrounding region.

The Toowoomba CBD contains some 23,000 jobs and is supported by three District level centres all in close proximity to the CBD, suggesting that Toowoomba City does not obey the conventional centres hierarchy as it has no sub-regional centre per se.

For some high level services such as private education, and to a lesser extent, health specialists, it services the whole of the western areas of Queensland, north-western NSW and the Northern Territory. Yet it is close enough to Brisbane to allow access to many of Brisbane's services. Thus, as an urban area, it is probably unique in Australia and again, is unlikely to obey the generally accepted rules of a structured hierarchy of (activity) centres. In a transport sense this then increases the significance of its National, regional and sub regional roles and those derived needs such as transport.

1.2.2 THE REGIONAL COMMUNITIES

Of the balance of the population outside the City itself (52,000), approximately 40% live in the suburban fringes of the City that make up the balance of the Toowoomba Statistical Division (TSD). The remaining 30,000 people are distributed around the regional area, principally in a range of various sized communities the larger of which are underpinned by some form of economic activity such as Millmerran (Power Station), Oakey (Army Air, Oakey Abattoir and Beef City), Crows Nest and Pittsworth.

The lesser centres have historically been the focus of local government administration and rural industries but have nonetheless left a legacy of subdivision not necessarily reflective of today's utility based development character.

Life style has been and continues to be an emerging driver of rural settlements and rural living in surrounding parts of the region.

The significance of the coal and gas resources of the Surat Basin is growing rapidly and is likely to create much activity and the associated jobs and residents across the region in the near term. There is insufficient direction to this outcome at present to allow it to be taken into account specifically in this study

1.3 THE TRANSPORT CONTEXT

At a strategic level, Toowoomba is provided with a limited network of rail corridors, National and State road corridors and an Airport. It is also serviced by regional bus operations to and from Brisbane and to and from western Queensland centres and even beyond.

Its rail link to Brisbane is basically the same steep, very slow route over the Toowoomba Range that was built in the 1860s, but that link no longer goes through to Sydney. It is too slow for inter-urban passenger services and that results in Toowoomba being the only large centre in mainland Australia with effectively no passenger rail link to its capital city.

Toowoomba is at the junction of two National Highways, Melbourne-Brisbane and Brisbane-Darwin, and these are the main road links between Brisbane and most of Australia. Yet it is the only remaining large centre with a main highway that goes through its CBD, and that highway is one of Australia's busiest. By comparison, Ballarat has a freeway bypass of the much less busy Melbourne-Adelaide National Highway. Albury/Wodonga's new Hume Highway bypass is now operational, and some years ago Rockhampton moved the highway out of the CBD in association with a new Fitzroy River bridge. The difficulty of surmounting the Toowoomba Range makes it very hard to move these highway links as other communities have been able to do.

The first north-south bypass west of Brisbane, the New England Highway, Route A3, also passes through the centre of Toowoomba. Heavy goods vehicle traffic levels on this route, are however, lower than on the Warrego Highway route.

Despite local difficulties, Toowoomba has excellent road links to the rest of Australia. It is closer than Brisbane is to most of Australia and most of its national linkages are fairly direct. There is room for improvement in the directness of linkages with the Gold Coast, Sunshine Coast, South and North Burnett, Canberra, Adelaide and Alice Springs. Some of this indirectness is due to topographical constraints and the rest to the largely historical shape of the national road network. Little of it is amenable to correction by TRC (with the possible exception of part of the North and South Burnett link), but it is important to keep these weaknesses in mind in the event they can be ameliorated through the transport strategy.

Toowoomba's airport is very limited in capacity with the result that Toowoomba is not able to support aircraft that could successfully operate direct services to Sydney or Melbourne. It supports direct services to Brisbane but only with small aircraft and these services are really only effective as linkages to other air services out of Brisbane. With travel times between Brisbane and Toowoomba of 90 minutes by car, air as an effective alternative is only marginal at this time.

Until recently, Toowoomba was the headquarters of Australia's most successful national coach company and had direct services all over Australia as a result. It also provided a reasonably frequent inter-city service to Brisbane. However as a result of company amalgamations, the headquarters have moved to Brisbane and the service is slowly declining. Some competition has developed but the coach link with Brisbane has become opaque, complex and of generally declining quality, and often at relatively high cost. Yet this is the city's only public transport link to its capital city, and public transport users mostly need to get to Brisbane to go anywhere else.

Originally, in a slower age, Toowoomba had good rail services to Brisbane. As life speeded up, the rail service to Brisbane retained its attractiveness by having coordinating buses between Helidon and Toowoomba, allowing trains to avoid the 90+ minutes needed on the tortuous Toowoomba Range section. This coordinated service was abandoned nearly 20 years ago – prematurely in the eyes of many.

The Toowoomba Range gives Toowoomba a magnificent location but it causes severe transport difficulties of connectivity and some have national effects. The effect on rail, for example, has been devastating. Toowoomba now has no direct interstate linkage, no direct link to the north, and a very poor link to Brisbane. Coal mined west of Toowoomba cannot go north to Gladstone (and, anyway, most local coal types do not at present have the value to support land transport over that distance) and only limited amounts can be carried down the Range to Brisbane. This puts a lot of unnecessary traffic on the road network, but Toowoomba's main road link east is via the infamous "Toll Bar" and local streets within the city.

Given these conditions, rail futures through TRC appear currently to be highly focused on rail freight (coal) to the exclusion of all else.

2 EXISTING DEVELOPMENT, TRAVEL AND ISSUES OF THE REGION IN 2006

2.1 THE PATTERN OF DEVELOPMENT

Table 2.1 provides an overview of the 2006 development characteristics of the eight prior jurisdictions now making up the Toowoomba Region.

Table 2.1 - 2006 Development in TRC

Location Old LGA	Sub Location	Existing (2006)		
		Dwellings	Population	Jobs
Cambooya	Cambooya Town	337	935	137
	Greenmount	106	285	87
	East Greenmount	15	39	5
	Wyreema	247	784	70
	Westbrook	0	0	35
	Hodgson Vale, Vale View	438	1314	152
	Balance Rural	830	2579	607
		<u>1973</u>	<u>5936</u>	<u>1093</u>
Clifton	Clifton Town	440	1074	533
	Nobby	60	156	0
	Balance Rural	550	1430	389
		<u>1050</u>	<u>2660</u>	<u>922</u>
Crows Nest	Crows Nest	727	1661	509
	Highfields	2199	7157	1365
	Blue Mtn Heights	214	673	32
	Hampton	121	345	16
	Balance Rural	1288	3501	921
		<u>4549</u>	<u>13337</u>	<u>2843</u>
Jondaryan	Oakey	1538	4461	
	Jondaryan	61	176	
	Glenvale	1253	3633	
	Torrington			
	Charlton-Wellcamp	20	58	
	Westbrook	689	1998	
	Balance Rural			
		<u>5156</u>	<u>14951</u>	<u>4,867</u>
Millmerran	Cecil Plains	94	319	76
	Millmerran	522	1483	259
	Rural Settlement	98	285	17
	Balance Rural	493	1440	996
		<u>1207</u>	<u>3537</u>	<u>1348</u>
Pittsworth	Pittsworth	1030	2741	868
	Brookstead	17	45	83
	Mt Tyson	18	52	25
	Southbrook	66	192	13
	Balance Rural	672	1999	1033
		<u>1803</u>	<u>5029</u>	<u>2022</u>
Rosalie	Meringandan West	310	971	40
	Gowrie Junction	410	1344	65
	Kingsthorpe	577	1718	219

Transport Strategy Proposals to 2031

	Goombungee	295	813	124
	Yarraman	549	1190	256
	Cooyar	80	187	13
	Balance Rural	1246	3173	1047
		<u>3467</u>	<u>9397</u>	<u>1764</u>
Toowoomba City	North East	4,718	11,050	3,528
	North West	7,614	19,039	10,354
	West	2,193	6,043	5,356
	South East	9,946	27,402	3,113
	Central and CBD	14,583	33,758	21,485
		<u>39,054</u>	<u>97,292</u>	<u>43,836</u>
TRC	All Areas	<u>58,259</u>	<u>152,139</u>	<u>58,695</u>

In the context of the new region, the pattern of residential development is dominated by the old Toowoomba City and the TSD, at 2006 accommodating 97,000 and 122,000 of the region's population, respectively.

Outside Toowoomba City, residential development focuses on the fringe residential areas made up of Highfields, Glensvale/Torrington, Gowrie/Kingsthorpe, Meringandan, Westbrook and Hodgson Vale/Vale View.

Lifestyle choice and some residual economic activity have attracted some residential development to a number of rural communities generally with a population less than 4000 people. These are Oakey, Pittsworth, Millmerran, Crows Nest, Clifton, Yarraman, Goombungee and Cambooya.

Again lifestyle has resulted in the maintenance of a disparate range of small villages, acreage living and rural residential settlements spread widely across the balance rural areas of the region.

In summary outside the TSD, the residential development densities and yields are relatively low making the provision of transport services, other than car, of limited viability.

In terms of jobs provided, the region reflects an overall jobs/population ratio of 44% which is surprisingly well balanced. This non-residential (employment based) development of the region is also concentrated firstly in Toowoomba CBD and secondly within TSD, the latter accounting for about 75% of the total jobs in the region.

Whilst there are a large number of activity locations in the region, only 64 of these are really definable as centres, and these are dominated, of course, by the centres in the TSD. These centres are not particularly well formed into a well structured hierarchy and this has led to a disparate pattern of land use generally across the region and partly explains the relatively low yields in population concentrations.

Outside the CBD, there are three District level centres located at Kearneys Springs, Wilsonton and Clifford Gardens.

There are also a number of significant economic activity locations outside the City area, at Oakey (Air Base, abattoir, seed merchants), Withcott, Cabarlah (Borneo Barracks), Beef City and Millmerran power station. These activities are supported by a number of industrial locations, together providing about 7,000 industrial jobs.

TRC is also characterised by having significant employment locations within reasonably easy commuting distance; at Warwick, Dalby, Withcott, Gatton, Ipswich and even Brisbane.

From a travel perspective then, not only is Toowoomba City a net attractor of workers generating flows in and out of the CBD from the region but also there is, as expected, a reasonably substantial movement of regional traffic between TRC and the surrounding activity locations mentioned. This has to be overlaid with the long distance, primarily freight traffic, moving to and through the region on the national and interstate 'highway' systems.

2.2 EXISTING TRAVEL CHARACTERISTICS

The Toowoomba Region is provided in some form or other, albeit limited, with the following elements of the transport system:

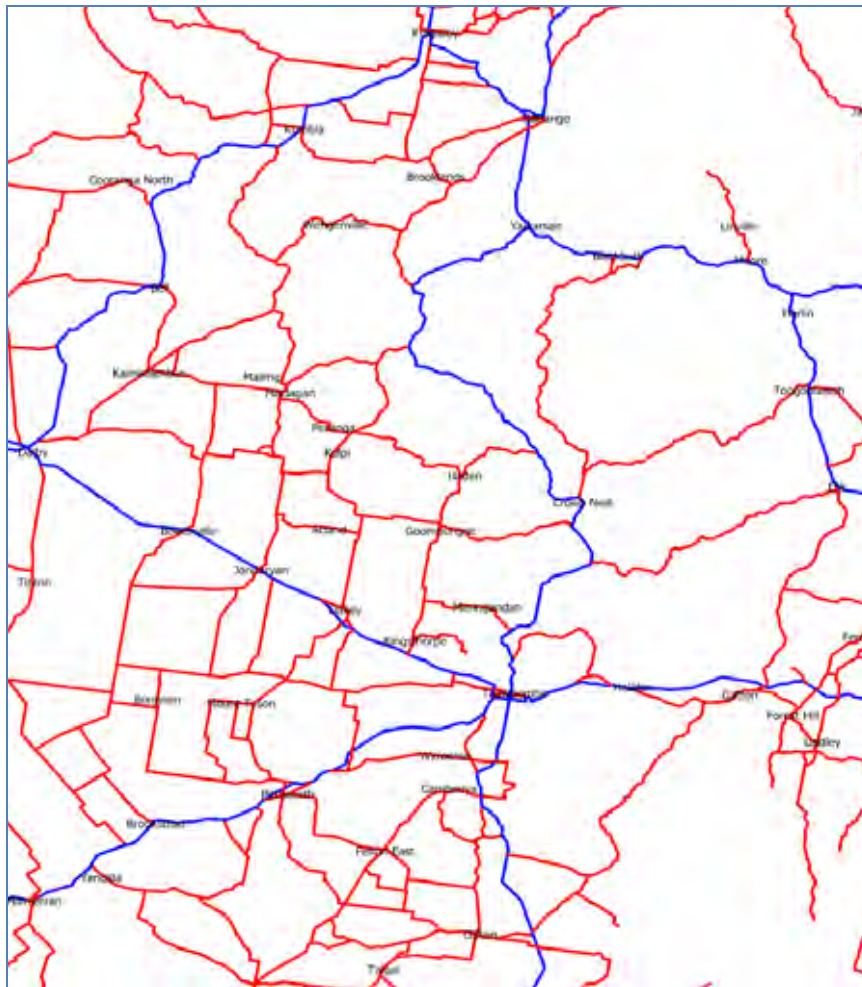
- National and State roads (Highways),
- Local government roads,
- Rail but principally for freight,
- Limited urban bus services,
- Regional coach services,
- Cycles and footpaths, and
- Car parking

The road network that serves the TRC area has some roads which are totally the Council's responsibility and others funded and controlled by either the Federal or State Governments. Typically roads with significance for long distance travel and freight are funded by the higher levels of government. However the recent formation of regional councils has meant that roads originally designed for inter-shire travel and so funded by the state, are now completely within the TRC area and in that context would rightly be considered local. The question of road hierarchy is addressed below, but as an introduction, roads will be divided broadly into those of

“local” significance and those of wider significance. The latter will be discussed first but in that discussion the local issues that interact with those regionally and nationally significant routes will be discussed also.

Figure 2.1; the high order road network shows the government level at which individual routes are controlled and funded.

Figure 2.1 - State Declared Roads in TRC



The National and State road network capacity is heavily constrained by topography and particularly by the gradients on the Toowoomba Range and is frequently subject to substantial delays when incidents occur.

2.2.1 PERFORMANCE OF THE ROAD SYSTEM PLANNING

The road network of the Toowoomba (RC) area is substantially advantaged by the number of National, interstate and State roads of regional significance. There is however a downside of this benefit that results from the intrusion, severance and reduced amenity created by the National and Interstate routes passing through the City. This is then manifest in the level and type of traffic that intrudes in

development precincts such as the Toowoomba CBD and its adjacent residential environs. Some of the rural community centres are also the subject of regional and national traffic intrusion, such as the Gore Highway through Millmerran, with much of this impact associated with commercial vehicles.

The separation of different traffic functions promotes amenity, safety and efficiency objectives. Long distance (characteristic of bypassing) traffic with its higher desired operating speeds is best separated from development areas in which it has no direct business, and from slower moving local traffic that does have business directly within these areas. This reduces the adverse impacts on local amenity and safety and increases the operating speed into the generally more efficient speed range, particularly advantaging freight movement.

Traffic function is very closely related to land use structure and can be defined as the product of this structure and the provision of the access or bypass movements on the one hand, and circulation movements on the other; that broadly and collectively define the requirements of travel.

Table 2.2 provides the relationship between the functional hierarchy elements proposed for TRC, the structure of land use and the bypass and circulation movements related to that structure within TRC.

Table 2.2 - The Functional Hierarchy Relationships

Land Use Element	Traffic Function	
	Circulation	Access/Bypass
TRC Region	Regional Arterial	Highway routes
CBD, regionally significant activities (airport, Base Hospital, USQ)	Sub Arterial	Regional Arterial
District level activities (District centres, groups of neighbourhoods, High Schools)	Distributor	Sub Arterial
Neighbourhoods, Local centres, primary schools	Collector, Local Access Street	Distributor

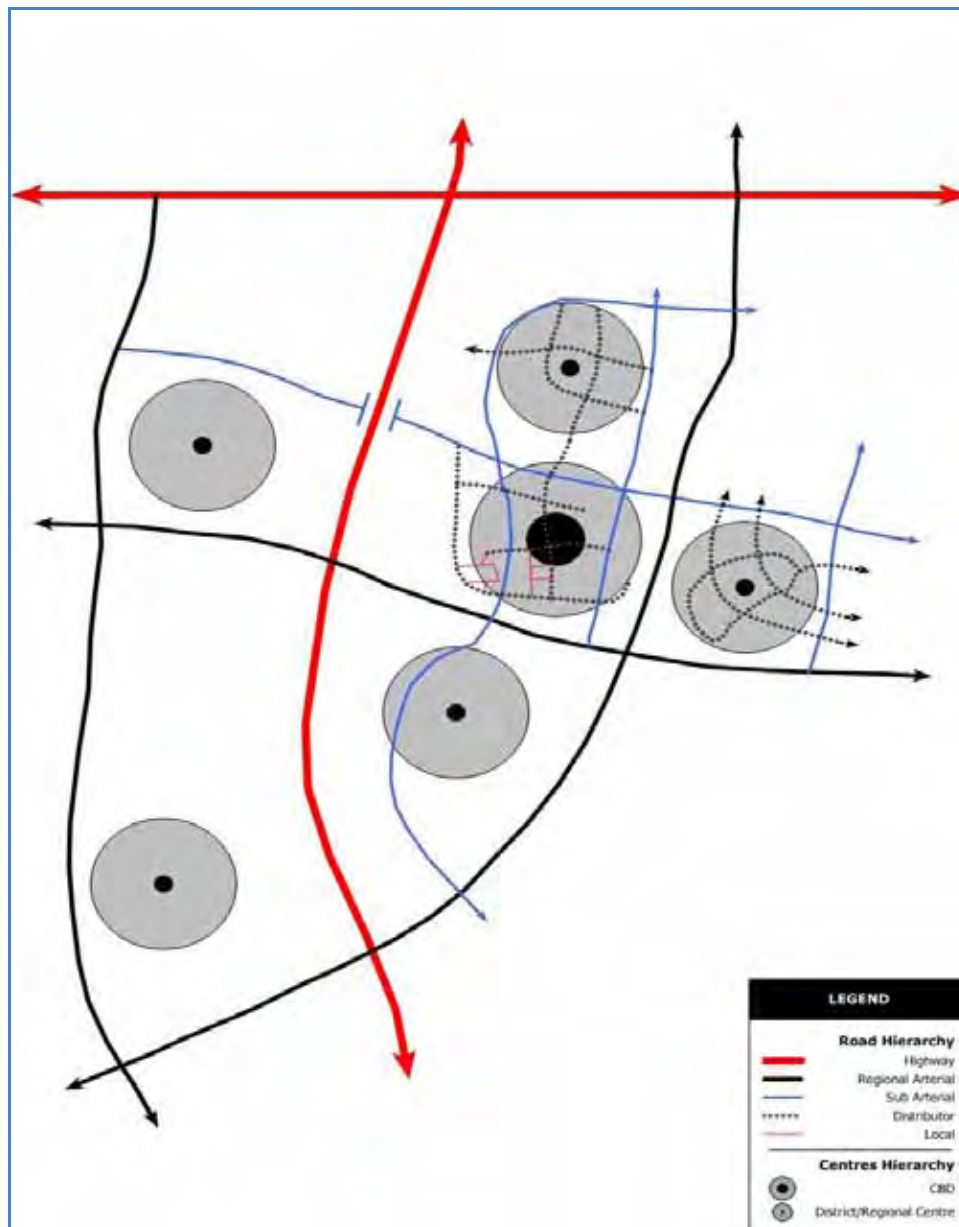
The nomenclature used can be flexible as the important issue is what function the corridor is fulfilling in terms of the land use structure and movement system. One of the significant considerations for the functional hierarchy is that traffic volume is not a defining characteristic per se.

The usefulness of the above classification system is that operational needs relating to such matters as access management, intersection form and spacing, management of turning traffic, the treatment of public transport and pedestrians and cyclists and

signing strategies can all be attached to the various elements of the functional hierarchy to ensure that compatible treatments and functions coexist.

The principles of the functional hierarchy are demonstrated in Figure 2.2.

Figure 2.2 - Principles of the Functional Road Hierarchy



Whilst Toowoomba is at the cross roads of key east - west and north – south roads of national and state significance, the routes pass through the principal activity centre of Toowoomba CBD and adjacent residential areas. The impact of large and heavy interstate and regional freight vehicles is substantial on these urban areas. The routes have also been allowed to develop in and through these locations with little thought to changing juxtaposed land uses to uses less sensitive to heavy vehicle intrusion; with residential access and noise impact continuing to occur. This has

resulted in a demonstrable weakness in the existing land use – road interactions, functional hierarchy and associated access management and of amenity objectives.

The existing Toowoomba range crossing of the Warrego Highway also presents a major constraint for the existing national and interstate roads and bypass network for Toowoomba; with no reasonable bypass and HGV alternative readily available. The Warrego Highway is subject to restricted use and closure when accidents and other events occur.

To the north of Toowoomba, the New England Highway may continue its highway or regional arterial function (see below): this is incompatible with existing single lane operations at bridges and restricted pavement widths and alignment that all need to be addressed.

The New England Highway will continue to deliver local traffic into Toowoomba City from the north, but the extent that it continues with a highway function depends on how the north-south bypass movements of TRC and Toowoomba City are planned and provided.

A Highfields and Toowoomba City bypass could benefit from being located to the west of the City, to align with the changing emphasis towards the west of industrial, bulky goods and some residential development. This could also influence the choice of route for long distance north-south traffic on the New England Highway particularly if some reasonably effective route was developed around the southern suburbs of Toowoomba (Drayton).

There is some logic emerging for a long distance north-south route through TRC being developed around the Oakey-Cooyar Road as the main road north from Toowoomba instead of the existing highway through Crows Nest. This could also respond to the emerging attraction that the Pittsworth -Oakey – Cooyar corridor is exhibiting between the Gore and New England (north of Toowoomba) Highways. But Sunshine Coast traffic from the east using the Hampton-Esk Road would still use the existing New England Highway route at least beyond any proposed Highfields bypass.

Despite these opportunities, the Toowoomba Bypass interchange would deliver traffic into Toowoomba city along Mort Street but a lot of Highfields traffic would still access the city through Mt Kynoch and Harlaxton.

The Warrego Highway will continue to increase its traffic volume. While the capacity of the existing four lanes on the Toowoomba Range may not be threatened, increases in accidents and resulting closures will be inevitable. Work on alternative routes will inevitably have to increase.

Through Toowoomba City, the Warrego Highway capacity of the existing four lanes East of Kitchener Street may probably also not be threatened. However, the recent closure of Herries Street while the East Creek Bridge was rebuilt has demonstrated how the section of James Street through the city centre can become clogged with little additional traffic diversion. This has a deleterious effect on both local and through traffic and amenity, overall.

If it is clear that if the Toowoomba Bypass is to be delayed too long, ameliorative measures might be needed for the section from west of West Street to east of Hume Street or Kitchener Street. As a conceptual example, a



continuous viaduct over that length for through vehicles would assist both forms of traffic and would retain a reasonable utility after the second range crossing is in operation. The visual effects, probably negative for many, would need to be balanced against the positive effects of freeing up traffic flow. The remainder of James Street as far as Anzac Avenue and the junction there with the Gore Highway (Melbourne-Brisbane National Highway) is also already a problem area but viaducts here may not prove to be warranted. The improvement of alternative range crossings would have some ameliorative effect and be of long term value but their use has implications for the roads that serve them.

The highway sections of Tor Street and Bridge Street work tolerably well, except for its land use and access and work connectivity issues and would probably continue to do so for some years simply because it is at saturation, but conditions will deteriorate. However the outcome for local amenity, pedestrians and cyclists and access management are deficient under the current function of the route.

West of the Toowoomba urban area, the case has already developed for duplication between Toowoomba and the commencement of the Oakey Bypass. The black soil west from there will continue to pose severe maintenance problems. This is the same black soil foundation issue that impacts on house building costs that were referenced in the extrinsic values of the red soil areas of the plateau.

The developing communities of Gowrie and Kingsthorpe east of Oakey are both north of the highway and already have busy intersections with it. They are not directly linked with each other or with Oakey at present and this adds to the busyness of the intersections. The construction of a more direct link road between

Oakey, Kingsthorpe (extension of the upgrading of the Oakey 4AK Road) along the railway line would reduce reliance on these intersections and the Highway, and facilitate needed public transport together with more community cohesion.

The Gore Highway starts with a difficult intersection with the Warrego Highway at James Street and Anzac Avenue. That intersection area is complicated by the unsatisfactory arrangements for the rapidly developing Glenvale Road.

The concentration of heavy industry further south along Anzac Avenue brings about high turning volumes of heavy vehicles that need some attention. Through Drayton there is a need for a better link with between the Gore Highways and the Drayton Connection Road and the links east to and beyond USQ. These intersections may be able to be linked in some advantageous way.

South of Drayton, the Gore Highway is rapidly developing a suburban service role for Westbrook and the growing hobby farm communities in the area. Local servicing of these areas is incompatible with its highway function and would benefit from being addressed. This may also require some intersection upgrading and may eventually need duplication as far as Westbrook. Beyond Westbrook, the Highway is an important TRC link with its communities of Pittsworth, Brookstead and Millmerran. There is already a Pittsworth Bypass and a bypass of the Millmerran town centre and these should serve the National Highway through traffic adequately through the planning period, although a more extensive bypass of the Millmerran Township would be beneficial.

The New England Highway is the first north - south bypass west of Brisbane and presently runs through the TRC area from its southern border north of Allora to its terminus at Yarraman where it forms a T junction with the D'Aguilar Highway. There are no issues at the southern end: its first major junction is where the Gatton-Clifton Road crosses it and there are other junctions as it serves a local function for the south-eastern side of the TRC area. From East Greenmount north into Toowoomba however there is increasing sub-urbanisation which increasing conflict between local and long distance traffic. Again, the highway network function needs to be protected through more direct and improved road links between the rural communities in this corridor and more extensively as it extends through the Toowoomba environs. The single lane bridges north of Crows Nest are incompatible with the road's function.

There is a major intersection with the Drayton Connection Road where northbound traffic has the choice of two ways of entering Toowoomba. This is a point north from which a more westerly (highway function) bypass of Toowoomba might be developed to resolve the last issue above. Presently the Highway itself enters Toowoomba along Ruthven Street and continues along it to James Street (Warrego Highway). Significant enhancement of this section is in progress and modelling will

reveal if this is likely to be sufficient for the planning period. Formally the New England Highway Route then uses the Warrego Highway to divert east to Hume Street along which it bypasses the heart of the CBD before re-joining Ruthven Street along Chalk Drive. The northern end of Ruthven Street is also seeing a significant upgrade.

North from Toowoomba the highway climbs Mt Kynoch and approaches Highfields through a significant fog zone. The foggiess of this section led to its being duplicated 15 years ago well in advance of its traffic volume needs, but this is now being tested with the rapid suburbanisation of Highfields. There is a speed limit of 70km/h through Highfields itself along a still-developing tourist strip (again a function somewhat incompatible with local access to individual developments). The four-lane cross section currently stops north of Highfields where traffic also reduces significantly.

There are significant rural intersections all the way to the Hampton-Esk Road intersection.

Despite its function of being a useful north-south bypass of Brisbane, the road becomes a typical rural highway north from Hampton. However, its form needs to reflect its highway status and substandard road alignment, pavement and capacity will need to be addressed as long as its highway function is retained.

The only significant issue for the New England Highway therefore is its form between north and south of Toowoomba: whether it should continue through the heart of



Toowoomba or whether it should deviate to the west, to bypass Toowoomba City, Highfields or both or divert even further west to the Oakey-Cooyar Road. This last option would not necessarily be a complete solution as it would still leave through traffic that uses the Hampton-Esk Road on the existing Highway route. As

discussed above, some of the choices here are tied up with the planned Second Range Crossing, the way it interchanges with the existing road system and the changed traffic functions and volume conditions it will impose.

The D'Aguilar Highway runs briefly through the TRC area in its north-east corner and traverses Yarraman. It is the extension of the Brisbane Valley Highway and links SEQ to the South and North Burnett and Callide. The intersection with the terminating

New England Highway is in town, with the New England Highway just west of the junction forming Yarraman's main street. There appear to be no strategic transport issues affecting this road within TRC.

The Gatton-Clifton Road provides a form of bypass of Toowoomba for traffic between SEQ and the Clifton area, and between Gatton and Warwick and points south to Sydney. It also leads through Clifton along the Clifton Leyburn Road to the Toowoomba Karara Road which in turn is the route to Inglewood and then via the Cunningham Highway is an effective route to Goondiwindi and beyond.

If the second range crossing is to be long delayed, a major upgrade may be warranted.

The alignment of the Gatton Clifton Road for the range crossing is to a poor standard but its limited strategic role and traffic volumes may not warrant significant realignment.

There are two issues likely to arise in respect to these roads:

- Their transit of townships and how their through function can coexist with urbanisation. There are also some town planning issues to bear in mind. For example, the Cambooya Connection Road through Cambooya on its way to connect with the Toowoomba- Karara Road has a new alignment which bypasses the main street but which has some urbanisation to the south of it. Careful planning is needed to ensure both the orderly development of the town and the ongoing effectiveness of the through route.
- The possible need for a more direct link between Wyreema, Cambooya, Greenmount, Nobby, Clifton and Allora. As these townships move increasingly to be outlying suburbs of Toowoomba, their independent roles will continue to diminish and the need for interlinking and a good link to Toowoomba, one suitable for public transport, will increase.

Although both Oakey and Cooyar are within TRC, the Oakey-Cooyar Road has a wider significance for north-south travel and this is already being experienced as traffic from the Gore diverts to the Oakey Cooyar Road at Pittsworth using the Oakey – Pittsworth Road and making it a realistic contender for a more westerly re-routing of the New England Highway as part of the creation of a (northern) bypass of Toowoomba and Highfields.

There is a network of declared roads in the north of TRC and these interact with council roads to form a not-very-well defined road network by which to travel between centres within and beyond TRC. Some inter- centre travel is quite indirect on this network. There are significant destinations not far beyond the TRC northern

border which need to be taken into account when considering the efficacy of the network; such as Dalby, Bunya Mountains and Kingaroy.

An issue for this study is to investigate whether there can be defined a network which is both shorter and serves demand better and upon which funding can be concentrated to good economic effect.

2.2.2 THE RURAL COMMUNITIES AND ACTIVITIES

Without exception the rural communities are connected to Toowoomba CBD, Warwick and Dalby by a road network, but like the highway system these have also developed in many instances as routes that penetrate these communities. Rural activities that abound in these outer areas including a range of agriculture, pastoral, rural processing, rural and extractive industries are associated with large road vehicles. These have a significant level of adverse impact on the rural communities through which these regional roads pass and on the roads themselves.

South East Queensland (SEQ) Regional planning has increased its boundaries to embrace the TSD. In the context of planning for SEQ, Toowoomba is a Principal Activity Centre that is; it a key centre for the region supporting the activities of Brisbane as the State's Capital City. Toowoomba's influence as an activity centre extends westwards beyond the current (artificial) limits of TSD to embrace and extend beyond the Eastern Downs. Indeed for some purposes it extends throughout western Queensland and into the Northern Territory and north-western NSW. Toowoomba CBD is also supported by a network of sub regional centres at Dalby and Warwick.

The issue here is that appropriate ground transport links particularly between the 'regional' activities and their catchments are provided and maintained in such a way that the integrity of the structure of TRC's development is maintained whilst the links to Brisbane are also fostered.

The State roads do not in themselves address all the regional traffic movements in and outside TRC. A significant consideration in this regard is that regional road links pass through many of the rural community centres. Whilst this does support some activity to these centres it is debatable as to whether this level of activity would be lost if key bypass routes were provided to improve amenity and, if it was lost, whether the improved amenity would itself generate local activity to replace that lost. This is a conundrum facing most rural communities located on regional routes. The general long term finding is that the improved amenity generates a long term net benefit.

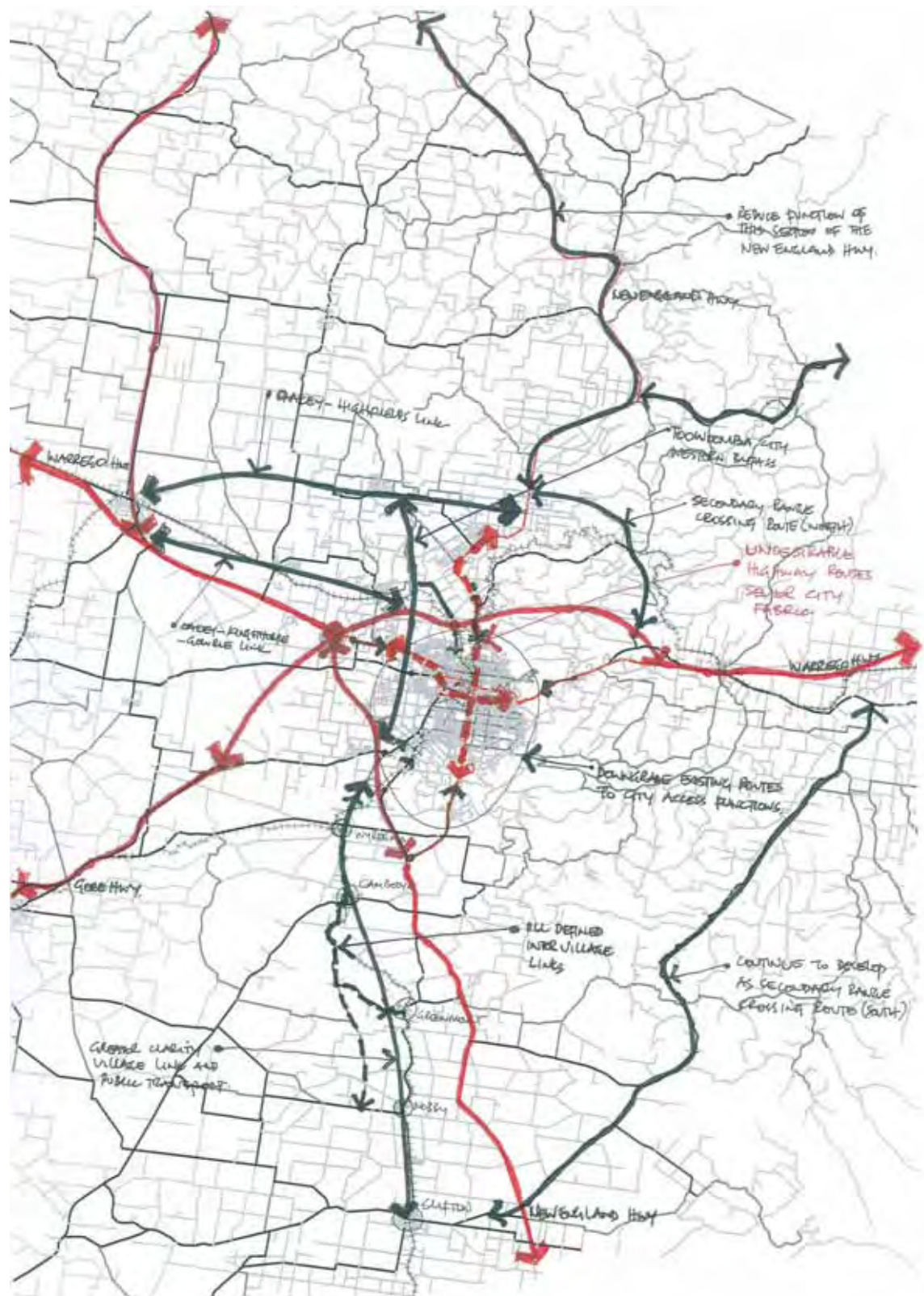
An examination of the 'regional' network suggests that it lacks clarity in certain areas, most notably through the old jurisdiction of Rosalie, and to the south through

Transport Strategy Proposals to 2031

Cambooya and Clifton Shires. The lack of clarity and continuity may well stem from the prior jurisdiction having different and localised perceptions of the various corridors rather than a holistic regional view of the network as a whole. The amalgamation resolves the localised planning approach, the issue becoming one of the physical (and political) capabilities of developing the desired corridors given the constraints that will have developed around them. These areas of perceived network weakness are shown in Figure 2.3.

Rural activities such as agricultural production, extractive industries and feed lots generate significant levels of traffic, much of it freight and heavy vehicles. These need a well-defined and located hierarchy to foster efficiency whilst not compromising on safety and amenity

Figure 2.3 - Near-Country Road Issues and Opportunities



2.2.3 URBAN COMMUNITIES AND ACTIVITIES

Topography and environmental and ecologically valuable assets are a major factor particularly for the provision of new road corridors. It is a very real issue for Toowoomba for both the regional and local level networks given the presence of the plateau and escarpment and the variable land form to the west, north and south together with the wide range of soil, rainfall and climates they produce. Whilst the established areas of Toowoomba are reasonably free of many of these constraints, future network planning must be cognisant of these issues and be informed by them.

Existing development approvals are yet another constraint on new transport corridor provision that must be included in the future network planning as an iterative input.

A really good example of how topography and development approvals can adversely impact on network development is in the southern parts of the West Street corridor. The planned future primary road network of the second range crossing and western bypass has been shown to change the address to the CBD and in concert with land use structure issues, places greater emphasis in the future of West and Mort Streets as sub arterial and regional arterial corridors. Providing a rational network connection between the New England Highway through Hodgson Vale to West Street could now be potentially compromised by a combination of development decisions and topography. Alternative (possibly less optimal) solutions may have to be considered.

Initial traffic volume analysis and anecdotal evidence suggests that much of the traffic on these routes has no direct business in the Toowoomba region and is even more inappropriate for a CBD environment and will only get worse. Some of the greatest congestion occurs on the National and regional road system which is a



totally contrary objective to getting the road network operating satisfactorily. Congestion levels should desirably be lower on the higher order roads to make them more attractive than the lower order alternatives. This has led and will continue to lead in turn to capacity and

operational difficulties in these and adjacent corridors, particularly at peak times.

Transport Strategy Proposals to 2031

With these primary routes passing through the centre of Toowoomba there is little opportunity to develop a supporting subordinate network to service the key land use of the CBD, Airport and Toowoomba Hospital and USQ.

Indeed corridors such as Margaret, West and Herries Streets have been developed almost by necessity as alternatives to service these activity locations because the regional (through) traffic is using those routes that would have been functionally more desirable and with less adverse impact on adjacent uses.

The issue here is that these corridors have limited opportunity for capacity expansion without significant cost and broader community impact.

This outcome has the very real potential to cause inappropriate and at times, illegible networks (evidenced around Drayton) with impacts that cascade down through the subordinate components of the network.

A number of the higher order weaknesses in the urban road fabric are summarised in Figure 2.4.

2.2.4 THE PUBLIC TRANSPORT NETWORK

Existing long distance land public transport services are performed mostly by coach, with one by rail. Direct services are summarised in Table 2.3 below.

Table 2.3 - Direct Services

Mode	Origin	Destination	Through	Connections	Frequency
rail	Bris	Charleville	Dalby, Chinchilla, Miles, Roma, Mitchell, Morven	Cunnamulla (coach) Quilpie (coach)	2/w
coach	Bris	Charleville	“ “		daily
coach	Tmba	Brisbane	Greyhound mostly all stop		c12/day
coach	Tmba	Brisbane	Transit Coaches exp & all stop		5* daily
coach	Tmba	Rockhampton	Dalby, Miles, Taroom, Biloela		3/w
coach	Bris	Melbourne	Milln, G'windi, Dubbo		3/w
coach	Bris	Sydney	War, Armi, Tam, Scone, Newc		daily
coach	Bris	Tamworth	War, Stan, , Tent, Glen In, Arm		4/w
coach	Tmba	Cunnamulla	Dalby, Tara, Moonie, St George		3/w
coach	Tmba	Lightning Rdg	Milln, G'wndi, St Geo, D'bandi		2/w
coach	Bris	Mt Isa	Morven, Barc, Longr, Wint, Clon		daily
coach	Tmba	Warwick			c3/day
coach	Tmba	Bris Airport	Door-to-door		Several/day
coach	Tmba	Gympie	Nanango, Kingaroy, Goomeri		4/week

*3 express, 2 all-stop weekdays, 1 express only on weekends

Of course, other destinations are reached through changing to other services, mostly in Brisbane but also in Dubbo, Rockhampton, Mt Isa, Glen Innes and Narrabri all to either rail or coach.

Toowoomba-Brisbane is by far the most important regional public transport issue. At present it is performed totally by coach. The existing coach services are provided either on a fully commercial basis or subsidised through Department of Transport and Main Road (TMR) and are of varying quality. The rail service doesn't compete

because it operates only 2 days per week, takes about 4 hours, is expensive and is not at the most attractive hours.

TransLink is responsible for public transport far west as Helidon. On the other hand it goes as far north as Gympie and as far south as Kingscliff, both further from Brisbane than is Toowoomba. A result of this is that Brisbane-Toowoomba services are not coordinated and are about twice as expensive as similar distances within the TransLink area. Also the service levels are subject only to the commercial decisions of the operators. Being road based they are highly subject to congestion and so have unreliable arrival times. Local Toowoomba services are regulated through a much looser mechanism by TMR.

There seems to be great ambivalence in the minds of people and governments as to whether or not Toowoomba is part of South East Queensland. For many administrative purposes it is clearly capital of its own region but in many other senses it is part of SEQ. Whatever, there is no doubt there is a substantial demand for travel between Toowoomba and other centres in SEQ, notably Brisbane and Ipswich. This already includes a significant amount of commuting or several days per week business travel.

Toowoomba is too close to Brisbane to be effectively served by air, and its airport is unable to handle medium size domestic jets. This means that there is a substantial demand for land based travel to Brisbane Airport.

The distance between Toowoomba and Brisbane is ideal for inter-urban rail. Its present rail link is too slow to allow such a service to be effective. However about half the total journey time is taken up between Helidon and Toowoomba so a service as far as Helidon could be effective. All other comparable centres on the Australian mainland have effective rail services. Table 2.4 that follows shows their trip time and frequency and how a Toowoomba service might compare both now and with the Inland Railway's range crossing in place.

Table 2.4 - Trip Time Comparison with New Rail Range Crossing

Centre	Rail trip time to adjacent Capital	Number of weekday services each way
Ballarat	1h 10 - 1h 30	17
Bendigo	1h 25 – 1h 55	17
Wollongong	1h 30 – 1h 45	29
Blue Mountains: Lithgow	2h 40	13
Mt Victoria-Katoomba etc	2h 10	28
Newcastle	2h 30 - 2h 40	24
Nambour	1h 42 – 2h 17	11 + 2 change trains + 13 bus Nam-Caboolture = 26 in all
Robina	1h 16	38
Surfers Paradise (bus Nerang)	1h 51	35
<i>Toowoomba (exist. Station) Bus - Helidon – rail ex align</i>	<i>c 2h (c1h 30 Hel-Bne)</i>	<i>c15 (hourly day base + peak extra)</i>
<i>Inland railway (T'mba – Bne direct rail)</i>	<i>c 1h 10 – 1h 20</i>	<i>c20</i>

Ballarat and Bendigo are both smaller than Toowoomba and both routes serve *en-route* centres comparable to those that would be served by a Toowoomba service. In both cases the recent introduction of faster services on better trains (the Velocity diesel rail cars which operate at up to 140km/h) has produced a marked increase in patronage. In addition to very reasonable fares, a ticket on those routes also entitles the buyer to a public transport trip in both Melbourne and the destination city, thus strongly encouraging door-to-door public transport usage.

5% of Toowoomba-Brisbane journeys are by coach (compared with only 1% public transport usage in Toowoomba) and it is clear that there is a significant commuting or at least several days per week component in this trip type. Indeed the journey-to-work data shows there are already about 1000 commuters travelling between Brisbane-Ipswich and the Toowoomba region each day. There are of course many more making the trip less frequently. While not all of these are amenable to public transport, the number can be maximised with through ticketing and good public transport linkages at both ends of the journey. In any case, maximising their shift to public transport would produce high returns in energy minimization.

Ballarat's example has demonstrated that the provision of a good service has a dramatic impact on patronage levels. Thus it should be expected that a good service with good connections and at a fare level comparable to others in SEQ would yield a marked improvement in that mode split.

The issue here is how to get the service improved. Possibilities include persuading the Queensland Government to add Toowoomba to TransLink's service area, and/or reinstate coordinated rail/bus services where modern fast rail cars coordinate with buses at Helidon, and the rail cars go to Roma Street or preferably on to the airport. With the coordinated rail option, more than one bus could meet each train opening the possibility of direct coordinated services to a range of TRC destinations. The coordinated service that ran until about 20 years ago used to achieve Brisbane-Helidon times of 2 hours. With modern rolling-stock and the track improvements that have already been made, a significant reduction in this should be possible. A service of this type would also provide much better linkages with Ipswich and offer much better trip time reliability. Thus a coordinated service would on average take about the same time as the existing services but would be much more time reliable and offer better linkages and connectivity.

Of course the rail part of the service could be speeded by 15-20 minutes if a planned new alignment through the Little Liverpool Range east of Laidley were constructed. In the longer term the planned Melbourne-Brisbane Inland Railway would reduce the rail part of the trip further and, with a new range crossing would allow rail to be used all the way with Toowoomba-Brisbane trip times of about 70 minutes, or less.

However the trunk service is provided, it needs to be fully coordinated with local urban and TRC services, a situation which is completely lacking at present. A suggested way to do this has two components. The first is to coordinate all local, regional and Brisbane arrival and departure times at a single point so as to maximize journeys involving more than one leg and thus make public transport use competitive between a much larger range of centre pairs. The second is to set things up for when rail services eventually return, by making the railway station the bus interchange as well. This would require some capital expenditure and the agreement of Queensland Rail to allow bus lanes to be introduced onto its site. See more detailed discussion below.

2.2.4.1 REGIONAL SERVICES

The only regional service that exists at present is Kynoch Coach's Crows Nest-Highfields-Toowoomba service which runs several services per day from Crows Nest and more from Highfields, connecting with a local Highfields collector service. Long Distance services that run through Pittsworth and Millmerran, to or through Dalby, and to or through Warwick provide some further occasional opportunities.

It is suggested that regular services should be developed to Gowrie Junction-Kingsthorpe-Oakey, Westbrook-Pittsworth-Brookstead-Millmerran, and Cambooya-Clifton. These should be timed to serve the peaks in both directions and offer off-peak return journeys. This might total a minimum of perhaps 7 each way trips per

day. More complex linkages to Highfields are also desirable and these could be more regular.

These services should be carefully coordinated with both local services and the trunk service to Brisbane, and Toowoomba Railway Station appears to be the best location for that to happen.

2.2.4.2 LOCAL SERVICES

Public transport usage in Toowoomba and to Toowoomba is very low in comparative terms. Less than 1% of the city work trips and only about 5% of Toowoomba-Brisbane trips are by public transport. These low values suggest there is great scope to increase them and the obvious place to start is with upgraded services.

At present there are two operators in Toowoomba. Sunbus (in the process of name change following ownership changes), which operates six routes and Kanga which has one route in the south-east sector. Between the two operators, the city is reasonably well served with basically hourly services during business hours and to serve commuters. The existing urban services are shown in Figure 2.5. The route and service designs need to be reviewed to bring them up to date with current needs and to set them up for higher use of public transport.

Currently, routes are designed to provide some level of access to those without a car available and are generally not car-competitive. To increase public transport usage, the routes need to be made more direct which in turn will require a greater number of routes to achieve the same coverage. In places where the distances are too short to support direct routes, (e.g. the north-east of the city) some form of dial-a-bus may be the best way to increase patronage levels. Places which are large attractors, such as USQ, the hospitals and the district centres, may be able to be linked with regular express services.

Figure 2.5 - Existing Urban Public Transport Services



All services run to and from the Toowoomba CBD. However the USQ is a very major trip generator and all but one of the services has an outer terminus there.

There is probably an opportunity to introduce a higher quality express service on a round trip route serving the railway station, CBD, Base Hospital, USQ and Kearney's Springs district centre.

2.2.4.3 TOOWOOMBA INTERCHANGE

At present all bus services terminate at or pass through the Bus Interchange on Neil Street. This has significant operational difficulties and requires some juggling of routes to and through the CBD. It also leaves the railway station out on a limb so does nothing to prepare for the (hoped for) eventual return of intercity rail services.

The existing railway station has arguably the best railway building in Queensland, has a significant area of under-used space around it and is only one block from the heart of the CBD. It would be easy to build a bus interchange there set up so as to link smoothly with rail services. This would provide a high quality address for public transport throughout the region. It also lends itself to a possible busway along the Warwick corridor through the CBD adjacent to Grand Central.

However the existing interchange serves the eastern part of the CBD so it would be important to retain significant service levels through that area on all routes.

2.2.5 AIR SERVICES

Despite being Australia's second largest inland City (population 100,000) and its supply of interstate attractions and interests (Education, Surat Basin etc.); Toowoomba airport's limited capability keeps it completely off the national carrier airline network. Its proximity to Brisbane by road (1.5 hours) and its limited runway length are in combination, the current key impediments to the provision of direct national air linkages to the area.

Toowoomba's airport is very limited in capacity with the result that Toowoomba is not able to support aircraft that could successfully operate efficient direct services to Sydney or Melbourne; it supports direct services to Brisbane but only with small aircraft and these services are really only effective as linkages to other air services out of Brisbane.

An important issue therefore is whether efforts should be made to put Toowoomba on the principal national airline network, and if so what infrastructure is needed to achieve this:

- Whether the maximum expansion of the existing runway (and airport facilities) would be sufficient to allow mainline aircraft (other than Dash8 - 300's) to use Toowoomba;
- Or whether a new airport is necessary, and if so, where it should be located?
- Presumably joint use of Oakey could be a contender; however we are advised that the Department of Defence is not supportive of joint arrangements at Oakey.

Further advice is that the maximum runway extension is currently 300 metres before physically impacting on existing urban areas and before being physically impacted by topography. We understand that Council has decided to invest in this runway expansion. This could expand the airport operations to DASH 8 -300 aircraft; but likely to still limit its mainline network capability. In conjunction with the opposition

for joint operations at Oakey, this will ensure Toowoomba effectively retains regional airport status until an alternative airport site capable of accommodating mainline jet services can be provided. This will be outside the timeframe for this transport strategy.

Even under these circumstances however, Toowoomba is unlikely to be an attractive national air service linkage to Brisbane given its proximity by car, although it could be the catalyst for high speed PT connections between Brisbane (Airport and CBD) and the Toowoomba CBD and Toowoomba airport as a regional air hub.

Development within and then expansion of the Surat Basin could possibly generate the potential for increased regional jet activity into Toowoomba and between Toowoomba and the Surat.

2.2.6 THE ACTIVE TRANSPORT NETWORK

Toowoomba (City Area) is like many other areas around Queensland where the walk and cycle path and trail systems do exist but are generally incomplete from a connectivity and corridor perspective.

This has occurred as a consequence of the relatively dispersed nature of community activities traditionally associated with higher levels of walking and cycling and limited continuity in the existing network.

Despite these factors the level of cycle and walking throughout Toowoomba but the City and Oakey in particular is high as evidenced from the journey to work analysis which shows this usage at around 10% and 15% for work.

There has been a focus in Toowoomba City on a trunk route network often provided along waterways and linear parks. This has been extended into the developing adjacent suburban areas of Highfields, Jondaryan and Hodgson Vale and Vale View where there is significant community desire and evidence of an off road path system being developed but again it is incomplete.

Whilst plans for networks of trunk and major paths exist in many locations their continuity is the main network weakness and so completing the trunk elements of this is a key issue for the future.

As the suburban fringe areas continue to attract development activity, the emphasis on providing a trunk path network within and from these areas into the Toowoomba network will increase. Providing this network will be an emerging issue for the future path and trail network to examine.

These pressures are not limited to Toowoomba City and its immediate developing suburban locations, but are also evidenced in the rural communities and particularly in and around the Oakey Army Air Base.

Future path and trail provision must not be limited to the Toowoomba City area but also needs to be pursued in the rural communities.

2.2.7 CAR PARKING

The supply, management and enforcement of illegal and informal parking are key components of transport policy. Parking provisions and management have to be balanced with the capacity provisions of other parts of the system such as road and public transport service capacity. It is generally accepted that local government needs to control or influence at least 50% of its parking stock in order to deliver on transport policy objectives through the use of parking as one of its effective policy tools.

Toowoomba is currently characterised by having high levels of parking generally available and accessible, even within its higher order centres such as the CBD. Parking is also relatively cheap in Toowoomba. TRC controls about 25% of available car parking stock in the CBD area.

This has led to the dominance of the use of private car for fulfilling most travel needs in Toowoomba and whilst this prevails there is no incentive under this regime for changing the emphasis more towards public transport even if services were more convenient and regular.

In summary, parking is generally too available for commuters and visitors alike and too cheap to be an effective transport policy tool.

2.2.8 EXISTING TRAVEL DEMANDS AND PATTERNS

The best source of data about travel around the TRC area is provided through the 2006 journey to work information collected at the Census.

Table 2.5 below provides the characteristics of this travel. It shows that around 58% of work travel occurred within the prior Toowoomba City area, with a further 35% occurring between the balance areas of TRC. Nearly 10% of work travel was between TRC and other locations in SEQ, including Brisbane. Of this balance, travel between TRC and Gatton/Laidley accounted for half.

With the possible exception of goods vehicles, the travel patterns in and around TRC are highly self-contained and this is further explained by the level of job provision in the City.

Table 2.5 - 2006 Journey to Work Characteristics of Self Containment in TRC

Home	Work	Train	Bus	Driver	Passenger	Bicycle	Walk	Other	Travelled	Total
Toowoomba City	Toowoomba City	6	193	21153	2730	473	1426	78	26062	30807
TRC-Part	Toowoomba City	3	18	6968	571	12	36	22	7633	8721
TRC-Part	TRC-Part	0	12	3441	399	57	566	49	4524	6774
Toowoomba City	TRC-Part	3	9	2276	360	9	24	12	2693	2930
Gatton/Laidley	Toowoomba City	0	9	1408	114	3	3	6	1543	1730
Toowoomba City	Gatton/Laidley	0	0	391	69	0	15	0	475	517
SEQ	Toowoomba City	6	4	216	24	3	7	0	260	260
TRC-Part	Outside JTW	0	3	173	17	0	3	0	196	215
Brisbane	Toowoomba City	6	10	177	11	0	10	0	214	214
Toowoomba City	Brisbane	0	12	157	21	0	6	0	196	202
Ipswich	Toowoomba City	0	0	143	6	0	3	0	152	152
Gatton/Laidley	TRC-Part	0	0	128	6	0	6	0	140	147
TRC-Part	Gatton/Laidley	0	0	90	3	0	3	0	96	109
SEQ	TRC-Part	0	3	71	9	0	11	3	97	97
Toowoomba City	SEQ	0	0	80	12	0	0	0	92	92
TRC-Part	Brisbane	0	0	68	9	0	6	3	86	86
Toowoomba City	Brisbane CBD	9	12	49	3	0	7	0	80	80
Toowoomba City	Ipswich	0	0	53	6	0	6	0	65	65
TRC-Part	SEQ	0	0	50	0	0	0	3	53	53

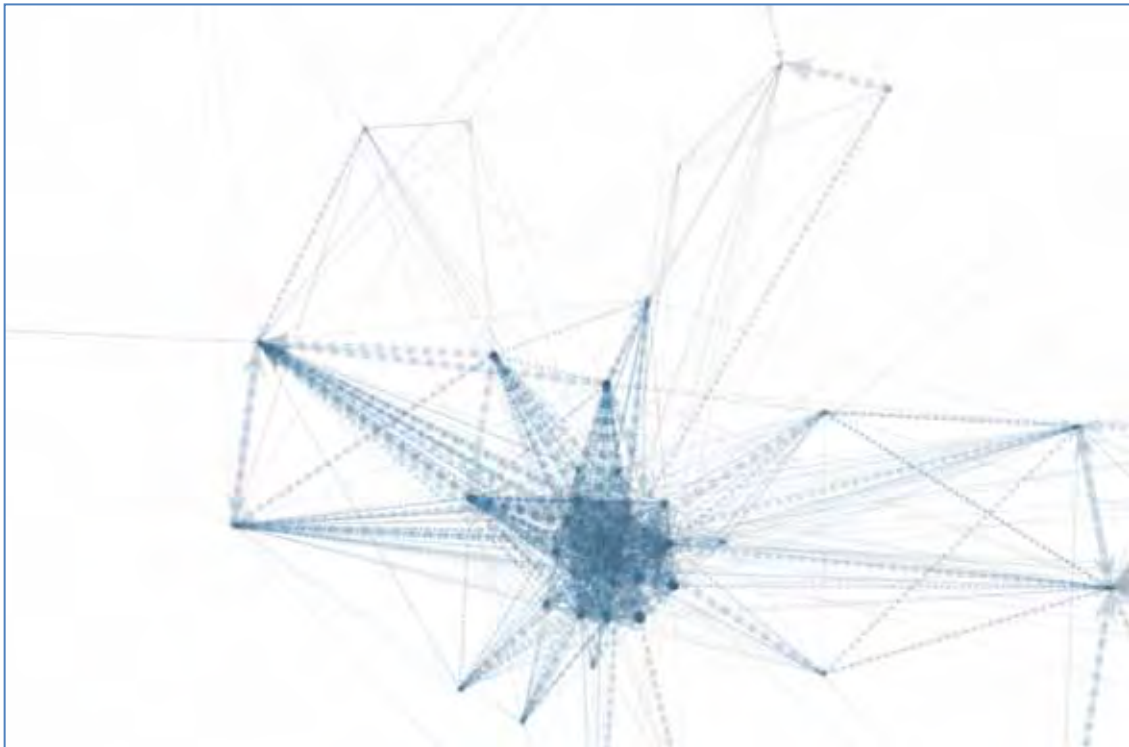
Table 2.6 - 2006 Journey to Work Mode Share Data

Home	Work	Travelled	Total	Bus%	Train%	Active%	Car%	PT%
Toowoomba City	Toowoomba City	26,062	30,807	0.7	0.0	7.3	91.6	0.8
TRC-Part	Toowoomba City	7,633	8,721	0.2	0.0	0.6	98.8	0.3
TRC-Part	TRC-Part	4,524	6,774	0.3	0.0	13.8	84.9	0.3
Toowoomba City	TRC-Part	2,693	2,930	0.3	0.1	1.2	97.9	0.4
Gatton/Laidley	Toowoomba City	1,543	1,730	0.6	0.0	0.4	98.6	0.6
Toowoomba City	Gatton/Laidley	475	517	0.0	0.0	3.2	96.8	0.0
SEQ	Toowoomba City	260	260	1.5	2.3	3.8	92.3	3.8
TRC-Part	Outside JTW	196	215	1.5	0.0	1.5	96.9	1.5
Brisbane	Toowoomba City	214	214	4.7	2.8	4.7	87.9	7.5
Toowoomba City	Brisbane	196	202	6.1	0.0	3.1	90.8	6.1
Ipswich	Toowoomba City	152	152	0.0	0.0	2.0	98.0	0.0
Gatton/Laidley	TRC-Part	140	147	0.0	0.0	4.3	95.7	0.0
TRC-Part	Gatton/Laidley	96	109	0.0	0.0	3.1	96.9	0.0
SEQ	TRC-Part	97	97	3.1	0.0	11.3	82.5	3.1
Toowoomba City	SEQ	92	92	0.0	0.0	0.0	100.0	0.0
TRC-Part	Brisbane	86	86	0.0	0.0	7.0	89.5	0.0
Toowoomba City	Brisbane CBD	80	80	15.0	11.3	8.8	65.0	26.3
Toowoomba City	Ipswich	65	65	0.0	0.0	9.2	90.8	0.0
TRC-Part	SEQ	53	53	0.0	0.0	0.0	94.3	0.0

Table 2.6 shows the relatively buoyant level of active transport use around the Toowoomba Region, and particularly within the old Toowoomba City and which also appear again around Oakey. It also highlights the poor level of public transport usage of the urban bus services at less than 1% of journey to work travel. This is a particularly low level of use for a City and region having a population of 150,000 people. A comparison with other areas of SEQ show that Toowoomba's level of PT use is below that of the hinterland of the Sunshine Coast.

An indication of the major patterns of travel is shown in Figure 2.6 below which has been obtained from the ABS Journey to Work data for 2006.

Figure 2.6 - 2006 Journey to Work Travel Patterns for TRC



Error! Reference source not found. reinforces the dominance of Toowoomba City as a focus for travel within the region and also shows the lesser but more dispersed pattern to key activities in the balance of the region. Also shown in Figure 2.6 is the significance of Withcott, Gatton and Laidley as a focus for the broader regional travel, highlighting how this imposes pressures on capacity in the Toowoomba Range route.

Figure 2.7 - 2006 Daily Traffic Flow on the TRC Network (source TRTM)

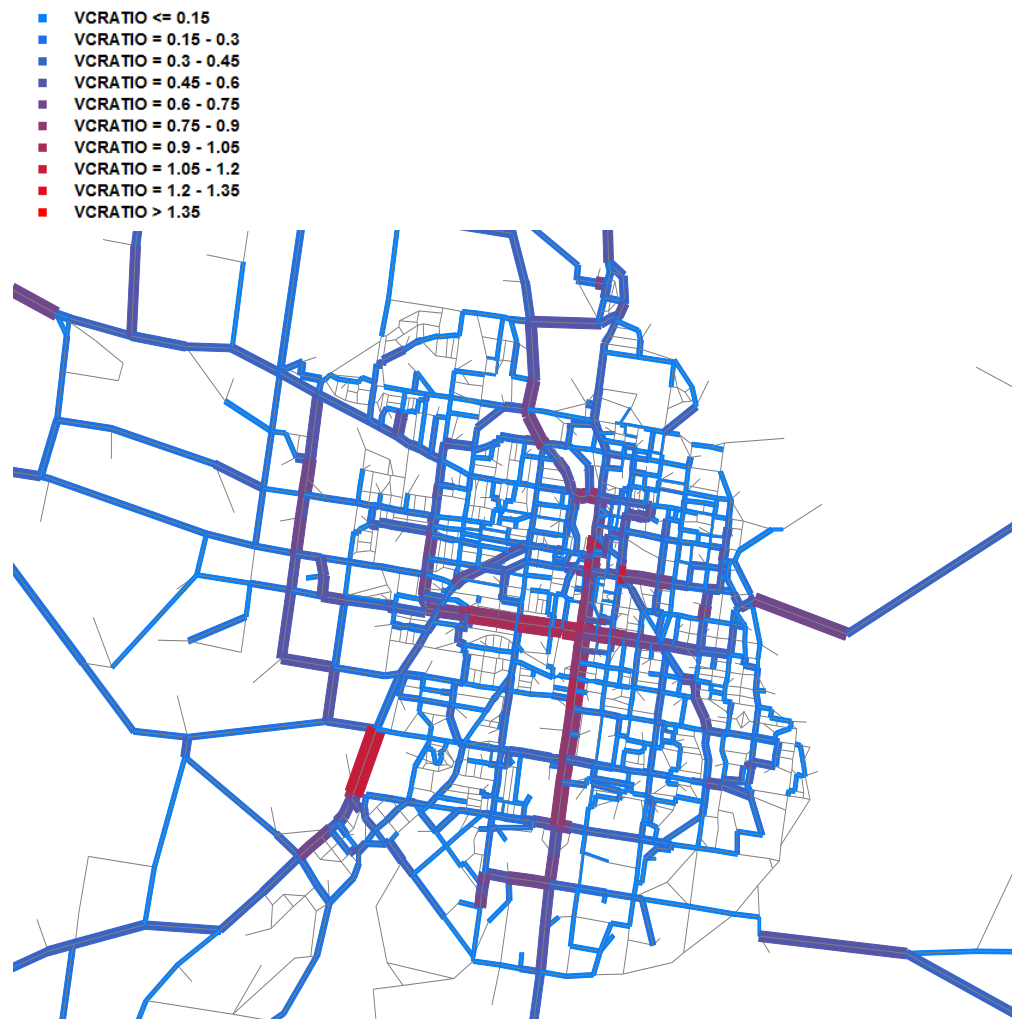
- TOTL ≤ 2000
- TOTL = 2000 - 4000
- TOTL = 4000 - 6000
- TOTL = 6000 - 8000
- TOTL = 8000 - 10000
- TOTL = 10000 - 12000
- TOTL = 12000 - 14000
- TOTL = 14000 - 16000
- TOTL = 16000 - 18000
- TOTL > 18000



Figure 2.7 shows the significant daily flows in the regional road system at 2006. Heaviest volumes are evident on the national and State system even through Toowoomba City.

A focus on the Toowoomba City road network in Figure 2.8 shows the volume/capacity ratios at 2006. A number of key routes have excessive values but most significantly the values in the national and State system are at odds with the service standards objectives that would make the hierarchy work acceptably. These characteristics result in traffic diversion onto routes that should not desirably be meeting the needs currently being imposed on them.

Figure 2.8 - Daily Traffic Flow V/C Ratios on TCC Network (source TRSTN)



2.2.9 INTEGRATED LAND USE AND TRANSPORT IN THE TOOWOOMBA REGION

The relationship between the characteristics of development and transport is profound. So profound that transport should be recognised as an important tool for managing and delivering desired land use outcomes, and conversely the broad structure of development in the city will be a major factor in determining transport system performance.

To better understand these issues, we have developed the use of accessibility analysis, which can give a single measure of the performance of the combined land use/transport system. Accessibility is usually understood to be a measure which gets better when more opportunities are available; when opportunities are closer to where people live; and when travel costs are low.

Our approach to accessibility is based on the micro-economic theory of random utility, and measures the net benefit that people receive from the range of opportunities available to them, allowing for the cost of travelling to those opportunities. This recognises that the reason people travel is because they obtain benefits (utility) from being at other locations, and that this benefit increases (to some degree) with the scale of opportunities available at that location. For example, we enjoy benefits from being able to shop at a location (due to the things that we can buy) and these benefits are generally higher at a larger shopping centre than a small one (since there is a bigger range of products and choices available). The nature of these benefits varies with our needs – if we are buying milk and bread then one shop will be pretty much equivalent with another, whereas if we are doing comparison shopping then the increased choices at a large centre will be more important.

The accessibility model reflects the variation between people, both in their perceptions of location benefits and in transport cost. The final accessibility value measures the average net benefit that people obtain from opportunities minus the cost of travelling to those opportunities.

Thus the accessibility measure (net utility) is a function of both the land use structure and the transport system and provides in a single and simple index a performance measure of the land use and transport structure of the region, and through comparison, its efficiency.

Further, the utility measure becomes a strategic planning tool that can amongst other things provide an analytical basis for maximising the opportunities and land use - transport efficiencies in a strategic plan. Change the scale or distribution of activities in an area and the overall utility changes, and importantly the distribution

or pattern of utility received, changes. Change the form or characteristics of the transport system linking development in an area, and again the utility changes.

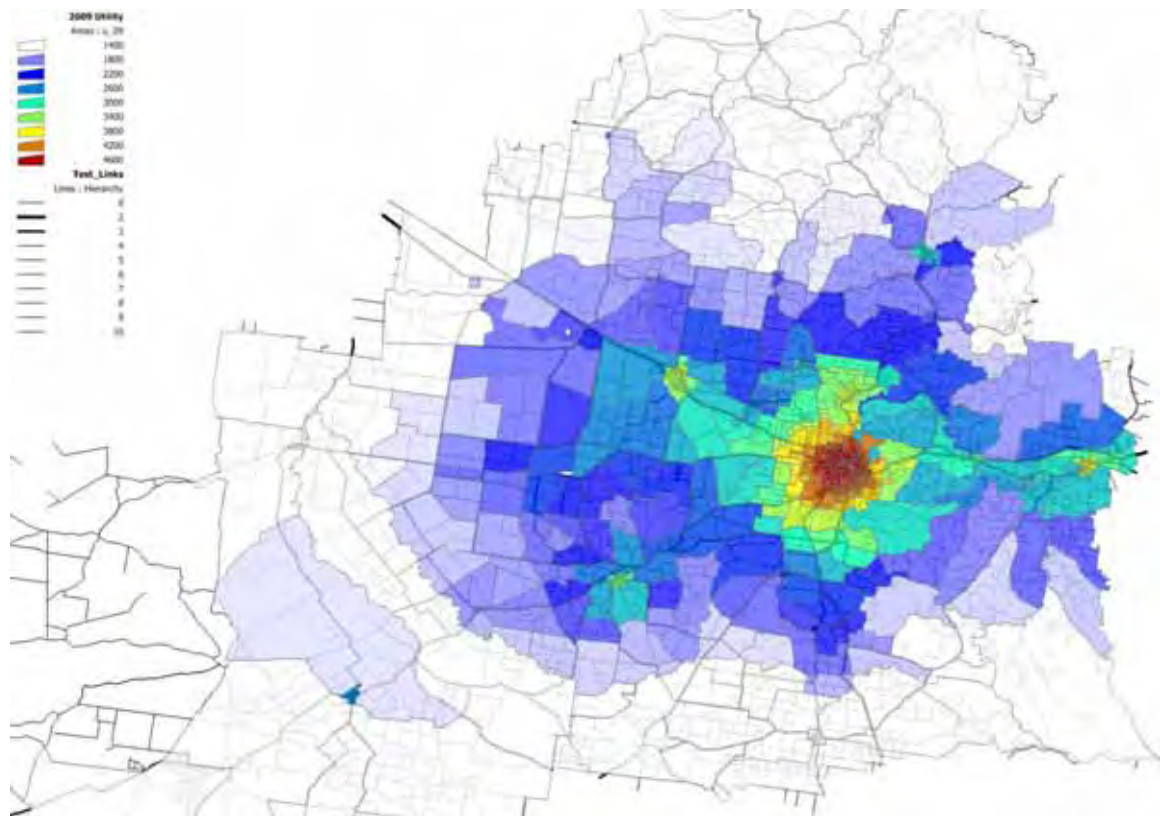
As a consequence of this, the accessibility relationship becomes an explanation of the dynamics between development (residential and non-residential) and transport. Change any one of these parameters and the outcomes change. Such changes in both land use the transport system can be engineered through planning to deliver a set of desirable outcomes.

The regional mean utility (the mean utility attributed to each person in the area) is then a properly weighted average of the land use – transport efficiency of that region. Change any of the accessibility parameters and the structural efficiency of the region can be expected to change. An example of this is to allow congestion to build up on a region's road system. This has the effect of increasing the cost of travelling between locations or in accessibility terms, 'spreading' locations, which in turn reduces the net utility as transport costs increase.

The accessibility to total employment (as a surrogate of activities) has been created for the TRC region for 2006. This is presented in Figure 2.9 below.

As expected the area around Toowoomba City and particularly the CBD has the highest level of accessibility, with the Warrego Highway corridor (corridors to Withcott and Gatton and Oakey extending down to Beef City) being the secondary areas of higher accessibility. Note too the evidence of some higher accessibility provided through the Gore and New England Highways to the south of the City.

Figure 2.9 - Toowoomba Regional Accessibility in 2006



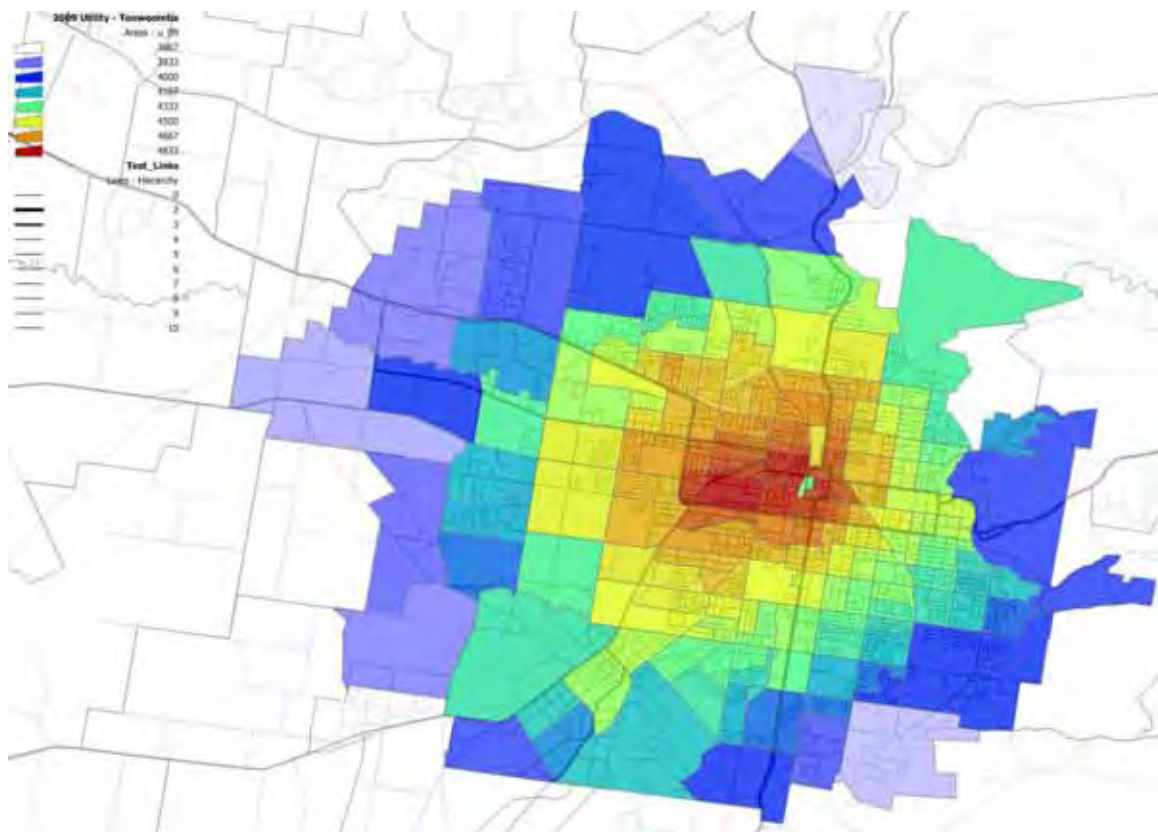
Transport Strategy Proposals to 2031

Figure 2.9 also identifies a much smaller level of localised accessibility generated by local activities most noticeably in Pittsworth, Clifton, Crows Nest and Millmerran.

Under this measure, the TRC regional mean accessibility index in 2006 is calculated to be 3,723. This is a base from which the relative performances of growth alternatives can be measured,

Figure 2.10 shows the more detailed accessibility measures around Toowoomba City.

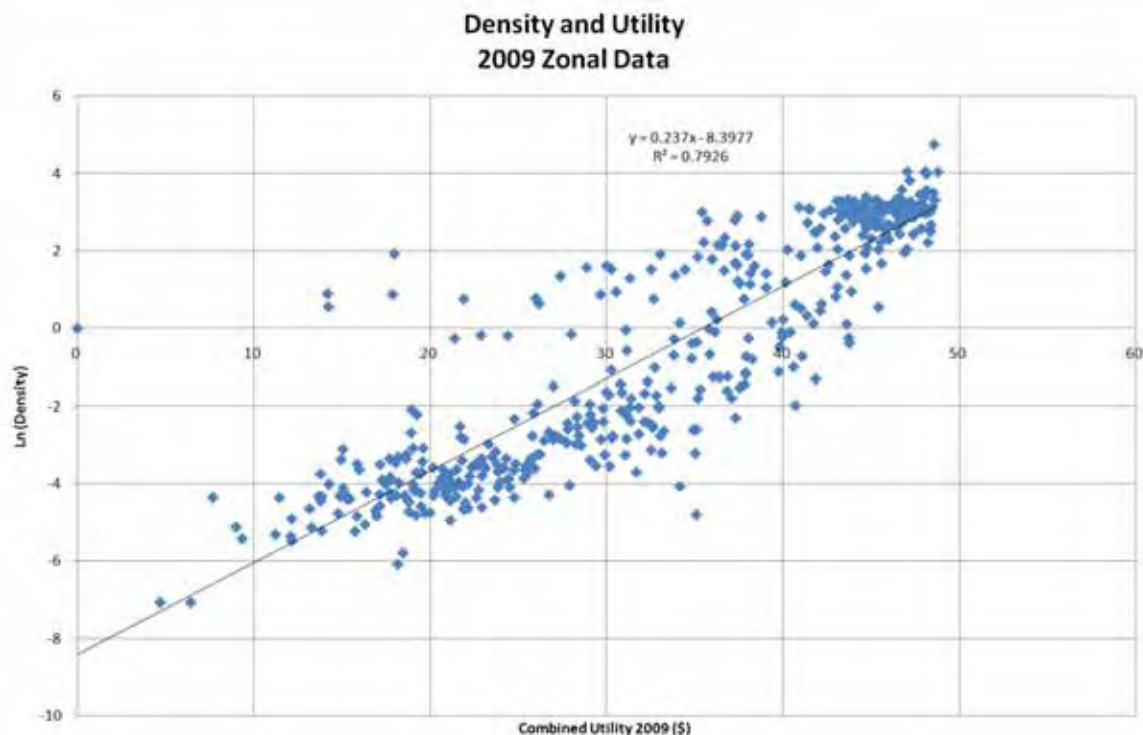
Figure 2.10 - Toowoomba City Accessibility in 2006



An important extension of accessibility is that there is a linear relationship between the utility derived by a location and the logarithm of development density at that location. A 'best fit' for this observed relationship can be thought of as a state that minimises the pressures for change in the system, although potentials to change will always exist.

In TRC, the 2006 relationship is provided in Figure 2.11. In this case, development is taken as the composite of [population + (0.5*employment)] apportioned over the net developed area of a location.

Figure 2.11 - Toowoomba Density/Utility Relationship in 2006



This relationship shows that in around 2006, the maximum likely densities occurred in the CBD and environs, and were equivalent to a maximum average density of around 50 dwellings per Ha. Further examination of the relationship shows that the CBD and environs appear to be a little over-developed for their accessibility. One reason for this may be the large block sizes and ownership of the CBD fringe that makes opportunities for redevelopment less opportunistic, more expensive and in conflict with the Planning Scheme and hence any redevelopment is forced into the CBD.

A strong element of Figure 2.11 is the extensive band of development reflecting what became traditionally referred to as 'standard (10 dwelling per ha) residential development'. Indeed this form of detached residential has been the traditional norm for many years, even in rural communities, and has perpetuated as fringe land was cheap to develop and pricing was not a development efficiency tool. So its physical extent is seen to be more widespread that was desirable.

Figure 2.11 also shows a number of locations which appear to be excessively dense for their location (accessibility). Whilst some of these fall into the historic subdivision category others are legitimately brought about by some other extrinsic value, for instance the views from and ambiance of the range; and lifestyle choice being the most obvious reasons. An allowance can be made for this with the consequence that these locations exhibit some additional utility gain from these extrinsic values that pushes them closer to the balance of trade-off between density and utility. Other

areas appear underdeveloped for their location and these are real opportunities for increasing the yield of the urban footprint whilst maximizing their utility values.

What Figure 2.11 also shows is that there are a number of areas within the Toowoomba City suburbs that may be potentially better placed than other proposed growth areas; that could be beneficially examined.

There clearly are other factors at work in the Toowoomba region which can be empirically accounted for in the accessibility modelling. In qualitative terms, however, it needs to be understood that Toowoomba was settled on a red soil plateau on and west of the crest of the Great Dividing Range, at a place where there is a significant watercourses very close to that crest and where a crossing of the range was possible. This red soil plateau provided an attractive climate, and rainfall and soil conditions that are suitable for both horticulture and building foundations. The plateau falls away sharply to the east, south and west but to the north redevelops again at Highfields. Off the plateau, particularly to the south and west, red soil gives way to boulder-strewn black soil and the climate becomes more extreme with lower rainfall. So developmentally, it is not surprising that as the Toowoomba plateau fills up with development, development jumps to the next “island” of similar conditions which is Highfields. For many locational purposes therefore, locators have “traded” raw accessibility for the values inherent in the red-soil plateau.

The model shows that the intrinsic value locators put on parts of Highfields and the range country to the north as far as Hampton, the eastern and inner city suburbs of Toowoomba, and rural lifestyle add about 15%, 10% and 20% respectively of the accessibility based utility of these locations. With these factors in place, Highfields can be compared properly with places closer in to the east, south and west.

Another way to look at this is to acknowledge that the fact that the Toowoomba region is not a featureless plain but an area with a wide range of landforms and micro-climates actually reduces the ‘efficiency’ of the region’s settlement pattern. But that is a bit like bemoaning that an archipelago costs more to settle and operate than one large island. Hence the landform pattern and the way it drives rational locational behaviour need to be taken as a given and the locational efficiency of alternative land use patterns assessed within that reality.

Within that reality it can be accepted that the development ‘jump’ to the Highfields plateau is an efficient solution to the lack of similar plateau closer to Toowoomba. This of course is not to say that development should not be planned in closer non-plateau areas; but it does suggest that such development is either regarded as further out than Highfields or is of the sort that gains no benefit from a softer climate, higher rainfall, better soil or cheaper building foundation costs.

3 A SUSTAINABLE FUTURE TRANSPORT STRATEGY

3.1 INTRODUCTION

A sustainable future transport strategy is not likely simply to be 'more of the same' into the foreseeable future. Such a future could be perceived as leading to increased reliance on personalized transport, significant increases in the use of finite fossil fuel resources and increased carbon emissions and global warming.

A sustainable transport strategy may on the other hand be driven by the (community) desire to move towards greater use of energy efficient modes and cost effective vehicle utilisation and travel demand management, providing that the overall utility of living in TRC is not compromised.

What this suggests is a search for a strategy built around land settlement and transport policy that meets the travel, utility, market realities and energy efficiency and emission objectives.

Relative to today's travel characteristics in TRC, one dimension of this sustainable strategy spectrum could be set by the National Emission targets of an absolute reduction of 25% from the 2002 levels by 2020. Assuming transport did its share of this reduction some future policy directions can be postulated.

3.2 IMPLICATIONS ON SUSTAINABLE FUTURE TRANSPORT OF NATIONAL EMISSIONS TARGETS

In the context of the above thresholds, it would be argued that it would be less onerous for urban conurbations of SEQ such as the Gold Coast – Brisbane- Sunshine Coast corridor to deliver on these objectives, so some form of emission reduction cross subsidy would be appropriate between urbanized and more regional areas. Whilst this has not been determined or fixed, it may not be unreasonable to suggest that a regional reduction of 20% in emissions would require a 29% reduction in the urban areas of the State and this might well be achievable.

A 20% overall absolute reduction in transport emissions for TRC is considered a reasonable starting point for the sustainable transport strategy. Whilst the national target is for the reduction from 2002 levels by 2020, achieving the 20% reduction by 2031 on 2006 levels in TRC would again be more achievable and potentially more supported by the TRC community.

The major factors that are affecting transport emissions and considered here for policy direction development include:

- Anticipated growth in TRC to 2031,

Transport Strategy Proposals to 2031

- Mode share to active transport (walk and cycle),
- Mode share to (diesel/electric/dual mode) public transport,
- Engine efficiency in personalized transport,
- Private vehicle occupancy,
- Land settlement pattern and distribution of activities, and
- Fuel and efficient operating speeds.

3.2.1 GROWTH IN TRC TO 2031

TRC is conservatively expected to grow by 60% to 2031. If all else remained equal, the scale of the transport task and transport emissions would also increase by 60% or possibly more, if as generally happens with growth, the urban footprint expands and trip lengths increase.

Relative to a 2006 transport task index of 100, the 2031 transport task index would be 160. With an emission index directly related to private vehicle use (85% of the transport task in 2006), the absolute target for 2031 would be an emission index of 80, and that for policy targets, heavily related to the use of private vehicles.

3.2.2 MODE SHARE TO ACTIVE TRANSPORT

In 2006 the active transport share was about 15% of the daily transport task. This is an exceptionally high level for a regional area and so if the 2031 sustainable strategy target was to be maintained at 15%, this would be equivalent to 24 index points of the 2031 transport task index of 160.

3.2.3 MODE SHARE TO PUBLIC TRANSPORT

In 2006, the overall share to public transport was about 1% of the journey to work. For all travel including school travel public transport was estimated to account for around 3%.

If this could be raised to 10% by 2031, the contribution to the 2031 daily transport task index would be 16 index points.

The combined effect of active and public transport by 2031 is to leave 120 points of the 2031 transport task to be accommodated by private vehicles but delivering this within a total emission index value of 80, assuming that active transport and public transport collectively have zero emissions.

Thus private vehicle use by 2031 has to reflect a 33% reduction in emissions through other available policy instruments such as energy efficiency improvement, increased car occupancy and the big one – land use/transport structure (refer here back to the mean average metropolitan utility measure of Section 2.2.7).

3.2.4 FUTURE ENGINE EFFICIENCY

Hybrid vehicles and synthetic fuel substitution could be expected to deliver a 10% increase in engine efficiency which could be assumed to be transferred directly into emission reductions.

3.2.5 VEHICLE OCCUPANCY

Average daily vehicle occupancy is about 1.10 persons per vehicle. If this could be increased by various policy instruments to 1.15 without adversely affecting public transport loadings, this would deliver a reduction in private transport travel of about 5% which would be translated into a similar reduction in emissions.

3.2.6 LAND USE STRUCTURE

The two preceding policy directions could deliver a combined reduction in private vehicle emissions of between 15% and 17%, leaving the land use – transport structure to deliver the balance absolute reduction across TRC of 20%, in broad terms.

This is highly significant in land use and travel task terms, given that 65% of the 2031 land use pattern already exists at 2006.

3.2.7 FUEL EFFICIENT OPERATING SPEEDS

The key to maintaining operating speeds as close as possible to the fuel efficient part of the fuel consumption curves is to develop a road network that achieves functional hierarchy planning, design and standard of service objectives. In this way, traffic with conflicting operating and travel requirement characteristics are separated through the hierarchy and longer distance traffic is not attracted to low speed local area streets in which they have no direct business, delivering the additional benefit of residential and other local area amenity.

3.3 SUMMARY DIRECTIONS FOR A SUSTAINABLE FUTURE TRANSPORT STRATEGY

At a high level of policy, the essence of a sustainable future transport strategy is two-fold. Firstly it is to reduce the scale of the transport task as much as possible through reducing the travel requirements through land use structure and secondly to set up the structure of land use and transport in such a way that active and public transport

components of the overall task are maximised and the use of private vehicles, that are the principal source of emissions, is minimised.

This strategy has therefore to be pursued from both a land use and supporting transport policy and provision perspectives. The elements of this direction are discussed in the following sections.

3.3.1 STRUCTURE OF ACTIVITY CENTRES BASED ON VIABLE ECONOMIC GROWTH

An appropriately structured pattern of centres that supports the economic directions of TRC and the physical distribution of the population are essential for delivering maximum utility to the community and from which a functionally based hierarchy of roads can be developed and improved integrated systems of active and public transport achieved.

From a transport perspective the objective here is to maximise the economically viable concentration of growth of commercial activity in key centres in order to:

- Generate critical mass for maximising residential densities, whilst
- Deliver an increasingly efficient land use - transport structure, and
- Improve the mean overall TRC utility for the community.

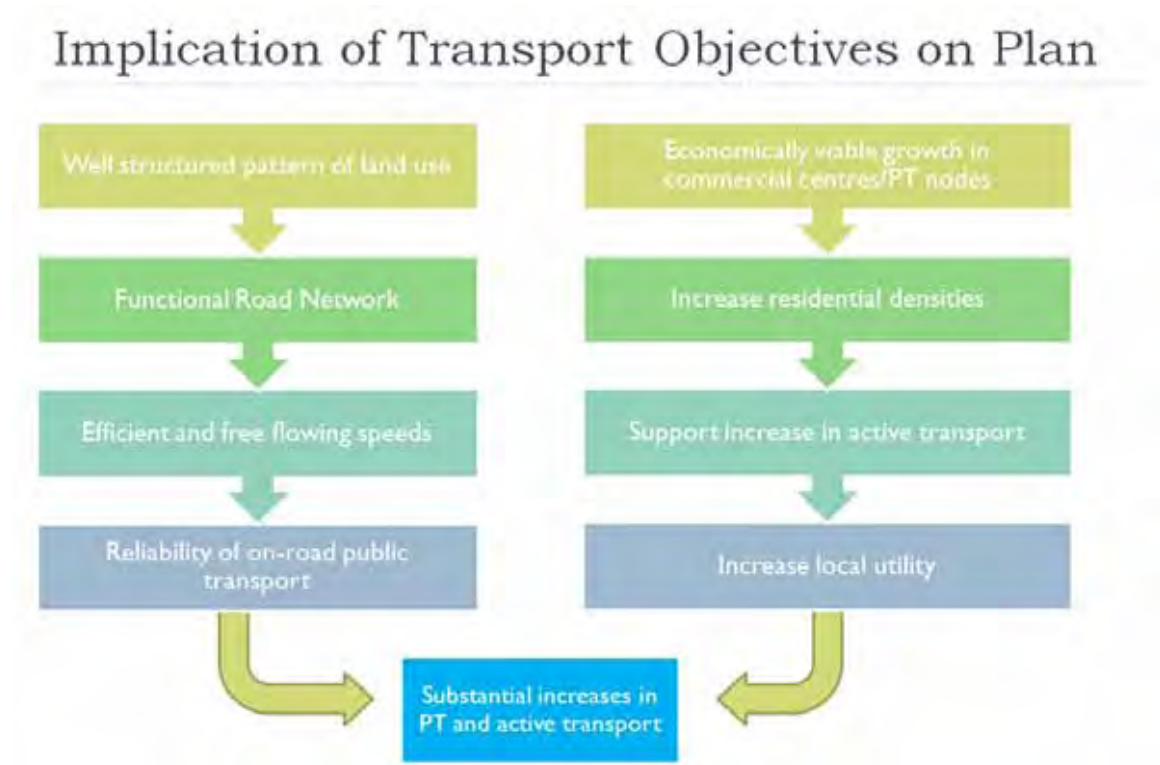
Reinforcing a dominant centres strategy allows an efficient functional road hierarchy to be developed with all its attendant benefits of increased amenity, operating efficiency, increased safety and reduced community severance and efficient freight movement.

The increased critical mass leads to the capacity to support higher residential density and development yields with concomitant increases in walk and cycle travel and public transport ridership through higher residential and commercial concentrations.

In summary then the single most useful element of the transport strategy is the move towards the most efficient structure of activity centres as most other policy instruments can leverage off this action and benefit from the consequential residential changes that can be planned.

Figure 3.1 that follows encapsulates this direction and its benefits.

Figure 3.1 - Implications of Transport Objectives on Plan



4 FUTURE TRANSPORT INFRASTRUCTURE PROPOSALS AND THEIR STATUS

The Toowoomba region has been studied extensively in the context of transport infrastructure. This extends from the national level infrastructure down to highly localized infrastructure.

Almost by definition, the national and State infrastructure is generally in the higher ends of transport functions and as a consequence proposals at this level have significant structural impacts and influences on the subordinate infrastructure.

Take for example, a Toowoomba Bypass and range crossing that links the western elements of the Gore and Warrego Highways with the eastern elements. As the highest level in the hierarchy, its operating and access management characteristics are of the highest standard and become the most limiting for subordinate systems. Access points are likely to be limited to maintain a high level of integrity and this will in turn set the structure for the next level in the road hierarchy.

The strategy considers the various modes that meet the transport task for TRC and the range of infrastructure projects that have been proposed to gain an insight into their status, momentum as far as provision is concerned and the influence they might exert on the TRC strategy.

This review starts with the national and State context projects and finishes with local considerations.

4.1 THE ROAD NETWORK PLANS

Amongst the studies considered here are:

- Toowoomba Transportation Study 1964 - 1985
- Toowoomba Bypass Study
- New England Highway relocation Study, incorporating
 - Toowoomba western arterial connector study
- Tor and James Street,
- Toowoomba associated road network study,
- Western arterial road – Drayton Wellcamp road,
- Traffic modeling Highfields, Gowrie and Meringandan,

4.1.1 TOOWOOMBA TRANSPORTATION STUDY 1964 - 1985

This study has been included because it provides a basis for road network planning that supports the functional hierarchy approach adopted for the current strategy. The study also contains a number of initiatives around the Toowoomba CBD that help to resolve the arterial road network issues around the inner parts of Toowoomba City. Of particular interest from this study is the concept of the extension of Bridge Street through the railway reserve area north of the CBD, to connect Bridge Street with what is now Chalk Street.

The proposed network has particular relevance to the development of a road system through and around Toowoomba City environs without a Toowoomba Bypass in place. What this study leads to is the sharing of the regional traffic loads between the Tor/James Street system, a Bridge/Kitchener/James and Bridge/Margaret systems.

It is likely that in the absence of the Toowoomba Bypass, this collective capacity would be required to meet the regional and local travel demands through the City.

It is therefore considered that this is still a very pertinent study for TRC and the Central City area.

4.1.2 TOOWOOMBA BYPASS AND RANGE CROSSING

The proposal for a National Highway bypass of Toowoomba was studied in great detail in the Second Range Crossing Study conducted by TMR (then QT) in 1994/5. The results of that study remain the basis for all planning for the route. The proposal is for a new route passing just north of Toowoomba, leaving the existing highway near Helidon Spa, going under the New England Highway between Harlaxton and Mt Kynoch in a short tunnel, having a major interchange in the Cranley area and then sweeping to the south west to join the Warrego Highway at Charlton. From there the proposed route extends to the Gore Highway near Athol (north of Southbrook) a new road corridor would be developed and that corridor has been currently planned to accommodate the proposed Inland Railway as well. The new corridor would complete the Toowoomba bypass of the Melbourne-Brisbane National Highway (Gore – Warrego Hwy east).

Transport modeling suggests the new bypass would be popular with long distance trucks on both the Brisbane-Darwin and Melbourne-Brisbane National Highways so most of those would no longer transit the city centre. It would also be popular with long distance passenger vehicles. Some local trips (particularly those in the northern sector of the city, Highfields and most northern and western parts of the region) would also most effectively be served by the bypass and many local heavy vehicles would choose to use it because of the much easier grades.

Toowoomba's main access for the bypass would be the new Mort Street Interchange. It would attract some CBD traffic and most traffic for North Toowoomba and Highfields and areas beyond them. Toowoomba CBD would have a new access route broadly along Mort Street while traffic to or from Highfields and points north would want a new route northbound from the interchange. This demand would probably advance the case for the New England Highway to bypass Highfields to the west, the route for which had been in the planning sights of CNSC for some years.

The existing Toll Bar route would remain a popular access road for Brisbane-Toowoomba traffic, particularly that related to the southern part of the city, but it would no longer be the pre-eminent access point to the city, albeit more enjoyable for being freer of heavy goods vehicles.

Similarly the Anzac Avenue approach from the southwest will still be used by most Gore Highway traffic with a trip end in Toowoomba but its through traffic role would effectively be eliminated.

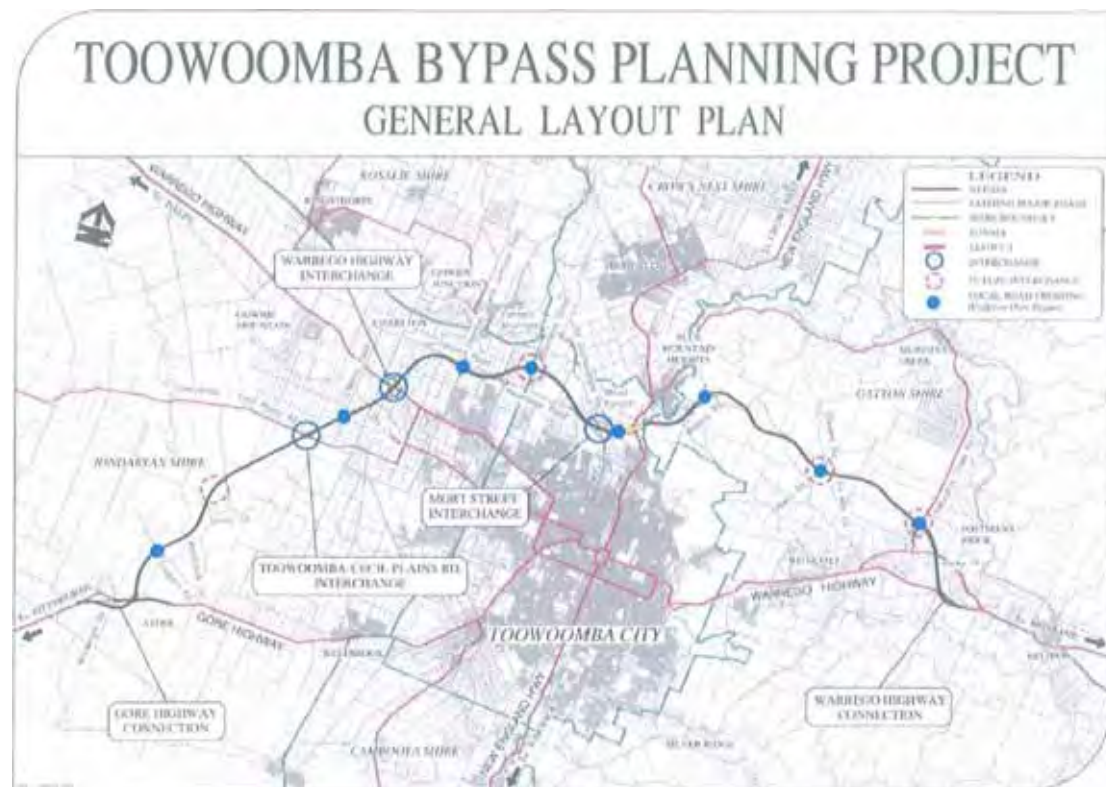
Similarly again the existing Warrego Highway approach from the west along Bridge Street and the less busy approach from Cecil Plains Road along Hursley Road will lose their through traffic function. Local road trains would still access the city along them as far east as Boundary Street.

Access opportunities through interchanges have been planned along the whole route and there is some momentum in the proposal resulting from extensive land acquisition for the corridor.

The proposal is highly significant for addressing a number of the existing road network weaknesses having a substantial impact on the TRC network and development. However, it is very expensive and a positive commitment to its construction and timing has yet to be made.

The corridor and access strategy is shown in Figure 4.1.

Figure 4.1 - Toowoomba Bypass and Second Range Crossing



Source: Charlton Wellcamp Enterprise Area Transport Study – SKM, 2009

4.1.3 NEW ENGLAND HIGHWAY RELOCATION STUDIES

A number of studies have been conducted into the possible relocation of the New England Highway to the south and west of Toowoomba City. A number of alignment options have been developed and the issues that this needs to consider include:

- Creating an effective north south bypass alternative of Toowoomba City, the CBD and its sensitive residential environs and land uses, for the New England Highway,
- Resolving the road network and connectivity weaknesses associated with many movements through the Drayton/Westbrook area,
- Possibly considering an alternative for long distance north south traffic between the New England Highway and the Oakey – Cooyar Road, and
- Providing a regional route between the emerging Charlton-Wellcamp regional industrial area and the south.

A preferred alignment for this route that trades off the above objectives and maintains maximum network flexibility is not too difficult to identify, but again such a project has no funding and timing status in TMR.

Transport Strategy Proposals to 2031

Figure 4.2 identifies an alignment for the route that addresses a number of the stated objectives.

Figure 4.2 - New England Highway Alignment



4.1.4 TOOWOOMBA ARTERIAL ROADS STUDY

This study was undertaken to address the short and middle term capacity issues on the Tor – James Street corridor; carrying the Warrego Highway through Toowoomba City.

Despite the Toowoomba bypass, prior analyses indicate that the corridor would have to be upgraded to six traffic lanes to meet projected traffic demands.

The pavement is deteriorating substantially and available funds are understood to be directed towards pavement rehabilitation rather than capacity improvements at this stage.

There is no firm commitment to the capacity upgrade in the Tor –James corridor at this stage.

4.1.5 TOOWOOMBA ASSOCIATED ROAD NETWORK STUDY

This study was undertaken by the State government to identify the appropriate road connections that should be made to the Toowoomba Bypass and Range Crossing project and to spell out the capacity improvements and impacts more generally of roads that serviced the new corridor.

The study supported future intermediate interchanges to the Toowoomba bypass at:

- Murphy's Creek Road,
- Gittins Road,
- Mort Street,
- Boundary Street,
- Warrego Highway,
- Toowoomba – Cecil Plains Road, and
- The Gore Highway.

The study simply went on to identify the implications of these access points on the road network servicing them. There is no commitment of funding to addressing these impacts. However, what can be concluded is the support for the interchange locations.

4.1.6 WESTERN ARTERIAL: DRAYTON WELLCAMP ROAD

This study examined the efficacy of developing a Willet Road – Drayton/Wellcamp Road – Boundary Street (south) corridor as a strategic arterial for the western area of what is now TRC.

The corridor also supports a number of the objectives associated with the New England Highway relocation study and both should be merged into a single outcome.

There is no commitment to funding or timing for this project.

The New England Highway from the north will continue to deliver local traffic but this system is complicated by how or whether a Highfields Bypass is realised. Irrespective of this, presumably a lot of Highfields traffic would still access the city through Mt Kynoch and Harlaxton. Acknowledging that the route for long distance north-south traffic on the New England Highway could depend on how a Highfields bypass was developed and whether some reasonably effective route was developed around the southern suburbs of Toowoomba (Drayton). It could also depend upon whether the Oakey-Cooyar Road was developed as the main road north from Toowoomba instead of the existing highway through Crows Nest. Again, Sunshine Coast traffic on the Hampton-Esk Road would still use the existing New England Highway route at least beyond any proposed Highfields bypass.

Like the Inland Rail proposal, the uncertainty of the timing of the Toowoomba Bypass and Range crossing project (funding now deferred by a further 5 years) means that road proposals for early implementation need to work in both with and without the Bypass contexts, and will be evaluated accordingly. However, this is a very difficult issue to address because of the likely significant impacts of short to medium term network solutions. The significance of this is doubly important given the profound impact that the highest order road network and access locations have on the development of subordinate networks.

Some relief to the existing range crossing could be provided by upgrading existing routes north and south of Toowoomba. An upgrade of the Gatton-Clifton Road would provide a reasonable option for Gore Highway traffic. For the north, there is also some support for a major upgrade of an existing 4-wheel drive route down the range east from Borneo Barracks and an upgraded route back to Oakey. This could take some Warrego Highway and local traffic off the existing range crossing.

Upgrades necessary to develop a quality direct route between Toowoomba, Gowrie Junction, Kingsthorpe and Oakey, broadly along the railway line also have some support.

4.2 LAND BASED PUBLIC TRANSPORT

4.2.1 IMPACT OF INLAND RAILWAY

The proposed Inland Standard Gauge Railway is likely to be built in some form, but the timing can be no more than a guess. If it were to proceed as quickly as possible following the Commonwealth's Alignment Study now current, it could be in existence in less than ten years. A major planning issue is the extent to which its existence should be assumed in making decisions in areas on which it will impact. As for the second range road crossing, this probably means finding proposals which will reach fruition with the railway but which will serve TRC in the meantime.

As currently conceived, the Inland Railway will arrive at Gowrie Junction via one of two alternative routes:

1. From the south west in a common corridor with the Gore Highway.
2. Along the existing Western Line from further west, perhaps around Oakey.

If it is the former, no further corridor planning work needs to be done as co-location with the Gore Highway corridor has been assumed since the Second Range Crossing Study was done in 1995. The concept of a freight centre and other activities that would benefit from access to the nation via standard gauge rail can be developed as planned in the Charlton/Wellcamp area.

If it is the latter, the Charlton/Wellcamp industrial development could still be viable but a specific rail spur from Gowrie Junction would be needed. This option would open up new opportunities between Gowrie and Oakey. Some parts of the disused Cecil Plains Branch line would be likely to be part of the new corridor but there would be new sections somewhere in an arc north east from Millmerran/Brookstead.

From somewhere east of Gowrie Junction the new railway would go into a long tunnel on a fairly direct line towards Helidon. Details of this have all been resolved and promulgated to the community in TMR's Gowrie-Grandchester rail study. So much work has gone into this proposed alignment that it would be safest to assume it is most likely to stand (although in the Alignment Study's published papers it is clear that alternative – cheaper and lower standard – routes are also being sought).

The existence of the Inland Railway will transform the use of rail in the region. The Inland Railway will deliver a direct link between Toowoomba and all centres in Australia served and proposed to be served by the growing standard gauge national network. This includes all capital cities and nearly all productive regions and

population centres. This will surely have an impact on industrial land use and would tend to speed TRC growth.

The existence of a quality route down the Toowoomba Range will transform regional use of rail and allow for the development of effective interurban passenger services. From Gowrie Junction west, the Inland Railway is most likely to be standard gauge. (i.e. it would not be dual gauge – how existing lines in the southwest are linked is yet to be determined). However eastwards from Gowrie Junction or where the Inland Railway joins the Western Line, narrow gauge will have to be accommodated for two reasons: the preservation of the Western Line, and to allow for a fully interactive passenger network in SEQ.

It is possible to imagine that the Western Line might eventually be converted to standard gauge, particularly if it is decided to extend standard gauge west to maximise the capacity of rail-based Surat and Moreton Basin coal transport to Brisbane.

Another influencing project is the proposed Miles-Gladstone line. If that is standard gauge, a major reason for doing so would be to link it to the Inland Railway, hence Toowoomba-Miles would have standard gauge too. If the line west of Miles was standardised as well, that would avoid the need for dual gauge of anything west of Toowoomba.

Thus, if the Miles-Gladstone line is standard gauge, the probability would have to increase that the whole of the Western Line would become standard gauge.

Decisions are yet to be made on the final alignment and commitments to funding and timing of these projects.

However, the Toowoomba Region should be very concerned that the Melbourne – Brisbane Inland Rail Alignment study is recommending a Range route that would not have sufficient capacity or the necessary ventilation for an inter-urban passenger service, and that this recommendation has the support of Transport and Main Roads.

4.3 OTHER PUBLIC TRANSPORT INFRASTRUCTURE

Although the TRC area is dominated by Toowoomba, it contains within it quite a number of centres. Significant interactions occur between them and Toowoomba as well as between each other. Also very strong interaction occurs with Brisbane and all centres on the Brisbane-Toowoomba corridor. Direct public transport cannot reasonably be provided between all the centres involved, so for public transport to be able to serve the region well enough to attract a good proportion of travellers the services that are provided need to have a high level of connectivity and this feature needs to be highly visible to interest potential converts.

In the belief that a new railway down the Toowoomba Range will be built eventually and that it will enable to return of inter-urban rail services, it is suggested that Toowoomba Railway Station is the ideal place to inter-connect public transport. It not only has an elegant building, it is under-utilised, surrounded by under-utilised railway corridor land, is very well located for interchange purposes and can readily be developed to improve both local and regional bus services.

This adaptation would readily include a section of busway starting at the corner of Ruthven Street and Chalk Drive, going through the station precinct and then south along the railway land and beside the existing railway (which would be retained, possibly for passenger use – see below) past Grand Central, diverting to serve the main entrance to the Base Hospital and weaving through the edge of the hospital land to finish on West Street. The northbound bus platform could be the southern end of the existing platform 1. The northbound bus platform would be at the eastern side of the new busway, with a Warwick line platform its other face. This would be facilitated further with a road proposal to build through the railway station precinct a link between the Bridge Street/Mort Street corner and the Ruthven/Chalk corner. With this infrastructure in place both local and regional buses could readily access all directions.

The plans for a new Toowoomba Range railway call for a tunnel with its western portal in the Cranley area. Fortuitously it is close to proposed new road routes to both Highfields and Gowrie Junction/Oakey. The line from Toowoomba would access the tunnel via a 180° curve joining the line from the south and west close to the tunnel portal. This area just west of the tunnel portal would thus be an ideal location for a new station that would be most convenient for much of the northern Downs, Highfields and local areas – so a large park and ride area would be desirable. This would particularly be so with an interchange of the new Gore Highway route nearby. Such a station would also be a good bus interchange for Oakey-Toowoomba and Highfields USQ services so a formal bus interchange would also be attractive. Of course its trip time to Brisbane would be perhaps 5 or more minutes less than that from Toowoomba itself so that could give added attractiveness. This Cranley Station would also be the Toowoomba stop for long distance rail passenger services on standard gauge and could be where such services interchange with narrow gauge inter-urban services. Indeed if all standard gauge passenger services are forced to use the proposed southern freight bypass, long distance rail trip times might be minimised by use of Brisbane-Toowoomba interurban services and changing to the long distance services at Cranley. That then raises the interesting possibility that, if a fast route is not provided into Brisbane for standard gauge passenger services, such services may be designed to have Cranley as their 'Brisbane' terminus. That would create both space requirements and employment opportunities.

4.3.1 POSSIBLE REGIONAL PUBLIC TRANSPORT USE OF EXISTING RAIL INFRASTRUCTURE

The existing rail infrastructure between Dalby and Toowoomba and Toowoomba and Brisbane is currently used to capacity for coal traffic and the whole community benefits if as much of this as possible is carried by rail. However the existing South Western Railway to Warwick via Toowoomba's south western suburbs and the villages between Toowoomba and Clifton is maintained to a good standard but is relatively underutilised. It may be possible and desirable to make opportunistic use of this infrastructure for some form of rail-based public transport such as for a dual-mode vehicle which could be used on that route instead of a regional bus. Very little if any new infrastructure would be required.

4.4 AIR SERVICES

The only future proposal currently being mooted for air services is the 300 metre runway extension and the ability to operate DASH 8 -300 aircraft. Indeed the decision has been made by Toowoomba Regional Council to invest in the runway upgrade thus creating the opportunity for the provision of DASH 8 -300 services; however, whether this is realised by the Airlines is a matter for the Airlines. These are not mainline aircraft and so Toowoomba will not effectively be on the national network for as long as this situation prevails. Access is already compatible with this form of air service.

What this indicates is the likelihood that urban growth will need to continue to be planned around the existing, albeit slightly enhanced airport facilities and activities for the life of the new Planning Scheme and for the life of this strategy. PANSOPS, OLS and ANEF layers and extents will all need to be taken into consideration by future development for as long as the Airport remains in its current location. When the impacts of an enhanced airport need to be considered, the facility will in all likelihood be planned for an alternative location.

4.5 SUMMARY CONCLUSIONS

It is suggested that the Toowoomba Bypass and Range Crossing road project will indeed go ahead, given the commitments to land acquisition along its proposed alignment, preliminary tunnel testing and the political momentum that the project is receiving. The biggest issue here is that of timing. Already the project appears to have been delayed for Federal funding by a further 5 years. This is the worst possible outcome for the TRC road strategy given the significant impact a project such as the Toowoomba Bypass has on subordinate road and land use planning and what the project could achieve for addressing functional weaknesses in the existing 'highway' system.

There is some support also for providing additional capacity in the Tor – James Street corridor; however this is also the National Highway and subject to Federal funding and budget. The early program of works focuses on rehabilitating the existing pavement only. Providing it can be shown that the long term need exists for further capacity upgrading, even following the introduction of the Toowoomba Bypass, there would be some support for this upgrading to be introduced as a short term alternative to the Bypass project (being completed).

Other State road planning proposals identified currently appear to have little commitment to either alignment or funding and it is suggested that this road strategy would be the best vehicle for promoting suitable outcomes for these routes.

The Inland rail project appears to be gaining momentum on an alignment immediately to the east of the Charlton – Wellcamp Regional Industrial Area, progressing via a tunnel down the Toowoomba Range. At this stage there is no commitment to funding although the preferred alignment is emerging. As discussed previously, current thinking in respect of the Range Crossing section is **not** to facilitate passenger trains. This is considered to be short-sighted, is not supported and it is recommended that TRC takes whatever steps it can to reverse this view. However, even if the concept of inter-urban Toowoomba – Brisbane rail services was to be supported, the absence of clear timing for the project suggests that a competitive rail based line haul operation to Brisbane is not a short term option (but a coordinated service with rail east for Helidon is already an option), but the future opportunity for achieving this needs to be protected within TRC. This includes ensuring the continued availability of Toowoomba Station and the reservation of land for a possible commercial centre, new station and interchange facility at Cranley.

There is general support for a road link between Highfields in the north and Drayton and the New England Highway in the south around the western side of Toowoomba. The Boundary Street corridor is favoured currently to form the basis of this link as it interchanges with the proposed Toowoomba Bypass and aligns with the changing focus of industrial and bulky goods development to the west of the City.

For public transport it is proposed to move the bus interchange to Toowoomba Railway Station to create a full public transport interchange and be set for when rail services return. Indeed the existing railway station site can also be used to create new road links between Bridge/Mort Streets and Ruthven Street/Chalk Drive and there and Russell Street at Victoria Street. Moreover a busway could be built from the railway station interchange adjacent to the South Western Railway past Grand Central and then to serve the Base Hospital before terminating in West Street. It may be desirable to introduce a regional rail service between Toowoomba and Clifton in which case some minimal rail works and access works may be necessary.

5 FUTURE LAND USE PATTERN

5.1 INTRODUCTION

The significance of the future land use pattern on transport has been expressed repeatedly throughout this report.

The Regional Planning Scheme Project has delivered a preferred residential settlement pattern, a preferred centres strategy and has identified opportunities for future industrial lands out to 2031.

It has to be recognised that over 60% of the 2031 pattern of land use already exists at 2006 and that this does impose a difficulty for opportunities for moving towards a different land use structure, should it be desirable. It has also been stated that the existing (composite) Planning Schemes, particularly those of the TSD (TCC, Crows Nest, Rosalie and Jondaryan) have enough capacity on the whole to meet the projected population and employment needs of TRC to 2031.

5.2 TRC REGIONAL PLAN: BASE CASE DEVELOPMENT PATTERN

The TRC population is anticipated to increase by about 77,000 people between 2006 and 2031.

Town planning and economic inputs to the TRC development pattern broadly propose the following:

- 77,000 new population,
- 8,650 new in-centres related jobs, and
- 7,000 new industrial jobs in addition to 2500 new jobs in Charlton-Wellcamp

These inputs have also distributed this growth as broadly shown in the following sections.

5.2.1 FUTURE DEVELOPMENT - RESIDENTIAL DISTRIBUTION

Residential growth has been distributed firstly to the communities outside the TSD and then secondly to the TSD area as follows:

- External to TSD – 10,560 population
- Within TSD – 66,625 population

The growth outside TSD has been distributed to the communities and rural balance of the prior jurisdictions as shown in Table 5.1.

Table 5.1 - Distribution of Non-TSD Growth in Population to 2031

Location	2031 Population Growth to 2031
Crows Nest township	2000
Balance Crows Nest outside TSD	1260
Balance Cambooya outside TSD	1400
Clifton	1000
Balance Clifton outside TSD	100
Yarraman	300
Goombungee	340
Balance Rosalie outside TSD	300
Oakey	1500
Balance Jondaryan outside TSD	160
Millmerran	200
Cecil Plains	100
Balance Millmerran outside TSD	100
Pittsworth	1500
Balance Pittsworth outside TSD	300
Total outside TSD	10,560

For the area within the TSD, a number of growth areas have been identified by HRP. Whilst these have had nominal densities attached to them, our accessibility analysis suggests a different level of density to that assumed by HRP. These lesser densities have been applied to the HRP growth areas to yield an additional population of 21,405 people. For further detail on proposed densities refer to section 7.1.1.

The remaining growth requirement in TSD has been allocated to the balance residential footprint using densities proposed by HRP that reflect current achieved densities. This growth has been allocated to vacant sites within the balance area and accounts for a further 44,595 new people. This allocation still leaves the balance area at densities below those available through the current planning scheme provisions.

5.2.2 FUTURE DEVELOPMENT - NON RESIDENTIAL DISTRIBUTION

Three inputs to the Regional Planning Scheme in terms of non residential or employment growth are the Toowoomba City Centre Master Plan, the Activity Centres Study and the Industrial Land study. These three studies are the only sources of work that deal with future employment activity in the urbanized parts of the TRC.

If the current activity rate is to be maintained through to 2031, a further 30,000 new jobs will be required in the region by that time.

The Toowoomba City Centre Master Plan identifies the capacity to attract a further 4,583 jobs to the City Centre by 2031, whilst the Activity Centres Study identifies a further 4,072 new jobs to the 64 centres located in TRC outside the City Centre. The Industrial study identifies the scope for more industrial jobs than are necessary to meet the projected 2031 population requirements, but this has been controlled to 7000 new industrial jobs by that time. This excluded any new employment in Charlton-Wellcamp which is believed likely to have commenced development at that time (see comments below related to the Surat Basin).

Other large employment growth generators are education and health. A further 3,200 new education jobs have been planned. 2,600 new teaching jobs have been allocated to the known future and existing schools in the region. A further 600 new tertiary jobs have been allocated to the USQ and two TAFE campuses.

Health employment will expand due to the increasing population base, the ageing population and the emerging focus on health care. A further 4000 health jobs have been allocated to the hospitals.

Some growth is also expected in out of centre locations, particularly in the areas of retail/personal services/hospitality/health and office. A further 3000 new jobs have been allocated to existing out of centre locations to meet these needs.

Increasing activity associated with the Surat Basin has prompted the provision of an additional 4000 new industry/support employment in the Charlton Wellcamp area by 2031.

The summary of the provision of new employment from these various sources is provided in Table 5.2.

Table 5.2 - Broad Distribution of Growth in Jobs to 2031

Location	Total Growth in Jobs	Traditional Retail	Bulky Goods	Office
City Centre	4,583	2,333	250	2,000

Transport Strategy Proposals to 2031

In Centres	4,072	2,199	645	1,228
Industrial Precincts	7,000			
Charlton-Wellcamp	4,000			
Education	3,200			
Health	4,000			
Out of Centres	3,000	1,000		2,000
All Areas	29,855	5,532	895	5,228

This broad distribution has been uniformly allocated to the individual centres and industrial area footprints, in the absence of detailed information from the various sources.

6 DEVELOPMENT OF THE FUTURE TRANSPORT STRATEGY

6.1 INTRODUCTION

The strategy is based upon the land use distribution identified in Chapter 5 above. Whilst we believe opportunities may exist to refine the distribution developed for 2031 to deliver a more sustainable transport strategy through land use structure amendments, this has not been undertaken under the scope of this study.

The essence of the strategy is to minimise the extent of new road building to that supporting the functioning of the Toowoomba region in an attempt to reduce the consumption of road space by private travel and to focus instead on enhancing the use of energy efficient modes such as cycle, walk and public transport. A major complicating factor is the unknown timing of the building of the Toowoomba Bypass project, because the more it continues to be delayed the more necessary become short term ameliorating measures. A way to deal with this is to find ameliorating measures which will continue to have value after the new route opens.

The functional road hierarchy that supports and is supported by an efficient activity centres structure is the key to achieving some of these important overall outcomes such as safety and efficiency in the road system. This is due to being able to focus future economic activity in key locations that then support higher density residential development leading to increased cycling and walking and higher potential PT ridership.

6.2 PRINCIPLES FOR THE FUTURE ROAD SYSTEM

As mentioned in the earlier text, what is likely to emerge in the National and State road network has a profound impact on the subordinate road system. As a consequence, assumptions for this strategy about the future of the Toowoomba Bypass and Range Crossing are absolutely critical to the developing the balance TRC network.

The significance of the momentum surrounding this project has led the study to assume that the bypass will be in place by 2031. The strategy is therefore able to develop a long term (2031) overall road network that is driven by the location and access arrangements proposed for this project. However proposals that would reduce the adverse impact of further delays in the Bypass project and have ongoing merit are also part of the strategy.

6.2.1 NATIONAL AND STATE NETWORK

The weaknesses stemming from the existing highway network passing through Toowoomba City need to be addressed in order to allow Toowoomba City to reach its development objectives. The key to this is the Toowoomba Bypass and range crossing project that creates the opportunity to remove Warrego and New England Highway through traffic from the city street system, thereby returning them to more appropriate City Centre access and circulation functions. This introduces a number of significant changes to the way the TRC network will develop and function, including:

- The proposed interchange between the Bypass and Mort Street and the subsequent development of Mort Street as a key northern (regional arterial) access to Toowoomba Central City
- The resulting significance of the Old Goombungee Road as a regional arterial connection from the Bypass to Highfields generating an additional high order connection between Highfields and the CBD, and alternative to the existing New England Highway link
- The opportunity for a Toowoomba Bypass interchange at Boundary Street, and its subsequent elevation of Boundary Street in the hierarchy this opportunity generates, and the momentum this creates for Boundary Street to acquire a regional arterial function in the network and possibly a western bypass of Toowoomba City
- The proposed interchange between the Toowoomba Bypass and the Warrego Highway at Charlton creating a major highway focus in the network
- A potential interchange between the Toowoomba Bypass and the Toowoomba – Cecil Plains Road
- A potential future interchange in the vicinity of Schultz Road
- The Gore Highway connection at Pittsworth, creating a Gore Highway to Brisbane bypass of Toowoomba

These above access points form the kernel of the Regional Arterial network through TRC.

What the Toowoomba Bypass and the associated links to the Warrego and Gore Highways perpetuate is the absence to some extent of a north to south bypass of the New England Highway around Toowoomba. Options for this are an inner western bypass of Toowoomba City and possibly of Highfields created through the use of

Transport Strategy Proposals to 2031

Boundary Street, or alternatively use of the Oakey –Cooyar Road well to the west of the City.

The network planning choices here have been influenced by the emerging regional industrial requirements of:

- A connection between the Charlton – Wellcamp industrial area and the New England Highway, south via the Drayton Connection Road, and
- North via the Oakey-Cooyar Road, as already the Oakey – Pittsworth Road and the Oakey - Cooyar Road are developing as a surrogate link between the Gore and New England (north) Highways.

The preferred longer term components of the National and significant state network that then emerge through the region are identified in tion of their traffic function.

Figure 6.2 as Highways and Regional Arterials.

6.2.2 DEVELOPING THE REGIONAL ARTERIAL ROAD NETWORK

Regional arterials in the rural parts of TRC are to be provided by the existing State controlled roads. It is unlikely that any of these alignments that currently pass through the existing rural communities will be changed, with the exception of Oakey. Key roads in Oakey such as the Oakey-Cooyar Road, the Oakey – Meringandan (Highfields) Road and the Oakey - Kingsthorpe/Gowrie road link have the propensity to take on functions higher than hitherto realised; because of the holistic view now taken of the network throughout TRC. A consequence of this is the need to review and rationalise the alignments of these roads through Oakey to minimise severance and amenity loss and to promote further development in Oakey.

Given the proposed rural network shown in Figure 6.2, the remaining emphasis for the regional arterial network is through the TSD and ensuring the logical extension of the key rural links as they focus towards Toowoomba.

Figure 2.4 identifies the existing network weaknesses and opportunities within TSD.

The key objective for the TSD road network is to substantially reduce the function generally of roads by removing highways and reducing the extent of regional arterials to a minimum and expanding the sub arterial (circulating traffic functions) and distributor networks where possible.

With the majority of east-west bypass traffic captured in the Toowoomba Bypass and range crossing project, the next priority is to capture the north-south and south to east traffic that has no direct business in Toowoomba through a regional arterial to the west of the City. The Boundary Street corridor creates this opportunity, to capture as much of the TRC and Toowoomba/Highfields bypassing traffic as possible. A key to this is developing a direct and rational network through Drayton.

This can be achieved in the short term by directly connecting the Drayton Connection Rd to the Drayton - Wellcamp Road using the existing Greenwattle and Euston Rd corridors. This then allows Stenner Street to be extended to the west with connections to Anzac Avenue and the Drayton Connection Rd, providing good access to Kearneys Springs and improved connections between the regional arterials and USQ (refer also to Figure 4.2).

Extending Boundary Street to the south to the Drayton –Wellcamp Road then develops the inner regional western bypass from north to south. The Boundary Street corridor is extended all the way north, to the west of Highfields to make a connection with Meringandan Road, making use of the Old Goombungee Road corridor.

Transport Strategy Proposals to 2031

The movements between Oakey and Highfields are significant for both public transport and car travel. These two opportunities have led to the proposed development of a strong road based link between these two communities to address both these movements.

The corridor proposed for this is:

- Meringandan Road,
- Yalangur – Lillyvale Road, with
- Modified alignments around the eastern side of Oakey to align with the proposed realignment of the Oakey- Cooyar Road also further to the east of the township, and
- Preserving the opportunity to develop a new link from the New England Highway to Murphy's Creek by way of the Fernbank Road corridor (which could, if the bypass is further delayed, provide some relief to the existing Range crossing).

Within TSD, the Warrego Highway extends around the CBD providing the regional arterial network by way of Bridge Street, Ruthven Street, Hume Street, Chalk Drive, Hume Street Spring Street and the New England Highway. It is recognised that the route to the east of Kearneys Springs is convoluted but needs to be established with priority signalization capacity and signposting. To the north of the CBD, the regional arterial network is created through Mort Street and Ruthven Street (north).

The 1966 Toowoomba Transportation Study proposed that Bridge Street link directly with what is now Chalk Drive by building a viaduct over the western railway line and routeing through the under-utilised railway corridor lands around the Toowoomba Railway Station. Some land resumptions were done to allow part of this connection and seem still to exist. It is proposed to revisit this concept as part of a more general transport scheme in the area. The general scheme and its principles, which also includes a link from Russell Street to the Chalk/Ruthven intersection (to complete the CBD outer circulating road) and a busway accessing, from both Chalk/Ruthven and Russell Streets, a new bus-rail interchange at the station, is sketched in Figure 6.1.

The desirable long term desirable form of the regional arterial and sub arterial networks in TSD is shown in tion of their traffic function.

Figure 6.2.

Figure 6.1 – Proposed Toowoomba Railway Station Bus/Rail Interchange



6.2.3 DEVELOPING THE SUB ARTERIAL NETWORK

This is controlled by the regional arterial road network and its subordinate access points (intersections) and caters for traffic wanting to circulate within the CBD and the broader Toowoomba TSD and provides access to, but has no direct business (bypass) in the lesser activity centres and their catchments.

Within TSD, the more significant urban sub arterial links proposed in the long term are as follows:

- Hume Street between Spring Street and James Street,
- Nelson Street –Rowbotham Street,
- West Street,
- Stenner Street,
- South Street,
- Taylor Street,
- Tor Street (Desirable long term function),
- James Street between Tor and Ruthven Streets (Desirable long term function)
- Hume Street (Spring Street – James Street)
- Anzac Avenue between Drayton Connection Road and West Street (Desirable long term function),
- North Street,
- Mary Street,
- Margaret Street,
- Ruthven Street between James Street – Chalk Drive
- Greenwattle Street between Euston and Bridge Streets,
- Glenvale Road,
- Hursley Road, and
- Russell Street

Again this future proposed sub arterial network is presented in Figure 6.3.

6.2.4 THE DISTRIBUTOR ROAD NETWORK

This part of the network leverages off and is a logical extension of the sub arterial network. Its greatest significance is in the TSD and this is shown in Figure 6.3.

6.2.5 PROPOSED FUTURE CHANGES IN ROAD FUNCTIONS

The key purpose of the functional road hierarchy is to cater for the functional travel patterns in the road system whilst protecting as far as possible the amenity of precinct from intrusion due to traffic that has no direct business in the areas in question.

The most significant changes in function that emerge from the proposed network are presented in Table 6.1.

Table 6.1 - Proposed Changes in Function in Key Roads

Road	Section	Existing Function	Future Function
Warrego/Bridge	Toowoomba Bypass – Ruthven St	Highway	Regional Arterial
Mort Street	Bridge – Hermitage Dr	Sub Arterial	Regional Arterial
Old Goombungee Rd	Neil - Hermitage	Sub Arterial	Regional Arterial
Tor St	Bridge – James	Highway	Sub Arterial
James St	Tor - Hume	Highway	Sub Arterial
Canning- Greenwattle- Euston	Gore to Drayton Wellcamp	Distributor	Regional Arterial
Drayton Wellcamp	Euston – Cecil Plains	Distributor	Regional Arterial
Troys Rd	Drayton Wellcamp - Warrego	Regional Arterial	Regional Arterial
Toowoomba Cecil Plains Road	Troys - Tor	Regional Arterial	Sub Arterial
Nelson St	West - Rowbotham	Distributor	Sub Arterial
Spring St	Ruthven - Hume	Sub Arterial	Regional Arterial
Stenner St extension	Gipps - Greenwattle	Local	Sub Arterial

Transport Strategy Proposals to 2031

West			
Boundary St	Gore – Drayton-Wellcamp	Local	Regional Arterial
Gore Hwy	Pittsworth - Canning	Highway	Regional Arterial
Gore Hwy	Canning - West	Highway	Sub Arterial
Boundary St	Drayton Wellcamp - Morris	Sub Arterial	Sub Arterial
Boundary St	Morris – Old Goombungee Rd	NA	Sub Arterial
Margaret St	Warrego - Ruthven	Arterial	Sub Arterial
Russell St	West - Ruthven	Highway	Sub Arterial
Herries St	Warrego - Anzac	Regional Arterial	Sub Arterial

The links shown in red in the above table are likely to experience an increase in their traffic function as a consequence of the proposed network whilst those routes shown in green likely to experience a diminution of their traffic function.

Figure 6.2 - Proposed Future Road Hierarchy in Region

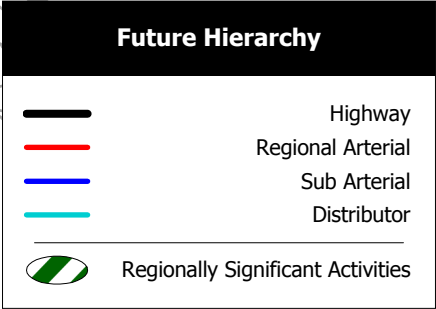
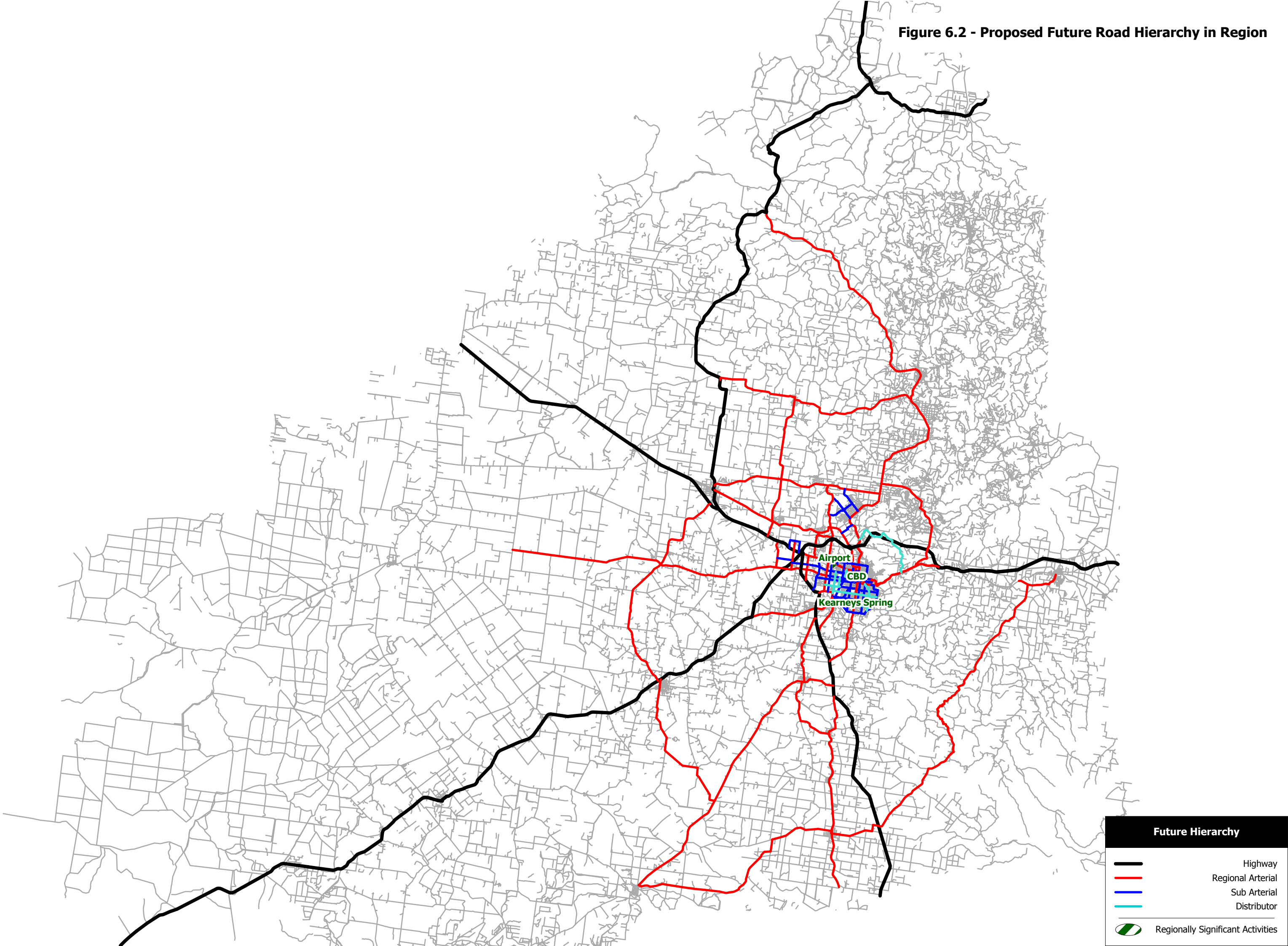
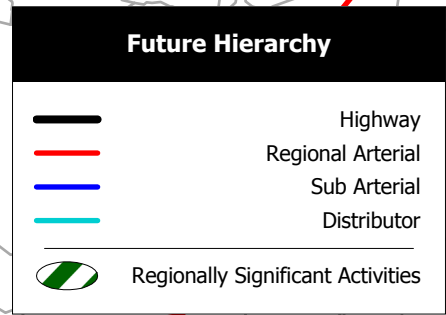
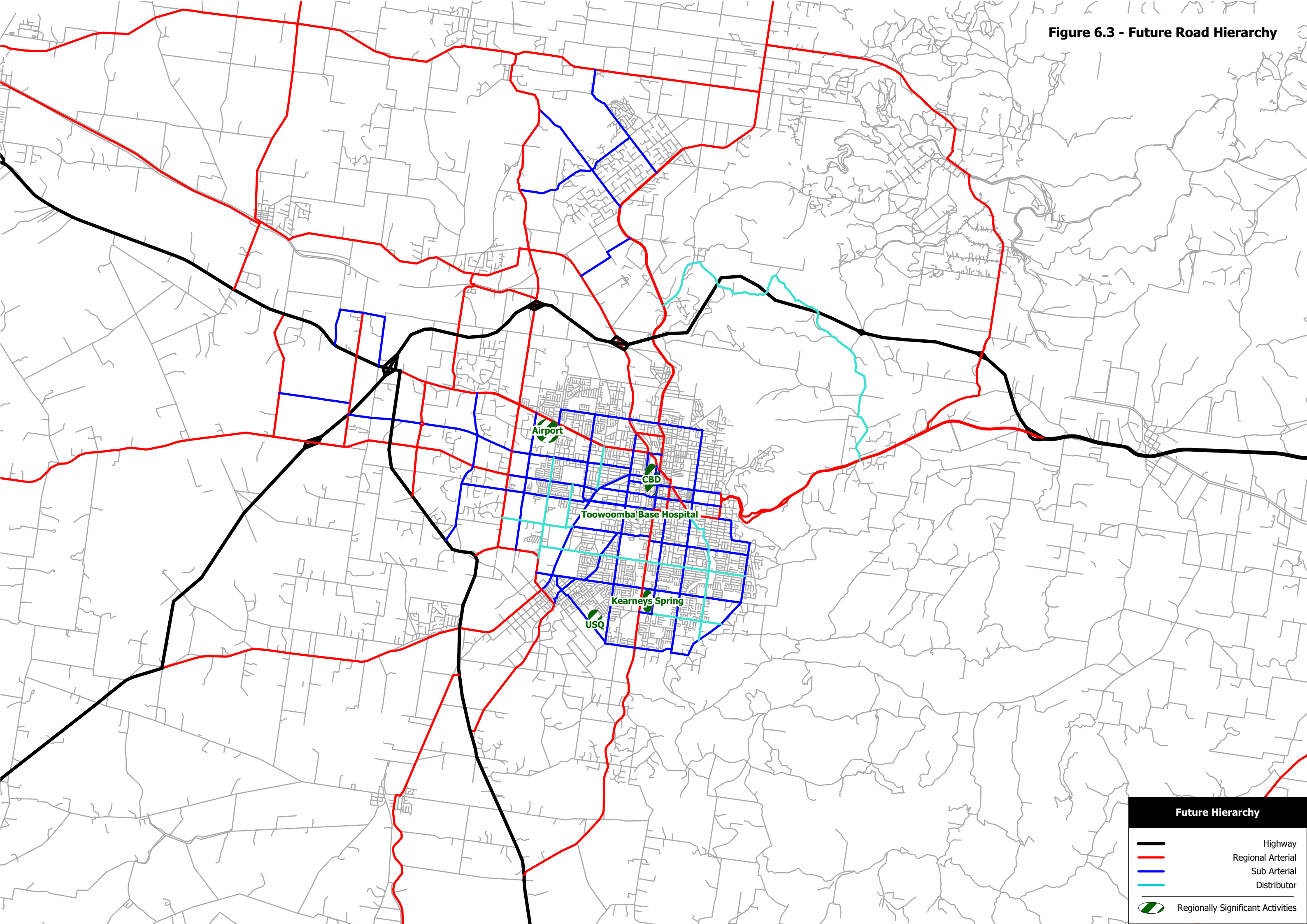


Figure 6.3 - Future Road Hierarchy



6.2.6 OPERATIONAL PROVISIONS IN THE FUNCTIONAL HIERARCHY

The elegance of the functional approach to developing a road network is that their functional characteristics relate directly to defining their operational specifications. The following operational characteristics are readily dealt with through the functional hierarchy:

- Operating environment,
- Nominal lane widths and carriageway treatments
- Access management (and intersection spacing)
- Treatment of pedestrians
- Treatment of cycling
- Public transport provisions
- Turning traffic provisions, and
- Parking provisions.

Note that the number of traffic lanes is a function of the future peak or off peak period flow and not directly a hierarchical issue. Whilst the following sections propose a number of operational requirements across the hierarchy, agreement needs to be reached between TRC and TMR as to what these ultimate values should be. The most significant issue here is to retain the relativity across the hierarchy rather than the absolute levels themselves.

6.2.6.1 SPEED ENVIRONMENT

Table 6.2 provides the desirable speed environments to be achieved in the various elements of the future hierarchy.

Table 6.2 - Proposed Speed Environments

Functional Element	Desirable Speed Environment
Highway	100 kph
Regional Arterial	80 -100 kph with generally free flow traffic and controlled access
Sub Arterial	60 – 80 kph with access limitations to building address and controlled intersections
Distributor	60 kph with access limitations to building address and generally priority junctions.
Collector Local Access street	40 - 50 kph with frontage access for developments and priority junctions

6.2.6.2 LEVELS OF SERVICE AND VOLUME CAPACITY RATIOS

There is a desirable relationship between the levels of service (represented by volume/capacity ratios) and the elements of the road hierarchy in order to reinforce the desired functioning of the various network elements. The guiding relationship proposed is provided in Table 6.3 as a desirable outcome.

Table 6.3 - Indicative Level of Service Objectives in Road Network

Hierarchy Element	Indicative Volume/Capacity Ratios by General Location		
	Rural	Suburban	Inner urban
Highway	0.5	0.6	0.65
Regional Arterial	0.5	0.6	0.65
Sub Arterial	0.6	0.65	0.70
Distributor	0.65	0.70	0.75
Collector, Local Access	0.75	0.8	0.85

6.2.6.3 NOMINAL TRAFFIC LANE WIDTHS AND EDGE TREATMENTS

Table 6.4 provides a guide to desirable traffic lane widths and forms of edge treatment in the hierarchy.

Table 6.4 - Nominal Lane Widths and Edge Treatments

Functional Element	Nominal Lane Width	Edge Treatment
Highway	3.5m	Shoulders, generally no kerbing
Regional Arterial	3.5 m	Rural shoulders, Urban kerbing
Sub Arterial	3.5 m	Rural shoulders, Urban kerbing
Distributor	3.5 m	Barrier kerb with adjacent pedestrian and cycle paths and at intersections
Collector, Local Access street	3.5 m but controlled by horizontal geometry for truck manoeuvring in industrial/commercial areas	Barrier kerb generally

6.2.6.4 ACCESS MANAGEMENT

These requirements relate to the desirable spacing and form of direct access to road corridors with the desirable objectives identified in Table 6.5.

Table 6.5 - Desirable Access Management Characteristics

Functional Element	Desirable minimum Intersection spacing	Direct Access
Highway	5km (possibly down to 3km in urban situations)	None
Regional Arterial	1 kilometre	None
Sub Arterial	500 m	Limited building address only and not within 60m of intersections
Distributor	200 -3000m	Limited to building address only and not within 40m of intersections
Collector, Local Access	120 m	Direct frontage permitted but not within 25m of junction.
Functional Element	Desirable minimum Intersection spacing	Preferred intersection form

Highway	5km (possibly down to 2km in urban situations)	Grade Separated
Regional Arterial	1 kilometre	Signals or roundabout depending on flow distribution and pedestrian/cycle movements.
Sub Arterial	500 m	Signals or roundabout depending on flow distribution and pedestrian/cycle movements.
Distributor	200 -300m	Priority Tee but controlled depending on flow distribution and pedestrian/cycle movements.
Collector, Local Access	120 m	Priority Tee with direct frontage permitted but not within 25m of junction.

6.2.6.5 TREATMENT OF PEDESTRIANS

Pedestrian facilities and treatments are desirably related to the hierarchy as shown in Table 6.6.

Table 6.6 - Treatment of Pedestrians

Functional Element	Longitudinal	Crossing Provisions
Highway	Off road	Grade separated (in settled areas or where volumes are very high)
Regional Arterial	Up to 2.5m off road paths	Temporal or grade separation
Sub Arterial	2.0 -2.5m shared path on one side of corridor	Generally temporal separation
Distributor	1.2 m each side or 1.2m and 1.5m shared path one side adjacent to carriageway	Temporal separation at signals or pedestrian crossings.
Collector, Local Access	1.2m paths both sides adjacent to carriageway	Pedestrian crossings or slow points combined with pedestrian refuges.

6.2.6.6 TREATMENT OF CYCLING

Desirable cycling provisions are shown in Table 6.7.

Table 6.7 - Desirable Cycling Provisions in Hierarchy

Functional Element	Longitudinal	Crossing Provisions
Highway	2.5 -5m off road paths	Grade separated
Regional Arterial	2.5m off road paths	Temporal or grade separation
Sub Arterial	2.5m shared path on one side of corridor	Generally temporal separation
Distributor	1.2m on road cycle lanes combined with parking or 1.5m shared path one side adjacent to carriageway	Temporal separation at signals or pedestrian crossings.
Collector, Local Access	1.2m on road cycle lanes combined with parking on both sides	Pedestrian crossings or slow points combined with pedestrian refuges.
Terminal Facilities	Terminal cycle storage at all buildings	

6.2.6.7 PUBLIC TRANSPORT PROVISIONS

Public transport facilities attached to the road system is associated with bus operations in accordance with Table 6.8.

Table 6.8 - Bus and Coach Provisions

Functional Element	Bus and coach provisions
Highway	No Provisions for stops (stops only on auxiliary roads or within interchanges)
Regional Arterial	Indented bus and coach stops with acceleration and deceleration provisions
Sub Arterial	Indented bus and coach stops with acceleration and deceleration provisions
Distributor	Indented bus stops or priority utilisation of parking lane if available.
Collector, Local Access	Stops in parking lane or indented bays if no parking lane provision.

Building addresses should accommodate taxi and hire car set down and pick up.

6.2.6.8 TURNING TRAFFIC PROVISIONS

Table 6.9 provides the desirable turning traffic treatments in the hierarchy.

Table 6.9 - Turning Traffic Provisions

Functional Element	Turning traffic provisions
Highway	Grade separated turning lanes with acceleration, deceleration and merging for design speed environment
Regional Arterial	Protected right turn lanes within minimum 6 metre median. Free left turn provisions with deceleration lanes. Acceleration lanes for entering traffic.
Sub Arterial	Protected right turn lanes within minimum 6 metre median. Free left turn provisions with deceleration lanes. Acceleration lanes for entering traffic.
Distributor	Protected right turn lanes within minimum 6 metre median. Free left turn provisions with deceleration lanes. No acceleration lanes for entering traffic.
Collector, Local Access	Added right turn provisions in pavement when warrants exist. No special added left turn provisions.

6.2.6.9 ON ROAD PARKING PROVISIONS

Desired objectives for the provision of on street parking attached to the road hierarchy elements are shown in Table 6.10.

Table 6.10 - Desirable Treatment of Parking in Hierarchy

Functional Element	On street parking provisions
Highway	No on road provisions
Regional Arterial	No on road provisions
Sub Arterial	Priority to service vehicle and short stay parking where width provisions exist.
Distributor	Priority to service vehicle and short stay parking where width provisions exist.
Collector, Local Access	Priority to service vehicle and visitor parking, possible use of localised parking only with road narrowing in residential streets.

6.3 DIRECTIONS FOR THE FUTURE PUBLIC TRANSPORT SYSTEM

In developing the future public transport directions the study has considered opportunities around:

- Rail services, primarily for inter-urban travel, and

- Regional and urban services.

No further consideration has been given to air services given the status of Toowoomba Airport expansion.

The issue here is that all elements of the transport strategy have to be planned and act together in an integrated way to deliver outcomes that will attract sustained patronage. So there are dependant relationships here in reducing the level of private vehicle use to the activity centres as follows:

- Remove the non-local (through) traffic by network planning means,
- Manage the demand for private vehicle use through parking supply and pricing whilst ensuring the availability of parking for business visitors,
- Provide good quality PT alternatives, and
- Create land use plans and provisions that foster walking and cycling on an established network
- The issue of timing of the provision of these elements is critical to the delivery of an integrated and sustainable outcome.

6.3.1 OPPORTUNITIES FOR INTER URBAN RAIL

It is unlikely that interurban passenger services to Toowoomba would be standard gauge, but this would depend to some extent on how the standard gauge track for freight trains enters Brisbane. The currently favoured route, the Southern Rail Freight Bypass, adds so much more distance and time to a Toowoomba-Brisbane journey as to be completely unsuitable for inter-urban passenger services. Only if a more direct standard gauge entry route was agreed upon (such as using most or all of the existing Rosewood-Roma Street or Rosewood-Yeerongpilly line) would through interurban services on standard gauge be attractive.

Assuming Brisbane-Toowoomba services were narrow gauge, it is unlikely they would be electric. This is because one hope for the Inland Railway is that it would allow interstate freight trains to be 'double-stacked' in and out of Brisbane. [By this is meant that containers could be stacked two high thus reducing rail transport costs.] However the vertical clearance required would be such that overhead electric catenary could not be provided on dual gauge tracks without greatly extending the height of the pantographs above narrow gauge electric trains. Trains using the Toowoomba Range would then have to be non-standard. That being the case, it might be considered easier just to have a set of diesel trains for Toowoomba services. Alternatively, a separate range tunnel could be built for narrow gauge services – but that could have been done anyway, but was never seen as justified on

its own. If the Inland Railway idea was abandoned, the growing demand for coal transport to the Port of Brisbane may, with the addition of the value of fast interurban rail services, be sufficient to justify a new narrow gauge range crossing.

Brisbane-Toowoomba interurban services would therefore most likely be non-electric unless a narrow-gauge-only system was built. QR at present has no modern diesel passenger trains other than the Cairns Tilt trains. Hence it would need to purchase new, modern, fast DMUs (diesel multiple units) of which there are already a growing number in Australia such as the fast trains that are now winning major patronage increases in Victoria between Melbourne and Ballarat, Bendigo, Warrnambool, Shepparton, and Traralgon/Sale/Bairnsdale, and WA's famous 'Australind' that provides an attractive narrow gauge service between Perth and Bunbury. These DMUs could run either to Roma Street or, preferably, right through all the city stops to the Airport.

The interurban service would use the new tunnel, emerging east of Gowrie Junction at which point they would execute a 180° turn and approach Toowoomba Station from the west. A major new station could be built near the tunnel portal which would also be Toowoomba's long distance station for any standard gauge interstate passenger services on the Inland Railway. Interurban passenger stations would therefore be the existing Toowoomba Station and a new one in the Gowrie/Cranley area. The location of that would best be done in conjunction with new road proposals consequent upon the Second Range (road) Crossing. Were it carefully located with respect to the developing road network, it would be very attractive to incorporate a significant bus/rail interchange and park-n-ride site.

Hence, Toowoomba Station would again return to being a busy station at the heart of Toowoomba's life with at least hourly fast services to Brisbane and the airport. It would therefore be best if that station was the heart of all local and TRC public transport services and a focus for the City Centre through strong pedestrian/cycle links.

If Toowoomba inter-urban service trains are going to be diesel, there is no major reason why they could not be provided in advance of the Inland Railway's construction and used to come as close to Toowoomba as would be consistent with an attractively fast Toowoomba-Brisbane service. Helidon is the obvious interim bus-rail interchange candidate. It is recommended that Council promote this concept to the State government and TransLink.

If passenger services are to be extended west from the existing Rosewood terminus by use of diesel trains, it adds justification to undertaking early the proposed deviation through the Little Liverpool Range between Grandchester and Laidley. This deviation would save perhaps 15-20 minutes of trip time and remove the loading

gauge constraints imposed by the historic Victoria Tunnel (Queensland's first rail tunnel and built to a very restrictive loading gauge). Benefits would therefore accrue to both passenger and freight services.

The proposed Inland Standard Gauge Railway is likely to be built in some form, but the timing can be no more than a guess. If it were to proceed as quickly as possible following the Commonwealth's Alignment Study now current, it could be in existence within ten years. A major planning issue is the extent to which its existence should be assumed in making decisions in areas on which it will impact.

An issue which impacts strongly on this whole matter is the growing demand for coal to be transported to the Port of Brisbane from developing mines west of Toowoomba. Already the existing railway is fully committed carrying about 5 million tonnes per year and apparently other traffic is being shunted onto road to maximise the limited capacity that is available. The building of a direct rail link to Gladstone will do little to change this demand because the coal in question is from the eastern Downs area and is steaming coal which does not have the market value to sustain the cost of a long transit distance to port. Hence the growing tonnage of coal for export through the Port of Brisbane is both a threat and an opportunity for the Toowoomba Region. It is a threat because it is now putting significant extra tonnage on the already stretched Toll Bar road alignment and eliminating the availability of rail for non-coal freight traffic and possibly passenger traffic growth. It is an opportunity because it adds very strongly to the benefits attributable to building a new Toowoomba Range rail link in that the new link would make substantial extra rail capacity available as well as greatly reducing rail transit times and operating costs.

6.3.2 OPPORTUNITIES FOR URBAN/SUBURBAN RAIL

The use of some form of urban/suburban rail or trams or rail/bus hybrid cannot be ruled out given the existence of the historic rail corridors through the region, despite the fact that conventional wisdom suggests that a bus based system is generally the most viable for urban populations envisaged in TRC. The additional maintenance cost associated with introducing an additional technology in TRC should also not be underestimated.

6.3.2.1 POSSIBLE REGIONAL PUBLIC TRANSPORT USE OF EXISTING RAIL INFRASTRUCTURE

The existing rail infrastructure between Dalby and Toowoomba and Toowoomba and Brisbane is currently used to capacity for coal traffic and the whole community benefits if as much of this as possible is carried by rail. However the existing South Western Railway to Warwick via Toowoomba's south western suburbs and the

villages between Toowoomba and Clifton is maintained to a good standard but is relatively underutilised. It may be possible and desirable to make opportunistic use of this infrastructure for some form of rail-based public transport.

The existing infrastructure was once part of the main Brisbane-Sydney line and has residual features which could be used to good effect. Trip time between Toowoomba and Clifton would be about one hour for normal rail passenger transport vehicles and could be less for a vehicle with high acceleration and braking capabilities. Currently the line is used only for transport of grain and cotton and at the very most would be used by only 6 trains per 24 hours, but generally fewer than that. Furthermore its previous high usage has bequeathed a passing loop and platform at every village: Wyreema, Cambooya, Greenmount, Nobby and Clifton and within Toowoomba at Harristown and Drayton.

A lightweight bus type vehicle could provide a reasonably attractive regional public transport service linking the villages between Clifton and Toowoomba utilising all the existing stations and new ones possibly near the Base Hospital and Grand Central. These could be provided in conjunction with the proposed busway stops at the same locations as the busway would be immediately adjacent to the railway line and generally within the railway corridor land.

Full size buses have been converted for exclusive rail use in other areas, but a more attractive approach in this context could be to make use of a Japanese-developed dual-mode vehicle (See Appendix A). In its advertised form this would have a capacity of perhaps 20 passengers and is designed to move seamlessly between road and rail at prepared sites. Perhaps most importantly it is designed for the local 1067mm narrow gauge track and for left-hand drive both of which are basic to Japan. Power is transferred from the rear road wheels directly onto the track and the only rail-specific addition is a pair of rail guide wheels front and back. This dual mode feature delivers a vehicle with great flexibility without too high a weight penalty and with all the reasonably low cost of a small road bus.

It is suggested that use of such a vehicle could provide an attractive alternative to bus for the provision of the proposed Clifton-Toowoomba regional bus service (see below). It could use rail either all the way between Clifton and Toowoomba Railway Station (the proposed Toowoomba public transport interchange) or it could leave rail at Drayton and serve USQ and from there travel as a bus along a selected route to the Interchange, or even rejoin rail near West Street and travel through the Grand Central stop and on to the Interchange on rail. Similarly it could offer a local service within Clifton prior to joining rail there. It could also go on to Warwick on some services.

It is suggested that TRC examine in more detail the opportunities offered for rail-based public transport by the fortuitous existence of a well-developed and located, and underutilised, rail route together with the off-the-shelf existence of dual mode vehicles which could be put into service without modification.

6.3.3 OPPORTUNITIES FOR REGIONAL BUS/COACH SERVICES

The TRC area at present has a local bus service within the confines of Toowoomba City, an uncoordinated series of services linking some of its other centres, and a fairly comprehensive school bus system. The school bus system can stand alone, but there are places where its existence could enhance general public transport availability.

Clearly there are a number of factors affecting public transport use, including:

- Those without a car or licence available,
- Those without the income for private car purchase (unemployment), and
- Where public transport can be shown to be a comprehensive alternative for work or for replacing car ownership.

The location of the population under general driving age is shown in Figure 6.4 and provides a perspective on public transport need, whilst the location of the relatively high unemployment rates in the TRC are also an indication of where public transport services could be beneficially focused.

Figure 6.4 - Proportion of Population Under Driving Age

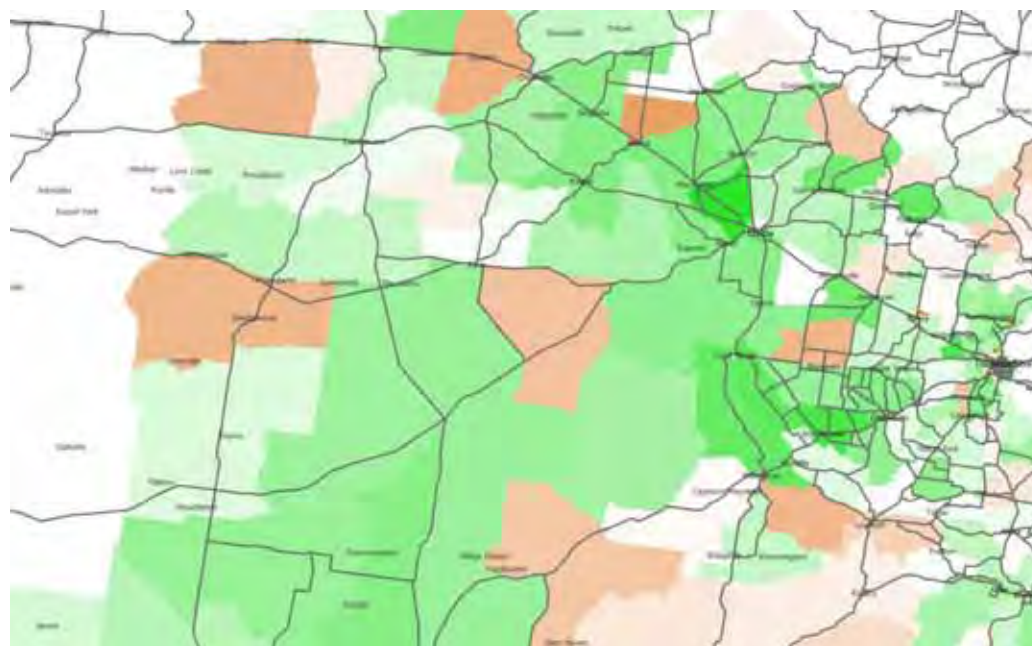
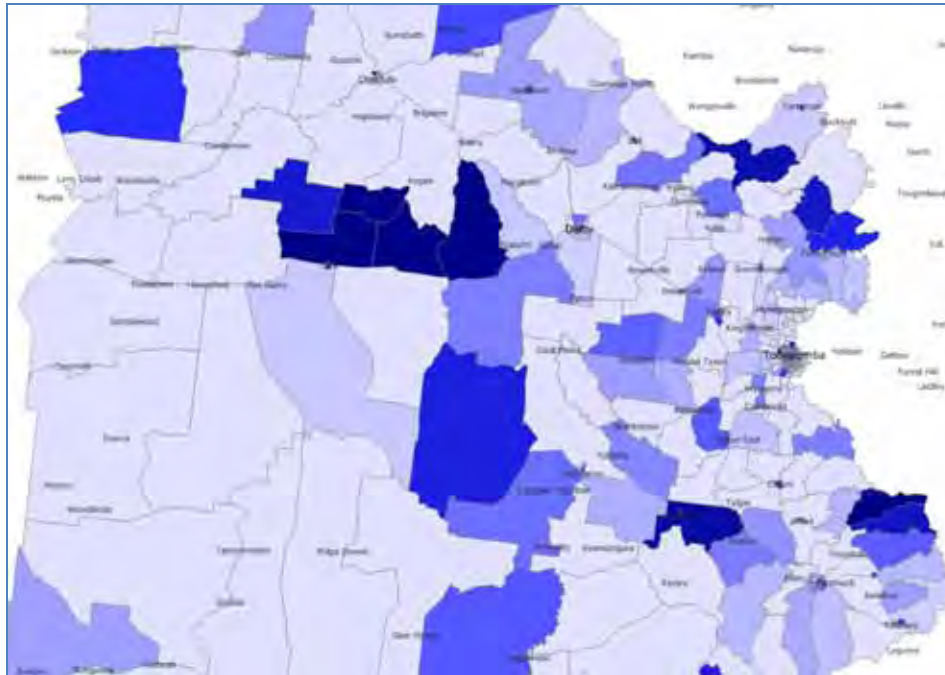


Figure 6.5 - Location of High Unemployment Rates in TRC



Country services run to and from Toowoomba but at present are limited to:

- Crows Nest – 4 / day via Hampton, Cabarlah and Highfields
- Highfields – 7 / day including through services to Crows Nest
- Pittsworth – 4 / day via Westbrook and Southbrook

Long distance services provide some service to Oakey and Millmerran.

There is a need for a complete review of these services. The growing popularity of hobby farms and acreage living in the TRC, and the growing spread of significant employment away from Toowoomba itself is continuing to expand the need for country services, not all of which are naturally based on Toowoomba.

It would be desirable to formulate some basic standard for country services. The elements of this standard should include:

- Commuter service – basis standard might be 2/peak, possibly in each direction.
- Service for other travel needs – basis might be to allow for one or more return non-peak trips.
- Local coordination – basis should be to standardised timetables so arrival of all services at a central point in Toowoomba would be the same and just before departure of return services on all other routes, thus providing point-

to-point public transport opportunities for travel between all centres in the TRC area.

- Regional/National coordination – basis should be to ensure all regional and national services also used the same central point in Toowoomba and local services were timed to coordinate well with these long distance services, particularly those to Brisbane.
- Commuter service to significant employment points outside Toowoomba, e.g. Oakey Army Aviation Base, Oakey Abattoir, Beef City at Purrawunda, Millmerran Power Station, and Cabarlah Joint Services facility should be explored. In some cases, workers at these sites might be concentrated in some other locations and services should reflect this. (E.g. Oakey employment centres should be linked directly to Kingsthorpe, Gowrie Junction, Meringandan and Highfields.)
- Routes and centres served should be so designed as to deliver efficient operation and round-trip times, given the need to coordinate times at Toowoomba and perhaps elsewhere.

Places and possible routing which should be considered for linking into a comprehensive country service include (places in parenthesis are outside TRC area):

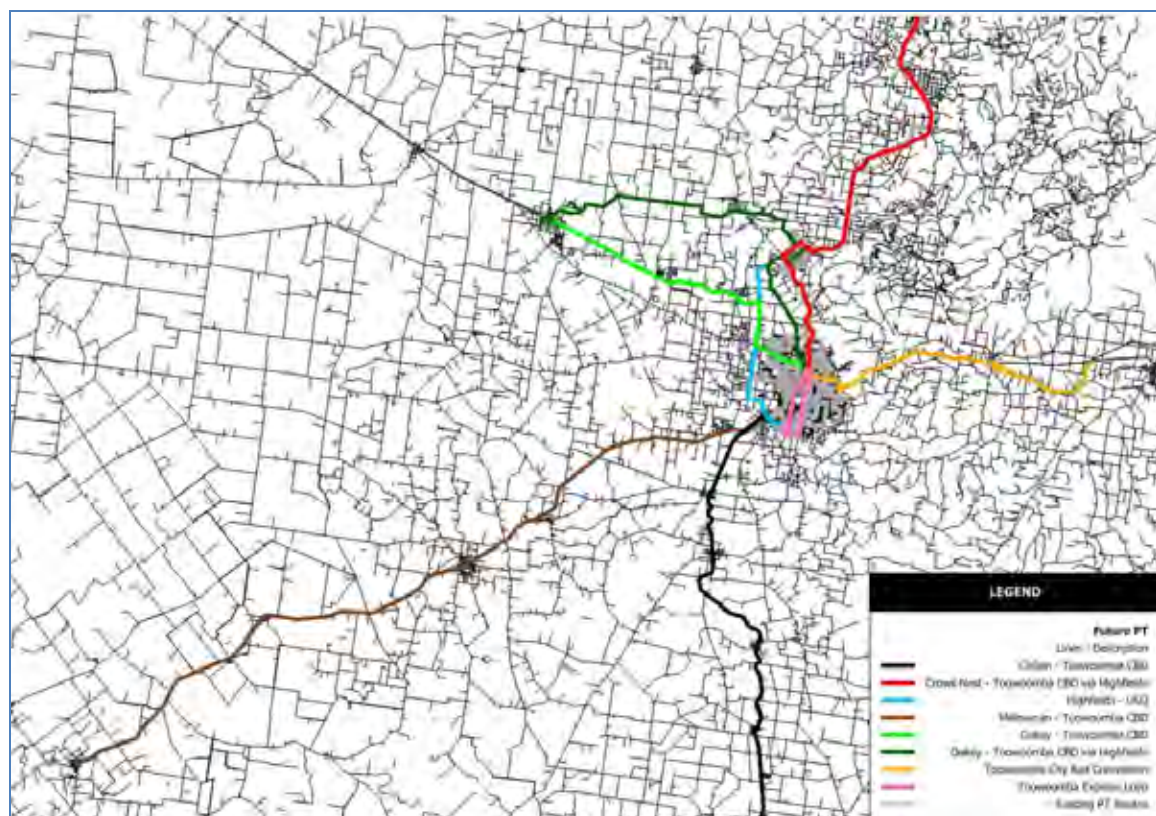
- Wyreema, Cambooya, Greenmount, Nobby, Clifton, (Allora, Warwick)
- Westbrook, Southbrook, Pittsworth, Brookstead, Millmerran, Power Station
- Purrawunda, Cecil Plains
- Gowrie Junction, Kingsthorpe, Oakey, Jondaryan, Bowenville, (Dalby)
- Highfields, Meringandan, Meringandan West, Army Aviation Base, Oakey, Abattoir
- Highfields, Barracks, Cabarlah, Hampton, Crows Nest.
- (Withcott, Helidon, Grantham, Gatton, UQ Lawes).

As for long distance and regional services, all of these services should terminate at a single well-located interchange at which it is possible to change as seamlessly as possible to both urban and long distance services.

The preference for the long term location of this interchange is the existing Toowoomba Railway Station.

The proposed new regional services are shown in Figure 6.6.

Figure 6.6 - Proposed Future Regional (Bus) Services



6.3.4 CRANLEY BUS/RAIL INTERCHANGE

Fortuitously, two proposed new roads which would be used by proposed Oakey regional buses and the proposed express Highfields-USQ service via Boundary Road meet at a point in Cranley adjacent to the proposed Inland Railway western portal of the proposed Range tunnel and at a point where the line from there to Toowoomba would join the Inland Railway. This would be an ideal location for a new railway station, served by a major park & ride and a bus interchange. It would be the last station on the western side of the Range and would be 5-7 minutes closer to Brisbane than the Toowoomba Station itself would be. It would be very convenient for park and ride users being close to Highfields and near a Second Range Crossing Gore Highway interchange. USQ students would find it very convenient to change there from the train and use the express bus direct to the campus. The Oakey to Toowoomba regional bus would also coordinate there with the Brisbane rail service and the Highfields express bus to USQ. The nominal interchange arrangement is shown in Figure 6.7. The final arrangement would depend on the exact location of the tunnel portal, but the same principles could be applied. Note that buses would use a one-way busway to access the bus stops above the railway platform so passengers could pass between the railway and bus platforms in a fully pedestrian environment. The park and ride facility would also have ready access to the same environment in which could be located the station concourse building. This station

would also be the Toowoomba station for long distance passenger services on both narrow and standard gauge.

Figure 6.7 - Conceptual Layout of Cranley Bus/Rail Interchange



6.3.5 OPPORTUNITIES FOR URBAN BUS SERVICES

Features to be looked for in designing an urban public transport service include:

- **Comprehensiveness:** It is important to serve all major generators from all parts of the city because Toowoomba is not yet quite large enough to have regionalised significantly as far as metropolitan services are concerned. It would not be possible to arrange services to serve all generators directly as has almost been done for USQ, so it would be important to arrange services so interchanging is efficient and attractive.

- **Coordination to deliver Connectivity:** As in the point above, connectivity is often the only way to produce comprehensiveness. It is also very important that city bus services coordinate attractively with country and regional services, particularly those to Brisbane. This involves both interchange location and trip timetabling.
- **Regularity:** It is now well established that a 'memory timetable' produces a much better patronage response than an irregular one, so much so that it is generally better to persevere with a regular timetable even if it doesn't match perfectly with demand patterns: which might best be dealt with by the insertion of extra services without disturbing the standard regular system.
- **Reliability:** People are reluctant to commit themselves to public transport if they are likely to be unreasonably delayed, or "stuck" because of an unexpected change in personal plans. To preserve and encourage patronage, these factors should be kept in mind when designing timetables. For example, the last bus should be well after the main demand is passed to keep faith with patrons who may have had unplanned delays and even if low patronage is experienced (because its existence puts more patronage on earlier buses).
- **Expedition:** Captive riders may put up with all sorts of indirectness and multi-stopping in a service but such features will not attract "choice" riders, who need to be attracted if patronage ratios are to be increased. Every effort should therefore be made to make point-to-point journey times as short as possible. When Cityxpress (services that had stops limited to one per suburb and went on the fastest and most direct route) services were introduced to Brisbane, half its passengers were new to public transport and the others significantly increased their level of usage. Furthermore, buses that complete their task with expedition have lower operating cost per passenger kilometre and thus higher cost recovery rates (Cityxpress delivered 2 to 3 times the cost recovery rate of ordinary services). It may be possible on some routes to introduce fast direct services by developing at the same time localised feeder services that are indirect but stop everywhere.
- **Information:** Potential patrons by definition do not know how a bus service works. Good information is critical to attracting them. This means route and timetable information at stops but also information about coordination points and the destinations that may be reached by such process. Sometimes information at a stop also needs to point to another stop nearby that delivers

a different service. A well-established central information point is also desirable, perhaps to be sponsored by TRC.

The existing bus interchange in Neil Street is not well located either for the CBD or to produce efficient bus routes. It would also not be able to function as a full interchange after rail services return to Toowoomba, which could be any time from 8 years forward. The only place where interchanging could occur with rail would be Toowoomba Railway Station, but the design of services should take into account a new station in the Cranley area which would come into being as the rail service returned. Cranley would also become the long distance stop.

The existing rail station is only one block from Grand Central and is on the edge of the City Centre. It is also the centre of a large area of under-utilised railway corridor land. The use of this would increase with the return of a passenger service but it is unlikely the whole goods loading area will ever been needed again.



It seems to create the possibility for a bus-rail interchange after the manner of Roma Street.

A number of possibilities come together here:

- Mort Street will become a major city gateway when the Toowoomba Bypass and Range crossing project is complete. Its access to the inner area would be facilitated by a new link from the Bridge/Mort corner to the Ruthven/Chalk corner via a new link using the railway yards and featuring a viaduct over the Western Railway.
- It might be possible to use the railway yards to develop the long-needed connecting road between Clifford Street and Ruthven Street north, with a road joining Ruthven Street at Chalk Drive.
- Given the location of the USQ and the Base Hospital, and the circuitous route needed for buses to serve both on the same route, it is suggested that a busway is created along the rail corridor south from Toowoomba Station whereby buses could have a dedicated route from Ruthven Street at Chalk Drive, through an interchange at the station, past a 'central' stop at Grand Central south of Margaret Street and then on to the Hospital main entrance and from there to West Street at the railway bridge? With such an arrangement, all local, country and regional services would have excellent

access and a well-located interchange point. Bus access to the new interchange from the north would be made direct with these suggested new road routes.

All city bus service routes and timetables would need to be reviewed taking into account Toowoomba's growth since the last review, expected growth until the next review, and the points listed above as desirable design features.

A demonstration express bus service might be a round trip linking Railway Interchange, Grand Central, Base Hospital, Westridge, USQ, Kmart, another spot along Ruthven Street and the City Centre.

It is clear that it would be desirable to have the Base Hospital as a stop on the demonstration express service. However, to do that at present requires a long deviation off James Street along Prescott Street. This could be eliminated if a way could be found within or adjacent to the Hospital grounds to have a bus route or bus-only road direct from West Street near the railway bridge to the hospital main entrance and thence either to Prescott Street or to a busway along the railway reserve to the east.

A semi-separated local bus service is also beginning to develop at Highfields. This needs to be reviewed, its connectivity checked and provision made for extensions as Highfields' growth continues. It is unlikely that stand-alone local services will be needed in any other communities in the planning period.

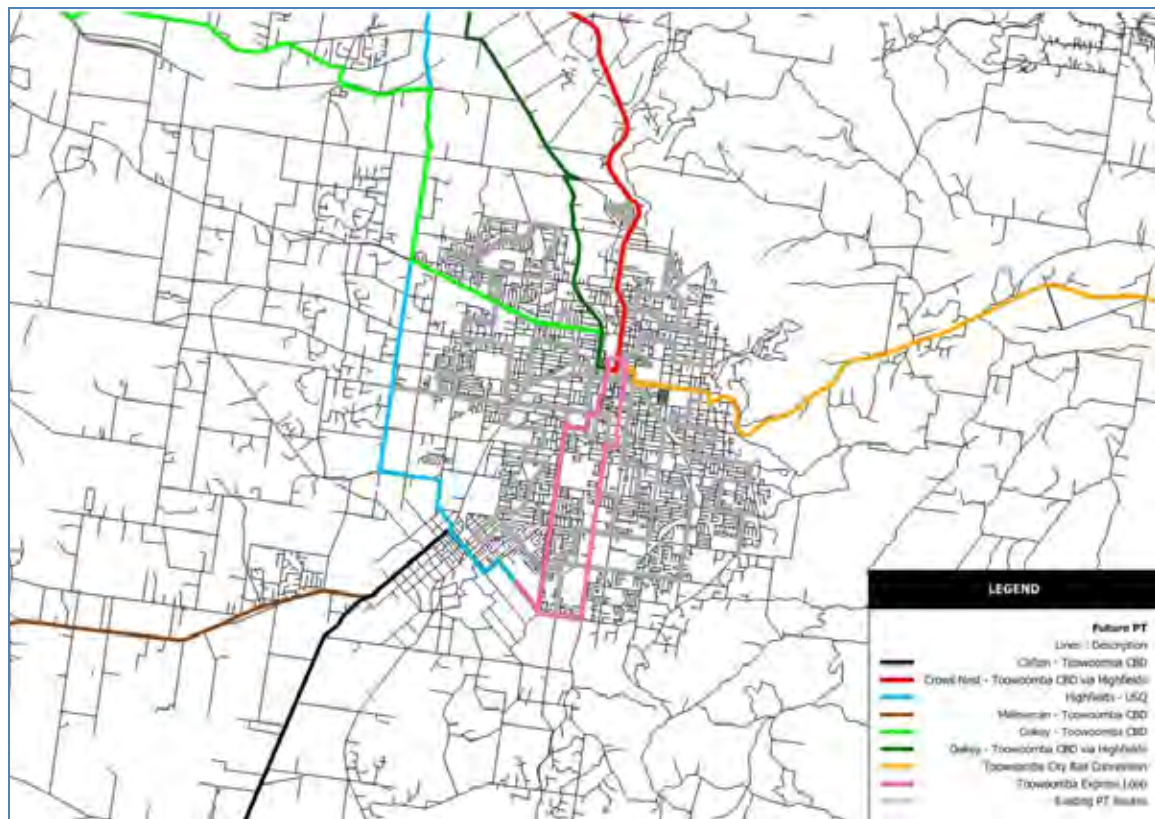
Most urban bus routes at present are indirect so as to maximise access to them rather than minimise trip time. A way to address this in the southern sector has been suggested above with a direct semi-express circular route serving the Base Hospital, USQ and Kearney Springs district centre.

Over time, it may be possible to shorten services and make them more direct by having more of them. For example, the existing very circuitous route for the Middle Ridge/Rangeville service could ultimately be replaced by three separate routes, one of which could be tourist oriented by terminating at Picnic Point and running via Cobb and Co Museum, Botanic Gardens, Queens Park, St Vincent's Hospital and Range Shopping Centre.

However, in the north east area, the escarpment precludes more extensive development so the distance from the CBD to the outer urban edge will always be too short to allow the development of direct bus services. Setting out to improve patronage in this area might best be achieved by some more creative form of bus service, such as dial-a-bus or a subsidised taxi.

These opportunities and desirable objectives, together with the future possible road network directions have been brought together into a proposed set of future urban bus routes in Figure 6.8.

Figure 6.8 - Proposed Future Additional Urban Bus Services



In introducing new bus services care needs to be taken to ensure that existing passengers are not lost to public transport in the process. It is thus always desirable to go to the extra expense of introducing new services progressively and over the top of existing services which may be removed later after existing patrons have accepted the improvements and new patrons attracted without being put off by an adverse media outcry.

6.3.6 CENTRAL BUSWAY

Figure 6.9 shows how a central busway could be built adjacent to the railway line broadly in railway land south from Toowoomba Station, past Grand Central and then to the Base Hospital and via a route along the hospital campus southern boundary to West Street.

Stops could, in principle, be located at any convenient point, but most obviously they would include stops outside Grand Central, south of Herries Street at the Sunday markets site, and at the Toowoomba Base Hospital. The Grand Central site would be likely to become the busiest stop on the network (reflecting the CCMP recommended location) and would be 'central' even though in these recommendations, it would not be the Toowoomba City interchange which is recommended to be at the Railway Station, two blocks to the north. This 'central' stop is the bus way equivalent to the main stop proposed in the CCMP, to be nearby in Victoria Street.

Figure 6.9 - Proposed Layout of Central Busway



6.3.7 TIMETABLE INTEGRATION

A very important aspect of making public transport attractive, particularly in a dispersed network, is its coordination so as to ensure broad connectivity. If good coordination can be achieved, passengers can board at any point in the region and travel efficiently to any other point even though more than one leg is required.

The diagram in Figure 6.10 gives an example of how this might be achieved. It shows how all bus routes are pulsed to arrive at the central coordination point, here shown as Toowoomba Railway Station, at about the same time and to depart about 10 minutes later. During this period, passengers from any route can make a connection with any other route, subject only to route frequency.

However efficient timetabling from an operating point of view also requires that turn-around times at route termini are at a comfortable but not excessive level. Sometimes this means that route lengths have to be adjusted to give a suitable route trip time.

The diagram also assumes that a new Toowoomba Range rail tunnel is in place and that Toowoomba- Brisbane rail times are 1h 30m. However the same principle would apply if the Toowoomba-Helidon section was run bus coach even though the times would be different on the Toowoomba-Brisbane-Airport section.

Note that the fulcrum of the whole scheme is the proposed regular hourly off-peak headway for Brisbane-Toowoomba services. All local and regional bus services then are timed to depart Toowoomba Railway 10 minutes after the train (or, in the interim, the coordinated coach from Helidon); and to arrive 10-15 minutes before the train is due to depart. The reason for the transfer time difference is that some routes would have more reliable travel time than others. Of course, it may be that buses can depart much sooner after the train arrival time than the 10 minutes shown here, because train arrival times are generally reliable. However in most cases it would not work in the other direction because of the lower trip-time reliability of bus services. Note too that turnaround times at the outer termini of the regional bus services are set at 10 to 15 minutes. It does appear that an efficient turnaround may not be possible at Millmerran, but with services less frequently than hourly outside the peaks, adjustments can easily be made. Also, the diagram shows how options can arise with insertions of peak extras which may only be needed in one direction. The final three rail services could be adjusted or the long turnaround times shown could be utilised for some special cleaning or some other use.

Two regional services – those to Clifton and Oakey – can easily be extended to Allora-Warwick or Jondaryan-Dalby respectively. These options should also be able to be timetabled efficiently.

Transport Strategy Proposals to 2031

Of course the times shown are for illustrative purposes only even though they probably fairly closely reflect actual trip times. The main point of the diagram is to show how all the routes can inter-connect with each other at one central point.

Figure 6.10 – Suggested Method of Timetable Integration for Local, Regional and Brisbane Services

Regional Routes (6 daily)					Local Routes 1-6 (hly)		Express Route (2/hr)						
Crows Nest	5.00	Oakey	5.05	Millmerran	4.45	Clifton	5.00	Univ	5.30				
Highfields	5.30	Kingsthor		Pittswth	5.15	Nobby		Base Hosp					
		Gowrie J		Westbrk		Cambooya		Grd Cent					
Tmbr Rly	5.50		5.45		5.45	Tmbr Rly	5.45	Tmbr Rly	5.50				
Interchange pattern					RLE	LE	RLE	ILE					
Tmbr Rly			4.00	5.00	6.00	6.30	7.00	7.30	8.00	9.00			
Helidon													
Gatton													
Lawes													
Laidley													
Rosewood													
Ipswich													
Corinda													
Brisbane			5.30	6.30	7.30	8.00	8.30	9.00	9.30	10.30			
Airport			5.50	6.50	7.50	8.20	8.50	9.20	9.50	10.50			
Airport				6.00	7.00	8.00		9.00	10.00	11.00	12.00		
Brisbane			4.20	5.20	6.20	7.20	8.20	9.20	10.20	11.20	12.20		
Corinda													
Ipswich													
Rosewood													
Laidley													
Lawes													
Gatton													
Helidon													
Tmbr Rly			5.50	6.50	7.50	8.50	9.50	10.50	11.50	12.50	1.50		
Interchange pattern			IRLE	LE	RLE	LE	RLE	LE	IRLE				
Tmbr Rly	6.00		6.05		5.55	6.00	Tmbr Rly	6.00	Tmbr Rly	6.00	Tmbr Rly	6.00	
		Gowrie J		Westbr		Wyreema		Tmbr Rly	6.00	Tmbr Rly	6.00	Tmbr Rly	6.00
Highfields		Kingsthor		Pittswth	6.25	Clifton	6.45	Grand Cent		Highfields	6.20	Highfields	6.20
Crows Nest	6.50	Oakey *	6.45	Millmerran	6.55	Alford		Base Hosp		Meringand	6.30	Meringand	6.30
		(Dalby 7.15)				Warwick	7.10	Univ	6.20	Oakey	6.50	Oakey	6.50
*Connects at Oakey with Highfields service						Local Routes 1-6 (hly)		Express Route (2/hr)		Inter-regional		Inter-regional	
						Inter-regional (3 dly)							

6.3.8 ACTIVE TRANSPORT DIRECTIONS

It has been commented previously that Toowoomba (City Area) is like many other areas around Queensland where the walk and cycle path and trail systems do exist but are generally incomplete from a connectivity and overall route perspective.

This has occurred as a consequence of the relatively low density and dispersed nature of community activities traditionally associated with the higher levels of walking and cycling and limited continuity in the existing network.

Despite these factors the level of cycle and walking throughout Toowoomba but the City and Oakey in particular is high as evidenced from the journey to work analysis which shows this usage at around 10% and 15% for work.

There has been a focus in Toowoomba City on a trunk route network often provided along waterways and linear parks. This has been extended into the developing adjacent Council areas such as Crows Nest and Cambooya (Hodgson Vale and Vale View) where there is significant community desire and evidence of an off road path system being developed but again it is incomplete.

Whilst plans for networks of trunk and major paths exist in many locations their continuity is the main network weakness and so completing the trunk elements of this is a key issue for the future.

As the suburban fringe areas continue to attract development activity, the emphasis on providing a trunk path network within and from these areas into the Toowoomba network will increase. Providing this network is an objective of the future path and trail network.

These pressures are not limited to Toowoomba City and its immediate developing suburban locations, but are also evidenced in the rural communities and particularly in and around the Oakey Army Air Base.

Whilst the key proposed path links in Toowoomba City have been guided by the Draft Toowoomba PIP, a new path between the University and the CBD is also proposed.

6.3.9 THE PARKING STRATEGY

Parking is a key policy instrument for achieving overarching transport policy objectives. In the case of TRC, there appears to be a prevailing sense that parking provision should be unconstrained and freely available.

Parking availability, pricing, management and parking enforcement and public transport capacity provision must go hand in hand and be totally and fully

coordinated. This is the approach adopted in putting together the transport strategy for TRC.

Council does not currently control a high enough proportion of parking for it to be an effective transport policy instrument, with the Central City the highest proportion controlled at 25%. The target needs to be increased to 50% in key activity centres such as the Central City, Kearneys Springs, Wilsonton and USQ.

The opportunity to reduce parking availability is recognised as being difficult to achieve except in the long run as redevelopment occurs in key activity centres where additional bus services are planned to be introduced, however a pricing strategy has been developed and tested to determine its success in achieving active transport and PT use improvements.

Key targets for the parking pricing strategy are driven by the proposed potential high ridership bus routes identified in Figure 6.8 and include:

- The Central City and environs,
- Kearney Springs,
- Wilsonton, and
- University.

The initial pricing regime identified in Table 6.11 has been tested.

Table 6.11 - Parking Pricing Strategy

Parking Charge Location	Initial Charge (\$) per day
Central City and Environs	10.00
Kearney Springs	6.00
Wilsonton	6.00
University	6.00

The areas have been defined so that parking pricing is unlikely to drive parkers into informal and surrounding residential areas.

Implementation of this parking strategy will be closely tied to the Planning Scheme provisions regarding parking provision rates for development. In the areas identified above, it is intended that maximum parking supply rates will be specified to provide operational and essential parking only on site. This will be defined in conjunction with the payment of a parking supply levy mandated through development codes. The levy will be for the supply of publicly available and provided parking. By providing this parking in this way, dual use of parking stock can be achieved and this in turn leads to reductions of up to 20% or 25% of parking requirements.

The physical extents of the areas identified in Table 6.11 are shown nominally in Figure 6.11.

Figure 6.11 - Parking Control Areas



The transport strategy elements have been tested using the proposed future pattern of development as described in Chapter 4. The performance of the strategy has considered the following:

- Integrated land use and transport (efficiency) outcomes
 - Mean utility and distribution of utility gains,
 - Pattern of supportable residential densities,
 - Locations for further potential residential growth and areas for growth to be discouraged in the strategy (further go and no go areas).
- Potential improvement in active transport usage,
 - Pattern of increase,
 - Key priority path routes
- Potential public transport ridership
 - Overall mode share improvement,
 - Distribution of PT improvement,
 - Changes in existing and proposed new routes,
 - Viability of PT routes,
 - Possible implementation strategy
- Effectiveness of parking strategy,
 - Implications of pricing strategy tested,
 - Implications for Planning Scheme provisions,
 - Implementation issues
- Performance of the road system,
 - Regional roads,
 - Urban network and functions,
 - Capacity implications,
 - Potential implementation strategy

7.1 INTEGRATED LAND USE AND TRANSPORT OUTCOMES

The utility derived from the proposed Preferred Development pattern alone shows an increase in the mean (population weighted) utility across the TRC region of about 6%, taking the 2006 utility index of 3726 to 3942. The value of the utility index translates to an annual value of \$13,500 per person derived from accessing the activities provided by TRC. The land use in conjunction with the preferred overall transport strategy generates a further improvement of 1% in the regional mean utility index, taking it to 3975.

These are good land use transport efficiency outcomes realised when trip lengths and travel costs generally increase under a 60% growth condition and a substantial level of established development pattern and travel behaviour.

The additional efficiency benefits realised across TRC emerge despite having been able to pursue alternative residential settlement opportunities in which the growth could possibly be identified in more land use/transport efficient locations characterised by having high accessibility and low residual car based trip lengths.

7.1.1 REVIEW OF THE PROPOSED DEVELOPMENT PATTERN

Expansion of green field areas as proposed is generally supported by the accessibility analysis, although some of these areas in question do not suggest supporting densities much better than those of rural residential densities, without the provision of additional commercial and community service activity. Oakey does appear as a location which has a little greater and more extensive potential for yielding additional land use transport efficient development, primarily because of the level of existing economic and defence based activity. There may be benefits in exploring further development opportunities in and around Oakey than have been identified to date.

Residential growth opportunities do exist in areas such as Highfields as a consequence of the additional utility afforded by additional commercial and industrial activity, the presence of 'red soil' locations, associated advantageous house construction costs and micro-climate. Broad general locations could well benefit from localized exploration of these higher utility areas to maximise the additional yields through the area. This course of action is suggested because from a strictly energy efficient transport perspective, there are other areas that reflect lower average residual car based trip making, such as in other infill and green field opportunities around the fringe of Toowoomba City, together with expanding growth opportunities around Pittsworth and Oakey.

Our analysis of the future development pattern also suggests that in most of the rural community 'centres' and including the 'Village' area of Highfields, provision should be made for some higher density dwellings in the heart of these centres to make use of the relative self containment offered and to allow local families to continue to benefit from the utility obtained from remaining in their community.

In this context, whilst opportunities do exist in most of these rural communities for additional density and residential growth, these opportunities do appear to be highly localized, and physically constrained to the immediate areas of 'urban zonings' under the current Planning Schemes, and within walking distance of the 'centre'.

Of the specific green field growth areas nominated, analysis suggests the following supporting residential densities could be sustained in the long term, with the commercial growth provisions envisaged:

- 1. A – G1 Kingsthorpe - 8 dwellings per ha
- 1. B – G2 Highfields – 7 dwellings per ha
- 1. C – G3 Gowrie – 8 dwellings per ha
- 1. D – G4 Westbrook – 8 dwellings per ha

The settlement pattern also identifies some priority areas for urban (TSD) residential consolidation. The 2031 utility density relationship suggests the following average net densities could be supported in the proposed areas for intensification.

It is not clear exactly how the consolidation areas have been identified and boundaries defined, and with this in mind the following observations are provided in respect of the residential growth:

- 1.1 PAC – Likely to support 40 -50 average net density. Analysis suggests the area could be expanded to the east along James St, and into the north-west if opportunities could be identified,
- 1.2 MUAC 1 – Likely to support average net density up to 20 dwellings per hectare around the village,
- 1.3 MUAC 2 – Likely to support average net density around 30 -35 dwellings per hectare , and some further expansion of the area if opportunities could be found,
- 1.4 MUAC 3 – Likely to support average net density around 20 -30 dwellings per hectare , with some further physical expansion of the area if opportunities can be found,
- 1.5 MUAC 4 – Likely to support average net density around 35-40 dwellings per hectare , and some real further expansion opportunities of the area if possible,

- 1.6 MUAC 19 – Likely to support average net density around 20 -25 dwellings per hectare , and some further expansion of the area if possible if additional employment opportunities could be realized in the area,
- 1.7 DUAC 6 – Likely to support average net density around 20 dwellings per hectare but could be incorporated into 1.1,
- 1.8 DUAC 5 – Question the value of this location from accessibility perspective as density improvement appears doubtful,
- 1.9 DUAC 3 – Likely to support average net density around 30 -40 dwellings per hectare , could be part of further inner area expansion supported by accessibility analysis, if additional opportunities can be found,
- 1.10 HFBS 1 – Likely to support average net densities around 30 -40 dwellings per hectare , and some further expansion of the area if opportunities can be found,
- 1.11 HFBS 2 – Likely to support average net density around 30 -35 dwellings per hectare,
- 1.12 HFBS 3 – Question the value of this location from an accessibility perspective as substantial density improvement appears doubtful, (supports 10 dwellings per ha),
- 1.13 HFBS 4 – Question the value of this location from an accessibility perspective as substantial density improvement appears doubtful.

The accessibility analysis suggest benefits could also be derived from further exploring urban consolidation and redevelopment opportunities throughout the central parts of Toowoomba City, and particularly expanding growth into the eastern and western inner city environs to make use of the cumulative benefit of the additional extrinsic value attached to these locations and their proximity to TRC's activities. This exploration has to be undertaken in the recognition of the demolition control and preservation of character housing objectives of Council.

The greatest opportunity for increasing residential densities occurs around the City Centre and its environs. This opportunity must be protected at all costs in the interest of pursuing an energy efficient transport future in TRC. Maximising this opportunity is built around ensuring the 'commercial' development objectives for the centre are realised. To do this, Council must also exhibit the political fortitude to resist commercial growth in easier and cheaper to develop centres that would otherwise tend to erode the primacy of the City Centre. More 'commercial' development around the central City area leads to more critical mass and benefits of commercial 'clustering' to encourage higher residential densities, increased active transport and public transport usage without having to rely as heavily on other supporting mechanisms.

7.2 TESTING THE PROPOSED ROAD NETWORK ALTERNATIVES

Provision of the Toowoomba Bypass and range crossing project is critical to enabling the functional hierarchy planning, safety, efficiency and amenity objectives to be achieved across the TRC road network and in particular removing heavy freight traffic out of the sensitive areas of Toowoomba City.

A future and functionally based road network has been developed that leverages off the Toowoomba Bypass project. This meets the north- south and east west travel through TRC and in turn resolves some of the road connectivity issues around Drayton and Highfields.

The future road network has been extensively informed by strategic road network planning proposals undertaken by agencies from as early as 1966. Many of these have merit and support the functional planning objectives espoused in this strategy.

An outcome of achieving this future network is that it creates the opportunity to downgrade the undesirable functioning of roads through Toowoomba City, such as Tor and James Streets and to consequentially improve the amenity on subordinate roads where currently the functions are undesirably high.

In the case of roads such as Tor and James Streets that currently carry a disproportionate amount of heavy freight, removal of very heavy vehicles has a multiplier effect on benefits, as this traffic is in fact replaced by smaller and more responsive vehicles and this in turn improves the operating conditions in the roads dramatically.

The future road network is proposed to be developed around a functional hierarchy as follows:

- The long term Highway network developed within TRC through:
 - The Gore Highway and its diversion into the Toowoomba Bypass and Range Crossing connecting to the Warrego Highway at Helidon,
 - The Warrego Highway west of the Toowoomba Bypass,
 - The diversion of the Drayton Connection Road across to and including the Boundary Street (south) corridor as a Highway function link,
 - The use of The Drayton-Wellcamp Road from Boundary Street to the Warrego Highway interchange with the Toowoomba Bypass, and
 - The Oakey- Cooyar Road.

Transport Strategy Proposals to 2031

- Essential elements of the long term regional arterial network are created by way of:
 - Boundary Street from Drayton Wellcamp Road to the Old Goombungee Road east of Gowrie township, using Old Goombungee Road north to Meringandan Road,
 - Old Goombungee Road and Mort Street to Bridge Street,
 - A new link of Bridge Street to Chalk Drive,
 - New England Highway from Highfields to Ruthven Street,
 - Ruthven – Chalk – Hume Streets to the Warrego Highway (James Street),
 - New England Highway from Drayton Connection Road to James Street,
 - Warrego Highway – Bridge Street diverted to Chalk Drive (to Ruthven St) in conjunction with Mort Street to Ruthven Street via Jellicoe Street,
 - Existing Warrego Highway from Hume Street to Helidon Spa, and
 - Canning Street connection to Euston Road and Drayton Wellcamp Road.

These key elements are supported by the general downgrading in function of the previously high order (State controlled) roads through Toowoomba City.

As required by Council, the performance of the future network has been examined at 2031 using the Cube platform Toowoomba Regional Transport Model previously established for the Toowoomba Bypass Study.

Despite having stated the significance of the Toowoomba Bypass and second range crossing project as a key future ‘highway’ element, the first test to be undertaken here is a far lesser ‘highway’ network solution developed around the Warrego Highway at Oakey and the Toowoomba Bypass from the Gore Highway to an extension of Boundary Street around the western side of Highfields to Meringandan Road. Limited east -west bypass traffic on the Warrego Highway could be diverted at Oakey to the Meringandan Road the via Cabarlah to Murphy’s Creek and Helidon Spa. This possible bypass of Toowoomba is recognizably indirect but does, in conjunction with the Clifton – Gatton Road, provide some semblance of an alternative to routes through Toowoomba City.

Transport Strategy Proposals to 2031

The 2031 daily flows under this network alternative, in the all important TSD component of TRC, are provided in Figure 7.1.

Figure 7.1 indicates significant levels of congestion by 2031 in the TSD network. Furthermore, the analysis indicates that the Cabarlah – Murphy’s Creek route could carry up to 5,000 vehicles per day. This level of traffic does not have a significant relieving quality for Tor and James Streets through the City Centre the impact of the Toowoomba Bypass simply being a reduction in the Toowoomba Range and James Street flows of 5,000 vehicles per day.

Table 7.2 Table 7.1 presents the daily traffic flow forecasts on some key TSD roads under this partial bypass option at 2031.

Table 7.1 - 2031 Daily Traffic Flows - Partial Bypass Option

Road Section	2031 Daily Traffic Flow
James St	41,000
West Street north of Drayton Rd	34,000
West Street south of Drayton rd	20,000
Herries Street east of CBD	5,500
Ruthven Street through CBD	8,000
Bridge Street	4,000
Hume Street	16,000
Herries St through CBD	10,000
Anzac Avenue	18,000
Mort Street	8,000
Tor Street	32,000
Boundary Street north of Bypass	17,000
Boundary Street south of Warrego Hwy	9,000
New England Highway south of Bypass	32,000
Toowoomba Range	22,000

Figure 7.1 - 2031 Estimated Daily Traffic Flows (without Range Crossing)



The preferred road network however includes the Toowoomba Bypass project and the second range crossing to join the Warrego Highway at Helidon. In conjunction with the full project, Boundary Street has been extended from the Drayton-Wellcamp Road in the south, northwards, interchanging with the Toowoomba Bypass and extending north to bypass Highfields to its west. Bridge Street has been extended in a south easterly direction across the railway lands from Mort Street to Chalk Drive. This section of Bridge Street has also been extended further south from Chalk Drive to Russell Street to form part of the recommended City Centre Outer Circulation route.

This network and all its supporting and subordinate network links has also been tested at 2031 using the TRTM. The daily traffic flows in the critical part of the TSD network are shown in Figure 7.2.

Figure 7.2 - 2031 Estimated Daily Traffic Flows (preferred network with range crossing)

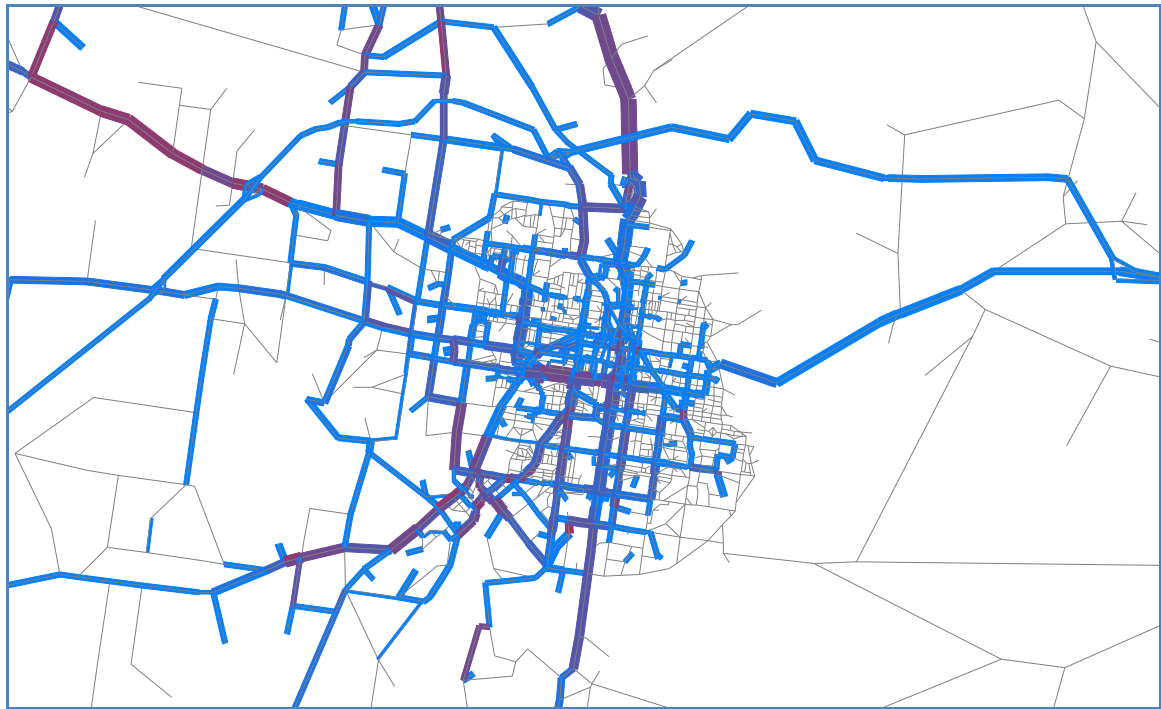


Table 7.2 provides the daily traffic flow forecasts in key road locations in TSD at 2031 under the preferred network and abstracted from the TRTM assignment.

Table 7.2 - 2031 Daily Traffic Flows – Preferred Network

Road Section	2031 Daily Traffic Flow
James St	36,000
West Street north of Drayton Rd	35,000
West Street south of Drayton rd	20,000
Herries Street east of CBD	4,000
Ruthven Street through CBD	9,000
Bridge Street	4,000
Hume Street	17,000
Herries St through CBD	9,000
Anzac Avenue	15,000
Mort Street	7,500
Tor Street	7,500
Boundary Street north of Bypass	18,000
Boundary Street south of Warrego Hwy	9,000
New England Highway south of Bypass	32,000
Toowoomba Range	17,000

At 2031, the Toowoomba Bypass appears to attract around 12,000 vehicles a day away from the Toowoomba City roads. This is not reflected so much in concomitant reductions in Tor and James Street flows, but a substitution of heavy commercial

vehicles by locally destined and circulating traffic. The net affect being the reduction in traffic on the subordinate CBD road network.

An examination of the corridor flows presented in Table 7.2 suggests that the Boundary Street corridor provides a good relief to the link between Toowoomba City and Highfields, with the road carrying around 18,000 vehicles per day north of the Toowoomba Bypass. South of the Warrego Highway it functions more as a distribution road with flows about 9,000 vehicles per day. Tor and James Streets still attract significant traffic flows resulting from the scale of increase in city centre employment with daily flows reaching 28,000 and 36,000 vehicles per day respectively. The assignment also shows that Hume Street operates well as a city centre and Kearneys Spring bypass with flows up to 17,000 vehicles per day. On the western side of the city West Street as a significant city distributor and bypass with flows predicted to reach between 20,000 and 35,000 vehicles per day south and north of Drayton Road respectively. This corridor will require attention to its carrying capacity prior to 2031. The model also suggests that the New England Highway retains its access function between Highfields and the Toowoomba City Centre in to the future.

7.3 TESTING THE OPPORTUNITIES FOR ACTIVE TRANSPORT IMPROVEMENT

The combination of achieving additional employment and residential development yields in the nominated locations of the overall development strategy has been examined using the utility based transport demand process.

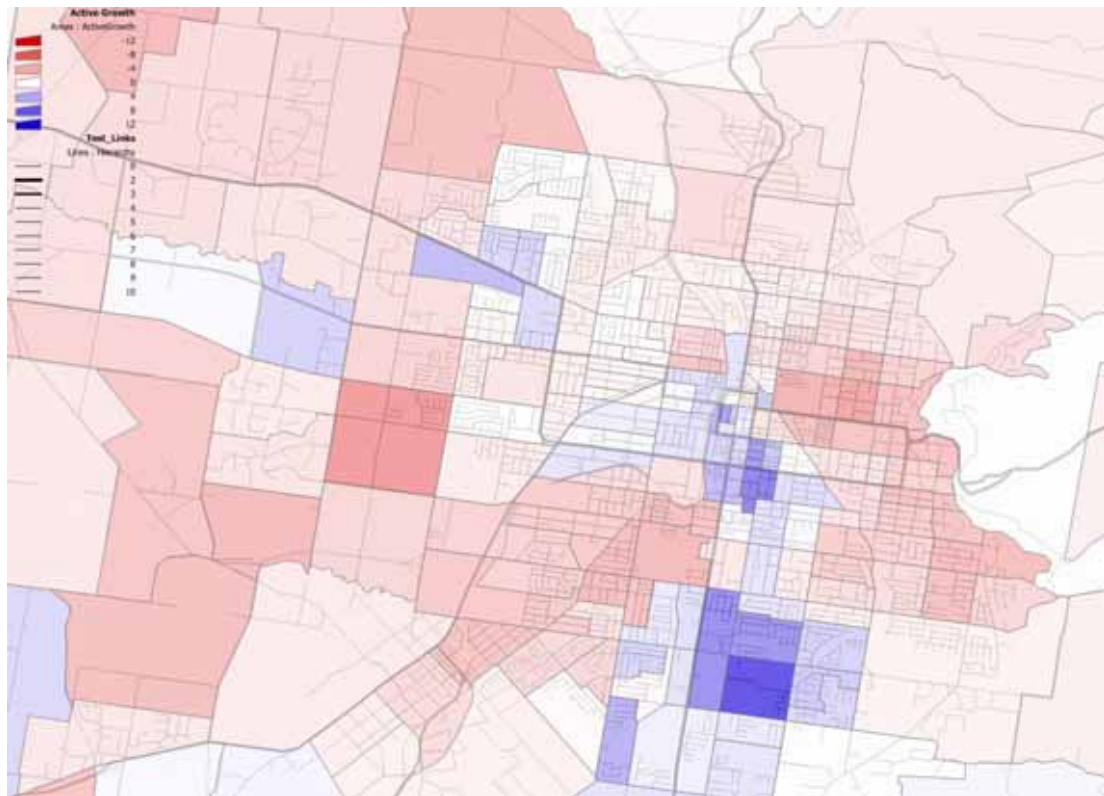
The overall strategy of targeted development growth in key centre locations in concert with a proposed increase in the price of parking (or reduction in parking stock) work together to foster increased active transport to meet the travel needs.

The 'Preferred Settlement Pattern' does deliver a potential additional 2% increase in the level of cycle and walk trip making at 2031. However, our analysis shows that active transport and short public transport trip making are very much the same market. The preferred transport strategy which focuses heavily on increasing public transport ridership across the board, does impact marginally on the level of active transport reducing it back to about 15%. This is primarily a consequence of the low 'flag fall' component of the fare strategy which attracts trips from walk and cycle to PT.

The distribution of active transport share between walking and cycling in Toowoomba is consistently dominated by walking which accounts for about 80% of active transport use. This itself suggests a priority for addressing the walking requirements.

Figure 7.3 shows the predicted growth in active transport by area across the region.

Figure 7.3 - Active Transport Growth in TRC Region by 2031



It can be seen from Figure 7.3 that the proposed parking control areas established to target PT ridership increases also attract increases in cycle and walk usage indicating the need for good paths systems developed along existing road corridors within these areas.

Figure 7.4 shows through the policy analysis the corridors along which walking is anticipated to increase to 2031.

Substantial increases in cycle and walk usage appears in the James Street, Kitchener Street, Herries Street, and Chalk Drive and on Ruthven Street through the City Centre, indicate the need to ensure adequate path widths are available on these corridors.

Anzac Avenue and West Street retain their pedestrian and cycle significance, indicating some support for the completion of the West Creek path system, including the provision of the path through the Golf Course.

Further a field in the regional areas and centres there also appears potential for increased walking within the urban footprint of the centres. This will need well developed path networks within road corridors, particularly in the urbanized footprints, in order to maximise on the level of self containment these centres offer. Again, in areas outside TSD, recreational walk and cycle path provisions need to be made; linking attractions such as schools, playing fields and recreational parks.

In the context of cycling, Figure 7.5 shows the corridors that are predicted to attract significant levels of use at 2031.

Again, Anzac Avenue and West Street retain their pedestrian and cycle significance, indicating some support for the completion of the West Creek path system, including the serious consideration of the provision of the path through the Golf Course.

Cycling is attractive throughout the City Centre and again along Stenner Street as it performs its traffic access function to Kearney's Springs.

Figure 7.3,

Transport Strategy Proposals to 2031

Figure 7.4 and Figure 7.5 provide the opportunity for developing the implementation plans for walk and cycle infrastructure in more detail in the future.

Figure 7.4 - Future Walking Demand

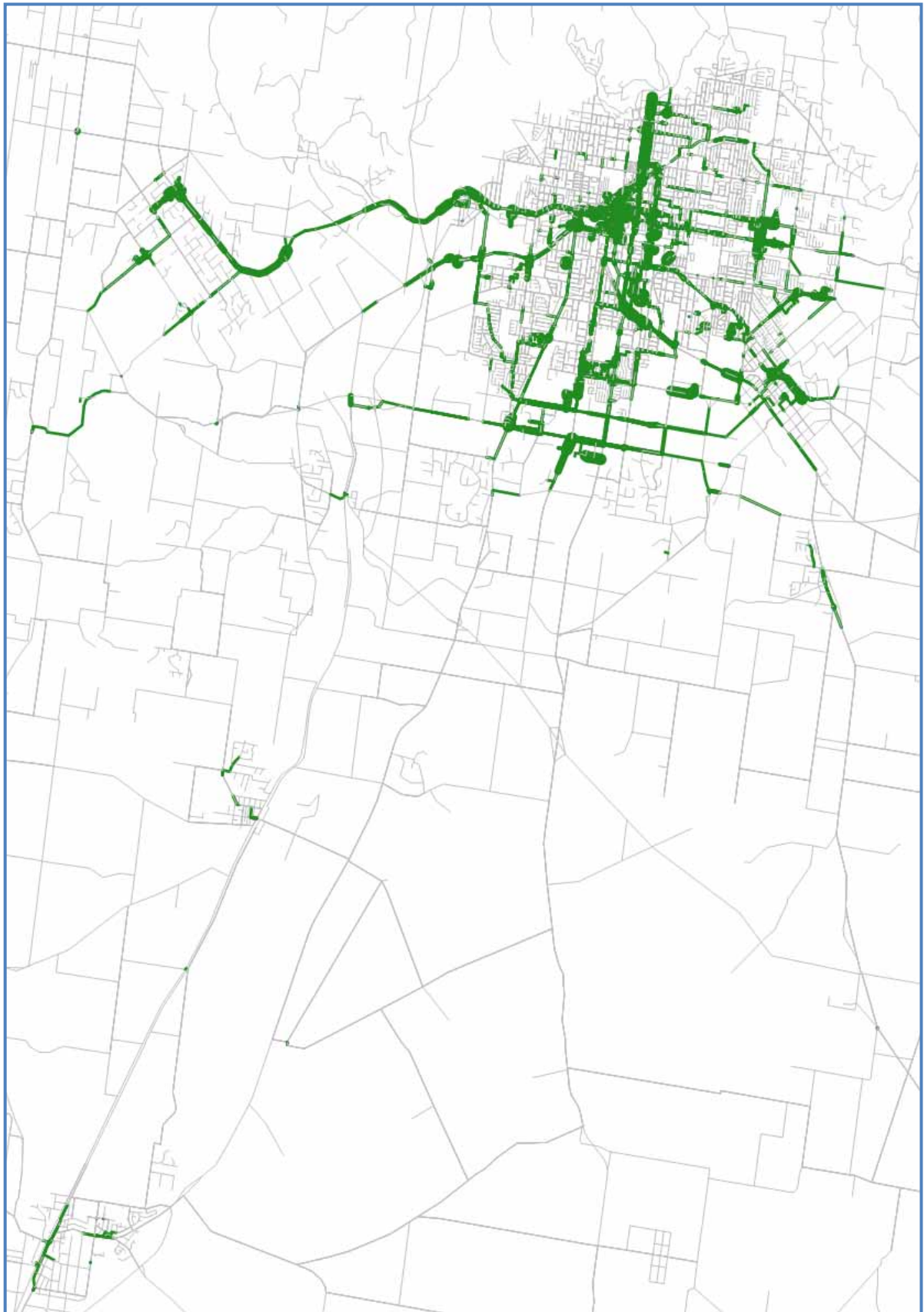
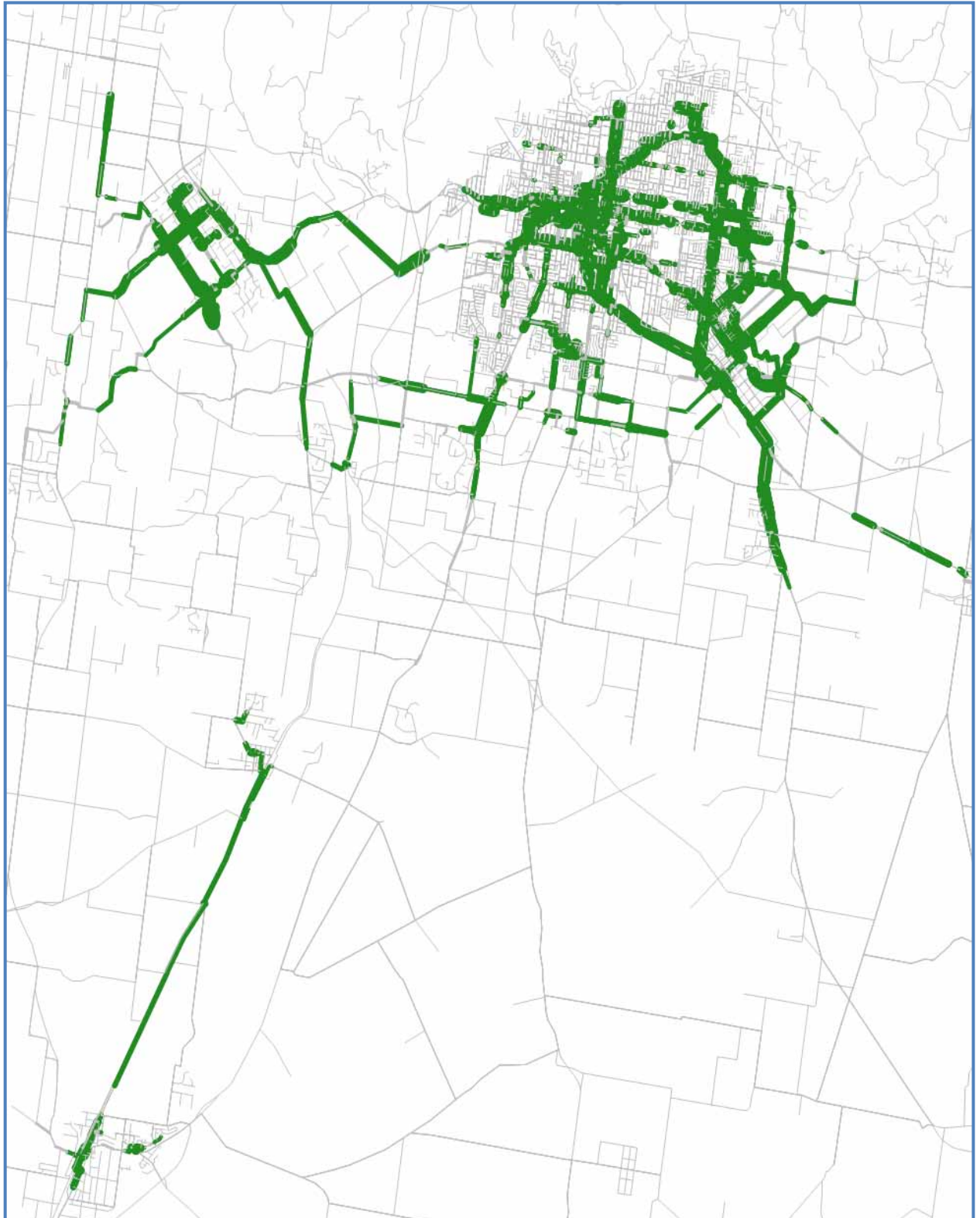


Figure 7.5 - Future Cycle Demand



7.4 TESTING THE POTENTIAL FOR INCREASING PUBLIC TRANSPORT RIDERSHIP

A consequence of the 'Preferred Development Pattern' alone is for public transport ridership to reflect about a 15% increase in the 2006 mode share over 20 years, which is considered to be a very mediocre improvement.

So the strategy here needs to be seen as a combination of three policy elements:

- The introduction of new and competitive bus routes,
- The review of a likely fare structure, and
- The introduction of a parking pricing/physical parking supply regime in nominated key centres.

Our analysis suggests that it is unlikely that bus route service characteristics will on their own, achieve the substantial bus ridership increases being sought and that new and improved existing services will need to be paralleled by reductions in parking supply and increase in parking pricing. This will certainly be the case if the availability and low price of parking in key centres is perpetuated into the future.

Under a combination of improved service structure, focused PT hubs at the Toowoomba Railway station and the Cranley Inter City rail interchange and a sensitive fare structure, increased levels of public transport mode share to 10.5% appear achievable over the longer term, but will only be obtained through coordinated parking restrictions/pricing in target activity centres and new service provision. It follows therefore that this quite extensive range of policy measures will have to be implemented over a period of time in order to gradually introduce a paradigm shift in the perception of free and freely available parking and low PT ridership.

Our analysis shows that the parking strategy is central to achieving increased public transport ridership in the long term.

7.4.1 PUBLIC TRANSPORT PATRONAGE

7.4.1.1 FARES

Attractiveness to public transport is a function of service quality and fare level and structure. Both of these have been modelled. The proposals for services used in the model have been discussed elsewhere. The model was then able to analyse the effect of fares given the defined services.

Fares generally are constructed as a sum of a distance charge and a 'flag fall' or boarding charge. The relationship between these two elements impacts on the

relative attractiveness of trips with different journey lengths. A high flag fall dissuades short trip makers. The model was run with zero flag fall and resulted in very high mode shift from active transport and probably would overcrowd buses with short trippers at the expense of long distance riders.

Conversely use of a high flag fall, as applied at present in the TransLink area, seriously dissuaded short trippers and to a greater extent than would be necessary on the TRC network which, in general would not have overcrowding problems. Finally a flag fall low by TransLink standards was applied and this seems to give sufficient attraction to short trippers without either attracting too many extremely short trips or turning off potential long trippers. In current terms the flag fall chosen was 50c with a distance rate of 10c/km.

It is suggested that, in the light of this analysis, a flag fall lower than applies in the current TransLink area be applied in TRC. The rationale for this is twofold: In TRC's smaller urban areas, trips in general will be shorter than is general within TransLink. Also, while public transport use is in its developmental phase, potential congestion will be lower so buses will be more likely to be able to accommodate short trippers without compromising attractiveness for long distance users.

7.4.1.2 PARKING CHARGES

Toowoomba City is beginning to experience problems with all day parking. This is associated with the current extremely low usage of public transport for journey to work in the CBD. It is suggested in this report that for a variety of reasons, a better outcome would be created if a higher proportion of commuting trips were made either by public transport or active transport. A two pronged approach is suggested. First, the quality and reach of public transport is markedly improved: rail based service to Brisbane, new regional routes, more direct urban routes, express urban routes between major attractors, limited bus-ways and new interchanges, and carefully coordinated timetables. Second, a daily parking charge is proposed in target areas displaying high PT potential.

7.4.1.3 MODEL ESTIMATES

There are limitations for the policy testing carried out here. In the absence of extensive existing public transport patronage data, the model was run with existing route and fare data and then with the proposed system. However, travel to Brisbane was not extensively modelled because of the lack of data, and travel requiring interchanging has probably been under-estimated. Also, there is potential for significant improvement in local services, most of which has not been included

because it has not been defined. All that has been included are three direct routes in the Middle Ridge/Rangeville quadrant and, of course, the express routes to USQ.

Given these limitations, current PT usage is modelled at under 10,000 passengers per day while future usage is modelled at 65,000 per day. This is highly significant and represents a 6 fold increase. Capacity provision to meet these sorts of ridership is not trivial even over a planned 20 year period.

Table 7.3 shows the estimated future daily PT passengers, noting that the individual route estimates should be read with some care.

Table 7.3 – 2031 Estimated Future PT Route Patronage

Route	2031 passengers/day
Toowoomba – Base Hospital – USQ – Kearney Springs DC express	5800
Highfields – USQ express via Cranley IC & Boundary Rd	7600
Oakey – Kingsthorpe – Gowrie Jct – Cranley IC - Toowoomba	2200
Millmerran - Pittsworth – Westbrook - Toowoomba	5500
Clifton – Cambooya – Wyreema - Toowoomba	2500
Crows Nest - Highfields – Toowoomba	3000
Highfields – Oakey	2100

Even allowing for some margin of error, it is clear that each of the proposed routes would be expected to have patronage levels at least equivalent to industry norms, with the two express services from USQ producing quite outstanding results.

Figure 7.6 and Figure 7.7 show the estimated growth in Public Transport ridership in the urban area and regional area respectively.

Figure 7.6 - Public Transport Ridership Growth in TSD

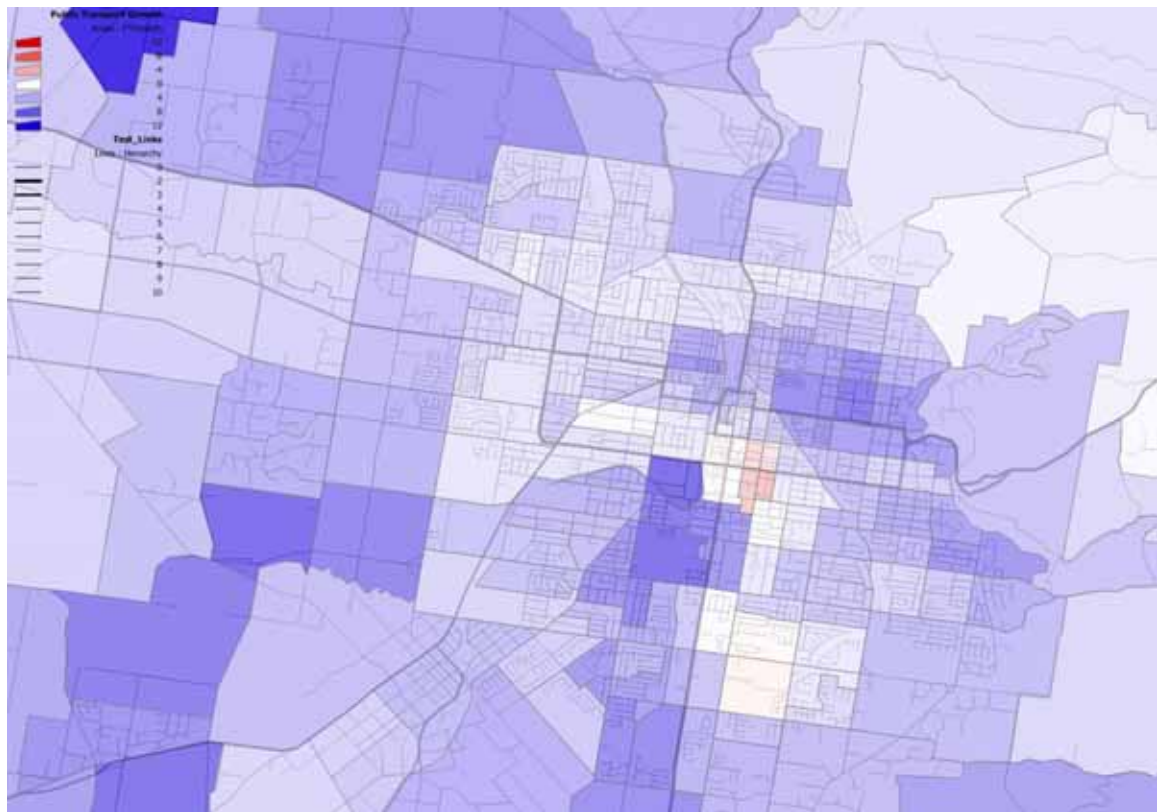
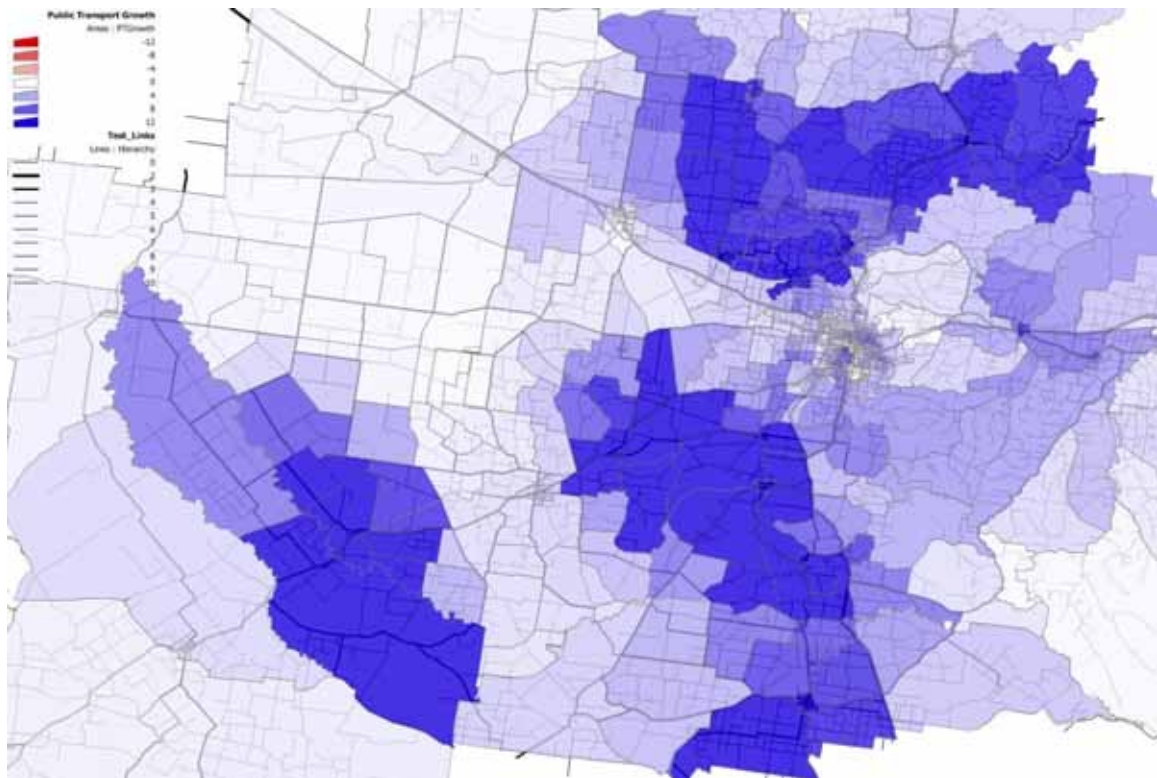


Figure 7.7 - Public Transport Ridership Growth in Region



Implementation is a significant issue for the PT policy elements. The essence of implementation of this part of the strategy is through coordinated public transport and parking measures proposed as follows:

- Very high priority measures (desirably 0-5 years)
 - Encourage TransLink to extend its area of interest to include TRC,
 - Lobby the State in the short term to provide new hourly train services between Helidon and Ipswich and Brisbane Cities and Brisbane Airport,
 - Lobby the State to provide the long term capability for rail passenger transport through the rail range tunnel,
 - Introduce a Toowoomba City - Helidon railway station express service in conjunction with the new rail services from Helidon to Ipswich and Brisbane Cities and Brisbane Airport,
 - Establish the Toowoomba City – USQ express loop service, combined with Central City, Kearneys Springs, USQ and Wilsonton parking areas and introduce parking pricing over all Council owned parking stock in these areas,
 - Commence introduction of the maximum provision of on site parking reflecting essential operational parking only combined with the collection of contribution for off site parking requirements,
 - Increase enforcement of illegal and informal parking in parking areas and environs,
 - Relocate the Toowoomba bus interchange to the Toowoomba railway station,
 - Introduce the regional express services from Millmerran (Pittsworth), Crows Nest, Oakey and Clifton (Warwick), in conjunction with park 'n' ride at centres.
- High priority (desirably 6-10 years)
 - Lobby the State to supply an inter-urban passenger service between Toowoomba and Brisbane following the provision of the rail range tunnel,
 - Increase the number of new urban bus services,

Transport Strategy Proposals to 2031

- Improve frequencies on existing competitive urban bus services and introduce new direct express services to the City in the south eastern Toowoomba suburbs.
- Extend regional express services to other centres,
- Introduce Oakey – Highfields cross country route,
- Increase parking charges in parking control areas,
- Continue with provision of a maximum (reduced) essential operational parking provision rate on new development sites in the 4 parking control areas,
- Continue to collect a long and short stay parking monetary contribution for non operational parking from new developments in the parking areas,
- Moderate priority (desirably 11 – 15 years)
 - Continue to ramp up parking charges in parking control areas
 - Increase frequencies of existing bus routes,
 - Introduce ‘dial a bus’ services into the existing north east suburbs of Toowoomba City,
 - Rationalise existing urban bus routes,

7.5 SUMMARY FINDINGS AND CONCLUSIONS FROM ANALYSIS

7.5.1 INTEGRATED LAND USE AND TRANSPORT ANALYSIS

The proposed pattern of development that focuses future commercial employment growth principally in activity centres is supported by the sustainable transport policy directions. The spread of growth proposed in the period to 2031 may benefit from a review focused on a more limited number of centres in order to provide additional critical mass for promoting higher residential densities than those currently appearing supportable. This refinement has not been undertaken in this transport study but the final development pattern could well benefit from such a review.

The accessibility analysis does indicate quite significant levels of additional utility being gained by particular locations in Toowoomba City and Highfields brought about by the extrinsic value attributed to the Toowoomba plateau, the red soil conditions and associated micro-climates. Furthermore rural townships and villages

and general rural lifestyle living also appear to generate some additional utility from the local environments. These values are more limited than the TSD values.

These additional levels of utility do compensate to some extent for the lack of accessibility to activities across the region, except in the case of Toowoomba City's eastern suburbs which realise a 'double-burger' benefit of extrinsic value and centralized location. This raises very real theoretical potential development opportunities in these areas considered to be worth exploring from a sustainable transport perspective.

The proposed settlement pattern encourages growth in employment in activity centres, thus providing the impetus for creating additional critical mass within them and in turn, increasing the residential densities and yields in those locations. It is quite probable that further iterative analysis and testing could improve the overall efficiency of development whilst also delivering on some of the recommended transport policy directions. This iterative review has not been undertaken in this study.

The accessibility analysis generally supports those areas of residential growth identified in the Preferred Development Pattern, although the scale of density increase proposed may take longer than anticipated to realise, whilst a lesser density could be achieved sooner.

The utility/development relationship has also been used to identify those locations where high net utility and low residual trip lengths combine in the region and locations where the opposite occurs. The former suggests further locations where additional residential development could be effectively provided and of course those latter areas where further residential development should be discouraged from a land use – transport efficiency viewpoint. This type of analysis also suggests broader opportunities within the existing fabric of Toowoomba City for additional residential growth, whilst acknowledging the need to consider the constraints of the existing demolition control provisions of the Scheme.

In the rural communities there appears to be some limited opportunities for achieving additional densities but these are generally quite constrained to the existing 'zoned' urban footprints in these centres. This is important for supporting some market opportunities but also importantly to allow people with a historic background in these areas to continue to find housing opportunities. However, expanding beyond these limited areas could quickly introduce additional and undesirable transport costs.

7.5.2 ROAD NETWORK PLANNING ANALYSIS

There are significant benefits in providing a future road network based on functional hierarchical planning principles and indeed embodying these principles assist in addressing the existing weaknesses in the existing TRC road network. This concept has been expanded to enable a wide range of functional and operational characteristics to be related to the elements of the network that in turn ensures that traffic operations and juxtaposed land use are compatible with planned functions. This also results in achieving benefits attached to improved safety, efficient operating speeds and reduced congestion, reduced fuel consumption and emissions, and enhanced amenity.

Provision of the Toowoomba Bypass and range crossing project is critical to enabling the functional hierarchy objectives to be achieved in TRC and in particular in the TSD. Achieving this future network creates the opportunity to downgrade the undesirable functioning of roads throughout Toowoomba City, such as Tor and James Streets and to consequentially improve the amenity on subordinate roads where currently the functions are undesirably high. In the case of roads such as Tor and James, removal of very heavy vehicles has a multiplier effect on the benefits, as this traffic is in fact replaced by smaller vehicles and this improves the operating conditions dramatically.

A future and functionally based road network has been developed that leverages off the Toowoomba Bypass project. This meets the north- south and east west travel through the TRC region and in turn resolves some of the road connectivity issues around Drayton and Highfields.

The future road network has been extensively informed by strategic road network planning proposals undertaken by agencies from as early as 1966. Many of these have merit and support the functional planning objectives.

Road traffic analysis has been undertaken using the Cube model based TRTM; developed and established by others using, however, the 2031 land use distribution associated with the Preferred Development Pattern.

By 2031 the TRTM model appears to attract between 5,000 and 12,000 vehicles per day on the Toowoomba Bypass, depending upon whether the Range Crossing is included or not. The presence of the second crossing appears to have an impact fairly well limited to Tor and James Street where this 7,000 variation in daily vehicles can be detected.

Under the major growth planned for the City Centre, the establishment of the city bypass and circulation system appears to operate successfully. Hume Street on the east and West Street on the west provide attractive bypass and distribution functions as do the other elements of the Outer Circulating Road.

Transport Strategy Proposals to 2031

Other supporting road corridors developed in and around the City Centre and environs such as West Street also attract accessing and circulating traffic (up to 35,000 vpd north of Drayton Road and 20,000 vpd south).

Land use and network planning imperatives put a high significance on the provision of the Boundary Street link between Drayton and Highfields. The 2031 projections suggest daily traffic flows of between 10,000 and 18,000 vehicles per day could be anticipated. Provision of this link is also important for the future bus route strategy.

7.5.3 ACTIVE TRANSPORT ANALYSIS

The proposed land use in the Preferred Development Pattern generates a small increase in walk and cycle use. The introduction of parking charges and public transport proposals stabilises the mode share at about 15% which supports the overall sustainability objectives.

Substantial increases in cycle and walk usage appears in the James Street, Kitchener Street, Herries Street, and Chalk Drive and on Ruthven Street through the City Centre, indicate the need to ensure adequate path widths are available on these corridors.

Anzac Avenue and West Street retain their pedestrian and cycle significance, indicating some support for the completion of the West Creek path system, including the provision of the path through the Golf Course.

The Parking control areas attract increases in cycle and walk usage indicating the need for good paths systems developed along existing road corridors within these areas.

Regional areas and centres need well developed path networks within road corridors, particularly in the urbanized footprints, in order to maximise on the level of self-containment these centres offer. Again, in areas outside TSD, recreational walk and cycle path provisions need to be made; linking attractions such as schools, playing fields and recreational parks.

7.5.4 PUBLIC TRANSPORT ANALYSIS

Developing a new relocated bus interchange at the Toowoomba Railway station creates the opportunity to provide coordinated and integrated regional and urban bus services not only with an intercity service to Ipswich and Brisbane but with internal TRC services. This coordination factor is to some extent missing in the existing system.

Transport Strategy Proposals to 2031

The Preferred Development Pattern on its own has the potential to generate a very small increase in PT usage to 5%, by 2031. To achieve anything approaching the target mode share requires the introduction of additional new services. The options for doing this suggest that the new regional express services in concert with new urban bus routes can increase the mode share to PT substantially. However, the full potential for increasing bus usage is realised when a parking pricing regime and eventually a physical restraint on available parking is introduced in key activity centres including the City Centre, Wilsonton, Kearneys Springs and USQ.

Under a parking pricing regime of between \$5 per day and \$10 per day in the City Centre and between \$3 per day and \$6 per day in the other centres by 2031, public transport patronage appears to be able to be increased to something over 10%.

Patronage is sensitive to the bus fare charged which is usually a combination of a flag fall component and a per kilometre component. Whilst a common flag fall of \$2 and \$0.10 per kilometre is adopted elsewhere, the analysis suggests that a \$0.50 flag fall and \$0.10 per kilometre delivers on the mode share objective without adversely affecting the longer trips by bus. Bus patronage levels under the new service structure, proposed fare structure and parking pricing regime would appear to meet the industry norm.

Costs to deliver these services and its supporting infrastructure will be expensive and to assist in its delivery and maintenance Council should consider the introduction of a Public Transport Levy similar to that in Gold Coast and Sunshine Coast and to use parking revenue to assist in its delivery.

8 SUMMARY CONCLUSIONS, RECOMMENDED STRATEGY AND STRATEGY PRIORITIES

8.1 SUMMARY OF MAJOR EXISTING ISSUES

The Toowoomba (RC) area is extremely well placed and connected to much of eastern Australia by the National, interstate and State significant road network, affording the region a high degree of State and national accessibility. However, in many instances its highest order roads still pass through rural and regional communities and Toowoomba City itself, highly proximate to the City Centre. This continues to have a major adverse impact on local amenity and the working of the subordinate road system and would have a potentially deleterious affect on achieving longer term development objectives for as long as the situation remains.

It is most desirable to progressively develop a road network based on functional hierarchy planning principles to address the functional, operational, amenity and associated weaknesses which exist in the region; in its absence. It is recognised that in Toowoomba's case, topography constrains the ease of achieving this.

Toowoomba supports an airport. Current facilities limit it to regional air services, but the Council decision to extend the runway creates the opportunity for DASH 8 – 300 aircraft to operate into Toowoomba, albeit it not at full capacity. This development probably takes the current site to its full potential yet it is unlikely to be sufficient to achieve mainline status. Since a new site is unlikely in the foreseeable future, planning must recognise its current presence and regional nature.

Despite being Australia's second largest inland City, it is not well connected by land based public transport to its state capital, unlike many other lesser cities in eastern Australia. Rail infrastructure exists, but its capacity is prioritised towards coal freight to the Port of Brisbane and its speed capability over the Toowoomba Range is inadequate for effective full-distance inter-urban services. Regional public transport services, including services to Brisbane are provided by bus. These are declining in attractiveness, price and service. The fact that the Toowoomba Region lies outside the TransLink service area adds to the inertia that improved levels of public transport use, has to overcome.

Urban bus services are provided, but route structures (long route factors), the spread of services across the day, frequencies and general lack of coordination and having to compete unfavourably with readily available and cheap parking has resulted in an unenviably low mode share for PT. This is an opportunity that needs to be realised.

Active transport is significant in Toowoomba, and at a level comparable with Brisbane. This needs to be maintained in the light of urban expansion which often

Transport Strategy Proposals to 2031

reflects a reducing share for this form of transport as urban growth boundaries extend and local self-sufficiency declines.

Car parking throughout Toowoomba is highly available and too cheap to be a really effective transport policy instrument at this point in time. Under the current supply and management arrangements, Council controls an inadequate level of the publicly available parking stock in key centres for it to influence higher public transport ridership. It would be desirable for Council to be able to exert more influence over parking supply and management in the future, in order to develop it as an effective policy tool. It is recognised that this outcome will only be useful when associated with public and active transport initiatives and additional parking enforcement, and is unlikely to occur quickly.

8.2 SUSTAINABLE FUTURE TRANSPORT STRATEGY PARAMETERS

The future transport strategy has been influenced by the transport policy instruments most likely to deliver reductions in transport emissions that align with the National targets. This objective has been an important element for defining the future strategy. These directions are summarised and prioritised in Table 8.1.

Table 8.1 Transport Policy Instruments and priorities

Policy Instrument	Target	Priority
Growth Pattern	20% reduction in distance travelled by car progressively by 2031	High
Toowoomba Bypass and Range Crossing	ASAP	High
New rail range crossing and passenger services to Brisbane (with interim Helidon – Brisbane service)	ASAP	High
New local PT services	10% of all travel progressively to 2031	High - medium

Transport Strategy Proposals to 2031

Fuel efficient engines	Progressive 10% improvement by 2031	Medium and by others
New Toowoomba Station bus interchange	Coordinated with Brisbane rail services	Medium
Parking Supply and Pricing	\$10/day and Council to control 50% parking in key locations progressively by 2031	Medium
Active Transport	Maintain 15% through improved local path provision	Medium
Functional road hierarchy and supporting network	Majority achieved by 2031, progressive investment in new and upgraded road corridors	Medium
Increase car occupancy	1.15 person per car	Medium

8.3 RECOMMENDED ELEMENTS OF TRANSPORT STRATEGY

8.3.1 INTEGRATED LAND USE AND TRANSPORT

The areas nominated for growth in the Preferred Development Pattern are generally supported by the transport analysis, although some proposed densities are considered to be optimistic at this point in time and yields have been slightly downgraded in the integrated land use - transport modelling. However, the concentration of future employment within the preferred Activity Centre Strategy and Industrial Land Strategy increases the opportunities for higher residential densities through higher 'critical mass' in centres and the potential for improved levels of active and public transport use. Selected regional community centres such as Pittsworth and Millmerran also need to be provided with real opportunities of localised higher density development to allow residents to remain in their local areas after their needs change and to accommodate further growth in life style living. This opportunity is generally extremely localised around the activity centres of the regional communities.

Certain specific areas attract extrinsic values in addition to the utility they obtain from their accessibility. These benefits are derived from factors such as views, lifestyle living, softer than the average micro climates and benefits derived from the

red soils (compared to the black soils). These characteristics are not uniformly distributed through the growth areas and moreover, the same qualities may be experienced by established development areas, adding an additional benefit to an already high utility gained from good accessibility. The issue here is that from the perspective of a sustainable transport future, the search should be extended to identify further high density and low private car travel development opportunities that may well exist in proposed growth areas but equally may exist in established areas, particularly of Toowoomba City and the TSD.

8.3.2 THE ROAD NETWORK

Being the highest order road function, the Toowoomba Bypass and Range crossing project is extremely important from two transport planning perspectives. Firstly from the perspective of actually enabling the functional hierarchy and its associated objectives to be successfully developed and secondly, through its connection points (interchanges) enabling many of the critical elements of the longer term regional arterial network to emerge and from which the subordinate networks can be developed.

Benefits of the Bypass and range crossing project are not limited to the road system, but through its provision, triggering the opportunity (for example the Boundary Street corridor to and around Highfields) to build much needed subordinate routes that create the opportunity for new and efficient bus services. This is therefore an extremely high priority project without which the many benefits of a functional hierarchy and the longer term development objectives are unlikely to be realised.

The Toowoomba Bypass and range crossing provides a much needed west to east regional bypass of Toowoomba but is limited in itself in its effectiveness to cater for the north to south inter and intra State and regional movements or complete the effective linking of Charlton-Wellcamp Regional Industrial Area to the south or provide protection to activities of regional significance in Toowoomba City from this traffic. By dealing with these considerations the opportunity to meet all these needs by again leveraging off the Toowoomba Bypass project emerges through:

- Creating a western bypass of Toowoomba City through emphasising a highway function of the Drayton Connection Road in preference to the New England Highway through a 'highway' link of this corridor via the Drayton – Wellcamp Road to the Warrego Highway/Toowoomba Bypass interchange. In the longer term, making use of the southern section of Boundary Street at Westbrook,
 - But in the short term creating this function in a regional arterial by extending the Drayton Connection Road through the Canning Street

Corridor and again through Greenwattle and Euston Streets to the Drayton Wellcamp Road corridor.

- And as a high priority, developing the Boundary Street corridor northward to a future interchange with the Bypass and beyond around Highfields to meet Meringandan Road. The far northern section would have a lesser priority than the southern section of the corridor.
- As a second order priority, develop the Old Goombungee Road between Boundary Street and Mort Street (ultimately) as a regional arterial connection, replacing the bridge over Gowrie Creek.
- As a third order priority tied to the development of the City Centre outer circulating road, extend Bridge Street south through the railway yards to connect with both Chalk Street and Russell Street. This could be accelerated in response to developing the bus interchange at the Toowoomba Railway Station.
- A third order priority exists for the general improvement in alignment of the western extension of the Yalangur- Lillyvale Road to Oakey in order to develop a good quality connection between Oakey and Highfields and the New England Highway.
- The above linkage improvement creates the opportunity for a further 'regional' crossing of the range to the north of Highfields by developing a route between Cabarlah and Murphy's Creek and Postman's Ridge using the Costello – Fernbank Road corridor to link with the Toowoomba Bypass. This has longer term network planning benefits and could provide some short term relief in the City Centre from Warrego Highway traffic.
- A similar level of priority is attached to persuading the State to continue to upgrade sections of the Clifton – Gatton Road necessary to provide a more useable south eastern bypass of Toowoomba,
- The Oakey – Pittsworth Road through Springside, Rossvale and Purrawunda (a State controlled road) is attracting heavy commercial vehicles as a surrogate for a western bypass of Toowoomba between the Gore and New England Highways and is as a consequence in need of some alignment and pavement attention as a consequence of its emerging significance.
- Outside the Toowoomba City environs where the Highway functions are to be retained, capacity and operating deficiencies need attention including the removal of isolated one lane sections of road (bridges and culverts) and duplication where capacity warrants and safety issues exist,

- For both Public transport and tourism some priority should be given to road alignment rationalisation, pavement improvements and general upgrading in the Clifton – Feltham, Clifton – Greenmount, Toowoomba-Karara corridors between Clifton and Wyreema (to Toowoomba) and in extending the work commenced on the Greenmount/Eltonvale Road corridor between Greenmount and the New England Highway.

Developing priorities will also emerge for the arterial, sub arterial and distributor road systems as development proceeds in Charlton-Wellcamp, Torrington and Glenvale growth areas and the road alignment through Clifton, Nobby and Greenmount to the New England Highway.

8.3.3 THE PUBLIC TRANSPORT NETWORK

Public transport usage will be encouraged and increased through land use changes that see increasing levels of commercial activity at key centres that leads to and support increased residential densities.

The physical public transport system is then proposed to be focused around developing a rail based, inter-urban, passenger service between Toowoomba (Australia's second largest inland City) and Brisbane (State capital) to address the current absence of this service. This should be tied to current planning for a new rail crossing of the range as an extension of the Inland Rail investigations. As the focus of PT, a central City location for bus/rail interchanging is desirable. The existing Toowoomba Railway Station provides this opportunity with the additional capability to develop major bus stops in closer proximity to City Centre activities.

A very high priority is ascribed to establishing an inter-urban rail passengers service between Toowoomba and Brisbane through:

- Persuading the State to provide the capacity for passenger services on the new rail range crossing between Gowrie Junction and Grandchester,
- As an interim expediency, to provide express and limited stop diesel rail services between Helidon and Ipswich and Brisbane and the Brisbane Airport,
 - That allows the early introduction of bus services between Toowoomba City interchange and Helidon that coordinate with rail,
- And to encourage TransLink to extend its operating area to Toowoomba,

Of equal very high priority is the establishment of the TRC public transport system leveraging off the inter-urban services through:

Transport Strategy Proposals to 2031

- Initially developing the City Centre interchange around the emerging priority bus stops in Victoria Street (CCMP recommendation) with a view to transferring this facility to the Toowoomba railway station in concert with rail passenger services to Brisbane and a TRC bus way between the City and USQ,
 - The priority stops between Grand Central and Gardentown being retained in principle but located on the proposed future bus way (see below)
- The early introduction of a Toowoomba City – USQ express loop service
- Introduction of a new Oakey – Toowoomba service and an Oakey – Highfields cross country service
- The early introduction of a regional express service between Clifton (Warwick) and Toowoomba City. This could be provided by way of a bus or a dual mode vehicle operating on the existing South Western line making use of under-utilised capacity and passing loop opportunities. In addition providing a regional express service between Millmerran and Pittsworth and Toowoomba City at one hour peak frequencies reducing in off peak, and
 - Making provision for park 'n' ride facilities at Millmerran and Pittsworth

A high priority in developing the TRC system is to be given to:

- Introducing regional express services between Oakey and Toowoomba City and Crows Nest and Toowoomba City with the same service frequency as above,
- Reviewing the structure and frequency of existing services, particularly
 - Restructuring feeder services through the south eastern suburbs of Toowoomba City, and
 - Introducing dial 'a' bus services from the bus interchange through inner the north western suburbs
- Following the construction of Boundary Street extension to Highfields and the rail range crossing, the related priority would be to create an interchange at Cranley between bus and rail services, and to
 - Provide a new Highfields to USQ service via Cranley, and
 - A park 'n' ride station at the interchange

A medium level of priority is afforded the construction of a busway from Ruthven St/Chalk Drive through the railway corridor land and Station then along the South Western railway alignment with stops at Grand Central (relocated priority bus stops in Victoria St), the markets, then to Toowoomba Base Hospital and south to USQ

8.3.4 THE PARKING STRATEGY

Parking controls in key high activity locations is an essential component of the overall transport strategy, necessary to deliver transport policy objectives associated with increased use of public transport and active transport, over time.

Parking pricing is shown to be effective in Toowoomba for discouraging the use of private car where suitable alternatives are available. It is this integration between policy instruments that is fundamental to achieve these efficiency objectives.

The parking strategy has two major components:

- Progressively enabling TRC to exert control over the amount, location and management of parking stock in key activity centre locations to foster increased active and public transport use, and
- To price parking in key centres to ensure the availability of business visitor parking and higher active and public transport

This will be achieved by:

- Introducing within the new Regional Planning Scheme new parking control areas defined for the City Centre and environs, Wilsonton, Kearneys springs and the USQ precinct; together with PS provisions (codes) that lag the provision of new bus capacity:
 - Limiting to a maximum the on site provision of parking in new developments to that of essential operational parking needs of the development (limited management, set down and pick up, parking for disabled, special users, delivery and service vehicles), and
 - Council to collect a monetary contribution for the provision of the balance parking needs of the development; reflective of long term PT mode share objectives and possible existing available stocks, and
 - Council to plan for and provide and manage the balance parking requirements in appropriately located, publicly available, shared use parking areas,

- Introduce a parking pricing regime (progressively to \$10 per day) within the parking control areas that delivers the local increased use objectives of active and public transport and ensures the availability of essential visitor (short stay) parking stock.

8.3.5 THE ACTIVE TRANSPORT NETWORK

The land use, parking and pricing strategy in combination increase the level of active transport within key centres and their environs. The emphasis here is on generating more short distance active transport trips in these areas, primarily as a consequence of the parking charge regime. This results in the need to ensure the provision of good quality path networks within these centres and between the centres as their immediate higher density catchments.

In Toowoomba City the off road path network attracts an increased level of use and investment in this network needs to be continued.

Longer distance active transport is not highly favoured in place of public transport or car travel except for the specialised recreational cyclists which are best accommodated on safe arterial and sub arterial bike lanes.

In the regional centres and communities, particularly Oakey, Pittsworth and Millmerran, but also in all communities local path networks within centres linking to associated residential catchments are still important and the provision of recreational path networks in these communities are also important.

8.3.6 THE FREIGHT NETWORK

Establishing and developing the functional road hierarchy and network and achieving its associated desired operating characteristics, commencing with the Toowoomba Bypass as the highest priority, is the key deliverable for freight in TRC.

Development of Dual Mode Vehicle (DMV) and its Practical Use

H. Arakawa¹, H. Kakinuma¹, I. Sato¹, T. Namba¹, M. Nakata¹, F. Ito¹, S. Iwata², T. Suzuki², Y. Sato², Y. Endo², H. Hirayama²

¹ Hokkaido Railway Company, Sapporo Japan

² Nichijo Manufacturing Co., Ltd, Sapporo, Japan

Introduction

Currently, JR Hokkaido covers the total railway route length of approx. 2,500km. Notably, a section comprising one third of the entire route (about 800km) is characterized by an extremely small number of passenger trains. The increasing use of local railways has continued over the last JR private railway company's 100 years of operation, and this has been accompanied by a change in the way of thinking about the use of local railways, along with bus-making route bus services.

- (2) Serious financial situations due to deregulation of route bus services and reduction in government subsidies
- (3) Strong demands for public transportation services by residents
- Consequently, JR Hokkaido introduced various measures to improve the management of local lines such as
- (1) Abandonment of deficit-induced local lines
 - (2) Serious financial situations due to deregulation of route bus services and reduction in government subsidies
 - (3) Strong demands for public transportation services by residents

- (2) Drive-only operation
- (3) Review of office operations
- (4) Review of station operations

- (1) It is to cut down on vehicle's initial and running costs by introducing small and light-weight vehicles (e.g. converted motorbikes), improved transport services and medium amount of passenger capacity according to the requirements.
- (2) It is to reduce operational costs by focusing on more efficient use of basic ground infrastructure such as rails and more advanced services such as express services.
- (3) It is to provide barrier-free transport services to cope with aging society and contribute to regional revitalization by introducing high-speed rail services, convenient buses capable of running both on the railway and on the road.

in order to attain these objectives, JR Hokkaido performs DMV research and development.

CMV system

GNV is a rail capable of running both on the road and on the rail. With a rubber tire, this vehicle uses a base of road ordinary wheels, and it runs on the rail using guide wheels and a driving rail (lower wheel) at the front and rear parts of the vehicle. To convert from the road to rail modes, the vehicle lifts a guide roller on the front and rear parts of the vehicle. To convert from the rail to road modes, the vehicle lowers the front and rear guide rollers by hydraulic transmission to approach the road interface section and run on the rails on the road. The vehicle can convert from the road to rail modes and from the rail to road modes without the need of a driver. The vehicle will be used in the section with guide roller will be stored in the vehicle body. This process takes only approx. 15 seconds. Meanwhile, to convert from the rail to road modes, the steering is performed in the section with rails and prevent this a railroad crossing, and the front rubber tire comes down and the rear rubber tire comes up. The vehicle is ready to be ready for running on the road. This operation requires nearly about 10 seconds.

DYS (Dual-mode Transport System)

(1) BMW (Dual Mode Vehicle) System

The DMV vehicle comprises rubber tyre driving system to run both on the road and rail, longitudinal guide wheel system which is guided by the rail for traveling and guide roller system to position the vehicle which will be transferred from the road to rail.



Test vehicle (On road)



Test vehicle (On rail)



Test vehicle (On mode interchange)

(1) DMV (Dual Mode Vehicle) S

The DMV vehicle comprises rubber which will be transferred from the

(1) DMV (Dual Mode Vehicle) System

itudinal guide wheel system w

(1) DMV (Dual Mode Vehicle) System

itudinal guide wheel system which is guided by the rail for traveling and guide roller system to position the vehicle

(2) Mode interchange system

More information is given



Mode Interchange



de change system

mode change time

- Road→Railway (on rail) : about 15 seconds
- Railway→Road (off rail) : about 10 seconds

(2) Mode interchange system

(3) Traffic control system

Traffic control system primarily consists of GPS-equipped operation system and train protection system.

