1. Land Use, Transport Planning and Cross-modal Issues

Mackay City Council Transitional Planning Scheme

The Mackay City Council Transitional Planning Scheme includes a number of principles and visions relevant to the development of an integrated transport system, including the following:

- the Mackay CBD should remain the primary commercial and administrative hub for the region and be supported by an appropriate hierarchy of centres throughout the city;
- opportunities for the convenient location of retail and commercial facilities and employment opportunities should be provided throughout the city;
- the community should have access to and plan for, an accessible and efficient transport system;
- orderly and sequenced development should allow for the efficient and affordable provision of utility and social infrastructure;

Land use and transport planning have a major influence on where people live and work and how people travel. The location of land uses influences both travel demand and the efficiency of public transport services, while the availability of roads and transport services often determines the location and distribution of different land uses. Travel patterns within Mackay are a reflection of the distribution of land uses. The existing imbalance manifests itself in high private vehicle traffic volumes across three bridges on the Pioneer River and arterial roads.

The plan recognises that there is a need to appropriately integrate modes of transport in the Mackay urban area. It is anticipated that the use of private vehicles as a mode for journey-to-work trips will remain high in the area.

The ageing of the population since 1991 will require increased services to support the aged. Increasing demands for public transport in the outer suburbs is likely to occur as the age profile changes, and the opportunities for the elderly to relocate closer to the City diminish.

Increased use of public transport will be effected through the provision of opportunities to integrate and improve passenger transfers between transport modes, and improve bus, cycling and pedestrian connectivity and access in existing urban areas. Improved directional signage between the city and major transport nodes (airport and station) will further enhance the use of alternative modes. This has the potential to reduce the dependence on private car travel and enhance passenger safety.

The Mackay City Council Transitional Planning Scheme and the assessment of development applications to support good urban design for future urban areas are critical to the improvement of the standard of living in Mackay. Proposed urban consolidation strategies will reduce urban sprawl and new urban design strategies can be employed to increase/enhance public transport usage and mitigate congestion.

There is a range of design standards and guides which supports this approach (such as Queensland Transport's *'Shaping Up'* document), and suggests ways to better integrate public transport planning and urban design. Better planned and more efficient inter-modal freight facilities will promote environmental and safety objectives.

Strategies for the Mackay urban area include the provision of green areas, developed parkland, botanic gardens and lagoons complex, and riverside infrastructure. The development of the CBD, which is a high priority, and other priorities such as the promotion of Mackay as a destination rather than a gateway, promotion of commercial and industrial development, ensuring ecological sustainability, integration of transport and land use planning and the development of sound infrastructure funding programs will influence the provision of transport infrastructure and services.

On 19 November 2001 Mackay City Council advertised their Statement of Proposals as part of the plan making process under the *Integrated Planning Act 1997*. Under this process, it is anticipated the final IPA planning scheme will protect major transport corridors such as the Multi-Modal Transport Corridor that will provide a future east-west route to the Port of Mackay.

Action Plan: Land Use, Transport Planning and Cross-Modal Issues

Action	Timing	Responsible Agencies
Lu1 Ensure that transport issues and concerns are identified in the terms of reference for all current and future impact assessment studies.	Ongoing	QT (Lead), DMR, MCC, MPA, QR
Lu2 Consider good urban design and integrated regional transport planning principles as contained in *'Shaping Up'* Guidelines, *'Queensland Streets'*, AMCORD and the Mackay Road Hierarchy Principles.	Ongoing	QT (Lead), DMR, MCC, DLGP (Supporting)
Lu3 Investigate opportunities to integrate and improve passenger transfers between transport modes in Mackay, including rail, bus, air and sea (in terms of infrastructure and service provision). *(Refer Pt3, Rl2)*	Short Term	QT (Lead), MCC, MPA, QR, DLGP
Lu4 Guide development in Mackay through the Mackay City Council Transitional Planning Scheme and Mackay Seaport and Airport Land Use Plan (LUP), with regular updates of these planning controls.	Ongoing	MCC (Lead), MPA, DMR, DLGP (Supporting)
Lu5 Consider public transport, pedestrian and cycling movement when planning new and re-developing areas.	Ongoing	MCC (Lead), DMR, QT DLGP
Lu6 Improve bus, cycling and pedestrian connectivity and access in existing urban areas, based on detailed needs assessment. *(Refer Pt15, Cy6, Pd4)*	Short Term	QT (Lead), DMR, MCC
Lu7 Monitor population growth and employment characteristics trends to enable transport strategies and actions to be revised to meet current and future community needs.	Ongoing	DLGP(Lead), MCC
Lu8 Ensure the IPA planning scheme for Mackay City Council incorporates the desired outcomes of the MAITP.	Ongoing	MCC (Lead) QT, DMR, MPA, DLGP

Mackay City Council Transitional Planning Scheme (continued)

- the existing light service industry centre along the river east of the CBD is expected to develop into commercial/industrial activity;
- neighbourhood centres will continue to develop at Bucasia, Blacks Beach, Walkerston, Andergrove, North Mackay, West Mackay, Ooralea, and at Bakers Creek;
- areas identified for concentration of major business and industry include Mackay Seaport, Paget/Ooralea, the Sugar Mills at Racecourse, Pleystowe, and Farleigh, as well as at Bakers Creek (abattoir);
- localised service, trade and commercial industrial areas are supported in places around the CBD frame, subregional and major neighbourhood centres.

2. Road Network

The road network is a key component in integrated transport planning, as it provides infrastructure for the movement of people and goods via a number of modes of transport. Development of actions for the road network in this Action Plan considered:

- the Mackay City Council Planning Scheme;
- results from the road network modelling studies;
- development of a number of road network development options; and
- an evaluation of the relative advantages, disadvantages, and broad cost implications of potential transport options.

The Mackay Area Integrated Transport Plan provides road corridor and bridge strategies that address current network issues and projected traffic growth in the short, medium and long term.

The development of a responsive road network for the Mackay urban area requires a balance between options for the upgrading and maintenance of existing transport corridors, identification and preservation of future transport corridors, and the maintenance or replacement of existing bridges or construction of new bridges. Transport studies undertaken for MAITS have considered a number of road network options. The development of these options needs to recognise population thresholds and key objectives of the Mackay City Council Planning Scheme.

Cross-River Traffic Demand

Currently within the urban area, three bridges cross the Pioneer River: Forgan Bridge, Ron Camm Bridge and Hospital Bridge. Hospital Bridge is also known as the Pioneer Bridge. The existing river crossings consist of eight lanes: Forgan Bridge (two lanes), Ron Camm Bridge (part of the national highway system) (four lanes) and Hospital Bridge (two lanes).

Cross-river traffic totalled 62,000 vehicles per day (vpd) in 1996 and is projected to reach around 90,000 vpd by 2015 and 100,000 vpd by 2025. The projected traffic growth rate of 2.3% p.a. until 2015 is based on the predicted rate of development that is likely to occur in the northern parts of the Mackay urban area. A lower projected growth rate of 1.1% p.a. is projected from 2015 onwards when development is expected to slow down.

If traffic growth occurs as predicted, the projected cross-river traffic will require a total of ten lanes across the river by 2025. The current Hospital and Forgan bridges will require either structural upgrading or replacement during this time.

A range of options was considered to provide cross-river capacity to meet this demand. Some of these options (from east to the west) include:

- the replacement of Forgan Bridge (at its current location or within the general eastern CBD area) with a new two- or four-lane bridge;
- construction of a new central bridge (two or four lanes);
- the addition of two lanes on Ron Camm Bridge; and
- the replacement of Hospital Bridge (at its current location or within close proximity of the existing bridge location) (two lanes).

As part of the normal planning and design process for upgrading or providing new bridges, cycle and pedestrian access will be addressed to allow safe and convenient travel for these modes.

A bridge crossing (Te Kowai-Foulden) further upstream to the west of the Hospital Bridge was considered as an alternative regional link. This bridge would serve mainly freight purposes and ultimately form part of a long-term alternative to using the current Ron Camm Bridge. As the timeframe for its construction is considered beyond 2025, it will not be considered further as part of this plan.

Some of the key considerations relating to each potential river crossing solution are discussed below.

Eastern CBD (Forgan Bridge)

The main bridge options considered within the general eastern CBD area were:

- retention of the existing two-lane Forgan Bridge;
- removal of the existing structure without replacement;
- replacement of the existing Forgan Bridge with a two- to four-lane bridge either on the current alignment or at an alternative location at the eastern end of the CBD.

Structurally, the existing Forgan Bridge will require upgrading or replacement in the medium term. If not upgraded or replaced, the current cost of maintenance will continue to increase.

Removal of the existing Forgan Bridge would require an increase in traffic capacity of the remaining bridges and significant traffic diversion to access them.

Construction of a four-lane bridge on the current alignment would require upgrading at the River and Sydney Street intersection and would need to address the impact of traffic along those streets.

An alternative bridge site within the general eastern CBD area would similarly need to address traffic impact and circulation issues.

Central Bridge

The main options considered for the provision of a central bridge were:

- construction of a new two-lane bridge (with an upgraded two-lane Forgan Bridge); or
- construction of a new four-lane bridge (removing Forgan Bridge).

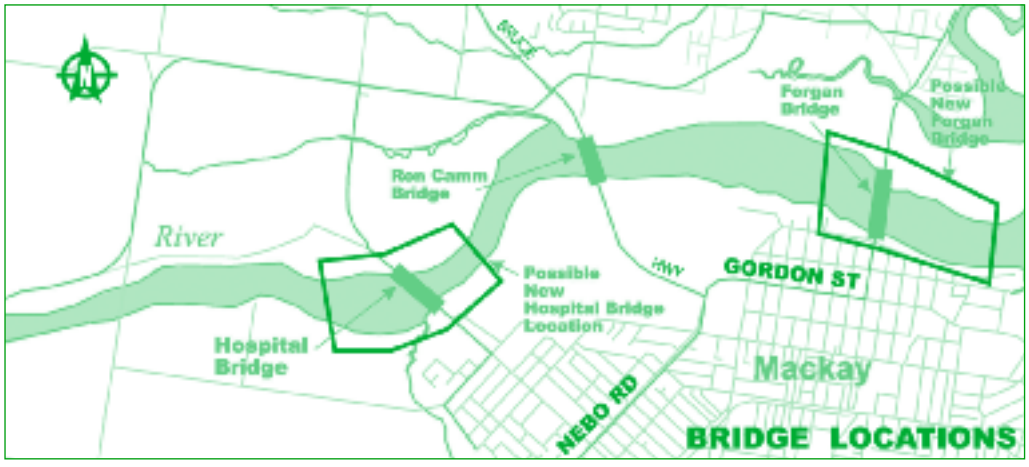
A new two-lane Central Bridge would supplement the existing bridges and cater for cross-river movements beyond 2025. All existing bridges would need to remain operational within the network.

The construction of a new four-lane Central Bridge, in lieu of Forgan Bridge, would require significant traffic diversion and could adversely impact on the operation of the CBD, especially current plans for revitalisation. Major congestion problems would also occur where Ron Camm Bridge and Central Bridge traffic meet.

Ron Camm Bridge

It is proposed that the existing Ron Camm bridge be retained with its four-lane capacity.

Upgrading of Ron Camm Bridge to six lanes is not practical. Although the option would theoretically meet traffic demand beyond 2025 , the costs to provide the additional capacity would be high, with major works required to replace the existing bridges, approaches and intersections. This option would still require that a total of ten lanes be provided – i.e. retention of two lanes at Hospital Bridge and two lanes at Forgan Bridge.



Hospital Bridge

There were three main options considered for Hospital Bridge:

- retain the existing two-lane bridge;
- remove the existing bridge; or
- construct a new two-lane bridge.

Hospital Bridge relieves traffic flow on other bridges and the approach road network, and provides access to the hospital, West Mackay and Paget from North Mackay. Hospital Bridge is strategically important, however the existing bridge has a 40 kph speed restriction and the structure has a limited life. The narrow carriageway and load limit precludes access for heavy vehicles. High maintenance costs, low flood immunity and the potential loss of the bridge in a major flood makes retention of the existing bridge a less desirable option.

Removal of the existing Hospital Bridge would reduce access to the hospital and increase traffic flow on Ron Camm Bridge.

Construction of a new two-lane bridge at its current location or in close proximity would ensure that traffic flows on the road network remain balanced and local accessibility is maintained. A new structure also provides an opportunity to improve the flood immunity.

Road Network Elements

The road network on either side of the river has several critical sections that are likely to require improvements to provide a viable network in the long term. These include:

- Glenpark Street;
- Nebo Road;
- Paradise Street, and the connection to the CBD;
- Malcolmson Street;
- future multi-modal freight corridor
- Bucasia Road;
- Rural View – Blacks Beach link.

Glenpark Street

Current traffic projections show that Glenpark Street may exceed two-lane capacity by 2015, with movements increasing to 25,000 vpd. An option is to upgrade Glenpark Street to four lanes, which would cater for traffic movements beyond 2025.

Nebo Road

Based on traffic projections, Nebo Road will have adequate traffic capacity to beyond 2025. At current growth rates, the Nebo Road/ Bruce Highway (Showgrounds) intersection will, however, reach capacity by 2010. The provision of a connection between Hume, River and Victoria Streets and the southern approaches to Ron Camm Bridge would reduce demand on the intersection and relieve congestion.

Paradise Street

Paradise Street is predicted to reach two-lane capacity by 2015, with projected traffic movements increasing to 20,000 vpd. Milton Street will provide an important link to the CBD. Resulting east-west traffic movements in Gordon Street are expected to increase from 20,000 vpd to 32,000 vpd by 2025.

Malcomson Street

As the East-West Connector project has been abandoned, four permanent lanes in Malcomson Street are required to accommodate projected traffic. Four lanes (using clearways) are currently provided in peak hours only.

Future Multi-Modal Freight Corridor

In the long term a multi-modal freight corridor, following the existing rail line, from Mackay Port to Bucasia Road, may reduce the impact of heavy vehicles on the existing road network. Provisions are planned in the pending Mackay City Planning Scheme to preserve the proposed Multi-Modal Freight Corridor from the Bruce Highway to the port. The future need for this corridor has been identified in the State Infrastructure Plan.

Mackay – Bucasia Road

Based on traffic projections, Mackay – Bucasia Road is predicted to exceed two-lane capacity before 2015, with traffic movements increasing to 30,000 vpd. The Department of Main Roads has commenced upgrading of Mackay – Bucasia Road.

Rural View-Blacks Beach Link

Eimeo Road will approach two-lane capacity by 2025, with projected traffic movements of 20,000 vpd. Introduction of a new two-lane link between Blacks Beach and Rural View would reduce traffic pressures on Eimeo Road and provide capacity in that corridor to beyond 2025.

Works are planned to commence in 2003 on a bypass of the Eimeo School, with provision for a future link to Blacks Beach.

Heavy Vehicle Routes

A number of options to provide improved heavy vehicle routes in the Mackay urban area have been considered including:

- a Greenmount Road–Alexandria Road link or a Stockroute Road – Bruce Highway link, around Walkerston. It is projected that, by 2025, any alternative route would carry only between 3,000 to 4,000 vehicles per day and, as such, is not considered further under this plan. Urban expansion at Walkerston along the Peak Downs Highway should be limited to retain the option for a long-term deviation around the township.
- upgrading of the Eton-Marian–Hampden link to provide a regional route around Mackay. This option, combined with upgrading the Eton-Homebush route, would provide an improved connection between the Peaks Downs Highway and the Bruce Highway to the north and south;
- provision of an additional river crossing in the Te Kowai-Foulden area to provide a long-term alternative north/south freight route which could potentially also link to the Port of Mackay. The need for such a link is considered to be beyond the timeframe of this plan.

Further detailed studies would be required to investigate the feasibility of the above options.

Consultation

A number of issues have been raised by the community for consideration when planning the future road network.

Revitalisation of the city centre is considered important. It is desirable to minimise heavy vehicle movement through the city centre, especially along River Street where a range of boardwalks/ cycleways and some traffic calming devices are being considered. The impact of any reduction in River Street traffic on the balance of the adjacent street system will have to be considered.

There is a 10-year plan for the development of botanical gardens in west Mackay. The development of Lagoon Street or a route parallel to the existing rail as a heavy vehicle route may create conflicts with the intended botanic gardens usage. In addition an environmental park is being considered to improve the northern entrance to the CBD. A Hume Street link to Victoria Street and River Street could provide access to this area.

Preservation of green corridors along Paradise, George and Evans Streets, is considered a high priority.

Consultation with the freight industry indicated that the current road network is generally acceptable. The main freight route to the Port is from Nebo Road across Ron Camm Bridge via Sams Road, Malcomson Street and Harbour Road. The freight industry indicated that the route is acceptable for the short to medium-term, providing that critical sections such as Malcomson Street are upgraded to adequately cater for heavy vehicle movements in the near future.

In the long term, a heavy vehicle route to the west of the railway joining to Sugarshed Road, Heaths Road, Sams Road and Malcomson Street to access the port should be considered. There is a general preference for a heavy vehicle route to the

west of the existing rail line for the north-south movements and use of the multi-modal corridor in the long term for the east-west movements. Delivery of medium- to long-term options will depend on funding availability and benefits of such routes.

Recommended Road Network Strategy

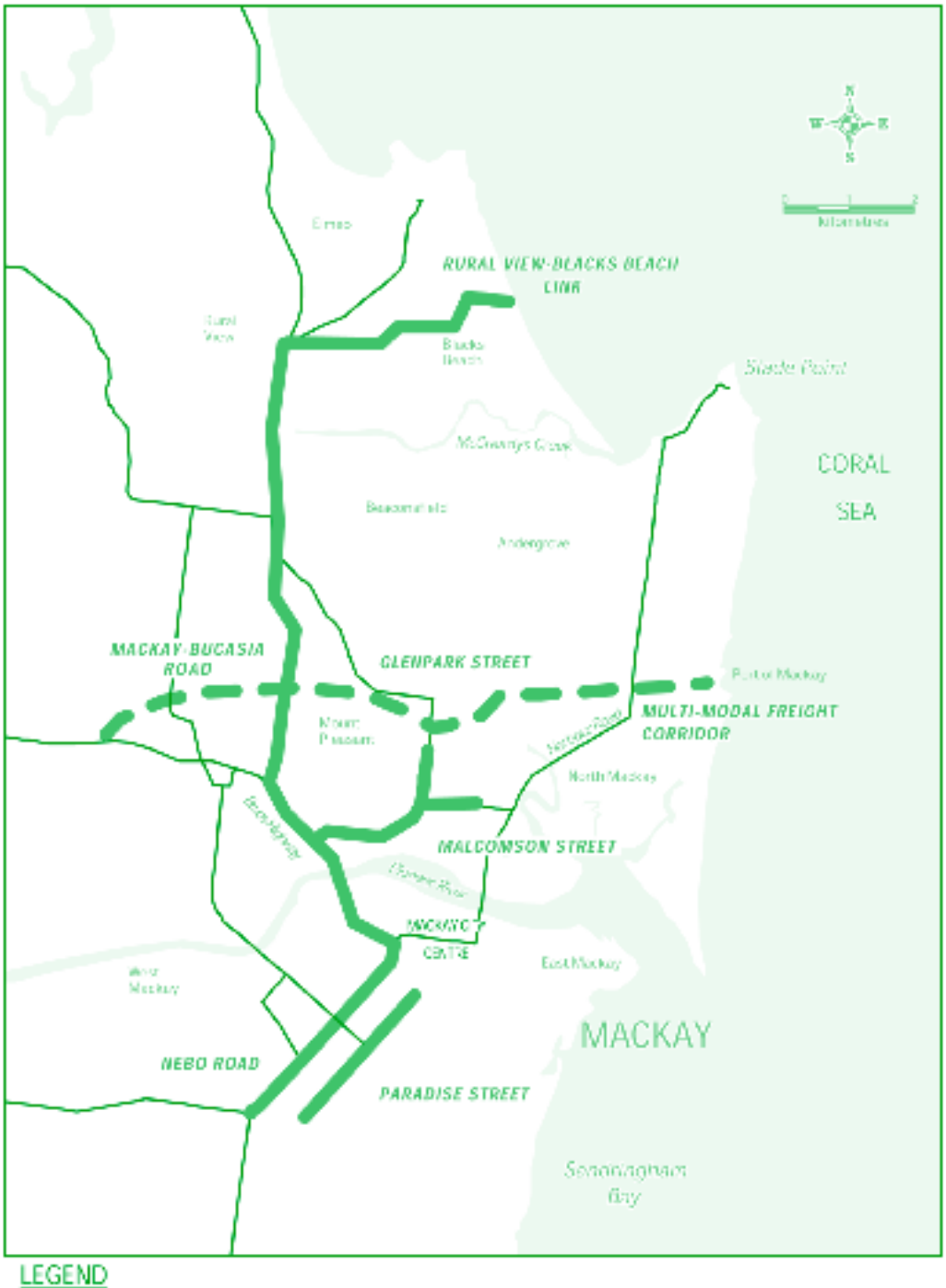
A road network strategy was developed, taking into consideration existing and projected traffic movements that may result from expected growth and land uses, the availability of funding for road infrastructure and the community's future development objectives for the area. Because of the range of planning options identified for each of a number of network elements (existing and future), a series of staging options is required. The timeline for planning and delivery of cross-river capacity needs to focus on potential key triggers (i.e. traffic volumes) based on demand for additional lanes, current infrastructure condition and potential impact of loss of a particular bridge.

The critical elements of the recommended road network strategy for the Mackay area are:

- Replacement of Forgan Bridge should be planned to coincide with the end of the anticipated structural life of the bridge. A four-lane structure should be provided as either a replacement for Forgan Bridge or construct a new bridge. Planning should commence in the short term and include a detailed study to address overall capacity and the staged implementation of cross-river solutions. The study should also consider intersection and approach road impacts at the approaches to each existing and potential future bridge.
- The disused railway corridor section from Shakespeare Street to Juliet Street is no longer required for future transport use but should be retained as 'Open Space'. The section from Alfred Street to Shakespeare Street needs to remain 'subject to QT assessment for a future transport corridor'.
- A Central Bridge should not be provided as it may adversely impact on the vitality of the CBD due to through traffic intrusion and resultant congestion, as well as social and environmental impacts on the northern approach.
- Hospital Bridge should be replaced at the end of the structural life of the bridge. Replacement should occur on either the current alignment or in close proximity prior to the combined traffic volumes on Hospital Bridge and Ron Camm Bridge exceeding 45,000 vpd. Planning needs to be undertaken in the short term due to the risk of the loss of the bridge during a flood event.
- The Hume Street connection from the southern approach of Ron Camm Bridge to River Street / Victoria Street and Hume Street should be constructed when the Nebo Road / Gordon Street intersection reaches capacity. This will maximise the traffic carrying capacity of the Ron Camm Bridge approaches, in addition to alleviating congestion at Nebo Road and Milton/Gordon Street intersections. Planning should commence in the short term.
- Malcomson Street should be upgraded to a higher standard four-lane facility as the main freight corridor through North Mackay for the medium term. Planning should commence in the short term.
- Upgrading of Mackay-Bucasia Road should continue to accommodate increasing traffic.
- The western north-south freight route (Te Kowai - Foulden) does not warrant further investigation within the timeframe of this Plan.
- The multi-modal freight corridor is the preferred freight route to Mackay Port in the long term. The state government should retain the road corridor land for the section of the multi-modal freight corridor between Mackay Port and Bucasia Road.

- The preservation of the corridor west of Mackay - Bucasia Road to the Bruce Highway is to be included as part of the Mackay City Council Planning Scheme, to protect the corridor from encroaching development.
- The total corridor from the Mackay Port to the Bruce Highway is to be the subject of a corridor management plan to preserve the corridor from encroachment by incompatible and noise-sensitive development.

Mackay Road Network



Action Plan: Road Network

Action	Timing	Lead Agencies	Other Agencies
Rd1 Commence planning for the replacement of Forgan and Hospital bridges to address cross-river capacity, including consideration of approach and major intersection requirements and cycle and pedestrian access.	Short Term	DMR	MCC
Rd2 Inform QR of the required status of the disused railway land from Alfred Street to Juliet Street. ■ Alfred to Shakespeare Street - subject to QT assessment for a future transport corridor; ■ Shakespeare to Juliet Street - not required for future transport purposes.	Short Term	QT	DMR, MCC
Rd3 Undertake detailed urban road planning studies to address capacity issues associated with: ■ Glenpark Street; ■ Nebo Road, including intersections; ■ Hume to Victoria/River Street link; ■ Paradise Street; ■ Bruce Highway north of Sams Road; ■ Malcomson Street; and ■ Rural View to Blacks Beach link.	 Medium Term Medium Term Medium Term Medium Term Medium Term Short Term Medium Term	 MCC* DMR* DMR/MCC MCC DMR DMR DMR/MCC	
Rd4 Undertake detailed investigations into the provision of alternative freight routes around the greater Mackay urban area to address the impacts of through transport of freight. *(Refer Fr8)*	Long Term	DMR, MCC	QT
Rd5 Preserve the existing multi-modal freight corridor between Bucasia Road and the port. Manage the impacts on the retained multi-modal freight corridor land, including resolving current conflicting uses as soon as practicable.	Short Term	DMR, MPA MCC,	QR, QT, DNR&M
Rd6 Preserve land for the multi-modal corridor between the Bruce Highway and Mackay – Bucasia Road through the Mackay City Planning Scheme.	Short Term	DMR, MPA, MCC	QT, QR, DNR&M
Rd7 Develop a management plan for the multi-modal freight corridor, including resolution of the required land tenure envelope to accommodate the MMFC, a strategy for acquisition of those parts of that envelope not currently controlled by the state, and termination of interim use of corridor land for any potential conflicting use.	Short Term, Ongoing	DMR	QT, MCC, MPA, QR
Rd8 Continue to manage the road network through: ■ maintaining road safety standards that are responsive to local needs; ■ reviewing traffic signal phasing to reduce delays; ■ maintaining road signage in accordance with local and state standards; ■ maintaining the road asset; and ■ undertaking road safety audits to consider the needs of all road users.	Ongoing	DMR, MCC*	

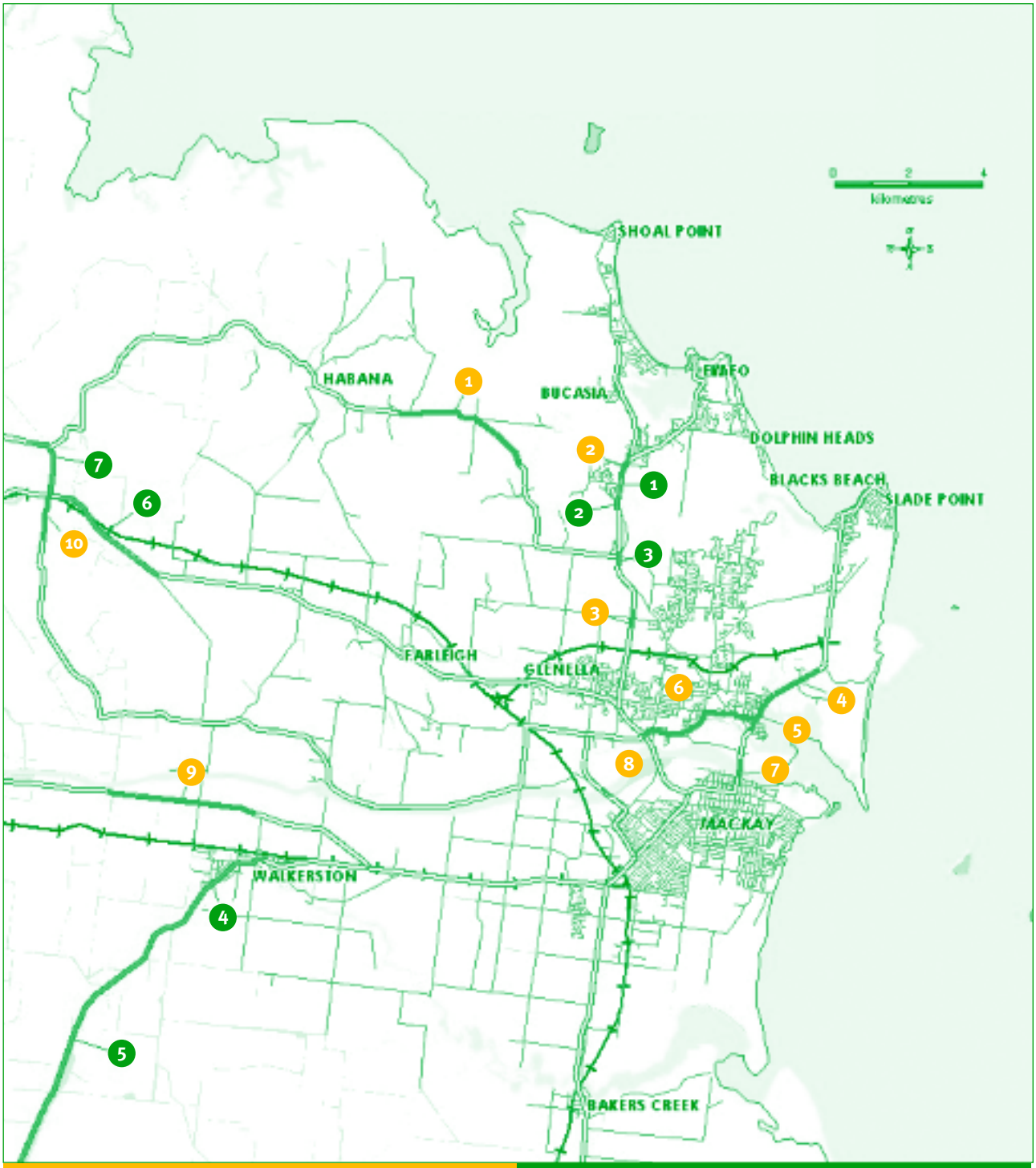
** Main Roads is lead agency for state controlled roads; Mackay City Council is lead agency for council roads*

Capital Program: Road Network

Description of Work	Lead Agency	Order of Cost	Timing (Term)	Funding Status
CRd1 Commence planning for the replacement of Forgan and Hospital Bridges to address cross-river capacity, including consideration of approach and major intersection requirements.	DMR	$200k	Short	Funded
CRd2 Undertake detailed urban road planning studies to address capacity issues associated with:				
■ Glenpark Street;	MCC	TBD	Medium	Unfunded
■ Nebo Road, including intersections;	DMR	$50K	Medium	Unfunded
■ Hume Street/River Street link;	DMR/MCC	$100K	Medium	Unfunded
■ Paradise Street;	MCC	TBD	Medium	Unfunded
■ Bruce Highway north of Sams Road;	DMR	$50K	Medium	Unfunded
■ Malcolmson Street; and	DMR	$80K	Short	Funded
■ Rural View to Blacks Beach link.	MCC	TBD	Medium	Unfunded
CRd3 Undertake detailed investigations into the provision of alternative road network routes to address the impacts of through transport of freight. *(Refer Fr8)*	DMR, MCC	$150K	Long	Unfunded
CRd4 Upgrade Mackay – Bucasia Road (intersections) and Eimeo Road deviation	DMR	$12M	Short	$3.9M Funded*
CRd5 Upgrade Mackay – Bucasia Road (4 lanes) and rail overpass and interchange at Habana Road	DMR	$23M	Medium	Unfunded
CRd6 Upgrade Bruce Hwy/Bucasia Rd intersection.	DMR	$5M	Long	Unfunded
CRd7 Continue to manage the road network including: ■ maintaining road safety standards that are responsive to local needs; ■ reviewing traffic signal phasing to reduce delays; ■ maintaining road signage in accordance with local and state standards; ■ maintaining the road asset; and ■ undertaking road safety audits.	DMR	$3.4 m/yr	Ongoing	Funded

** Approved allocation in 2001/02 to 2005/6 RIP*

Roads Implementation Program 2001/02 – 2005/06



Approved Program Years 1 and 2

1. Mackay-Habana Rd – Widen existing pavement
2. Mackay-Bucasia Rd – At-grade intersection improvement
3. Mackay-Bucasia Rd – Construct roundabout
4. Mackay-Slade Point Rd – Pavement rehabilitation
5. Mackay-Slade Point Rd – Pavement rehabilitation
6. Rockleigh-North Mackay Rd – Transport study
7. Mackay-Slade Point Rd – Bridge repairs
8. Mackay Bypass Rd – Bridge repairs
9. Mackay-Eungella Rd – Widen existing pavement
10. Maraju-Yakapari Rd – Pave and seal

Indicative Program Years 3 to 5

1. Mackay-Bucasia Rd – At-grade intersection improvement
2. Mackay-Bucasia Rd – At-grade intersection improvement
3. Mackay-Bucasia Rd – At-grade intersection improvement
4. Peak Downs Hway – Pavement rehabilitation
5. Peak Downs Hway – Pavement rehabilitation
6. Bruce Hway – Realignment of 2 lanes
7. Yakapari-Seaforth Rd – Shoulder widening and sealing