Volume 1

Moreton Bay Regional Council

Moreton Bay Rail Link Local Plans Phase 2 Report

August 2011



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August 2011

Moreton Bay Regional Council



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Contents

Glossary			iv
Executive summary			v
1.	Intro	oduction and context	1
	1.1	Background	1
	1.2	1.1.1Context1.1.2Project needProject methodology	1 2 3
2.	Tech	nnical issues and concept plan development	6
	2.1	Local plan boundaries	6
	2.2	Determining station area typology	6
2.3 Opportunities and const		Opportunities and constraints analysis	7
	2.4	 2.3.1 Kallangur Station Catchment 2.3.2 Socio-economic assessment 2.3.3 Transport and mobility assessment Station Concept Plans 	7 11 12 13
	2.5	 2.4.1 Kallangur Station 2.4.2 Murrumba Downs Station 2.4.3 Mango Hill Station 2.4.4 Kinsellas Station 2.4.5 Rothwell Station 2.4.6 Kippa-Ring Station Summary 	14 16 17 19 20 21 23
3.	Tran	sport and traffic analysis	24
	3.1	Transport and land use integration issues	24
	3.2	Network integration	24
	3.3	 3.2.1 General principles of network integration 3.2.2 Kallangur and Murrumba Downs 3.2.3 Mango Hill and Kinsellas Road 3.2.4 Rothwell Kippa-Ring 	25 27 29 31 33
4.	Infra	structure and services analysis	35
	4.1	Sewer Infrastructure	35
		 4.1.1 Kallangur 4.1.2 Murrumba Downs 4.1.3 Mango Hill 4.1.4 Kinsellas 	35 35 36 36



	4.2	4.1.5 Rothwell4.1.6 Kippa-RingWater]	37 37 38
	4.3	 4.2.1 Kallangur 4.2.2 Murrumba 4.2.3 Mango Hill 4.2.4 Kinsellas 4.2.5 Rothwell 4.2.6 Kippa-Ring Stormwater and Floor 	Downs g oding	38 38 39 39 39 40 40
	4.4	 4.3.1 Kallangur 4.3.2 Murrumba 4.3.3 Mango Hill 4.3.4 Kinsellas 4.3.5 Rothwell 4.3.6 Kippa-Ring Summary of Finding 	Downs g s	40 40 41 41 41 41 42 42
5.	Impl	ementation challer	nges	45
	5.1	Evolution of the rail	project	45
	5.2	Water and Sewer Int	frastructure	46
	5.3	Integrated Transport	t	46
	5.4	Other issues commo	on to all station/local plan areas	46
	5.5	Station specific issue	es	46
		5.5.1Kallangur5.5.2Murrumba5.5.3Mango Hill5.5.4Kinsellas F5.5.5Rothwell5.5.6Kippa-Ring	Rd	46 47 47 47 47 47
6.	Rela	tionship to regulat	ory framework	48
	6.1	South East Queensl	and Regional context	48
	6.2	Uncertainties and op	otions	48
	6.3	Implementation mec	hanism	49
	6.4	The MBRL local plan	ns - a way forward	49
7.	The	Local Plans		51
	7.1	Kallangur/Murrumba	Downs Local plan	52
	7.2	Mango Hill/Kinsellas	Local plan	55
	7.3	Rothwell Local plan		57
	7.4	Kippa-Ring Local pla	an	58
8.	Refe	eference list		



List of tables

Table 2.1	MBRL station typology	7
Table 2.2	Key values and constraints for Kallangur station catchment	8
Table 2.3	Key values and constraints for Murrumba Downs station catchment	8
Table 2.4	Key values and constraints Mango Hill station catchment	9
Table 2.5	Key values and constraints Kinsellas station catchment	9
Table 2.6	Key values and constraints Rothwell station catchment	10
Table 2.7	Key values and constraints Kippa-Ring station catchment	10
Table 2.8	Raw traffic generation rates for new development in catchment areas	13
Table 2.9	Kallangur station - summary of concept plan features	15
Table 2.10	Murrumba Downs station - summary of concept plan features	16
Table 2.11	Mango Hill station - summary of concept plan features	18
Table 2.12	Kinselas station - summary of concept plan features	19
Table 2.13	Rothwell station - summary of concept plan features	21
Table 2.14	Kippa-Ring station - summary of concept plan features	22
Table 4.1	Local plan servicing infrastructure	43
Table 4.2	Likely upgrades	44

List of figures

Figure 1.1	Current context for proposed railway stations and catchments	3
Figure 1.2	Project process diagram	4
Figure 2.1	Kallangur preferred station concept plan (as at 12/05/2011)	15
Figure 2.2	Murrumba Downs preferred station concept plan (as at 12/05/2011)	17
Figure 2.3	Mango Hill preferred station concept design (as at 12/05/2011)	18
Figure 2.4	Kinsellas initial station concept design (as at 12/05/2011)	20
Figure 2.5	Rothwell preferred station concept design (as at 12/05/2011)	21
Figure 2.6	Kippa-Ring preferred station concept design (as at 12/05/2011)	23
Figure 3.1	Likely park 'n' ride catchment for MBRL	26
Figure 7.1	MBRL Local Plans in regional context	51
Figure 7.2	Kallangur Aerial perspective	53
Figure 7.3	Zoning and precinct plan for Kallangur and Murrumba Downs	54
Figure 7.4	Murrumba North Precinct – street level perspective	54
Figure 7.5	Zoning and precincts plan for Mango Hill and Kinsellas	55
Figure 7.6	Kinsellas Station – street level perspective	56
Figure 7.7	Mango Hill Precinct	56
Figure 7.8	Zoning and Precinct plan for Rothwell	57
Figure 7.9	Zoning and precincts plan for Kippa-Ring	58
Figure 7.10	Kippa-Ring aerial perspective	59
Figure 7.11	Kippa-Ring, street level perspective	59



Glossary

- TOD Transit Orientated Development
- SEQ South East Queensland
- MBRL Moreton Bay Rail Link
- MBRC Moreton Bay Regional Council
- DTMR Department of Transport and Main Roads
- GMQ Growth Management Queensland



Executive summary

This is the Phase 2 report in the Moreton Bay Rail Link (MBRL) Local Plans project. The purpose of the MBRL Local Plans is to provide a comprehensive and flexible planning framework that will deliver the agreed future role and function of each station area to be developed as part of the Moreton Bay Rail Link Project.

The MBRL Project is a \$1.15 billion infrastructure project to be delivered jointly by the Commonwealth Government, Queensland Government and Moreton Bay Regional Council. The proposed project is located approximately 25-30km from the Brisbane CBD and is contained within the Moreton Bay region, Queensland. The MBRL project will deliver a 12.6 km dual-track rail line between Petrie and Kippa-Ring, including six new rail stations at Kallangur, Murrumba Downs, Mango Hill, Kinsellas Road, Rothwell and Kippa-Ring.

Preparation of the local planning instruments was commissioned by Moreton Bay Regional Council (MBRC) in 2011. The need for this project evolved in response to:

- the recognition that station outcomes have the potential to positively influence land development and travel behaviour within the new station catchments
- the need to reduce car-dependency and improve access to major employment centres through development and design outcomes which connect communities with improved transport, employment and housing choices.

Phase 2 of this project has culminated with the production of four (4) detailed Local Plans. These include the:

- Kallangur and Murrumba Downs Stations Local Plan
- Mango Hill and Kinsellas Stations Local Plan
- Rothwell Station Local Plan
- Kippa-Ring Station Local Plan.

Combined, these Local Plans set out the land use and design outcomes for the catchment areas of the six new MBRL rail stations as part of a transformation from a string of fragmented, car-based dormitory suburbs to an integrated and cohesive urban corridor. This report has thus been prepared to document the planning and design process undertaken in Phase 2 of the MBRL Local Plan project.

Preparation of the Local Plans has occurred at a time in parallel with significant legislative change in planning in Queensland. The draft Local Plans presented in this report have been prepared on the basis that they will be included in the proposed MBRC 2030 Planning Scheme. Preparation of the Local Plans has also required that these documents are consistent with the objectives of the *Sustainable Planning Act 2009* and the format of the recently introduced Queensland Planning Provisions (QPP).

Development of the Local Plans included a more detailed review of key technical issues and refinement of the preferred concept plans developed in Phase 1 of the project. The concept plans provided the basis for the mapping and graphic representations shown in the Local Plans for the six proposed station locations. Targeted stakeholder engagement was a critical component of this stage. The input and guidance received from key stakeholders during workshop meetings was critical to refinement and evolution of the concept plans into the appended Local Plans of this report.

The MBRL local planning process has also centred on understanding the potential impacts and opportunities to existing transport and infrastructure services as a result of plan implementation. The report presents the result of a high level analysis for both transport and traffic, and infrastructure and



services, in order to identify opportunities and constraints at the six station locations which built upon the Phase 1 findings.

Reasonably detailed findings are included for each of the station areas with respect to transport in the body of the report. Some of the overarching recommended changes to the transport network include:

- allowance for the status and alignment of the proposed Kallangur "bypass" as a 4-lane urban arterial road (rather than motorway standard road) to improve connectivity and station area development for both Kallangur and Murrumba Downs stations; resolution of this proposed change will require further coordinated planning with DTMR and MBRC;
- Proposed movement of the Kippa-Ring station further east (by approximately 100m) to better connect and provide mixed use development integration with the existing Kippa-Ring centre;
- Improved locations for park 'n' ride and bus interchanges to better support mixed use development and transit integration within the station catchments (thus ensuring park 'n' ride or bus transit interchanges are not the dominant feature immediately adjacent to the station). Further analysis of park 'n' ride demand and bus network planning is underway in conjunction with TransLink, which will inform final designs for these critical network and infrastructure elements;
- Further analysis will be required to assess and refine transport networks as the MBRL project proceeds toward final design and construction (eg the intersection of Anzac Avenue and Deception Bay Road requires modelling to determine capacity for future Rothwell station area development potential, etc.).

Existing and planned infrastructure along the MBRL corridor is shown to have adequate capacity to service the proposed population. Localised impacts however may require some trunk main augmentations within local catchments as well as upgrades to pump stations to service the ultimate population.

A number of issues surrounding statutory implementation of the Local Plans have been identified. Certain issues are specific to each station area while others have the potential to impact across the entire MBRL. Key challenges identified relate to:

- the evolution of the MBRL project and the impact of changes to the rail alignment and/or major engineering design upon land availability
- the potential for delay in the delivery of several significant changes to the existing road network which underpin the Local Plans
- issues surrounding resumption, land ownership and compensation
- the need to secure significant investment in the public transport strategies endorsed in the Local Plans.

A timely resolution of the implementation process for the Local Plans themselves is urgently required. This report recommends that the statutory means for implementation of the Local Plans is likely to relate to the completion of the MBRC 2030 Planning Scheme, which is to be QPP compliant.

In the short-term, MBRC has resolved to initiate Temporary Local Planning Instruments (TLPIs) to protect key land parcels within the station catchments from under-development which would compromise realisation of the intent of the Local Plans. Council intends to prepare amendments to the existing Pine Rivers and Redcliffe planning schemes to maintain such protection until gazettal of the new scheme in 2014.

This report is presented in two volumes: Volume 1 provides background and content and Volume 2 provides the draft Local Plans.



1. Introduction and context

The Moreton Bay Rail Link (MBRL) Project is a major project supported and funded by the three tiers of government: federal, state and local council. It will represent a significant investment to provide more effective public transport solutions to one of the fastest growing local government areas in Australia.

In recognition of the significant potential of the Moreton Bay Rail Link Project to influence the transport options and built form around each of the six stations as part of a transformation from a string of fragmented, car-based dormitory suburbs to an integrated and cohesive urban corridor, the Moreton Bay Regional Council (MBRC) has engaged the Parsons Brinckerhoff team to prepare detailed Local Plans for the new station catchments on the Moreton Bay Rail Link.

The delivery of this local planning response has involved a rigorous planning process which provides a concrete step towards nation building and more efficient use of transport infrastructure. The Parsons Brinckerhoff team included a team of technical specialists comprising:

- Parsons Brinckerhoff planners, infrastructure and transport engineers
- Deicke Richards urban designers
- Foresight Economics urban economists
- John Gaskell Planning Consultants and
- DMA Partners development economists.

This report forms Phase 2 of the MBRL Local Plans Project. It builds on the information presented in the Phase 1 Report and presents the Local Plans developed for each station.

This Phase 2 report is presented in two volumes: Volume 1 provides background analysis in the development of the Local Plans; Volume 2 presents the draft Local Plans.

1.1 Background

1.1.1 Context

Moreton Bay Rail Link (MBRL) is a \$1.15 billion infrastructure project that is being provided jointly by the Commonwealth Government, Queensland Government and Moreton Bay Regional Council. The proposed project is located approximately 25-30km from the Brisbane CBD and is contained within the Moreton Bay Regional Council, Queensland. The MBRL project will deliver a 12.6 km dual-track rail line between Petrie and Kippa-Ring. Six new rail stations will be developed as part of the MBRL project at Kallangur, Murrumba Downs, Mango Hill, Kinsellas Road, Rothwell and Kippa-Ring.

The MBRL alignment is located on land acquired between 1978 and 1979 by the Queensland Government for future transport use. Despite rapid population growth, the Moreton Bay region remains poorly serviced by public transport options, with no section of the acquired Petrie to Kippa-Ring corridor having been utilised to date for public or active transport (DTMR).



1.1.2 Project need

In 2011, Moreton Bay Regional Council engaged Parsons Brinckerhoff to prepare Local Plans, detailing a preferred concept plan and Local Plan for each new station area along the rail link.

The need to prepare a local planning instrument or instruments resulted from:

- the identification of the MBRL Project (formerly referred to as the Petrie to Redcliffe Rail Corridor) as a Key Infrastructure Project (Public Transport Network) in the South East Queensland Infrastructure Plan and Program 2010–2031
- the recognition that station area outcomes as a result of this project have the potential to positively influence land development and travel behaviour within the station catchments and across the urban growth corridor generally
- the need to reduce car-dependency and improve access to major employment centres through development and design outcomes which connect communities with improved transport, employment and housing choices.

The MBRL Local Plans Project provides opportunity to capture the economic and community benefits of government investment in new public transport infrastructure. Once gazetted, the Local Plans will provide a powerful planning mechanism to guide the transformation of the rail corridor, consisting currently of relatively unplanned low density and highly cardependent suburban area, into a self-contained and sustainable urban area. However, there are considerable administrative issues to be addressed before this transformation can be effective.

The major components of the MBRL project are shown on Figure 1.1. These station locations are based on the Draft Project Change Report, Moreton Bay Rail Link, November 2010. The other major features on this figure are:

- the boundaries for the extent of the Pine Rivers ShirePlan and Redcliffe City Planning schemes –both of which are currently administered by MBRC
- the arterial and sub-arterial road network
- the South East Queensland Regional Plan boundary of the Regional Landscape and Rural production area
- 800 m radius walking distance from each proposed new Railway Station (representing a notional 10 minute walking catchment).





Figure 1.1 Current context for proposed railway stations and catchments

1.2 Project methodology

The formulation of the Moreton Bay Rail Link Local Plans has been conducted in a collaborative manner with Council and key stakeholders in three (3) integrated phases as follows:

- Phase 1
 - Part A: Background analysis
 - > Part B: Concept plan option development and selection
- Phase 2: Development of Local Plans
- Phase 3: Finalisation of Local Plans (by Council).

This report draws together the detailed planning and design undertaken in Phase 2 of the MBRL Local Plan process (Figure 1.2). It presents the recommended Local Plans and associated infrastructure strategies required to deliver the agreed future role and function of each station area.





Figure 1.2 Project process diagram

In order to meet tight timeframes, the Moreton Bay Rail Link Local Plans have been prepared within a streamlined framework requiring the commitment of Council, state government and key stakeholders.

Key tasks and outputs delivered for each phase of the MBRL local planning process are described in summary detail below.

1. Background analysis and synthesis (Phase 1)

The project team undertook a wide range of background research which has formed the basis for the Local Plans presented in this document.

Refer to the Phase 1 report for detail. Particularly relevant to this Phase 2 report, the mapping exercise identified:

- key values and constraints contained in the study area catchments
- preliminary options for existing and future land use.

2. Workshop 1 – station area vision, role and function (Phase 1)

Workshop 1 workshop was undertaken 8 February 2011 which:

- addressed a review of the background information
- developed and proposed the regional role and function of each station catchment



 involved a number of MBRC staff as well as a number of stakeholders including staff from Growth Management Queensland (GMQ), Department of Transport and Main Roads (DTMR), TransLink and the Department of Planning and Local Government (DLGP).

3. Workshop 2 - Concept plan option development and selection (Phase 1)

A multiple day enquiry by design (EBD) workshop was held 21-23 February 2011 with the following outcomes:

- agree upon criteria for assessment and selection of preferred concept plans
- development of two initial concept plans for each station to explore issues and opportunities for each location
- preliminary identification of preferred concept plans (for further refinement/evaluation) for each station area.

4. Concept option selection (Phase 1)

Detailed analysis was conducted on economic potential for each station area concept.

Preliminary infrastructure and transport network assessments were also conducted for each station area concept.

Application of the agreed criteria for selection of preferred concepts.

A background and summary report included in Phase 1 details the analysis undertaken and presents the preferred concept plan selected for each of the six station areas.

5. Development of the Local Plans (Phase 2)

Local Plans for each of the stations were prepared by the Parsons Brinckerhoff team in accordance with agreed structure, relationships and content of the Queensland Planning Provisions (QPP). A reasonably detailed transport and service infrastructure analysis was also produced to support implementation of the Local Plans and to inform Council's priority infrastructure plans.

This was undertaken in a collaborative manner with MBRC and Growth Management Queensland (GMQ) to ensure a seamless approach to the development of the preferred Local Plans, which have required refinement following the preferred concept designs developed in Phase 1.



2. Technical issues and concept plan development

The following section is a summary of key findings from Phase 1 that have influenced the development of the Local Plans for each station. Phase 1 was completed in the period from January 2011 to May 2011.

More detailed information relating to this background analysis work can be found in the Moreton Bay Rail Link: Local Area Plans Phase 1 Summary Report (Parsons Brinckerhoff et al. 2011).

2.1 Local plan boundaries

The MBRL Local Plans project exemplifies the integration of land use and transport planning. The SEQ Regional Plan prioritises several policies to assist in the delivery of integrated land use and transport planning outcomes. Transit Oriented Development (TOD) is an essential component of successful urban structure and form, the principles of which should be applied where *transit nodes exist* or *are proposed* (DIP 2009, p.102). As a general rule of thumb TOD precincts focus on the area within a 5 to 10 minute walking catchment of the transit station (generally 400m and 800m respectively); where inherently the catchment takes into account such elements as the nature of the topography, the mix of uses (and attractions), etc.

One of the first tasks in preparation of a local planning instrument is determining the definition of the boundaries of the planning area. For this project the boundaries were initially broadly based on the typical 10 minute walking distance of 800 metres. This catchment distance for a transit node determines the area for developing an appropriate mix of land uses to support both creating higher demand for the MBRL Project as well as developing appropriate TOD centres of activity.

It is acknowledged that the overall catchments for the railway stations will be considerably larger when taking into account provisions for park and ride access by vehicles, access by bus services, and cycling. These modes were taken into account in the concept design and mobility network planning. However, the Local Plan boundaries focused more on a 'walking' catchment boundary than an overall all mode boundary.

The 10 minute walking catchment boundary was used as an initial guide for boundary determination. In association with Council staff, the exact boundary for each of the Local Plans was then determined taking into account such matters as existing development areas, areas of likely land use change, and natural or physical boundaries within the 10 minute catchment area.

2.2 Determining station area typology

The Queensland Transit Oriented Development guide (TOD Guide GMQ 2010), to which Parsons Brinckerhoff were key contributors, outlines a number of broad precinct characteristics to provide a guide for planning professionals and the development industry. The results of applying these core typology guidelines suggest the following descriptions for the MBRL stations:



Туре	Description	MBRL examples
Urban	 Core (within 200 m of the station) - High and medium rise (Between 4 and 10 storeys) Primary walking catchment (within 400 m of the station and core) - Medium rise (4 to 10 storeys) Secondary walking catchment (within 800 m of the station and core) - Medium and low rise (3 to 4 stories) Density range (dwellings per hectare) depending on context - 60+ /180+ dw/ha. 	Kippa-Ring
Suburban	 Core (within 200 m of the station) - Medium rise (Between 4 and 10 storeys) Primary walking catchment (within 400 m of the station and core) - Medium and low rise, depending on context (3 to 4 stories) Secondary walking catchment (within 800 m of the station and core) Low rise (up to 3 storeys) Density range (dwellings per hectare) depending on context - 30 - 80 / 100+ dw/ha. 	Kallangur Kinsellas Mango Hill
Neighbourhood	 Core (within 200 m of the station) - Medium and low rise depending on context (3 to 4 stories) Primary walking catchment (within 400 m of the station and core) - Low rise (up to 3 storeys) Secondary walking catchment (within 800 m of the station and core) - Low rise (up to 3 storeys) Density range (dwellings per hectare) depending on context - 30 - 60 / 80+ dw/ha. 	Murrumba Downs Rothwell

Table 2.1MBRL precinct typology

Source: (GMQ 2010, p.10)

A considerable amount of planning and investment is required for these locations to reach the intensity and types of development described above. The characteristics, opportunities and constraints of the six locations for the proposed railway stations are described below.

2.3 Opportunities and constraints analysis

As a part of the background analysis process associated with design of the concept plans conducted in Phase 1, a series of analysis plans were prepared to identify key values and constraints to the Project and set the scene for subsequent workshop discussion for the identification of realistic options for existing and future land use.

The key findings of the urban analysis process are set out in this section according to catchment area. More detailed information can be found within the Phase 1 Summary Report.

2.3.1 Kallangur Station Catchment

The Kallangur station is located along Goodfellows Road with the surrounding catchment approximately bounded by Sheehan Street to the north, Marlene Street to the south east and Bluegum Street to the far west.

Key values and constraints identified for the catchment area are provided in Table 2.2.



Value/Constraint	Summary
Koala habitat	High number of areas in the southern and western reaches within the catchment which are mapped as 'bushland habitat: high/medium value'. The station itself is directly located in an area of bushland of high/medium value.
Threatened species	Online database records indicate there are 5 Threat-listed fauna species (4 near-threatened bird species and 1 vulnerable mammal species (Koala) under the <i>Nature Conservation Act 1992</i>) occurring within 1 km of the proposed station.
High value regrowth	The catchment contains High value regrowth vegetation under the <i>Vegetation Management Act 1999</i> , including mapped regrowth containing Endangered regional ecosystem located at the proposed station location.
Wastewater treatment plant	The Murrumba Downs Sewage Treatment Plant is located directly adjacent to the western area of the catchment. Detectable odour emissions from this sewerage treatment plant are a potential nuisance to future intensification of residential development.
Cultural heritage sites	Two sites of significance - the historical trees located on Anzac Avenue, Kallangur and the historical trees located on Chestnut Drive, Murrumba Downs.

Table 2.2 Key values and constraints for Kallangur station catchment

2.3.1.1 Murrumba Downs Station Catchment

The Murrumba Downs station catchment is located along the Freshwater Creek ecological corridor. The Bruce Highway forms the eastern side of the catchment area while Goodfellows Road forms the predominant western boundary. Anzac Avenue and Ogg Road form the respective north and south boundaries.

Key values and constraints identified for the catchment area are provided in Table 2.3.

Value/Constraint	Summary	
Flood prone land	The catchment is traversed by the waterway tributaries of Fresh Water Creek and Black Creek. These waterways are subject to significant flooding.	
Cultural heritage sites	Two sites of significance - the historical trees located on Anzac Avenue and the historical trees located on Brays Road.	
Koala habitat areas	The catchment contains mapped Koala habitat, including small areas of medium and low value Koala bushland and medium and low value bushland suitable for rehabilitation.	
Regional ecosystems	There is an area of Endangered regional ecosystem (12.5.3) mapped within the station catchment; located 450 m north of the proposed station, along Freshwater Creek.	
High value regrowth vegetation	The station catchment contains High value regrowth vegetation under the <i>Vegetation Management Act 1999</i> , including mapped regrowth containing Endangered regional ecosystem immediately to the north of the proposed station location.	
Essential habitat	Essential habitat is vegetation in which a Threat-listed species has been known to occur. There are several areas of essential habitat (regrowth) mapped along the unnamed watercourses, and areas of essential habitat (Regional Ecosystem) mapped along Freshwater Creek.	

Table 2.3 Key values and constraints for Murrumba Downs station catchment



2.3.1.2 Mango Hill Station Catchment

The Mango Hill Station Catchment is bounded by Kinsellas Road East, Maryvale Road to the south, the Bruce Highway to the west and the waterway which traverses North Lakes Town Park to the North.

Key values and constraints identified for the catchment area are provided in Table 2.4.

Table 2.4Key values and constraints Mango Hill station catchment

Value/Constraint	Summary
Development activity	Large portions of land to the north east and north west of the catchment were identified as 'mooted' applications, implying that they are potentially in the pipeline for development. Development applications have been lodged over some sites and, in some cases, conditional approval has been granted.
Threatened species	Online database records indicate there are 2 threat-listed fauna species (1 near-threatened bird species and 1 vulnerable mammal species (Koala) under the <i>Nature Conservation Act 1992</i>) occurring within 1 km of the proposed station.
High value regrowth	The catchment contains High value regrowth vegetation under the Vegetation Management Act 1999 including areas of mapped regrowth containing Endangered regional ecosystem located south and east of proposed station location.

2.3.1.3 Kinsellas Station Catchment

The boundary of the Kinsellas Station Catchment is formed approximately by Hay Inlets to the east, Richard Road to the south, Kinsellas Road East to the west and Saltwater Creek to the North.

Key values and constraints identified for the catchment area are provided in Table 2.5.

Value/Constraint	Summary
Development activity	Opportunities for the development of vacant land near the station could be compromised by recent development approvals lodged over the majority of the catchment area.
Ecological corridors	The North Lakes Ecological Corridor traverses the station catchment along the length of an unnamed watercourse.
Threatened species	Online database records indicate there is 1 Threat-listed fauna species (a vulnerable mammal species (Koala) under the <i>Nature Conservation Act 1992</i>) occurring within 1 km of the proposed station.
Koala habitat areas	The station catchment contains mapped Koala habitat, including primarily medium and low value bushland suitable for rehabilitation with small areas of medium and low value Koala bushland.
Cultural heritage	One site of cultural heritage significance - the historical trees located on Kinsellas Road West.
Essential habitat	There are several areas of essential habitat (regrowth) under the <i>Vegetation Management Act 1999</i> , mapped within the station catchment, surrounding the proposed station.
Ramsar Wetland	None exist within the station catchment, however the site drainage discharges into the Ramsar listed Moreton Bay Wetland, which is located 900 m to the north east of the proposed station.

Table 2.5 Key values and constraints Kinsellas station catchment



2.3.1.4 Rothwell Station Catchment

The Rothwell Station Catchment is bordered by Hays Inlet, McKillop Street to the west and Cambridge Street to the north.

Key values and constraints identified for the catchment area are provided in Table 2.6.

 Table 2.6
 Key values and constraints Rothwell station catchment

Value/Constraint	Summary
Flood prone land	The area contains a significant portion of low-lying and flood-prone land in close proximity to coastal waters and fish habitat areas.
Site characteristics	Approximately one half of the Rothwell Station Catchment is located inside the regional Landscape and Rural Production Area under the SEQ Plan. Development within RLRP areas is generally limited and precludes urban development.
Acid Sulfate Soils	Acid sulphate soils are extensive within the Rothwell Station catchment. Acid sulphate soil is only able to be developed following appropriate remediation.
Essential habitat	Essential habitat is vegetation in which a Threat-listed species has been known to occur. There are several areas of essential habitat; both regrowth and regional ecosystem, mapped within the station catchment
Protected areas	Protected area Hays Inlet Conservation Park 2 is located to the northwest and southeast of the station, within the station catchment
Fish habitat areas	Saltwater Creek flows through the station catchment and into Hays Inlet. The lower extent of Saltwater Creek and the full extent of Hays Inlet are part of the Hays Inlet Declared Fish Habitat Area.
Wetlands	The declared nationally important wetland Pine River and Hays Inlet and the Ramsar listed Moreton Bay wetland are mapped within the station catchment, following the course of Saltwater Creek.
Koala habitat	The station catchment contains mapped Koala habitat, including medium and low value Koala bushland and medium and low value bushland suitable for rehabilitation. The proposed station itself is located within mapped low value bushland suitable for rehabilitation.

2.3.1.5 Kippa-Ring Station Catchment

The Kippa-Ring Station Catchment is bordered approximately by Kippa Street to the North, Bingle Street to the east, MacDonnell Road to the south and Cheshire Street to the north west.

Key values and constraints identified for the catchment area are provided in Table 2.7.

Value/Constraint	Summary
Flood-prone land	Significant constraints to this area include the potential for localised flooding, including in and around the station location. This flooding is associated with low elevation of the catchment to Hays Inlet.
Wetlands	The declared nationally important wetland Pine River, Hays Inlet and the Ramsar listed Moreton Bay wetlands are mapped in the southwest of the catchment.

 Table 2.7
 Key values and constraints Kippa-Ring station catchment



Value/Constraint	Summary
Acid Sulfate Soils	The entire station catchment is mapped as having the potential to contain acid sulphate soils. However, much the catchment is mapped as 'areas above five metres elevation with low probability of acid sulfate soils'.
Cultural heritage	One site of cultural heritage significance - the Anzac Memorial Avenue (former) located on Anzac Avenue, Redcliffe.
Wetlands	The declared nationally important wetland Pine River and Hays Inlet and the Ramsar listed Moreton Bay wetland are mapped in the southwest of the station catchment
Essential habitat	There are several areas of essential habitat; both regrowth and regional ecosystem, mapped within the station catchment, southwest of the proposed station.
Koala habitat	The station catchment contains mapped Koala habitat, including a small area of low value Koala bushland to the west of the station, as well as medium and low value bushland suitable for rehabilitation.

2.3.2 Socio-economic assessment

As detailed in the Phase 1 report, in parallel to the broader constraints analysis process, the Parsons Brinckerhoff team also investigated the socio-economic composition of the Dakabin–Kallangur–Murrumba Downs Statistical Local Area (SLA), Griffin–Mango Hill SLA and Rothwell–Kippa-Ring SLA (Total Study Area), a summary of which is set out below.

2.3.2.1 Demographic characteristics

- Compared to the Brisbane Statistical Division (SD), the Total Study Area has a higher proportion of children of dependent age (0-14 years) and accordingly a higher proportion of couple with children households.
- Lower labour force participation rates contribute to a lower average household income.
- The proportion of households owning or purchasing their home is higher than the Moreton Bay Regional Council and the Brisbane SD.

2.3.2.2 Employment characteristics

- A lower proportion of residents in the Total Study Area were employed in white collar occupations compared to other benchmark areas, accounting for 61.0% (3,266) of all workers. The lowest proportion of white collar workers is in Kinsellas Road (35.7%) and the highest proportion at Mango Hill (70%). This difference is partially explained by the different stages of development represented by these two areas. By the time the Kinsellas area is more advanced in developed, it is likely its share of white collar workers will more closely match those of Mango Hill.
- Technicians and trades workers (17.3%) and clerical and administrative workers (17.2%) represent the single largest occupation groups across the Total Study Area.
- The manufacturing industry has the single largest proportion of workers in the Total Study Area at 14.1% (745), which is higher than both MBRC and Brisbane, followed by retail trade (14.0%) and health care and social assistance (11.3%).



2.3.2.3 Industry specialisation

- There is a greater concentration of education and training and accommodation and food services employment in Dakabin–Kallangur–Murrumba Downs (with LQs of 1.8 and 1.6 respectively) compared to MBRC.
- Griffin–Mango Hill has a comparative employment advantage in retail trade, with a location quotient of 1.9 given the major shopping centre in North Lakes.
- Rothwell–Kippa-Ring has a greater concentration of employment in health care and social assistance than other areas (with an LQ of 1.7).

2.3.2.4 Containment rates

- In comparison, the labour force containment for the study SLAs was 15.9% as at the 2006 Census. This implies that almost 85% of employed people residing within the three SLAs worked outside the SLA boundaries.
- Approximately 3,300 people were employed in Dakabin–Kallangur–Murrumba Downs as at the 2006 Census. Around 1,560 of these workers also resided in the Dakabin– Kallangur–Murrumba Downs SLA, giving a job containment rate for the SLA of 47.1%. This means that 53% of people working in the SLA travelled from outside the region. In Griffin–Mango Hill, the job containment rate of the SLA was 34.4% while in Rothwell– Kippa-Ring it was 24.8%.

2.3.3 Transport and mobility assessment

A transport and mobility assessment was also undertaken in Phase 1. Key findings from this assessment are presented below.

2.3.3.1 Journey to work analysis

- Dakabin–Kallangur–Murrumba Downs and Griffin–Mango Hill experience higher levels of commuter outflow than inflow, which results in a net loss of workers. This lies in correlation to limited employment opportunities in these areas compared to higher order activity centres such as Strathpine and Brisbane.
- Outflow rates are especially high in Dakabin-Kallangur-Murrumba Downs, which had a net loss of 7,015 workers, followed by Griffin-Mango Hill (-2,812 workers).
- According to the 2006 Census, approximately 80% of residents living within the Moreton Bay Region SLAs travelled to work by one method of travel. Of those travelling by a single method, car travel accounted for nearly 90% of travel.
- The proportion of people using public transport (comprising train and bus travel) varies amongst the SLAs. Public transport ridership is highest in Dakabin, Kallangur and Murrumba Downs. A further 4.0% to 5.0% of usual residents used two methods of travel to work, with the most popular options together being car and train travel.
- In comparison to workers employed within each of the three SLAs, car dependence was very high accounting for nearly 90% of single based travel only. There were a notably lower proportion of workers using public transport as the only means to travel to work particularly in Dakabin, Kallangur and Murrumba Downs.



2.3.3.2 Traffic infrastructure assessment

At this stage no standard trip generation rates for TODs in Australia are in place. Trip generation rates for development along the MBRL have therefore been generated based on available international and local research in trip making in TOD communities. PB understands that Growth Management Queensland is currently developing a guideline for Queensland specific TOD traffic generation rates for different modes. Once Growth Management Queensland has completed their guideline the projections of multi-modal trip generation rates for the developments should be updated.

Research shows that the density and mix of uses within TODs within walking distance of a high frequency public transport station has a significant influence on the number of walking, cycling, public transport and vehicle trips undertaken by residents. In the absence of a Queensland specific guideline on trip generation rates the trip generation rates that are used to calculate the traffic generation for new development within 800m of a station should apply a trip reduction factor to standard vehicle trip generation rates. The reduction factor is based on international research and is due to active and public transport having a greater mode share within TODs.

The expected vehicular traffic generation of the likely future development surrounding the proposed rail stations on the MBRL were assessed based on first principles traffic generation. The assessment was undertaken for the forecast years of 2021 and 203, the base vehicle trip generation rates and vehicle trip reduction factors to be applied for development within 800m of the station are detailed in Table 2.8.

The total vehicle trip generation is based on land-use trip production and attraction rates sourced from the Main Roads Road Planning and Design Manual and, where data was not available, from the RTA Guide to Traffic Generating Development. These trip generation rates are for vehicle trips and a reduction factor needs to be applied to recognise the impact TOD will have on vehicle trip generation.

Land use	Unit of generation	Daily vehicle trip generation rate	AM rate	PM rate	Vehicle trip reduction factor
Detached residential	Dwellings	10	0.85	0.85	40.7%
Multi-Unit residential	Dwellings	6	0.5	0.5	40.7%
Commercial	100 m2	10	2	2	3%
Retail GFA 0-10,000	100 m2	121	12.5	12.5	7%
Retail GFA 10,000-20,000	100 m2	78	6.2	6.2	7%
Retail GFA 20,000-30,000	100 m2	63	5.6	5.6	7%
Retail GFA 30,000-40,000	100 m2	50	3.7	3.7	7%

 Table 2.8
 Raw traffic generation rates for new development in catchment areas

Source: (Parsons Brinckerhoff 2011, p.15)

2.4 Station Concept Plans

The process of formulating a preferred concept for the future growth along the MBRL involved canvassing a range of land use options for each station catchment area. These options were framed by the planning and socio-economic parameters identified in the background analysis tasks of Phase 1.



The concept plans were developed during Phase 1 in collaboration with stakeholders from MBRC, DTMR, TransLink, GMQ and DLGP Concepts selected were those that would generally increase development potential, improve connectivity for all modes and better integrate the rail stations into each of the local areas.

The following summarises the preferred role and function, as well as the land use concept plans for each station catchment area. These concept plans formed the basis for the Local Plans, which evolved after more detailed analysis and consideration of statutory requirements.

2.4.1 Kallangur Station

2.4.1.1 Role and function

The bus catchment for the station is potentially quite large with bus services currently serving Kallangur and linking Murrumba Downs to Petrie Station passing in close proximity to the station. The ease and efficiency of bus access to the rail station will be a major factor in determining the opportunities for integration and the design of the road network and bus interchange at the station should be reviewed to support this. This is complemented by the potential for a reasonably large residential and employment catchment of Kallangur District Centre as a transit destination, particularly as Kallangur Fair is 750 metres from the station and within a ten minute walking distance.

There is also potential for the station to have a large cycling catchment as the riverine corridor and multiple potential on-road cycle routes provides opportunities for cycle access to a large population. Supporting this would however require investments in supporting on and off-road cycle infrastructure and end-of-trip facilities.

There is potential for Kallangur station to have a reasonably large vehicle commuter catchment due to the strong road linkages in all directions along Dohles Rocks Road, Goodfellows Road, Duffield Road and Anzac Avenue. A large park and ride facility (eg greater than 400 carparks) at the station has however been deemed not appropriate due to the potential for development around the station, the opportunities for integration with bus services, and the proximity of large park-and-ride facilities at Petrie and potential for future facilities at Dakabin and Murrumba Downs.

Kallangur station would therefore predominately have walk/cycle access and some bus/rail interchange function. Park and ride should be minimised and a reasonable level of mix of uses and density would be preferred to support a reinforcement of the Kallangur District Centre as a transit destination as outlined further below.

2.4.1.2 Concept plans

A summary of the features of the initial concept plans for Kallangur Station (Option A and B) is provided in Table 2.9.



Option A Option B Proposes - • Consolidation of fragmented sites north of Kallangur Bypass • To connect Duffield Road to Dohles Rocks Road beside open space corridor to intersect with Goodfellows Road East at grade and continue to a park and ride park on the north side of the Bypass and station • Plan for Kallangur Bypass as a 4-lane 'urban arterial' standard road with limited access to achieve boulevard character and allow greater connectivity • An extension of Goodfellows Road to follow the southern side of the rail corridor, under the overpass to the station • Consolidation of fragmented and alienated sites north of Kallangur Bypass • Refinement of Place Design Group master plan produced for the DTMR catalyst site • Park and Ride capacity of 150 cars				
Proposes Consolidation of fragmented sites north of Kallangur Bypass Park and Ride capacity of 150 Park and Ride capacity of 150 Plan for Kallangur Bypass as a 4-lane 'urban arterial' standard road with limited access to achieve boulevard character and allow greater connectivity An extension of Goodfellows Road to follow the southern side of the rail corridor, under the overpass to the station Consolidation of fragmented and alienated sites north of Kallangur Bypass Refinement of Place Design Group master plan produced for the DTMR catalyst site Park and Ride capacity of 150 cars 	Option A Option B			
 Consolidation of fragmented sites north of Kallangur Bypass Park and Ride capacity of 150 To connect Duffield Road to Dohles Rocks Road beside open space corridor to intersect with Goodfellows Road East at grade and continue to a park and ride park on the north side of the Bypass and station Plan for Kallangur Bypass as a 4-lane 'urban arterial' standard road with limited access to achieve boulevard character and allow greater connectivity An extension of Goodfellows Road to follow the southern side of the rail corridor, under the overpass to the station Consolidation of fragmented and alienated sites north of Kallangur Bypass Refinement of Place Design Group master plan produced for the DTMR catalyst site Park and Ride capacity of 150 cars 	Proposes			
	 Consolidation of fragmented sites north of Kallangur Bypass Park and Ride capacity of 150 	 To connect Duffield Road to Dohles Rocks Road beside open space corridor to intersect with Goodfellows Road East at grade and continue to a park and ride park on the north side of the Bypass and station Plan for Kallangur Bypass as a 4-lane 'urban arterial' standard road with limited access to achieve boulevard character and allow greater connectivity An extension of Goodfellows Road to follow the southern side of the rail corridor, under the overpass to the station Consolidation of fragmented and alienated sites north of Kallangur Bypass Refinement of Place Design Group master plan produced for the DTMR catalyst site Park and Ride capacity of 150 cars 		

Table 2.9Kallangur station - summary of concept plan features

2.4.1.3 Recommended station concept plan

The preferred concept plan was Option A with a number of features in Option B. It assumes that the Kallangur bypass will be designed as an urban arterial with at grade intersections at Kallangur Station.

The preferred option does not fully overcome the issues of poor legibility of station location and between north and south of corridor and the disconnection of Goodfellows Road.



Figure 2.1 Kallangur preferred station concept plan (as at 12/05/2011) Source: (Parsons Brinckerhoff et al. 2011, p.51)



2.4.2 Murrumba Downs Station

2.4.2.1 Role and function

The proximity of the Murrumba Downs Station to the Bruce Highway will make this transit node popular as a park-and-ride station for residents of the northern suburbs, potential including commuters to Brisbane from the Sunshine Coast. This popularity will be reinforced by the station being the most accessible rail station from the Bruce Highway before Bald Hills.

The potential residential walking catchment for the station is similar to Kallangur Station. The location of the station provides the potential for high levels of bicycle access, but would require cycle pathways along the creek corridors and roads serving the station. The location of the station close to the confluence of three creek corridors creates the potential for high levels of bicycle access to the station, assuming practicable to provide pathways along these creek corridors.

There is some potential for buses serving Griffin and the southern part of Murrumba Downs to integrate with the station. The size of these catchments is however small and bus services could also potentially integrate at Kallangur station.

It would best be used as a local station combining walk and cycle access with park and ride and bus/rail interchange. It may serve as interim major park-and-ride to serve northern suburbs (including trips from the Sunshine Coast) until such time as improvements to services on the North Coast Rail Line reduce the need for this. It would have a mix of uses associated with a support of any future development of the Council's 'Tulip Town' site as a transit destination to the north of the station.

2.4.2.2 Concept plans

A summary of the features of the initial concept plans for Murrumba Downs Station (Option A and B) is provided in Table 2.10 below.

Table 2.10 Murrumba Downs station - summary of concept plan features

Opt	ion A	Option B	
Pro	poses		
•	Elevated station with concourse and cross- connections below rail	-	Elevated station with concourse and cross- connections below rail
•	Development of the Tulip Town site as Commercial retail, community and high	-	planned Kallangur Bypass as a 4-lane urban arterial road with limited access.
•	density residential High density residential on surplus land between bypass and rail corridor	•	Development of the Tulip Town site as Commercial retail, community and high density residential
 Consolidation and redevelopment of residential sites to the north west of Cecily Street Continuation of Cecily Street to a pedestrian overpass connection to station 	-	High density residential on surplus land between arterial and Freshwater Creek	
	Street Continuation of Cecily Street to a pedestrian overpass connection to station	-	Consolidation and redevelopment of residential sites to the north west of Cecily Street
•	Significant park and ride facilities off Brays Road.	•	Continuation of Cecily Street over Freshwater Creek to connect to arterial main street at station.
		-	Significant park and ride facilities off Brays Road
		•	A connection of Goodwood Road directly to Masjakin Court.



2.4.2.3 Recommended station concept plan

The preferred concept plan for Murrumba Downs is Option B with no significant modifications and is shown in Figure 2.10.



Figure 2.2Murrumba Downs preferred station concept plan (as at 12/05/2011)Source: (Parsons Brinckerhoff et al. 2011, p.62)

2.4.3 Mango Hill Station

2.4.3.1 Role and function

The proximity of the station to the designated Major Regional Activity Centre of North Lakes Town Centre reinforces that centre as a transit destination It also increases the potential for higher density residential and employment opportunities within walking distance of the station. There is also potential for providing reasonably good cycling connections between the station and development related to North Lakes south of Anzac Avenue. Given this potential, a park-and-ride facility at Mango Hill Station is considered inappropriate development and the extent of this parking should therefore be limited

The North Lakes Bus Station is designated as a district hub serving North Lakes town centre. It is however not directly accessible from the station. To ensure the Mango Hill Station can adequately serve the large catchments of North Lakes it is essential that the bus/rail interchange at Mango Hill Station has strong service linkage to North Lakes Bus Station. The station would be a Town Centre Fringe station with predominantly walking and cycle catchment and a bus/rail interchange function. Reinforcement of linkages to the North Lakes town Centre is critical to enable that centre to evolve as a substantial transit destination.



2.4.3.2 Concept plans

A summary of the features of the initial concept plans for Mango Hill Station (Option A and B) is provided in Table 2.11 below.

 Table 2.11
 Mango Hill station - summary of concept plan features

Option A	Option B	
Proposes		
 Below grade station Residential and commercial to area to north east fronting Anzac Avenue Connecting area to north east via street off Mango Hill Ring Road Park and ride on Corner of Halpine drive and Freshwater Creek Road Bus interchange and drop off on site through access off Mango Hill Ring Road. 	 Below grade station with concourse above Consolidation and redevelopment of residential site to the north of the station in an integrated mixed use development connecting over the station with views over Halpine lake to hinterland Possible high density of active uses on balance corridor between park and rail corridor Potential bus interchange on street or on site All residential use to area north east of station fronting Anzac Avenue. 	

2.4.3.3 Recommended station concept plan

The preferred concept plan for Mango Hill incorporates the Option B for the area immediately around the station and Option A for the area to the north east of the station between Anzac Avenue and Mango Hill Ring Road although with commercial and no retail allowed (Figure 2.3).



Figure 2.3 Mango Hill preferred station concept design (as at 12/05/2011) Source: (Parsons Brinckerhoff et al. 2011, p.78)



2.4.4 Kinsellas Station

2.4.4.1 Role and function

This station is located in an area that is currently largely undeveloped but subject of current development approvals.

Mango Hill Ring Road has potential to provide good vehicle access and bus access to the station (whereby existing bus route 682 could divert from Kinsellas Road East to serve the station and any associated development). Future bus services operating on the Mango Hill Ring Road would also provide access from an extensive potential catchment, making this station highly attractive as a major bus/rail interchange station. The design of the station would however need to be revisited to allow for convenient and efficient bus integration with rail while ensuring it also serves the town centre.

The station will be easily accessible off Anzac Avenue and Kinsellas Road and is expected to have high demand for park and ride from North Lakes. It would be a local station with predominantly walk and cycle catchment with a substantial park and ride function and a bus/rail interchange function. The mix of uses (residential and retail) south-east of the station would be increased beyond the scope of the current approvals to commensurate with a TOD.

2.4.4.2 Concept plans

A summary of the features of the concept plans for Kinsellas station (Option A and B) is provided in Table 2.12 below.

Opt	ion A	Opt	ion B
Pro	poses		
•	High density Residential to area to the east of Mango Hill Ring Road Park and ride on the site north-west of the station adjacent to school access road Bus drop off on Mango Hill Ring Road or at new public space in front of station.	· · ·	Relocation of town centre closer to station to engage station with town main street Connection across the narrow point of the lake to the previously approved residential area to the north east Connection of the residential area to the north of the lake line by an active way below the overpass to provide pedestrian and cycle connection direct to the station Higher residential densities around town centre and station Community uses at new public space in front of station Higher Retail and Commercial GFA in town centre.

Table 2.12 Kinsellas station - summary of concept plan features

2.4.4.3 Recommended station concept plan

Option B was selected as the preferred option for Kinsellas Road (Figure 2.4). The previously approved residential area north of the lake is accommodated but not reflected in the maps, as it falls outside the SEQ Regional Plan Urban footprint.





Figure 2.4Kinsellas initial station concept design (as at 12/05/2011)Source: (Parsons Brinckerhoff et al. 2011, p.93)

2.4.5 Rothwell Station

2.4.5.1 Role and function

There is limited immediate additional residential or employment potential within 800m of this station due to the majority of the catchment being flood-prone and traffic access issues from Anzac Avenue. Unless mitigation measures were possible, the potential of the surrounding land is limited to uses that do not require high levels of flood immunity, like sports fields.

The station would be attractive as a park 'n' ride facility serving communities from the Redcliffe Peninsula and from Deception Bay. Bus services from the areas of Deception Bay and Rothwell could potentially feed the station. However, the high traffic volumes and congestion points on Anzac Avenue impact on access to the station. Those access challenges, together with the separation of the station from Anzac Avenue and the absence of any major attractors, also constrain the opportunity for a bus/rail interchange. Subject to addressing the road network issues, the appropriate role for this station is as the main 'park and ride' station on the MBRL serving Deception Bay and the Redcliffe peninsula with provision for bus/rail interchange.

2.4.5.2 Concept plans

A summary of the features of the initial concept plans for Rothwell Station (Option A and B) is provided in Table 2.13.



i alor				
Opt	Option A Option B			
Pro	poses			
•	Connection of Gynther Road to Anzac Avenue	•	Connection of Gynther Road to Anzac Avenue	
•	Connection of residential area from Whitlock Drive to west of Gynther Road	•	Connection of residential area from Whitlock Drive to west of Gynther Road	
•	Business precinct on Anzac Avenue		Business precinct on Anzac Avenue	
•	Park and ride at the station	•	Park and ride at the station	
•	Open space and drainage for remainder of land between station and Anzac Avenue.	•	Open space sport and recreation for remainder of land between station and Anzac Avenue.	

Table 2.13Rothwell station - summary of concept plan features

2.4.5.3 Recommended station concept plan

Given the need to address a range of site and access constraints, it is not appropriate to designate specific development outcomes pending further investigation and resolution of outstanding issues. Consequently, the site is to be an investigation area. This is broadly shown in Figure 2.5.

The particular issues which need significant further investigation include flooding constraints and traffic congestion on Anzac Avenue. These will need to be further understood prior to the progression of a preferred concept plan and local plan development.



Figure 2.5Rothwell preferred station concept design (as at 12/05/2011)Source: (Parsons Brinckerhoff et al. 2011, p.109)

2.4.6 Kippa-Ring Station

2.4.6.1 Role and function

The proximity of the station to the Redcliffe Kippa-Ring Major Activity Centre supports that centre as a transit destination. It also increases the potential for higher density residential



and employment opportunities within walking distance of the station. The potential of such development is currently constrained by the limited permeability of the existing road network. Improved north-south connectivity would reduce reliance on Anzac Avenue and Elizabeth Avenue by commuters and improve development potential.

Most bus services that currently terminate or pass through Peninsular Fair Shopping Centre, or operate along Anzac Avenue between Boardman Avenue and Klingner Road, could be extended to operate via the rail station. Kippa-Ring would thus be a major bus/rail interchange station, serving a catchment that includes all of Redcliffe Peninsula and the southern portion of Deception Bay.

Kippa-Ring station would be a District Multi-Modal Station with predominantly walk and cycle and bus access through a major bus/rail interchange. Park and ride should be minimised. The mix of uses expected should include higher density residential, retail and commercial.

2.4.6.2 Concept plans

There were some common desired improvements for the initial concept options in Kippa-Ring including the need to downgrade the intensity and dominance of traffic on Anzac Avenue, increasing development potential and improving connectivity particularly to the station but also for the adjoining area. These broad intentions were captured in both concept plans for Option A and B. A summary of the features of Option A and B is provided in Table 2.14 below.

Opt	ion A	Opt	ion B
Pro	poses		
•	A connecting street on the south side of existing properties in Kroll Street to connect Anzac avenue to Hercules Street	•	Moving the station closer to Anzac Avenue, realigning station and platform to be parallel to Kroll street
:	Civic space between new street and station Connect Hercules Street over rail through to Macdonnell Road.	•	A connecting street on the south side of existing properties in Kroll Street to connect Anzac avenue to Hercules Street and station precinct to the retail precinct to the east of Boardman Road
		•	Closing off Kroll street to Anzac Avenue to consolidate with resumed properties for a new catalyst redevelopment site
		•	boulevard treatment to Anzac Avenue, including two additional signalised intersections to reduce severance and amenity impact on adjacent development.

Table 2.14Kippa-Ring station - summary of concept plan features



2.4.6.3 Recommended station concept plan

The preferred concept plan developed for Kippa-Ring station was largely based upon Option B (Figure 2.6). This concept was selected as it incorporates a proposed change in location and alignment which will result in a superior land use integration outcome, as it has the rail station closer to the centre of Kippa-Ring.



Figure 2.6 Kippa-Ring preferred station concept design (as at 12/05/2011) Source: (Parsons Brinckerhoff et al. 2011, p.126)

2.5 Summary

The concept plans developed in Phase 1 provided the basis for the mapping and graphic representations shown in the Local Plan for the localities associated with the walk-up catchments of the six proposed station locations.

The Parsons Brinckerhoff team acknowledges the critical importance, input and guidance from MBRC, TMR and GMQ into the concept plans and subsequent refinements as these documents evolved into the Local Plan appended. It should be noted, there has also been some limited engagement with major land holders in the area which was facilitated by MBRC. The concept plans and Local Plan reflect this input.



3. Transport and traffic analysis

3.1 Transport and land use integration issues

As identified in SEQ Connecting 2031, the Moreton Bay Rail Line from Petrie to Kippa-Ring will provide significant improvement (eg ExpressLink) in rail services between Kippa-Ring and Brisbane. The rail line will ensure that improved sustainable transport options are available for trips to, from and within the areas between Petrie and Kippa-Ring, as well as serving district and major centres along the corridor as transit destinations in their own right. Trips to other parts of greater South-East Queensland will also be facilitated.

The potential patronage of the MBRL will be very dependent on the extent to which the stations can integrate with the surrounding land use. Research undertaken by Transportation Research Board (TRB) in the United States on transit and urban form (TCRP 1996) found that residential and employment densities surrounding stations are the dominant influencing factor on patronage on suburban rail.

The urban design and density of areas surrounding the stations has a major impact on the mode of access to the stations. The TRB research shows that residents of higher density residential areas are more likely to walk to rail stations. Similarly, rail patrons accessing employment are more likely to walk longer distances in high density centres. Urban design treatments that supports pedestrians increases their contribution as a mode of access to the station. High intensity mixed used centres are also able to better serve the needs for the local population, significantly reducing the need for longer-distance travel for a range of purposes.

The scale and location of park 'n' ride provisions similarly have a major impact on the patronage of stations. As an inefficient user of road space and land, park 'n' ride can reduce the potential patronage to/from stations if it reduces residential and employment densities around the station, and/or if it results in an environment that is not supportive of pedestrian access to the station. Park 'n' ride does however serve an important function as a mode of access, especially in areas with low residential density and where more sustainable modes of access are unduly compromised.

Park 'n' ride provision and location will therefore have significant impact on the development potential for station areas as well as influence the mode of access to the MBRL. It is important that where park 'n' ride is provided at MBRL stations, it should not limit the TOD potential of the land surrounding the station. It should not separate the station from the surrounding land use, and should be located on land with otherwise limited development potential.

3.2 Network integration

This section details the network integration principles that have been used in identifying the active, public and road transport requirements for the Local Plans. These principles have informed the development of the maps setting out the transport requirements. These maps set out the preferred position of the MBRL stations as well as the network connectivity for all modes. These networks and key designs will need refinement and may need to be revised in further, more detailed planning for the MBRL, the transport network and the proposed development within each of the Local Plan areas. These principles should however guide these investigations to ensure the intent of the Local Plans are achieved.



It should be noted that no transport modelling or detailed traffic analysis (demand modelling, intersection analysis, etc.) was conducted for this assessment. So the advice provided below is based on principles of good integrated transport planning.

3.2.1 General principles of network integration

To encourage more sustainable transport solutions (eg lower car use and higher use of alternative modes), TransLink's preferred hierarchy of station access modes is, in order of priority, walking, cycling, public transport, kiss 'n' ride and park 'n' ride. The contribution of each of these modes to the patronage catchment of the station is related to its function. For each of these access modes, the following assumptions are made with regard to how they contribute to the integration of the rail stations with the land uses within their catchment.

The standard used for acceptable walking distance to a rail station is for a 10 minute walk, which equates to approximately 800m. An equivalent cycling catchment is approximately 3km. International research (TRCP 1996) shows that walking as a mode of access to a rail station is influenced by:

- the distance from the station entrance
- the amenity and legibility of the walking environment surrounding the station
- the frequency and coverage of integrated bus feeders
- the availability of free parking close to the station.

Cycling as a mode of access to the station is also influenced by similar factors including:

- the distance from the station entrance
- the availability of convenient and safe cycle routes to the station
- the availability of bicycle parking and the security thereof
- the ability to transport a bicycle on the train
- the frequency and coverage of integrated bus feeders
- the availability of free parking close to the station.

To maximise the use of walking and cycling as modes to access the stations the Local Plan has identified the need for an extensive network of active ways connecting the stations to the surrounding development. This will provide ease of walking and cycle access to the rail stations. The standard of the active ways would need to create a safe, secure and amenable environment for pedestrians and cyclists. These access routes to the stations should provide direct routing to the station and would use off-road shared pathways or roads with low traffic volumes and speeds.

The current land use density within the region is typically low and a large proportion of the total potential catchment for the stations would be outside the walkable or cycle-able catchment of the stations. In alignment with TransLink's preferred hierarchy of access modes, bus would be preferred over car as a mode of access to the stations. To this end providing for bus rail interchanges close to the station entrance is preferred. The location of



the proposed bus interchanges set out in the Local Plan have been chosen to minimise the distance of interchange to the station while ensuring efficiency for bus services and integration with surrounding land use.

The catchment of the stations for kiss 'n' ride and park 'n' ride is largely dependent on road network connectivity and ease of access, the availability of parking and the likelihood of available seats on train services. Some patrons who currently access the Caboolture rail line and Shorncliffe rail line using park 'n' ride will utilise the MBRL stations (including using the park 'n' ride facilities).

The MBRL would attract a large proportion of park 'n' ride rail patrons that currently use the Caboolture line that live east of Old Gympie Road and south of Boundary Road. Some park 'n' ride patrons that currently access the Caboolture Line from the Bruce Highway are likely to shift to the MBRL if parking is made available with easy access to the highway. A large proportion of park 'n' ride rail patrons that currently use the Shorncliffe line that live north of Duffield Road are likely to use the MBRL as access will be more convenient. This is illustrated in Figure 3.1.





Figure 3.1 Likely park 'n' ride catchment for MBRL

Parsons Brinckerhoff understands that TransLink is currently developing a park 'n' ride strategy for the MBRL, although this was not available at the time of writing this report. No detailed car park numbers are provided in this report, acknowledging that demand studies and more detailed transit network analysis will be required to determine appropriate and desirable park 'n' ride allocations for each of the associated stations.

The preferred park 'n' ride function and the likely catchment is discussed for each station below. This sets out the Council's preferred position in regards park 'n' ride and requires further planning as part of the delivery of the MBRL.



3.2.2 Kallangur and Murrumba Downs

Station function

The preferred function of the Kallangur station is that it primarily serves the local catchments of both Kallangur and Murrumba Downs (this is partially due to the proximity of the two adjacent stations and that Murrumba Downs residents are expected to have equally good access to both stations). Access to the Kallangur station would primarily be by walking, bicycle and bus. A significant park 'n' ride function for this station located at the station is not preferred for the following reasons:

- the significant potential for Transit Oriented Development around the station
- good opportunity for integration with bus routes servicing areas north and south of the station
- the large park 'n' ride facilities at Petrie and future potential facilities at Dakabin are easily accessible for a large portion of the potential park 'n' ride catchment of the station.

It is preferred that the Murrumba Downs station have a dual function. The first is to serve the local catchments of Murrumba Downs and Griffin, primarily accessed by walking, bicycle and bus. The other function is to serve a broader park 'n' ride catchment including North Lakes, Murrumba Downs and Griffin and areas along the Bruce Highway. The reason for this preference is as follows:

- easy access to the Murrumba Downs Station off Anzac Avenue and Brays Road gives convenient access from North Lakes and Murrumba Downs and Griffin for buses and cars.
- ease of access from the Bruce Highway will make this station very popular as a park 'n' ride station for residents along the Bruce Highway, including some of those from to the Sunshine Coast as it would be the most accessible rail station from the Bruce Highway. This regional park 'n ride demand should however decrease in the future as rail service frequencies and speeds on the North Coast Rail Line to the Sunshine Coast are improved
- the restricted potential for residential development of that part of the parcel of land north of Murrumba Downs station affected by the exclusion zone of the pump stations (P3108A). that same part of the parcel which also fronts Brays Road is the most accessible from the Bruce Highway, Griffin, and the southern parts of Murrumba Downs, making it ideal located for park 'n' ride.

Park 'n' ride and kiss 'n' ride

The park 'n' ride and kiss 'n' ride at Kallangur station should be located north of the rail line as the area south of the rail line has high potential development for TOD. The location is indicatively shown adjacent to the Goodfellows Road overpass of the rail line due to the access and amenity constraints of this parcel of land. This may need to be revisited in more detailed planning for the development north of the station.

The park 'n' ride and kiss 'n' ride for Murrumba Downs station is located within 400m of the station adjacent to the pump station (PS108A) and the parcel of land north of the rail line between Brays Road and the Bruce Highway. Should demand warrant, the park 'n' ride



could be expanded beyond the 400m catchment of the station along the rail line to the Bruce Highway.

Road network

Vehicle access to the Kallangur and Murrumba Downs Stations and the surrounding TOD is critical to:

- ensure the efficiency of integration of bus and rail services
- ensuring ease of access for kiss n' ride and park n' ride access to the stations
- supporting the commercial viability of development surrounding the stations and reinforcing linkages to the Kallangur District Centre and the Council's 'Tulip Town' site, enhancing their potential as transit destinations.

It is essential however that the road network does not result in through traffic impacting negatively on the communities. To this end the following recommendations are made for the road network:

- the planned road parallel to the MBRL should serve the development along the rail line as an urban arterial and not be a developed as motorway standard bypass of Kallangur. Thus the name proposed for this road is Kallangur Drive (with an urban arterial or subarterial function)
- the east-west continuity of Goodfellows Road over the rail line is retained by providing a road link via the station. This route will be less direct than current and will therefore discourage some through traffic that may currently use Goodfellows Road. It will however allow for ease of car and bus access from areas south of the rail line to the rail station (to allow interchange between bus and rail and kiss 'n' ride), surrounding development and Kallangur Centre on Duffield Road. This will reduce the need for local traffic to to take more circuitous routes through existing residential streets east of the rail line.
- access to the Station and surrounding development from north of the rail line should be facilitated using Duffield Road, Goodfellows Road and Kallangur Drive. The road network north of Kallangur Station requires further investigation to determine the appropriate connections between Duffield Road, Goodfellows Road and Kallangur Drive. A connection of Duffield Road and Kallangur Drive is preferred to minimise through traffic on the lower order road network north of Kallangur Station
- Cecily Street is extended to provide multi-modal access to Murrumba Downs Station. For the purpose of this plan, we have adopted the name of this link as Murrumba Boulevard. The alignment of this road link should minimise impacts on Freshwater Creek. It should be designed to maximise its attractiveness for slower mode access, and to minimise its attractiveness as a rat-run for through traffic between Anzac Avenue and Kallangur Drive
- to support the redevelopment of the residential areas south of Murrumba Downs Station it is proposed that the road network be restructured to improve ease of access through the development for all vehicles and bus services. This would only be achievable as part of the redevelopment of this area



 an indicative structure is proposed for the network of lower order roads serving the large greenfield development areas surrounding the Kallangur and Murrumba Downs Stations. This will be refined as part of the detailed transport planning of the area and through negotiations with the relevant proponents.

Active transport network

The South East Queensland Principal Cycle Network Plan identifies Anzac Avenue, Dohles Rocks Road and the MBRL corridor as future principal cycle routes. These are captured in the Local Plan as proposed active ways.

It is proposed that the cycleway along the MBRL between Murrumba Downs and Mango Hill Stations be located south of the rail line to align with the proposals for Mango Hill Station.

In order to achieve an appropriate level of connectivity and permeability for cyclists and pedestrians active way crossings of the rail line are proposed over/under the rail line using proposed road bridges over the rail line or rail bridges as well as culverts required to cross creeks or roads. Further design of the MBRL should endeavour to ensure that these opportunities for active crossings of the rail line are implemented.

Public transport network

The existing pattern of bus routes is generally focussed on providing access from these catchments to Brisbane City or to the North Coast rail line. The introduction of the MBRL will enable that pattern to be completely overhauled, freeing up bus capacity to more directly serve centres in the area from their natural catchments, and to act as feeder routes to rail stations, facilitating multi-modal trips. Bus integration with Kallangur Station will be achieved through a bus interchange south of the station. This station requires ease of access from Goodfellows Road west and east of the station, Duffield Road and Dohles Rocks to maximise the efficiency of bus services integrating with the rail services.

It is proposed that Blachford Drive is connected to Buse Court to improve ease of access to Kallangur Station for buses accessing the station from Dohles Rocks Road. This would require a new road link and the classification of this as a bus collector.

Bus integration with Murrumba Downs Station will be achieved through a bus interchange north of the station either through an on-road bus station on Kallangur Drive or an off-road interchange adjacent to the station. The structure of the interchange should allow efficient access of buses from Brays Road and Anzac Avenue to the interchange with minimal delay to services not terminating at the interchange.

The restructure of the road network to support the redevelopment of the residential areas south of Murrumba Downs Station is proposed to improve ease of access to the development for bus services.

3.2.3 Mango Hill and Kinsellas Road

Station function

The proximity of the Mango Hill station to North Lakes activity centre reinforces the North Lakes Town Centre as a significant transit destination, and increases the potential for higher density residential and employment opportunities within a walk-up catchment of the station. The distance from the station to the North Lakes centre is greater than 600m. This is approaching the outer limit of an acceptable walking distance and therefore requires a high



standard of bus access between the station and North Lakes centre is required to maximise convenient access to the centre from the rail line.

The drive-up catchment for both Mango Hill and Kinsellas stations are potentially large as they are the closest stations to North Lakes and have relatively good access off Anzac Avenue. The proximity of Mango Hill station to the North Lakes town centre, and the potential for higher density residential for higher density residential and employment opportunities makes it inappropriate as a significant park 'n' ride station. The extent of such a role should be very limited if at all. Parking management will be essential within 400 m of the station to minimise informal overflow parking.

The function of the Mango Hill station is therefore as an important bus-rail interchange station serving the North Lakes and the local walk-up catchment.

It is preferred that the Kinsellas Road station has a dual function: to serve the local catchments of the areas south of the rail line primarily accessed by walking, bicycle and bus; and to serve a broader bus and park 'n' ride catchment primarily servicing North Lakes and Mango Hill. The reasoning for this recommendation follows:

- difficulty in providing an efficient interchange adjacent due to the location of the bridge over the rail line and the intersection with Kinsellas Road East. This limits its attractiveness as a major bus interchange
- the station will be easily accessible by car off Anzac Avenue and the North-south Arterial / Kinsellas Road East.

Park 'n' ride

Providing park 'n' ride at Mango Hill station would exacerbate congestion through the North Lakes town centre and Mango Hill. It is thus not a preferred land use. It is preferred that any park 'n' ride provided should be primarily limited to disabled parking. Kiss 'n' ride provision would be appropriate along Halpine Drive and this would allow convenient access for residents of Mango Hill and North Lakes.

A large park 'n' ride and kiss 'n' ride should be located north of the Kinsellas Road rail station. The park 'n' ride lot has potential to perform a dual use as parking for the school sports fields after hours and on weekends. This will serve as an important park 'n' ride access station for residents of North Lakes.

Road network

Vehicle access to the Mango Hill and Kinsellas Road stations is critical to:

- improving efficiency of integration of bus and rail services
- ensuring ease of access for kiss n' ride and park n' ride access to the station
- supporting the commercial viability of development surrounding the station.

It is essential however that the road network does not result in through traffic impacting negatively on communities. To this end the following recommendations are made for the road network:

 a minor collector connecting Anzac Avenue and Link Road between Halpine Drive and Kinsellas Road East is required to provide access to development



- the large greenfields development south of Kinsellas Road Station would be served by collector roads between Kinsellas Road East and Anzac Avenue forming the completion of the Mango Hill Ring Road
- the internal road network that serves the large greenfield development areas north of Mango Hill and south of Kinsellas Road stations would need to be refined as part of the detailed planning of this greenfield development.

Active transport network

The South East Queensland Principal Cycle Network Plan identifies Anzac Avenue and the MBRL corridor as future principal cycle routes. Kinsellas Road East is an existing principal cycle route. These are captured in the Local Plan as active ways.

The following recommendations for the active transport network are made:

- The cycleway along the MBRL is proposed to be located to the south of the rail line past the Mango Hill Station to minimise conflicts with pedestrian access to the station. This could either be located adjacent to the rail line through the cutting or divert through the parklands adjacent to the lake to improve accessibility to the cycleway from the local area. It is also critical that the cycleway provide direct and convenient access to the station and be provided with appropriate cycle storage and end of trip amenities
- The cycleway along the MBRL is proposed to be located north of the rail line past Kinsellas Road Station as set out in the MBRL Reference Design
- A pedestrian plaza and pedestrian boulevard along Halpine Drive should connect the station to the North Lakes town centre. This should be continued through the station and provide a link to the lake
- Active way crossings are provided over/under the rail line using road bridges or rail bridges or culverts.

Public transport network

Mango Hill will be an important rail/bus interchange serving North Lakes. Integration will be achieved through a bus interchange west of the station. This station needs to serve terminating services as well as through services along Halpine Drive, Freshwater Creek Road and any future services that may use the Mango Hill Ring Road. The interchange could be located either on Halpine Drive or in the area adjacent and north-west of the station.

The bus station at Kinsellas Road should serve both the Kinsellas Road town centre and the Rail Station and ensure efficiency of services passing through the interchange. An on-road bus station is proposed on the Mango Hill Ring Road to maximise efficiency. Integration of bus and rail at Kinsellas Road will be difficult due to the separation of the collector road from the station.

3.2.4 Rothwell

Station function

The determination of the land use surrounding Rothwell Station is still subject to further investigation due to uncertainty with regard to how the flooding risk and traffic/transport



access. Analysis is required (for both the Anzac Avenue / Deception Bay Road roundabout congestion and future access/impacts from the station and prospective uses in the Local Plan area) are resolved. The separation of the station from Anzac Avenue and its limited development potential limits the potential for efficient bus-rail integration. Subject to satisfactory resolution of traffic and access issues the station has great potential to be a major park 'n' ride station serving Rothwell, Deception Bay and Redcliffe due to its proximity to the Anzac Avenue and Deception Bay Road intersection.

Irrespective of the land use surrounding the station the function of the station will include a major park 'n' ride and kiss 'n' ride function. This together with the fact that part of the site is outside the SEQ Regional Plan Urban footprint restricts the potential of the station surrounds for Transit Oriented Development.

Road network

Vehicle access to the Rothwell Station is critical to ensuring ease of access for kiss n' ride and park n' ride access to the station. The intersection of Anzac Avenue and Deception Bay Road has severe capacity constraints and is subject to detailed investigations to improve capacity. The proximity of the intersections of the two potential station access roads to this congested intersection will need to be addressed as part of the upgrade of the Anzac Avenue and Deception Bay Road intersection.

Residential development along Parsons Street makes it inappropriate as an access route to the station. Design treatments of the intersection with Anzac Road should minimise its attractiveness for access to the rail station. The preferred access to the station is via Gynther Road. A signalised intersection with Anzac Avenue would be required to ensure adequate access to the park and ride.

Active transport network

The South East Queensland Principal Cycle Network Plan identifies Anzac Avenue, Deception Bay Road and the MBRL corridor as future principal cycle routes. These are captured in the Local Plan as proposed active ways.

Pedestrian access crossing the rail line would be required for Hays Inlet Conservation Park south of Rothwell station. It is proposed that this be provided via Rothwell station and by pedestrian paths below the rail where it is on structure over Saltwater Creek and other drainage lines where possible.

Public transport network

Rothwell station has limited potential for integrating with bus services on Anzac Avenue due to the separation from Anzac Avenue. There is however opportunity for extending existing bus routes that terminate in Rothwell to terminate at the station. There may be potential for the provision of feeder bus services from Deception Bay to Rothwell Station. These could replace or complement current bus services feeding to the Caboolture rail line. There should therefore be provision for a bus stop/interchange adjacent to Rothwell station to allow for interchange with services.



3.3 Kippa-Ring

Station function

Kippa-Ring is the end-of-line station and functions as the 'gateway' to the Redcliffe Peninsula. The station should serve both the Kippa-Ring walk-up catchment and function as the public transport hub to Redcliffe. It will require a major bus-rail interchange to ensure good access to all areas of Redcliffe. The proximity of the station to the Kippa-Ring centre supports that centre as a transit destination, and increases the potential for higher density residential and employment opportunities within a walk-up catchment of the station.

The drive-up catchment for this station is potentially very large as it is the closest station to Redcliffe and has relatively good access off Anzac Avenue. The need for this station to serve as a gateway to Kippa-Ring and the potential for higher density residential and employment opportunities however makes it inappropriate to serve as a large park 'n' ride station. The extent of any park 'n' ride facility should be limited (perhaps serving predominantly disabled access). It should not separate the station from Kippa-Ring centre. Parking management will be essential within 400m of the station to minimise overflow parking from park 'n' ride.

The function of the station is as a major bus-rail interchange station serving Redcliffe and the Kippa-Ring walk-up and cycling catchment. Park 'n' ride should be limited with appropriate parking controls to minimise park 'n' ride overflow.

It is proposed that park 'n' ride is provided in the land bounded by the MBRL corridor, the station access road and the proposed Hercules Drive overpass of the rail line. This land has limited potential for development and the location of park 'n' ride here would not separate the station from surrounding development. The size of this park and ride should be limited to minimise the vehicle trips passing the station entrance. Intelligent Transport System (ITS) technology could be used to make drivers on Anzac Avenue aware of whether there is capacity in the park 'n' ride. This would minimise the number of trips passing the station to see if there is available parking.

Kiss 'n' ride is likely to be a popular mode of access to the station. Provision should be made in close proximity to the station without generating more car trips past the station. It is therefore preferred that kiss 'n' ride is provided along Anzac Avenue just north of the station access road. The location and design of this will need to be further investigated as part of further planning and design.

Road network

Anzac Avenue and Boardman Avenue separate the station from the Kippa-Ring centre. The Local Plan proposes shifting the rail station closer to Anzac Avenue and the existing Kippa-Ring centre, while also increasing the mix of uses around the station to 'bring' the Kippa-Ring centre towards the rail station. To ensure a TOD and pedestrian friendly environment on this section of Anzac Avenue, there is a need to put in place treatments on Anzac Avenue to minimise the degree to which it segregates the station from the rest of Kippa-Ring. Additional crossing points and improved amenity and safety for cyclists and pedestrians is essential for achieving the land use outcomes sought.

Options to reduce traffic volumes on Anzac Avenue to support the preferred development intent are under investigation.

The proposed changes to the road network in Kippa-Ring will improve circulation, permeability and connectivity however they would impact on existing development. These



will need further investigation and will only be undertaken as part of the redevelopment of the area.

A signalised intersection is required at the access road to the station to allow for ease of access and egress of bus and general traffic and allow pedestrians to safely cross Anzac Avenue. There will need to be further investigation of this to determine whether this intersection would have capacity for all traffic or should just be restricted to bus access only.

Connecting Hercules Road south over the rail line is proposed to improve north-south network permeability and reduce demand on Anzac Avenue. This will however impact on residents along Hercules Road and access to the school. This will need further investigation to determine its feasibility and enable appropriate impact management techniques to be considered.

Active transport network

The South East Queensland Principal Cycle Network Plan identifies Anzac Avenue, Deception Bay Road and the MBRL corridor as future principal cycle routes. These are captured in the Local Plan as proposed active ways.

The Kippa-Ring activity centre is designed to be supportive of walking and cycling as the main mode of movement around the centre. Anzac Avenue through Kippa-Ring between Klingner Road and Elizabeth Avenue therefore needs restructuring and is intended to be reconfigured to in a boulevard character. To support that reconfiguration and reduce the traffic impact on pedestrians and cyclists, options need to be investigated to achieve a more favourable balance in traffic demand between Anzac Avenue, Klingner Road, Boardman Road and Hercules Road.

Public transport network

Kippa-Ring station will be a major bus/rail interchange. The bus station is being structured to facilitate ease of transfer between bus and rail and minimise delay for buses passing through the interchange. To achieve this it is proposed that any bus routes that currently are using Anzac Avenue between Klingner Road and Elizabeth Avenue be redirected to use Hercules Road and pass the station. To achieve this without negatively impacting on the efficiency of services there may need to be bus priority provided to avoid delays caused by conflicts with traffic accessing the park and ride. This would require further investigation as part of more detailed planning of the station and surrounding area.



4. Infrastructure and services analysis

A strategic level of infrastructure analysis was carried out, in order to identify opportunities and constraints at the six station locations. Existing infrastructure in the vicinity of station locations and the proposed future infrastructure by MBRC in the Priority Infrastructure Plan (PIP) were assessed. Proposed land use patterns around the stations and the corresponding population and employment forecasts were factored into this analysis to assess the serviceability of the station precincts from an infrastructure perspective. Findings corresponding to each station in respect of the various infrastructure classes are summarised below.

4.1 Sewer Infrastructure

4.1.1 Kallangur

There are existing trunk sewers in the vicinity of the proposed Kallangur station. Unitywater has also planned future trunk sewers in this area (PIP).

Existing Trunk Sewers

There is an existing trunk sewer of 300mm and 375mm diameter running from Dohles Rocks Road in the west to Goodfellows Road on north northeast thence to a pump station in Duffield Road. There is also an existing 450mm trunk sewer running from Goodfellows Road along the edge of an existing residential subdivision onto Dohles Rocks Road and then along Bickle Road to the existing Waste Water Treatment Plant (WWTP). Connection to this sewer is further away than that on the north of the proposed Kallangur Station.

Planned Future Trunk Sewer (PIP)

Two trunk sewers are proposed to the east of the proposed station, one along Duffield Road and another along the proposed track alignment of the MBRL from the east. They meet at Goodfellows Road and run in parallel in a deviation to avoid the footprint of the future road overpass over the rail tracks. They cross the tracks east of the proposed Kallangur Station. These trunk sewers then run parallel to the existing 450mm trunk sewer along the edge of the existing residential subdivision into Dohles Rocks Road and from there follow Bickle Road into the existing WWTP. The connection to this future sewer form the proposed station is approximately 150m.

Serviceability

The existing and planned sewers are expected to provide adequate capacity to service the proposed additional development associated with Murrumba Downs station and its environs.

4.1.2 Murrumba Downs

There are existing trunk sewers in the vicinity of the proposed additional development associated with Murrumba Downs station and its environs. Unitywater has also planned future trunk sewers in this area (PIP).



Existing Trunk Sewer

There is an existing trunk sewer of 300mm diameter running in Kuhr Court from the west to the east. This connects into an existing 600mm trunk main that discharges into an existing pump station (PS108A) which is approximately 120m north-east of the proposed Murrumba Downs Station. There are also two other existing trunk sewers running south from the pump station referred to above, 300mm and 500mm trunk sewers. The former runs parallel to Chesterfield Dr and Tokely Ct at approximately 80m separation to the east while the latter runs closely to the road alignment of Brays Road.

Planned Future Trunk Sewer (PIP)

A new trunk sewer is proposed to the north of the proposed Murrumba Downs station, running parallel to the tracks. Another two trunk sewers are proposed from the existing pump station running south parallel to the existing 300mm and 500mm trunk sewers. However the distance for connection to these sewers are far greater than that to the proposed trunk sewer to the north of the station.

Serviceability

The existing and planned sewers are expected to provide adequate capacity to service the proposed Murrumba Downs Station development.

4.1.3 Mango Hill

There is an existing trunk sewer that runs across the proposed railway tracks in the vicinity of the proposed Mango Hill Station.

Existing Trunk Sewer

An existing 225mm trunk sewer runs along Freshwater Creek road to the south of the station. This sewer joins an existing 200mm sewer and crosses the proposed railway tracks on the southern side of Freshwater Creek Road some 450m to the south west of the proposed Mango Hill Station. This sewer then continues along the alignment of Freshwater Creek Road westwards beyond the round-a-bout at the intersection of Freshwater Creek Road and Halpine Dr and connects to a 525mm trunk sewer. The 525mm trunk sewer runs south from Freshwater Creek Road and crosses the proposed railway tracks some 650m to the south west of Mango Hill station.

Planned Future Trunk Sewer (PIP)

No new trunk sewers are planned (PIP) in the vicinity of the proposed Mango Hill Station.

Serviceability

Significant augmentations of the sewer network would be required in order to adequately service the proposed development of Mango Hill Station and its environs as developments progressed. In particular the cost of local infrastructure and augmentation of the sewer along Freshwater Creek Road must be taken into consideration.

4.1.4 Kinsellas

There is an existing 150mm gravity sewer north west of the proposed Kinsellas Station but no existing trunk sewer in the immediate vicinity of the proposed station development.



Existing Gravity Sewer

There is an existing 150mm gravity sewer running along Kinsellas Road West from the north and then along Anzac Avenue in the southerly direction. The closest connection directly into this sewer is approximately 600m. The new station development is unlikely to benefit from this existing sewer.

Planned Future Trunk Sewer (PIP)

A new trunk sewer is proposed on the south eastern side of the proposed Kinsellas Station through the Future Urban land. This proposed line will adequately service the development.

Serviceability

The proposed additional development associated with Kinsellas Road Station and its environs will be adequately serviced by the proposed trunk sewer from the south eastern direction through the Future Urban land.

4.1.5 Rothwell

There is no sewer infrastructure in the vicinity of the proposed Rothwell Station.

Existing Trunk Sewer

There is no existing sewer in the vicinity of the proposed station.

Planned Future Trunk Sewer (PIP)

There are no plans (PIP) for any trunk sewer in the vicinity of the proposed station.

Serviceability

There is currently no local infrastructure around the station location. Developments, if planned in the vicinity of the station, must consider the cost of new infrastructure. This challenge will need to be addressed as part of the further investigatios of opportunities and constraints in this locality.

4.1.6 Kippa-Ring

The proposed Kippa-Ring Station is surrounded by existing residential subdivisions in close proximity and as such a well-established sewer reticulation network is available to service this proposed station development. There are existing trunk sewers in the vicinity.

Existing Trunk Sewer

An existing trunk sewer at the rear of the allotments on the southern side of Kroll Street runs between Anzac Avenue and Hercules Road and is understood to have sufficient capacity to service the additional development associated with the station and its environs. This sewer joins an existing trunk sewer in Hercules Road, crosses the propose railway tracks of the future station and runs through an easement, through open space to Nottingham Road.

Planned Future Trunk Sewer (PIP)

There are plans for a new trunk sewer main that connect to the existing trunk sewer main along Hercules Road (near the proposed railway track) and continue south.



Serviceability

Kippa-Ring station area is in a developed state and further population growth is not likely to impose significant additional demand on infrastructure. The existing and the proposed sewers are expected to provide adequate capacity to service the proposed additional development associated with Kippa-Ring station and its environs.

4.2 Water

4.2.1 Kallangur

Existing Trunk Water Main

There is an existing 450mm dia trunk water main running on the southern side of Goodfellows Road. This trunk main is on the north eastern side of the proposed Kallangur Station and is about 350m from the station. There is also an existing smaller 150mm water main along the north eastern verge of Dohles Rocks Road. This water main is on the south western side of the proposed station.

Planned Future Trunk Water Main (PIP)

There is no proposed trunk water main in the vicinity of the proposed Kallangur Station development.

Serviceability

The existing 450mm water main has adequate capacity to service the proposed additional development associated with Kallangur station and its environs.

4.2.2 Murrumba Downs

Existing Trunk Water Main

There is an existing 500mm trunk water main along Anzac Avenue with a 200mm spur along Brays Road. The 200mm trunk main runs on the eastern aide of Brays Road and crosses the proposed tacks east of the proposed Murrumba Downs Station where it joins an existing 300mm trunk water main. The proposed station is about 350m from this 200mm trunk main.

Planned Future Trunk Water Main (PIP)

A new 300mm trunk water main is proposed to run south from the intersection of Anzac Avenue and Brays Road towards the future railway tracks.

Serviceability

The existing 500mm trunk main in Anzac Avenue and the new 300mm spur along Brays Road are expected provide adequate capacity to service the proposed additional development associated with Murrumba Downs station and its environs.



4.2.3 Mango Hill

Existing Trunk Water Main

There is an existing 375mm trunk water main along the northern verge of Freshwater Creek Road. This water main crosses the proposed railway track approximately 270m from the proposed Mango Hill Station.

Planned Future Trunk Water Main (PIP)

There is no new trunk water main proposed in the vicinity of the proposed Mango Hill Station.

Serviceability

The existing 375mm trunk water main is expected to provide adequate capacity to service the proposed additional development associated with Mango Hill station and its environs.

4.2.4 Kinsellas

Existing Trunk Water Main

There is an existing 600mm trunk water main along the north western verge of Anzac Avenue north of Kinsellas West Road and then crosses to the south eastern verge of Anzac Avenue to continue southwards.

Planned Future Trunk Water Main (PIP)

A new 450mm trunk water main through a parcel of land zoned as Sports, Recreation and Special Purposes and a new 375mm trunk water main along a proposed road running in the north south direction are proposed to connect onto the existing 600mm trunk water main currently located in Anzac Avenue. The 375mm proposed trunk water main continues in a south easterly direction after it crosses the railway tracks. The connection point from the proposed station to this main is approximately 400m.

Serviceability

The proposed 375mm trunk water main feeding off an existing 600mm trunk water main in Anzac Avenue would have adequate capacity to service the proposed additional development associated with Kinsellas station and its environs.

4.2.5 Rothwell

Existing Trunk Water Main

There is an existing 600mm trunk water main along the southern verge of Anzac Avenue. this water main then skirts around the southern edge of an existing residential subdivision and the south eastern boundary of Hays Inlet Substation.

Planned Future Trunk Water Main (PIP)

There is no future trunk water main proposed in the vicinity of the proposed Rothwell Station development.



Serviceability

The existing 600mm trunk water main will have adequate capacity to service the proposed additional development associated with Rothwell station and its environs. This water main is about 450m from the station.

4.2.6 Kippa-Ring

The proposed Kippa-Ring Station is surrounded by existing residential subdivisions in close proximity. A well-established water reticulation network is available to service this proposed station development available to service any additional development associated with the station and its environs.

Existing Trunk Water Main

There are existing 300mm and 150mm water mains in Hercules Road that runs in the north south direction. These mains are to the west of the proposed Kippa-Ring Station. There is also a 600mm trunk water main in Anzac Avenue. This water main is on the eastern side of the station development.

Planned Future Trunk Water Main (PIP)

There is no future trunk water main proposed in the vicinity of the Kippa-Ring Station development.

Serviceability

The existing trunk water mains in the area will have adequate capacity to service the proposed additional development associated with Kippa-Ring station and its environs.

4.3 Stormwater and Flooding

4.3.1 Kallangur

The Q100 inundation area affects the waterway corridor to the north of the station. The structure plan for the proposed development has generally left the area prone to such inundation as open space/buffer area for flood storage / conveyance.

The rail corridor generally forms a barrier to flows from upstream catchments and therefore allowance for surface flows to get across this barrier such as culverts will be required. There will be a need to provide hydraulic structures across inundation areas.

Water Sensitive Urban Design (WSUD) is to be adopted in all new development areas and due consideration must be given to events larger than Q100 and climate change impacts.

4.3.2 Murrumba Downs

The Q100 inundation area affects the waterway corridor to the north and east of the station. The structure plan of the development has generally left this area as open space/buffer area for flood storage / conveyance.

The rail corridor generally forms a barrier to flows from upstream catchments and allowance for surface flows to get across this barrier such as culverts will be required. There will be a need to provide hydraulic structures across the inundation area.



Water Sensitive Urban Design (WSUD) is to be adopted in all new development areas and due consideration must be given to events larger than Q100 and climate change impacts.

4.3.3 Mango Hill

The Q100 inundation area affects the waterway corridor to the south and east of the station. The structure plan for the development has generally left this area as open space/buffer area for flood storage / conveyance.

The rail corridor generally forms a barrier to flows from upstream catchments and allowance for surface flows to get across this barrier such as culverts will be required. There will be a need to provide hydraulic structures across the inundation area.

Water Sensitive Urban Design (WSUD) is to be adopted in all new development areas and due consideration must be given to events larger than Q100 and climate change impacts.

4.3.4 Kinsellas

The Q100 inundation area affects the low-lying easterly portion of the area, plus a corridor running east west through the proposed station location. The structure plan for the development appears to have left some parts of this area as open space/buffer area for flood storage / conveyance. Other parts are proposed to be filled to above flood level. An artificial saltwater lake to the east of the town centre provides a degree of flood retention. The park and ride station is located within the Q100 inundation area. There is a need to confirm that the car park areas have adequate flood immunity (not necessarily Q100 immunity).

The rail corridor generally forms a barrier to flows from upstream catchments and allowance for surface flows to get across this barrier such as culverts will be required. There will be a need to provide hydraulic structures across the inundation areas.

Water Sensitive Urban Design (WSUD) is to be adopted in all new development areas and due consideration must be given to events larger than Q100 and climate change impacts. There is also a need to ensure that any proposed lake will have an adequate source of freshwater to promote regular flushing / aeration to ensure good water quality.

4.3.5 Rothwell

A major part of the area including the station is located within the Q100 inundation area posing, a significant development risk .

The park and ride facility is located within the Q100 inundation area. There is a need to confirm that the car park areas have adequate flood immunity (not necessarily Q100 immunity).

The rail corridor generally forms a barrier to flows from upstream catchments and allowance for surface flows to get across this barrier such as culverts will be required. There will be a need to provide hydraulic structures across the inundation area.

Water Sensitive Urban Design (WSUD) is to be adopted in all new development areas and due consideration must be given to events larger than Q100 and climate change impacts.



4.3.6 Kippa-Ring

The Q100 inundation area runs east west through the proposed station location and extends towards the west. The structure plan for the development has generally left this area as open space/buffer area for flood storage / conveyance. The park and ride facility is located within the Q100 inundation area. There is a need to confirm that the car park areas have adequate flood immunity (not necessarily Q100 immunity). Parts of the existing developments within the Q100 inundation area north west of the station are vulnerable.

The rail corridor generally forms a barrier to flows from upstream catchments and allowance for surface flows to get across this barrier such as culverts will be required. There will be a need to provide hydraulic structures the across inundation area.

Water Sensitive Urban Design (WSUD) is to be adopted in all new development areas and due consideration must be given to events larger than Q100 and climate change impacts.

4.4 Summary of Findings

Water and Sewer

The existing and planned infrastructure along the MBRL corridor will have adequate capacity to service the population. The localised impacts may require some trunk main augmentations within local catchments and upgrades to pump stations to service the ultimate population. The scheduling of such upgrades will very much depend on how the local developments progress into the future. When further details of the pattern and certainty of development is available a detail assessment of the impact on the local infrastructure must be carried out.

Unitywater has also carried out an independent assessment (April 2011) of the water and sewer infrastructure of the wider catchments and concluded that the big ticket infrastructure items (bulk water infrastructure, wastewater treatment plants) have adequate capacity to handle the population projections. Detailed comments on this report are tabulated in subsequent sections. The Unitywater report confirms our high level assessment of the services infrastructure.

The current infrastructure plan by Unitywater indicates that the GIS Demand model adopted has already picked up the MBRL growth forecast. The overall population forecast in the GIS Demand model and the DTMR model are in general agreement. However, there are local shifts in growth forecast – but this balances out in the overall scheme of things. For example the DTMR model predicts a higher ultimate population in BSTM zone 2230 compared to the GIS demand model, while the scenario is reversed for BSTM zone 2231. In essence this translates to a shift in the growth scenario from north to the south of Anzac Avenue where the Mango Hill and Kinsellas stations are located. In terms of infrastructure provision this will mean a shift in the focus area and localised impacts, but this is not considered significant when it comes to the overall servicing strategy for infrastructure.

Stormwater and Flooding

The Q100 flood inundation area straddles the surrounding terrain associated with all of the six stations. The structure plans for the station precincts have generally left the areas prone to inundation as open space/buffer area for flood storage / conveyance. The proposed parklands and open areas that are expected to be inundated must conform to safety criteria with regards to depth and velocity of flow. Development within and around two stations in



particular, Kinsellas Road and Rothwell Station, will require careful planning to ensure adequate flood immunity.

Some park and ride facilities are also located within the Q100 inundation area. Detail modelling will be required during development stage to ensure that the car park areas have adequate flood immunity (not necessarily Q100 immunity).

The rail corridor is a barrier to flows from upstream catchments. Allowance for surface flows will be required (e.g. culverts). Hydraulic structures to facilitate stormwater conveyance across the inundation areas will be required. New development areas must also incorporate water sensitive urban design principles (WSUD).. Due consideration must also be given to events larger than Q100 and potential climate change impacts.

Servicing of Stations and Surrounds

In addition to the above overall summary from the servicing infrastructure perspective, a brief station based summary is provided below:

Station	Comment (Servicing Infrastructure)
Kippa-Ring	No significant impact as growth is consistent with that adopted in the current infrastructure plan
Rothwell	Even though the population growth planned is small, there is currently no local infrastructure around the station location. Developments, if planned in the vicinity of the station, must consider the cost of new infrastructure.
Kinsellas and Mango Hill	Shift in growth from north to the south of Anzac Avenue, but capacity of trunk infrastructure in the area is adequate. When further details of the pattern and certainty of development is available a detail assessment of the impact on the local infrastructure must be carried out. Local sewer augmentation may be required for Mango Hill.
Murrumba Downs and Kallangur	DTMR population forecast is higher than that adopted in the current infrastructure plan. Localised upgrades that may be required to service the ultimate population has been identified by Unitywater (Report dated April 2011). When further details of the pattern and certainty of development is available a detail assessment of the impact on the local infrastructure must be carried out.

Table 4.1	Local p	lan servicing	infrastructure
	Loouip	an our ronig	in in a ota ota o

Likely Upgrades (Unitywater Report, April 2011)

Unitywater report is generally in agreement with the above assessment and confirms that the existing and planned infrastructure along the MBRL corridor will have adequate capacity to service the population. The localised impacts may require some trunk main augmentations within local catchments and upgrades to pump stations to service the ultimate population. Unitywater has listed the likely upgrades to the local infrastructure that may be required as follows:



Unity Water Item Ref Conclusions	Description	PB Comment
4	Pump Station PS104 and the Rising Main may require upgrade	In the ultimate population scenario the capacity is only marginally exceeded. There is also the possibility of directing some of the future wastewater flows to PS108A. As such this should be re- assessed in the future when further details of the pattern and certainty of development is available, to ascertain if and when an upgrade is required.
5	Increase size of Rising Main from PS179 from 250 to 300mm	This is a planned work (PIP); so this should be incorporated into the current capital works programme.
6	Existing pumps in some pump stations may have to be replaced with larger pumps	This will happen as developments progressed within the local catchments. Timing of major developments within the local catchment will determine the trigger for this.
7	Proposed upgrade of trunk gravity main upstream of pump station 19X should be brought forward to 2021	This is planned work (PIP); so the capital works programme must now incorporate the new timing of delivery.
8	Requirement for two sewer corridors through MBRL – one in Kallangur and the other in Kippa-Ring	The sewers will cross the rail line at two locations. The details regarding the location and depth of crossing will have to be coordinated between the MBRL project team and Unity Water.

Table 4.2Likely upgrades



5. Implementation challenges

There are a number of implementation challenges which will require further refinement and resolution as the MBRL project and the Local Plans proceed. Some issues are specific to each station area while others have the potential to impact across the entire MBRL.

An overview of the significant issues which need addressing to ensure efficient implementation are outlined below. Resolution of these challenges will require Council and its partners to carefully assess the next steps in the evolution of the rail corridor and the development and re-development of surrounding localities.

5.1 Evolution of the rail project

While there is a clear distinction between the MBRL and the preparation of Local Plans for the areas surrounding the stations, the two projects are closely linked. This first section provides an overview of some of the implications of major changes to the MBRL upon the Local Plans.

- the nature of these major transport infrastructure projects is that the engineering designs and challenges evolve through a series of planning and design iterations. The Local Plans attached rely upon the best information available at the time of writing and it should be noted that if the alignment and/or major engineering designs were to change several issues arise which may justify the review of these Local Plans. These issues include:
 - a potential increase or reduction in the amount of land available for development particularly around the stations. An example may be the stabling of trains at Kippa-Ring, or the park 'n' ride strategies for each station
 - the configuration of the land available may not be conducive to development (eg thin linear areas)
 - issues around resumption and ownership may require considerable effort and research from the various project partners. This aspect has evolved considerably during the project to date, and will likely evolve further
- the entire route has still to undergo an approvals process which may have design impacts including: Environment Protection and Biodiversity Conservation Act 1999 requirements, the evolving nature of the Koala issue at a state level, and fauna corridors (and other mitigation devices) may be required. There may also be legislative changes which could result in changed level of physical constraints. Where such impact on surrounding land use opportunities or on local connectivity changes will need to be reflected in the final Local Plans
- further consultation with key stakeholders and the wider community will result in further changes and/or the requirement for mitigation measures beyond those incorporated in the Reference Design or the Change report. These mitigation measures may impact on engineering design and potentially Local Plan content
- the financial availability may impact on the staging of the rail project which will in turn impact the likely development responses and market demands.



5.2 Water and Sewer Infrastructure

- as noted in Section 4, the water and sewer infrastructure do not appear to present any major impediments to the implementation of the Local Plans
- the population growth has been largely anticipated in earlier studies and the Priority Infrastructure Plan work which has already been carried out.

5.3 Integrated Transport

 several significant changes to the existing road network underpin the Local Plans, including major road upgrades or in the case of Kallangur and Murrumba Downs the revision of previous planning to only provide for an urban arterial standard road.

5.4 Other issues common to all station/Local Plan areas

- Preparation of Temporary Local Planning instruments
- Planning scheme policies
- Planning scheme amendments
- Incorporation in the new planning scheme
- a timely resolution of the implementation process for the Local Plans themselves is urgently required. If the MBRC planning scheme is delayed, and the only means of *implementation* is through this planning scheme, then opportunities may be lost.
- the need to refine community facility requirements within each of the station areas and Local Plan areas
- the public transport strategies rely on a significant investment in bus interchanges and services
- further resolution of the park 'n' ride and bus interchange designs and locations are required
- station design and civic interface requires detailed design.

5.5 Station specific issues

5.5.1 Kallangur

- Confirming the form and function of the Kallangur as an urban arterial is the major transport issue to be resolved at both functional and design levels
- provision for Goodfellows Road southern connection to the station's south side to be confirmed by the MBRL project
- Duffield Road connection to the northern side of the station and integration with Goodfellows Road requires further design refinement and confirmation
- more refined environmental and open space planning for the Freshwater Creek 'corridor' is required to delineate development limits and to minimise impacts of road access provisions.



5.5.2 Murrumba Downs

- Confirming the form and function of the Kallangur as an urban arterial is the major transport issue to be resolved at both functional and design levels
- Murrumba Downs 'investigation' area (the old Tulip Town site) to be subject to further investigation to define appropriate uses. It is envisaged that such uses will reinforce the potential of the site as a transit destination
- more refined environmental and open space planning for the Freshwater Creek 'corridor' is required.

5.5.3 Mango Hill

- resolution for improved station access via adjacent AV Jennings site (pedestrian promenade providing direct access to station, and vehicle/bus access to northern side of station) is to be negotiated with proponent
- investigation is required of the potential mixed use development on the southern side of station residual DTMR project land

5.5.4 Kinsellas

 negotiation with Urbex through development application processes for subsequent stages so that development better reflects in the Local Plan including such elements as a slight shift in the location of 'retail', higher residential densities in immediate proximity to the station area, etc.

5.5.5 Rothwell

- resolution of traffic generation and resultant design requirements for the Anzac Avenue / Deception Bay Road intersection, as well as general transport/traffic access associated with both the MBRL project and the Local Plan are required
- the Rothwell Investigation Area Precinct contains a number of constraints to development, primarily areas subject to flood inundation, and ecologically significant areas. Additional work is required to determine the potential for development within this Precinct.

5.5.6 Kippa-Ring

- Further work is needed to identify how best to manage the traffic on Anzac Avenue between Klinger Road and Elizabeth Avenue and Klinger Road and Boardman Avenue to minimise severance and amenity impacts.
- the implications of the extension of Hercules Road over the rail line require further detailed investigation
- improved connectivity across Anzac Avenue from the Station to the Kippa-Ring Village and Peninsula Fair (either via a pedestrian link or road link) should be investigated
- structure planning requirements for the Major Activity Centre at Kippa-Ring/Redcliffe should reflect the opportunities for redevelopment of Kippa-Ring Village and Peninsula Fair to better integrate with the new rail station.



6. Relationship to regulatory framework

6.1 South East Queensland Regional context

The South East Queensland Regional Plan (2009) sets out the desired characteristics of urban development in Section 8. Compact settlement. The Local Plans have been prepared in accordance with the intent of the SEQ Regional Plan. The specific regional policies these Local Plans have addressed area:

Compact development (8. 1) Conserve land by making the most efficient use of land allocated for urban development.

Containing growth (8.2) Promote liveability and transport efficiency and reduce car dependence and private vehicle travel.

Activity centres and transit corridors (8.6) Focus employment, infill housing and community services in well-planned, vibrant and accessible regional activity centres and along high-frequency transit corridors.

Mixed-Use activity centres (8.8) Include a broad mix of land uses in activity centres and structure them as mixed-use centres in a predominantly main-street format to best serve their surrounding communities.

Integrated land use and transport planning (8.9) Ensure new development utilises existing infrastructure or can be provided with timely transport infrastructure, community services and employment.

Each of these principles are addressed within the MBRL Local Plans through the following strategies:

- focusing higher density and mixed-use development in and around regional activity centres and public transport nodes and corridors
- increasing the residential densities in areas closest to the railway station and to established district and major centres
- including a diversity of uses and employment opportunities at densities that support walkable community, more convenient and safe cycle access, efficient public transport services, and fewer and short vehicle trips
- establishing stronger linkages between the two Major Activity Centres and the railway stations in a main-street format
- the land uses and transport networks have been designed through an iterative process which derives their interdependence.

6.2 Context of Regulatory Framework August 2011

The preparation of the Local Plans to address development within an 800 metre catchment around each of the six stations presented several challenges. This was due to the size and scale of the project as well as the regulatory framework. This framework was still in the



process of managing significant statutory and administrative changes which led to uncertainties and a range of options.

These options and uncertainties related to:

- the relatively recent amalgamation of Pine Rivers Shire Council, Redcliffe City Council and Caboolture Shire Council (15 March 2008)
- the requirement for an integrated planning scheme for MBRC (to be named the MBRC 2030 Planning Scheme) which had begun at the beginning of this project but was not anticipated to take effect before 2015
- the introduction of the Sustainable Planning Act 2009, and the associated Queensland Planning Provisions (QPP). The QPP sets out the definitions, structure and format for a consistent structure for Planning Schemes throughout Queensland, and represented a complete departure from any of the existing Planning Schemes currently in effect within MBRC
- local planning instruments generally only exist as part of a planning scheme
- the MBRL route traversed two planning schemes (Pine Rivers and Redcliffe)
- considerable development opportunities and pressures existing within the various catchments. This also included significant long-standing development approvals.

6.3 Implementation mechanism

Discussion with MBRC during the initial stages of the project confirmed there are several approaches to statutory implementation of the Local Plans, including application of a temporary local planning instrument (TLPI). To provide clarity on the project MBRC instructed that the local planning instruments to come from this project were to be compliant with the QPP.

To conform with the QPP the local planning instruments would be referred to as Local Plans. The sequence to implementation through-out the MBRL corridor as been determined as follows:

- TLPIs are being negotiated with DLGP
- Council will consider the adoption of the Draft Plans as policy after DTMR has consulted on the relocation of Kippa-Ring station
- Council has agreed with DLGP to undertake scheme amendments to replace the TLPIs within 12 months of their gazettal
- Ultimately, the Plans will be incorporated into the new scheme due in 2014.

6.4 The MBRL Local Plans - a way forward

The draft Local Plans presented in this report have been prepared on the basis that they will be included in the proposed MBRC 2030 Planning Scheme. It is not intended that the Local Plans are standalone documents and it is intended that they will rely on the general codes,



level of assessment tables and zones outlined in the proposed MBRC 2030 Planning Scheme.

It should be noted that QPP provides a standard suite of land use and administrative definitions, zones, levels of assessment, overlays, infrastructure planning provisions, development assessment codes and other administrative matters. Therefore the matters addressed in the standard suite of zones are not addressed in the Local Plans.

To provide context, the entire suite of overlays from QPP have been appended to each Local Plan as an example. While these elements are optional to include, they must only be drawn from the standard QPP suite.

In preparing the Local Plans, several assumptions have been made relating to the structure of the MBRC 2030 Planning Scheme, the structure of the Local Plans and the level of detail required at each level. Each of the Local plans include the following aspects:

- detail the building design requirements for the different zones(e.g. building height, site cover, setbacks, energy efficiency, etc.)
- requirements for stormwater management
- requirements for developments to comply with Crime Prevention Through Environmental Design (CPTED) Principles
- requirements for bicycle parking and facilities
- requirements for landscaping including deep tree planting
- requirements for parking, access and manoeuvring
- requirements to mitigate noise and air pollution.

It is assumed that little variation is required to the Tables of Assessment as shown in the QPP will generally apply. This will be finalised during the preparation of the planning scheme.

There have also been assumptions made around the other studies and strategies which are to be completed as part of the preparation of the MBRC Planning Scheme and include the following:

- a centres study
- roads and traffic study
- infrastructure study.

Other agencies such as the Department of Transport and Main Roads, Department of Environment and Resource Management, Department of Planning and Local Government, and Department of Employment, Economic Development and Innovation may introduce other requirements the 'state interest check' phase of planning scheme amendments and/or scheme preparation. Such requirements may affect these Local Plans in terms of engineering solutions to rail crossings, the alignment of the rail and approaches to resumptions and other property acquisition strategies.

None of these assumptions are intended or expected to bind either MBRC or other agencies and the Local Plans will evolve in response to these changes.



7. The Local Plans

This section provides an overview of the structure and content of the Local Plans. These Local Plans have been developed to provide detailed guidance for integrated land use and development outcomes within each station catchment along the Moreton Bay Rail Link. The identity and the differing characteristics/issues of each station catchment area are identified. The application of locally focused and consistent desired outcomes within the built form will benefit those local areas, as well as the function and form of development in the entire Moreton Bay region.

The boundaries for each Local Plan have been adapted from the catchments to a more useful format which generally follows property boundaries. These boundaries are shown below in Figure 7.1 and provide the context across the entire length of the rail line.



Figure 7.1 MBRL Local Plans in regional context

Internal Structure

As discussed in the previous section the Local Plans will be incorporated into the MBRC 2030 planning scheme. A total of four (4) Local Plans have been developed to cover the six (6) MBRL station catchment areas. The internal structure of these Local Plans is described below:

- Purpose statement Each Local Plan contains a purpose statement which sets out the key objectives of the planning scheme for land that is included within the particular Local Plan.
- Overall outcomes The purpose statement is supported by a number of desired outcomes which are specific to the catchment area included in the local Plan. These outcomes may relate to land use and urban form, amenity, environment and connectivity.



- Precinct intents Each Local Plan contains several precincts, which are areas of distinct land use and development type within the Local Plan boundary. The precinct intent describes the desired provisions for future development in these defined subcatchment areas.
- Local Plan Code The 'Local Plan Code' contains Performance Criteria and Acceptable Solutions which apply to the assessment of development in the Local Plan area. Performance Criteria may specify building heights, density, setbacks, car parking requirements or green space contributions. Specific levels of assessment to accompany each Local Plan Code have not been developed as part of this project scope. It is assumed that the level of assessment and associated code requirements will be stipulated upon completion of the statutory Moreton Bay Regional Council 2030 planning scheme.
- Supporting documentation Each Local Plan is supported by three (3) maps. These maps illustrate:
 - zoning and precinct locations
 - road hierarchy
 - active and public transport.

Below are brief summaries of each of the Local Plans designed to provide an overview of what each Local Plan is trying to achieve. The full text of the Local Plans are included in Volume 2 of this report (see Appendices A, B, C, D).

Included within the Local Plan summaries are a number of 'artist impression' drawings. These drawings do not form part of the planning scheme and therefore do not have statutory weight. Rather, they are provided for information purposes only and intend to provide a visualisation of the long term outcomes to be achieved by each Local Plan.

7.1 Kallangur and Murrumba Downs Stations Local Plan

The Kallangur and Murrumba Downs Stations Local Plan is to guide development within the catchment of the Kallangur and Murrumba Downs stations for the life of the Moreton Bay Regional Council 2030 Planning Scheme. It is expected that the district centre along Anzac Avenue in Kallangur will consolidate (Figure 7.2). A neighbourhood centre will also emerge near Kallangur Station.

Sustainable development within the catchment will be delivered by increasing densities around the Kallangur and Murrumba Downs Stations. Greenfield development areas to the north and south of the Kallangur Station will contain the highest density residential development opportunities in proximity to the Kallangur Station. Infill redevelopment areas will also provide increased residential densities at locations close to/or with direct access to the Kallangur and/or Murrumba Downs Station.





Figure 7.2 Kallangur StationAerial perspective

(Source: Deicke Richards 2011)

The Local Plan sets out desired land use and development provisions for 14 Precinct areas. Key Precinct areas of the Plan include:

- Murrumba Downs Investigation Precinct, identified as an area which requires extensive investigation and resolution of technical issues, particularly traffic and physical and environmental constraints.
- Murrumba Downs Station North Apartment Precinct, which will provide higher density residential development (minimum of sixty dwellings per hectare) in close proximity to the Murrumba Downs Station.
- Goodfellows Road West Mixed Use Precinct, which will contain mixed-use development on Goodfellows Road toward Anzac Avenue.
- Kallangur District Centre Precinct, which will provide a variety of commercial, retail, office, community and employment functions along Anzac Avenue. The District Centre will be connected to the Kallangur Station by pedestrian and cyclist paths.

The Kallangur and Murrumba Downs Local Plan and the supporting mapping documentation are supplied in Volume 2. Below is the zoning and precincts for the Local Plan which surrounds both stations (Figure 7.3).





Figure 7.3Zoning and precinct map for Kallangur and Murrumba Downs Stations(Source: Parsons Brinckerhoff 2011)



Figure 7.4 Murrumba North Precinct – street level perspective

(Source: Deicke Richards 2011)

The *Station North Apartment Precinct*, as shown in Figure 7.4 above, will provide a high density residential (minimum of sixty dwellings per hectare) in close proximity to the Station. Residential development will provide discreet on-street parking with landscaping bays.



7.2 Mango Hill and Kinsellas Stations Local Plan

The Mango Hill and Kinsellas Stations Local Plan will guide development within the Mango Hill Station and Kinsellas Station areas. This area includes the site of the largest as yet undeveloped sites along the MBRL. Halpine Lake has been created close to the Mango Hill station site. Another lake is planned for the area near Kinsellas Station. Both lakes are likely to be at least partially visible from the train and from the stations.

The primary purpose of the Mango Hill and Kinsellas Stations Local Plan is to create a consolidated, vibrant, connected and cohesive urban locality, linking activities on each side of Anzac Avenue and facilitating the on-going transformation and activation of the North Lakes town centre. The Plan will reinforce North Lakes Town Centre as the Major Regional Activity Centre and as a destination in its own right, while promoting a more compact urban form through the provision of transit-supported residential choices.

The Plan provides for an 'urban neighbourhood' with a focus on the Capestone village centre and lakeside amenity with close and activated linkage to the Kinsellas Station. Residential land uses are promoted by the Plan, including provisions for innovative residential development of the "Greenfield" site to the south-east of Kinsellas Station. Key Precincts include the Mango Hill Station Precinct, Akuna Way Precinct, Kinsellas Station Precinct and Kinsellas North Precinct. The Precincts and Zoning identified for this relationship to the train line is shown in the Zoning and Precinct map below (Figure 7.5).



Figure 7.5 Zoning and precincts map for Mango Hill and Kinsellas Stations

(Source: Parsons Brinckerhoff 2011)

Building height and densities (approximately 60 dwelling per hectare for residential) will reinforce the Kinsellas Station as the transit core of the suburb, and ensure the resource of land, critical to the achievement of walkability and transit oriented development outcomes, is maximised (Figure 7.6).





Figure 7.6 Kinsellas Station – street level perspective

(Source: Deicke Richards 2011)

The Kinsellas Station Precinct is located within 400m of Kinsellas Railway Station, and provides a range of compact land uses which will support a commercial and residential focus for the Kinsellas Railway Station. The above figure illustrates the potential for consolidated mixed-use development contiguous to a Local Centre and Apartment Residential.

Figure 7.7 (below) illustrates how the area leading towards the Mango Hill Station could be developed under this Local Plan. This urbanised view is towards the station and emphasises the ease of pedestrian access. Mixed use retail/residential buildings and wide pedestrian promenade create a more 'human scaled' streetscape.



Figure 7.7Mango Hill Station Precinct(Source: Deicke Richards, 2011)



The Mango Hill and Kinsellas Stations Local Plan and the supporting mapping documentation are supplied in Volume 2.

7.3 Rothwell Station Local Plan

There is little development anticipated to occur within the Rothwell Station catchment pending completion of further investigation in relation to balancing development opportunities against resolution of traffic and access issues, and the impact on environmental values of local and national significance.

The Local Plan facilitates public transport options and promotes opportunities for bus interchange and park and ride facilities to be developed immediately adjacent to the station. The Plan provides strong protection for open space and environmental attributes and in so far as appropriate, improved access to transport services. The Precincts and Zoning identified for this relationship are shown in Figure 7.8.



Figure 7.8Zoning and precinct map for Rothwell Station(Source: Parsons Brinckerhoff 2011)

As shown, the precinct areas of the Local Plan include: Anzac Avenue Residential Precinct, Rothwell Investigation Precinct, Buchanan Residential Precinct and the Rothwell Environmental Management Precinct.

Proposals in proximity to the *Environmental Management Precinct* must have regard to the effects that development can have on the environmental values of this area, such as water quality impacts to the wetlands. Development must ensure that the protected wetland and vegetation areas of this precinct remain linked to adjoining native vegetation or habitat areas.

The Rothwell Station Local Plan and the supporting mapping documentation are supplied in Volume 2. It is noted that all of Precinct 4 the Rothwell Environmental Management Precinct



and part of Precinct 2 – Rothwell Investigation Precinct are outside the SEQ Regional Plan 2009 - 2031 'urban foot print'.

7.4 Kippa-Ring Station Local Plan

The primary purpose of the Kippa-Ring Station Local Plan is to create a "gateway" to the Redcliffe Peninsula. It will also create an intensive focus of urban activity appropriate to the hub of transit access to the Redcliffe/Kippa-Ring Major Regional Activity Centre. A quality public realm setting for the station will be complemented by the transformation of Anzac Avenue and Boardman Road to safe and attractive urban boulevards.

The Plan provides strong functional linkages between Kippa-Ring Station and Kippa-Ring Village. This serves to reinforce the centre's role as part of the Redcliffe/Kippa-Ring Major Regional Centre intensive urban corridor. This connection will increase the vitality of the centre and enhance its character as a mixed use 'centres neighbourhood', as well as increasing its accessibility and attraction as a transit destination from its wider district and sub-regional catchments. This urban form is shown in the Zoning and Precincts map below in Figure 7.9.



Figure 7.9Zoning and precincts map for Kippa-Ring Station(Source: Parsons Brinckerhoff 2011)

The Plan provides for complementary 'urban neighbourhoods' of higher residential densities in proximity to the 'transit neighbourhood' and 'centres neighbourhood'. The increased residential densities in the Kippa-Ring Station area will support the commercial activities in the Kippa-Ring Major Activity Centre. These higher residential densities will include taller buildings located to access the views across Hays Inlet to the west and across the Peninsula towards Moreton Bay (Figure 7.9).





Figure 7.10 Kippa-Ring Station aerial perspective (Source: Deicke Richards 2011)

A high level of accessibility is a critical component of the Kippa-Ring Local Plan. Within the surrounding precincts of the Kippa-Ring Station, the interconnected framework of pedestrian and cycle linkages will create a focus on the station, particularly in the main approach to the station. Figure 7.11 illustrates the importance of a high quality public realm and the maintenance of critical sightlines from Anzac Avenue, which together reinforce Kippa-Ring Station's role as the terminal station and the 'gateway' to the Redcliffe Peninsula.



Figure 7.11 Kippa-Ring, street level perspective (Source: Deicke Richards 2011)

The Kippa-Ring Station Local Plan and the supporting mapping documentation are supplied in Volume 2.



8. Reference list

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