

Strategic Passenger Transport Plan

25 August 2011

City of Playford

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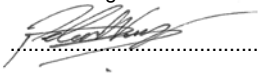
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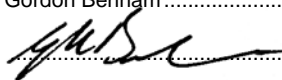
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Contents

	Page number
Executive summary	xi
1. Introduction	1
1.1 Key objectives	1
1.2 Outcomes	2
1.3 Study area	2
2. Baseline review	3
2.1 State and Local Government documents and policies	3
2.1.1 City of Playford Council Plan 2010/2011-2013/2014	3
2.1.2 The Playford Community Plan	3
2.1.3 State of the City report 2010 (City of Playford)	4
2.1.4 South Australian Strategic Plan	5
2.1.5 Strategic Infrastructure Plan for South Australia	5
2.1.6 30-year Plan for Greater Adelaide	6
2.1.7 Department for Transport Energy and Infrastructure annual reports	7
3. Demographics	9
3.1 Population trends	9
3.2 Age profile	10
3.3 Employment and work travel patterns	11
3.3.1 Workers	11
3.3.2 Jobs	11
3.4 Car ownership	15
3.5 Socio-economics	16
4. Existing urban developments	19
4.1 Residential	19
4.2 Key activity centres and destinations	20
4.3 Employment regions	20
4.4 Educational institutions	20
4.5 Other developments	21
5. Passenger transport network	23
5.1 Public transport	23
5.1.1 Geographic coverage of services	27
5.1.2 Hours of operation	29

Contents (Continued)

	Page number
5.1.3 Frequency	29
5.1.4 Public transport use	29
5.1.5 Public transport infrastructure	34
5.2 Regional bus services	34
5.3 Community based transport services	35
5.3.1 HACC operated services	35
5.3.2 Development of the Community Passenger Network	35
5.4 Other passenger transport services	35
5.4.1 Dial a Ride services	35
5.4.2 School bus services	36
5.5 Summary of existing network	39
5.5.1 Patronage by route	39
5.5.2 Patronage by region	39
6. Identification of current issues	41
6.1 Identified gaps in the passenger transport network	41
6.1.1 Routes and services	41
6.1.2 Hours of operation	41
6.1.3 Frequency of services	42
6.1.4 Accessibility and social inclusion	45
6.2 Community (non-public) transport services	45
7. Future developments	47
7.1 Residential expansion	49
7.1.1 Blakeview	49
7.1.2 North western metropolitan area	50
7.1.3 Urban expansion (MacDonald Park, Munno Para Downs north and south)	54
7.1.4 Angle Vale	54
7.1.5 Virginia and Buckland Park	55
7.1.6 Existing urban areas	55
7.2 Residential population staging	56
7.3 Transit oriented developments	57
7.4 Passenger transport improvements	57
7.4.1 Gawler Train Line	57
7.4.2 Proposed bus service improvements	58
7.4.3 Other passenger transport infrastructure measures	59
7.5 Potential mass transit corridor	59

Contents (Continued)

	Page number
8. Key challenges and directions for passenger transport	61
8.1 Gaps in current passenger transport services	61
8.2 Public transport use and patronage	63
8.3 Prioritisation of improvements	64
9. Passenger transport network principles	67
9.1 Simplification of the route network	67
9.2 Priority to quality over coverage	68
9.3 Passenger transport network hierarchy	69
9.3.1 A layered passenger transport network structure	69
9.4 Service standards	71
9.4.1 General service standards	71
9.4.1 Higher frequencies	72
9.4.2 Express and limited stop services	73
9.4.3 Consistency	73
9.5 Service level guidelines	73
9.6 Route numbering and differentiation	75
10. Current network options development	77
10.1 Baseline conditions	77
10.2 Option 1 – Minimum option	81
10.2.1 Train services improvements	81
10.2.2 Improvements to bus services	81
10.3 Option 2 – existing network upgrade	87
10.3.1 Train service improvements	87
10.3.2 Bus service improvements	87
10.4 Option 3 – new network	93
10.4.1 Train service improvements	93
10.4.2 Bus service improvements	93
10.5 Option 4 – Go Zone network	103
10.5.1 Train service improvements	103
10.5.2 Bus service improvements	103
10.6 Comparison of options	109

Contents (Continued)

	Page number
10.7 Assessment of options	110
10.7.1 Value for money	110
10.7.2 Ease of implementation	111
10.7.3 Impacts	111
10.7.4 Innovation	113
10.7.5 Meeting goals and objectives	114
10.7.6 Assessment of options comparison	115
10.8 Preferred option	115
11. Future network options	117
11.1 Train service improvements	117
11.2 Future network 1: 2013–2017	117
11.2.1 Bus services improvements	117
11.3 Future network 2: 2018–2020	123
11.3.1 Bus service improvements	123
11.4 Future network 3: 2021–2030+	127
11.4.1 Bus service improvements	127
11.5 Comparison of future options	133
12. Potential infrastructure improvements	135
12.1 Mass transit corridors	135
12.1.1 Buckland Park mass transit corridor	135
12.1.2 Angle Vale to Smithfield mass transit corridor	136
12.1.3 Buckland Park, Virginia, Angle Vale to Gawler mass transit corridor	138
12.1.4 Buckland Park and Virginia to Salisbury mass transit corridor	139
12.1.5 Potential mass transit corridors for the northern region	139
12.2 Park and Ride	139
12.2.1 Upgraded Smithfield Station Park and Ride	140
12.2.2 Upgraded Elizabeth Station Park and Ride	140
12.2.3 Other potential Park and Ride locations	140
12.2.4 Development of Park and Rides	141
12.3 Bus priority infrastructure	141
12.3.1 Potential bus priority locations	142
12.4 Interchange improvements	143
12.5 Operational facilities	143

Contents (Continued)

	Page number
13. Action plan	145
13.1 Costing for infrastructures and services improvements	145
13.2 Rationale	145
13.3 Community (Information and communication)	146
13.3.1 Community input and involvement	146
13.3.2 Information and communication provision	147
13.4 Services	147
13.4.1 Network structure improvements	147
13.4.2 Temporal coverage and frequency improvements	147
13.4.3 Long term passenger transport plan	148
13.5 Infrastructure	148
13.5.1 Bus stop audit and infrastructure requirement	148
13.5.2 Mass transit corridor safeguarding	149
13.5.3 Passenger transport priority infrastructure strategy	149
13.5.4 Park and Ride strategy	150
13.5.5 Interchange improvement strategy	150
13.5.6 Operations facilities strategy	150
13.6 Action plan summary	151
13.7 Interaction with other agencies	154
14. Summary	155
15. Recommendations	159
15.1 Implementation of Option 3 service plan	159
15.2 Other implementation options	159
15.2.1 Removal of competing services	159
15.2.2 Upgrade all services to a minimum frequency	160
15.2.3 Recommended upgrades (before 2015)	160
15.2.4 Upgraded corridors (Go Zone development)	161
15.2.5 New linkages	161
15.2.6 Corridor safeguarding	161
15.2.7 New infrastructure	161
16. Conclusion	165

List of tables

	Page number
Table ES.1 Additional residential population 2010–2050+	xii
Table ES.2 Identified issues	xv
Table ES.3 Comparisons of options	xviii
Table ES.4 Comparisons of future options	xviii
Table 3.1 Worker Origin/Destination	12
Table 3.2 Car ownership for the City of Playford – Vehicles per household	15
Table 5.1 Public transport patronage	30
Table 5.2 Patronage by area	31
Table 5.3 Average daily train patronage by station	32
Table 5.4 Present operating routes (January 2011)	37
Table 6.1 Hours of operation issues	41
Table 7.1 Blakeview expected population growth	49
Table 7.2 Metropolitan area north west expected population growth	50
Table 7.3 Angle Vale population growth	54
Table 7.4 Virginia and Buckland Park population growth	55
Table 7.5 Existing urban areas expected population growth	56
Table 7.6 Staged population growth	56
Table 9.1 Layered/Hierarchical passenger transport network	71
Table 9.2 Proposed service guidelines	74
Table 10.1 Baseline service kilometres	78
Table 10.2 Peak vehicle requirement	78
Table 10.3 Approximate cost to operate annual services	78
Table 10.4 Patronage	78
Table 10.5 Option 1 – Train service improvements	81
Table 10.6 Option 1 – Bus service changes	82
Table 10.7 Option 1 – Bus service improvements costs	82
Table 10.8 Option 1 – Performance	83
Table 10.9 Option 2 – Train service improvements	87
Table 10.10 Option 2 – Bus service changes	87
Table 10.11 Option 2 – Bus service improvements costs	88
Table 10.12 Option 2 – Performance	89
Table 10.13 Option 3 – Train service improvements	93
Table 10.14 Option 3 – Bus service changes	94
Table 10.15 Option 3 – Bus service improvements costs	96
Table 10.16 Option 3 – Performance	98
Table 10.17 Option 4 – Train service improvements	103
Table 10.18 Option 4 – Bus service changes	104
Table 10.19 Option 4 – Bus service improvements costs	104
Table 10.20 Option 4 – Performance	105
Table 10.21 Comparison of options	109
Table 10.22 Value for money comparison	110
Table 10.23 Assessment of options comparison	115
Table 11.1 Future network 1 – Train service improvements	117
Table 11.2 Future network 1 – Bus service improvements costs	118
Table 11.3 Future network 2 – Bus service improvements costs	124
Table 11.4 Future network 2 – Bus service improvements costs	128
Table 11.5 Comparison of future options	133
Table 13.1 Action Plan priority matrix	146
Table 13.2 Action plan	151

List of figures

	Page number
Figure E.1 City of Playford population growth	xii
Figure E.2 Current public transport routes	xiii
Figure 1.1 Study area	2
Figure 3.1 Population trends 1996–2009	10
Figure 3.2 Age profile changes 2001–2006	11
Figure 3.3 Worker origins and destinations	13
Figure 3.4 Journey to work by public transport	15
Figure 3.5 Households without a motor vehicle	16
Figure 3.6 City of Playford SEIFA index of disadvantage	17
Figure 4.1 Existing urban development	19
Figure 5.1 Current public transport routes	25
Figure 5.2 400 m geographical coverage	27
Figure 5.3 800 m geographical coverage	28
Figure 5.4 Bus stop density (400 m catchment)	28
Figure 5.5 Patronage sections	33
Figure 6.1 Route 443 night loop service	44
Figure 7.1 Future growth areas	48
Figure 7.2 Blakeview draft structure plan	49
Figure 7.3 Playford Alive project boundary	51
Figure 7.4 Proposed structure plan for the new retail and commercial centre	52
Figure 7.5 Playford Alive structure plan	53
Figure 7.6 City of Playford population growth	57
Figure 7.7 30-year Plan – Indicative mass transit corridor	60
Figure 8.1 Current travel pattern gaps	63
Figure 9.1 Network principles	67
Figure 9.2 Current Go Zone corridors	68
Figure 9.3 Example of overlapping service layers	72
Figure 9.4 Route numbering regions	76
Figure 10.1 2011 – baseline network	79
Figure 10.2 Option 1 – 2011 minimum option	85
Figure 10.3 Option 2 – 2011 upgraded existing network	91
Figure 10.4 Option 3 – 2011 new network (Preferred)	101
Figure 10.5 Option 4 – 2011 Go Zone network option	107
Figure 11.1 Future network 1: 2014–2017	121
Figure 11.2 Future network 2: 2018 – 2020	125
Figure 11.3 Future network 3: 2021–2030+	131
Figure 12.1 Potential mass transit corridor alignment options	136
Figure 12.2 Angle Vale potential mass transit corridors	137
Figure 12.4 Potential mass transit corridors	139

List of photographs

	Page number
Photo 7.1 Rail revitalization and station upgrades	58

Appendices

Appendix A	Existing urban development
Appendix B	Passenger transport network
Appendix C	Future developments
Appendix D	Key challenges
Appendix E	Options development

Glossary

CBD	Central Business District
City	Refers to the Adelaide CBD
DTEI	Department for Transport Energy and Infrastructure
PTSD	Public Transport Service Division
PSPTP	City of Playford Strategic Passenger Transport Plan
TOD	Transit Oriented Development
UP service	Refers to a passenger transport services travelling towards the Adelaide CBD
DN service	Refers to a passenger transport service travelling from the Adelaide CBD
Resources	Refers to service kilometres and/or passenger transport vehicle fleet
Go Zone	A Go Zone is not a route but a zone that offers convenient services every 15 minutes between 7.30 am and 6.30 pm Monday to Friday and every 30 minutes at night, Saturday, Sunday and Public Holidays* until approximately 10 pm.

Executive summary

Parsons Brinckerhoff (PB) was engaged by the City of Playford to develop a Strategic Passenger Transport Plan that will significantly transform the way in which passenger transport services are provided in the region, to improve accessibility to services for all residents, and therefore to provide more sustainable services within Playford. As part of this plan, PB has identified key travel demand, current issues and gaps, and has developed a range of options for improving passenger transport within the region. The plan provides a summary of actions and recommendations that council can use to advocate for improved services, and to assist in the development and planning of new services, infrastructure and facilities to meet the growing demand for passenger transport in the region.

Key objectives

The City of Playford Strategic Passenger Transport Plan (PSPTP) seeks to develop an integrated passenger transport strategy that will assist in optimising opportunities for increased accessibility across the relevant passenger transport modes, consistent with the City of Playford's long term sustainability objectives. The objectives of the plan are to:

- identify the significant issues of passenger transport in the City of Playford
- develop options by which to address these issues
- assess and priorities these options
- identify the actions required in order to realise the objectives of The Strategic Passenger Transport Plan
- identify the passenger transport needs of the community
- develop a vision for passenger transport services in the City of Playford; and
- recommend areas of passenger transport improvement and investment by which to realise the vision

The key goals of the PSPTP are to:

- meet the needs of the community by improved passenger transport services within the region
- provide suggestions and recommendations for maximising current passenger transport resources
- recommend new or improved services to address gaps and issues with the current network
- match service levels for passenger transport services currently provided in inner regions of metropolitan Adelaide (development of Go Zones).

Need for the plan

Population

The 30-year Plan for Greater Adelaide has indicated a substantial amount of additional new residential greenfield development within the City of Playford. As part of the plan, the Urban Growth Boundary, which currently exists around the existing urban areas, has been identified by government for expansion. The alteration of the existing urban growth boundary will allow for extensive expansion of the urban area to meet the government's population and employment targets.

Based on the medium growth population scenario provided by the City of Playford, it is estimated that an additional 120,577 residents will reside in the City of Playford by 2050. In the short term (within 5 years) the population is expected to increase by 22,191 new residents. Residential development is predicted to grow at 4,000 to 4,600 residents per annum from 2010 to 2030. Beyond 2030 it is expected to slow to

approximately 2,000 additional residents per annum. The table below stipulates the predicted residential growth for the council region by short, medium and long growth years.

Table ES.1 Additional residential population 2010–2050+

Location	2010–2015	2016–2020	2021–2030	2031–2050	2050+	Total
Blakeview	4,137	2,781	4,736	4,262	0	15,917
North western metropolitan area	14,386	11,514	9,390	10,007	0	45,297
Angle Vale	321	1,618	5,933	1,079		8,951
Virginia and Buckland Park	1,097	3,329	10,417	18,797	6,399	40,038
Existing urban areas	2,250	2,655	3,511	1,958	0	10,375
Total residential growth	22,191	21,897	33,986	36,103	6,399	120,577

Source: City of Playford population model (medium growth scenario)

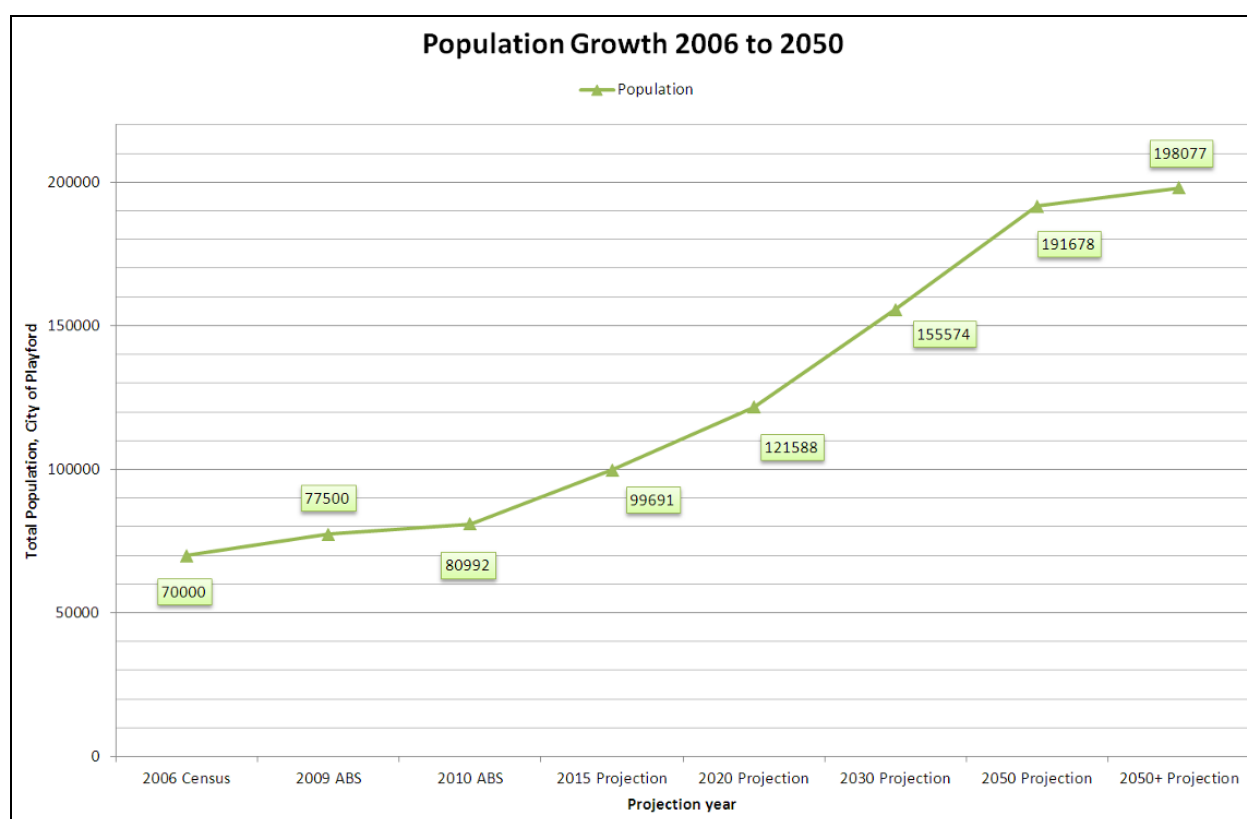


Figure ES.1 City of Playford population growth

Employment

Unlike the major increases in retail and residential development which has occurred over the last 10 years, only minor expansion to industrial development has occurred. The majority of the industrial development since 2001 has taken place in the Elizabeth West industrial estate where the most of development has been infill development within the suburb.

The 30-year Plan for Greater Adelaide has identified a significant amount of new industrial and employment land located within the City of Playford. Located west of Heaslip Road and south of Penfield

Current passenger transport network

Source: Metro Guide, Northern Suburbs July 2011 – Adelaide Metro

An estimated 195,101 passengers boarded public bus services within the City of Playford in March 2011. This equates to more than 8,650 passengers per weekday across the council region. It is estimated that a total of 2.1 million boardings are recorded within the City of Playford each year. This represents approximately 5.3% of total passenger boardings across the Adelaide Metropolitan region¹. Estimates from the 2007 Rail Boarding and Alighting survey and current patronage provided by DTEI, the Gawler Train Line indicated that approximately 4,149 passengers used one of the 7 train stations located within the council region each weekday.

¹ Source: Department for Transport Energy and Infrastructure: Annual report 2009–2010

Geographical coverage

Transport services in the City of Playford provide a good geographical coverage of the main urban areas. Most residents in urban areas are within a 400 m or 5 minute walking distance from a train station or bus stop. There are also several areas within the urban area which have very high access to public transport services in the form of multiple stops or stations within a short distance from residential developments. However, regions outside of the main urban areas (such as Virginia and One Tree Hill) have limited access to transport services.

Frequency of services

The frequency of public transport services in the City of Playford is adequate when compared to the rest of metropolitan Adelaide. Services generally operate at 15–30 minutes intervals during peak periods with 30–60 minute intervals interpeak and at nights and weekends.

Over recent years the frequency of public transport services in the City of Playford has improved significantly, with most routes now operating at 30 minute intervals during weekday peak and interpeak periods. This has come as a result of significant investment by state government into service delivery in the outer northern regions. However, despite the additional resources, public transport frequencies currently do not compare to other inner metropolitan council regions. Many inner city regions have corridors and service levels at Go Zone standard (15 minutes or less 7:30 am to 6:30 pm and 30 minute night and weekend services). There are presently no Go Zones located within the City of Playford.

In 2008 when major alterations to train timetables were implemented, two stations within the council region had improved service frequencies. Elizabeth and Smithfield both have a train service operating approximately every 15 minutes throughout the day (7:30am to 6:30pm weekdays) with 10 minute frequency or less service during peak periods. This has been developed using a skip stop pattern for train services. However, train frequencies at the remaining 5 stations are limited to 30 minute peak and interpeak services. Despite the improved weekday daytime services, the frequency of train services on weekends is limited to every 30 minutes and at night, 60 minute frequencies apply.

Identification of issues

Geographical coverage

Overall the majority of the metropolitan urban area within City of Playford is covered by some form of regular passenger transport service. Most of the area is covered by at least one bus route which links to the Gawler Train Line and/or a local activity centre (Munno Para or Elizabeth). However, outside of the metropolitan boundary, access to passenger transport can be limited or not available.

Service levels

Throughout the City of Playford, the majority of routes and corridors operate between 6:00 am and 11:00 pm–12:00 am weekdays and Saturdays. Services on Sundays and Public Holidays generally have shorter hours of operation and less network coverage. Although the coverage of passenger transport services is good during peak periods, there are selected areas which have insufficient, limited or no transport service during off peak periods.

Accessibility and social inclusion

The present passenger transport network provides sufficient service levels to meet general accessibility and social inclusion requirements. However, most weekend and night services operate hourly, therefore limiting the opportunities for residents to easily move around the network.

Although the majority of the urban area is covered by at least one passenger transport service, accessing some areas of employment can be difficult. Links between Elizabeth and the industrial areas located in the Edinburgh region are not provided in the current network, thereby forcing workers to make multiple connections to access the very limited service from Salisbury to the employment region. The limited access to this region could greatly affect potential residents, (who don't have access to a private vehicle), and who are employed in the area. The lack of access to this employment zone could potentially prevent potential unemployed persons from access workplace locations.

Although a vast majority of residents have good access to transport services, there are small percentages of residents that either have; very limited access or no access to services, thereby potentially creating issues of isolation.

Table ES.2 Identified issues

Issue	Effect area, region or issue
Current Issues	
Frequency and hours of operation	Limited evening and night frequencies for train services Limited evening, night and weekend frequencies for bus services Selected routes have limited or no service at night or weekends Selected routes have limited peak hour service frequencies
Speed	Convolutud routes that don't provide fast and direct services Close bus stop spacing (increasing travel times and infrastructure costs)
Integration	Many routes overlap creating inefficiencies in the network
Connectivity	Some routes compete with the Gawler Train Line for radial services to Adelaide CBD Not all routes and services meet the first or last train services from Adelaide Limited connectivity between Hillbank and Lyell McEwin Hospital
Consistency	Routes and services change at different times of the day and week Departure times are not regular or consistent
Legibility	High density of moderate to low frequency routes
Accessibility	Not all regions have good access to passenger transport services. Limited or no coverage of passenger transport services to One Tree Hill, Virginia, The Palms Residential Village, Elizabeth Village, McDonald Park and portions of Munno Para West. Issues for accessing employment regions in Salisbury, Edinburgh, Port Adelaide and Wingfield
Potential future issues	
Urban expansion	Large population and employment growth in regions currently not served by passenger transport Development of new activity centres and key destinations Major new developments at Angle Vale, Buckland Park and Virginia Major urban expansions at Munno Para, Penfield and Andrews Farm
Service improvements	The increase population will demand improved services throughout the region
Infrastructure improvements	With the electrification of the Gawler Train Line, how will the network change to support the new services and infrastructure
Meeting State Government goals and objectives	Meet the Governments goal to <i>"Increase the use of public transport to 10% of metropolitan weekday passenger vehicle kilometres travelled by 2018"</i>

Passenger transport network principles

The Strategic Passenger Transport Plan has established a set of network principles that can be used to guide the planning and development of passenger transport services within the City of Playford. These principles have been based on providing high quality connections between major centres and the Gawler Train Line and linking major centres with suburbs, rural developments and townships.

The principles of the network include:

- Simplification of the route network by:
 - ▶ creating consistent routes that do not change by weekday, night or weekends;
 - ▶ providing direct services that aren't convoluted to major centres and the Gawler Train Line
 - ▶ simplifying the network by reducing the number of routes on the different corridors
 - ▶ reduction in route variants
- Priority to quality over coverage by the establishment of high quality, high frequency, direct and reliable transport services. Quality passenger transport services are valued highly by able bodied passengers who are often prepared to walk longer distances to reach higher quality services (such as Go Zones). An emphasis should be to move away from providing a high density neighbourhood style service to a reduced network but with higher frequency. This may involve increasing the walking catchment target from 400 m to 600 m due to the geometric road layouts within the City of Playford. For example most major roads (such as Uley Road and Craigmore Road) are located 1200 m apart.
- The establishment of a hierarchy of routes and services will assist in the coordination, planning and prioritisation of resources in developing a successful passenger transport network. This included developing several different passenger transport layers, each designed to service a different function or demand. The suggested layers are:
 - ▶ **Mass Transit Corridor/Go Zone:** concentrated on key corridors providing access to main centres (including the Adelaide CBD in the case of the Gawler Train Line). These services would be direct, fast, frequent, and have a high level of priority (where possible for the bus Go Zone services).
 - ▶ **Link Services:** this would be a combination of cross suburban and rail feeder services. They would operate at similar operating times to the Mass Transit/Go Zone Corridors, though at reduced frequencies; high frequencies would be provided during peak periods, with good frequencies for interpeak, night and weekend services.
 - ▶ **Local Services:** these services would provide local access or regional access to major centres. These services would typically be demographic or geographic specific services, and designed to meet specific requirements.

Service standards and guidelines

The Strategic Passenger Transport Plan has developed a set of recommendations for the key characteristic for the provision of passenger transport services in the region. Based on the hierarchy of routes developed, each layer has been classified in terms of frequency of service, accessibility, walking catchments and coverage, function, hours of operation, priority measures and stop spacing.

Development of options

As part of the options development, four alternate scenarios for improving the current passenger transport services in the region have been included. Each of the scenarios has been developed based on the principles of providing quality passenger transport services to the region established in the previous chapters.

The four scenarios are based on making improvements to the existing network, and have not included the development of new services. It has been assumed that any new routes or services would follow service planning guidelines established.

- **Option 1:** Development of scenario that would deliver a minimal level of service improvement. This option focused on increasing service levels on selected routes to match other service currently provided within the region. This option also addressed some connectivity issues; however, the majority of improvements were focused on upgrading services to meet a minimum standard.
- **Option 2:** The second scenario examined the possibility of increasing services on selected routes to provide high quality, Go Zone standard services (15 minute services on weekdays and 30 minute services at nights and weekends), to select routes within the existing network. Although, this option significantly improved service levels in selected regions, duplication of resources and a high cost to implement this option (such as capital and operational costs) denoted that this option was less viable than others developed.
- **Option 3:** The third option was based on maximising the existing services and resources while making modest increases to the operating cost of the system. This option examined the possibilities of simplifying the network, establishing new connections and links, removing duplicated or closely space corridors, upgrading service frequencies and improving legibility. However, implementing this option did have some impacts on the community. Some residents would be required to walk further to a transport services and some passengers would be required to make a transfer to complete their present journey.
- **Option 4:** The final option was developed to determine the cost of implementing a large proportion of the Option 3 network at a high frequency, Go Zone standard level. This included significant improvements to Gawler Train Line. The scenario, built upon the revised network established in Option 3, however, provided the majority of routes within the urban area at Go Zone standard. Although, this scenario is highly desirable from a community perspective, the costs associated with significantly improving service to this level is unlikely to occur in the short term (0–3 years). However, this option was still included to indicate the cost associated with operating a transport system at this level.

Each option was then costed, compared and assessed based on criteria such as improvements to: frequency, reliability, speed, integration, connectivity, consistency, legibility and accessibility.

An additional comparison of each route was conducted. This included an assessment to determine the possibility and likelihood of implementing each service, with this assessment being based on: ease of implementation; impacts on: community, service providers, government and, council; innovation of services; value for money; and meeting the goals and objectives

Based on the analysis of the different options, a score was applied to each criterion for each option. From the assessment of the options and cost to implement, **Option 3** was determined to deliver the greatest improvement without significantly increasing operating or capital costs.

Table ES.3 Comparisons of options

Category	Option 1	Option 2	Option 3	Option 4
Additional km	475,369 km	1,138,739 km	661,286 km	4,775,233
Additional buses	4	9	5	22
Total bus km	3,538,120 km	4,399,150 km	3,869,923 km	6,248,674 km
Total train km	1,670,522 km	1,670,522 km	1,670,522 km	3,300,277 km
Bus operational costs	\$10,144,087	\$12,854,625	\$11,827,409	\$19,175,997
Train operational costs	\$16,189,346	\$16,189,346	\$16,189,346	\$31,923,216
Additional cost³	\$2,145,517	\$4,856,054	\$3,828,838	\$26,911,296

1. Based on all bus route complete length. Current bus network costs have been based on \$3.00 per revenue kilometre for weekdays and \$3.33 for weekend services (estimate based on PTSD input). Weekend rate is based on 51 Saturdays at \$3.00, 52 Sundays at \$3.50 and 11 Public holidays at \$4.00 to average \$3.33.
2. Based on all Gawler Train Line services. Current train network costs have been based on \$4.00 per weekday day and Saturday day carriage kilometre, \$4.50 per weekday night, Sunday day and Public Holiday day carriage kilometre, \$5.00 per Saturday night carriage kilometre, \$5.50 per Sunday night carriage kilometre and \$6.00 per Public Holiday night carriage kilometre. A carriage multiplier of 2.5 per weekday and 2.0 for all other times has been used to determine costs per revenue kilometre. Night time services are determined as any service departing after 6:00pm.
3. Compared to current 2011 operating costs

Development of future options

The high projected levels of regional residential and employment growth will add considerable strain to the current passenger transport network. Without the many improvements identified in the future scenarios, many residents would not have adequate or equitable access to public transportation, especially those located in the new greenfield development sites.

The future scenarios examine making additions and improvements to the preferred short term network (Option 3). The Strategic Plan has attempted to estimate the additional operational costs associated with implementing the upgraded network, and thence the incremental costs for implementing the potential future networks.

Table ES.4 Comparisons of future options

Category	Option 3	Future 1	Future 2	Future 3
	2011–2012	2013–2017	2018–2020	2021–2030+
Additional km	661,286 km	4,092,093 km	9,284,958 km	14,628,088 km
Total Bus km	3,869,923 km	5,520,035 km	10,712,899 km	16,056,030 km
Total Train km	1,670,522 km	3,300,277 km	3,300,277 km	3,300,277 km
Bus Operation Cost	\$11,827,409	\$16,910,323	\$32,852,296	\$49,168,682
Train Operation Cost	\$16,189,346	\$31,923,216	\$31,923,216	\$31,923,216
Additional Cost	\$3,828,838	\$24,645,622	\$40,587,595	\$56,980,765

The future networks have been based on improvements made relative to Option 3 (preferred option). Future options include a significant improvement to train service levels; it is anticipated that the operational cost for train service improvements will decrease with the implementation of the electrified train network. All costs are based on the 2011 estimated operational costs and are represented in 2011 dollars.

Actions and recommendations

The current passenger transport network has a good foundation; however portions of the existing system can be confusing and difficult to interpret from a passenger's perspective. This is especially evident with evening and night time services and where services are not coordinated (for example between Elizabeth and Lyell McEwin Hospital). The action plan and recommendations aims to set out the basic structure and the core components of the network to improve services, legibility and customer satisfaction in the short term, while establishing and protecting future infrastructure improvements.

The key actions or recommendations include:

Community

- Establishing a community transport web-portal as part of the council's website. This portal would allow residents access to general passenger transport information (both public and community based) as well as provide an opportunity for residents to provide comments, concerns and feedback on transport issues in the region. This information could be collated and used as part of the wider advocacy role of Council to improving passenger transport in the region.

Services

- Advocate for an improved passenger transport network structure (preference for Option 3 implementation), removal of competing services and establishment of new transport links.
- Advocate for increasing services to meet minimum service standards while advocating for the development of Go Zones in the region.
- Develop in coordination with DTEI and Planning SA a long term passenger transport plan which would examine future potential routes, service levels, patronage projections, costs, infrastructure requirements for long term developments. The plan would influence the design of structure plans and newly developed areas to maximise the use and efficiency of passenger transport services.

Infrastructure

- An audit into the existing bus stop infrastructure and facilities including, the number and location of stops, bus stop infrastructure requirements (to meet minimum infrastructure levels and disability standards), bus stop rationalisation and optimisation of stop locations, development of a hierarchy of stops to coordinate and provide adequate infrastructure to where it is required the most.
- The 30-year Plan for Greater Adelaide identified the Buckland Park and Virginia to Elizabeth corridor as a potential new mass transit corridor. The PSPTP identified a further three potential mass transit corridors in the region (Smithfield to Angle Vale, Buckland Park, Virginia to Angle Vale and Gawler and Buckland Park/Virginia to Salisbury). Since the mode of transport for these corridors is unknown or undecided, safeguarding of these corridors to enable any mode (Train, Tram or Bus Rapid Transit) should be conducted to allow for their future development.
- The Department for Transport Energy and Infrastructure presently do not have a strategy in place for the development of Park and Ride facilities within the council region. However, selected locations have had demand assessments conducted. The PSPTP recommends that a study to investigate the potential for the expansion of Park and Ride facilities in the region is warranted. With the upgrade and electrification of the Gawler Train Line in the near future, the demand for Park and Ride facilities is likely to increase. An investigation into the size, number and locations of these facilities should be conducted. The study should also examine the possibility of converting these locations into Transit Oriented Developments (TOD) when demand for such developments warrants the conversion.

- The potential for bus priority, although not crucial in the region (due to low congestion rates when compared to other regions with Adelaide), should be investigated. Study into the possible implementation of bus priority measures. The study would include a cost and benefit analysis as well as detailed examination into the impacts to traffic, parking and passenger transport services. The study would focus particularly on the core network with possible options development for congestion points on the feeder and local networks. Possible locations include: Munno Para Shopping Centre to Smithfield Station, sections of Yorktown Road, Uley Road, Main North Road and Haydown Road (at the Lyell McEwin Hospital)
- An investigation into the upgrade and development of existing or new interchange facilities is recommended. With the expansion of the network and the development of new satellite development regions (such as Angle Vale, Buckland Park and Virginia), new interchange facilities will be required to enable passenger transfer between services across the network. This study should examine the potential location and size of new interchanges as well as examine the potential to upgrade existing interchanges, including investigating capacity constraints with regard to vehicle movement and bus stop capacity.
- The future options forecast a significant increase in bus fleet requirements over the next 10–20 years. This will place considerable strain on the existing storage and maintenance facilities as well as a potential increase in out-of-service kilometres. It is likely that the government and its service providers will conduct a fleet acquisition and depot strategy to cater for future requirements. This study would include fleet requirement and operation facilities including investigation into storage capacity, maintenance services, administration offices and land requirements. Council should coordinate with Government and service providers to assist in the identification and selection of preferred locations for these facilities within the region.

Conclusions

Overall the City of Playford Strategic Passenger Transport Plan has developed concepts, options and recommendations for the improvement to passenger transport services within the council region. These recommendations have been based on the information obtained from council, developers, transport operators and government.

The strategic plan recognises that the passenger transport system is fluid and changeable with regard to the demand and expectations from transport users. Origins and destinations within the system can easily change with alterations to land use or when travel behaviour patterns occur.

A strategic and long term transport plan will never be able to predict, develop options and solve all transport issues within the network. Therefore, a strategic transport plan should be flexible and adaptable to the range of factors that influence the provision, demand and operation of transport services. The City of Playford Strategic Passenger Transport Plan is a snapshot of the current issues and demands affecting the passenger transport system in 2011. Solutions have been developed to address the current issues and concerns for the present system, however, this plan should remain as an open and working document to allow for future revisions, changes and alterations to meet the ever changing demand for passenger transport services.

1. Introduction

Parsons Brinckerhoff (PB) was engaged by the City of Playford to develop a Strategic Passenger Transport Plan that will significantly transform the way in which passenger transport services are provided in the region, to improve accessibility to services for all residents, and therefore to provide more sustainable services within Playford. As part of this plan, PB has identified key travel demand, current issues and gaps, and has developed a range of options for improving passenger transport within the region. The plan provides a summary of actions and recommendations that council can use to advocate for improved services, and to assist in the development and planning of new services, infrastructure and facilities to meet the growing demand for passenger transport in the region.

The City of Playford is located in the outer northern suburbs of metropolitan Adelaide. The council region is bounded by Little Para River in the South, the Edinburgh RAAF Base and the Gulf of St Vincent in the west, Gawler River and Dalkeith Road to the North and South Para River and One Tree Hill – Kersbrook Road in the East. The council region consists of a variety of different types of urban and rural development including country townships, low density suburbs to major industrial development and regional activity centres.

The City of Playford Strategic Passenger Transport Plan (PSPTP) seeks to develop an integrated passenger transport strategy that will assist in optimising opportunities for increased accessibility across the relevant passenger transport modes, consistent with the City of Playford's long term sustainability objectives.

1.1 Key objectives

The purpose of the PSPTP is to develop a long term strategic passenger transport vision for the council region. The objectives of the plan are to:

- identify the significant issues of passenger transport in the City of Playford
- develop options by which to address these issues
- assess and priorities these options
- identify the actions required in order to realise the objectives of The Strategic Passenger Transport Plan
- identify the passenger transport needs of the community
- develop a vision for passenger transport services in the City of Playford; and
- recommend areas of passenger transport improvement and investment by which to realise the vision
- The key goals of the PSPTP are to:
- meet the needs of the community by improve passenger transport services within the region
- provide suggestions and recommendations for maximising current passenger transport resources
- recommend new or improved services to address gaps and issues with the current network
- match service levels for passenger transport services currently provided in inner regions of metropolitan Adelaide (development of Go Zones).

1.2 Outcomes

The key outcome of the PSPTP is a strategic passenger transport plan that:

- council can use to advocate for improved public transport services in the City of Playford
- meets the community's needs and requirements for passenger transport provision.

1.3 Study area

The study area for the PSPTP is located within the municipal boundary for the City of Playford. The region covered by this study is illustrated in Figure 1.1 below. However, due to the nature of passenger transport services and operations, selected regions outside of the City of Playford have been included in the study area; these include portions of the District Council of Gawler to the north and the City of Salisbury to the south.

The major suburbs and areas of settlement are described below:

- Urban areas, suburbs including: Munno Para, Munno Para West, Blakeview, Andrews Farm, Smithfield Plains, Smithfield, Craigmore, Davoren Park, Elizabeth West, Elizabeth North, Elizabeth Downs, Elizabeth, Elizabeth Park, Elizabeth East, Elisabeth South, Elizabeth Grove, Hill Bank and Elizabeth Vale.
- Townships, including: Virginia, Angle Vale and One Tree Hill.
- Other regions of interest, Suburbs include: Waterloo Corner, Penfield, Buckland Park, Munno Para Downs and MacDonald Park.
- Areas outside of the City of Playford, Suburbs including: Salisbury, Salisbury Park, Edinburgh, Evanston Gardens, Evanston and Gawler.

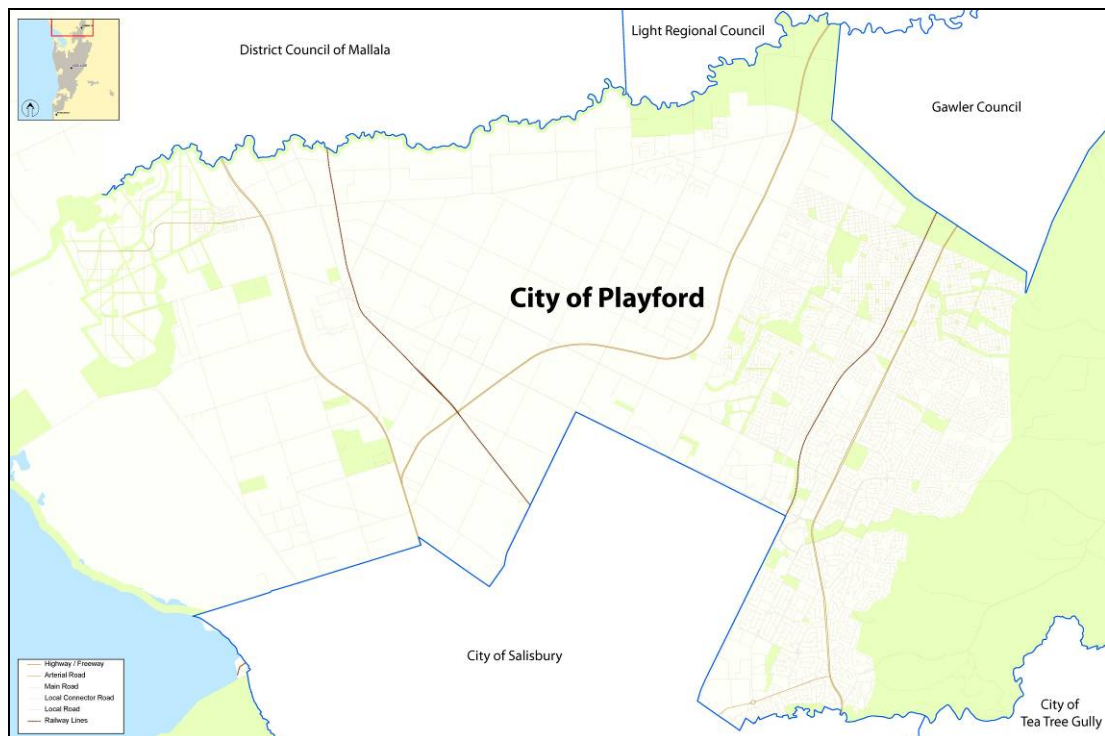


Figure 1.1 Study area

2. Baseline review

The following chapter focuses on the existing conditions within the City of Playford including urban development and existing land uses, population and urban densities, employment regions and major regional and activity centres. This chapter also provides an extensive review of the existing passenger transport condition in the City of Playford including government funded public transport services including rail and bus services as well as a brief review on community based passenger transport services (provided by community groups and not for profit organisations), intra-state and regional services and school services.

2.1 State and Local Government documents and policies

2.1.1 City of Playford Council Plan 2010/2011-2013/2014

The Council Plan for 2010–2014 set the council's priorities over a four year period to 2014. The plan identifies the key actions to be implemented of the life of the plan. Key actions to be implemented within the first year of the plan have been detailed including how they will be funded.

The council plan has a strong focus on sustainability. This element is considered a key component as the City of Playford is set to have rapid growth in development of the plan's lifetime. This growth impacts on the environment, infrastructure, community needs and opportunities, and the ability for council to deliver services.

The council plan has been derived from the Playford Community Plan, the Playford Development Plan as well as the long term financial goals and objectives. Key elements of the plan relating to passenger transport services are included below:

Key relevant policies

- Transport Advocate: Develop and transport advocacy programme that will identify needs, liaise with government and transport authorities to improve services.
- Transit Oriented Development: funding for studies and research on TOD opportunities on the Gawler/Adelaide railway line.
- DDA works on footpaths: Installation of DDA compliant footpaths.
- Toward One Planet Living – community needs analysis: development and assistance in moving towards sustainable living.

2.1.2 The Playford Community Plan

The City of Playford Community Plan has been developed over several years to provide a council wide collective vision and direction to guide the progression of the council and its residents into a positive future. The plan is a collection of the community's hopes and aspirations in the form of a range of realistic objectives and strategies. Measures and targets are used as guides to determine the progression of the council region against the desired outcomes.

The community plan represents the interests, and a desire to improve the quality of life, of the Playford community in a socially just and ecologically sustainable manner.

There are three segments which are contained in the community plan. These are:

- Community wellbeing – to improve and support the wellbeing, health and safety of the Playford community.
- Economic prosperity – to improve the economic prosperity of the region.
- Environmental care – to secure a sustainable future for Playford’s community and environment through leadership innovations, collaboration and engagement.

Under each of the three segments, additional goals and objectives have been identified as part of the plan. The goals and objectives relevant to passenger transport services are:

- Health and wellbeing
- Learning and Employment
- The Elizabeth Regional Centre
- Business investment growth; and
- Liveable and accessible city

The measures and targets which have been developed for passenger transport within the City of Playford are based on the overarching strategic direction by State Government to increase the use of public transport to 10% of metropolitan weekday passenger vehicle kilometres travelled by 2018. Building upon this base the community plan has established three goals oriented to provide towards the provision and deliver of passenger services within the council region.

Key relevant policies

- Accessibility of transport services in the Playford area (Playford Community Plan Objectives 2.7 and 2.8) – 100% of residents should have reasonable access to transport services.
- Frequency of public transport services meets the Adelaide Statistical Division average.
- Maintain less than Adelaide Statistical Division of private vehicle travel to employment by residents.

2.1.3 State of the City report 2010 (City of Playford)

The State of the City Report 2010 for the City of Playford is a comprehensive profile of the social, economic and environmental aspects for the local government area. The report using information gathered from the Australian Bureau of Statistics, community surveys and other council collected information provides a snapshot of the current situation for the city. The report used historical information to compare the progress and trends of the different aspects as well as census data for the Adelaide Statistical Division to compare the City of Playford to the Greater Adelaide region.

The report is structured around four distinct sections: Demographics, Community Wellbeing, Economic Prosperity and Environmental care. Each section is linked to a strategic objective set by the City of Playford in the Council Plan 2010–2014 or The Playford Community Plan. This enables the comparison and progress of each aspect to be compared with the target set by council.

The key aspects of the State of the City Report which are relevant to the Strategic Passenger Transport Plan have been expanded in section 3 of this report.

2.1.4 South Australian Strategic Plan

In March 2004 the State Government released the State Strategic Plan. The plan provides a holistic view of government policies, goals and commitment's to benefit all South Australians. The focus of the strategic plan is to create opportunity for the residents and the state. The plan consists of six interlaced objectives including:

1. Growing prosperity
2. Improving wellbeing
3. Attaining sustainability
4. Fostering creativity
5. Building communities
6. Expanding opportunity.

The State Strategic Plan provides specific targets for a large area of government; however, there are several targets that specifically apply to passenger transport. Although the plan is the overarching document, government agencies report outcomes against the key elements in the plan. The passenger transport specific target (originally T3.9 revised to T3.6 in 2007) was taken directly from the Draft Transport Plan, and it has been a key target which has been used to shape the future of South Australia and its passenger transport system. This target to increase passenger transport use has been utilized to instigate a significant investment in passenger transport services and infrastructure since the plan was originally adopted.

Key relevant policies

- Increase the use of public transport to 10% of metropolitan weekday passenger vehicle kilometres travelled by 2018.
- Achieve the Kyoto target by limiting the state's greenhouse gas emissions to 108% of 1990 levels during 2008–2012, as a first step towards reducing emissions by 60% (to 40% of 1990 levels) by 2050

2.1.5 Strategic Infrastructure Plan for South Australia

Building on the State Strategic Plan from 2004, the Strategic Infrastructure Plan for South Australia (2005) incorporates the policies and guiding principles established by government to deliver an efficient, affordable and safe transport system throughout South Australia. The plan aims to deliver key infrastructure projects including the development of the Adelaide Rapid Transit System (ARTS). ARTS is based on maximising the use of the existing north and south heavy rail spines with new and upgraded interchanges. The plan also acknowledges that targeted investment is required to increase and maximise the utilisation and efficiency of the metropolitan passenger transport system. The report recognises and aims to support passenger transport as a significant mode of metropolitan and CBD travel.

Key relevant policies

- Encourage the shift to rail transport for passenger and freight movements, where justified, by environmental, economic or social imperatives.
- Coordinate public transport networks and facilities to maximise access and social services.
- Transform Adelaide's urban passenger transport system into a cost-effective, environmentally friendly and modern metropolitan network.
- Coordinate the development of urban planning and transport systems to maximise the economic, social and environmental benefits.
- Upgrades to the north and south heavy rail spines.
- Develop urban passenger infrastructure to support growth in train and bus services and patronage.
- Developing key train/bus interchange.
- Investigate the electrification of the metropolitan heavy rail network.
- New and upgraded interchanges providing bus links and car parking facilities.

2.1.6 30-year Plan for Greater Adelaide

The aim of the 30-year plan for Greater Adelaide is to maximise opportunities for South Australia and respond to its challenges. There are three interlocking objectives associated with the plan. These are to maintain and improve liveability, increase competitiveness and drive sustainability and resilience to climate change. From the three objectives the plan aims to review the characteristics of the existing and new urban form and create new governance arrangements. There are fourteen underpinning principles which are reflective of the objectives. Of these principles, those following are related to public transport and how people move around Greater Adelaide are: A compact and carbon efficient city, Accessibility, a transit focused and connected city, social inclusion and fairness, healthy, safe and connected communities and climate change resilient.

The 30-year plan specified a desired future population target. The plan has identified the City of Playford to be a key region for both residential and employment growth. The Northern Adelaide Region in 30 year plan indicates a residential population growth of 169,000 and an employment growth of 79,000 jobs.

Key relevant policies

- The promotion of new housing and employment around key transport corridors.
- Increasing residential densities around railway stations, tram stops and public transport interchanges.
- Create mixed use precincts around transport nodes.
- Develop new Transit Oriented Developments around key transport nodes and corridors (14 sites have been suggested with a possible further 20 that would incorporate TOD principles within the Greater Adelaide region. Elizabeth and Munno Para have been identified in the City of Playford).
- Improvements to the existing 16 major activity centres.
- Key potential mass transit corridors identified in the plan relevant to the City of Playford:
 - Modbury to Salisbury – McIntyre Road
 - Elizabeth to Buckland Park
- Upgrades to existing interchanges:
 - Munno Para
 - Elizabeth

Urban development policies

- Increase residential population by 169,000 for Northern Adelaide.
- Increase employment by 79,000 jobs.
- Increase employment/industrial land by 2440 ha.

2.1.7 Department for Transport Energy and Infrastructure annual reports

DTEI annual reports published between 2006 and 2010 have shown a positive outcome for passenger transport, both in terms of the future investment committed to passenger transport infrastructure as well as a reflection on the achievements that passenger transport has had in patronage and improved services levels. Between 2006 and 2010, the state government invested heavily in passenger transport infrastructure and services. Firstly with the extension of the Glenelg tram line to North Terrace and then to the Adelaide Entertainment Centre. This has since been followed by the electrification and revitalisation of the train network and the addition of 100 new buses to the fleet.

Key relevant policies 2006–2010

- Improve the performance of the rail, tram and O-Bahn corridors by increasing frequency, reliability and speed of service (2007–2010).
- Undertake planning for Adelaide's future public transport network to provide an integrated public transport system supported by upgraded interchanges and stations (2008–2010).
- Invest in capacity improvements, delivery of faster and better connected public transport services and system improvements (2006–2010).
- The revitalised rail network will be supported by high frequency bus services on key routes including for the O-Bahn bus to the City (2008–2010).
- Increase accessibility across the metropolitan public transport network by facilitating transit oriented development and improving connectivity of service at key interchanges (2009/2010).
- Develop bus feeder services linking local areas to dedicated rail corridors and high frequency bus corridors (2008–2010).
- Coordinate public transport services with the proposed transit oriented developments (2008–2010).
- Strengthen public transport links with future land use planning strategies, including facilitating growth of new transit oriented developments to meet housing demand and contributing to the development of a more environmentally resilient city (2009/2010).
- Investing in improvement to customer amenity, safety and security including improved timetable and route information and accessibility for people with disabilities (2006–2010).
- Continue to invest in improvements to customer information, safety, security and amenity (2008–2010).
- Improved public perception of public transport (2006/2007).
- Implementing demand management initiatives and behaviour change measures to slow the growth in private vehicle use and increase the use of public transport (2008/2009).
- Increase bus services by 77% by 2020 (2007/2008).
- Foster greater use of the expanded public transport network (2007/2008).
- Increase the use of lower emission and renewable fuels and technologies (2006–2010).
- Encouraging increase use of public transport through the Adelaide Metro workplace program (2008/2009).
- Manage passenger transport contracts to deliver high quality public transport services to Adelaide.
- Align service more closely to people's travelling patterns.
- Improving facilities including park and rides.
- Increase the effectiveness of public transport in terms of patronage and social includes.
- Reducing the impact of passenger transport on the environment.
- Encouraging public transport patronage and reducing demand on the road network though mode shift.

3. Demographics

The following section has been derived from data sourced from the Australian Bureau of Statistics, the State of the City Report 2010 for the City of Playford, general observations and satellite imagery.

3.1 Population trends

The City of Playford historically comprises low density dispersed settlement patterns which cover the majority of the northern metropolitan region. The City of Playford includes the three major semi-urban townships of Angle Vale, One Tree Hill and Virginia. Development in the area has continued to sprawl across the primary production lands in the form of greenfield developments, however; in recent years a steady increase in the amount of infill development has also occurred.

The population within the council region grew steadily between the 1996 census and the 2006 census. Since 2006, the residential growth rate has tripled from 1.0% to 3.5% per annum, with this growth rate likely to continue. The population in 1996 was recorded at 63,486, 70,013 in 2006 and estimated at 79,850 in 2010². The estimated 2011 population as at the end of 2010 was 80,992. This has been derived from the City of Playford's population model.

The majority of the population growth being experienced in the region is occurring in the outlying fringe developments, largely due to the availability of affordable and developable land. However, there are selected regions within the existing urban areas that are experiencing some growth as a result of densification with infill development. Areas currently experiencing the largest population growth rates are the suburbs surrounding Andrews Farm, Munno Para, Munno Para West and Blakeview. The redevelopment and infill developments are mainly occurring in Davoren Park, Smithfield Plains, and the older developments located between Elizabeth and the Little Para River on the southern boundary. Figure 3.1 below illustrates the population growth experienced between 1996 and 2011 and the average percentage of growth per year.

² Source: Australian Bureau of Statistic: Estimated Residential Population – City of Playford Community Profile

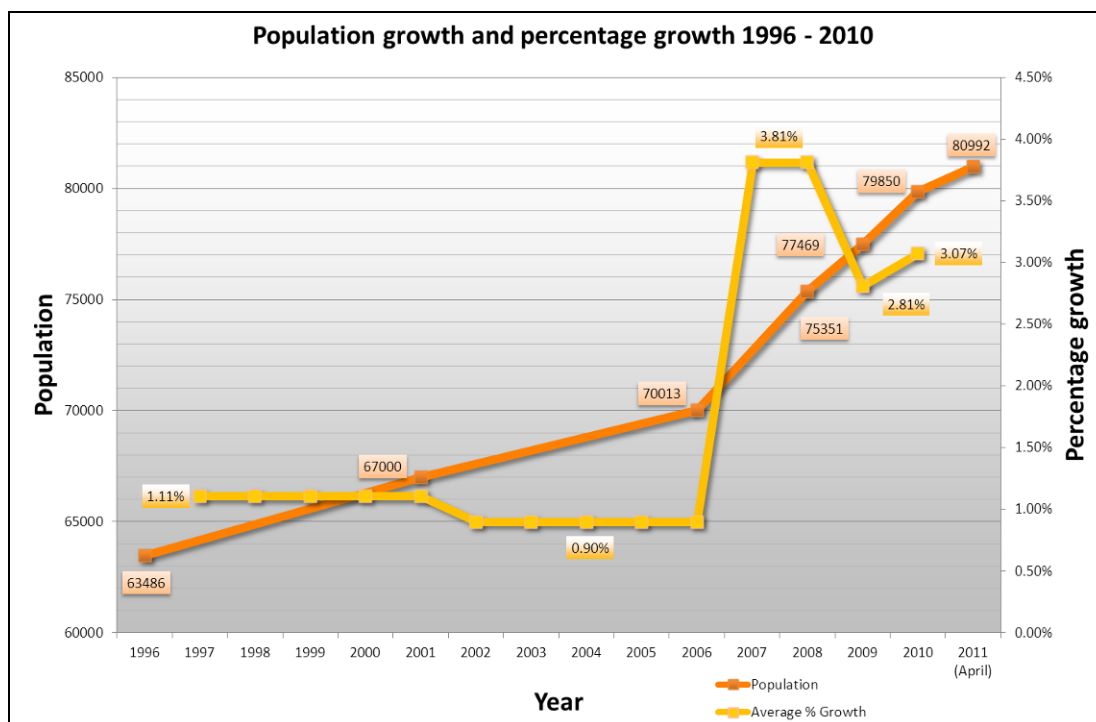


Figure 3.1 Population trends 1996–2009

Source: State of the City Report 2010 and City of Playford Community Profile

3.2 Age profile

Like all other council regions in Adelaide, the City of Playford has an aging population. Although not as prevalent as other council regions, the general aging of the population is noteworthy. When compared to the Adelaide Statistical Division, the City of Playford generally has a higher percentage of residents with age groups that are under 50 years old.

The City of Playford also has a notable higher proportion of residents under the age of 18. With the recent developments of affordable housing in the region, the City of Playford also has an increasing percentage of younger families when compared with the Adelaide Statistical Division.

Between the 2001 and 2006 censuses, changes to the age profile of the residents within the council region took place. There has been significant growth in residents aged 50 to 59, 18 to 24 and 35 to 49, while decreases have occurred in residents aged 25 to 34, 5 to 11 and 0 to 4. These figures indicate that there is a trend in growth for residents' aged 35 years or older.

Figure 3.2 shows the percentage of change in age groups between 2001 and 2006.

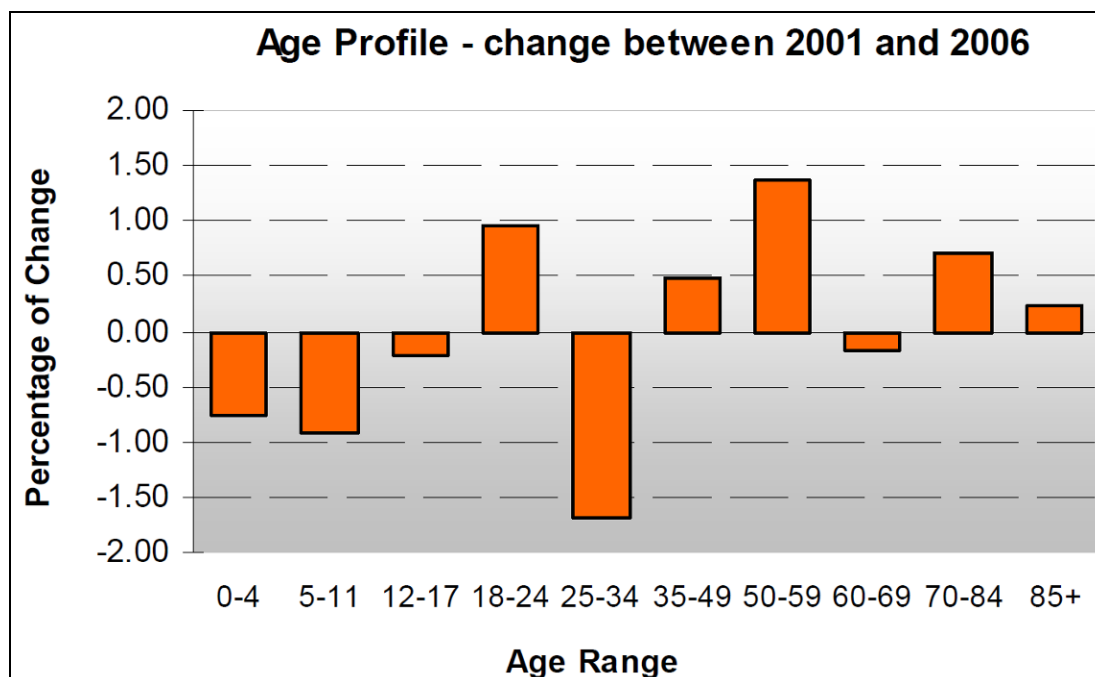


Figure 3.2 Age profile changes 2001–2006

Source: State of the City Report 2010 – City of Playford

3.3 Employment and work travel patterns

3.3.1 Workers

In 2006, there were a total of 26,304 workers living within the City of Playford with the majority being employed in manufacturing (29.6%), health care and social assistance (15.1%), retail trade (14.3%) and education (8.9%). The majority of positions held by workers in the City of Playford included: labourers (21.6%), professionals (15.9%), managers (12.3%), technicians and trade workers (12%) and sales workers (11.2%).

The highest qualification achievement for workers in the City of Playford include: no post-school qualification (54.4%), certificate level (18.3%), bachelor degree level (11.8%) and advanced diploma and diploma (7.3%).

The 2006 census indicated that 31.5% (8,298) of workers living within the City of Playford were employed within the council region while 58.0% (15,257) were employed outside of the council region and 10.5% (2,749) had work locations unknown.

For residents working outside of the council region, the top employment destinations included: Salisbury (17.9%), Port Adelaide Enfield (11.8%), Adelaide CBD (7.1%) and Charles Sturt (3.8%)¹.

3.3.2 Jobs

In 2006, there were a total of 20,994 jobs located within the City of Playford. There were 12,696 workers who were employed within the City of Playford but who resided in other surrounding local government areas. The top origins for workers who live outside of the City of Playford but work within the region include: Salisbury (20.8%), Tea Tree Gully (10.6%), Gawler (5.6%) and Port Adelaide Enfield (4.4%)¹.

Table 3.1 and **Error! Reference source not found.** below illustrates the location of employment for workers who live within the City of Playford as well as the origin of employees who work within the City of Playford and who commute from surrounding local government areas.

Table 3.1 Worker Origin/Destination

Council	From Playford (workers)	To Playford (jobs)
City of Playford	8,298 (Internal employment)	
City of Salisbury	4,711	4,365
City of Port Adelaide Enfield	3,094	931
City of Charles Sturt	994	582
Adelaide City Council	1,861	N/A
Other Council Areas	8,045	1,753
Campbelltown City Council	N/A	315
Norwood St Peters Council	344	N/A
Tea Tree Gully Council	776	2,233
Barossa Council	203	380
Gawler Council	727	1,184
Light Regional Council	N/A	496
Mallala District Council	N/A	457
Total	29,053	20,994 Jobs

Source: City of Playford Community Profile

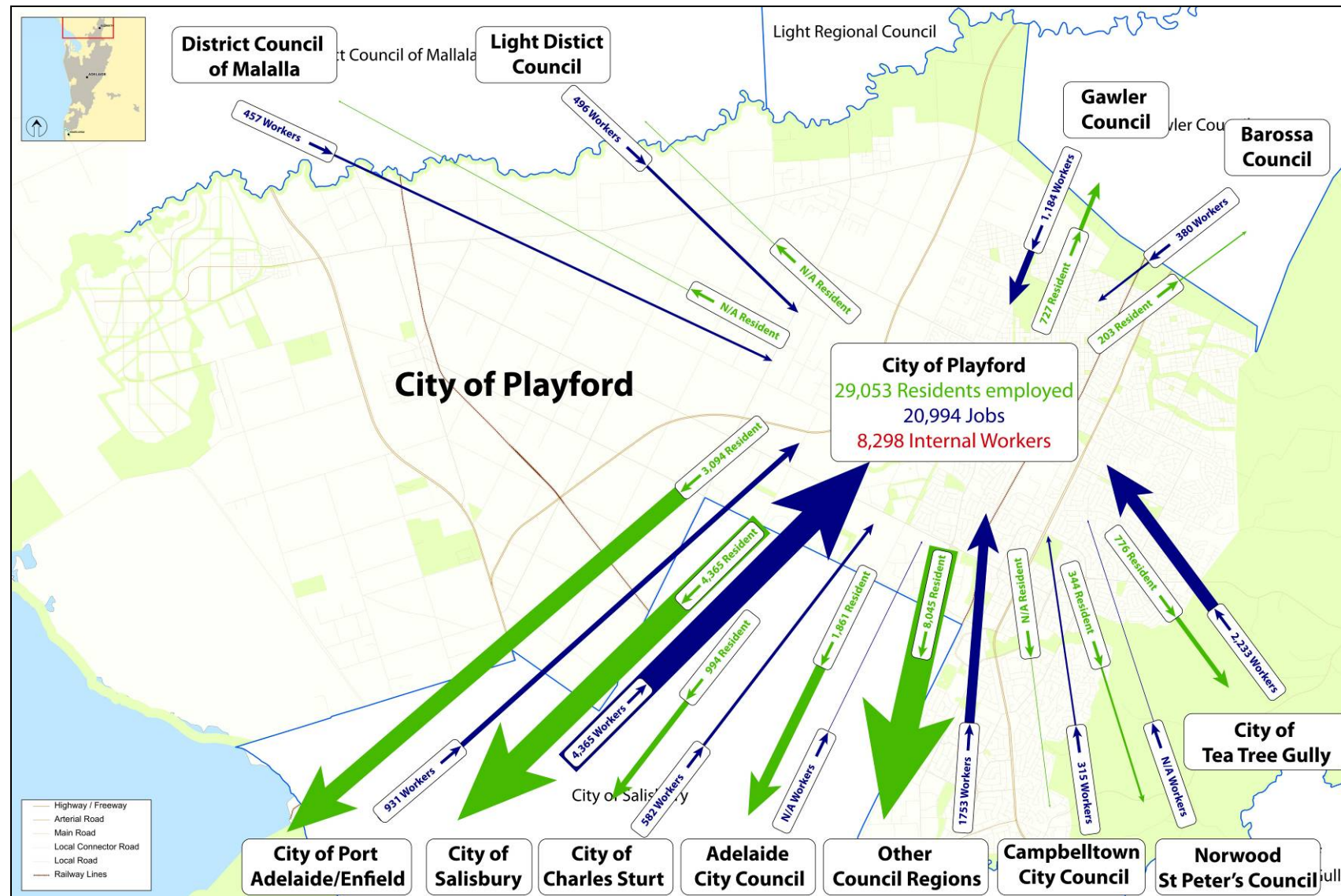


Figure 3.3 Worker origins and destinations

Source: City of Playford Community Profile

Information gathered from the 2006 census Journey to Work data, like most other statistical divisions, indicates that travel to work by car is the primary mode of transport to work. For the City of Playford in 2006, 65.5% of workers travelled by car as a driver, 7.0% by car as passenger, 4.2% by train and 2.3% by bus.

The journey to work data illustrates that the level of public transport used across the council region varies depending on location. All areas outside of the main urban areas recorded little or no public transport journeys to work. This compares to areas within close proximity to quality public transport services which recorded moderate to high level of public transport use. The 2006 census indicated that a total of 26,304 people attended work within the council region on the day of the census of which 22,164 used a method of transport to access their employment. For the council wide region, public transport journeys accounted for 8.13% of journey to work (1,803). This compares with 425,129 who used a method of transport to access work for Adelaide Statistical Division of which 44,723 (10.52%) were conducted by public transport.

This difference percentage of residents using public transport to access employment for the City of Playford and the Adelaide Statistical Division can be attributed to multiple factors including: accessibility to quality public transport services (from place of residents and to place of employment), the distance between residents and employment, the convenience and directness of public transport services and the cost associated with the relevant transport mode. In the case of the City of Playford, many employment locations for residents are located in City Salisbury, City of Port Adelaide Enfield and the City of Charles Sturt. The majority of employment in these areas would be industrial or manufacturing based and therefore in less accessible areas when compared with the Adelaide CBD. There are strong public transport links between the City of Playford and the City of Salisbury, however, access to the major employment generators in the City of Salisbury generally requires a transfer between different public transport services, thereby, increasing travel time and inconvenience. This is intensified with regions located at a greater distance. Therefore, these factors can contribute towards the lower percentage of residents using public transport to access employment.

The journey to work data demonstrates that there is a relationship between journey to work by public transport and households without a motor vehicle, as illustrated in Figure 3.5. Areas with higher percentages of no motor vehicles generally also show higher percentages of public transport journeys to work. Figure 3.4 below illustrates the percentage of residents who access employment using public transport services either as a primary method or in combination with other modes (including car).

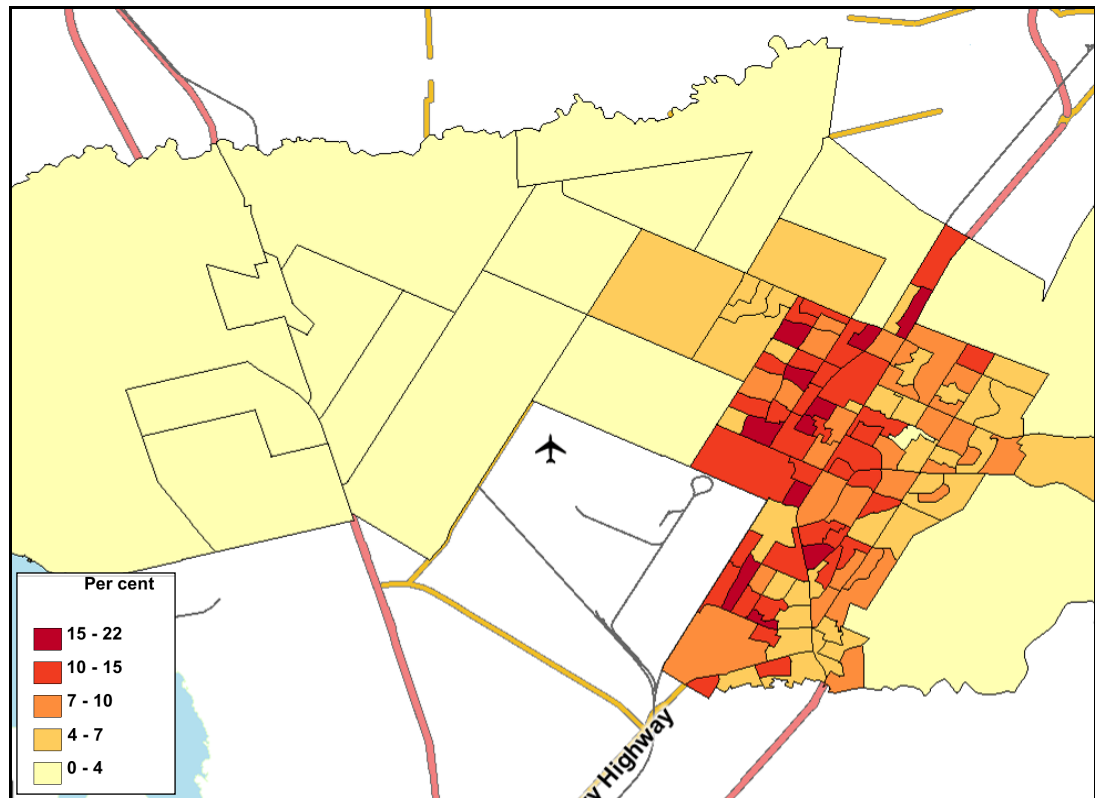


Figure 3.4 Journey to work by public transport

Source: Australian Bureau of Statistic

3.4 Car ownership

The majority of households within the City of Playford either have one or two vehicles per household. Approximately 79.3% of households owned at least one car compared to 83.6% in the Adelaide Statistical Division. This is evident across all suburbs within the council region. However, when compared with the Adelaide Statistical Division, the City of Playford recorded a higher percentage of households without access to a private vehicle and a smaller percentage of households with one or more vehicles. Table 3.2 below reports the number of vehicles per household within the City of Playford.

Figure 3.5 illustrates the percentage of households within the council area which have no motor vehicle. The highest percentages of households are located south of Elizabeth, followed by the areas in the Peachy Belt. The newer residential developments around Craigmore and Blakeview demonstrate that these households have significantly lower percentages of household without a motor vehicle.

Table 3.2 Car ownership for the City of Playford – Vehicles per household

Enumerated data	Vehicle	Percentage	ASD percentage
No Vehicles	3,452	12.9%	10.3%
1 vehicle	10,180	38.0%	37.6%
2 vehicles	7,830	29.2%	33.3%
3 vehicles	3,238	12.1%	12.7%
Not stated	2,081	7.8%	6.1%
Total	26,781	100.0%	100.0%

Source: City of Playford Community Profile (ABS, 2006)

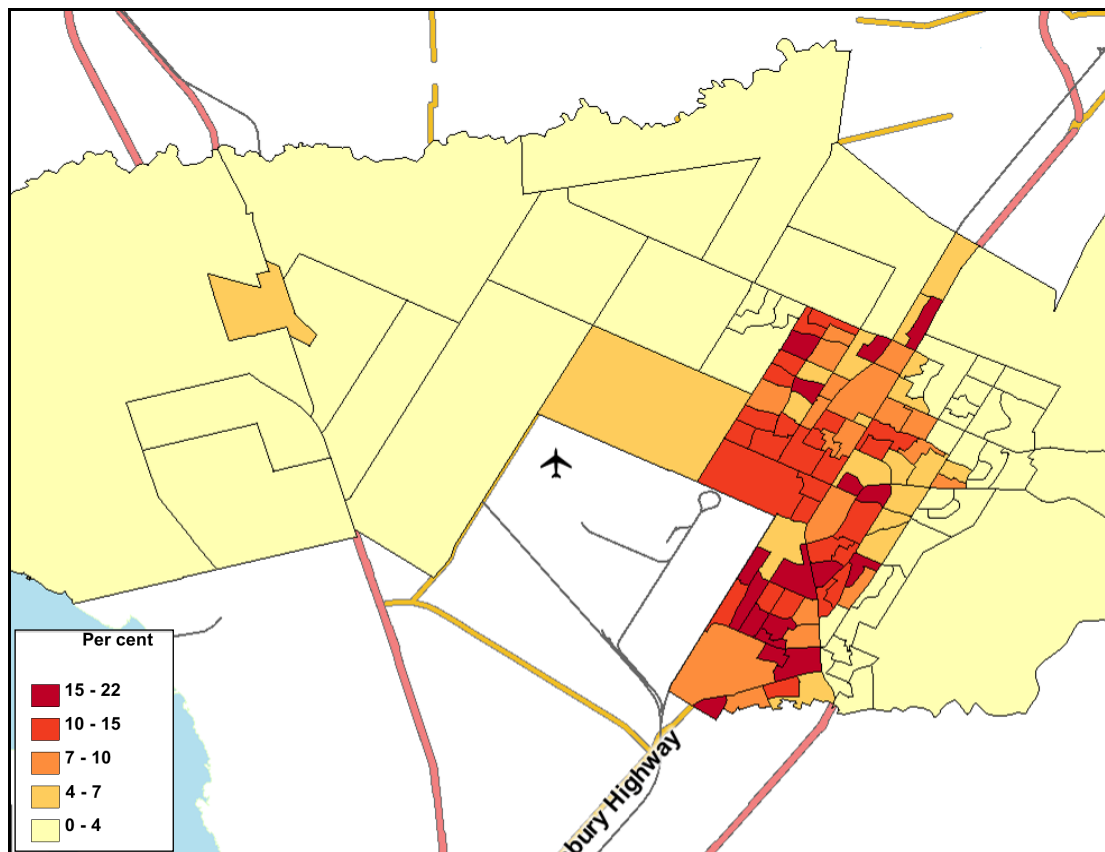


Figure 3.5 Households without a motor vehicle

Source: Australian Bureau of Statistics

3.5 Socio-economics

The Socio-Economic Index for Areas (SEIFA) gives an indication of the locations of high socio-economic disadvantage within the study area. SEIFA is derived from attributes such as low income, low educational attainment, high unemployment, relatively unskilled occupations, access to private vehicles and other variables that reflect disadvantage rather than measure specific aspect of disadvantage. SEIFA has been designed to have an average value of 1,000, with lower values indicating areas of disadvantage and higher values reflecting minimal disadvantage. The latest available SEIFA information for the City of Playford was developed from the 2006 census. The City of Playford recorded the fourth lowest score in South Australia with a score of 886. This was the lowest score for all metropolitan council regions in Adelaide. The closest ranking suburbs include Port Adelaide Enfield with a score of 917 and the City of Salisbury with a score of 944³ below highlights the position of the City of Playford with comparison to the remaining Adelaide local council regions.

³ Source: Australian Bureau of Statistic – 2033.0.55.001 – Socio-economic indexes for areas (SEIFA), 2006

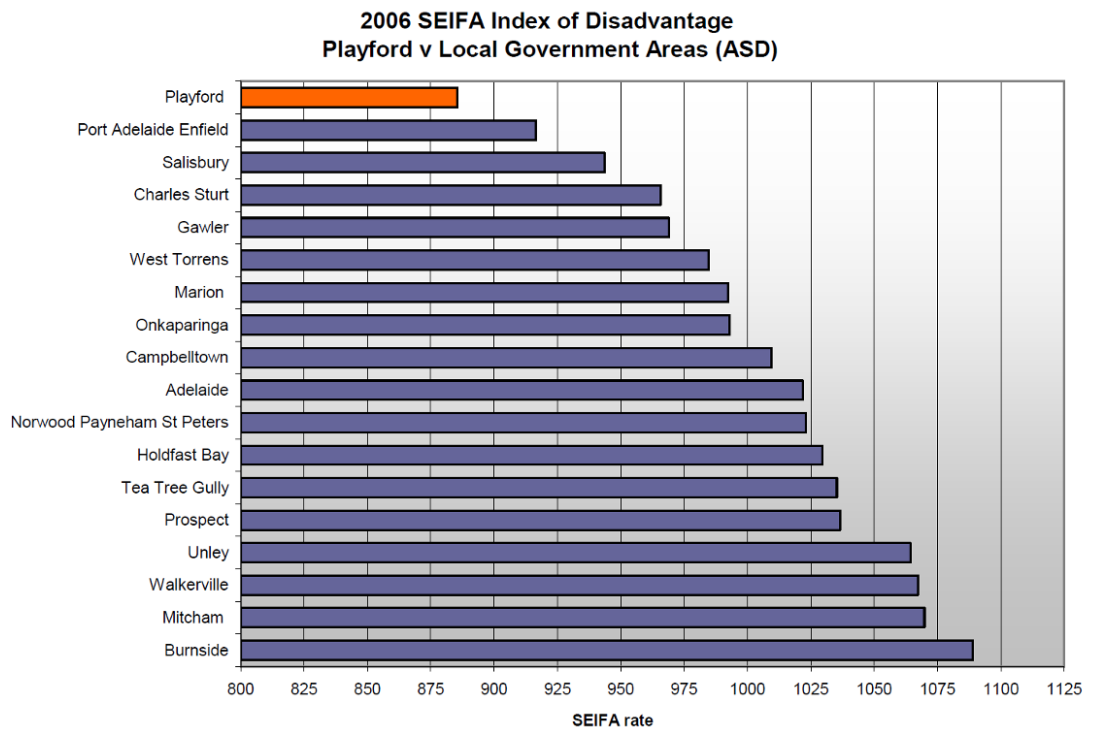


Figure 3.6 City of Playford SEIFA index of disadvantage

Source: State of the City Report 2010 – City of Playford

4. Existing urban developments

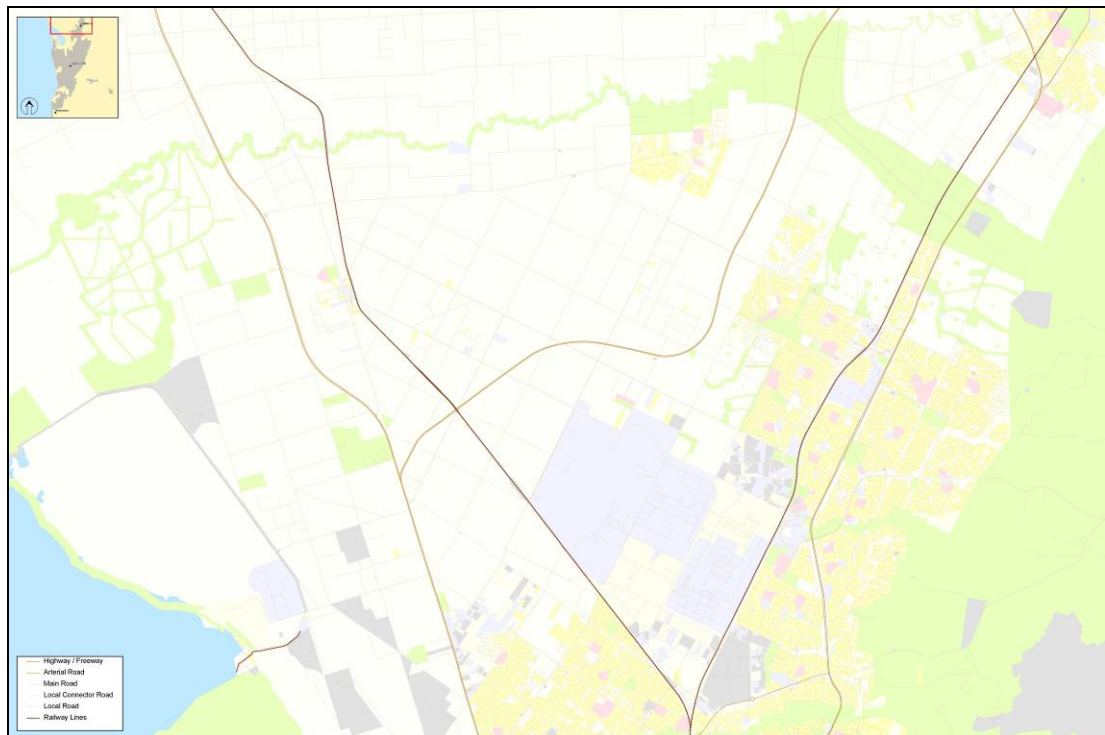


Figure 4.1 Existing urban development

4.1 Residential

Residential development is concentrated in the eastern region of the City of Playford. The urban residential precincts have built up around the two main infrastructure corridors, Main North Road and the Gawler Train Line. These two corridors provide the back bone for metropolitan residential development. Outside of the metropolitan boundary, residential development occurs in Virginia, Angle Vale and One Tree Hill.

The age of housing stock within the City of Playford can be broadly broken down by regions. The majority of older housing stock, typically of post war era, is located in the southern suburbs of Playford and round Elizabeth City Centre. As development moves further north the age of housing stock decreases.

Over the last 10 years the City of Playford has seen a strong growth in residential population. This population growth has been attributed to extensive expansion of the urban areas surrounding Munno Para, Davoren Park and Andrews Farm as part of the Playford Alive project, with additional development around Craigmore and more recently in Blakeview.

The City of Playford is also experiencing major urban renew of many of the existing suburbs. Playford Alive is one of Australia's largest urban renewal projects and is rejuvenating approximately 1,000ha of urban land, of which 500ha is new greenfield development. The project is concentrated around the suburbs of Smithfield, Davoren Park, Munno Para and Andrews Farm. The Playford Alive project is an ongoing project and is expected to take 10–15 year to complete. The project aims to replace dilapidated housing stock and replace it with a greater diversity of modern and higher density residential housing.

In addition to the major Playford Alive redevelopment, the typically larger residential blocks located to the south and east of Elizabeth activity centre have encouraged private investors to subdivide and redevelop old and deteriorated housing stock and replace them with new modern compact residential developments. Although not as fast paced as other suburbs of similar age within metropolitan Adelaide, areas around Elizabeth Grove and Elizabeth Vale are showing steady urban renew and infill developments. This urban renewal trend is likely to continue as housing prices increase across the metropolitan region.

Appendix A.1 demonstrates the current developed residential land.

4.2 Key activity centres and destinations

In addition to the major growth in residential development over the last 10 years, the City of Playford has also experienced strong retail and commercial development. The two major retail centres in the council region, Elizabeth City Centre and Munno Para Shopping Centre, have both undergone major renovations and expansion to cater for the increased population and demand. These two large scale retail hubs have encouraged new business and retail opportunities to establish in the area. This has however, had a minor impact on the local community and district centres. As a result of the centralised retail facilities at the major centres, some of the smaller local centres have closed down or downsize as a result.

Due to the expanding population and demand, there has been a small increase in supporting commercial facilities and services in the region. This new commercial development has been concentrated around Elizabeth City Centre, with some minor development at Munno Para.

Appendix A.2 illustrates the key regional, district and local centres within the council region

4.3 Employment regions

Unlike the major increases in retail and residential development, only minor expansion to industrial development has occurred over the last 10 years. The majority of the industrial development since 2001 has taken place in the Elizabeth West industrial estate where the majority of development has been infill development within the suburb.

In addition, there has been a slight increase in the number and coverage of market garden and greenhouse development in the rural areas surrounding Virginia and Angle Vale.

Appendix A.3 highlights the key employment and industrial regions within the City of Playford and the regions.

4.4 Educational institutions

Presently within the City of Playford council boundaries, there are 24 primary schools, 6 high schools, one TAFE college, one Adult Education Campus and one special school. This includes the two new, Mark Oliphant College (birth–year 12) and John Hartley Primary School (birth–year 7). These schools are replacing Smithfield Plains High School, Smithfield Primary School, and Davoren Park Junior Primary School.

In addition to the schools located within the council boundaries, there are three additional High Schools which attract students from the City of Playford, these comprise: Gawler High School and Trinity College in the Gawler Council area, and Salisbury High School in the City of Salisbury.

As part of the major urban expansion which is presently occurring, there are also several new and proposed schools which are expected to be constructed during the expansion of the city. There are 9 proposed primary schools and two proposed high schools.

For residents looking to study further in tertiary institutions, the closest university campuses are located in Mawson Lakes (University of South Australia), Roseworthy (Adelaide University) or within the Adelaide CBD (Adelaide University, University of South Australia and Carnegie Mellon University).

Appendix A.4 illustrates the current and planned education institutions within the City of Playford and surrounding regions.

4.5 Other developments

The Lyell McEwin Hospital precinct has expanded significantly over the last 10 years. The redevelopment included expansion of the main buildings, construction of multi-story car parks and the development of additional supporting medical services around the precinct.

In February 2011, the South Australian government announced funding for a study into the development of a new health precinct around the Lyell McEwin Hospital. The study is set to examine the possibility of integrating other health and medical services into the area surrounding the hospital⁴. The study will also examine the possibility of incorporating other facilities and services into the precinct including: retail, commercial, community, education and recreation facilities. There is also the potential to include student accommodation as well as increasing the residential densities surrounding the precinct⁵.

In addition to the health and medical services located in Elizabeth Vale, there are several other medical centres located within the City of Playford. Elizabeth City Medical Centre located on Philip Highway, the Elizabeth GP Plus Clinic, on Playford Boulevard adjacent to the Civic Centre) and the proposed GP Plus Centre on the corner of Curtis Road and Peachy Road in the Playford Alive development.

Additional smaller medical centres are located at: Davoren Park, Smithfield, Munno Para, Blakeview, Elizabeth Downs, Elizabeth Park, Elizabeth East, Elizabeth North and within the Elizabeth City Centre.

Appendix A.5 demonstrates the key health care and community service facilities within the region.

⁴ Source: News Release: Study into proposed Lyell McEwin health precinct, Labour Government media release, 25/02/2011.

⁵ Source: Master plan for Lyell McEwin Hospital precinct, P. Brombal, Messenger Newspaper, 09/03/2011.

5. Passenger transport network

Presently there are 16 scheduled public transport bus routes, one scheduled public transport train line, one Dial a Ride service, two regional bus services, seven community transport vehicles and selected regional school bus services operate within the City of Playford council region.

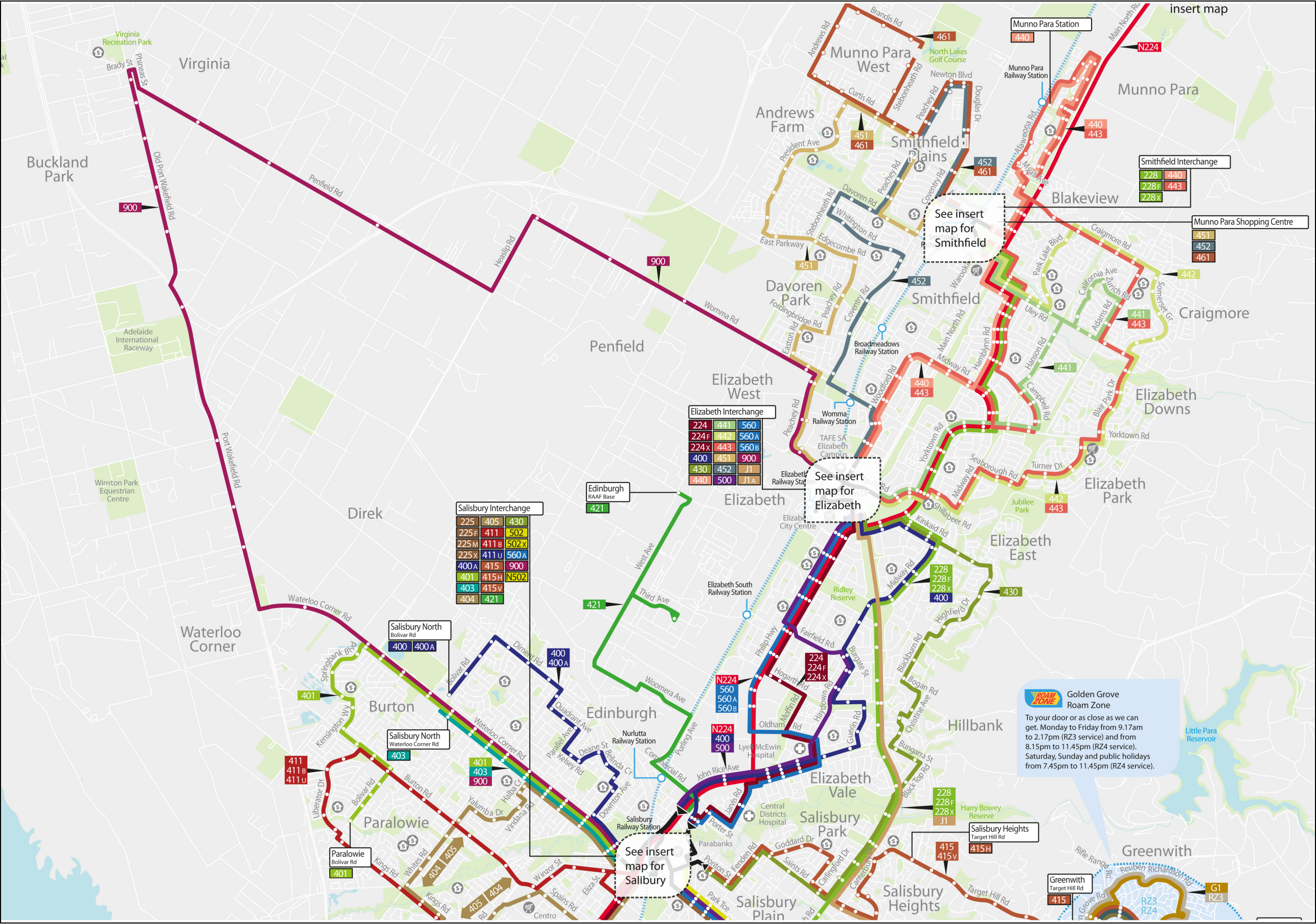
Each category of passenger transport service has been detailed below:

5.1 Public transport

Scheduled public transport services provide the majority of passenger transport services within the City of Playford. The 16 bus routes traversing the council region transport approximately 169,000 passengers per month or 2.1 million per annum⁶.

A summary of key operating hours, service frequencies and patronage has been detailed in Table 5.4 at the end of this section.

⁶ *Patronage estimate is based on patronage recorded within the City of Playford for the month of March 2011 and annual patronage by complete route length for April 2010 to March 2011. Train patronage based on 2007 patronage recordings*



5.1.1 Geographic coverage of services

Public transport services in the City of Playford provide a good geographical coverage of the main urban areas. Figure 5.2 below demonstrates a 400 m walking catchment to each bus stop or train station. There are selected pockets within the existing network where residents are not within a 400 m or 5 minute walk of a public transport service. These areas include sections of Munno Para West, Smithfield Plains, Craigmore and Elizabeth Park. There is however, a large section of urban land which is presently not served well by public transport services. This is the area located between Munno Para Shopping Centre (north) and Woodford Road in the South, the Gawler train line in the west and Main North Road in the east. The majority of this land is designated as defence/government land; however, there are pockets of residential development in this area.

When considering 800 m walking catchments (10 minute walk), public transport services provide good geographical coverage to all residential properties within the urban boundary. Figure 5.3 illustrates a 400 m and 800 m catchment from bus stops or train stations for the City of Playford.

There are also several areas within the urban area which have very high access to public transport services in the form of multiple stops or stations within a short distance from residential developments. Figure 5.4 illustrates the bus stop and train station catchment density. Darker catchment areas indicate that residents have access to multiple stops and services.

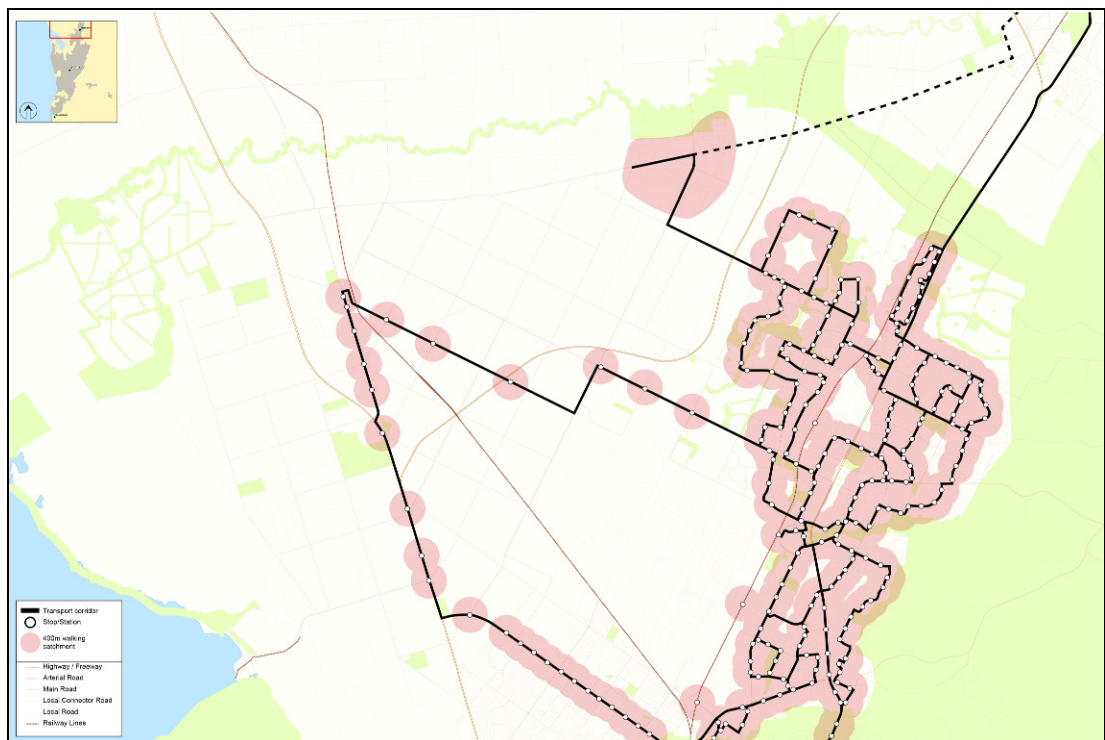


Figure 5.2 400 m geographical coverage

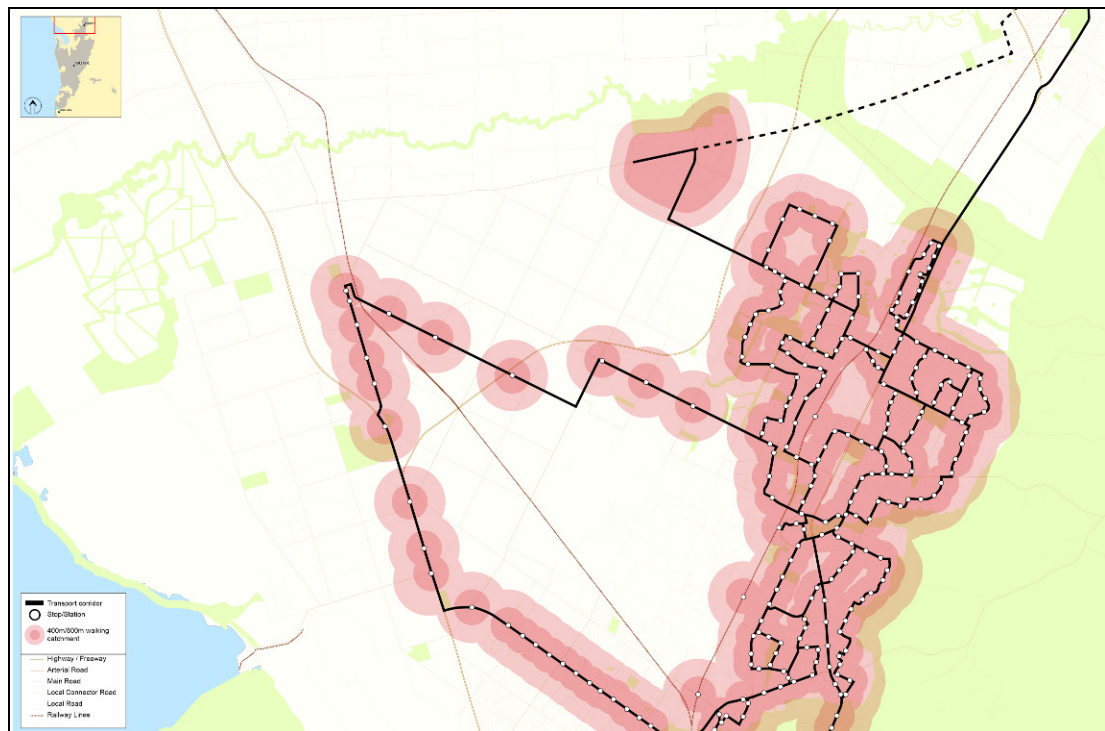


Figure 5.3 800 m geographical coverage

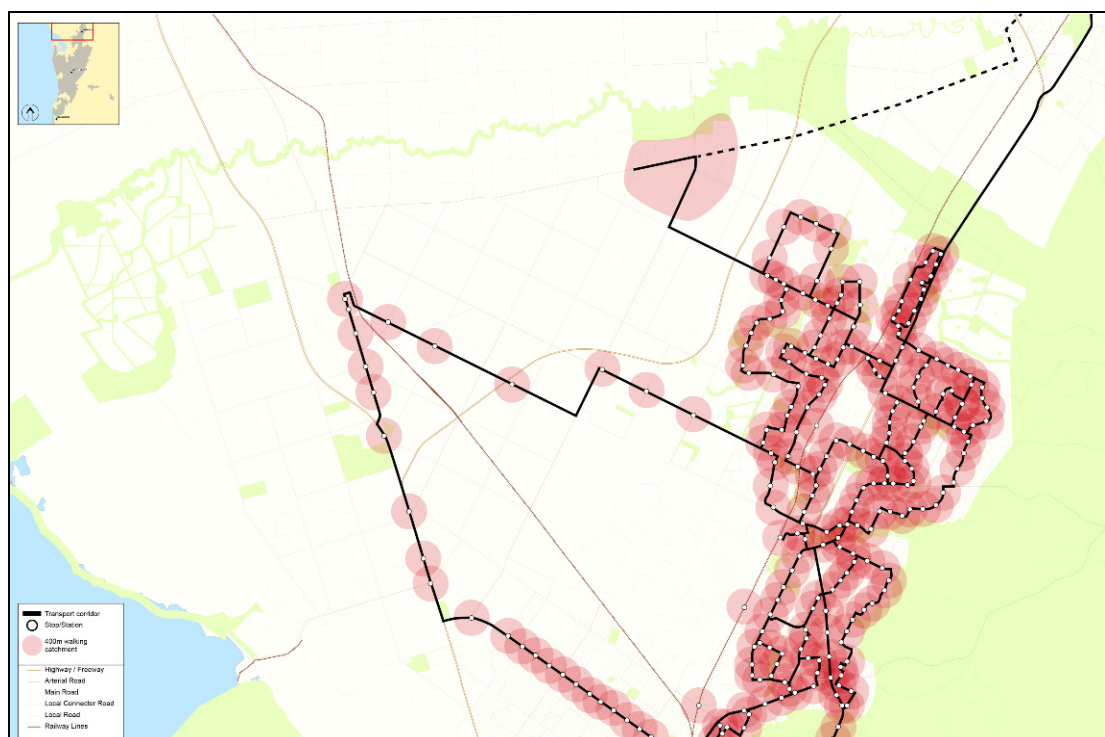


Figure 5.4 Bus stop density (400 m catchment)

5.1.2 Hours of operation

Service frequencies are often referred to as the most important aspect of a passenger transport system. If services are infrequent, the convenience of using the system decreases. Generally the passenger transport system in the City of Playford can be seen as adequate during weekday daytime periods; however, outside of these times access to frequent passenger transport services is limited. There are several pockets within the region which have limited or no services at night, weekends or during certain periods of the day. This places significant disadvantage on residents who do not have readily available access to private transport.

5.1.3 Frequency

The frequency of public transport services in the City of Playford is adequate when compared to the rest of metropolitan Adelaide. Services generally operate at 15–30 minutes intervals during peak periods with 30–60 minute intervals interpeak and at nights and weekends.

Over recent years the frequency of public transport services in the City of Playford has improved significantly, with most routes now operating at 30 minute intervals during weekday peak and interpeak periods. This has come as a result of significant investment by state government into service delivery in the outer northern regions. However, despite the additional resources, public transport frequencies currently do not compare to other council regions. Many inner city regions have corridors and service levels at Go Zone standard (15 minutes or less 7:30 am to 6:30 pm and 30 minute night and weekend services). There are presently no Go Zones located within the City of Playford.

In 2008 when major alterations to train timetables were implemented, two stations within the council region had improved service frequencies. Elizabeth and Smithfield both have a train service operating approximately every 15 minutes throughout the day with 10 minute frequency or less service during peak periods. This has been developed using a skip stop pattern for train services. However, train frequencies at the remaining 5 stations are limited to 30 minute peak and interpeak services. Despite the improved daytime services, the frequency of train services on weekends is limited to every 30 minutes and at night, 60 minute frequencies.

Appendix C1 to C5 contains route and frequencies maps for all public bus corridors within the City of Playford.

5.1.4 Public transport use

An estimated 195,101 passengers boarded public bus services within the City of Playford in March 2011. This equates to more than 8,660 passengers per day across the council region. It is estimated that a total of 2.1 million boardings are recorded within the City of Playford each year. This represents approximately 5.3% of total passenger boardings across the Adelaide Metropolitan region⁷. Estimates from the 2007 Rail Boarding and Alighting survey for the Gawler Train Line indicated that approximately 4,149 passengers used one of the 7 train stations located within the council region.

⁷ Source: Department for Transport Energy and Infrastructure: Annual report 2009–2010

Table 5.1 indicates the estimated number of boardings by route for the month of March (2011). Based on the monthly boardings within the council area and the annual boardings for the complete route, an estimate of the total annual boardings by route has been calculated.

Table 5.1 demonstrates the total patronage within different regions of the council area. These regions have been derived from bus route section points (the method in which patronage is recorded) and census collector districts. The table estimates the monthly patronage and the average daily patronage for all bus routes which operate in that region.

Figure 5.5 illustrates the different patronage recording regions within the City of Playford.

Table 5.1 Public transport patronage

Route	Monthly patronage in the City of Playford	Estimated annual patronage in the City of Playford	Annual patronage (complete route)
J1	5,659	61,520	1,296,401
205 ¹	10,211	110,500	429,826
224	22,945	259,688	908,792
N224	84	887	4,675
228	17,412	190,132	742,050
400	21,089	216,220	356,090
430	5,568	58,515	58,515
440	20,357	214,126	214,126
441	16,452	174,578	174,578
442	17,988	181,347	181,347
443	339	3,493	3,493
451	28,089	267,311	267,311
452	15,238	145,013	145,013
461	1,267	13,537*	13,537*
AVD	55	677	677
500 ¹	11,536	114,710	619,619
900	953	8,705	8,705
Gawler Train	47,651	785,860	3,366,940
Total	242,893	2,793,282	8,778,158

Source: Department for Transport Energy and infrastructure

Notes: Monthly patronage includes sections within the City of Salisbury for services that operate between Elizabeth and Salisbury Interchanges. Monthly patronage is taken from March 2011 initial and transfer boarding data supplied by the Passenger Transport Service Division (DTEI). Gawler train services were based on 2007 passenger survey counts supplied by DTEI. Estimated annual patronage within the City of Playford has been based on the approximate ratio of the month of March patronage compared with the annual route patronage for services that operate outside of the council boundary (March patronage complete route/total annual patronage to equal a percentage. Monthly patronage within the City of Playford/Percentage for the month of March to equal approximate annual boarding). Annual patronage is all boardings by route for all areas (including outside the City of Playford). Annual patronage is total boardings recorded from April 2010 to March 2011. Annual patronage for routes 451 and 452 has been combined due to service changes and revisions which occurred in January 2011 (route 451 and 452 were previously routes 450, 451 and E1). Annual patronage data for route 461 is only for services operated between January 16th and March 2011 as this service did not operate in 2010 (expanded MetroTicket boundary). Annual patronage was not available at the time of writing for routes 500, Angle Vale Dial a Ride and the Gawler Train Line.

1. The July 2011 timetable changes resulted in changes to routes J1, 205, 224, 228 and 500. Route 205 as at July 2011 has been replaced with extended route 560. Route 500 has been re-numbered to Route 500.

Table 5.2 Patronage by area

Map Ref	Area	Routes	Patronage	
			Weekday ¹	Month ²
B	Blakeview	440, 443	62	1,530
BS	Blakeview South	441 442 443	148	3,535
C	Craigmore	442 443	103	2,478
CP	Craigmore Park	442 443	82	1,966
CS	Craigmore South	442 443	93	2,213
CW	Craigmore West	442 443	89	2,154
E	Elizabeth	J1 224 400 430 440 441 442 443 451 452 500 560 900	2,631	61,609
ED	Elizabeth Downs	228 440 441 443	423	10,830
EE	Elizabeth East	228 430	129	3,216
EN	Elizabeth North	440 443	89	2,174
EP	Elizabeth Park	228 400 430	270	6,502
ES	Elizabeth South	224 400 500 560	472	11,260
H	Hillbank	J1 228 430	153	3,787
L	Lyell McEwin Hospital	224 400 500 560	554	13,279
M	Munno Para	440 443	66	1,644
MW	Munno Para West	440 443	19	445
P	Peachy Belt	452	278	4,278
PA	Playford Alive	451 461	510	8,657
S	Salisbury	224 400 430 500 900 560	886	21,351
SM	Smithfield	228 440 441 442 443 451 452 461	1,173	21,739
SP	Salisbury Park	J1 228 430	111	2,626
Y	Yorktown Road	228 441 442 443	291	7,200
R	Rural (Virginia)	900	29	627
Total Bus			8,661	195,101

This information has been extracted from section data provided by the Passenger Transport Service Division (DTEI). Boardings are recorded by route and section point. Errors such as incorrect boarding per section are outside the control of this data set. Areas have been aligned as best possible to current Census district to allow for analysis and comparisons, precise location of each boarding is unknown and therefore may be represented in adjacent section areas.

1. Weekday patronage is the average passengers per day for the month of March 2011.
2. March 2011

Table 5.3 Average daily train patronage by station

Map Ref	Area	Station Name	Patronage	
			Weekday ¹	Month ²
M	Munno Para	Munno Para	151	2,905
SM	Smithfield	Smithfield	1,116	21,432
P	Peachy Belt	Broadmeadows	353	6,786
EN	Elizabeth North	Womma	460	8,837
E	Elizabeth	Elizabeth	1,483	28,463
ES	Elizabeth South	Elizabeth South	460	8,837
L	Lyell McEwin Hospital	Nurlutta	125	2,392
S	Salisbury	Salisbury	2,472	47,454
Total			6,620	127,105

Source: Rail Boardings and Alighting Survey: October – November 2007, Passenger Transport Division, DTEI and 2010/2011 rail patronage data

1. Indicates the total average daily passenger boardings at each of the train stations location within the council region (extrapolated using March 2010 boardings and the Boarding and Alightings survey from 2007.
2. Indicates March 2010 including weekends and public holidays.

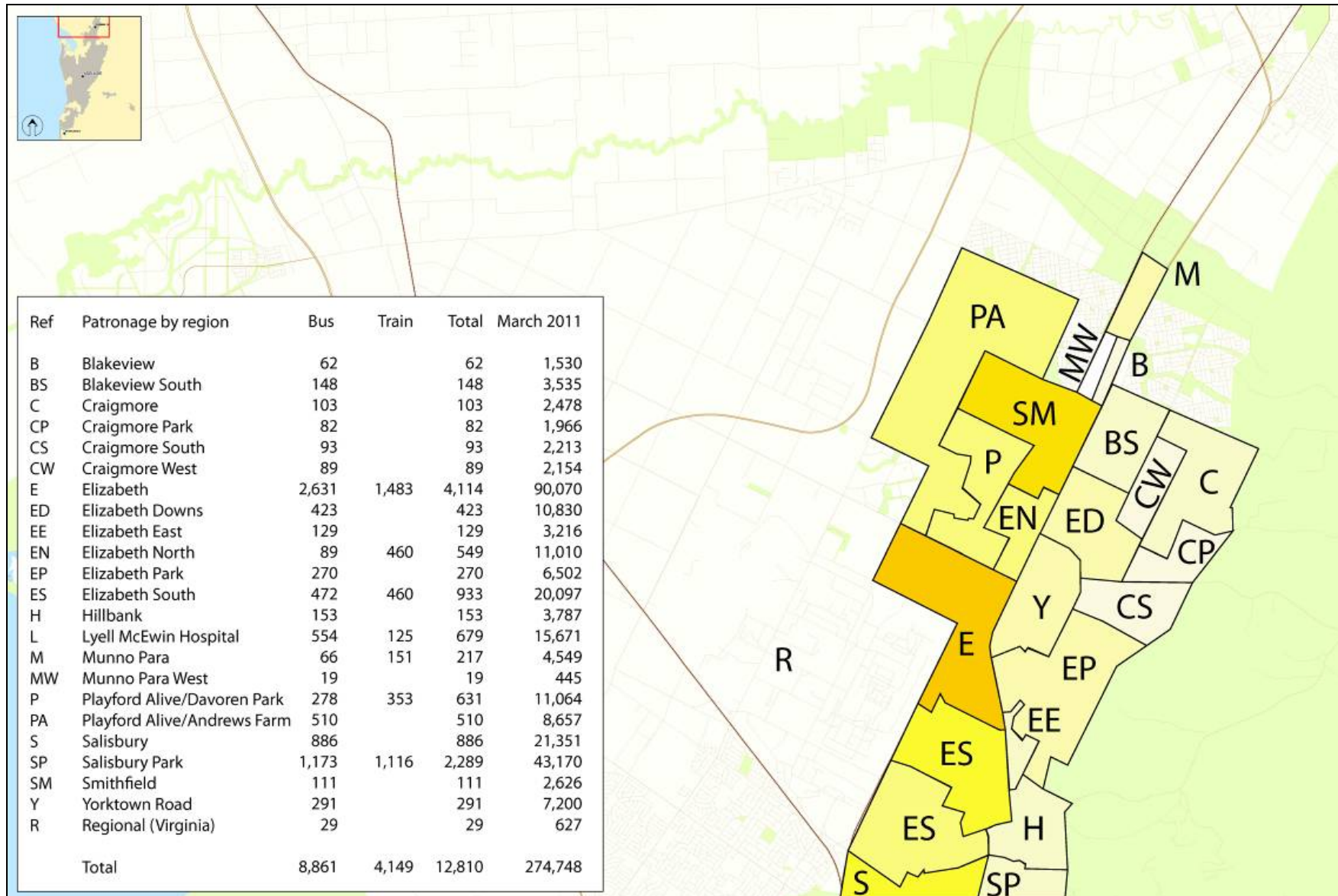


Figure 5.5 Patronage sections

5.1.5 Public transport infrastructure

At present there is a limited amount of public transport infrastructure located within the City of Playford, with the Adelaide to Gawler Train Line comprising the largest form of public transport infrastructure. The Gawler Train Line represents the public transport backbone in the region. The train line, which runs parallel to Main North Road, provides a fast and relatively frequent train services along the corridor. The corridor, along with its stations and bus interchanges, provides key public transport linkages between the City of Playford and other sectors of the metropolitan region. The main components of this infrastructure include:

- The Gawler Train line corridor
- Stations including: Nurlutta (shared with the City of Salisbury), Elizabeth South, Elizabeth, Womma, Broadmeadows, Smithfield and Munno Para
- Bus/Rail interchanges are located at Elizabeth and Smithfield.

Other major public transport infrastructure which is presently located in the City of Playford includes

- Elizabeth West bus depot
- Elizabeth City Centre Interchange
- Munno Para Shopping Centre Interchange.

The City of Playford also has a limited number of bus stop shelters. These range from large advertising shelters which have seating, lighting, timetable information and rubbish bins to smaller shelters with seating space for three passengers. The larger bus shelters are generally located on major road arterials and at interchanges (for maximum advertising catchment) with the smaller shelters located on minor roads and streets.

5.2 Regional bus services

There are presently three main regional bus routes which serve the City of Playford. These services provide limited connections from the City of Playford to the Adelaide CBD and Barossa Valley. However they are primarily designed to provide residents from regional townships outside of the Greater Adelaide region access to services and facilities within the metropolitan area.

Other regional, intra-state and interstate services traverse the City of Playford however; they do not stop within the council area.

Current regional bus services operating within the City of Playford include:

- Angaston to Adelaide: Link SA provides a direct link between Angaston in the Barossa Valley and the Adelaide CBD. This service operates twice a day in each direction Monday to Saturday and a single afternoon service on Sundays however; only morning services stop within the City of Playford heading towards the city and the early afternoon service on the return. All other services operating express between the city and Gawler. These services operate to Munno Para Shopping Centre and Elizabeth City Centre providing residents of the Barossa Valley to access these two key centres with a 3 hour break in services. However, passengers from the Barossa Valley region have the opportunity to use other bus services and connect with the train services at Gawler to access destinations within the City of Playford.

- Yorke Peninsula Coaches provides limited services between the Copper Coast and Balaklava to the Adelaide CBD. These services operate along Port Wakefield Road and provide the township of Virginia with a direct link to the Adelaide CBD. The two regional services provide 3 return weekday connections between Virginia and Adelaide. There is also a daily connection on weekends and public holidays.

5.3 Community based transport services

5.3.1 HACC operated services

Presently the Home Assist Community Care program offers eligible residents a community bus program. The current community bus program is confined within the council boundaries, and provides essential transport services to residents who would normally not be able to access regular public transport services. The HACC community bus service provides regular door to door shopping transport, medical transport services as well as essential links between Virginia and Elizabeth and Munno Para. The community bus service also offers charter services available to HACC eligible clients and programs.

The current community bus service operates using 7 vehicles and transports approximately 420 residents on 2,200 trips per month. Current services are heavily booked and there are few vacancies available for expansion or new residents.

5.3.2 Development of the Community Passenger Network

The CPNs were established to fulfil the objectives of the Passenger Transport Act (1994) to facilitate access to passenger transport services, particularly for the transport disadvantaged in regional areas. However, the concepts of CPNs have since developed to include metropolitan areas to assist people with transport disadvantage, especially those who reside in more remote areas of the Adelaide metropolitan region.

The City of Playford and the City of Salisbury are currently in the process of establishing a Community Passenger Network (CPN). A CPN is an umbrella management tool to bring together all current community transport providers within the Playford and Salisbury region. The main goals and objectives of the CPN are to provide a centralised, coordinated and managed community transport network. The coordinated approach is aimed at improving efficiencies, reducing gaps in service and maximising the use of existing and future resources. The development of the CPN will also create a central point for obtaining information for both residents and service providers.

It is anticipated that components of the CPN will be in operation within the northern region of Adelaide by the end of 2011 or early 2012, with the CPN fully functional by the end of 2012. The CPN for the region will maximise available resources and potentially improve services to eligible residents across the City of Playford.

5.4 Other passenger transport services

5.4.1 Dial a Ride services

In December 2010 a new Dial a Ride service was implemented in the township of Angle Vale. This service was modelled on the successful service implemented in Gawler in 2004,

whereby passengers call an operations centre and arrange a pick up and drop off location within the service's boundaries. The Dial a Ride service in Angle Vale is slightly different to that presently operating in Gawler as the service is a combination of fixed route, Dial a Ride and roam zone type service. Presently there are 5 fixed route services operating from Angle Vale to Smithfield Interchange and Munno Para Shopping Centre and 5 return services. During 9:00 am and 4:00 pm, the service operates as a Dial a Ride service where passengers have the opportunity to travel to either Smithfield/Munno Para or Gawler. Like the Gawler service, full fare services cost \$5.00 per adult or \$2.50 for concession.

Since the implementation of the Angle Vale Dial a Ride, take up for the service has been slow. Patronage peaked at 102 passengers per month for March 2011. However, the service is averaging 56 passengers per month. Although the service take up is low, it is expected that patronage will increase as residents become familiar with the service provided. However, should patronage remain steady within the next 3-6 months, the service may be discontinued.

5.4.2 School bus services

There are presently several regional school buses which operate in the council region. These services provide essential travel to school students who are not within a walking catchment of their local school. The majority of school buses are provided within the urban area; however, due to the nature of the council region, many regional school bus services also operate. In addition to publically funded services, many of the private schools also offer private school buses to and from their schools.

Table 5.4 Present operating routes (January 2011)

Routes	Origin	Destination	Average Frequency ¹				Patronage March 2011 ⁸					
			Peak ²	Interpeak	Night	Weekends	Average Weekday			Month Total March 2011		
							Up ⁹	Down ¹⁰	Total	Up ⁹	Down ¹⁰	Total
J1	Glenelg/City	Elizabeth	15 mins	30 mins	N/A	60 mins	192	35	227	4,872	787	5,659
205^{&}	City	Elizabeth	30 mins	30 mins	N/A	60 mins ⁴	327	101	428	7,717	2,494	10,211
224	City	Elizabeth	15 mins	30 mins	60 mins	60 mins	519	402	921	13,383	9,562	22,945
228	City	Elizabeth	15 mins	30 mins	60 mins	60 mins	518	147	665	13,246	4,166	17,412
400⁺	Salisbury North	Elizabeth	30 mins	30 mins	60 mins	60 mins	577	269	846	14,516	6,573	21,089
430	Salisbury	Elizabeth	30 mins	60 mins	N/A	60 mins ⁴	138	98	235	3,240	2,328	5,568
440	Elizabeth	Munno Para	15 mins	30 mins	60 mins	60 mins	415	427	842	10,088	10,269	20,357
441	Elizabeth	Smithfield	20 mins	30 mins	60 mins	60 mins	340	338	678	8,217	8,235	16,452
442	Elizabeth	Smithfield	20 mins	30 mins	60 mins	60 mins	376	371	747	9,036	8,952	17,988
443	Elizabeth	Smithfield	N/A	N/A	60 mins	N/A	3	7	10	73	266	300
451	Elizabeth	Smithfield	15 mins	30 mins	60 mins	60 mins	831	730	1,561	10,525	17,564	28,089
452	Elizabeth	Smithfield	15 mins	30 mins	60 mins	60 mins	461	388	849	5,579	9,459	15,238
461	Smithfield	Munno Para	30 mins	60 mins	N/A	N/A	60	24	84	733	534	1,267
AVD	Angle Vale	Smithfield	60 mins	60-120 mins	N/A	N/A	0.1	0.1	0.1	28	28	56
T500^{&}	City	Elizabeth	10 mins	30 mins	N/A	N/A	404	119	524	8,900	2,636	11,536
900[#]	Salisbury	Elizabeth	60 mins	N/A	N/A	N/A	29	15	43	628	325	953
N224[^]	City	Gawler	N/A	N/A	N/A	60 mins	N/A	N/A	N/A	2	81	84
Train A[~]	City	Gawler Central	7/8 mins	15 mins	60 min	30–60mins	3,200	949	4,149	61,437	18,209	79,467
Train B[~]	City	Gawler Central	30 mins	30 mins	60 mins	30–60mins						

Source: Department for Transport Energy and Infrastructure, Passenger Transport Services Division

1. all route frequencies are averages
2. peak periods are approximate level of service between 7:00 am and 8:00 am
3. Route 443 operates only after 10pm weekdays and 9pm weekends
4. Services do not operate Sundays or public holidays
5. N224 only operates on Sunday mornings between 12:00 am and 5:00 am
6. Train A frequencies are taken from Go Stations (Smithfield, Elizabeth or Salisbury)

7. Train B frequencies are taken from minor train stations
8. For passenger boarding within the City of Playford or between Elizabeth and Salisbury
9. UP indicates services which travel towards Adelaide or generally in a south bound direction
10. Down indicates services which travel away from Adelaide or generally in a north bound direction
- * Route 400 patronage has been estimated based on available sectional data (data provided did not accurately determine patronage as there were two identical sections numbers along the route therefore the sectional data was divided in half where appropriate)
- # Route 900 operates along portions of route 401 and 403 to/from Salisbury Interchange. The AM peak services operate 4 minutes prior to the 401 timetabled services and therefore pick up additional passengers. The PM peak services operate 3 minutes after the 401 timetabled services and therefore do not pick up as many passengers along the shared portion of route
- ^ Operates primarily as a late night services departing from Adelaide after midnight on Sunday Mornings
- ~ Station patronage was obtained from the Rail Boarding and Alightings Survey October-November 2007. Patronage is for boarding only for all stations within the City of Playford boundaries.
- & The July 2011 timetable changes resulted in changes to routes J1, 205, 224, 228 and T500. Route 205 as at July 2011 has been replaced with extended route 560. Route T500 has been re-numbered to Route 500.

5.5 Summary of existing network

Based on the review of existing passenger transport services, patronage and coverage, several key observations can be made from the recorded data.

5.5.1 Patronage by route

The Gawler Train Line clearly transports the greatest number of passengers within the City of Playford. However, this is to be expected as the corridor is the primary passenger transport service connecting destinations within the City of Playford as well as to other regions across the Adelaide metropolitan area. The Gawler Train Line transported an estimated 79,647 passengers per month from stations located within the City of Playford.

With respect to bus services operating within the region, Route 451 operating between Elizabeth and Smithfield via Davoren Park and Andrews Farm was the highest patronised route for the month of March 2011 carrying 28,089 passengers. This was followed by Route 224 (22,945), 400 (21,089), 440 (20,357), and 442 (17,988). However, if services which operate within corridors are considered, for example Elizabeth to the Lyell McEwin Hospital and Salisbury, then these corridors have significant levels of patronage. There are presently two approximate corridors operating between the above three destinations, comprising routes 205 (now 560), 224, 400 and T500 (now 500). When the ridership is combined for these corridors, the total monthly patronage totals some 65,781 per month or approximately 32,890 per corridor. Therefore, making these non-rail based corridors the most important within City of Playford becomes a key planning consideration.

The lowest patronised services were routes 461 (1,267), 430 (5,568) and 443 (300). However it should be noted that these routes operate on relatively low frequencies and have restricted operating times. Route 443, for example, only operates during late night periods; route 461 is relatively new and provides access to newly developing areas, resulting in modest patronage due to the developing nature of the area that the route services; and route 430 which, although an established route, operates hourly during the day and does not operate at night or on Sundays. These routes do not meet service standards that attract significant patronage.

5.5.2 Patronage by region

When examining patronage by region, it is clear that the major activity centres and their associated train stations attract the greatest level number of passenger boardings. Within the City of Playford the region with the greatest number of boardings was the Elizabeth region (including shopping centre and station/interchange) with 90,070 boardings per month. This was followed by Smithfield (43,170), Elizabeth South (20,097), Lyell McEwin Hospital (15,671), Elizabeth North (11,010) and Elizabeth Downs (10,830). Salisbury, which is located outside of the City of Playford, recorded 21,351 boardings; however, these are boardings associated with passengers who are travelling to/from the City of Playford. Therefore, the actual number of boardings in the City of Salisbury would be much greater as there are additional bus and train services operating to this region.

The least passenger boardings came from regional areas such as Virginia and Munno Para West which currently has low population due to the developing nature of the area.

6. Identification of current issues

6.1 Identified gaps in the passenger transport network

6.1.1 Routes and services

Overall the majority of the metropolitan urban area within City of Playford is covered by some form of regular passenger transport service. Most of the area is covered by at least one bus route which links to the Gawler Train Line and/or a local activity centre (Munno Para or Elizabeth). However, outside of the metropolitan boundary, access to passenger transport can be limited or not available. Areas which presently have insufficient passenger transport coverage include:

- One Tree Hill
- Virginia
- The Palms Lifestyle Village (Waterloo Corner)
- Elizabeth Village (Penfield)
- McDonald Park
- Ramnet Cct development (Munno Para West).

It should be noted that the many of these regions as listed above are located outside of the current metropolitan boundary, and have small residential populations. However, the residents living in these developments should desirably have access to some form of passenger transport whether it is a regular fixed route bus, community bus or regional type service.

6.1.2 Hours of operation

Throughout the City of Playford, the majority of routes and corridors operate between 6:00 am and 11:00 pm–12:00 am weekdays and Saturdays. Services on Sundays and Public Holidays generally have shorter hours of operation and less network coverage. Although the coverage of passenger transport services is good during peak periods there are several gaps within the current hours of operation for selected areas. Table 6.1 below highlights the current issues with passenger transport hours of operation.

Table 6.1 Hours of operation issues

Location	Issue
Virginia	Limited peak services, no interpeak, evening, night or weekend services
Hillbank	Limited evening, no night or Sunday and public holiday services
Craigmore	Very limited night services (weekdays and weekends)
Blakeview	Very limited night services (weekdays and weekends)
Munno Para	Very limited night services (weekdays and weekends)
Munno Para West	No services at night or weekends
Angle Vale	No service at night or weekends
Route 500	No service at night or weekends
Route 560	Limited AM peak, Sunday and public holidays services and no night services
Route J1	No service (Adelaide bound) at night or evenings (weekdays and weekends)
All Services	Limited services operate beyond 10:30pm

Source: determined using current public transport timetables (DTEI)

6.1.3 Frequency of services

For the routes that operate within the City of Playford, various temporal maps have been developed. These are based on the average/approximate frequency of each service or corridor. Six such maps illustrate the frequency of different corridors within the region. These six maps include: peak direction (towards the Adelaide CBD), interpeak, evening, night, Saturday; and Sunday and Public Holidays. Appendix C1 to C5 contains route and frequencies maps for all public bus corridors within the City of Playford.

6.1.3.1 Gawler Train Line

The Gawler Train line, which underpins the majority of service frequencies in the Playford region, operates at medium to high frequencies during certain periods of the day. The Gawler Train line has two categories of stations along the corridor, they are: High Frequency Stations and regular stations. There are two High Frequency Stations in the City of Playford, Elizabeth and Smithfield. High frequency stations provide services of approximately 15 minutes during interpeak periods and 5–10 minute service during peak periods. All other stations offer 30 minute services during peak and interpeak services. All stations have a basic 30 minute service on weekday daytime and all stations have an hourly service during the evening and night time periods seven days a week.

Most bus services within the City of Playford operate as rail feeder services whereby they are focused on getting residents to the train line. These services are therefore, limited by the train service frequency. The frequency of evening, night and weekend train services limits the frequency of the rail feeder services as well as increases complexity and difficulty in providing quality bus services during these times.

6.1.3.2 Bus services

Peak hour services (7:00 am to 9:00 am and 3:00 pm to 6:00 pm)

The majority of bus routes within the City of Playford provide a relatively high level of service in the peak direction (Adelaide CBD bound). Routes 224 and 228 operate have frequencies of less than 15 minutes, routes J1, 440, 451, 452 and 500 operate approximately every 15 minutes while routes 441 and 442 operate between 15 and 20 minutes. Route 400 operates at an adequate 30 minutes frequency while routes 430, 461, AVD and 900 operate at 60 minute intervals or more. However, most bus service frequencies are not consistent. For example routes 441 departs Smithfield Station at 6:40, 7:00, 7:22, 7:36, 7:50 and 8:21 in the AM peak period rather than a constant 20 minute frequency of 6:40, 7:00, 7:20, 7:40, 8:00 and 8:20.

Interpeak services (9:00 am to 3:00 pm)

Outside of the peak periods, most routes and corridors operate with 30 minute frequencies with the exception of routes 430, 461 and AVD which operate hourly or less. Route 900 does not operate during interpeak periods. There are several corridors within the region which have more than one bus route operating along them. These include Main North Road (south of Midway Road), Haydown Road, Philip Highway, John Rice Avenue, Yorktown Road, Hamblynn Road, Woodford Road, Anderson Walk, Uley Road and Warooka Road. Some of these selected corridors have the potential for service integration and improved frequencies however, the route destinations, segments and/or timetable coordination have not been completed and therefore, services do not provide higher service frequencies. An example of this is Routes 560 and 224; each service operates at 30 minute interval between Elizabeth and Salisbury. Each route take the same amount of time between destinations and have

similar routes (with the exception of a short portion in Elizabeth South), however, services are uncoordinated and departure intervals at Elizabeth Station, for example, are 224 at 12:23 pm, 560 at 12:28 pm, 224 at 12:53 pm and 560 at 12:58 pm. Therefore the gap between services is 5 minutes and 25 minutes rather than an even 15 minutes. In addition to these routes, route 500 also operates as a limited stops service along a similar corridor between Salisbury and Elizabeth. This service also operates at a 30 minute interval. This creates inefficiencies and unnecessary duplication of services within the network.

Evening services (6:00 pm to 8:00 pm)

Most service which operate in the evening periods have basic 60 minute frequencies. However, services that link with the Gawler Train line provide additional services for commuters connecting from train services from Adelaide. Generally the coverage of public transport services is the same as weekday interpeak frequencies however, due to the low frequency train services, the connecting bus services generally operate at the same low frequency.

Night services (8:00 pm to last service)

Like evening services, night time services provide a minimal service. Several areas within the urban boundary have a very limited service while others do not have night services (for example Hillbank). Currently route 443 which operates as a one way loop (Elizabeth, Smithfield, Munno Para, Craigmore then returning to Elizabeth provides a convoluted, long and infrequent service between the suburbs east of Main North Road and the major centres of Elizabeth and Smithfield. For example, passengers departing Elizabeth to Craigmore after 9:00 pm by bus have to travel via Smithfield and Munno Para before reaching Craigmore. This journey can take up to 45 minutes when during the day can take 6–13 minutes (on direct bus routes).

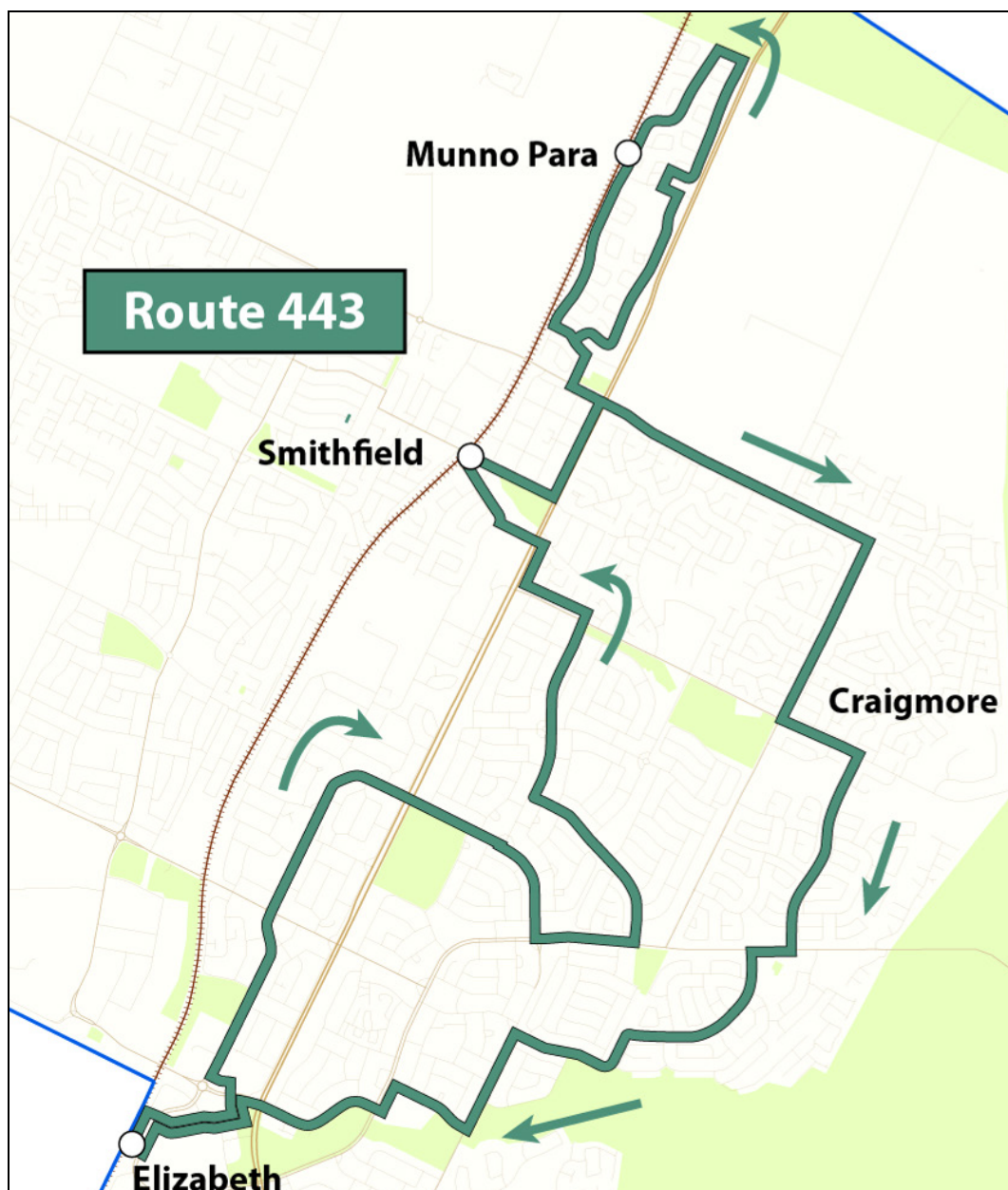


Figure 6.1 **Route 443 night loop service**

Saturday

Like weekday evening services, most services provide a 60 minute frequency of services between 9:00am and 6:00pm on Saturdays with the exception of routes 461, AVD, 500 and 900. In addition, hourly services finish around 6:00pm on routes J1, 560 and 430. All other services operate at similar frequencies to weekday night services.

Supplementary to the regular timetabled services, one late night services operates in the region. Route N224 operates between midnight and 5:00am on Sunday mornings only (Saturday after midnight). This service provides a 60 minute frequency providing residents with a public transport option on Saturday nights/Sunday mornings. Route N224 operates along a modified 224 route and services residential areas along Phillip Highway, sections of route 228 and then continues via Main North Road to Gawler. These services do not operate to or from Elizabeth City Centre or Smithfield/Munno Para.

Sunday and public holidays

Like Saturday more services operate every 60 minutes on Sundays and Public Holidays. However, route 430 does not operate on Sundays. In recent years, services have been improved on Sundays and Public Holidays to provide a standard weekend timetable. However, service on Sunday and Public Holidays generally commence operation 1-2 hours later in the morning and conclude earlier in night periods. Most routes have 2-4 fewer services on Sundays than on Saturdays.

6.1.4 Accessibility and social inclusion

The present passenger transport network provides adequate levels of service and coverage across the metropolitan and urban regions on weekdays. Most services operate at 30 minute intervals, thereby providing sufficient service levels to meet general accessibility and social inclusion requirements. However, most weekend and night services operate hourly, therefore limiting the opportunities for residents to easily move around the network.

Although the majority of the urban area is covered by at least one passenger transport service, accessing some areas of employment can be difficult. Links between Elizabeth and the industrial areas located in the Edinburgh region are not provided in the current network, thereby forcing workers to make multiple connections to access the very limited service from Salisbury to the employment region. The limited access to this region could greatly affect potential residents, (who don't have access to a private vehicle), and who are employed in the area. The lack of access to this employment zone could potentially prevent potential unemployed persons from access workplace locations.

For residents living outside of the metropolitan region, access to transport services is further limited. Residents in the One Tree Hill and McDonald Park areas presently do not have access to regular transport services, while the residents of Virginia have very limited services. Residents in these regions are therefore reliant on private transport, friends and relatives or the limited community based transport services (if they meet eligibility criteria).

Although a vast majority of residents have good access to transport services, there are small percentages of residents that either have; very limited access or no access to services, thereby potentially creating issues of isolation.

Steps should be made to provide these residents with access to some form of passenger transport service. Expanding the regular MetroTicket passenger transport system may not be the a viable solution, therefore various options should be assessed to develop the most appropriate form of transport service to isolated and presently inaccessible areas, regions and residents.

6.2 Community (non-public) transport services

Presently the community bus program which operates within the City of Playford is limited by the availability of funding for the service. With few vacancies available and an increasing demand on services through the ageing population, the community passenger transport services are unable to fully meet the needs of the community.

Limited services are currently provided to residents who live in remote areas with little or no other public transport options. An example of these isolated areas is: The Palms Lifestyle Village near Virginia and Elizabeth Village in Penfield. Both lifestyle villages are in semi-

remote areas and have very limited public transport access. Presently The Palms has a community bus service to Elizabeth and Smithfield every two weeks. Although this service is crucial to most residents in these villages, a service every second week is limiting for shopping, retail and medical appointments.

The community bus program is also currently only available to HACC eligible residents. If an elderly or frail resident does not meet this requirement then they are not eligible to use the service.

7. Future developments

The City of Playford has undergone an extensive amount of growth over the last few years and is the fastest growing council region in South Australia. The number of residential development application approvals has increased from 620 per annum in 2002 to 2,337 per annum in 2010. This rate of growth is mainly attributable to the Playford Alive, Craigmore and Blakeview developments. These major developments are still under construction and are likely to continue over the next 5 year period and beyond.

The 30-year Plan for Greater Adelaide has indicated a substantial amount of additional new residential greenfield development within the City of Playford. As part of the plan, the Urban Growth Boundary, which currently exists around the existing urban areas, has been identified by government for expansion. The alteration of the existing urban growth boundary will allow for extensive expansion of the urban area to meet the government's population and employment targets.

The following section has been subdivided into different regions to highlight the proposed urban development expansion. Figure 7.1 below illustrates the areas of growth for residential and urban lands between 2011 and 2050. Figure 7.6 reports the expected population growth for all areas within the City of Playford over the 40 year period.

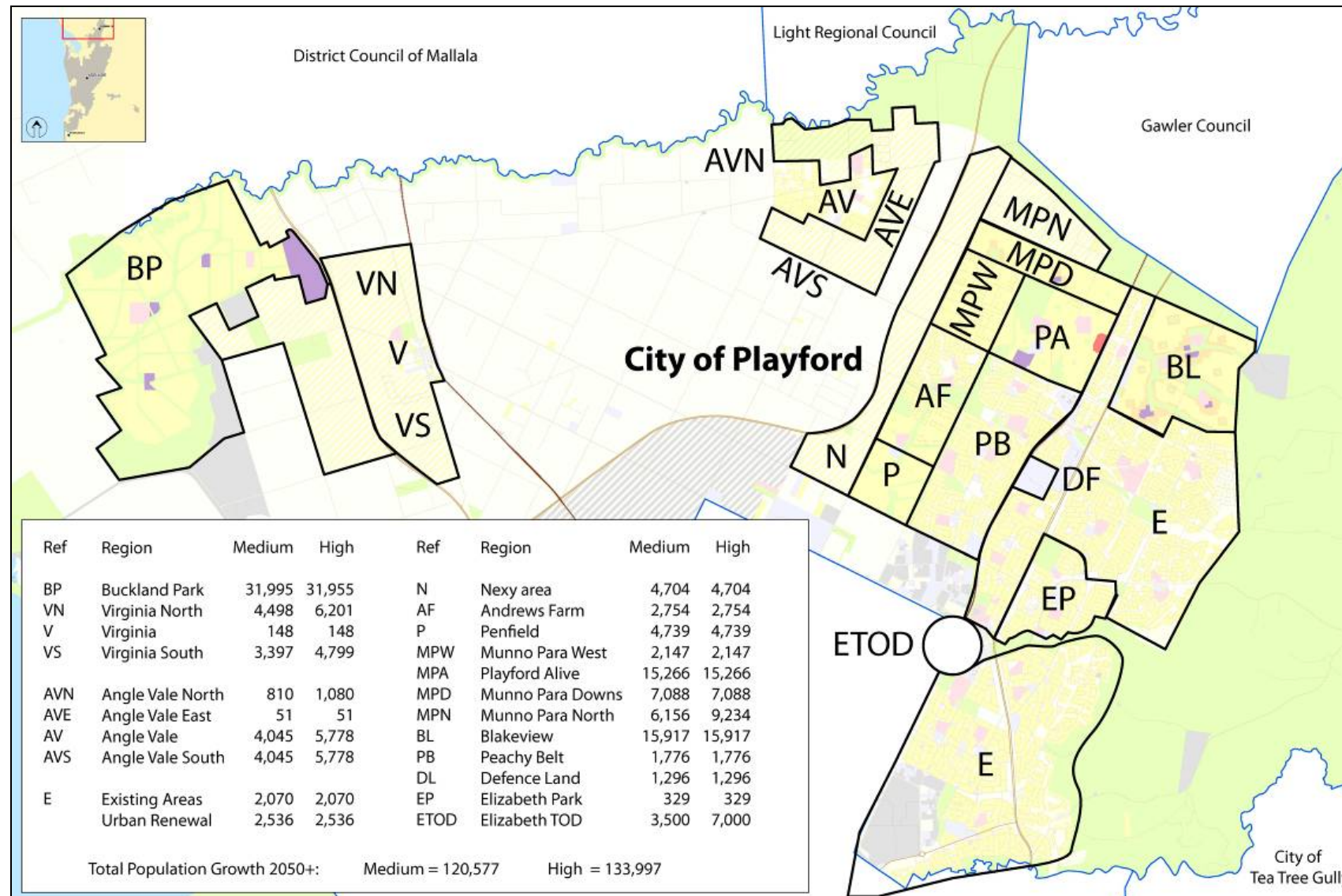


Figure 7.1 Future growth areas

7.1 Residential expansion

7.1.1 Blakeview

The southern sections of Blakeview were constructed from the 1990s onwards. More recently the greenfield land north of Craigmere Road has been subdivided and transformed from agricultural land into new residential development.

The total land area available for development is 448 ha. Based on current and projected urban residential densities, it is estimated that Blakeview will be able to accommodate between 16,000 and 19,000 residents in 6,000 to 9,000 dwellings. It is understood that the development timeframe will be between 2011 and 2039⁸.

Table 7.1 below demonstrates the projected population growth expected for the Blakeview development.

Table 7.1 Blakeview expected population growth

Location	2010–2015	2016–2020	2021–2030	2031–2050	2050+	Total
Blakeview	4,137	2,781	4,736	4,262	0	15,917

Source: City of Playford population model (medium growth scenario)



Figure 7.2 Blakeview draft structure plan

Source: Conner Holmes – John Stimson: 18/5/2010

⁸ Source: Snapshot – Urban Growth Area: Blakeview – City of Playford, January 2011.

7.1.2 North western metropolitan area

The north western metropolitan area is the region located between The Gawler Train Line, The Northern Expressway, the future urban growth boundary to the north (Dalkeith Road) and Womma Road in the south. The population model produced by the City of Playford divides this region into 9 sub-regions. Each region has been included in Table 7.2.

Table 7.2 Metropolitan area north west expected population growth

Location	2010-2015	2016-2020	2021-2030	2031-2050	2050+	Total
Munno Para West Playford Alive	3,619	4,000	4,025	3,622	0	15,266
Munno Para West Existing	2,070	76	0	0	0	2,147
Andrews Farm	2,754	0	0	0	0	2,754
Peachy Belt Infill	643	236	472	425	0	1,776
Peachy Belt School Infill	95	119	239	215	0	668
Penfield	2,369	2,369	0	0	0	4,739
Munno Para Downs South	1,894	2,361	2,833	0	0	7,088
Munno Para Downs North	0	0	410	5,746	0	6,156
MacDonald Park	941	2,352	1,411	0	0	4,704
Total	14,386	11,514	9,390	10,007	0	45,297

Source: City of Playford population model (medium growth scenario)

7.1.2.1 Playford Alive (Munno Para, Munno Para West, Andrews Farm and the Peachy Belt)

The Playford Alive development is one of Australia's largest urban renewal and rejuvenation projects. The total site area for the development is approximately 1,000 ha, of which half is new greenfield development. The Playford Alive development consists of the established suburbs of Munno Para, Smithfield Plains and Davoren Park, and new greenfield development in Andrews Farm, Penfield (see below) and Munno Para West⁹.

The Playford Alive project will involve rejuvenation of the existing suburbs of Smithfield Plains, Davoren Park and Munno Para, and the development of new areas on greenfield sites. The Playford Alive project aims to regenerate these suburbs by replacing dilapidated housing stock and upgrading the facilities and amenity of the area.

The new greenfield lands located in the northern and western portions of the development include major new residential subdivision, education institutions, retail centres and a new Transit Oriented Development at Munno Para train station.

The new residential development is expected to house approximately 18,000 new residents while the infill and redevelopment of the existing suburbs is estimated to increase by 2,500. In addition to the population growth Playford Alive project area, an estimated 2,100 more residents will occupy the almost completed Munno Para West development (the area bounded by Curtis Road, Andrews Road, Fradd Road and Stebonheath Road in Munno Para West)

⁹ Source: www.playfordalive.com

The Playford Alive project will have two new key destinations within the project boundary. A new retail and commercial centre will be located north of the intersection of Peachy Road and Curtis Road while the transit oriented development at Munno Para will become a key employment and residential zone with access to the Gawler Train Line. These two centres will be an attraction for the residents of the new suburbs as well as reducing the requirement for residents to use the existing facilities at Munno Para Shopping Centre.

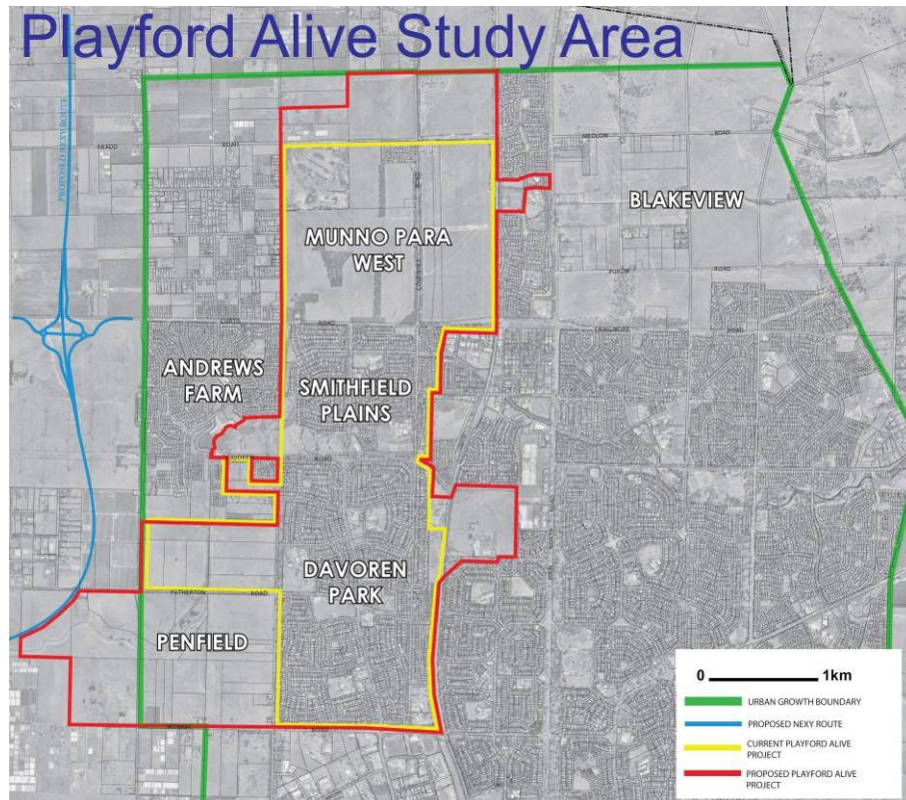


Figure 7.3 Playford Alive project boundary

Source: City of Playford



Figure 7.4 Proposed structure plan for the new retail and commercial centre

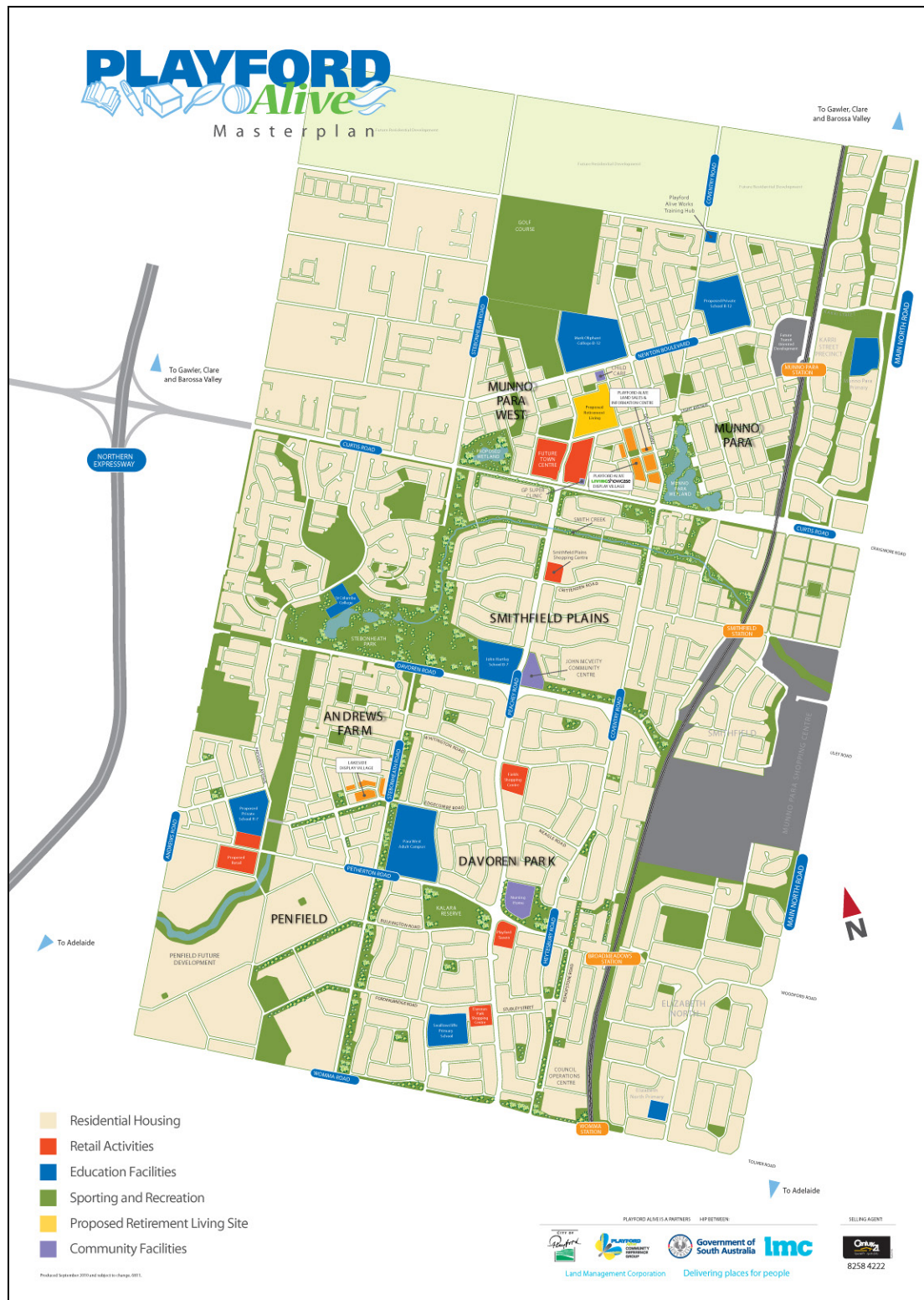


Figure 7.5 Playford Alive structure plan

Source: City of Playford

7.1.2.2 Penfield

The Penfield residential development is located in the south western portion of the Playford Alive area. The Penfield estate will predominantly consist of residential development with

local retail outlets located in the northern section. The residential estate is boarded by Petherton Road in the north, Stebonheath Road in the east, Womma Road in the south and Andrews Road in the west. The future development will likely consist of very low density development with an approximately density of 13.5 dwellings per hectare. The current site is approximately 130 ha in size and is estimated to house a future population 4,739 residents in approximately 1,755 new dwellings.

7.1.3 Urban expansion (MacDonald Park, Munno Para Downs north and south)

The urban expansion zone consists of areas which are currently outside of the current Urban Growth Boundary but are still located adjacent to the current metropolitan area. These areas are the future growth zones located to the west and north of the existing urban areas of Smithfield, Munno Para and Andrews Farm. MacDonald Park is the area boarded by Andrews Road in the east, Petherton Road in the south, the Northern Expressway in the west and potentially as far north as Angle Vale Road. Munno Para Downs South is the region boarded by Fradd Road in the South, the Gawler Train Line in the east, Field Road in the North and Andrews Road in the west. Munno Para Downs North is boarded by Field Road in the South, Coventry Road in the east, the Metropolitan Open Space System (MOSS) in the north (Nosworthy Road and/or the major power transmission lines) and Andrews Road in the west. These three regions currently do not have structure plans however; the current developable land area is approximately 575 ha. With residential densities expected to be between 8 and 15 dwellings per hectare the estimated population for this region is almost 18,000 new residents.

7.1.4 Angle Vale

The 30-year plan for Greater Adelaide indicates a significant expansion to the township of Angle Vale. The present population of the township is estimated at 1,360 (2006 census, ABS). The proposal in the 30-year plan would expand the current township to include an additional 468 ha of developable land. This would change the dynamics of the township with an estimated extra 19,000 residents. The new developable land would be of low to very-low density development. Increasing the residential density of the region to match that of the Playford Alive suburbs, could drastically increase the land capacity of Angle Vale.

Table 7.3 Angle Vale population growth

Location	2010– 2015	2016– 2020	2021– 2030	2031– 2050	2050+	Total
Angle Vale Township	51	0	0	0	0	51
Angle Vale North	0	0	1,620	0	0	1,620
Angle Vale East	578	2,889	5,200	0	0	8,667
Angle Vale South	0	578	5,778	2,311	0	8,667
Total	629	3,467	12,598	2,311	0	19,005

Source: City of Playford population model (medium growth scenario)

7.1.5 Virginia and Buckland Park

The South Australian government recently approved the development of Buckland Park. This development is a major expansion of the urban area within Adelaide. The development is likely to accommodate up to 32,000 residents in new low density suburbs. The site is located on the western side of Port Wakefield Road and will consist of three minor centres, a major district centre, employment lands as well as a High School and 5 primary schools. Although efforts have been made in the plan to improve the new development's self-sufficiencies (employment, education and retail), there are likely to be high proportions of residents travelling to other regions for employment, retail and recreation.

As a result of the approval for Buckland Park, the 30-year plan has also stipulated that additional residential development is to be located around the township of Virginia. Presently the small market garden township is home to 319 residents (2006 census, ABS). The proposed urban growth boundary expansion will increase the developable land to include an additional 386 ha of residential land. This will add approximately 8,000 new residents to the east of Port Wakefield Road.

The 30-year plan has also identified 420 ha of land on the western side of Port Wakefield Road not currently in the Buckland Park development site, as additional future urban land. Based on the residential density of the surrounding region, this land has the potential to add 10,000 to 20,000 residents. However, this land has not yet been provided a population in the City of Playford population model.

Table 7.4 below shows the population growth for Virginia and Buckland Park. These figures exclude the potential for an additional 10,000 residents for the future residential land south of the current Buckland Park Development.

Table 7.4 Virginia and Buckland Park population growth

Location	2010-2015	2016-2020	2021-2030	2031-2050	2050+	Total
Virginia Township	148	0	0	0	0	148
Virginia North	0	300	2,999	1,200	0	4498
Virginia South	679	1,698	1,019	0	0	3397
Buckland Park	269	1,331	6,399	17,597	6,399	31,995
Total	1,097	3,329	10,417	18,797	6,399	40,038

Source: City of Playford population model (medium growth scenario)

7.1.6 Existing urban areas

The City of Playford population model has estimated that an additional 11,945 residents will occupy existing suburbs within the metropolitan region. It is expected that these additional residents will be housed in new greenfield developments (Defence land), infill developments and urban renewal, new higher density developments, transit oriented developments and increased residential densities around existing centres.

The City of Playford population model currently excludes the health precinct development which is currently being studied for the area surrounding the Lyell McEwin Hospital. Media releases by government have stipulated that the area could have the potential for increase

residential development in addition to the additional medical services and facilities. For the purpose of this plan, it has been estimated that the population within the three census districts surrounding the hospital would be doubled. This provides an estimated population increase of 1,570 new residents.

Table 7.5 Existing urban areas expected population growth

Location	2010–2015	2016–2020	2021–2030	2031–2050	2050+	Total
Elizabeth TOD	233	1167	2,100	0	0	3,500
Defence	52	259	518	467	0	1,296
Elizabeth Park	329	0	0	0	0	329
Centres	114	189	341	0	0	644
Other	1,267	803	0	0	0	2,070
Renewal	255	237	551	1,491	0	2,536
Health Precinct ¹	785	785	0	0	0	1,570
Total	3,035	3,440	3,510	1,958	0	11,945

Source: City of Playford population model (medium growth scenario)

1. Health precinct is an estimate for the Lyell McEwin master plan. The population has been based on doubling the 2006 census population for the three collector district surrounding the hospital.

7.2 Residential population staging

Based on the medium growth population scenario provided by the City of Playford, it is estimated that an additional 120,577 residents will reside in the City of Playford by 2050. In the short term (within 5 years) the population is expected to increase by 22,191 new residents. Residential development is predicted to grow at 4,000 to 4,600 residents per annum from 2010 to 2030. Beyond 2030 it is expected to slow to approximately 2,000 additional residents per annum. Table 7.6 below stipulates the predicted residential growth for the council region by short, medium and long growth years. Figure 7.6 illustrates the population growth to 2050.

Table 7.6 Staged population growth

Location	2010–2015	2016–2020	2021–2030	2031–2050	2050+	Total
Blakeview	4,137	2,781	4,736	4,262	0	15,917
North western metropolitan area	14,386	11,514	9,390	10,007	0	45,297
Angle Vale	321	1,618	5,933	1,079		8,951
Virginia and Buckland Park	1,097	3,329	10,417	18,797	6,399	40,038
Existing urban areas	2,250	2,655	3,511	1,958	0	10,375
Total residential growth	22,191	21,897	33,986	36,103	6,399	120,577

Source: City of Playford population model (medium growth scenario)

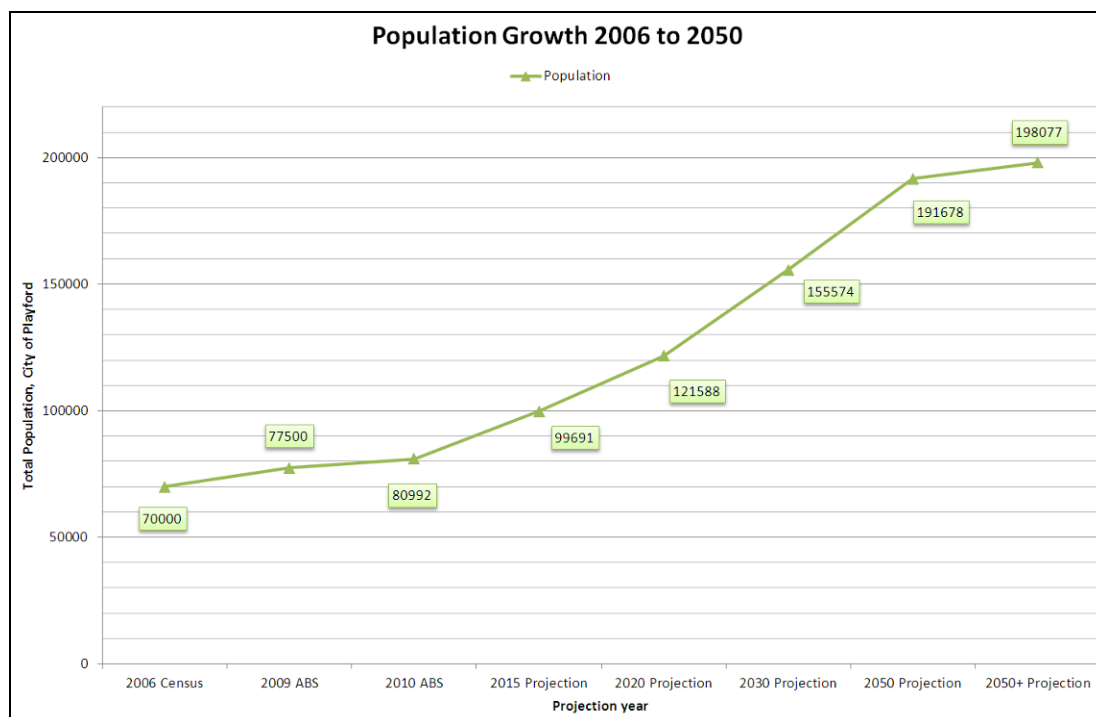


Figure 7.6 City of Playford population growth

7.3 Transit oriented developments

Transit Oriented Developments (TODs) are defined as the areas which surround major public transport infrastructure facilities providing high quality public transport services. TODs typically comprise of higher-density residential developments mixed with other land use and employment activities such as retail centres, offices and community facilities and services. TODs promote more sustainable transport communities by concentrating residential, employment, recreation, and in some cases education in a self-contained, accessible and walkable community.

The 30-year Plan for Greater Adelaide has identified 14 sites across the Adelaide suburban rail network to accommodate TODs. One of the TOD sites identified in the plan is located within the City of Playford; this site is Elizabeth Train Station. However, there are several other suburban train stations within the City of Playford that could facilitate TODs. These sites include, Elizabeth South Station, Smithfield Station and Munno Para Station. Each site has sufficient available land or re-developable land which could be used for high residential densities and mixed use developments. The Munno Para West development has already identified land around the Munno Para Station as a potential TOD site.

7.4 Passenger transport improvements

7.4.1 Gawler Train Line

In 2008/2009 the State Government announced major investment into the revitalisation of the Adelaide metropolitan rail lines. This included major upgrades to the Gawler Train Line. The purpose of this significant investment was to transform the current diesel system into a

modern, vibrant, state of the art and sustainable electrified heavy rail network. When completed the train network will be faster, cleaner, more frequent and efficient.

In 2010 the government commenced the revitalisation of the Gawler Train Line, with the upgrading of the track and its foundations. With federal government assistance, it is anticipated that the Gawler Train Line will be completed by 2013 at an investment of \$293.5M.

Proposed improvements along the Gawler Train Line include:

- concrete sleepers and improved track formation for high ride quality
- electrification of the line to remove localised emissions
- faster and more frequent train services to provide greater flexibility and access for users
- new trains to provide greater comfort; and
- station upgrades including completely rebuilding stations at Elizabeth, Munno Para and Elizabeth South with additional upgrades at Smithfield. Station upgrades at Elizabeth and Munno Para will incorporate major bus interchange facilities and allow for future transit oriented developments. Both stations will provide improved amenity and services and will be of similar standard to the current Mawson Interchange¹⁰.



Photo 7.1 Rail revitalisation and station upgrades

Source: Department for Transport Energy and Infrastructure

7.4.2 Proposed bus service improvements

As part of the major overhaul of passenger transport services, the state government announced in 2008 that additional buses and services would be implemented across the network over a four year period until 2012. This included the implementation of 20 buses per year over the four year period. These additional buses and services will be used to improve peak hour services on major bus route corridors and improve frequency on rail feeder bus routes. 40 buses have been integrated into the network since 2008 with an additional 20 buses to be introduced in July 2011¹¹.

As part of the 2010 election, the Labor government committed to increasing the number of additional buses for the greater network by an additional 20 buses over the election cycle. This increased the total number of new buses to be added to the fleet to 100 vehicles¹². This election commitment was dedicated to improving services in the Outer Northern and Outer Southern regions with the additional resources allocated to these areas. Additional services

¹⁰ Source: Department for Transport Energy and Infrastructure (www.infrastructure.sa.gov.au)

¹¹ Source: Department for Transport Energy and Infrastructure (www.infrastructure.sa.gov.au)

¹² Source: News Release: Safer, Faster and Easier Public Transport, Labour Government media release, 12/03/2010

and buses were added to the Outer Northern Regions (including the City of Playford) in the January 2011 service changes. The committed investment was fast tracked from July 2011 to improve services to meet the demands of the local community¹³.

Over 2011-2013 an additional 60 buses will be introduced into the network. These buses will be deployed on the busiest routes and to areas with growing demand. These committed buses will provide improved services on existing bus route corridors by increasing service frequencies and hours of operation as well as supporting the development of new and extended bus routes and corridors. As part of the longer term commitment, the South Australian Government, as part of the public transport investment, will increase the public transport fleet by an estimated 300 buses as part of the decade long commitment. This growth in new buses and associated resources will allow for the significant improvement to bus services across the metropolitan region⁴.

7.4.3 Other passenger transport infrastructure measures

As part of the 2010 election commitments, the state government announced that it would commit to \$5 million in additional funding to build new bus shelters and upgrade existing shelters across the state¹⁴.

Details of the additional new shelters, such as, proposed locations, size and who will be responsible for the ongoing maintenance, is still to be determined by the Department for Transport Energy and Infrastructure.

7.5 Potential mass transit corridor

The 30-year Plan for Greater Adelaide reports that there is potential for a mass transit corridor between Elizabeth, Virginia and Buckland Park. The plan does not specify what type of mass transit mode should be designed or accounted for, however; the strategic plan should identify potential options for this corridor.

¹³ Source: SouthLink (Bus operator for the Outer North contract area)

¹⁴ Source: News Release: New and upgraded bus shelters, Labour Government media release, 12/03/2010

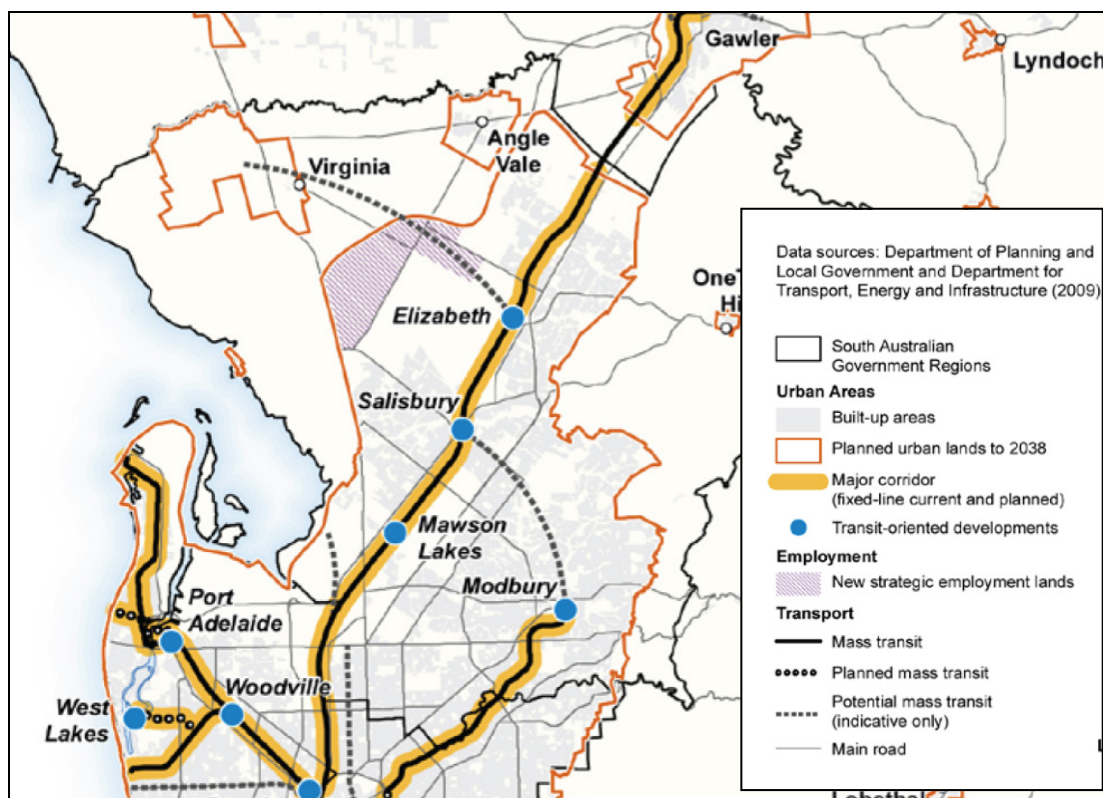


Figure 7.7 30-year Plan – indicative mass transit corridor

Source: 30-year plan for Greater Adelaide

8. Key challenges and directions for passenger transport

Based on the issues identified in the previous sections, there are some key challenges for the provision of passenger transport services in the City of Playford. These are:

Public transport network

- Large population growth in the short, medium and long term. The majority of this growth will occur in the peripheral suburbs in the short term and the townships in the mid to longer term. The key growth areas are Munno Para, Blakeview, MacDonald Park, Penfield, Angle Vale, Virginia and Buckland Park.
- High car ownership in the region and long distances between households and employment locations. The future public transport network must be able to compete with private vehicles by providing a viable alternative.
- New activity centres and transit oriented development to support the future growth in population. These new centres will attract trips from already established centres such as Munno Para and Elizabeth.
- New major areas of employment currently outside of the established metropolitan region currently not serviced by public transport services.
- The continued importance of the Elizabeth activity centre, Munno Para shopping centre, the Adelaide CBD and Salisbury Town Centre.
- The importance of providing convenient operating hours and service frequencies to attract users and non-users, and the need for operating hours to reflect the travel needs of the community.
- The need to reduce convoluted routes and travel times while improving the directness of public transport services.

Community transport network

- An aging population, particularly within selected established suburbs.
- Increasing number of young families.
- There is presently no council operated community bus service, current community transport is for HACC eligible clients only.
- A coordinated approach to the provision of community transport services.
- Ensuring that the basic accessibility requirements of the community are met in terms of transport and access.

8.1 Gaps in current passenger transport services

The baseline review of existing passenger transport services in the City of Playford raised several transport and access issues. This section expands on the travel pattern gaps in the current system.

There are several key travel patterns which currently exist within the City of Playford. Many of these are to the key centres, and destinations are encompassed within the existing passenger transport network. However, several key linkages are either missing, have insufficient service frequencies or have convoluted routes structures. From the analysis on the existing passenger transport network, the following key travel patterns currently are not served or are insufficiently served by passenger transport.

Existing travel pattern gaps

- **Hillbank and areas south of the Little Para River to Lyell McEwin Hospital:** Presently it is not possible to travel from Hillbank to the Lyell McEwin Hospital on a direct service. Passengers wishing to make this journey are required to connect with other services at either the Elizabeth or Salisbury Interchanges. Similarly, passengers living south of the Little Para River (Salisbury Park and Salisbury Heights) either require a transfer at Salisbury Interchange or a 900 m walk from Main North Road.
- **Elizabeth Interchange to DSTO/Edinburgh RAAF base:** Currently there are three services which operate between Salisbury Interchange and the Edinburgh region via Nurlutta Train Station. There are no direct services from Elizabeth or Smithfield to these employment zones.
- **Virginia to Elizabeth:** Presently route 900 services Virginia and provides residents with two return trips per day, two trips from Elizabeth to Salisbury via Virginia in the morning and two returning services in the evening. This provides the ability for passengers to access employment lands (such as market gardens) in the Virginia area from Elizabeth as well as allowing residents of Virginia access to Salisbury. However it does not allow for residents of Virginia to directly access Elizabeth due to the one way nature of the services.
- **Northern region to City of Port Adelaide Enfield:** The origin and destination information sourced from the 2006 Census journey to work data indicates that there is a strong movement of workers between the City of Playford and the City of Port Adelaide Enfield. Although, this movement is outside of the Strategic Plan boundary, considerations should be made to ensure that this travel pattern is catered for as part of wider passenger transport planning policies and developments.
- **Angle Vale to Elizabeth:** Although the introduction of regular passenger transport services into the Angle Vale region over the past year has significantly increased accessibility for residents, services are only provided between Angle Vale and Munno Para (via Smithfield Station) and to Gawler. This is in the form of the Angle Vale Dial-a-Ride which is not a MetroTicket service. Whilst this represents a significant service improvement, passengers do not have direct access to Elizabeth. Access is only possible by connecting with regular MetroTicket services at Smithfield Station.
- **The Palms Residential Village and Elizabeth Village:** Both of these lifestyle villages are located within the City of Playford, however, both are located in regional areas of the city. Therefore, both currently do not have access to regular passenger transport services.

Future travel patterns

- **New developments:** The major increase in residential population in the northern suburbs will require a significant increase in passenger transport services to meet the demands of these new residents. With the majority of the growing population moving into new greenfield development sites, the requirement to provide these areas with transport links to the major centres will be critical. Depending on the residential development location, new links would be required between the suburb and either Munno Para Shopping Centre or Elizabeth. All future residential areas also should be connected to the Gawler Train Line.

- **Buckland Park to Virginia and Elizabeth:** With the state government committing to the development of Buckland Park, the provision of improved passenger transport services between Buckland Park, Virginia and Elizabeth will be critical to ensuring that residents are not socially isolated.
- **Northern region to Greater Edinburgh Parks:** With the development of the proposed new major employment nodes to be located west of Heaslip Road, demand for new services in this area will be warranted from all major residential areas across the City of Playford.
- **Buckland Park, Virginia and Angle Vale to Gawler:** With the population of these regions, as well as Gawler, expect to grow significantly over the coming 10–15 years, direct access between these three regional growth centres will be required.

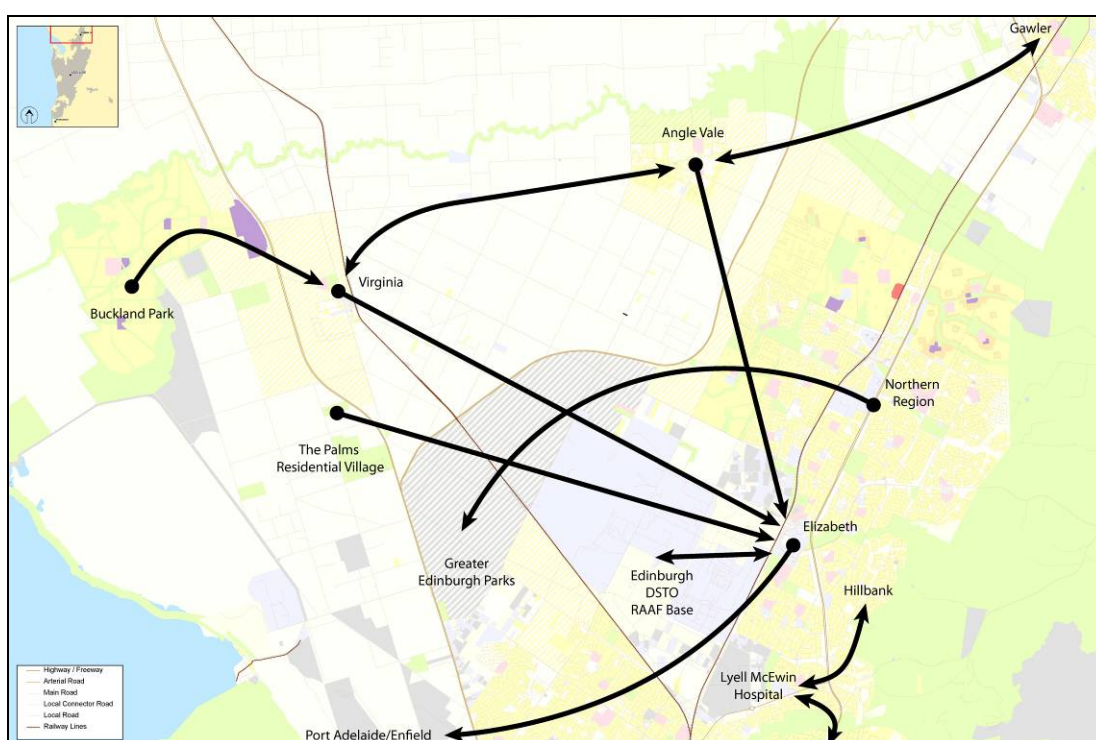


Figure 8.1 Current travel pattern gaps

8.2 Public transport use and patronage

The South Australian State Government has committed to improving public transport services across metropolitan Adelaide by providing a significant investment in public transport infrastructure and services. The Draft Transport Plan produced by government in 2003 set a target increasing public transport ridership to approximately 10% of metropolitan weekday passenger vehicle kilometres. South Australia's Strategic Plan Progress Report for 2010 indicated that as of 2008/2009 the percentage achieved was 7.3% up from the baseline of 6.5%.

The current population for 2011 of the City of Playford is estimated to be 84,543 persons (population model City of Playford April 2011). The total number of daily public transport

boardings within the City of Playford is estimated to be 12,194 for bus and train. This represents approximately 1 daily public transport boarding per 6.9 residents.

Assuming that the City of Playford's population is expected to increase to 113,137 by 2018, 155,574 by 2030 and 191,687 by 2050, the estimated number of public transport boardings is likely to be in the order of 16,320, 22,440 and 27,650, respectfully. This has been based on no increase in public transport mode share.

The current estimate for metropolitan weekday passenger vehicle kilometres travelled from the 2010 Strategic Plan progress report indicated that in 2008/2009 the percentage was estimated to be 7.3%. With the target being 10% by 2018, a basic multiplier of 1.37 could be applied to the patronage totals. Using the basic passenger boardings per capita, and the multiplier of 1.37 to gain the 10% of metropolitan weekday passenger vehicle kilometres, patronage could equate to 22,350, 30,740 and 37,870 daily boardings for 2018, 2030 and 2050 respectively.

Using these basic mode share assumptions, and growth in residential population and targets set in the state strategic plan, an annual increase in public transport patronage of 9.04% would be required per year until 2018 to achieve the government's targets.

In order to achieve the government's public transport goals, significant investment in services will need to be implemented over the next 7 years to 2018. The current network and services have sufficient capacity to meet the demand, however; the current network does not provide the level of service needed to attract new users to the system.

8.3 Prioritisation of improvements

Based on the information gathered as part of the baseline review and the gaps analysis, there are certain key areas, services and standards that should be advocated in order to improve passenger transport services to a level that would meet community expectations and demands. A list of potential priority improvements has been developed, based on the review conducted. These have been listed below, but are not limited to and in no particular priority order:

- Increase service frequencies of existing metropolitan services to meet a recommended minimum service standard for weekday (30 minutes), evenings, nights and weekends (60 minutes).
- Provide a basic minimum service level (reduced frequency and hours of operation when compared to metropolitan regions recommended minimum service standard) to all residential areas and townships within the region.
- Prioritise service improvements where they are most required, for example areas with lower SIEFA indexes, areas with lower average household income or with lower proportions of vehicles (no vehicles) per household.
- Improve service coverage to new and existing employment regions, such as the Edinburgh RAAF Base and DSTO.
- Improve services on routes and corridors which are already performing well such as route 451, 440 and 442.
- Improve services to areas which have strong existing demand for passenger transport to support and continue to encourage growth.
- Improve connections for services operating to and from the Lyell McEwin Hospital.
- Rationalise bus stops to improve travel times, user experiences (on board) and reduce overall infrastructure requirements (stops, shelters, information, pavements etc.).

- Improve bus stop amenity by providing route and timetable information, seating, shelters, bins and pavements to meet disability and mobility standards.
- Improve service directness by reducing convoluted routes between suburbs and centres.
- Reduce route/modal competition by developing a coordinated network planning approach.
- Coordinate services to improve frequencies on corridors where multiple services operate.

9. Passenger transport network principles

Figure 9.1 below illustrates the principles of a potential future passenger transport network for the City of Playford in terms of network connections and service hierarchy.

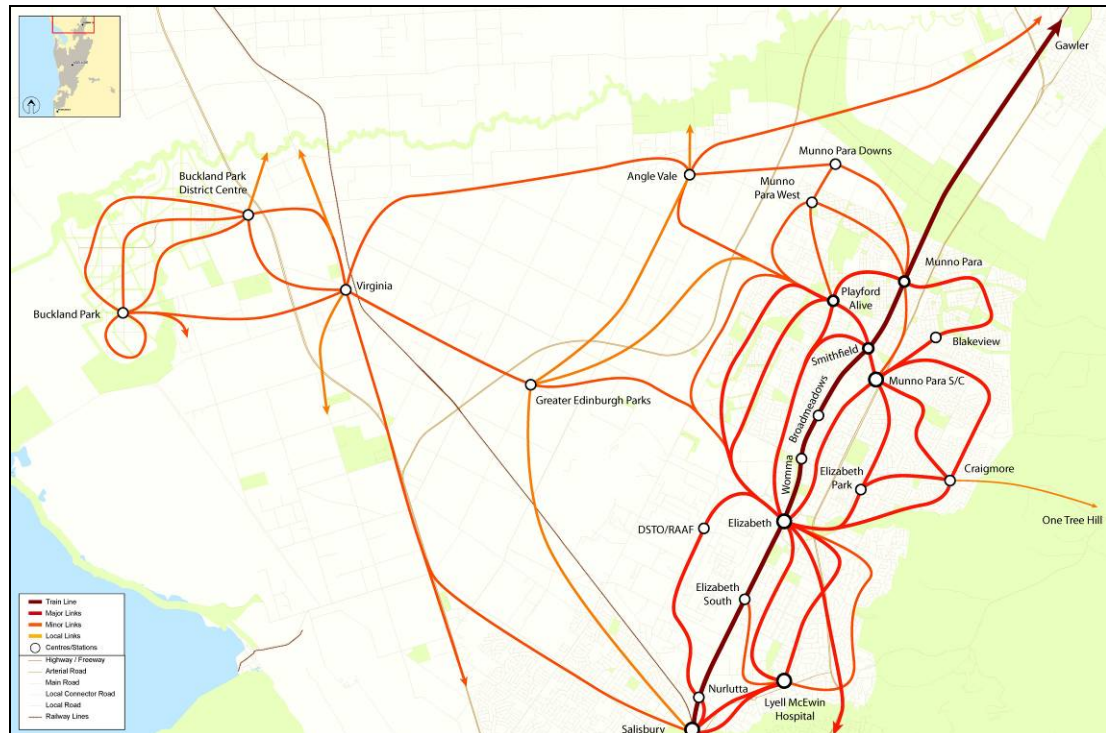


Figure 9.1 Network principles

The figure illustrates the key connections required from the passenger transport network. These are represented as:

- Major links: between major centres, the Gawler Train Line and the Adelaide CBD
- Minor links: between major centres, minor centres and regional centres
- Local links: between suburbs and local centres.

9.1 Simplification of the route network

Presently there are many routes that only operate during limited periods of the day or week. At other times these routes change numbers, directions and routes travelled. This complicates the network and creates confusion for non-regular passengers. To simplify the network, the number and variety of routes should be minimised. Although the route network in the City of Playford has improved over the past 5 years through a reduction in route variants, the directness of some services between locations is still convoluted. The future network should be simplified, regular and direct to improve service convenience and legibility for passengers.

9.2 Priority to quality over coverage

To have an effective alternative to the private car, bus service connections to and between major centres and the Gawler Train Line should be of high quality, high frequency, direct and reliable. Quality passenger transport services are valued highly by able bodied passengers who are often prepared to walk longer distances to reach such services.

In line with the state government's objectives to improve passenger transport services, an emphasis should be given to provide high profile, high quality links and corridors connecting origins and destinations. These should be in the form of fewer routes but with greater frequencies. There should be a shift from providing a high density of neighbourhood style services.

When examining the high frequency corridors in the inner metropolitan area, many of which are Go Zones, the spacing between corridors varies between 450 m for Hawker Street and the Torrens Road Go Zones, 650 m spacing between The Parade and Kensington Road, 800 m between Churchill Road, Prospect Road and Main North Road, 1150 m between Sir Donald Bradman Drive and Richmond Road to 1350 m spacing between Valetta Road and Henley Beach Road. Figure 9.2 below is an illustrative representation of the Go Zone corridors radiating out from the Adelaide CBD.



Figure 9.2 Current Go Zone corridors

Source: Adelaide Metro

Where possible, the spacing between two adjoining main corridors is recommended to be a minimum of 800 m. This allows for an ideal average 400 m walk distance to the closest corridor. The Service Planning Guidelines produced by the PTSD in February 2000 (formally Passenger Transport Board – PTB) state that 90% of households should be within a 500 m walking distance to a service for weekday and Saturday daytime periods (6:30 am to 7:00 pm and 7:30 am to 7:00 pm Saturdays). However, many of the current roads within the City of Playford are spaced 1,200 m apart, making the provision of passenger transport services difficult, circuitous or uneconomical. Therefore, the recommended walk distance should be 600 m for 90% of households. This would allow for 1200 m spacing between corridors.

Presently some services in the region are operating as little as 300 m apart. Where two routes operate 500 m apart or closer, considerations should be made to alter these services. Amalgamating these routes could potentially provide an overall higher frequency, albeit with increased route separation.

For passengers who are unable to walk the extra distance to a local bus stop, alternative services could be offered. These could be in the form of community based services, local dial-a-ride services or targeted interpeak localised services. Passengers who have difficulty in accessing these stops generally require the use of specialised community transport services to make their journeys.

9.3 Passenger transport network hierarchy

9.3.1 A layered passenger transport network structure

Establishment of an appropriate hierarchy of services will assist in the coordination, planning and prioritisation of resources in developing a successful passenger transport network. This includes developing several different passenger transport layers, each designed to serve a different function or demand.

Many cities and regions across the world have layered or hierarchically organised passenger transport networks. However, those that have them do not necessarily apply them consistently across their systems. The many successful cities which have established service hierarchies across their network or region have found that this approach to service design has not only greatly assisted in the planning and management of their networks, but also has provided effective tools for marketing and promoting these layers. Adelaide is no exception to the world example; the concept of a Go Zone is well understood and recognised amongst transport users across the City. This is one form of a hierarchical type service. However, aside from the Go Zone concept, the only other hierarchical service promoted is the Adelaide O-Bahn. The train and tram systems, although unique and identifiable, still do not have a recognisable or consistent service provision approach.

The geographical location of the City of Playford necessitates different methods of providing passenger transport services when compared to inner city council regions. However, there are still many relevant and similar principles.

Not all regions of the council have the same demand for passenger services provision; therefore, the level of service provided to each of these regions will be different. A hierarchical approach is recommended for the City of Playford to categorise the demand and apply the most appropriate level of resources to a route or corridor. This approach not only maximises the availability of resources and funding, but also provides a more equitable

approach to planning and management of services. This approach can also be used as a tool to encourage or grow patronage on a particular route, corridor or region.

Based on a hierarchical approach for the City of Playford, a high priority should be placed on establishing a core network of routes and corridors to operate within the council region. The core network would be focused on providing high quality connections between regional and local activity centres, connections to the Gawler Train Line and other mass transit corridors, and linking in with major employment nodes and residential areas. The core network would have high quality, frequent, direct, fast and reliable services.

The recommended network principles suggest some network development options, based on service differences including:

- **Mass Transit Corridor:** These are the dedicated corridors operating (currently or planned) within the City of Playford. An example of this style service would be the Gawler Train Line.
- **Go Zone Corridor:** This is the application of the Go Zone principles to a major passenger transport corridor or route. However, Go Zone principles should only be applied to corridors or routes which provide direct and fast services between key centres.
- **Rail Feeders:** Generally they would provide good connections to the Mass Transit Corridors, operating at similar times to the Mass Transit Corridors but at lower frequencies.
- **Cross Suburban Services:** provide fast, direct and convenient links between major activity centres across the metropolitan region.
- **Local Services:** providing access from suburbs to centres. Services may be indirect, less frequent and designed to serve a localised population or particular demographic.
- **Regional/Rural Services:** provide the key links from non-metropolitan regions and townships to major centres and Mass Transit Corridors.

In terms of differentiation, PB considers that a simple four-stage hierarchy would be the most appropriate structure, given the nature of the urban and regional development within the council region. Reducing the number of layers simplifies the network and enables reduced complications for the planning and management of the system. The number of layers could be reduced by amalgamating Mass Transit Corridors with Go Zones; these can apply similar service frequencies and operating times.

The suggested layers are therefore:

- **Mass Transit Corridor/Go Zone:** concentrated on key corridors providing access to main centres (including the Adelaide CBD in the case of the Gawler Train Line). These services would be direct, fast, frequent, and have a high level of priority (where possible for the bus Go Zone services).
- **Link Services:** this would be a combination of cross suburban and rail feeder services. They would operate at similar operating times to the Mass Transit/Go Zone Corridors, though at reduced frequencies; high frequencies would be provided during peak periods, with good frequencies for interpeak, night and weekend services.
- **Local Services:** these services would provide local access or regional access to major centres. These services would typically be demographic or geographic specific services, and designed to meet specific requirements.

9.4 Service standards

9.4.1 General service standards

Standards can be set for certain service parameters, primarily based on providing a certain minimum level of accessibility for residents. For example, one possible standard is for all residents to be able to access bus services within 500-800 m of their homes (approximately 5 to 10 minute walk). Benchmarking of this kind will stipulate that a certain percentage of households (90-95%) fall within this parameter. While this approach can reflect operational and geographical constraints that influence the ability to design bus network for serving the greatest portion of the population, networks developed to these principles can be overly circuitous, as planners attempt to maximise coverage at the expense of directness. This has been demonstrated in the recent service changes (January 2011) with routes 451 and 452 where the previous route was divided into two and the directness of the service was replaced by two circuitous services.

Standards can be in the form of hours of operation, days of operation, frequency, vehicle quality etc. Distance to a bus service can be refined to incorporate a tiered approach, i.e. to a primary (direct) or neighbourhood/local style service. Direct services may be those that operate on a full time basis (early morning to late evening seven days a week). Local or neighbourhood/local services may only operate during daylight hours (7:00am to 7:00 pm) and may be limited to Monday to Saturday operation. At those times when only the primary corridors are operating, i.e. when passenger demand is the lowest, the distance required for passengers to walk to a service may be 800 m to 1000 m.

A layered or hierarchical service structure allows bus services levels to be developed incrementally. Those routes that combine the highest number of boardings with the broadest geographical spread may be the first to be upgraded to a higher quality service.

The proximity of households to high frequency services may also exceed the recommended walking catchment, as in a high frequency corridor there is typically a service trade off against intensive service coverage. Railway services, for example, extend their designated catchments areas by trading off increased walking distances against consistently reliable travel times and complete priority.

A layered or hierarchical network structure will support the numerous roles of the passenger transport systems within the region, each level performing a specific role within the overall network. Typical layers and the principles behind them are shown in Table 9.1.

Table 9.1 Layered/Hierarchical passenger transport network

Service Hierarchy	Primary Role	Predominant trip type service	Characteristics
Mass Transit/Go Zone	Direct connections between major centres and major employment areas	Regional District	High Frequency High Speed Direct Distinctive
Link Service	Linking residential areas, centres, employment areas, Mass Transit/Go Zones (including the Gawler Train Line and Adelaide O-Bahn)	Regional Cross Suburban District Local	Moderate Frequency High Speed Direct

Service Hierarchy	Primary Role	Predominant trip type service	Characteristics
Local Service	Ensuring universal accessibility to passenger transport	District Local Regional	Low Frequency or demand responsive Local access

There is typically a function overlap between the different tiers within the network. For example:

- Go Zone routes may link to Mass Transit Corridors or other Go Zones and thus will serve a secondary role as a link service.
- Link and local routes may operate along a Go Zone corridor.
- A Go Zone corridor may consist of several link or local services coordinated to function as a higher order corridor for a particular section of the route.
- Link services may have higher frequencies and levels of priority in excess of some Go Zone corridors but do not meet the route network principles regarding connecting centres.
- Local services will support local accessibility and could be integrated with the Community Passenger Network or other forms of community transport when serving identified transport disadvantaged groups.

This overlap is illustrated below:

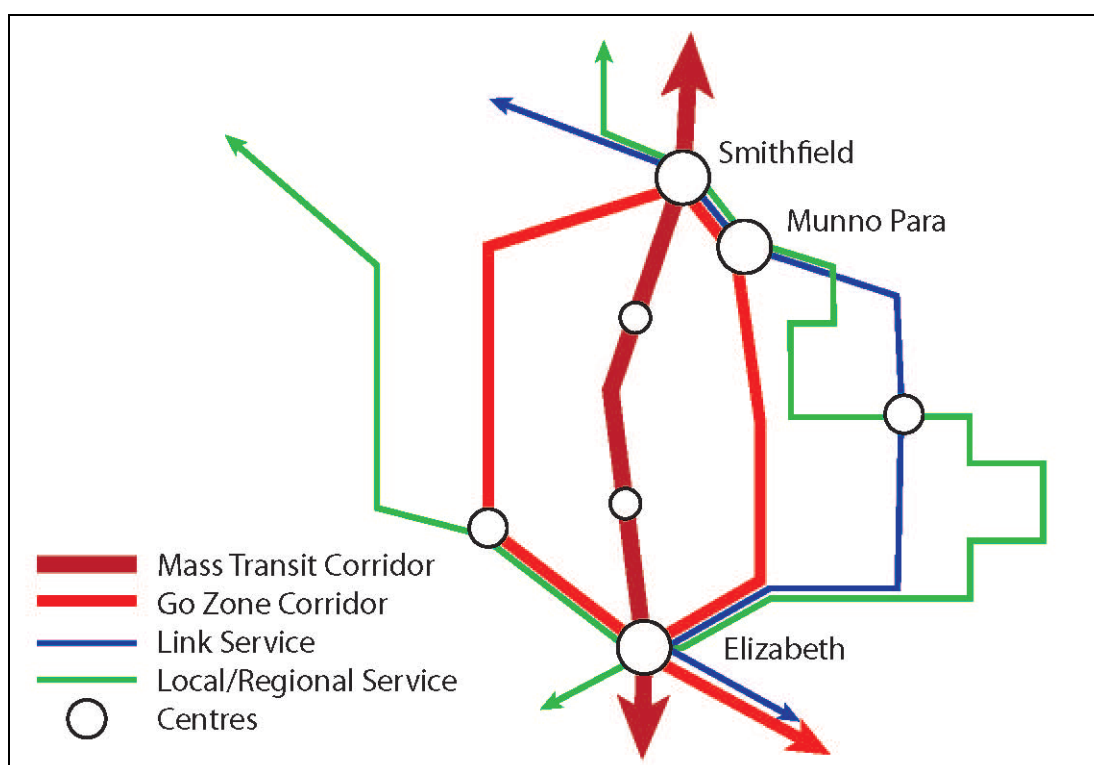


Figure 9.3 Example of overlapping service layers

9.4.1 Higher frequencies

Service frequencies have a significant and direct impact on patronage demand. Increasing the frequency by 100% may typically increase patronage by 40–50%. This is a consequence

of the reduction in waiting times for passenger, and the increased flexibility and convenience. Minimum target frequencies of 15 minutes in the peak periods and 30 minutes in the interpeak are desirable and achievable for all routes within the metropolitan region. However, many routes within the region already operate to these standards. Therefore, a focus or target of increasing frequencies to match those corridors operating within the inner suburban regions should be adopted.

9.4.2 Express and limited stop services

Generally express or limited stop services should be restricted to longer cross regional services. The outer suburban context for many passenger transport services in the City of Playford do not demand or warrant express or limited stop services for internal travel (within the City of Playford area). Express and limited stop services should be constrained to longer distance movements such as cross suburban services (i.e. J1 to Golden Grove and Tea Tree Plaza), Mass Transit Corridors (i.e. the Gawler Train Line) and possibly future regional link services (such as from Buckland Park and Virginia to Elizabeth).

9.4.3 Consistency

Consistency is a key component to the legibility of a passenger transport network. Providing consistent routes for weekday, evening, night and weekend services creates an uncomplicated network and allows passengers to become familiar with the services in the area. Over the past 10 years since the introduction of Adelaide Metro, services have been altered to provide consistent route networks, day and night.

In recent service changes, consistency for departure times has been adopted. Similar travel times for night and weekend services allow for consistent departure times from terminals. Route B10, for example (West Lakes to Magill via City) operates at a Go Zone standard. Departure times from both West Lakes and Magill are consistent for evening and night periods (6:30 pm to last service) seven days a week. E.g. services depart Magill at 7:10 pm every day of the year. This consistency allows passengers to become familiar with their local service and therefore, assists in the reliance on public timetables.

Adopting consistent timetables for weekends and public holidays as well as evening and night time periods, greatly enhances user perceptions and understanding of the passenger transport services provided within a region.

9.5 Service level guidelines

The service level guidelines (Table 9.2) provide a guide to the level and quality of passenger transport services that should desirably be provided on each of the different elements of the network and, subject to funding availability, are intended to ensure that the network provides the attributes listed below. These guidelines have been developed based on the wider suburban characteristics of equivalent passenger transport services.

- Frequent and fast services – services should be frequent during peak and other critical periods, and as fast and direct as possible to provide travel times that are competitive to cars. This can be developed through direct routes and rationalised bus stop locations (recommended minimum distance between stops i.e. 300 m–500 m).
- A high degree of reliability.

- Timely connections between services (for example feeder services with the Gawler Train Line).
- Integrated services – an appropriate mix of directional connections and transfers will provide access to all major destinations including regional centres.
- Adequate service coverage and stop spacing.
- Passenger transport services should be available with a reasonable walking distance, especially in high density residential and employment areas, at trip origins and destinations.
- Convenient – services should be available from early in the morning until late in the evening seven days a week to allow convenient connections to be made between town centres and interchanges. This includes providing connections to the first and last train departures to Adelaide.
- Services should be designed to facilitate transfers between services in a timely and convenient way.

For the purpose of comparing the different layers of the passenger transport provision, Mass Transit Corridors and Go Zones have been separated to differentiate between an on-road high frequency corridor vs. a fixed train, tram, O-Bahn or Bus only roadway.

Table 9.2 Proposed service guidelines

Service Attribute		Mass Transit	Go Zone	Feeder	Local
		Limited stops	All Stops	All Stops	All Stops
Route Spacing (approximate)		2 km	800 m to 1 km	Subject to development patterns and road configurations (minimum recommended 600 m)	
Frequency	Peak	10 mins	15 mins	15 mins	30 mins
	Interpeak	10 mins	15 mins	30 mins	30 mins
	Evening	15 mins	30 mins	30 mins	60 mins
	Night	30 mins	60 mins	60 mins	Depending on demand
	Saturday	15-30 mins	30 mins	30 mins	60 mins
	Sunday	15-30 mins	30 mins	30 mins	60 mins
	After Midnight	30-60 mins			
Service Periods	Monday to Friday	5:00am – 12:30am	5:00am - 12:30am	5:00am – 01:00am	7:00am to 10:00pm (minimum)
	Saturday	6:00am – 12:30am	6:00am – 12:30am	7:00am – 12:30am	Depending on demand
	Sunday	7:00am – 12:30am	7:00am – 12:30am	8:00am – 12:30am	Depending on demand
Connection times		Connections between the Gawler Train Line and any service should be made within 10 minutes of the arrival/departure of the designated connecting service. A minimum connection time of 3 minutes should be adopted to allow for passenger to transfer from one service to another			
Stop Spacing		500 m – 5 km	300 – 500 m	Depending on demand	

Service Attribute	Mass Transit	Go Zone	Feeder	Local
Priority	The entire corridor should have priority measures to ensure high average travel speeds	Targeted priority measures recommended at congestion locations		

Legend

Peak: 7:00 am to 9:00 am and 3:00 pm to 7:00 pm

Interpeak: 9:00 am to 3:00 pm

Evening: 7:00 pm to 10:00 pm

Night: 10:00 pm to last service

After Midnight: 12:00 am to 5:00 am

Go Zone: Current Go Zone requirements are: services operate every 15 minutes between 7:30 am and 6:30 pm Monday to Friday and every 30 minutes until 10:00 pm at night, Saturday, Sunday and Public Holidays.

9.6 Route numbering and differentiation

Route numbering and naming can have an important role in network legibility, and this Network Plan offers the opportunity to match future route descriptions to the service hierarchy and coverage area.

In general, there is a structural hierarchy underpinning the route network, with the route number or differentiation system reflecting this, as an aid to people understanding the services function. For example higher order routes have a range of number which are clearly different to the local routes.

There are already multiple route numbering systems in existence in the Adelaide Metro network. However, there is no one coordinated approach. Generally most routes, including within the northern suburbs, consist of three numbers. Letter suffixes are generally used in addition to the route number to distinguish detours, short workings or stopping patterns. For example route 400A terminates in Salisbury rather than at Elizabeth Station. Route 500 operates as a Transit Link¹⁵, limited stops service pattern between Salisbury and Elizabeth, 224F which indicates that for a portion of the journey the bus operates set down or pick up only, and route 228X which has an express component.

In recent service changes (2005 onwards), letter suffix, cross city/suburban bus routes have been established, this includes route J1 for example. The J1 or “JetBus” operates from Elizabeth to Glenelg via Golden Grove, TTP, the Adelaide O-Bahn, City, Adelaide Airport and Harbour Town. The J1 is one of Adelaide most used and recognised bus routes. Other similar style services have been recently introduced such as M44, G40, H20 and H30 series, and B10.

The southern regions of Adelaide (south of Sturt Road) have a different unique but logical three digit numerical system. Based on the traditional route number system applied generally across the metropolitan region, the outer southern route number systems are based on destinations and corridors. For example, all routes operating in the outer southern region have a 7xx prefix, the second number represents the major destination or anchor point on the route (Local 0, City 2, Marion 3, Noarlunga, 4 and Outer South/Regional services 5) and the last number indicates the corridor in which the service operates on (South Road, 1, States Road 2, Woodcroft 3, Lonsdale, 4 etc.). Therefore from the three digit number a

¹⁵ Transit links are often represented with the letter “T” in front of the route number. Prior to the July 2011 service changes route 500 operated as route T500.

passenger can determine the destination for each bus. Using this principle a passenger in Woodcroft would use route 723 to the City or 733 to Marion.

There are many logical approaches to the numbering and determination of routes within the region. PB recommends that a similar approach to the outer southern regions be applied to the Outer North (with some exceptions). The passenger transport services in the City of Playford already have a reasonably logical numbering system in place. It is recommended that this three digit number system continue in the future. Possible numbering by area includes:

- **400–419:** For services in the Salisbury region
- **420–429:** For services between Elizabeth and Salisbury (west of the Gawler Train Line)
- **430–439:** For services south of Elizabeth (to Salisbury)
- **440–449:** For services between Elizabeth and Smithfield (east of the Gawler Train Line)
- **450–459:** For services between Elizabeth and Smithfield (west of the Gawler Train Line)
- **460–469:** For services focusing on Munno Para Station (east and west of the Gawler Train Line)
- **470–479:** For services to Angle Vale
- **480–489:** For services to Virginia, Buckland Park and Greater Edinburgh Park
- **490–499:** For services to/from the Gawler Region
- **500–505:** For services operating between Elizabeth, Salisbury, Ingle Farm and Paradise Interchange and the Adelaide O-Bahn (with the exception of route J1).

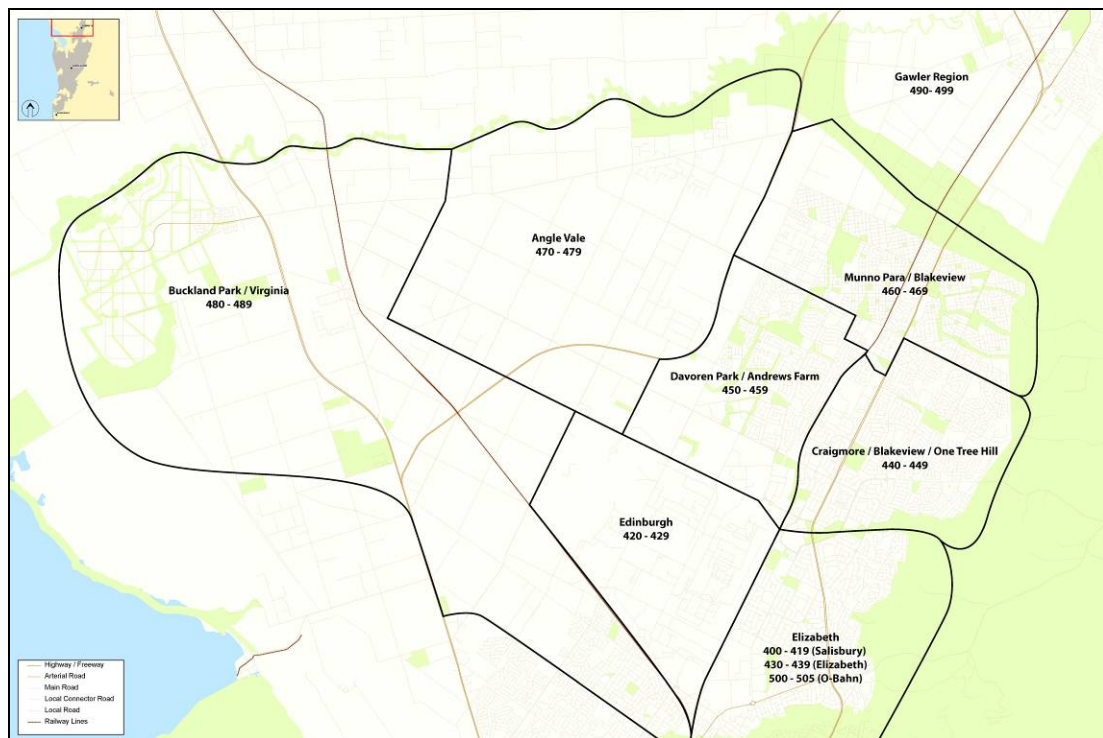


Figure 9.4 Route numbering regions

10. Current network options development

The Strategic Passenger Transport Plan has developed several concepts for potentially improving passenger transport services in the City of Playford. The passenger transport service structure which is currently operating within the region was mainly established prior to 2000. Since the privatisation of bus services and the implementation of the Adelaide Metro public transport services umbrella, services have undergone slight modifications and improvements. Service frequencies have significantly improved over the last 10 years, however, the route structure have not changed (with the exception of the newly developed areas around Andrews Farm and Munno Para West). With changes land use patterns, travel behaviours and expectations alterations to the network structure has the potential to reduce competition between services, maximise resources and meet the demands of the community.

As part of the City of Playford options development, four alternate scenarios for improving the current passenger transport services in the region have been included. Each of the scenarios has been developed based on the principles of providing quality passenger transport services to the region established in the previous chapters.

The four scenarios are based on making improvements to the existing network, and have not included the development of new services. It has been assumed that any new routes or services would follow service planning guidelines established. Therefore, this chapter has focused on improving passenger transport services for the existing northern metropolitan region to raise services to the guideline level.

The existing passenger transport network operating in the City of Playford provides a reasonable level of coverage and frequency of service during weekday day time periods. The route network is relatively well structured and meets many of the key travel patterns within the region. Most services are focused on connecting to the Gawler Train Line and, therefore, are subject to the operating times and frequencies of those services; current services provide good connections between suburbs and centres. Based on the review of passenger transport services in the region and comparing them to other areas within metropolitan Adelaide, major alterations to the route network and structure not likely to be required. However, there are many areas in which the passenger transport services more widely in the region could be improved.

The four scenarios described below have been based on changing some of the principles of service provision for the network such as walking catchment and route network density rather than larger more aggressive route network and infrastructure changes.

10.1 Baseline conditions

Baseline conditions have been established to provide the basis for assessing the differences in cost, vehicles, and route kilometres of each scenario. This information has been gathered from public timetables, patronage data from the PTSD and the estimate of peak vehicle requirements based on an assumed travel speed, distance and number of services (expanded in Appendix G). The table below estimates the baseline conditions.

Table 10.1 Baseline service kilometres

Mode	Service kilometres per annum
Bus network (All bus routes – complete length)	3,196,202 km
Train network (Gawler Train Line)	1,541,913 km

Table 10.2 Peak vehicle requirement

Mode	Estimated peak vehicle requirement
Bus network (maximum) ¹	79 (based on rounding up each route) ⁴
Bus network (minimum) ¹	66 (based on no-rounding)
Train network (consists) ²	13 consists
Train network (carriages) ³	33 (based on an average of 2.5 carriages per consists)

1. Based on bus route length (distance) divided by peak vehicle travel speed of 20.0 km/h (conservative) multiplied by the approximate trips per hour (departing between 6:30 am and 8:30 am)
2. Based on the current Adelaide to Gawler Central timetable
3. Assumed trains consists would either be 2 or 3 carriages
4. All estimated increases in bus fleet requirements have been compared with maximum estimate

Table 10.3 Approximate cost to operate annual services

	Estimated annual operating cost
Current bus network ¹	\$9,255,825
Current train network ²	\$14,952,110
Total	\$24,207,935

1. Based on all bus route complete length (Table 10.1) Current bus network costs have been based on \$3.00 per revenue kilometre for weekdays and \$3.33 for weekend services (estimate based on PTSD input). Weekend rate is based on 51 Saturdays at \$3.00, 52 Sundays at \$3.50 and 11 Public holidays at \$4.00 to average \$3.33.
2. Based on all Gawler Train Line services (Table 10.1) Current train network costs have been based on \$4.00 per weekday day and Saturday day carriage kilometre, \$4.50 per weekday night, Sunday day and Public Holiday day carriage kilometre, \$5.00 per Saturday night carriage kilometre, \$5.50 per Sunday night carriage kilometre and \$6.00 per Public Holiday night carriage kilometre. A carriage multiplier of 2.5 per weekday and 2.0 for all other times has been used to determine costs per revenue kilometre. Night time services are determined as any service departing after 6:00pm.

Table 10.4 Patronage

Route	Patronage (within City of Playford)	
	Monthly	Annual
Bus network	195,187	2,006,745
Train network	79,651	785,860
Total	242,838	2,792,605

The baseline network (currently operating) has been illustrated in Figure 10.1 for comparison with the four alternative improvement options which have been detailed below.

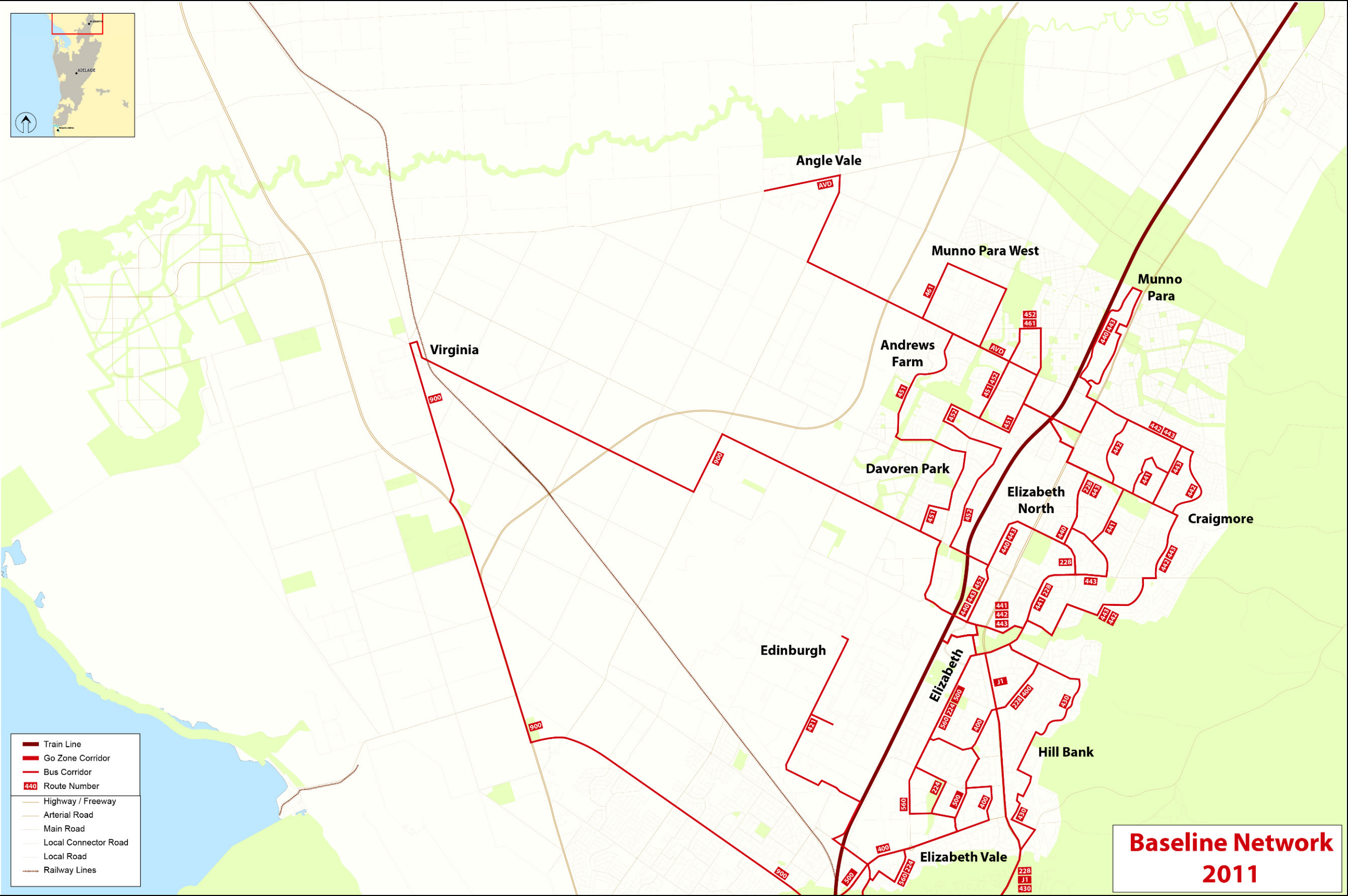


Figure 10.1 2011 – baseline network

10.2 Option 1 – Minimum option

The minimum option seeks to make the minimum number of service improvements to meet the lowest level of service for all routes. This recommended minimum service level is defined as a local service having regard to the preferred service guidelines documented in Table 9.2 (30 minute weekday and 60 minute evening, night and weekend services).

10.2.1 Train services improvements

In 2008 passenger services on the Gawler Line improved with the introduction of Skip Stop services. This provided higher frequencies at major stations such as Elizabeth, Smithfield and Salisbury, enabling improvements to subsequent bus services. Currently services operate approximately every 15 minutes during weekdays, 30 minutes on weekend days and 60 minutes at night. To enable the effective planning of the supporting bus network and the development of Go Zone style services in the region, improvements to the weekend and weeknight frequencies are required. This would involve including an additional 8 weekday services and 10 weekend services to enhance the “High Frequency Stations” to Go Zone frequencies. This would come at only a minor operational cost of 132,846 service km per annum. No additional train consists or carriages would be required to operate these services as all additional trips are conducted during off peak periods.

It has been assumed that train frequencies would be improved to this minimum level before or in coordination with any additional bus service improvements.

Table 10.5 Option 1 – Train service improvements

	Current km	Proposed km	Additional km
Gawler Train Line	1,537,676	1,670,522	132,846

10.2.2 Improvements to bus services

The minimal option looks at ensuring that all routes on the network operate a minimum recommended service standard. All routes operating in the metropolitan region would operate at a local style service frequency. With the exception of routes 421 and 900, all services would operate at a minimum of every 30 minutes on weekdays and on a basic hourly service at night and on weekends. This option would require the implementation of 4 additional peak buses as additional peak hour services would be implemented on routes 430 and 900. All other additional resources would be implemented during the interpeak, night or weekend periods. Details of the proposed minimum changes to the bus network have been detailed in the table below.

With the development of a new road intersection at Ryan Road and Port Wakefield Road, a new route 901 can be created to link the Palms Lifestyle Village with regular public transport services. The new route would also operate via Elizabeth Village providing regular transport access.

Table 10.6 Option 1 – Bus service changes

Route	Description of change	New buses
J1	Additional weeknight and weekend night services would operate to provide a night time service between Tea Tree Plaza and Elizabeth and return	0
224	No Change	0
228	No Change	0
400	No Change	0
430	Upgraded weekday service from hourly to half hourly. New weekend night and Sunday/Public Holiday services	2
440	Upgraded night services to replace portions of route 443	0
441	No Change	0
442	Upgraded night services to replace portions of route 443	0
443	Route replaced with upgraded night services on route 440 and 442	0
451	No Change	0
452	No Change	0
461	Upgraded weekday services to 30 minutes and new weekend services	0
500	No Change	0
560	Upgraded weekend services to meet the minimum standard	0
900	No Change	0
901	New route operating as per existing route 900 with a detour to the Palms Lifestyle Village and Elizabeth Village. The service adds new reverse direction services in the AM and PM peak periods to allow access to Elizabeth. Four new interpeak services would be offered to provide a basic 2 hour link between Virginia, Elizabeth and Salisbury	2
Total		4

Highlighted rows indicate new or altered services when compared to the baseline conditions.

Table 10.7 Option 1 – Bus service improvements costs

Route	Change	Current km	Proposed km	Additional km
J1 ¹	Upgraded frequency	340,791	390,832	50,041
224 ²	No Change	192,432	192,432	0
228	No Change	764,268	764,268	0
400 ²	No Change	214,344	214,344	0
421	No Change	6,381	6,381	0
430	Upgraded frequency	124,176	254,808	130,632
440	Upgraded frequency	221,460	242,517	21,058
441	No Change	189,822	189,822	0
442	Upgraded frequency	219,824	241,567	21,742
443	Deleted/replaced	22,239	0	-22,239
451	No Change	300,906	300,906	0
452	No Change	259,879	259,879	0
461	Upgraded frequency	60,765	131,977	71,213

Route	Change	Current km	Proposed km	Additional km
500 ²	No Change	118,748	118,748	0
560 ²	Upgraded frequency	144,236	144,236	15,722
900	No Change	30,722	30,722	0
901	New service (3 return services)	0	51,138	51,138
Total		3,196,202	3,535,508	339,306

Highlighted rows indicate new or altered services when compared to the baseline conditions

1. km are represented between Elizabeth and Tea Tree Plaza Only
2. km are represented between Elizabeth and Salisbury Only.

The benefits of Option 1 are described in Table 10.8 below. However, since these improvements are reliant on the existing bus network route structure, the following issues within the current network have not been addressed:

- connection issues that currently exist between Elizabeth and DSTO/Edinburgh RAAF;
- base and Hillbank and Lyell McEwin Hospital;
- the issue of directness of routes;
- duplication (overlap) between train and bus services; and
- link between the City of Playford and City of Port Adelaide Enfield (outside of project boundaries).

In addition to these issues, no significant improvements to the frequency of passenger transport services in the region would be created. No Go Zones would be established in the region; services would continue to compete against train services to and from Adelaide and services would continue to be uncoordinated with regard to route structure and integrating services. This would therefore not resolve the current inefficiencies within the network.

Table 10.8 Option 1 – Performance

Frequency	<ul style="list-style-type: none"> ■ Upgrade all service to meet a basic 30 minute frequency during weekdays and hourly at night and on weekends including for train services.
Reliability	<ul style="list-style-type: none"> ■ No changes to existing services
Speed	<ul style="list-style-type: none"> ■ No changes to existing services
Integration	<ul style="list-style-type: none"> ■ Services would continue to be integrated as present with train services
Connectivity	<ul style="list-style-type: none"> ■ A new connection between Virginia and Elizabeth would be possible during peak and interpeak periods
Consistency	<ul style="list-style-type: none"> ■ Operating hours are consistent across the different services ■ Routes do not deviate during different time periods ■ Service intervals remain consistent for most time periods (where possible) ■ Consistent night and weekend timetables (where possible)
Legibility	<ul style="list-style-type: none"> ■ Routes remain similar to currently configured
Accessibility	<ul style="list-style-type: none"> ■ Same geographical coverage as existing (with the exception of new services to newly developed areas) ■ New service to the Palms Lifestyle Village and Elizabeth Village

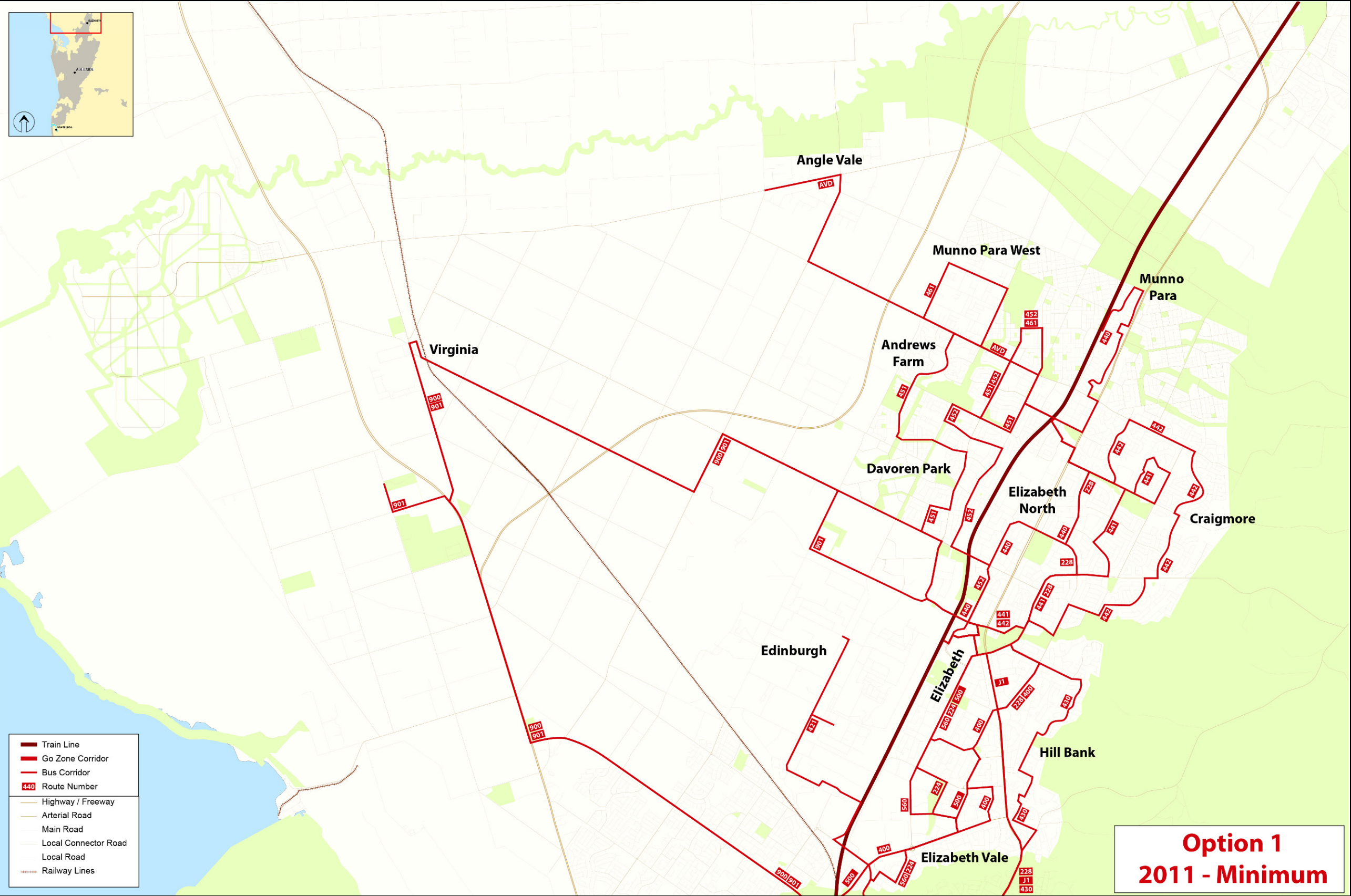


Figure 10.2 Option 1 – 2011 minimum option

10.3 Option 2 – existing network upgrade

Option 2 comprises a set of service improvements to the existing public transport network. This option creates new Go Zones and makes service improvements to existing routes.

10.3.1 Train service improvements

In order to improve the bus network, the train network would require additional services to ensure all new bus services and frequency improvements are connected to the train services. Therefore, Option 2 adopts the same service improvements for the train network as Option 1 (improved night and weekend night services).

Table 10.9 Option 2 – Train service improvements

	Current km	Proposed km	Additional km
Gawler Train Line	1,537,676	1,670,522	132,846

10.3.2 Bus service improvements

Option 2 does not propose any changes to the geographical coverage of the existing bus network. It has used the existing service structure as the base layer and has applied service improvements to this structure to gain improved service frequencies.

As part of the Option 2 package, several bus services would need to be upgraded to match the Go Zone standard as applied to inner metropolitan bus corridors. This standard of service has been provided on the two corridors between Elizabeth, Lyell McEwin Hospital and Salisbury (route 224 and 400), the corridor between Elizabeth, Elizabeth North and Smithfield (route 440) and the corridor between Elizabeth, Andrews Farm and Smithfield (route 451). Several other service improvements have been incorporated including, removal of the night only loop service (route 443), increases to service frequencies in the Hillbank region, increases to services to Munno Para West and new links between Virginia, Elizabeth and Salisbury.

As per Option 1, a new route to The Palms Lifestyle Village and Elizabeth Village would be implemented using the new road intersection at Ryan Road and Port Wakefield Road. This link, as in Option 1, enables regular passenger transport access to these two previously unserved locations.

The improvements to the bus network as part of Option 2 are documented below.

Table 10.10 Option 2 – Bus service changes

Route	Description of change	New buses
J1	No Change	0
224	Increase service levels to provide Go Zone frequency along the length of the corridor between Elizabeth, Lyell McEwin Hospital and Salisbury Interchange	2
228	No Change	0
400	Increase services to Go Zone standard on the portion between Elizabeth, Lyell McEwin Hospital and Salisbury Interchange	2

Route	Description of change	New buses
421	No Change	0
430	Double weekday frequencies on the route to operate every 30 minutes rather than 60 minutes. An introduction of Sunday and public holiday day time services	2
440	Double service levels in peak; interpeak, night and weekend to provide a Go Zone standard service between Elizabeth and Smithfield Interchanges. Services north of Smithfield to Munno Para would operate as a regular bus service.	1
441	Increase night services to replace the current 443 loop service. Add two additional week night services to meet late night trains services from Adelaide. Add 6 additional weekend night services	0
442	Increase night services to replace the current 443 loop service. Add two additional week night services to meet late night trains services from Adelaide. Add 6 additional weekend night services	0
443	Route replaced by increased frequencies on route 440, 441 and 442	0
451	Increase services to Go Zone standard along complete route length between Elizabeth, Andrews Farm and Smithfield	0
452	No Change	0
461	Increase weekday interpeak and evening services to provide a 30 minute service throughout the day, add hourly weekend and night services	0
500	No Change	0
560	No Change	0
900	No change	0
901	New route operating as per existing route 900 with a detour to the Palms Lifestyle Village. The service adds new reverse direction services in the AM and PM peak periods to allow access to Elizabeth. Four new interpeak services would be offered to provide a basic 2 hour link between Virginia, Elizabeth and Salisbury	2
Total		9

Highlighted rows indicate new or altered services when compared to the baseline conditions

Table 10.11 Option 2 – Bus service improvements costs

Route	Change	Current km	Proposed km	Additional km
J1 ¹	No Change	340,791	340,791	0
224 ²	Go Zone	192,432	367,864	175,432
228	No Change	764,268	764,268	0
400 ²	Go Zone	214,344	433,612	219,268
421	New route and services	6,381	66,003	59,622
430	Weekday & weekend increases	124,176	254,808	130,632
440	Go Zone	221,460	319,360	97,901
441	Night Increases	189,822	223,509	33,687
442	Night Increases	219,824	260,109	40,284
443	Deleted/replaced	22,239	0	-22,239
451	Go Zone	300,906	557,040	256,134
452	No Change	259,879	259,879	0

Route	Change	Current km	Proposed km	Additional km
461	Weekday, Nights & Weekends	60,765	131,191	71,213
500 ²	No Change	118,748	118,748	0
560 ²	No Change	128,514	128,514	0
900	No Change	30,722	30,722	0
901	New route (5 return services)	0	146,674	146,674
Total		3,196,202	4,403,880	1,207,677

Highlighted rows indicate new or altered services when compared to the baseline conditions

1. km are represented between Elizabeth and Tea Tree Plaza Only

2. km are represented between Elizabeth and Salisbury Only

Like Option 1, this option does not address some of the issues identified within the current network. These include:

- connection issues that currently exist between Elizabeth and DSTO/Edinburgh RAAF base and Hillbank and Lyell McEwin Hospital;
- the issue of directness of routes;
- duplication between train and bus services; and
- link between the City of Playford and City of Port Adelaide Enfield (outside of project boundaries)

The greatest benefit between Option 1 and 2, which are based on the existing network, is the development of four Go Zones with the region. However, like Option 1, with no changes to the existing route network, there are several inefficiencies in the Option 2 network. In particular the corridors between Elizabeth, Lyell McEwin Hospital and Salisbury where several routes and services would be duplicated (224 and 560 and 400 and 500) as well as the provision of services in the Deveron Park region with route 452 and 451 having a corridor separation of 300 m.

Overall, this option would improve services levels and provide the perception that significant improvements were being made to the passenger transport network in the City of Playford. The benefits of Option 2 service improvements are summarised in Table 10.12.

Table 10.12 Option 2 – Performance

Frequency	■ Improvements to basic service frequencies compared with existing network
Reliability	■ Improved and consistent travel times
Speed	■ Bus stop rationalisation
Integration	<ul style="list-style-type: none"> ■ Services are coordinated at key interchanges ■ Integration with major activity centres, employment regions and other destinations
Connectivity	<ul style="list-style-type: none"> ■ Access to employment, retail, commercial and leisure destinations ■ New connections and links not provided in the existing network
Consistency	<ul style="list-style-type: none"> ■ Operating hours are consistent across the different services ■ Routes do not deviate during different time periods ■ Service intervals remain consistent for most time periods (where possible) ■ Consistent night and weekend timetables (where possible)

Frequency	<ul style="list-style-type: none"> Improvements to basic service frequencies compared with existing network
Legibility	<ul style="list-style-type: none"> Routes remain similar to currently operating
Accessibility	<ul style="list-style-type: none"> Same geographical coverage as existing (with the exception of new services to newly developed areas) New service to the Palms Lifestyle Village and Elizabeth Village

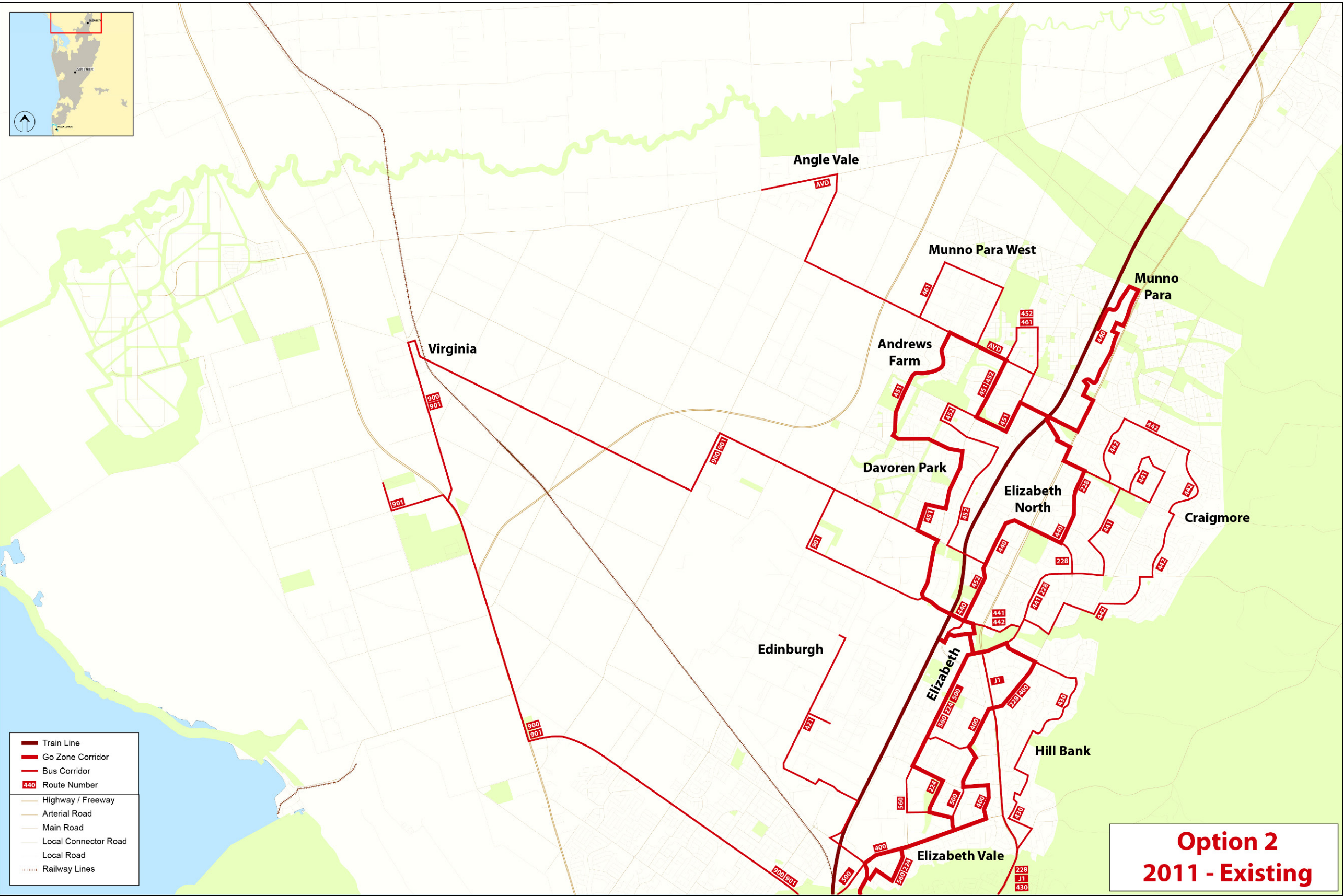


Figure 10.3 Option 2 – 2011 upgraded existing network

10.4 Option 3 – new network

Option 3 examines the possibility of amalgamating services and coordinating routes and corridors to improve service frequency and access. This options looks at reducing competition between routes and maximising existing and future passenger transport resources.

10.4.1 Train service improvements

As in Option 1, in order to make improvements to the bus network, slight improvements would be required for the train services. Option 1, 2 and 3 have the same level of minimum rail service level improvements. These are required in order to improve services to corresponding bus services and establish Go Zone bus routes.

Table 10.13 Option 3 – Train service improvements

	Current km	Proposed km	Additional km
Gawler Train Line	1,537,676	1,670,522	132,846

10.4.2 Bus service improvements

Option 3 explores the possibility of increasing some of the walking distances to bus services. Unlike in the existing baseline network, and for Options 1 and 2, Option 3 examines the possibility of increasing the walking distance to a bus service beyond the current maximum distance prescribed in the PTSD Service Planning Guidelines (developed in 2000). This option recommends that the maximum distance to a passenger transport corridor is increased from 500 m direct distance to 600 m direct distance. This would enable several improvements to the network including:

- Improvements to the directness of services by not providing convoluted routes to meet the 500 m maximum walking distance target.
- Reduction in travel times by concentrating services on main arterial roads rather than local streets. This also influences the number of buses required to operate peak services with possible savings being able to be reinvested into the network. The removal of bus services from local streets can also lead to reductions in road maintenance costs, operating costs and greenhouse gas emissions.
- Amalgamation of routes/corridors to improve service frequencies with minimal additional service kilometres.

Option 3 proposes to change the structure of the route network. Although the basic coverage and roads currently used by passenger transport services would not change, these changes and improvements deliver a more efficient network.

As part of the Option 3 package, several bus services would be upgraded to achieve the Go Zone standard. This standard of service is proposed on the two corridors between Elizabeth, Lyell McEwin Hospital and Salisbury (new routes 400 and 500), the corridor between Elizabeth, Elizabeth North and Smithfield (route 440), the corridor between Elizabeth, and Davoren Park (new routes 450 and 453) and the corridor linking Elizabeth, Craigmore, Blakeview and Smithfield (new route 448). Like the previous options, several other service

improvements have also been incorporated into this option including, the removal of the night only loop service (route 443), increases to service frequencies in the Hillbank region through the introduction of new route 431 linking Hillbank with Lyell McEwin Hospital and Elizabeth South, increases to services to Munno Para West and new links between Virginia, Elizabeth and Salisbury.

As per Option 1, a new route to The Palms Lifestyle Village and Elizabeth Village would be implemented using the new road intersection at Ryan Road and Port Wakefield Road. This link, as in Option 1, enables regular passenger transport access to these two previously unserved locations.

In addition to the development of the new route network, this option also examines making changes to the route numbering system. Based on the recommendations outlined in Section 9.6 of this report, Option 3 explores the possibility of renumbering routes to the different geographical regions within the City of Playford. Making changes to the route network in the short term can assist in the development of new routes and their route numbers for future developments.

The improvements to the bus network as part of Option 3 are summarised below

Table 10.14 Option 3 – Bus service changes

Route	Description of change	New buses
J1	Change J1 to operate all stops between Elizabeth and The Grove Way. This would allow coordination with new route 227 which would operate along Main North Road. Route J1 and 227 would provide Go Zone standard services to all stops between Elizabeth and The Grove Way.	0
224	Replaced: Route 224 would no longer operate along the portion of route between Elizabeth and Salisbury. Services would be replaced by new routes 500 and 400. Please refer to these services for further information	-7
228	Replaced: Route 228 currently competes directly with the Gawler Train Line along Main North Road as well as rail feeder services along Hamblynn Road to Smithfield. Therefore to reduce competition between different modes of transport and services, route 228 would be altered to operate between Elizabeth and the City only as route 227.	-12
227	New Route 227 would operate between Elizabeth and the Adelaide CBD along Main North Road. The service would operate at the same frequency as the present 228 service between Adelaide and Elizabeth East. The new route would not compromise other Go Zones on Main North Road. New route 227 would be coordinated with route J1 to provide a Go Zone standard between Elizabeth Station and The Golden Way in Salisbury Heights.	9
400	New route 400 would operate between Elizabeth, Lyell McEwin Hospital and Salisbury. Selected services would continue to Salisbury North (outside the study area). The new route replaces portions of route 400, 500 and 224. From Elizabeth Station via the current route to Haydown Road then continue to Lyell McEwin Hospital via route 500, then via route 224 from Lyell McEwin Hospital to Salisbury Station. The portion of route along Guerin Road would be replaced with new route 431. Passengers have alternative Go Zone stops on Haydown Road (470 m distance) or Main North Road (335 m). Services would operate at Go Zone standards. Due to the amalgamation of routes and services, frequencies during peak periods could be increased to 7/8 minutes.	6

Route	Description of change	New buses
421	Extend route 421 from the Edinburgh RAAF Base and DSTO to Elizabeth. Additional services would be implemented to provide additional weekday peak hour services. 5 am and 5 pm services in each direction per weekday would provide adequate connection between Elizabeth and Salisbury Interchanges.	1
430	Increased frequencies between Elizabeth and Hillbank. Route 430 coordinated with new route 431	2
431	New route 431 would operate between Elizabeth and Hillbank via route 430, then continue across Main North Road, Guerin Road, and John Rice Avenue to Lyell McEwin Hospital then via the current route 224 to Blake Road then continue to the terminus at Elizabeth South Station. Services would provide a limited frequency along the corridor; however, services between Elizabeth and Hillbank would be coordinated to improve weekday, weekend and night services along the corridor.	2
440	Increased frequencies between Elizabeth and Smithfield Interchange. Route 440 and 440A would provide a Go Zone level service between the two interchanges. North of Smithfield route 440 would provide a standard feeder type service. Increased night and weekend frequencies would replace the current Route 443.	1
441	Replaced: Route 441 would be replaced by a combination of route 445 and 448	-4
442	Replaced: Route 442 would be replaced by a combination of route 445 and 448	-4
443	Replaced: Route 443 would be replaced by an improved route 440 and new routes 445 and 448.	0
445	New route 445 replaces portions of route 441, 442 and 443. From Elizabeth Station the route would operate via Elizabeth Shopping Centre and Civic Centre, Kinkaid Road, Midway Road then via the current route 442 to Craigmores Shopping Centre, Yorktown Road, Campbell Road, Hanson Road, and Uley Road to Main North Road then continue to Smithfield Interchange. Route 445 provides a direct connection between Craigmores and Smithfield. Services would operate as a feeder style service.	6
448	New route 448 replaces portions of route 441, 442 and 443. From Elizabeth Station the route would operate via Elizabeth Shopping Centre and Civic Centre, Yorktown Road to Craigmores Shopping Centre then via current route 442 to Smithfield Interchange. Route 448 would provide faster and more direct services between Craigmores and Elizabeth via the direct path on Yorktown Road. Route 448 would operate as a Go Zone for the entire length of route.	6
451	Replaced: Route 451 would be replaced with new route 453	-6
452	Replaced: Route 452 would be replaced with new route 450	-5
450	New route 450 replaces portions of 451 and 452. The new route operates from Elizabeth Interchange via Elizabeth Shopping Centre, Winterslow Road, Peachy Road, Edgecombe Road, Stebonheath Road, Davoren Road, Coventry Road then the Munno Para Shopping Centre. The new route provides a more direct link between Davoren Park and Elizabeth, Smithfield and Munno Para Shopping Centre. Services are coordinated with route 453.	3
453	New route 453 replaces portions of route 451 and 452. The new route operates from Elizabeth to Edgecombe Road via route 450 then continues via current route 451 to Curtis Road, then via Peachy Road, Crittenden Road, Anderson Walk to Smithfield Interchange and Munno Para Shopping Centre. Route 450 provides more direct services between Andrews Farm and Elizabeth, Smithfield and Munno Para Shopping Centre. Services are coordinated with route 450 to provide Go Zone standards between Elizabeth and Edgecombe Road.	5

Route	Description of change	New buses
461	Increased frequencies between Munno Para West and Smithfield Interchange.	0
480	Renumbered route 900	2
481	New route operating as per existing route 900 with a detour to the Palms Lifestyle Village. The service adds new reverse direction services in the AM and PM peak periods to allow access to Elizabeth. Four new interpeak services would be offered to provide a basic 2 hour link between Virginia, Elizabeth and Salisbury	2
500	Replaced with new route 500 operating between Elizabeth and Salisbury. Route 500 provides an all stops service along the new route. Route 500 travels via the current route 560 to Lyell McEwin Hospital and then via the current route 500 to Salisbury Interchange. The new route provides a direct link between Elizabeth and Lyell McEwin Hospital and then direct to Salisbury Interchange.	2
560	Deleted: This service would be amalgamated with route 224 and 500 to allow for increased services on these routes. See route 500 for further information.	-3
900	No Change	-2
Total		5

Highlighted rows indicate new or altered services when compared to the baseline conditions

Table 10.15 Option 3 – Bus service improvements costs

Route	Change	Current km	Proposed km	Additional km
J1 ¹	No Change	340,791	340,791	0
224 ²	Replaced with 400/500	192,432	0	-192,432
227	New Route	0	627,021	627,021
228	Replaced with 228/445/448	764,268	0	-764,268
400 ²	Go Zone	214,344	398,116	183,772
430	Increased services	124,176	245,292	121,115
431	New service	0		
440	Go Zone	221,460	496,133	274,673
441	Replaced with 445/448	189,822	0	-189,822
442	Replaced with 445/448	219,824	0	-219,824
443	Replaced with 445/448	22,239	0	-22,239
445	New Route	0	204,898	204,898
448	New Route	0	502,587	502,587
451	Replaced with 450	300,906	0	-300,906
452	Replaced with 453	259,879	0	-259,879
450	New Route	0	219,437	219,437
453	New Route	0	289,532	289,532
461	Replaced with 460	60,765	144,269	83,504
480	Renumbered route 900	0	30,722	30,722
481	New route (5 return services)	0	85,230	85,230
500 ²	Replaced with new 500	118,748	0	-118,748

Route	Change	Current km	Proposed km	Additional km
500	New Route	0	334,143	334,143
560 ²	Replaced with 400/500	128,514	0	-128,514
900	Renumbered to 480	30,722	0	-30,722
Total		3,196,202	3,869,923	673,721

Highlighted rows indicate new or altered services when compared to the baseline conditions

1. km are represented between Elizabeth and Tea Tree Plaza Only

2. km are represented between Elizabeth and Salisbury Only

Option 3 proposes significant changes and improvements to the network. The proposed network improvements address some of the identified issues with the current network. The issues not addressed with this proposal are:

- the link between the City of Playford and City of Port Adelaide Enfield however; this is a result of the proposed link being outside of project boundaries
- passengers in the Angle Vale region would also still require two ticket types to access selected areas within the City of Playford
- residents in One Tree Hill would not have a regular MetroTicket service.

Option 3 maximises the existing resources within the current network by amalgamating routes and services to improve service frequencies. As part of Option 3, six new Go Zones would be established within the City of Playford. This has been achieved by altering the Main North Road city bound service (228) to commence from Elizabeth rather than Smithfield. This reduces direct competition with the Gawler Train Line while still enabling access to Smithfield (via other scheduled services) and Main North Road via a transfer at Elizabeth Station. This alteration to this route creates a consistent corridor between Elizabeth and The Golden Way/Main North Road intersection, thereby allowing the coordination with route J1 to provide a Go Zone standard service. This can be achieving using no additional resources; however, route J1 would require changes to its stopping pattern along the corridor. The savings made from the reduction in service kilometres between Smithfield and Elizabeth would be re-invested into other services to improve frequencies.

The proposed Go Zones on routes 400 and 500 would be achieved by amalgamating resources from the current routes 224, 400, 500 and 560. Minimal additional resources would be required to provide the two new Go Zones while legibility and directness of the routes in the area would be improved.

The proposed new Go Zone in the Davoren Park region would be created by combining current routes 451 and 452. Although, slight increases to the walking distance to a bus service in the area would occur, the combined corridor would improve overall frequencies along the corridor while enabling other improvements in the region through the re-allocation of resources. The changes to these routes would also provide more direct services between Davoren Park and Andrews Farm to Elizabeth, Smithfield and Munno Para Shopping Centre.

The savings made from changing route 228, 451 and 452 allow for increased frequencies on other services such as the new Go Zone for route 440 between Elizabeth, Elizabeth North and Smithfield, and new route 448 between Elizabeth, Craigmores, Blakeview and Smithfield.

Changes to services in the Elizabeth Downs, Craigmores and Blakeview region improve directness and travel times to and from Elizabeth and Smithfield interchanges. For residents north of Craigmores Shopping Centre (Craigmores and Blakeview), the new services could potentially reduce travel times to Elizabeth or Elizabeth Downs to Smithfield by up to 5

minutes. The alterations would also enable the development of a Go Zone along new route 448 which would provide a high frequency and direct service linking Craigmore Shopping Centre, Elizabeth Park Shopping Centre, Elizabeth Shopping Centre and the Gawler Train Line.

Overall, this option would improve service levels, legibility and accessibility, while maximising the use of available service resources. The benefits of Option 3 service improvements are described in Table 10.16. .

Table 10.16 Option 3 – Performance

Frequency	<ul style="list-style-type: none"> ▪ Improved consistency for service frequencies ▪ New Go Zones: <ul style="list-style-type: none"> › Route J1/227 – Main North Road › Route 400 – Elizabeth East/Elizabeth Vale › Route 440 – Elizabeth North/Elizabeth Downs › Route 448 – Craigmore/Blakeview › Route 450/453 – Davoren Park › Route 500 – Elizabeth South/Philip Highway
Reliability	<ul style="list-style-type: none"> ▪ Improved and consistent travel times
Speed	<ul style="list-style-type: none"> ▪ Bus stop rationalisation ▪ New faster connections/routes linking suburbs to the Gawler Train Line and major activity centres ▪ More direct services <ul style="list-style-type: none"> › Andrews Farm to Smithfield and Elizabeth › Davoren Park to Smithfield and Elizabeth › Elizabeth to Lyell McEwin Hospital › Craigmore to Elizabeth and Smithfield
Integration	<ul style="list-style-type: none"> ▪ Services are coordinated at key interchanges ▪ Integration with major activity centres, employment regions and other destinations ▪ Higher frequencies equates to improved connectivity between services at major interchanges ▪ Reduced competition between competing radial services (Gawler Train Line and Main North Road services)
Connectivity	<ul style="list-style-type: none"> ▪ Access to employment, retail, commercial and leisure destinations ▪ New connections and links not provided in the existing network <ul style="list-style-type: none"> › Hillbank to Lyell McEwin Hospital and Elizabeth South › Edinburgh to Elizabeth › Virginia to Elizabeth
Consistency	<ul style="list-style-type: none"> ▪ Operating hours are consistent across the different services ▪ Routes do not deviate during different time periods ▪ Service intervals remain consistent for most time periods (where possible) ▪ Consistent night and weekend timetables (where possible)

Legibility	<ul style="list-style-type: none"> ▪ Routes are direct and in most instances are the shortest route ▪ Route network is similar but simpler and easier to comprehend ▪ Improved timetables and route information
Accessibility	<ul style="list-style-type: none"> ▪ Same geographical coverage as existing (with the exception of new services to newly developed areas) ▪ Some walking distances may increase, however, more residents will be within a short distance from a higher frequency services (Go Zones) ▪ New service to the Palms Lifestyle Village and Elizabeth Village
Reductions and removals	<ul style="list-style-type: none"> ▪ Bus stops would be rationalised to a minimum distance of 300 m to 500 m where possible ▪ Some bus stops and bus utilised roads would be remove to improve directness ▪ Direct link removed from Main North Road and Elizabeth North/Elizabeth East (Connection required at Elizabeth Station) to reduce competition between CBD radial services and the Gawler Train Line. ▪ Link between Elizabeth North and Elizabeth Park replaced with upgraded frequencies to Elizabeth and Smithfield interchanges



10.5 Option 4 – Go Zone network

The fourth option envisages rationalising the current network and increasing all service frequencies to Go Zone standard with the exception of route 421 and 900 (employment and regional services). The purpose of this option is to determine the cost of operating the majority of services at Go Zone standard, including upgrading train frequencies. It thus represents the highest level of service improvement with respect to the defined service standards as most services would operate at a 15 minute interval or less. However, this option also comes at the highest operational and capital cost. This option has been developed to demonstrate the significant cost of operating the network at a Go Zone standard. This option is unlikely to be implemented in the short term as the significant cost of implementing services at these levels is unrealistic.

All services would operate on the same route network as established in Option 3 (rationalised routes). Only route 453 would be altered to enable two Go Zones to operate in the Davoren Park/Andrews Farm regions.

10.5.1 Train service improvements

As part of the fourth network option, a maximum service level or aspirational service frequency has been established for the Gawler Train Line. In this scenario, all stations along the Gawler Train Line would receive better than Go Zone standard. Services would operate at a minimum frequency of 15 minutes or less from first service to last service every day of the week for all stations. Major stations with bus interchanges, such as Smithfield, Elizabeth and Salisbury (and in future scenarios, Munno Para), would have a 7-8 minute frequency on weekdays. However, providing this level of service has a significant operational cost. With the majority of these additional services being provided outside of the peak periods; a slight increase in the number of train cars would be required. It is estimated that 15 consists would be required for this level of service, however train lengths may need to be larger, and therefore the total number of cars required may be higher.

Table 10.17 Option 4 – Train service improvements

	Current km	Proposed km	Additional km
Gawler Train Line	1,537,676	3,300,277	1,762,601

Note: km referred to in this table are service or consist km, not car km.

10.5.2 Bus service improvements

Option 4 utilises the rationalised network developed in Option 3. However, this option examines converting a majority of the routes in Option 3 to Go Zone standard. With only slight changes to the proposed route network, this scenario provides a very high standard of passenger transport service in the region. However, as a consequence of this network, some inefficiency with regard to duplicated services may arise. This option has been developed to estimate the total cost and resources required to operate the network at Go Zone standard.

Table 10.18 Option 4 – Bus service changes

Route	Description of change	New buses
J1	Same as Option 3 but Go Zone service levels	3
224	Replaced	-7
227	Same as Option 3 but Go Zone service levels	12
228	Replaced	-12
400	Same as Option 3	2
421	Same as Option 3 but increased services	1
430	Same as Option 3 (coordinated with route 431 to create Go Zone)	0
431	Same as Option 3 (coordinated with route 430 to create Go Zone)	2
440	Same as Option 3 but Go Zone service levels	1
441	Replaced	-4
442	Replaced	-4
443	Replaced	0
445	Same as Option 3 but Go Zone service levels	6
448	Same as Option 3 but Go Zone service levels	6
450	Same as Option 3 but Go Zone service levels	4
454	New route 454 replaces portions of route 451 and 452. The new route operates from Elizabeth via Winterslow Road, Bellchambers Road, and Stebonheath Road to Edgecombe Road then via the current route 451 to Curtis Road then, Peachy Road, Crittenden Road, Anderson Walk to Smithfield Interchange and Munno Para Shopping Centre. Route 454 provides more direct services between Andrews Farm and Elizabeth, Smithfield and Munno Para Shopping Centre.	6
461	Same as Option 3 but Go Zone service levels	1
480	Same as Option 3	2
481	Same as Option 3	4
500	Same as Option 3 but Go Zone service levels	2
560	Replaced	-3
900	Renumbered to 480	-2
Total		22

Highlighted rows indicate new or altered services when compared to the baseline conditions.

Table 10.19 Option 4 – Bus service improvements costs

Route	Change	Current km	Proposed km	Additional km
J1 ¹	Go Zone	340,791	722,418	
224 ²	Replaced with 400/500	192,432	0	-192,432
227	New Route (Go Zone)	0	1,101,980	1,101,980
228	Replaced with 228/445/448	764,268	0	-764,268
400 ²	Go Zone	214,344	398,116	183,772
430	Increased services	124,176	0	-124,176
431	New service (Go Zone with 430)	0	478,202	478,202

Route	Change	Current km	Proposed km	Additional km
440	Go Zone	221,460	496,133	274,673
441	Replaced with 445/448	189,822	0	-189,822
442	Replaced with 445/448	219,824	0	-219,824
443	Replaced with 445/448	22,239	0	-22,239
445	New Route (Go Zone)	0	411,427	411,427
448	New Route (Go Zone)	0	502,587	502,587
451	Replaced with 450	300,906	0	-300,906
452	Replaced with 454	259,879	0	-259,879
450	New Route (Go Zone)	0	369,478	369,478
454	New Route (Go Zone)	0	508,234	508,234
461	Replaced with 460	60,765	279,528	218,764
480	Renumbered route 900		30,722	30,722
481	New route (14 return services)	0	362,514	362,514
500 ²	Replaced with 500	118,748	0	-118,748
500	New Route (Go Zone)	0	334,143	334,143
560 ²	Replaced with 400/500	128,514	0	-128,514
900	Renumbered to 480	30,722	0	-30,722
Total		3,196,202	6,248,674	3,052,472

Highlighted rows indicate new or altered services when compared to the baseline conditions

1. km are represented between Elizabeth and Tea Tree Plaza Only
2. km are represented between Elizabeth and Salisbury Only

Option 4 proposes developing a high density network of Go Zone services. This option builds upon the network proposed in Option 3. Option 4 takes the advantages of Option 3's improved network and applies higher levels of service. This creates a passenger transport network that provides high quality, Go Zone quality passenger transport services to the majority of residents within the metropolitan suburbs of the City of Playford. Most residents would be within a 600 m catchment of a 15 minute Go Zone service.

The benefits Option 4 service improvements have been described in Table 10.16.

Table 10.20 Option 4 – Performance

Frequency	<ul style="list-style-type: none"> ▪ Improved consistency for service frequencies across all services ▪ New Go Zones: All routes excluding: <ul style="list-style-type: none"> ▸ 421 – Salisbury – Edinburgh – Elizabeth ▸ 480/481 – Salisbury – Virginia – Elizabeth
Reliability	<ul style="list-style-type: none"> ▪ Improved and consistent travel times
Speed	<ul style="list-style-type: none"> ▪ Consistent with Option 3
Integration	<ul style="list-style-type: none"> ▪ Improved coordination through reduced transfer times as a result of increased service frequencies ▪ Integration with major activity centres, employment regions and other destinations

Connectivity	<ul style="list-style-type: none"> Consistent with Option 3 Ability to move quickly and conveniently throughout the network
Consistency	<ul style="list-style-type: none"> Consistent with Option 3
Legibility	<ul style="list-style-type: none"> Consistent with Option 3
Accessibility	<ul style="list-style-type: none"> Employment, recreational and social trips and destinations are more accessible through higher levels of service frequencies Most regions have access to Go Zone service within 600 m walking catchment
Reductions and removals	<ul style="list-style-type: none"> Consistent with Option 3

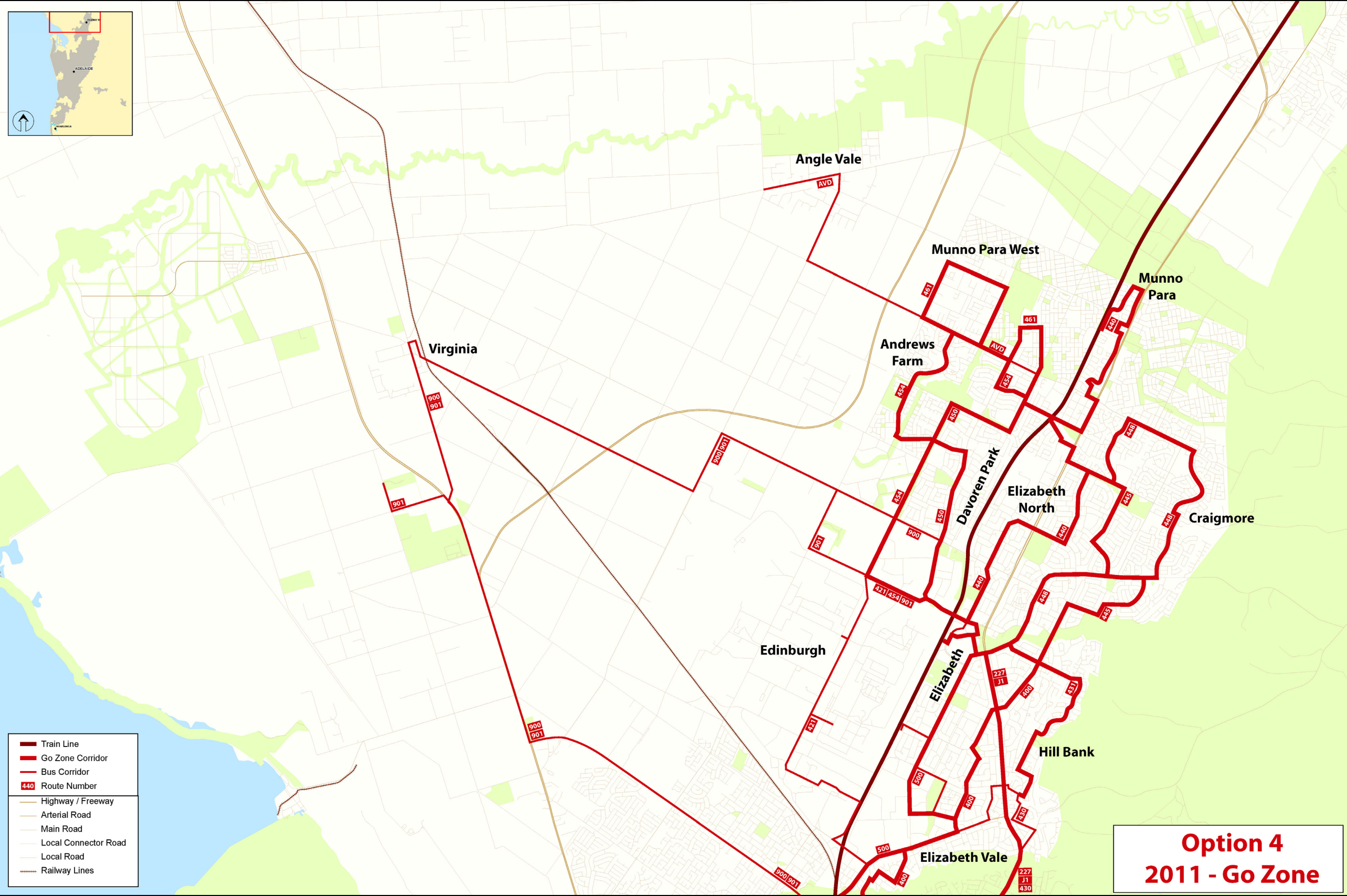


Figure 10.5 Option 4 – 2011 Go Zone network option

10.6 Comparison of options

A matrix has been created to compare and assess the network implications of the four alternative options.

Changes relative to the base case have been ranked using the following criteria and associated weights:

- 1 – No change, little improvement, high cost, less coverage
- 2 – Minor change, modest improvement, moderate cost, same coverage
- 3 – Significant change, significant improvement, minimal cost, increased coverage.

Table 10.21 Comparison of options

Category	Option 1	Option 2	Option 3	Option 4
Frequency	1	3	2	3
Reliability	1	1	1	2
Speed	1	1	2	3
Integration	1	2	2	3
Connectivity	1	2	2	3
Consistency	1	2	3	3
Legibility	1	1	3	3
Accessibility	1	2	1	3
Cost	3	1	2	1
Score	11	15	18	24
Additional km	467,915 km	1,138,739 km	661,286 km	4,775,233
Additional buses	4	9	5	22
Total bus km	3,535,508 km	4,403,880 km	3,869,923 km	6,248,674 km
Total train km	1,670,522 km	1,670,522 km	1,670,522 km	3,300,277 km
Bus operational costs	\$10,136,560	\$12,871,545	\$11,827,409	\$19,175,997
Train operational costs	\$16,189,346	\$16,189,346	\$16,189,346	\$31,923,216
Additional cost³	\$2,117,971	\$4,852,956	\$3,808,820	\$26,891,278

4. Based on all bus route complete length (Table 10.1) Current bus network costs have been based on \$3.00 per revenue kilometre for weekdays and \$3.33 for weekend services (estimate based on PTSD input). Weekend rate is based on 51 Saturdays at \$3.00, 52 Sundays at \$3.50 and 11 Public holidays at \$4.00 to average \$3.33.
5. Based on all Gawler Train Line services (Table 10.1) Current train network costs have been based on \$4.00 per weekday day and Saturday day carriage kilometre, \$4.50 per weekday night, Sunday day and Public Holiday day carriage kilometre, \$5.00 per Saturday night carriage kilometre, \$5.50 per Sunday night carriage kilometre and \$6.00 per Public Holiday night carriage kilometre. A carriage multiplier of 2.5 per weekday and 2.0 for all other times has been used to determine costs per revenue kilometre. Night time services are determined as any service departing after 6:00pm.
6. Compared to current 2011 operating costs (Table 10.3)

Option 4 includes a significant improvement to train service levels. It is anticipated that the operational cost for train service improvements will decrease with the implementation of the electrified train network.

From the analysis conducted and the costs associated with improving passenger transport services in the City of Playford, Option 3 would provide the greatest benefit to users while not significantly increasing the capital or operating costs of the network in the region. The

City of Playford Passenger Transport Network Plan recommends that a network similar to that described in Option 3 be adopted as the preferred passenger transport network (highlighted). With the State Government's commitment to improving passenger transport in the Outer Northern Suburbs, maximising the use of existing assets by reducing competition and overlap between radial services, Option 3 provides a quality solution at minimal expense, thereby maximising resources. With the state government committed to increasing the passenger transport fleet and service kilometres, Option 3's minor increase in resources suggests that this option could be implemented within a 12 month period.

10.7 Assessment of options

The following section attempts to assess the different options developed as part of the strategic plan. Each of the four options has benefits and dis-benefits with respect to the provision and operation of a passenger transport network. The main elements affecting the implementation of passenger transport improvements within the City of Playford are listed below:

10.7.1 Value for money

Value for money examines the costs associated with implementing additional service kilometres compared with the level of improvement provided to the residents of the City of Playford. To determine the value for money proposition, a simple equation of: total score for service improvements (derived from improvements to frequency, reliability, speed, integration, connectivity, consistency, legibility, accessibility and cost) divided by the additional service kilometre cost associated with providing the new services from Table 10.21 above, is derived.

The option with the greatest value score has the greatest value for money. Results from the equation above are demonstrated in Table 10.22 below. From this analysis, Option 3 has the greatest value for money, closely followed by Option 1 (minimal option) and Option 2 (existing network improvements). Option 4 had the least value for money, given that the very significant costs associated with implementing this network drastically reduced its score.

Table 10.22 Value for money comparison

Parameter	Option 1	Option 2	Option 3	Option 4
Score	11	15	18	24
Additional cost	\$2.1M	\$4.9M	\$3.8M	\$26.9M
Value for money	4.2	3.1	4.7	0.9

The value for money score represented in this report only provides a high level and indicative analysis of the value for money. Other elements such as patronage growth, capital investment requirements etc. have not been included in this assessment, as these elements require significant analysis and modelling beyond the scope of this study.

10.7.2 Ease of implementation

Ease of implementation refers to the level of adjustment and acceptance of a service improvement or modification. For example service frequency improvements (no route structure changes) are relatively easy to implement, as only minor resources are required to adjust the existing timetables. For significant changes which require route, network and timetable changes, implementation becomes rather more complex. The number and scale of service changes directly influence the ease of implementation. The larger the service change with more route alterations, the difficulty of implementing the service change increases. Additional resources will be required for public marketing campaigns, driver training, new capital infrastructure etc.

Ease of implementation can also relate to available funding and political support, without which implementing service improvement requiring additional service resources is very difficult.

With regard to the four options developed, each has a different level of implementation ease. Option 1 is the easiest and simplest to implement. This is due to the minimal improvements made to service frequencies. No changes to the route network are required, and therefore major marketing campaigns are not required.

Option 2 has a significant increase to service levels based on the existing route structure. Although, this option is simplistic in terms of the marketing campaign needed and operational aspects, the resource increases (both capital and operational) are substantial. Therefore, the ease of implementing this option is reduced due to the increase in costs.

Option 3 would require less capital and operating resources compared to Option 2, however, due to major structural changes to the network, marketing, driver training and infrastructure changes would reduce the ease of implementing this option.

Option 4 would be the most difficult option to implement. The high costs associated with this option and the major structure changes will give rise to difficulties in terms of marketing, driver training, capital resources, annual operation costs and political support. These make this option unlikely unless there is major community and political support.

10.7.3 Impacts

Making adjustments and service changes to any passenger transport network will have impacts on the community. Improving service frequencies will impact the community in several ways; for example, residents have access to improved services, though the increased frequencies will also result in more transport vehicles in residential areas. This contributes to increased noise and pollution.

There are positive and negative impacts to every service change. The section below has identified the main impacts to the community, the service providers, government and council.

10.7.3.1 Community

The majority of the City of Playford community will benefit from the implementation of any of the options developed. However, the scale and impacts associated with each option are different.

Option 1 and 2 provide the least impacts with respect to changes in routes and network structure. Therefore, walking distances and general access remain similar to the existing network. Option 1 however, provides the least benefit to the community, as only minor service improvements are proposed (mainly at night and on weekends). Option 2 does provide improvements to services and frequencies (for weekdays and weekends); however, the distribution of these services may not be equitable to all residents, as additional resources are provided to improve services where other services are already operating. Therefore, residents of some suburbs will have a significant increase in the standard of passenger transport while other regions do not receive the same level of improvement.

Options 3 and 4 provide a focus on making changes to the structure of the existing network. These changes attempt to maximise the use of existing resources by amalgamating and reallocating services to deliver a more equitable distribution of resources across the City of Playford. These options would impact the community by potentially increasing the walking distance to a local stop for residents, altering or changing some current user travel patterns (routes and destinations), and requiring some passengers (limited) to make transfers to other services in order to complete their journeys. Although the impacts listed above are negative, improvements to legibility, consistency, frequency and connectivity within the system will outweigh the negatives. Option 4 has the greatest benefit to the community as the majority of services would operate at Go Zone standard. However, the likelihood of implementing this option is improbable due to the substantial costs associated.

10.7.3.2 Providers

Service providers are also impacted by the implementation of new services. Changes to routes and services affect the number of vehicles required and drivers required to operate the services. In addition, driver training and new driver schedules are an important consideration.

The greater the increase in the number of vehicles required in the peak period, the greater the impact on staff required to operate them. The greater the number of route and service changes implemented, the greater the amount of staff training and re-scheduling is required. Therefore, a larger transport fleet requirement and more services will significantly impact on service provider operations and costs.

Option 1 provides a minimal impact on service changes, and therefore would have the least impact on the service provider as there would be a minimal increase in drivers required to operate the new services.

Options 2 and 4 which have the greatest increase in service kilometre and vehicle fleet requirements would have the greatest impact on service providers. Option 4 would exceed those for Option 2 as training would be required to educate drivers of the new route.

Like Option 4, option 3 would require additional driver training however, the maximisation of existing resources involves only a slight increase in peak vehicle requirements, and therefore would only have a minor impact on driver requirements.

10.7.3.3 Government

The South Australian State Government will ultimately have the greatest impact with regard to making improvements to passenger transport in the region. The PTSD is current responsible for funding any new service, providing new passenger transport vehicles, adjusting, improving, installing and removing passenger transport infrastructure, and the development and management of information provision.

For every service change, substantial resources are required in order to alter timetables, printed and web-based information, bus route information (for operators) and bus stop infrastructure. Generally, for larger service changes, a wide reaching media campaign is also required.

The scale of the service changes influences the cost of adjusting the network to match the future scenario, therefore, the greater the change to the network, the larger the cost.

Developed Options 3 and 4 in the previous section suggest major changes to not only services and timetables, but also transport routes and infrastructure. These two options would have the greatest impact on the government's marketing and media resources.

Option 2 and 4, have the largest increase in service kilometres and, therefore, require significant increases in government funding.

Option 1 (minimal option), has the least impact on government, as there are only minimal service changes and infrastructure upgrades to the network; therefore, this option has the least impact.

10.7.3.4 Council

Council is presently responsible for the installation of bus stop infrastructure (shelters, seating, lighting, pavement, access and other associated infrastructure) and maintenance of local roads. Therefore, the number of stops within the council area and the amount of kilometres travelled by passenger transport services in the region impact on the costs associated with council's contribution to passenger transport.

Option 1 provides a minimal impact to the existing installation of new infrastructure for passenger transport services. However, the existing network has a high number of stops and local road kilometres. Therefore, the longer term costs of this option are higher than other options.

Option 2, which is also based on the existing network, provides similar impacts as Option 1.

Option 3 provides a moderate change to existing infrastructure in the region. However, the alteration of transport routes reduces the number of kilometres of passenger transport travel, therefore reducing the additional maintenance costs associated with maintaining them. Option 3 also proposes a reduction in the number of stops provided within the region through the rationalisation program. Therefore, with a reduced number of stops, the maintenance cost for their upkeep will reduce. These savings can then be prioritized to improve infrastructure at more heavily used stops within the region.

Similar to Option 3, Option 4 proposes the same route structure. Therefore, this option has similar associated impacts. However, the frequency of service in Option 4 is significantly higher than Option 3; resulting in more services traversing the allocated routes. Although service frequencies are likely to increase to Option 4 level at some point in the future, this scenario would have a considerable impact on council if implemented in the short term. This is associated to the higher costs for maintaining the transport network and infrastructure.

10.7.4 Innovation

Innovation is the term applied to maximising passenger transport services by providing the greatest benefit to the community whilst using the least amount of resources. Innovation can

be in the form of creating a high frequency corridor by amalgamating routes, and coordinating and connecting services to increase the coverage of the network without duplicating services, to developing new routes and networks to reduce travel times, increase accessibility and make passenger transport services more appealing to the general public.

Although the current passenger transport system provides good coverage and adequate frequency, there are areas within the network which are duplicated, either by multiple routes on a particular corridor that are uncoordinated, to services competing with the radial train network. The assessment of innovation examines the existing network (which Options 1 and 2 are based upon) to the proposed altered network (which Options 3 and 4 are based on).

The existing network consists of services which operate within close proximity to one another (for example routes 451 and 452), services which are uncoordinated on particular corridors (for example routes 224, 500 and 560 between Elizabeth, Lyell McEwin Hospital and Salisbury), to services that directly compete with the train system for passengers accessing the Adelaide CBD (Route 228). Therefore, even though the existing network provides good accessibility and coverage, there are many inefficiencies in the network.

Options 1 and 2 expand upon the existing route network and therefore, do not provide any innovative ways to maximise resources to benefit the community.

Option 3 and 4 examine new routes and services to provide passengers within the City of Playford with improved services and links

10.7.5 Meeting goals and objectives

Section 1.1 of this report outlined selected key goals and objectives for the City of Playford Strategic Passenger Transport Plan. These goals were to:

- meet the needs of the community by improve passenger transport services within the region
- provide suggestions and recommendations for maximising current passenger transport resources
- recommend new or improved services to address gaps and issues with the current network
- match service levels for passenger transport services currently provided in inner regions of metropolitan Adelaide (development of Go Zones).

With respect to these goals, each of the options attempts to meet these goals differently.

Option 1 provides only minimal improvements to the network and therefore, many of the goals set as part of the plan are not met.

Option 2 attempts to achieve these goals by addressing some of the identified gaps in the system and develop transport corridors with service levels similar to that of inner metropolitan regions. However, option two does not achieve the goals for maximising passenger transport resources or fully addressing the gaps and issues within the network.

Option 3 provides a passenger transport network that best meets all of the set goals. Although not every goal can be fully achieved, this option does attempt to fill all gaps and improve service standards to similar levels within the inner metropolitan region.

Option 4, like Option 3, addresses many of the goals, with a large emphasis on providing new Go Zones across the region. This option also addresses the goal of maximising existing resources, however, the significant cost of implementing this option deter from making this option likely in the short term.

10.7.6 Assessment of options comparison

In order to assess and compare the different options against the criteria listed above, a scoring system (similar to the comparison of network options – Table 10.21) was developed. The scores for each option have been based on the criteria below:

- 1 – Low value for money, complex implementation, greatest impact, least innovation, may not meet objectives
- 2 – Modest value for money, moderate implementation, slight impact, slight innovation, objectives met
- 3 – High value for money, simple implementation, minimal impacts, greatest innovation, meets or exceeds objectives.

Table 10.23 Assessment of options comparison

Criterion	Option 1	Option 2	Option 3	Option 4
Value for money	3	2	3	1
Ease of implementation	3	2	2	1
Impacts				
<i>Community</i>	2	3	2	3
<i>Providers</i>	3	1	2	1
<i>Government</i>	3	1	2	1
<i>Council</i>	1	1	2	2
innovation	1	1	3	3
Meeting objectives	1	2	3	3
Score (out of 24)	17	13	19	15

10.8 Preferred option

From the analysis conducted on the provision of service improvements, cost and impacts, Option 3 provides the greatest overall level of improvement. Option 3 maximises resources, attempts to address the identified gaps and creates new Go Zones while simplifying the network. This option is therefore, the preferred option for the City of Playford.

11. Future network options

The options development section focused on making improvements to the passenger transport network which is currently operating (following the January 2011 service changes). This next section focuses on examining the implications of the significant projected increases in regional residential population and employment levels, and major new developments on the passenger transport network.

Three future scenarios have been developed, reflecting the expansion of the urban growth boundary for the metropolitan areas (Munno Para West, Munno Para Downs, Blakeview, and Penfield), and the significant development of regional areas such as Buckland Park, Virginia and Angle Vale.

The three scenarios are based on making improvements and alterations to the preferred network (Option 3 – Chapter 10). New services have been defined to complement this network to provide increased coverage to developing suburbs.

11.1 Train service improvements

With the electrification of the Gawler Train Line, estimated to be completed by the end of 2013, all future networks have adopted a higher level of service to all stations within the City of Playford. The service levels provided in the future networks are the same levels that have been developed for Option 4 (Section 10). All stations on the Gawler Train Line would receive a 15 minute service over all operating periods. Major stations such as Elizabeth, Smithfield and Munno Para would receive 7/8 minute frequencies. The increase in service levels effectively represents a doubling of service kilometres.

Table 11.1 Future network 1 – Train service improvements

	Current km	Proposed km	Additional km
Gawler Train Line	1,537,676	3,300,277	1,762,601

The three future networks are described below.

11.2 Future network 1: 2013–2017

The first future network envisages expanding the current passenger transport network to adequately service the growth regions within the City of Playford. This network focuses on improvements being implemented between 2013 and 2017.

11.2.1 Bus services improvements

With the significant growth in residential population expected over the next 10-15 years, major improvements to the provision of passenger transport services to these new greenfield developments will be required. The first future scenario focuses on making improvements to the bus network between 2013 and 2017. These improvements are an expansion of the route network described in Option 3 (preferred network) in the options development section.

The additional improvements to the network include:

- New service linking Elizabeth and Smithfield via Elizabeth North and the new residential development located on the defence land adjacent to the Gawler Train Line (new route 441).
- New route linking Elizabeth and Craigmore with the new Blakeview development and Munno Para (new route 447).
- New limited service to One Tree Hill (route 449).
- New service linking Elizabeth, Davoren Park and Smithfield via Peachy Road (improves directness frequency of service along Peachy Road, new route 450). Go Zone extended from Peachy Road to Smithfield.
- New service linking Elizabeth, Davoren Park and Smithfield via Stebonheath Road (improves directness frequency of service along Stebonheath (new route 451).
- New routes 454 (Elizabeth to Smithfield) and 455 (Elizabeth to Munno Para) linking Elizabeth with the new Penfield development and Andrews Farm. New Go Zone from Elizabeth, Womma Station, President Avenue to Curtis Road/Playford Alive District Centre.
- New route linking Munno Para Downs and Munno Para West (north of Fradd Road) to Smithfield and Munno Para Shopping Centre (new route 462).
- New route linking Munno Para to Smithfield via the new Blakeview development, new route 467. New Go Zone created in coordination with route 447, linking Blakeview with Munno Para Station.
- Conversion of the current Angle Vale Dial a Ride into a regular MetroTicket service (new route 470).
- New route 482 linking the Buckland Park development with Virginia and Elizabeth.

The additional service kilometres required to implement these services are listed below:

Table 11.2 Future network 1 – Bus service improvements costs

Route	Origin	Destination	Via	Go Zone	Proposed km
J1 ¹	Elizabeth	Adelaide / City	Tea Tree Plaza	No	340,791
227	Elizabeth	Adelaide / City	Main North Road	No	627,021
400	Elizabeth	Salisbury	Lyell McEwin Hospital	Yes	398,116
421	Elizabeth	Salisbury	Edinburgh/DSTO	No	66,003
430	Elizabeth	Salisbury	Hillbank	No	168,980
431	Elizabeth	Elizabeth South	Hillbank	No	99,396
440	Munno Para	Elizabeth	Smithfield	Yes	390,654
441	Smithfield	Elizabeth	Elizabeth North	No	109,916
445	Smithfield	Elizabeth	Craigmore	No	205,714
447	Munno Para	Elizabeth	Blakeview/Craigmore	Yes	254,722

Route	Origin	Destination	Via	Go Zone	Proposed km
448	Smithfield	Elizabeth	Craigmore/Yorktown Road	Yes	502,587
449	Elizabeth	One Tree Hill	Craigmore/Yorktown Road	No	76,480
450	Munno Para S/C	Elizabeth	Peachy Road	Yes	326,722
451	Munno Para S/C	Elizabeth	Stebonheath Road	No	195,226
454	Munno Para S/C	Elizabeth	President Avenue	Yes	246,453
455	Munno Para	Elizabeth	President Avenue	Yes	239,999
461	Munno Para S/C	Munno Para S/C	Munno Para West	No	139,764
462	Munno Para S/C	MP Downs	Munno Para West	No	158,319
467	Munno Para	Smithfield	Blakeview	Yes	145,210
470	Angle Vale	Smithfield	Munno Para West	No	112,074
480	Elizabeth	Salisbury	Virginia	No	76,806
481	Elizabeth	Salisbury	Virginia/The Palms	No	85,230
482	Elizabeth	Buckland Park	Virginia	No	219,064
500	Elizabeth	Salisbury	Lyell McEwin Hospital	Yes	334,789
Total					5,552,035
Additional					2,329,493

Highlighted rows indicate new or altered services when compared to Option 3 (preferred)

1. km are represented between Elizabeth and Tea Tree Plaza Only
2. km are represented between Elizabeth and Salisbury Only

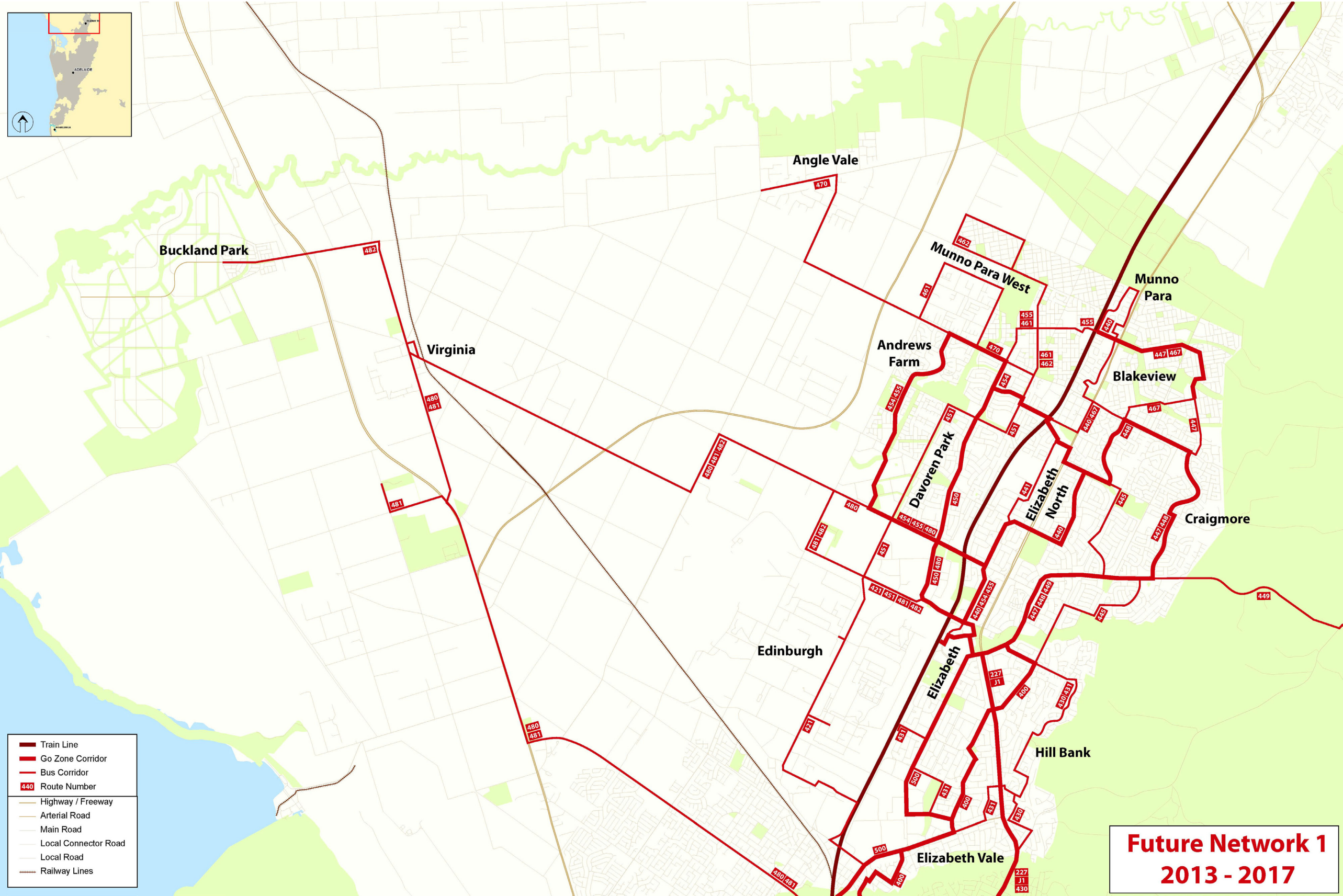


Figure 11.1 Future network 1: 2014–2017

11.3 Future network 2: 2018–2020

The second future network examines proposed service improvements for implementation between 2018 and 2020. This route network assumes a significant growth in residential population in the regional areas of Angle Vale, Buckland Park and Virginia.

11.3.1 Bus service improvements

These improvements have been incrementally added to the 2013-2017 future networks. The additional services and network changes are described below:

- Upgrade route J1 to provide Go Zone standard services between Elizabeth, Golden Grove and Tea Tree Plaza.
- Upgrade route 227 to Go Zone standard providing a complete Go Zone from the Adelaide CBD to Elizabeth via Main North Road.
- Improve frequencies on routes 430 and 431 to Hillbank to provide Go Zone standard service to Elizabeth. Also improves frequencies between Elizabeth South Station, Lyell McEwin Hospital and Hill Bank.
- New service 456 and 457 linking Elizabeth with Elizabeth Village, Penfield, the new developments west of Andrews Road (McDonald Park) and Andrews Farm. Route 456 continues to Munno Para West, Munno Para Downs and Munno Para Station while route 457 connects to Smithfield and Munno Para Shopping Centre.
- New route 463 linking Munno Para Shopping Centre, Smithfield, Munno Para West and District Centre with Munno Para Downs and Angle Vale. New Go Zone established between Munno Para Shopping Centre and Munno Para Downs.
- New route 464 linking, Smithfield, Main North Road, Munno Para Station with Munno Para Downs (north of Hatcher Road) and Angle Vale.
- Upgrade route 467 to Go Zone Standard.
- Altered route 470 in Angle Vale to provide coverage to developments north of Angle Vale Road, improved frequencies provided.
- New route 471 linking Munno Para Shopping Centre and Smithfield with Angle Vale and Buckland Park. New Go Zone established over complete route.
- New route 473 linking Angle Vale with Greater Edinburgh Parks along Heaslip Road.
- Upgrade route 480 and 481 to Go Zone standard to provide a Go Zone service linking Elizabeth, Virginia, The Palms Lifestyle Village to Waterloo Corner and Salisbury.
- New route 483 linking Elizabeth with Greater Edinburgh Parks.

The additional service kilometres required to implement these services has been listed below.

Table 11.3 Future network 2 – Bus service improvements costs

Route	Origin	Destination	Via	Go Zone	Proposed km
J1 ¹	Elizabeth	Adelaide / City	Tea Tree Plaza	Yes	722,418
227	Elizabeth	Adelaide / City	Main North Road	Yes	1,101,980
400	Elizabeth	Salisbury	Lyell McEwin Hospital	Yes	398,116
421	Elizabeth	Salisbury	Edinburgh/DSTO	No	66,003
430	Elizabeth	Salisbury	Hillbank	Yes	259,360
431	Elizabeth	Elizabeth South	Hillbank	Yes	221,848
440	Munno Para	Elizabeth	Smithfield	Yes	390,654
441	Smithfield	Elizabeth	Elizabeth North	No	109,916
445	Smithfield	Elizabeth	Craigmore	No	205,714
447	Munno Para	Elizabeth	Blakeview/Craigmore	Yes	254,722
448	Smithfield	Elizabeth	Craigmore/Yorktown Road	Yes	502,587
449	Elizabeth	One Tree Hill	Craigmore/Yorktown Road	No	76,480
450	Munno Para S/C	Elizabeth	Peachy Road	Yes	326,722
451	Munno Para S/C	Elizabeth	Stebonheath Road	No	195,226
454	Munno Para S/C	Elizabeth	President Avenue	Yes	246,453
455	Munno Para	Elizabeth	President Avenue	Yes	239,999
456	Munno Para	Elizabeth	McDonald Park	No	118,070
457	Munno Para S/C	Elizabeth	McDonald Park	No	166,142
461	Munno Para S/C	Munno Para S/C	Munno Para West	No	139,764
462	Munno Para S/C	MP Downs	Munno Para West	Yes	158,319
463	Munno Para S/C	Angle Vale	Munno Para Downs	Yes	229,108
464	Munno Para S/C	Angle Vale	Munno Para	Yes	264,402
467	Munno Para	Smithfield	Blakeview	Yes	145,210
470	Angle Vale	Munno Para S/C	Munno Para West	No	112,074
471	Buckland Park	Munno Para S/C	Angle Vale	Yes	849,073
473	Angle Vale	Edinburgh	Greater Edinburgh Parks	No	222,856
480	Elizabeth	Salisbury	Virginia	Yes	617,141
481	Elizabeth	Salisbury	Virginia/The Palms	Yes	684,825
482	Elizabeth	Buckland Park	Virginia	Yes	764,771
483	Elizabeth	Salisbury	Greater Edinburgh Parks	No	471,326
500	Elizabeth	Salisbury	Lyell McEwin Hospital	Yes	334,789
Total					10,712,899
Additional					7,522,357

1. km are represented between Elizabeth and Tea Tree Plaza Only

2. km are represented between Elizabeth and Salisbury Only



11.4 Future network 3: 2021–2030+

The third future network is the ultimate scenario. It reflects significant levels of improvements to passenger transport services within the metropolitan region as well as to the new greenfield development sites in Angle Vale, Buckland Park and Virginia. This future network comprises incremental improvements made to the network from 2021 and beyond.

11.4.1 Bus service improvements

Additional improvements have been added to the 2021-2030+ future networks. The additional services and network changes have been listed below:

- Upgrade route 421 (Elizabeth to Edinburgh RAAF Base, DSTO and Salisbury) to Go Zone standard.
- Upgrade route 441 (Elizabeth to Elizabeth North, defence land development and Smithfield) to Go Zone standard.
- Upgrade route 445 (Elizabeth, Elizabeth East, Craigmore, Elizabeth Downs to Smithfield) to Go Zone standard.
- Upgrade route 451 (Elizabeth, Davoren Park to Smithfield via Stebonheath Road) to Go Zone standard.
- Upgrade route 456 (Elizabeth, Penfield, McDonald Park, Munno Para Downs to Munno Para Station) to Go Zone standard.
- New route 465 linking Smithfield, Main North Road, Munno Para Station with Munno Para Downs (north of Hatcher Road) and Angle Vale North. New Go Zone between Angle Vale Road and Smithfield (route 464 and 465).
- Upgrade route 473 (Angle Vale to Greater Edinburgh Parks) to Go Zone standard.
- New route 474 linking Munno Para Shopping Centre, Smithfield with Angle Vale East (Frisby Road) and Angle Vale.
- New route 475 linking Munno Para Shopping Centre, Smithfield with Angle Vale West (Short Road) and Angle Vale.
- New route 478 linking Munno Para Shopping Centre, Smithfield, McDonald Park (Julian Road, Greater Edinburgh Parks and Virginia.
- Upgrade route 483 (Elizabeth to Salisbury via Greater Edinburgh Parks) to Go Zone standard.
- New route 485 linking Virginia and Virginia West to Buckland Park (Buckland Park local service).
- New route 486 Buckland Park internal local service.
- New route 487 linking Virginia, The Palms Lifestyle Village to Buckland Park (Buckland Park local service).
- New Go Zone route 490 linking Gawler, Angle Vale and Buckland Park.

The additional service kilometres required to implement these services has been listed below.

Table 11.4 Future network 2 – Bus service improvements costs

Route	Origin	Destination	Via	Go Zone	Proposed km
J1 ¹	Elizabeth	Adelaide / City	Tea Tree Plaza	Yes	722,418
227	Elizabeth	Adelaide / City	Main North Road	Yes	1,101,980
400	Elizabeth	Salisbury	Lyell McEwin Hospital	Yes	398,116
421	Elizabeth	Salisbury	Edinburgh/DSTO	Yes	530,338
430	Elizabeth	Salisbury	Hillbank	Yes	259,360
431	Elizabeth	Elizabeth South	Hillbank	Yes	221,848
440	Munno Para	Elizabeth	Smithfield	Yes	390,654
441	Smithfield	Elizabeth	Elizabeth North	Yes	219,831
445	Smithfield	Elizabeth	Craigmore	Yes	411,427
447	Munno Para	Elizabeth	Blakeview/Craigmore	Yes	254,722
448	Smithfield	Elizabeth	Craigmore/Yorktown Road	Yes	502,587
449	Elizabeth	One Tree Hill	Craigmore/Yorktown Road	No	76,480
450	Munno Para S/C	Elizabeth	Peachy Road	Yes	326,722
451	Munno Para S/C	Elizabeth	Stebonheath Road	Yes	390,452
454	Munno Para S/C	Elizabeth	President Avenue	Yes	246,453
455	Munno Para	Elizabeth	President Avenue	Yes	239,999
456	Munno Para	Elizabeth	McDonald Park	Yes	592,939
457	Munno Para S/C	Elizabeth	McDonald Park	Yes	276,100
461	Munno Para S/C	Munno Para S/C	Munno Para West	No	139,764
462	Munno Para S/C	MP Downs	Munno Para West	Yes	158,319
463	Munno Para S/C	Angle Vale	Munno Para Downs	Yes	229,108
464	Munno Para S/C	Angle Vale	Munno Para	Yes	264,402
465	Munno Para S/C	Angle Vale	Munno Para	Yes	299,091
467	Munno Para	Smithfield	Blakeview	Yes	145,210
470	Angle Vale	Munno Para S/C	Munno Para West	No	228,907
471	Buckland Park	Munno Para S/C	Angle Vale (extended)	Yes	897,476
473	Angle Vale	Edinburgh	Greater Edinburgh Parks	Yes	445,713
474	Angle Vale	Munno Para S/C	Munno Para West	No	168,403
475	Angle Vale	Munno Para S/C	Munno Para West	No	172,436
478	Virginia	Munno Para S/C	McDonald Park	No	379,763
480	Elizabeth	Salisbury	Virginia	Yes	617,141
481	Elizabeth	Salisbury	Virginia/The Palms	Yes	684,825
482	Elizabeth	Buckland Park	Virginia	Yes	764,771
483	Elizabeth	Salisbury	Greater Edinburgh Parks	Yes	942,652
485	Virginia	Buckland Park	Virginia West	No	353,747
486	Buckland Park	Buckland Park	Internal service	No	159,327

Route	Origin	Destination	Via	Go Zone	Proposed km
487	Virginia	Buckland Park	The Palms	No	467,898
490	Buckland Park	Gawler	Angle Vale	Yes	991,459
500	Elizabeth	Salisbury	Lyell McEwin Hospital	Yes	334,789
Total					16,056,030
Additional					12,865,488

1. km are represented between Elizabeth and Tea Tree Plaza Only
2. km are represented between Elizabeth and Salisbury Only

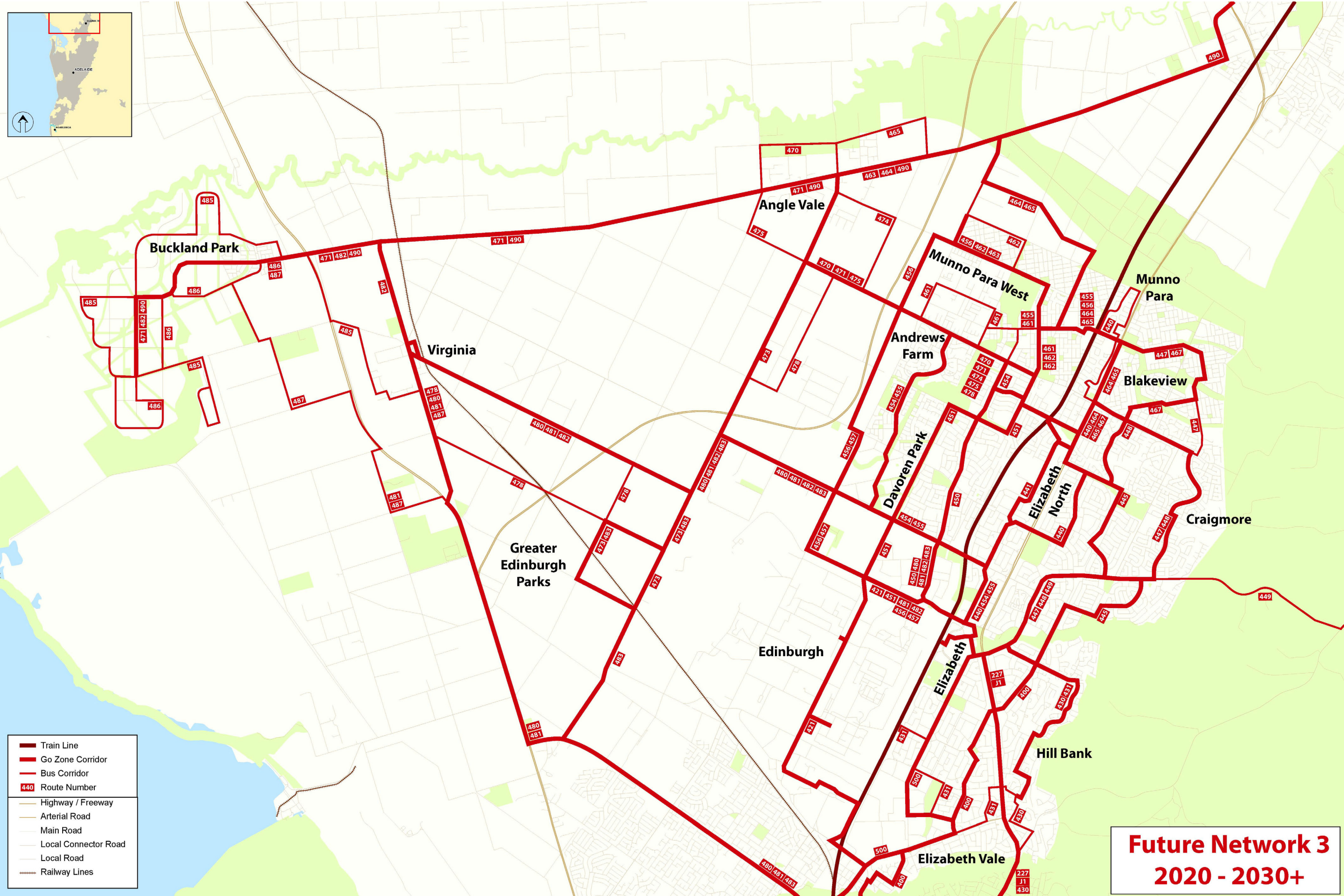


Figure 11.3 Future network 2: 2021–2030+

11.5 Comparison of future options

The high projected levels of regional residential and employment growth will add considerable strain to the current passenger transport network. Without the many improvements identified in the future scenarios, many residents would not have adequate or equitable access to public transportation, especially those located in the new greenfield development sites.

Delivery of improvements to passenger transport services in the City of Playford will come at a substantial cost to government, however. Although revenue will be generated from the increase in patronage levels, this income will likely contribute to less than 25% of the cost to operate services.

The future scenarios examine making additions and improvements to the preferred short term network (Option 3). The Strategic Plan has attempted to estimate the additional operational costs associated with implementing the upgraded network, and thence the incremental costs for implementing the potential future networks. The estimated annual operating costs have been determined using existing operating costs for the 2011 network multiplied by the additional kilometres required to operate the new networks.

A comparison of the operational costs and service kilometres is shown in Table 11.5. These costs are compared with the current 2011 costs associated with operating the current 2011 network.

Table 11.5 Comparison of future options

Category	Option 3	Future 1	Future 2	Future 3
	2011-2012	2013-2017	2018-2020	2021-2030+
Additional km	673,721 km	4,082,196 km	9,275,061 km	14,618,191 km
Total Bus km	3,869,923 km	5,520,035 km	10,712,899 km	16,056,030 km
Total Train km	1,670,522 km	3,300,277 km	3,300,277 km	3,300,277 km
Bus Operation Cost	\$11,827,409	\$16,910,323	\$32,852,296	\$49,168,682
Train Operation Cost	\$16,189,346	\$31,923,216	\$31,923,216	\$31,923,216
Additional Cost	\$3,808,820	\$24,625,604	\$40,567,577	\$56,960,747

The future networks have been based on improvements made relative to Option 3 (preferred option). Future options include a significant improvement to train service levels; it is anticipated that the operational cost for train service improvements will decrease with the implementation of the electrified train network. All costs are based on the 2011 estimated operational costs and are represented in 2011 dollars.

12. Potential infrastructure improvements

The City of Playford Strategic Passenger Transport Plan includes exploring the possibility of developing new passenger transport infrastructure within the region. The following section identifies some of the potential upgrades that could be examined or implemented as part of this plan. All concepts listed below would require further investigation to determine their viability and feasibility; however, they provide a guide for some of the potential infrastructure projects in the region for the short, medium and long term.

12.1 Mass transit corridors

12.1.1 Buckland Park mass transit corridor

The 30-year plan's indicative mass transit corridor between Elizabeth and Buckland Park could be developed using several alternative modes. The most likely is to be an on-road high frequency bus service. However, should DTEI or the state government place a high priority on the corridor, then alternative rapid transit modes could be selected. This may include a Bus Rapid Transit (BRT) system in the form of either a fixed guideway (for example the Adelaide O-Bahn), dedicated road corridor (bus only roadway, similar to the Brisbane South East Busway or Sydney Parramatta to Liverpool Busway), or dedicated bus lanes on major arterial roads; a light rail line operating on street or within its own corridor between Elizabeth and Buckland Park or an extension of the electrified rail system. Each system has its advantages and disadvantages; however, for the purpose of future planning, a mass transit corridor should be safeguarded to enable the construction of BRT, LRT or Electrified train line.

The region between Elizabeth West and Virginia consists of rural living, market farms and agriculture land uses, therefore, land acquisition, corridor safeguarding and disruption to existing developments would be minimal. The corridor between Elizabeth Station and Stebonheath Road in Elizabeth West however, has more constraints which would influence the development of the potential mass transit corridor.

This Strategic Passenger Transport Plan identifies two potential corridors for a mass transit line between Elizabeth and Buckland Park. The first, and preferred corridor, follows the western side of the existing rail corridor from Elizabeth Station to Womma Road, then veers west and runs parallel along the northern side of Womma Road. Presently a 30m land reserve exists along the corridor that could accommodate any mode of mass transit. This corridor reservation would enable a 300-400m radius curve from the existing rail corridor to the northern side of Womma Road. This radius would approximately allow for a 60km/h speed for trains or guided buses. This option is preferred as the alignment would provide greater catchment to the suburbs of Davoren Park, Andrews Farm and Penfield. The second route option would veer west north of Elizabeth Station and then follow the northern boundary of the Edinburgh RAAF Base (southern boundary of the City of Playford). This alignment would also facilitate a 300-400m radius curve. Both options would then continue to Virginia and Buckland Park along a non-specified alignment. The figure below illustrates the two potential mass transit corridor alignments for the Virginia and Buckland Park developments.

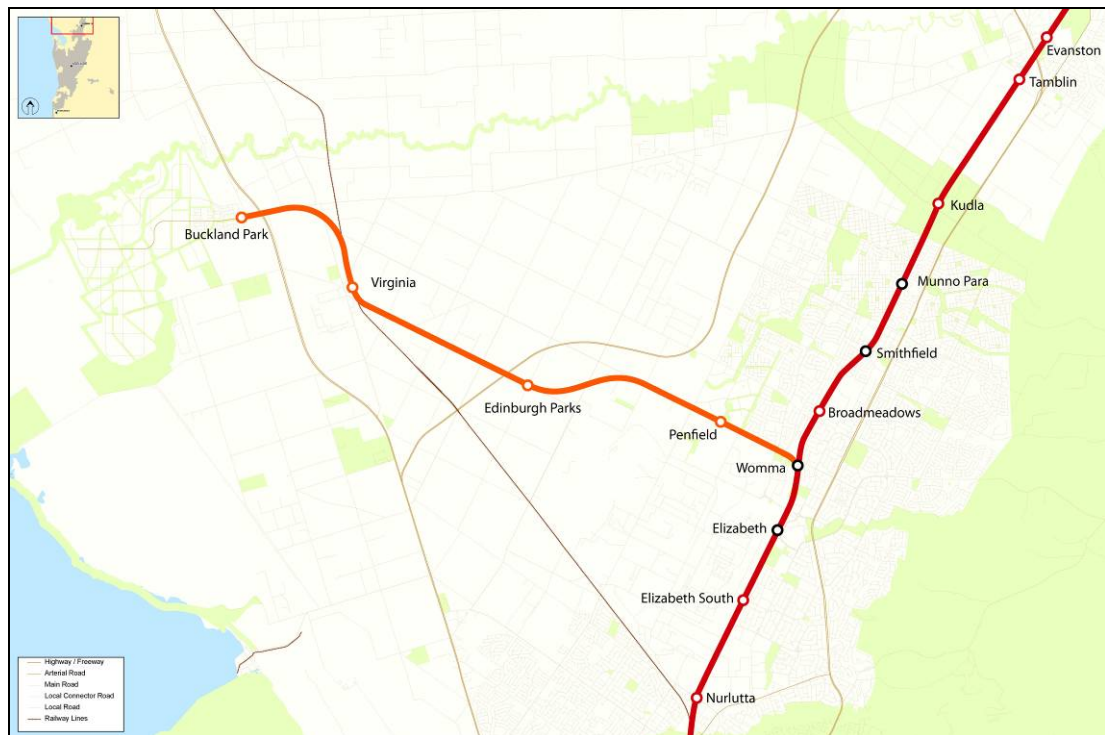


Figure 12.1 Potential mass transit corridor alignment options

12.1.2 Angle Vale to Smithfield mass transit corridor

Although there are no specific policies or indications that the state government is considering a mass transit corridor for the township of Angle Vale, the proposed intensity of residential development in the region will warrant some form of high quality public transport corridor. With the total population of Angle Vale likely to exceed 10,000 residents by around 2030, the requirement to transport residents to the Gawler Train Line and the major retail centres of Munno Para and Playford Alive is paramount.

Developing a new mass transit corridor between Munno Para Shopping Centre, Smithfield Station and Angle Vale will be more difficult than the proposed Elizabeth to Virginia corridor. There is no direct, free corridor available for a dedicated form of high quality mass transit. Therefore, some modes of transport may not be suitable unless considerable land acquisition is conducted. However, these modes should not be excluded.

Two alternative alignment options between Smithfield and Angle Vale have been identified. The first utilises the Curtis Road corridor while the second follows the Fradd Road corridor to the north of Munno Para railway station.

The Curtis Road corridor has the benefit of being able to serve the existing residential developments of Munno Para West, Andrews Farm and the new Playford Alive. This corridor would also provide a high quality link between Munno Para, Smithfield Station and the new activity centre located on the corner of Peachy Road and Curtis Road. However, this corridor is constrained between Coventry Road and Andrews Road. The width of the corridor varies between 35 m and 45 m depending on location. This corridor does, however, have minimal access points and limited street facing houses. This would allow for an overall higher operation speed with fewer conflict points. In addition to the constraints along the Curtis Road corridor, the provision of a direct corridor between Smithfield Station and Curtis Road

is limited. There are a few different corridor options which could allow for fast and direct access between the two locations, these are: Smith Creek, Charlotte Street, Samuel Street or Anderson Walk and Coventry Road. The fastest alignment would be the Smith Creek Corridor; this alignment does not utilise existing roads and can be positioned on the Northern Side of the creek to limit the impact on residential developments. However, some partial land acquisition from the industrial estate may be required.

Due to the limitations of this corridor for width and configuration, the strategic plan recommends that the modes of mass transit used on this corridor be limited to high quality bus, bus rapid transit and/or light rail.

The second option for the corridor between Smithfield and Munno Para would be Fradd Road located north of Munno Para. Due to the development timeline, this corridor would be easier to plan for and develop as the majority of land in the area has not been planned. Although this corridor has the potential to be faster, the corridor is less direct, does not serve the new activity centre in Playford Alive and there are potential restrictions to modes. Should this corridor be safeguarded, the most logical mode of mass transit would be heavy rail. This would involve the development of a new branch line from Munno Para Station to Angle Vale via a nominated corridor. Other modes of transport, including high quality bus, BRT or light rail, have limitations between Munno Para Station and Smithfield and Munno Para shopping centre. These limitations include: limited corridor widths and corridor availability between the Munno Para and Smithfield stations and duplication of an existing mass transit corridor (the Gawler Train Line).

Both mass transit corridor options have been illustrated in Figure 12.2 below.

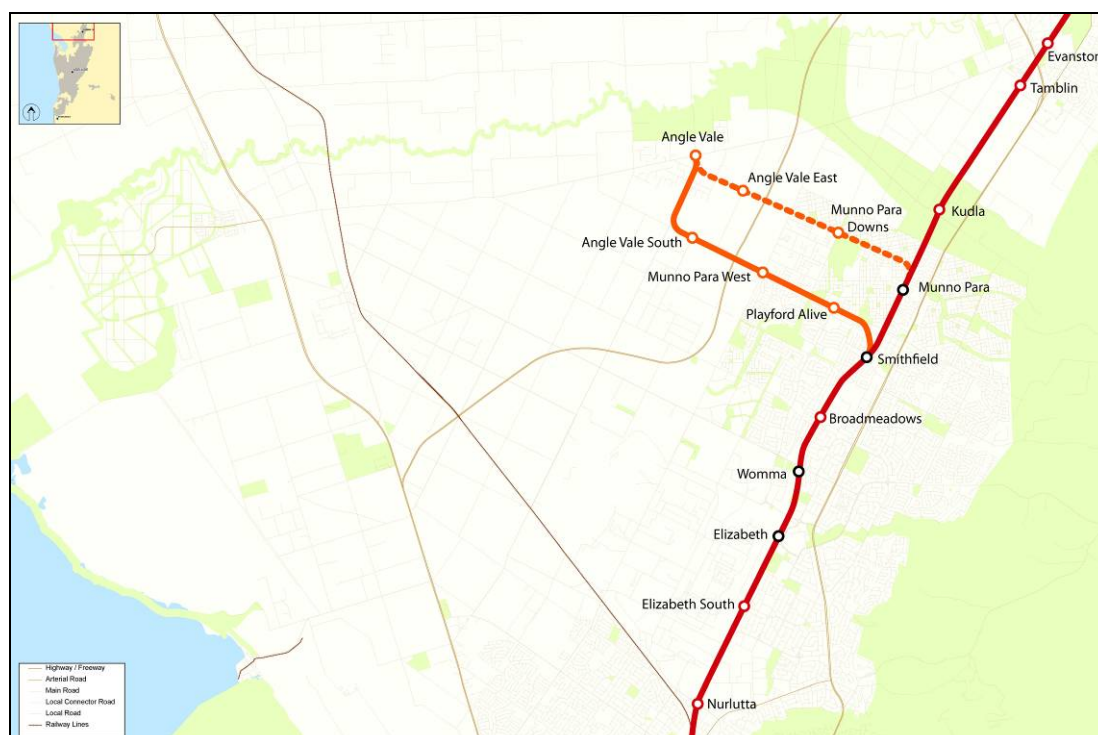


Figure 12.2 Angle Vale potential mass transit corridors

12.1.3 Buckland Park, Virginia, Angle Vale to Gawler mass transit corridor

With the population of Virginia, Angle Vale and Gawler all expected to significantly increase over the next 30-40 years; travel demand between these locations is likely to become a significant contributor to travel movements between the three locations. With the population estimated to be 40,000 for Virginia and Buckland Park, 10,000 for Angle Vale and a further 40,000–60,000 for Gawler, high quality public transport linking these three centres should be considered. The strategic plan suggests that some form of high quality, high speed mass transit is developed. Since the majority of land currently in the area is market gardens and agriculture, development constraints are limited excepted within the townships. Ideally this new corridor would be coordinated with the Buckland Park to Elizabeth and Angle Vale to Smithfield mass transit corridors, therefore allowing for connectivity and integration. This corridor could be in the form of heavy rail, light rail or bus rapid transit. If the development of this potential mass transit corridor uses similar technology as the Elizabeth and Smithfield corridors then this corridor could be built in stages and allow for multiple routes and services. For example residents of Buckland Park have the option to access Elizabeth, Munno Para or Gawler via a single mode of mass transit. The recommended alignment for the corridor is along Angle Vale Road. Different options should be explored in the Virginia region as the potential mass transit corridor could traverse Gawler Road to Virginia or continue along Angle Vale Road to Buckland Park.

The potential mass transit corridor between Buckland Park and Virginia to Angle Vale and Gawler is illustrated in Figure 12.3 below.

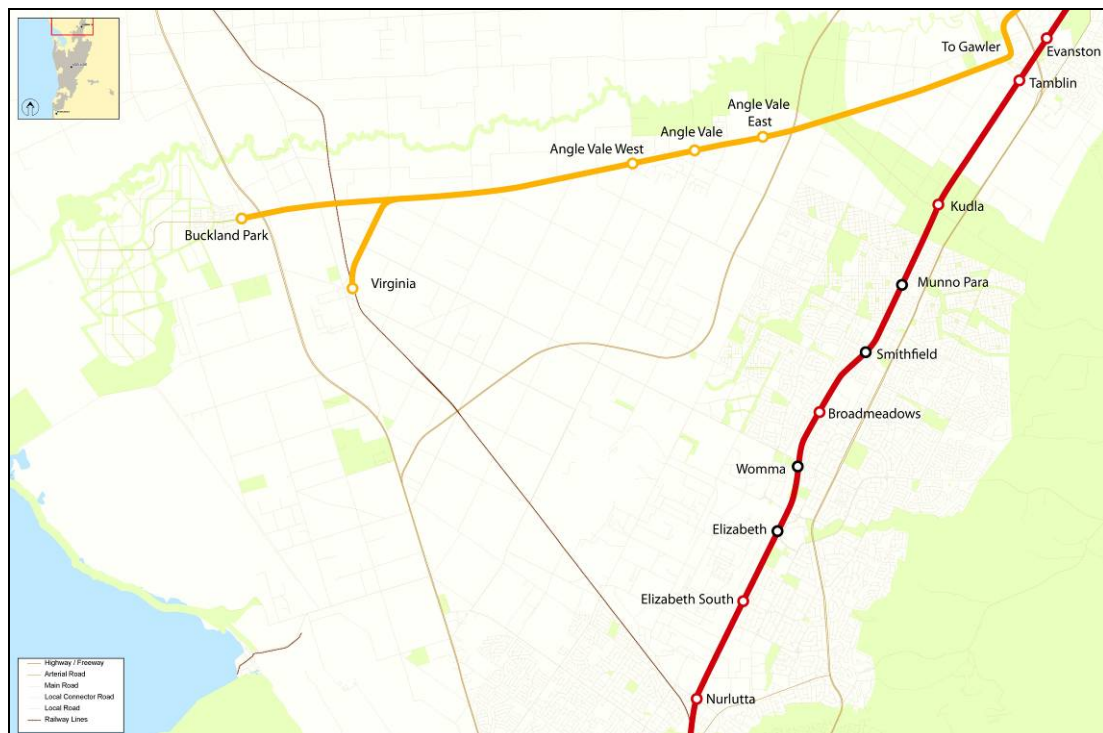


Figure 12.3 Buckland Park to Gawler potential mass transit corridor

12.1.4 Buckland Park and Virginia to Salisbury mass transit corridor

The travel demand between Buckland Park and Virginia to Salisbury is expected to be similar to the corridor to Elizabeth. Therefore, a corridor between Buckland Park, Virginia and Salisbury should be safeguarded for future development. Although the majority of the corridor is outside of the City of Playford boundaries, this potential mass transit corridor will still be an integral component to future public transport provision in the region. With the potential for freight and passenger inter and intra state trains to be removed from the rail corridor between Salisbury and Penfield due to the proposed construction of the Northern Connector linking South Road with Port Wakefield Road, this enables possibilities to use the corridor for public transport purposes.

Alternatively a new on-road mass transit corridor could be developed along Port Wakefield Road and Waterloo Corner Road.

12.1.5 Potential mass transit corridors for the northern region

Figure 12.4 below illustrates all potential mass transit corridors that should be considered as part of a longer term transport plan for the region. Although many of these corridors may not be viable in the short term, these corridors should be safeguarded for future development, whether it is within the next 30–40 years or beyond 2050.



Figure 12.4 Potential mass transit corridors

12.2 Park and Ride

Park and Ride facilities provide an important alternative option to access passenger transport services, particularly where walk access is inconvenient or excessive. Park and

Ride is attractive where passengers are able to easily park their car in a relatively secure environment at a stop or station which has fast, frequent and direct services to the Adelaide CBD.

For the City of Playford, Park and Ride facilities have already been established at Smithfield and Elizabeth railway stations. Commuter parking has also been developed at Womma and Elizabeth South, however, the low frequency of train services throughout the day discourages passengers from utilising this infrastructure.

Unless train frequencies are significantly improved at the minor stations, the potential for implementing successful Park and Ride facilities at these locations is limited.

12.2.1 Upgraded Smithfield Station Park and Ride

Smithfield Station Park and Ride has been upgraded and expanded several times over recent years. The station presently still has significant undeveloped land surrounding the station which could be used for additional Park and Ride purposes. The station has approximately 6,450 m² to the south west, 8,900 m² to the south and 4,835 m² to the east totalling 20,185 m².

Current car parking construction techniques estimate 30 m² is required per car parking space (allowing for access roads and internal circulating roadways). Therefore, Smithfield Station has the potential for an additional 675 spaces to be provided to complement the current 150 spaces if the Park and Ride facilities, assuming the new spaces were to be provided in the form of a surface car park. Multi-story parking facilities have the potential to further increase this amount.

12.2.2 Upgraded Elizabeth Station Park and Ride

Presently the Elizabeth Station precinct and associated existing Park and Ride facilities are located within an already confined station precinct. Therefore, the potential for expanding the Park and Ride within close proximity to the station on the eastern side of the train line is limited.

Two options are available for expanding the Park and Ride facilities at Elizabeth Station. The first and least costly is to allow commuter parking within the Elizabeth Shopping Centre precinct, however this would require negotiations and potential compensation with shopping centre management. The second alternative is to develop a new Park and Ride facility on the western side of the train corridor. This land is presently undeveloped land; however, access to this location from the eastern side of the train line is limited due to inability to cross the train line near the station.

12.2.3 Other potential Park and Ride locations

The development of successful Park and Ride locations is limited to major stops, stations and interchanges where access to high quality, fast frequent and reliable transport services are readily available. Developing Park and Ride locations within the existing urban areas more remotely from existing train stations is unlikely to capture significant numbers of new users to the system.

There is the potential for developing new Park and Ride facilities in the regional townships as their population levels increase. With the major residential developments occurring in Buckland Park, Virginia and Angle Vale, there is the potential to develop new facilities at strategic locations along high quality passenger transport services linking these townships to Elizabeth, Smithfield, Salisbury or the Adelaide CBD. However, development of these sites would not be warranted until the high quality transport corridors are established and there is significant population to support such infrastructure development.

12.2.4 Development of Park and Rides

The cost to develop Park and Ride facilities can vary significantly, depending on the type and standard of infrastructure provided and the size of the facility; land acquisition can also represent cost components. The 2011 costs for developing a surface car parking facility can vary between \$4,000 and \$5,000 per space. This does not include land acquisition, landscaping or passenger transport infrastructure.

If the Park and Ride demand is significant enough to warrant a multi-story parking facility, then a significant increase in the cost to develop the site is required. For a basic multi-story facility (louvered walls and naturally ventilated), a cost of \$20,000 to \$25,000 per space should be allowed for. Therefore, unless the available space is constrained, and Park and Ride demand is sufficient to warrant such a facility with some form of cost recovery (for example the paid Park and Ride spaces at Tea Tree Plaza and Noarlunga Centre), then multi-story Park and Ride facilities are generally not viable.

The Passenger Transport Service Division (PTSD, DTEI), have indicated that there is a preference for developing large scale Park and Ride sites of 500 spaces or more along major transit corridors. The preference for larger sites is a result of lower costs per parking space and the ability to improve security with CCTV. PTSD are currently examining locating large Park and Ride sites on land that could eventually be transformed into Transit Oriented Developments, when the property values reflect TOD development potential.

The PTSD estimate that the current cost to develop new Park and Ride sites is approximately \$10,000 per car park¹⁶. This cost includes asphalt, curbing, stormwater, lighting, and CCTV. However, this is based on ideal development conditions and that additional funding would be required for basic transport infrastructure such as stops, shelters, seating and information infrastructure.

12.3 Bus priority infrastructure

Bus priority is an important component for delivering consistent and reliable passenger transport services throughout the day. Bus priority is especially important for areas where there are high volumes of passenger transport vehicle movements or where services are delayed due to traffic conditions or congestion.

Bus priority infrastructure can be implemented in various forms including:

- Bus lanes:
 - ▶ Bus only roadways can be implemented for sections of the transport system that experience substantial passenger transport vehicle volumes. Bus only roadways

¹⁶ Based on estimates provided by PTSD 2010

can be as extensive as the Adelaide O-Bahn where they are grade separated, to providing high speed, reliable services to roadways such as Station Road between Morialta Drive and the Smithfield Train Station.

- ▶ Dedicated bus lane: these can full time bus lanes where the road is marked with red pavement. An example of this is at the intersection of George McCullum Road and Main North Road.
- ▶ Part time bus lanes can be implemented where bus priority is required only during certain periods of the day. An example of part time bus lanes is evident on Pulteney Street (south of Grenfell Street) in the Adelaide CBD. Outside of peak times these bus lanes revert to car parks. Another example of these lanes are along West Lakes Boulevard to serve bus movements to/from AAMI Stadium.
- ▶ Clearways, like part time bus lanes restrict car parking on main roads during peak periods. These benefit passenger transport services as more road space is made available for general traffic movements, thereby improving traffic flows for buses.
- Bus intersection priority:
 - ▶ Bus only signals and movements provide priority to passenger transport services by enabling vehicle movements not possible for general traffic. This type of priority is provided at the intersection of George McCullum Road and Main North Road. This current intersection configuration enables services to turn right onto Main North Road where general traffic is not permitted.
 - ▶ Bus queue jump lanes provide services with the ability to jump ahead of traffic queues by providing dedicated lanes leading up to a signalised intersection. This form of priority is often coordinated with bus priority signal phasing (see below)
 - ▶ Bus priority signal phasing is where bus services receive a priority signal phase ('B' phase) allowing buses to either jump ahead of traffic (prior to the regular traffic movement) or enabling services to make a restricted turning movement (for example hook turns – right turning movements from the far left lane)
 - ▶ Intersection prioritisation and green wave phasing is a complex form of service prioritisation. This form of priority relies on GPS tracking technology to determine priority at signalised intersections. For example, based on a bus's location, schedule and speed, signalised intersections can adjust phasing to enable the passenger transport service priority at the intersection by a green wave (signals turn green at each intersection the bus approaches). This form of technology is in operation with Henley Beach Road and The Parade services.

Bus priority can be implemented in various forms and to different degrees. Providing priority measures can greatly assist the on-time running of services while maximising the efficiency of vehicles by providing consistent travel times for routes and services.

12.3.1 Potential bus priority locations

With major alterations and improvements to the passenger transport network, priority measures should be considered at locations which will support high volumes of passenger transport services and movements.

Based on the present and future networks the following locations should be considered for priority measures:

- intersection of Haydon Road and John Rice Avenue
- intersection of Oldham Road and Philip Highway
- access to and from Elizabeth Station
- Oxenham Drive
- Playford Boulevard including intersection with Philip Highway
- intersection of Yorktown Road and Main North Road
- Elizabeth Way and Winterslow Road
- George McCullum Road including upgraded intersection with Main North Road
- Warooka Drive
- Anderson Walk
- Curtis Road
- Peachy Road

12.4 Interchange improvements

Interchanges represent an important component to a passenger transport network as they allow passengers to connect more effectively to multiple services across the network. These locations facilitate passengers to transfer from one service to another. Therefore, high quality facilities are required to provide adequate waiting areas for transferring passengers.

Within the City of Playford, three major interchange already exist. These are Elizabeth Station, Smithfield Station and Munno Para Shopping Centre. However, with the expansion of the passenger transport network, more interchanges are likely to be required in the future.

The Strategic Passenger Transport Plan has identified some potential new interchanges that would assist in improving the connectivity and integration of the passenger transport network for the City of Playford. The new facilities are suggested at:

- **Major interchanges**
 - ▶ Munno Para Station
 - ▶ Lyell McEwin Hospital (Haydown Road)
 - ▶ Playford Alive District Centre (Curtis Road and Peach Road)
 - ▶ Angle Vale Shopping Centre
 - ▶ Virginia Shopping Centre; and
 - ▶ Buckland Park District Centre (Port Wakefield Road).
- **Minor interchanges**
 - ▶ Craigmore Shopping Centre
 - ▶ Womma Station
 - ▶ Greater Edinburgh Parks; and
 - ▶ Buckland Park (internal centre).

12.5 Operational facilities

Facilities such as bus depots and bus storage locations are a vital component to the operation of a transport network. The future transport network is likely to place considerable strain on the existing facilities already located in the City of Playford. Also the expanding

geographical coverage of the network will create inefficiencies if new additional facilities are not developed.

With only a slight estimated increase in the passenger transport vehicle fleet in the short term, new depots and facilities are unlikely to be required until 2013 or beyond. However, the Strategic Passenger Transport Plan recommends establishing potential locations in the short term to ensure that these locations are safeguarded for the future networks.

A list of current and potential depots locations has been described below:

- **Existing**
 - ▶ Elizabeth Depot (SouthLink): Hewittson Road, Elizabeth East
 - ▶ Edinburgh Depot (Torrens Transit): East Avenue, Edinburgh
- **Potential new locations**
 - ▶ Buckland Park
 - ▶ Angle Vale
 - ▶ Smithfield/Munno Para; and/or
 - ▶ Greater Edinburg Parks.

13. Action plan

The components of the City of Playford Strategic Passenger Transport Network (PSPTN) plan have been prioritised to determine the most appropriate order in which they should be delivered over the next 15–20 years, to enable the development of an associated Action Plan. Each component has alternatively been rated as very high, high, moderate and low based on the importance and priority in which the component should be completed.

The rating has been based on transforming the passenger transport network within the City of Playford into a legible, useable and reliable passenger transport system. Components that have a very high rating have received this category as these components are seen as not meeting the current standards applied within other regions within Metropolitan Adelaide.

Components which have received a high rating are essential to the delivery of the basic core components and structure of PSPTN. Components with moderate and low ratings still represent an important elements of the system however, may not be essential in delivering the PSPTN.

13.1 Costing for infrastructures and services improvements

As part of the Action Plan, some costs have been developed for each component, however, many of the information, communication and infrastructure improvements require future assessment to determine accurate capital and operating costs. Therefore, only a high level indication of associated cost has been developed for these elements. For example, a bus only lane utilising existing road pavement may only require a coat of paint and therefore has an estimated cost of \$80-\$100 per linear metre, whereas constructing a new bus only lane may require land acquisition, road widening and significant modifications to road infrastructure which could cost in excess of \$1 million per metre.

High level cost bands have been adopted to indicate the relative scale of the improvement costs for each component. These bands are:

- \$ Small: for capital or operational improvements with budgets less than \$100K.
- \$\$ Medium: for capital or operational improvements with budgets more than \$100K but less than \$1M.
- \$\$\$ Large: for all capital and operation improvements with budgets larger than \$1M.

13.2 Rationale

The current passenger transport network has a good foundation; however portions of the existing system can be confusing and difficult to interpret from a passenger's perspective. This is especially evident with evening and night time services and where services are not coordinated (for example between Elizabeth and Lyell McEwin Hospital). The Action Plan aims to set out the basic structure and the core components of the network to improve services, legibility and customer satisfaction in the short term, while establishing and protecting future infrastructure improvements.

The Action Plan aims to provide quick wins to the system that can easily be introduced, and which will provide immediate user benefits. Priority in the Action Plan is given to:

- providing consistent and reliable passenger transport
- route simplification and consistent timetables; and
- improving frequencies and hours of operation.

The planning strategies for other passenger transport improvements such as infrastructure and bus priority have also been developed within the Action Plan, so that once the core components of the basic network have been established, these supporting features can be developed as part of the longer term plan.

Table 13.1 below highlights the key components of the Action Plan, and the priority of each element. Further details of each component are then described below.

Table 13.1 Action Plan priority matrix

Area	Action	Year	Priority
Community	Community input into passenger transport planning	2011–2021	High
Services	Route and network improvements	2011–2013	Very High
	Increased service frequencies	2011–2013	Very High
	Improved coverage to new developments	2013–2021	High
Infrastructure	Audit of bus stop infrastructure	2011–2012	High
	New Mass Transit corridors safeguarding	2011–2012	Very High
	New Mass Transit corridors development	2016–2021	Low
	Improved passenger transport infrastructure	2011–2021	High
	Park and Ride facilities	2011–2021	Moderate
	Passenger transport priority measures	2011–2021	Low
	Passenger transport infrastructure requirements	2011–2021	High
	Passenger transport stop and station disability accessibility	2011–2018	High

13.3 Community (Information and communication)

13.3.1 Community input and involvement

Passenger transport services are designed to meet community transport needs and accessibility requirements. Therefore, any future transport network needs to have the support of its users and the wider community. Passenger input is critical in ensuring that the established network is responsibly meeting these needs and requirements. However, passenger input and involvement into the planning and development of passenger transport services is often ignored or not considered. To gain acceptance from the community and to develop a sense of ownership for the passenger transport network, community input and involvement should take a high priority early in the process.

The Action Plan recommends establishing a feedback and recommendations website as part of the regular council website. This portal would allow residents access to passenger transport information including service changes, updates, detours, etc. (mostly sourced from Adelaide Metro), but the site would also allow residents to provide comments and feedback on transport issues in the area of concern to them. This information could be collated and used as part of the wider advocacy role of Council for improving passenger transport in the region.

13.3.2 Information and communication provision

The passenger transport system within the City of Playford will change significantly over the next 10–15 years. User travel patterns and demand to travel around the transport network will likely change over this period, and the opportunities available for new users to identify passenger transport as their preferred mode of choice for selected trips will increase. The information and communication focus of the Action Plan should therefore focus on ensuring that:

- the background to and need for the PSPTN is understood and accepted by the community
- the community is involved in the development and expansion of the passenger transport network to ensure travel demands are met; and
- the opportunities to improve the marketing and information are set in place by the City of Playford.

The Action Plan will deliver high quality passenger transport information to passengers via multiple forms of media. As new technologies are developed over the 10–15 year timeframe, these new developments will be examined and potentially incorporated into the delivery of a high class passenger transport communication and information service.

13.4 Services

13.4.1 Network structure improvements

The focus for the network structure in the Action Plan is on developing the Mass Transit/Go Zone, Feeder and Local network of passenger transport routes as a means of addressing existing service weaknesses and shortcomings (inefficiencies, duplication and convoluted operation), and building on the strengths (frequent and direct main road corridors) of the current network. Structural changes to the City of Playford passenger transport network are required in order to meet the objectives of the PSPTN. The PSPTN proposes that the public bus routes in the City of Playford region will dramatically change over the timeframe of the plan.

13.4.2 Temporal coverage and frequency improvements

Improving the frequency and the duration of hours across which services are provided, will significantly improve the level of service provided to the general public via more options to access employment, services, facilities and recreation. The Action Plan therefore aims to support the development of the core network structure with improvements to frequencies and duration of operating hours, in accordance with the service planning guidelines within the PSPTN, but without the requirement for investment in additional fleet. As capital (fleet) costs

are driven by peak hour demands, improvements outside of peak hours can generate significant benefits with no immediate capital cost implications. Areas for improvements are:

- increasing weekday interpeak frequencies
- improving night time services
- improving early morning weekday services
- improving Saturday services to match interpeak weekday frequencies; and
- providing a minimum level of service on Sundays and weekend nights (minimum of an hourly service).

The Action Plan will also aim to providing consistent weekend and public holiday timetables, whereby the same basic level of daytime service would be operated on both days (with additional Saturday morning and night services to cater for the extra passengers at these times).

13.4.3 Long term passenger transport plan

With a new core network established for the short term, the longer term goals for the Action Plan can be set in place to increase frequencies to match those which are currently provided on inner suburban services in Adelaide. These may include improving service frequencies to Go Zone standard.

The Action Plan calls for the continued advocacy for improved passenger transport in the region and the development of a state government, local council and community adopted longer term passenger transport plan for the Northern Adelaide region.

13.5 Infrastructure

The main aim of the Action Plan is to develop the basic structure of the network. The infrastructure elements of the Action Plan focus on developing the detailed strategies for bus stop facilities, interchanges and bus priority measures to be prioritised over the next 10–20 years.

13.5.1 Bus stop audit and infrastructure requirement

The Action Plan identifies that improvements to bus stop infrastructure including signage, route and timetable information panels, should be of the highest priority. Good quality service information is crucial to the use of any passenger transport service.

In order to fully understand the scope of a rollout program of standardised bus stop information and signage, an audit of the current bus stop infrastructure within the City of Playford region should be conducted. The purpose of this audit will be to assess what bus stop infrastructure is current in the network, what stops require additional infrastructure to meet the minimum standards within the PSPTN, and where the demand for new infrastructure will be. The audit should also include an assessment of bus stop locations for the entire network, and provide recommendations on where bus stops should be added or removed, with a particular focus on the rationalisation of bus stops for the network.

The bus stop audit will develop a framework and action plan to meet the requirements of the Disability and Discrimination Act. The audit should suggest an appropriate timeframe and prioritisation for which bus stops meet the specified requirements.

The bus stop audit will determine appropriate levels of information to be provided at bus stops, including a feasibility assessment for the potential implementation of real time passenger information systems (RTPIS).

The PSTNP identified a number of key interchange points on the route network. The bus stop audit will also be used to identify and document the infrastructure requirements necessary for these locations to provide safe and efficient interchange opportunities for passengers. Considerations could include:

- pedestrian access paths between connecting services
- bus stop capacities
- implications for surrounding areas:
 - ▶ footpath capacity
 - ▶ car parking space.

13.5.2 Mass transit corridor safeguarding

The 30-year Plan for Greater Adelaide identified a potential Mass Transit Corridor between Elizabeth and Buckland Park. The strategic plan has identified further potential corridors from Smithfield to Angle Vale, Salisbury to Virginia and Buckland Park to Gawler. Although, most of these corridors may not be developed within the next 10 year, safeguarding and reserving the rights of way will not preclude the development of the corridors in the future.

The City of Playford, in coordination with the Department for Transport Energy and Infrastructure and the Department of Planning and Local Government, should conduct a study into the feasibility, route options and corridor safeguarding for each of these corridors. This study would determine the most appropriate corridor, preferred mode of transport as well as potential land reservation, acquisition and requirements for the corridor, facilities and potential stations.

With the development of the outer northern regions progressing at a strong pace, this study should be conducted within a short timeframe to ensure that opportunities are not lost.

13.5.3 Passenger transport priority infrastructure strategy

As part of Action Plan, a study into the effective implementation of bus priority measures should also be conducted. This would include an audit of current congestion points and areas of delay. The study should:

- determine where appropriate bus priority infrastructure (such as bus lanes, queue jump lanes, signal priority, the introduction of peak hour clearways, the removal of on-street parking etc.) can be placed to improve passenger transport operations and travel times
- determine the impacts of the identified priority measures on other users (traffic flow, parking, pedestrians)
- determine the costs and benefits of the identified priority measures
- prioritise investment accordingly.

The study into priority measures could be conducted in stages in accordance with the implementation of the service changes and expansion of the passenger transport network. For example, a study of the passenger transport services operating between Munno Para Shopping Centre and Smithfield Station, and whether the current road network can support a higher volume of bus movements.

13.5.4 Park and Ride strategy

Park and Ride can be an effective measure for growing patronage and attracting users out of their cars for longer distance travel. However, a fine balance between high quality feeder bus services, frequent core services and Park and Ride infrastructure is required to develop a successful and integrated system. Numerous large Park and Ride locations may directly compete with the Feeder and Local networks, thus reducing the efficiency of the network. Park and Rides are an element to the PSPTN, however they need to be adequately investigated and implemented as part of a wider strategy for infrastructure provision. As part of the Action Plan, it is recommended that a further detailed study be undertaken to examine the potential locations for Park and Ride expansion and infrastructure. The study would build upon the investigations and assessments that the DTEI have already conducted at selected locations along the Gawler Train Line. Park and Ride infrastructure requirements such as size and location for the City of Playford region, and the interaction between such sites and the strategic bus network, need to be examined in more detail.

13.5.5 Interchange improvement strategy

The Action Plan for the passenger transport network in the City of Playford identifies that an investigation into the upgrade and development of existing or new interchange facilities is warranted. With the expansion of the network and the development of new satellite development regions (such as Angle Vale, Buckland Park and Virginia), new interchange facilities will be required to enable passenger transfer between services across the network.

This study should examine the potential location and size of new interchanges as well as examine the potential to upgrade existing interchanges, including investigating capacity constraints with regard to vehicle movement and bus stop capacity.

13.5.6 Operations facilities strategy

The future options forecast a significant increase in bus fleet requirements over the next 10–20 years. This will place considerable strain on the existing storage and maintenance facilities as well as a potential increase in out-of-service kilometres. Therefore, the Action Plan recommends that a fleet acquisition and depot strategy be developed in coordination with local service providers and the state government. This study would include and need to cover:

- the assessment of the government's bus procurement program required over the next 10–15 year timeframe
- how many buses would be required and at what stages
- what facilities and infrastructure would be required to operate and service the vehicles?

The study would also examine the optimum location for depot and storage facilities. Significant savings in operating costs can be made by locating depot or stabling facilities near to major interchanges and terminals. Therefore, the study would also examine the requirements for new depot facilities for the City of Playford region. Although the majority of this study would be developed by DTEI and service providers, council can play a significant role in assisting and determining appropriate locations for light industrial land uses such as bus depots. The joint venture study should examine:

- storage capacity
- maintenance services

- administration offices; and
- land requirements.

The transport facilities study should also examine the capacity of existing infrastructure such as layover space and storage capacity at major interchanges including Elizabeth and Smithfield.

13.6 Action plan summary

Table 13.2 Action plan

Cost	Project	Project Period	Agency
Community (information and communication)			
\$	Community feedback and recommendations	Establish a feedback procedure to record community comments and concerns for passenger transport services in the region. This could be in the form of an online form that residents can submit via the council website or through regular council surveys. Comments and recommendations can be collated and used to advocate for improved services across the region.	2011 Council
Services			
\$\$	Advocate for an improved passenger transport network structure	Discuss the potential to change and adjusted the current passenger transport network structure to improve services, maximise resources and simplify the current network	2011–2012 Council
\$\$	Advocate for increasing services to meet minimum service standards	Negotiate and advocate for improved service levels for selected routes (especially the Gawler Train Line) to meet a minimum standard	2011–2012 Council
\$	Ongoing advocacy for improved services to DTEI and State Government	Continue to advocate for improved services through the establishment of a Community web-portal and supporting transport/ economic/population/growth documentation	2011–ongoing Council
\$\$	Long term passenger transport plan	Develop in coordination with DTEI and Planning SA a long term passenger transport plan which would examine future potential routes, service levels, patronage projections, costs, infrastructure requirements for long term developments. The plan would influence the design of structure plans and newly developed areas to maximise the use and efficiency of passenger transport services	2012–2013 DTEI, PTSD, Planning SA, Council and service providers.

Cost	Project	Project Period	Agency	
Infrastructure				
Bus stop infrastructure				
\$	An audit into existing bus stop infrastructure and facilities including: <ul style="list-style-type: none">The number and location of stopsBus stop infrastructure requirementsBus stop rationalisationOptimisation of stop locations; andDevelop a hierarchy of stops to coordinated and provide adequate infrastructure to where it is required the most.	2011-2013	Council	
\$\$	Commence a long term study into the development of bus stop infrastructure for the region including responsibilities, the capital and maintenance costs, establishment of minimum standards for seating, shelters and information at bus stop locations.	2012-2013	DTEI and Council	
\$\$	Transport accessibility infrastructure study to establish a program to improve the accessibility of passenger transport services in the region including disability access of services and associated infrastructure at bus stops. The program would also examine disability access between developed areas and passenger transport infrastructure (bus stops and train stations)	2011-2018	DTEI, Planning SA and Council	
Mass Transit Corridors				
\$	Elizabeth to Virginia and Buckland Park corridor safeguarding	Establish a planning study to examine potential corridors for the Elizabeth to Buckland Park and Virginia Mass Transit Corridor as stipulated in the 30-Year Plan for Greater Adelaide	2011–2012	Planning SA, DTEI and Council
\$	Munno Para to Angle Vale mass transit corridor safeguarding	Establish a planning study to examine the potential of developing a Mass Transit Corridor between Munno Para and Angle Vale	2011–2012	Planning SA, DTEI and Council
\$	Buckland Park, Virginia, Angle Vale to Gawler mass transit corridor safeguarding	Establish a planning study to examine the potential of developing a Mass Transit Corridor between Buckland Park, Virginia, Angle Vale and Gawler	2011–2012	Planning SA, DTEI and Council
\$	Buckland Park, Virginia to Salisbury and Adelaide	Establish a planning study to examine the potential of developing a Mass Transit Corridor between Salisbury and Buckland Park, Virginia via the current rail or road corridors.	2011–2012	Planning SA, DTEI and Council
Park and Ride facilities				
\$	Develop a study into the long term establishment of new Park and Ride locations within the council region.	2012-2013	DTEI, Planning SA and Council	

Cost	Project	Project Period	Agency
Bus priority improvements			
\$\$	<p>Study into the possible implementation of bus priority measures. The study would include a cost and benefit analysis as well as detailed examination into the impacts to traffic, parking and passenger transport services. The study would focus particularly on the core network with possible options development for congestion points on the feeder and local networks. Possible locations include:</p> <ul style="list-style-type: none"> ▪ Intersection of Haydon Road and John Rice Avenue ▪ Intersection of Oldham Road and Philip Highway ▪ Access to and from Elizabeth Station ▪ Oxenham Drive ▪ Playford Boulevard including intersection with Philip Highway ▪ Intersection of Yorktown Road and Main North Road ▪ Elizabeth Way and Winterslow Road ▪ George McCullum Road including upgraded intersection with Main North Road ▪ Warooka Drive ▪ Anderson Walk ▪ Curtis Road; and ▪ Peachy Road. 	2012-2014	DTEI, Planning SA, Council and transport operators
Interchange improvement strategy			
\$\$	<p>Study to examine the cost and prioritisation of upgraded existing and developing new interchange facilities:</p> <p>Major Interchanges</p> <ul style="list-style-type: none"> ▪ Munno Para Station ▪ Lyell McEwin Hospital (Haydown Road) ▪ Playford Alive District Centre (Curtis Road and Peach Road) ▪ Angle Vale Shopping Centre ▪ Virginia Shopping Centre; and ▪ Buckland Park District Centre (Port Wakefield Road) <p>Minor Interchanges</p> <ul style="list-style-type: none"> ▪ Craigmore Shopping Centre ▪ Womma Station ▪ Greater Edinburgh Parks; and ▪ Buckland Park (internal centre) 	2012-2014	DTEI, PTSD, Planning SA, Council and service providers.

Cost	Project	Project Period	Agency
Operations facilities strategy			
\$	<p>Depot strategy to identify the optimum locations and sizes of the future required depots. This study would determine possible locations for new/expanded depots to maximise the use of the passenger transport fleet, lower the operation costs and reducing the amount (or percentage) of dead running kilometres.</p> <p>An emphasis should be on potential depot or storage facilities at the following locations:</p> <ul style="list-style-type: none"> ▪ Buckland Park ▪ Angle Vale ▪ Smithfield/Munno Para; and/or ▪ Greater Edinburg Parks 	2011-2013	DTEI, service provider and Council
\$ = Small (<\$100K) \$\$ = Medium (\$100K - \$1.0M) \$\$\$ = Large >\$1.0M			

13.7 Interaction with other agencies

The Action Plan will require the coordination of several government agencies and planning authorities:

- coordination with the Department for Transport Energy and Infrastructure for determining and planning bus priority measures
- coordination with other council departments on bus stop infrastructure requirements, changes to parking restrictions, zoning requirements
- Infrastructure Australia for funding.

14. Summary

The City of Playford Strategic Passenger Transport Plan presents the findings of a comprehensive investigation into the provision of passenger transport services within the Playford Region. This has been done via the following process:

- Research conducted on current state and local government reports and policies including the City of Playford Council Plan, The City of Playford Community Plan, State of the City report 2010, South Australian Strategic Plan, Strategic Infrastructure Plan for South Australia, 30-year Plan for Greater Adelaide and the Department for Transport Energy and Infrastructure Annual Reports. The research conducted reviews of the policies and objectives that have been established in each of these documents. These policies and objectives have been used to assist in the development of the strategic passenger transport plan including the development of improvement options.
- Development of a baseline review for passenger transport services for the City of Playford based on the region's demographics and environs, to provide an overview of the potential attractors for passenger transport services and a summary of existing passenger transport services in the region. Potential attractors include the existing major retail facilities at Elizabeth and Munno Para (Smithfield), the various education institutions (including the TAFE SA campus in Elizabeth North and Para West Campus in Davoren Park), the major health services at Lyell McEwin Hospital and the various general practitioner clinics (including GP+ centres) and the major employment regions of Elizabeth West, Smithfield and Edinburgh.
- A detailed assessment of the current passenger transport network within the City of Playford. This includes a detailed review of current services, frequencies, route networks, geographical coverage, infrastructure and facilities. This review considers MetroTicket services (provided under the Adelaide Metro banner), regional bus services and community transport. An analysis of current passenger usage and boarding location was also conducted.
- Identification of current issues that exist within the current passenger transport network including: routes and services, hours of operation, frequency of service, accessibility and social inclusion.
- The evaluation of the proposed future urban developments and population growth. In particular the impact that the population on the passenger transport network.
- Identification of the key challenges and direction for passenger transport including, current gaps and passenger transport use. Based on the gaps identified and the current issues with the network, a series of improvements were developed to progress the passenger transport network into a coherent, accessible and equitable service for all residents. This section focused on making small service improvements to create consistent service coverage and frequencies.
- Building upon the current services, the establishment of passenger transport network principles was developed to outline possible improvements/desires for a future passenger transport network. The principles for the network included:
 - ▶ priority to quality of services
 - ▶ development of a route hierarchy and layered network
 - ▶ developing service standards

- ▶ establishing guidelines for the delivery of service; and
- ▶ recommending a logical format to geographical service provision.

From the research conducted and the recommended service guidelines, a series of options were created to determine different levels of improvement that could be made to the existing system. These options were based on the current passenger transport services, network, population and urban development. The options were as followed:

- Option 1: Development of scenario that would deliver a minimal level of service improvement. This option focused on increasing service levels on selected routes to match other service currently provided within the region. This option also addressed some connectivity issues; however, the majority of improvements were focused on upgrading services to meet a minimum standard.
- Option 2: The second scenario examined the possibility of increasing services on selected routes to provide high quality, Go Zone standard services (15 minute services on weekdays and 30 minute services at nights and weekends), to select routes within the existing network. Although, this option significantly improved service levels in selected regions, duplication of resources and a high cost to implement this option (such as capital and operational costs) denoted that this option was less viable than others developed.
- Option 3: The third option was based on maximising the existing services and resources while making modest increases to the operating cost of the system. This option examined the possibilities of simplifying the network, establishing new connections and links, removing duplicated or closely space corridors, upgrading service frequencies and improving legibility. However, implementing this option did have some impacts on the community. Some residents would be required to walk further to a transport services and some passengers would be required to make a transfer to complete their present journey.
- Option 4: The final option was developed to determine the cost of implementing a large proportion of the Option 3 network at a high frequency, Go Zone standard level. This included significant improvements to Gawler Train Line. The scenario, built upon the revised network established in Option 3, however, provided the majority of routes within the urban area at Go Zone standard. Although, this scenario is highly desirable from a community perspective, the costs associated with significantly improving service to this level is unlikely to occur in the short term (0-3 years). However, this option was still included to indicate the cost associated with operating a transport system at this level.

Each option was then costed, compared and assessed based on criteria such as improvements to:

- frequency
- reliability
- speed
- integration
- connectivity
- consistency
- legibility; and
- accessibility.

An additional comparison of each route was conducted. This included an assessment to determine the possibility and likelihood of implementing each service, with this assessment being based on:

- Ease of implementation
- Impacts on:
 - ▶ Community
 - ▶ Service providers
 - ▶ Government; and
 - ▶ Council.
- Innovation of services
- Value for money; and
- Meeting the goals and objectives

Based on the analysis of the different options, a score was applied to each criterion for each option. From the assessment of the options and cost to implement, Option 3 was determined to deliver the greatest improvement without significantly increasing operating or capital costs.

With the significant growth in residential population expected to occur over the next 5 to 40 years, three additional future scenarios were developed. Based on the preferred network established in Option 3 for the existing network, each of the future scenarios reflected a series of improvements as the residential population increases, and as the expected level for demand, and expectations from the community, increase. The future scenarios were based on 2013 to 2017, 2018 to 2020 and 2020 to 2030+ timeframes. Each scenario identified potential new routes and services, significant upgrades to the Gawler Train Line and establishment of a network of high frequency Go Zone corridors across the region. Each future scenario was costed based on current operational funding per revenue kilometre.

The 30-year Plan for Greater Adelaide identified the corridor between Elizabeth and Virginia/Buckland Park as a potential new mass transit corridor. Building upon this base, the PSPTP identified possible alignment for this suggested corridor while also examining possibilities to develop other alternative mass transit corridors in the region based on the projected population and residential development growth. Four additional corridors were suggested as part of the potential infrastructure upgrades to the passenger transport network:

- Smithfield to Angle Vale
- Buckland Park/Virginia to Angle Vale and Gawler; and
- Buckland Park and Virginia to Salisbury.

Additional infrastructure improvements have also defined as part of this plan. These include the potential to expand Park and Ride sites (and associated costs), upgrades to major interchanges, bus priority measures, and new or upgraded operation facilities (such as bus depots).

The PSPTP has established a set of actions in which the current system can be improved, modified and researched to assist in the delivery of an improved passenger transport network. Based on the network improvement options and infrastructure upgrades, a series of key actions has been established. Each action is grouped under **Community**, **Services** or **Infrastructure**, and provides a brief description on the action, when the action should be completed, by when, and what organisations are responsible for completing these actions.

15. Recommendations

Recommendations for the proposed passenger transport network for the City of Playford reflect a combination of routes and service improvements, operational funding costs and infrastructure requirements.

Based on the research conducted, several recommendations have emerged from the development of this plan. These recommendations are listed below:

15.1 Implementation of Option 3 service plan

As discussed previously, Option 3 provides the greatest benefit to the community with a moderate increase in operational cost. The strategic plan recommends that this option be further analysed by the current service provider (SouthLink) and the Department for Transport Energy and Infrastructure.

Option 3's characteristics include: upgrading services to meet a minimum service standard; development of new links which are currently missing within the existing system; maximising resources by reducing competition between services and modes; establishment of new Go Zones to key destinations such as Lyell McEwin Hospital, Para West Campus as well as Smithfield, Munno Para Shopping Centre and Elizabeth, as well as to suburbs such as Craigmore, Davoren Park and Elizabeth South. The two latter areas have high percentages of households without private vehicles.

This option represents the highest service benefit at a moderate cost by amalgamating routes and coordinating services. The slight impacts to the community such as increased walking distances (for some residents) and requirement for some residents to transfer in making their current trips (limited number) are outweighed by the benefits of improved service frequencies, consistency of services, reduction in the number of convoluted routes (improved directness), improvements to operating hours and consistent weekend timetables. Therefore, this is the recommended option to proceed.

15.2 Other implementation options

The strategic plan recognises that implementing Option 3 (described above) requires a modest increase in service resources and therefore cost. Although, it is recommended to implement this option in a single stage (therefore, allowing all future improvements to be built upon this network), the plan identifies that additional funding may not be available to complete the implementation process in this way. Therefore, as an alternative option, the following recommendations have been established to assist in progressing the network towards the preferred structure. These recommendations are listed below:

15.2.1 Removal of competing services

Competing services do not maximise the use of the limited funding available for services. Therefore, it is highly recommended that removing as many competing services as possible will assist in delivering a network that is still accessible but is less wasteful.

The strategic plan recommends:

- The removal of competing services with the Gawler Train Line to the Adelaide CBD. Presently route 228 provides a direct connection between Smithfield and the City. These services should be redirected to Elizabeth to connect with the train services. Passengers would still have access to Main North Road from Elizabeth Station.
- Routes 224, 400, 500 and 560 presently operate along similar routes between Elizabeth, Lyell McEwin Hospital and Salisbury. These routes should be amalgamated into two new services to increase frequencies, reduce competition and improve legibility of services along these corridors.
- Routes 451 and 452 operate along similar corridors between Elizabeth and Davoren Park. A corridor spacing of approximately 300 m is considered by the strategic plan to be too close. Amalgamating these routes could enable a new high quality corridor to be established.

15.2.2 Upgrade all services to a minimum frequency

- The highest priority for upgrading services within the City of Playford region is the upgrade of the Gawler Train Line. Presently evening and night services on weekdays and weekends operate hourly from 7:00 pm. The strategic plan considered the Gawler Train Line to be the key passenger transport asset, and the quality of this service should be high. Therefore, it is highly recommended that the Gawler Train Line's frequency during evening and night periods be upgraded to a minimum of 30 minutes. With many of the existing bus services reliant on the train service for connections from the Adelaide CBD, upgrading service frequencies will greatly assist in the operation and future planning of supporting (bus) passenger transport services.
- Upgrade all services operating within the metropolitan/urban area to a minimum of 30 minutes on weekdays.
- Upgrade all services operating within the metropolitan/urban area to a minimum of hourly at night and weekends (including Public Holidays).

15.2.3 Recommended upgrades (before 2015)

- Upgrade all services to operate at a minimum headway of 30 minutes between 7:00 am and 7:00 pm weekdays, 8:00 am and 6:00 pm Saturdays and 9:00 am and 6:00 pm on Sundays and public holidays.
- All train station should have a minimum of a 15 minute frequency between 7:00 am and 7:00 pm seven days a week and 30 minutes outside of these times. All major stations should have double frequencies as those at other stations.
- Significantly expand the Park and Ride facilities within the region, with the notion that the surface car parking could be transformed into Transit Oriented Development if/when demand is warranted in the future.

15.2.4 Upgraded corridors (Go Zone development)

- Upgrade the direct link between Elizabeth and Salisbury to Lyell McEwin Hospital by developing a new Go Zone service linking the three major centres.
- Develop a new high frequency Go Zone corridor linking Craigmore shopping centre with Elizabeth via Yorktown Road.
- Develop a new high frequency Go Zone corridor linking Peachy Road to Elizabeth.

15.2.5 New linkages

The PSPTP has identified many links and connections which are missing from the current passenger transport network. As part of the future network, new links should be established to allow residents to access key destinations. These new links have been identified as:

- Hillbank to Lyell McEwin Hospital
- DSTO/RAAF to Elizabeth
- Lyell McEwin Hospital to Elizabeth South Station
- Elizabeth Village and The Palms Residential Village to Elizabeth; and
- One Tree Hill to Elizabeth.

In addition to the short term links and connections, future connections will be required to satisfy the demand from future developments. The future key links have been identified as:

- Buckland Park and Virginia to Elizabeth
- Buckland Park and Virginia to Angle Vale and Gawler.

15.2.6 Corridor safeguarding

The 30-year Plan for Greater Adelaide identified the Buckland Park and Virginia to Elizabeth corridor as a potential new mass transit corridor. The PSPTP identified a further three potential mass transit corridors in the region. Since the mode of transport for these corridors is unknown or undecided, safeguarding of these corridors to enable any mode (Train, Tram or Bus Rapid Transit) should be conducted. For safeguarding purposes, a double track train line should be safeguarded. This would enable any mode of transport to be constructed in the proposed corridors. It is recommended that a minimum corridor safeguarding width of 25 m be allocated with a minimum turning radius of 400 m. However, exact corridor locations and dimensions should be discussed with the Department for Transport Energy and Infrastructure and Planning SA. The recommended corridors are:

- safeguard corridor between Elizabeth and Virginia and Buckland Park
- safeguard corridor between Smithfield and Angle Vale/Virginia/Buckland Park
- safeguard corridor between Virginia/Buckland Park, Angle Vale and Gawler.

15.2.7 New infrastructure

The PSPTP recommends that a study to investigate the potential for the expansion of Park and Ride facilities in the region is warranted. With the upgrade and electrification of the Gawler Train Line in the near future, the demand for Park and Ride facilities is likely to increase. An investigation into the size, number and locations of these facilities should be conducted. The study should also examine the possibility of converting these locations into

Transit Oriented Developments (TOD) when demand for such developments warrants the conversion. Park and Ride facilities can be considered as land banking for TODs.

The PSPTP recommends the development of at least one new or upgraded major Park and Ride facility within the region (1000–2500+ spaces).

Additional analysis should be conducted for the development of minor Park and rides sites in expanding areas. New Park and Ride facilities could be established in:

- Angle Vale
- Buckland Park; and
- Virginia.

15.2.7.1 Bus priority infrastructure

The potential for bus priority, although not crucial in the region (due to low congestion rates when compared to other regions with Adelaide), should be investigated. The following bus priority infrastructure projects have been identified as potential locations that cause delays to passenger transport services:

- Munno Para Shopping Centre to Smithfield Station (bus lanes both directions). With the significant increase in passenger transport services in the region, the number of services operating between the Shopping Centre and Smithfield Station is likely to be significant as services originating from the west would pass Smithfield Station and terminate at Munno Para Shopping Centre, while services from the east would pass Munno Para Shopping Centre and terminate at Smithfield Station. Therefore, creating a high volume of passenger transport traffic between the two locations.
- Yorktown Road/Main North Road intersection priority infrastructure. This would include the installation of east and west bound bus priority lanes and priority phasing at the signals. This intersection is the main point where services from the east of Main North Road cross over to Elizabeth Shopping Centre and Station (as developed in Option 3 and the future scenarios). Up to 5 Go Zone services (20 or more bus movements per hour per direction) could be operating through the intersection by 2020. Therefore, prioritisation at this intersection offers the potential to reduce future delays.
- Uley Road/Main North Road intersection would have similar issues and volumes as the Yorktown Road intersection mentioned above. It is recommended that a westbound bus priority lane and priority phasing at the signals be developed.
- Main North Road/George McCullum Road intersection upgrade. Presently bus services have priority at this intersection for southbound services. However, services approaching from the north are unable to turn into George McCullum Road. With the significant developments occurring in Munno Para and Blakeview, enabling right hand turning movements from Main North Road into George McCullum Road for buses would greatly assist the operation and planning of future networks.
- Bus lane and priority infrastructure on Haydown Road between Oldham Road and John Rice Avenue. This section of road is where the two corridors linking Lyell McEwin Hospital converge to service the hospital. Providing dedicated bus lanes along this section would greatly assist services in the area. The development of a new on street bus interchange is also recommended along this section.

15.2.7.2 Other upgraded infrastructure

With increases in the number of services imminent in the region over the next 5 to 30 years, without upgrades to selected intersections many services would suffer from significant delays due to right turning movements. It is recommended that the following intersections be upgraded to signalised intersections:

- Oldham Road and Philip Highway
- John Rice Avenue and Haydown Road; and
- Yorktown Road and Playford Boulevard.

16. Conclusion

Overall the City of Playford Strategic Passenger Transport Plan has developed concepts, options and recommendations for the improvement to passenger transport services within the council region. These recommendations have been based on the information obtained from council, developers, transport operators and government.

The strategic plan recognises that the passenger transport system is fluid and changeable with regard to the demand and expectations from transport users. Origins and destinations within the system can easily change with alterations to land use or when travel behaviour patterns occur.

A strategic and long term transport plan will never be able to predict, develop options and solve all transport issues within the network. Therefore, a strategic transport plan should be flexible and adaptable to the range of factors that influence the provision, demand and operation of transport services. The City of Playford Strategic Passenger Transport Plan is a snapshot of the current issues and demands affecting the passenger transport system in 2011. Solutions have been developed to address the current issues and concerns for the present system, however, this plan should remain as an open and working document to allow for future revisions, changes and alterations to meet the ever changing demand for passenger transport services.

Appendix A

Existing urban development

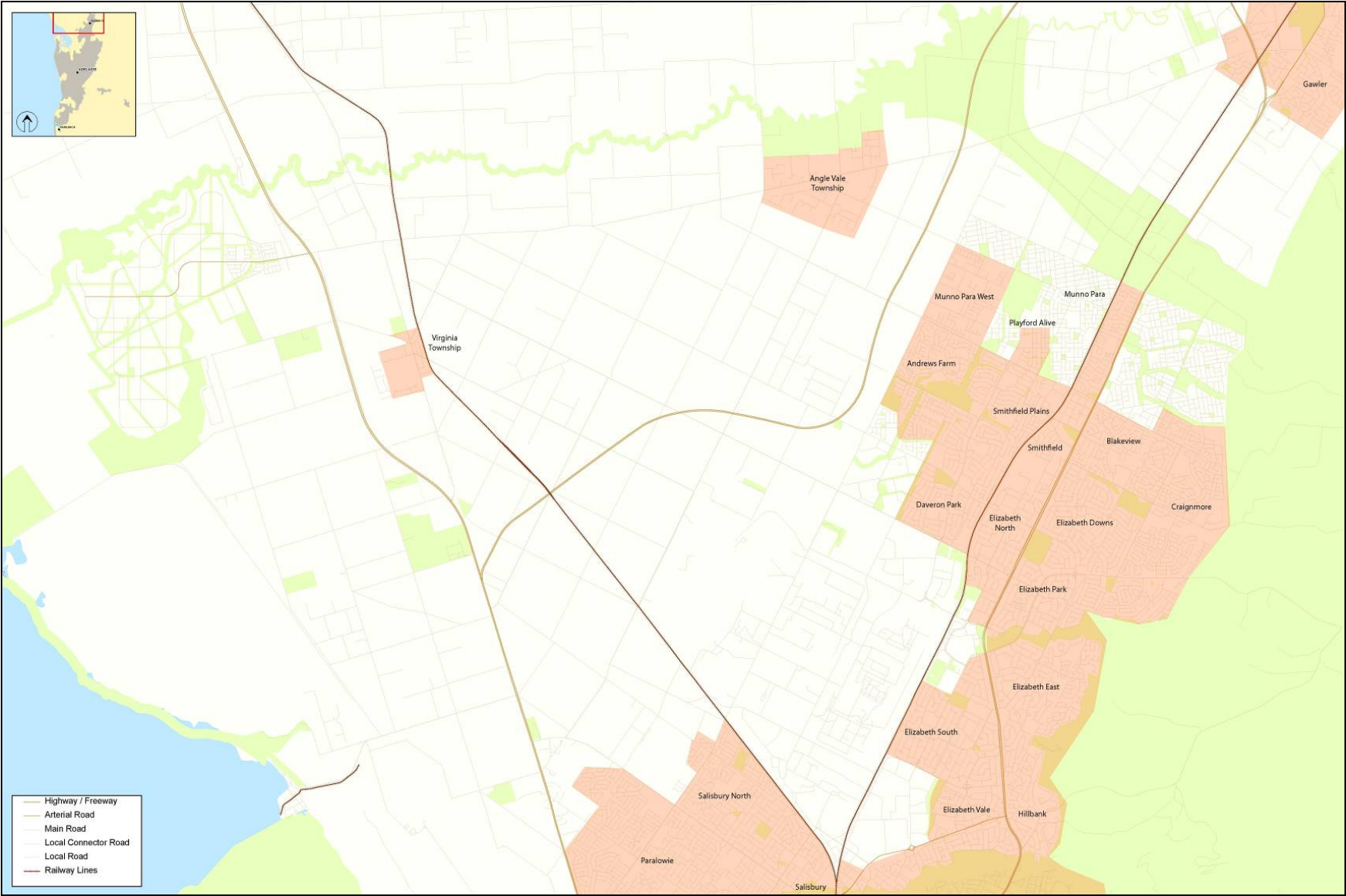


Figure A.1 Residential regions

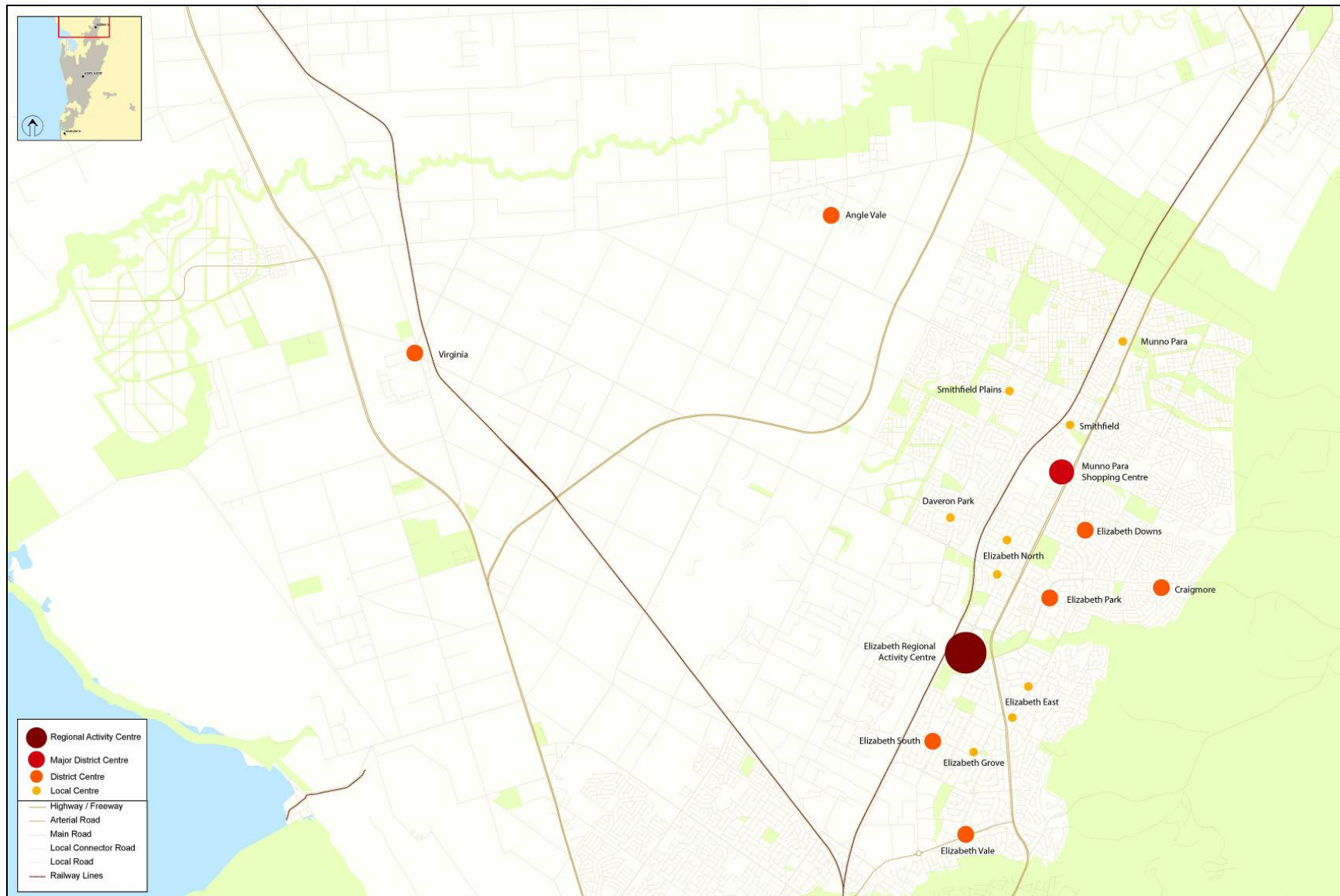


Figure A.2 Existing major and minor centres



Figure A.3 Current and future industrial and employment regions

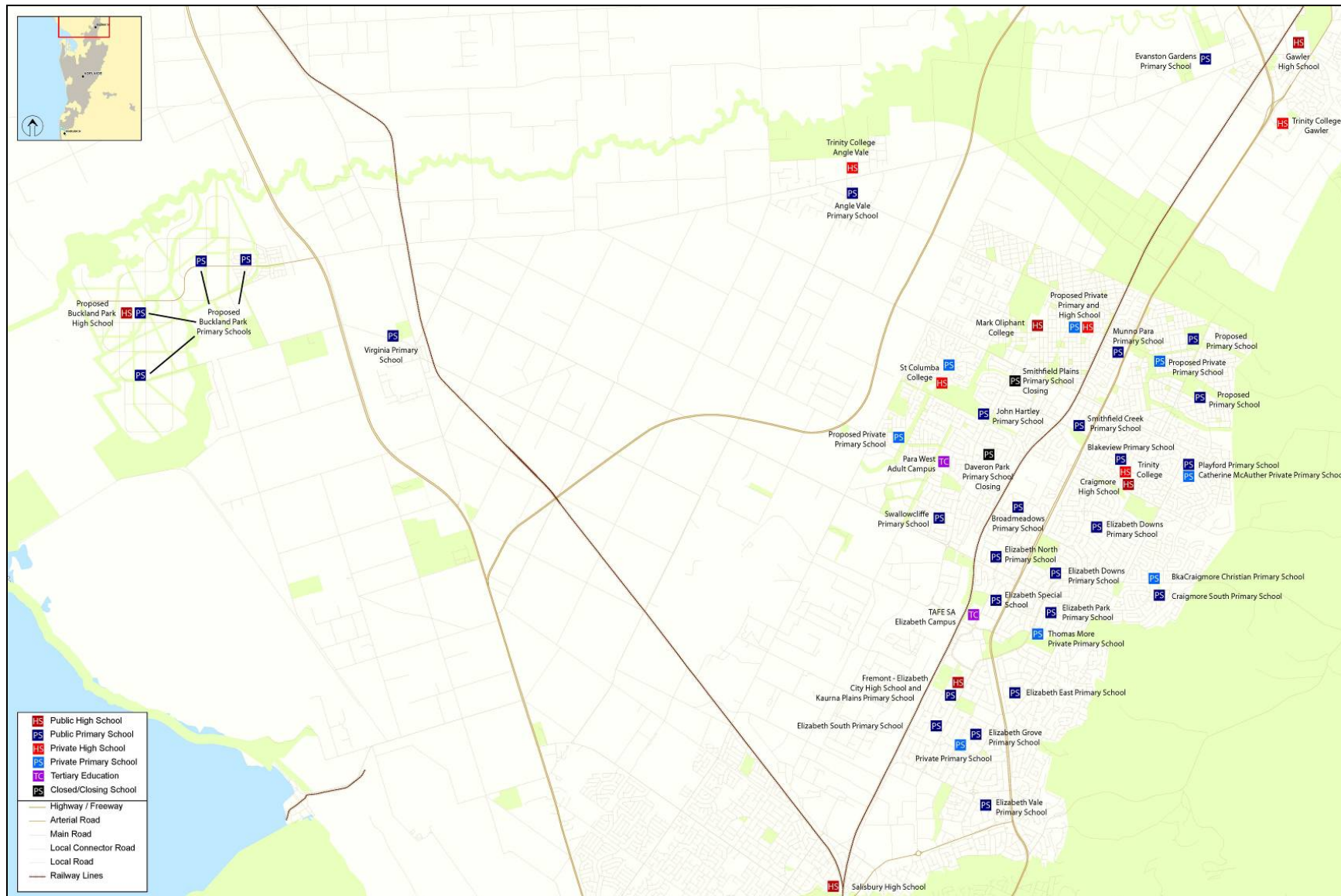


Figure A.4 Current and proposed education institutions

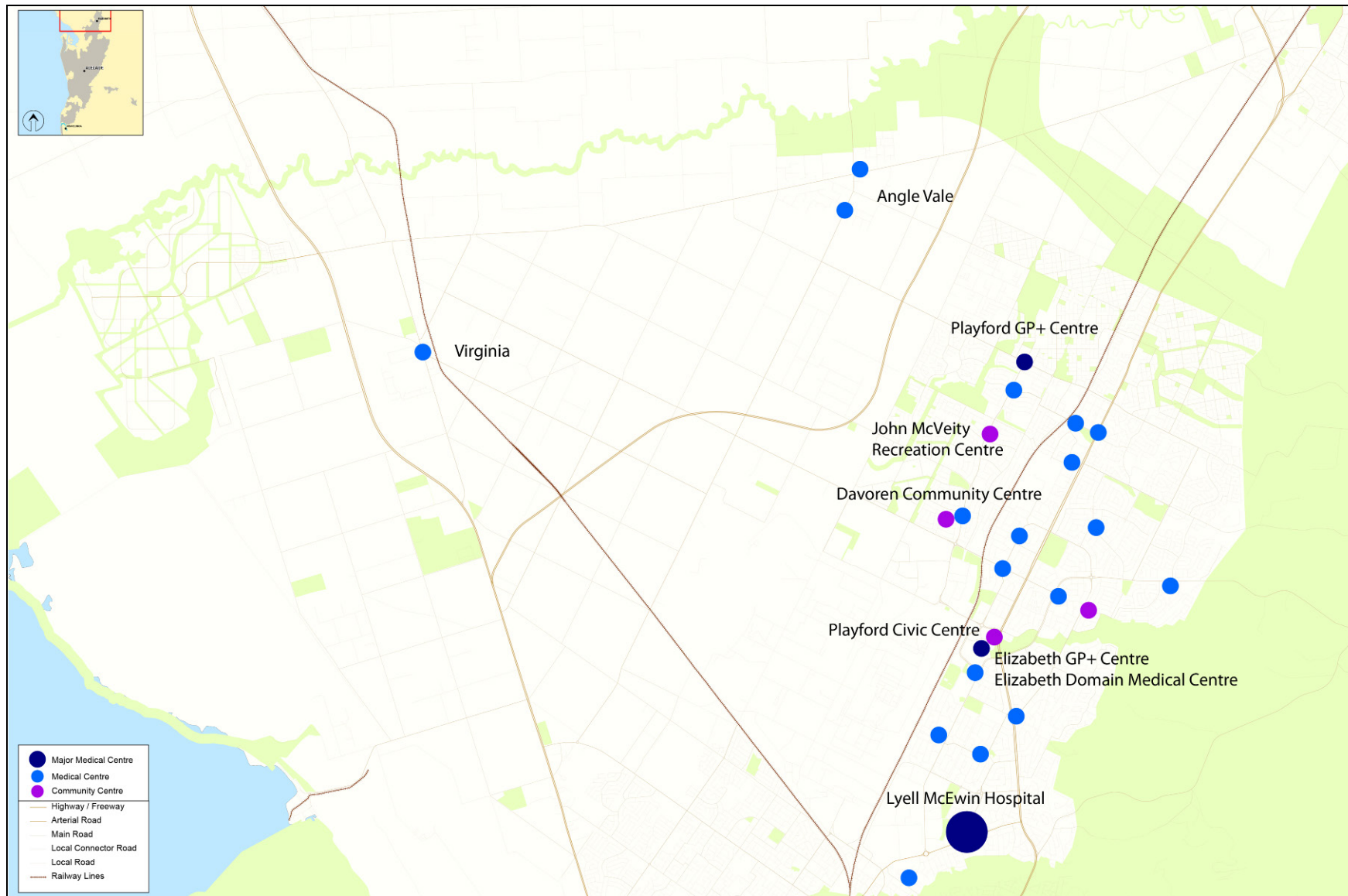


Figure A.5 Other key land uses

Appendix B

Passenger transport network

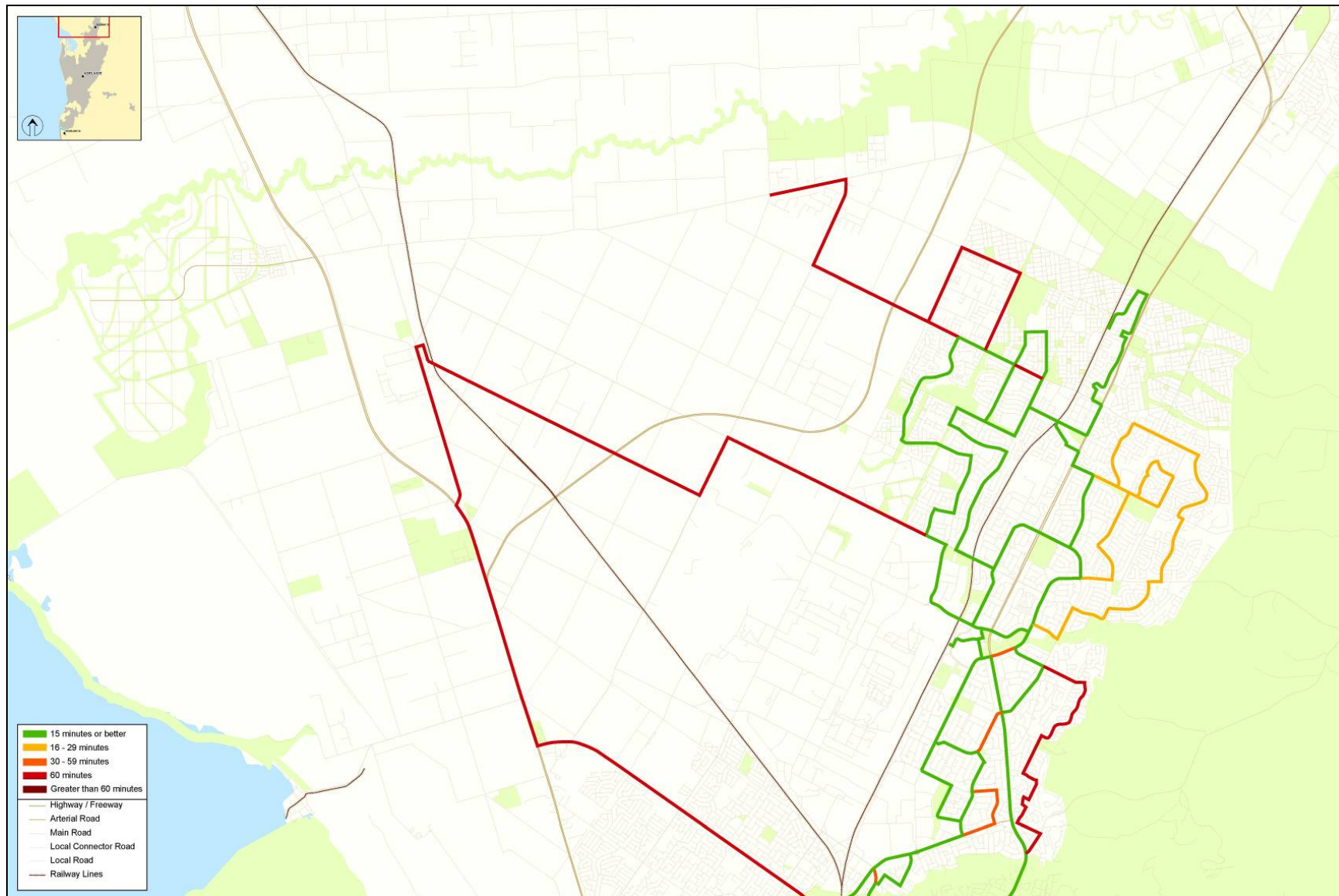


Figure B.1 Weekday peak hour frequency by corridor

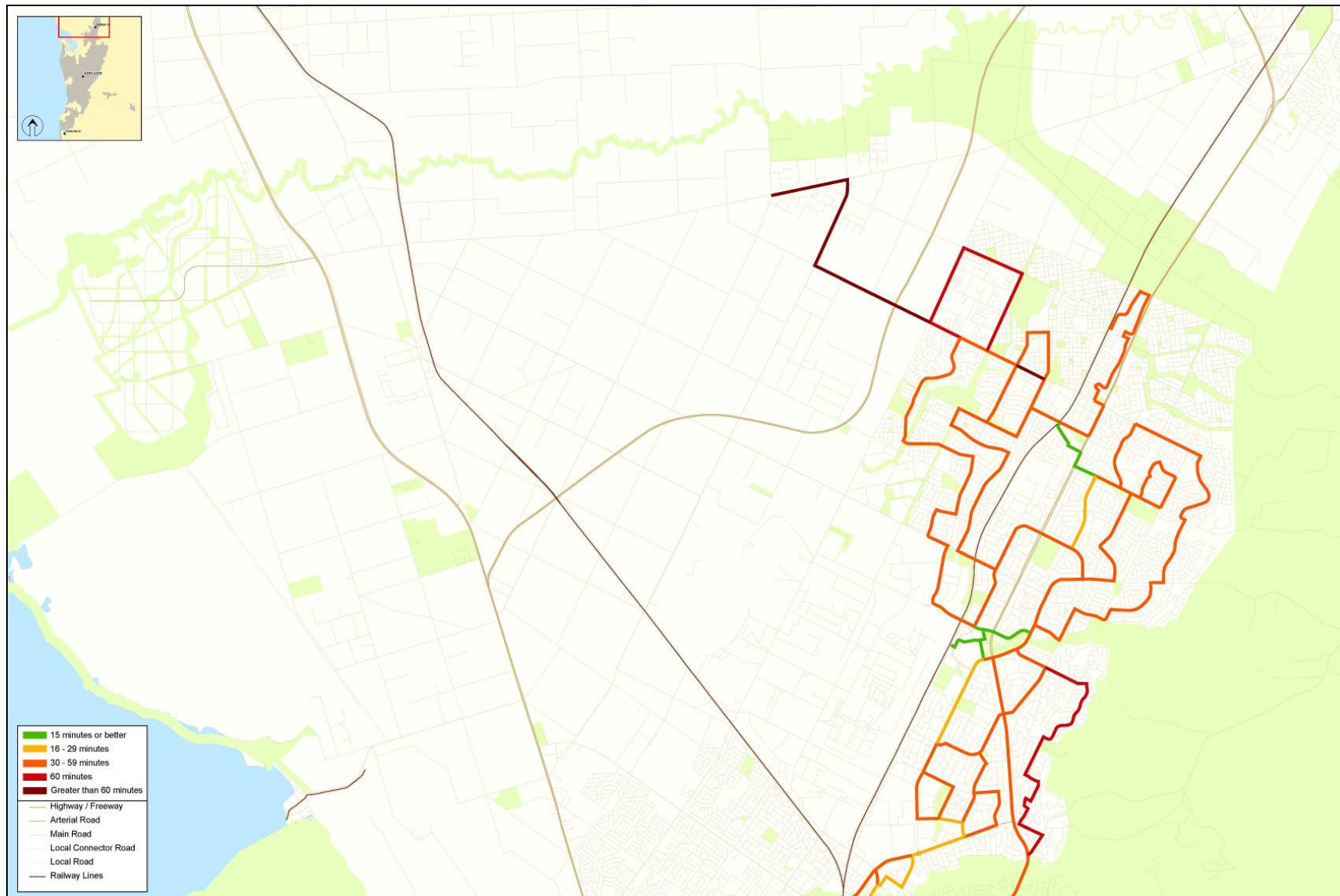


Figure B.2 Weekday interpeak frequency by corridor

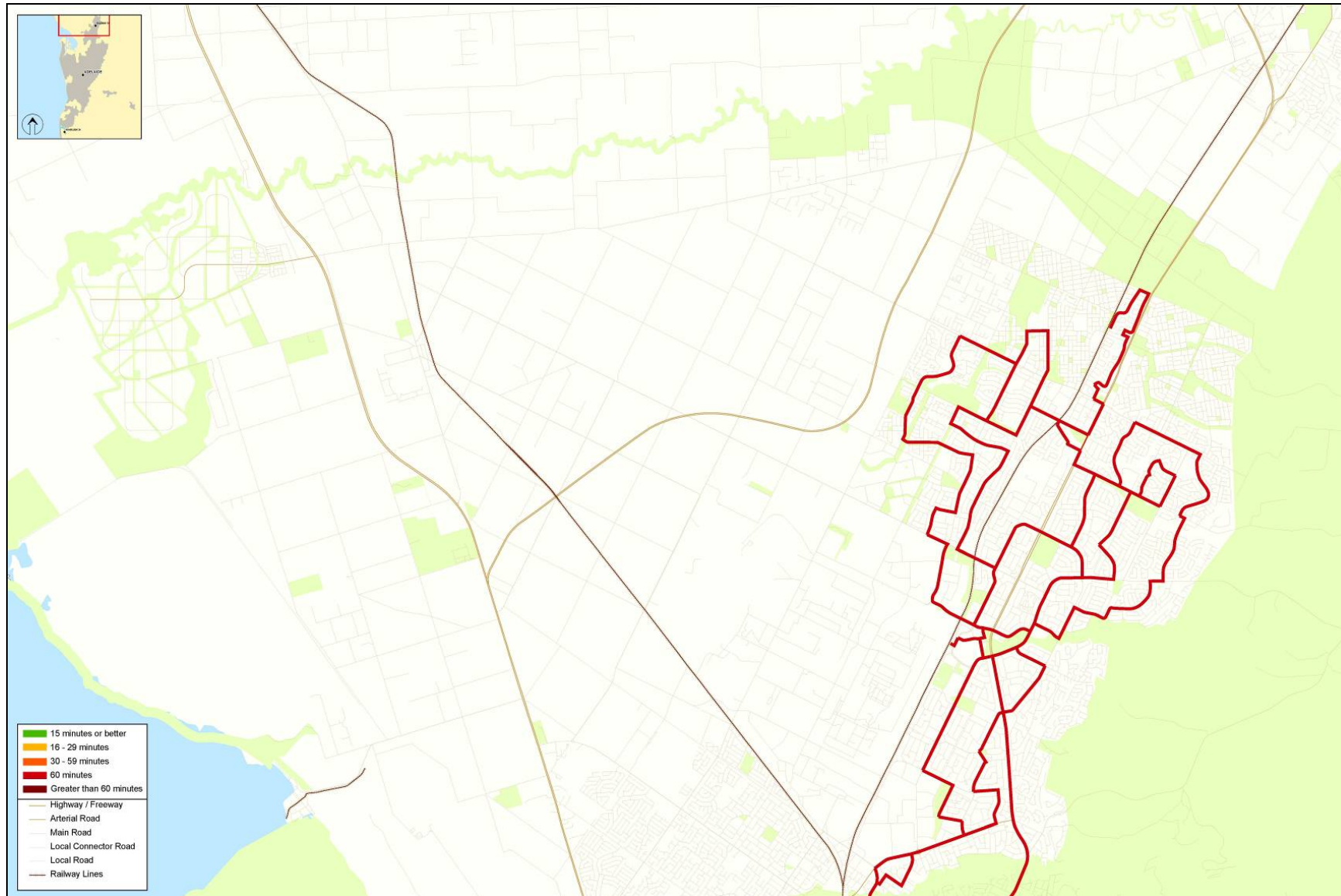


Figure B.3 Weekday and weekend Evening frequency by corridor

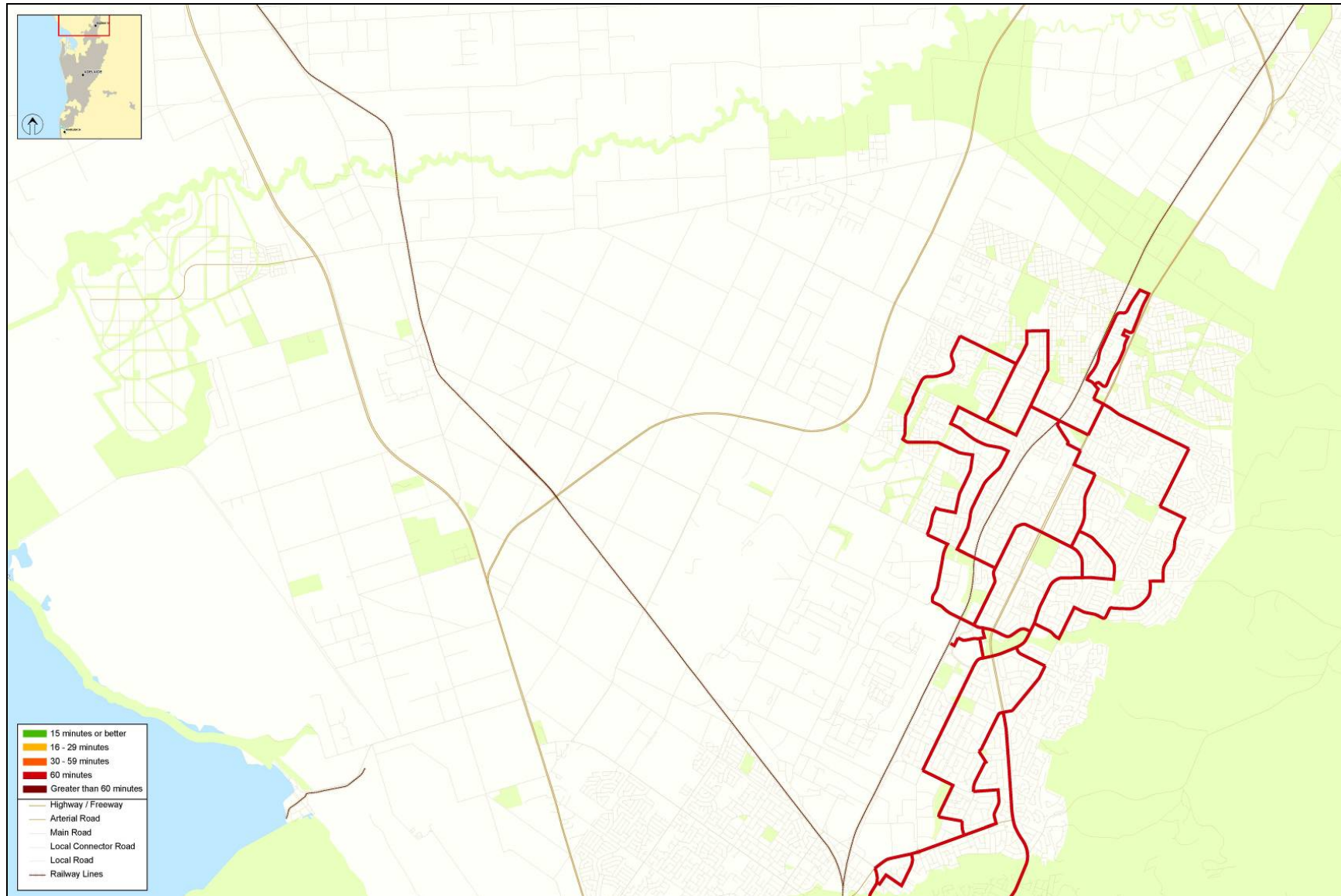


Figure B.4 Weekday and weekend Night frequency by corridor

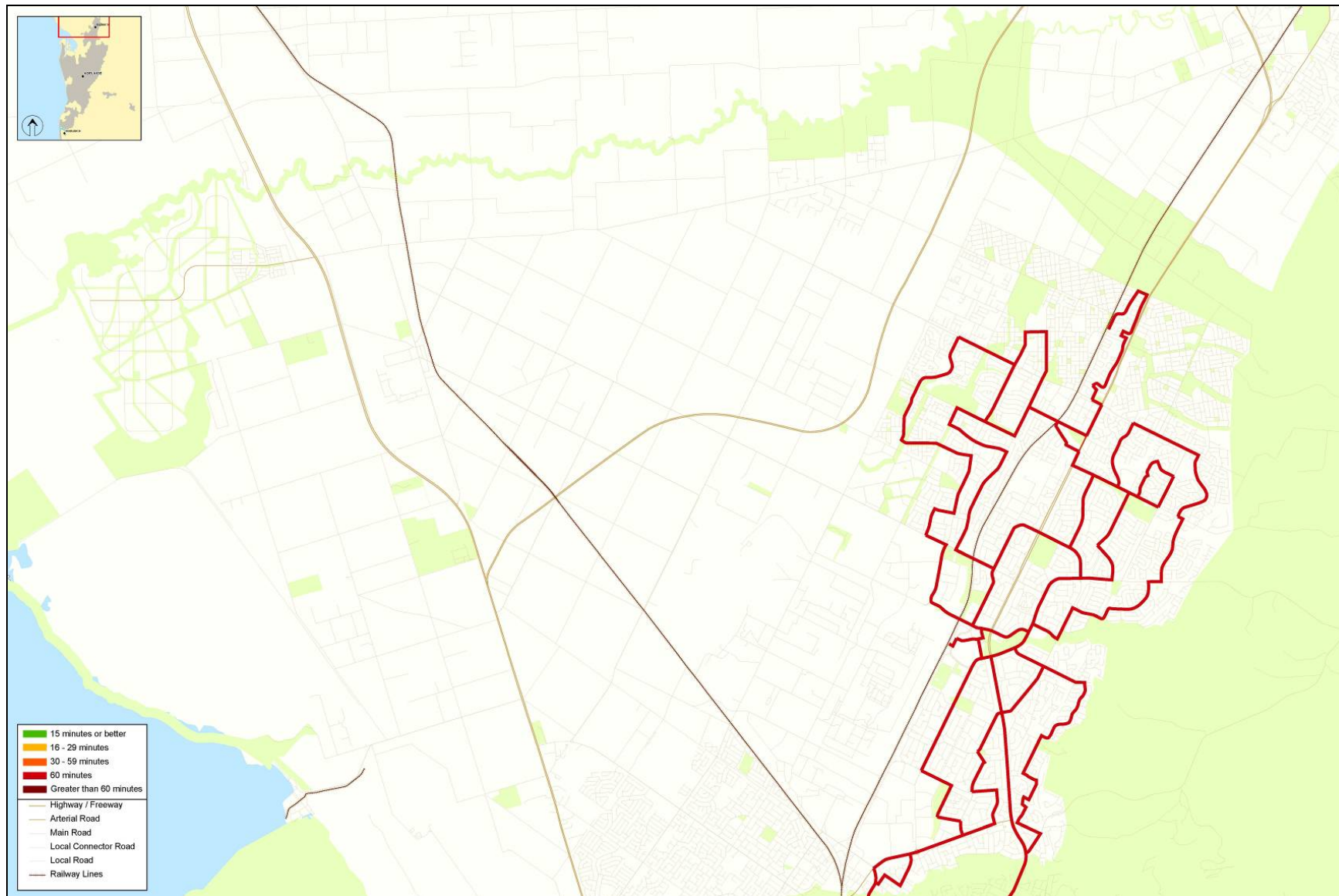


Figure B.5 Saturday frequency by corridor

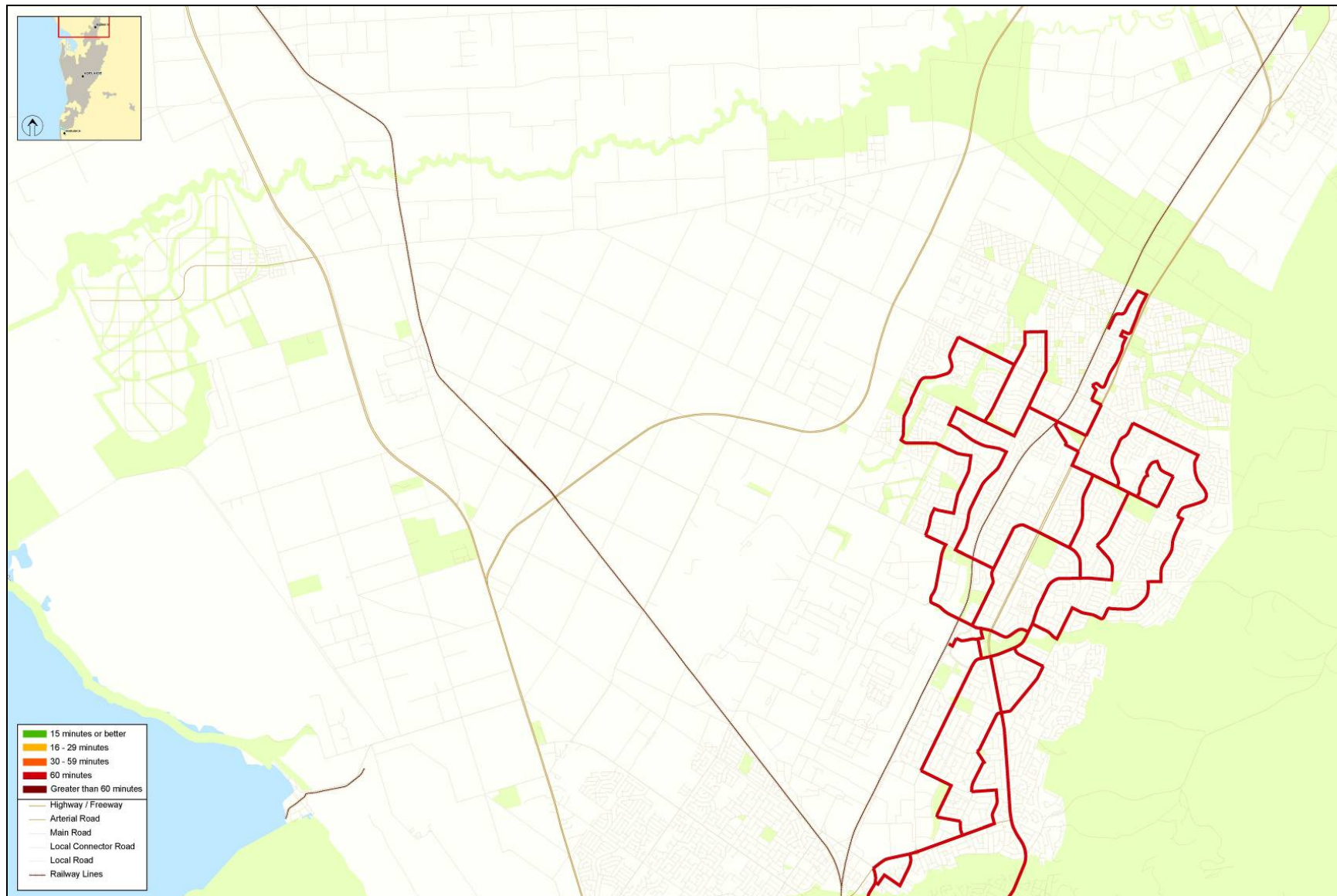


Figure B.6 Sunday frequency by corridor

Public transport resources

Table B.1 Current public transport resources

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
J1	Elizabeth Station	TTP Interchange	17.91	30	13	13	161,404
J1	TTP Interchange	Elizabeth Station	17.91	34	13	13	179,389
J1 Total							340,791
224	Elizabeth Station	Salisbury Station	9.12	34	21	15	96,216
224	Salisbury Station	Elizabeth Station	9.12	34.2	21	15	96,681
224 Total							192,897
228	Smithfield Station	Adelaide / City	32.34	39	17	15	386,313
228	Adelaide / City	Smithfield Station	32.34	38	17	15	377,955
228 Total							764,268
400	Elizabeth Station	Salisbury Station	10.75	33	17	15	108,521
400	Salisbury Station	Elizabeth Station	10.75	32	17	15	105,823
400 Total							214,344
421	Salisbury	DSTO	8.47	2	0	0	2,127
421	DSTO	Salisbury	8.47	1	0	0	4,254
400 Total							6,381
430	Elizabeth Station	Salisbury Station	12.86	16	11	0	58,860
430	Salisbury Station	Elizabeth Station	12.86	18	11	0	65,315
430 Total							124,176
440	Munno Para Station	Elizabeth Station	12.30	30	14	10	109,150
440	Elizabeth Station	Munno Para Station	12.30	30	15	11	110,552
440	Smithfield Station	Elizabeth Station	7.00	1	0	0	1,757
440 Total							221,459
441	Smithfield Station	Elizabeth Station	10.62	30	14	11	94,910
441	Elizabeth Station	Smithfield Station	10.62	30	14	11	94,910
441 Total							189,821
442	Smithfield Station	Elizabeth Station	12.70	30	14	10	112,699
442	Elizabeth Station	Smithfield Station	12.70	28	14	11	107,124
442 Total							219,824
443	Elizabeth Station	Elizabeth Loop	25.98	2	2	4	22,238
443 Total							22,238
451	Munno Para S/C	Elizabeth Station	13.81	34	17	16	138,707
451	Stop 74A	Elizabeth Station	7.76	3	0	0	2,208
451	Munno Para S/C	Stop 74A	6.05	3	0	0	5,843
451	Elizabeth Station	Munno Para S/C	13.81	33	16	15	143,748
451	Elizabeth Station	Stop 74A	6.05	1	1	1	5,843
451	Stop 74A	Munno Para S/C	7.76	3	0	0	4,555

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
Route 451							300,906
452	Munno Para S/C	Elizabeth Station	11.92	35	17	13	117,483
452	Stop 78D	Elizabeth Station	7.32	3	0	0	2,671
452	Munno Para S/C	Stop 71	9.36	3	0	0	2,349
452	Elizabeth Station	Munno Para S/C	11.92	32	16	16	124,814
452	Elizabeth Station	Stop 78D	7.32	1	1	1	7,048
452	Stop 71	Munno Para S/C	9.36	1	0	0	5,511
Route 452							259,879
461	Munno Para S/C	Munno Para S/C	13.86	14	0	0	48,704
461	Stop 77	Munno Para S/C	9.61	5	0	0	12,060
Route 461							60,764
500	Elizabeth	Salisbury	8.30	28	0	0	58,332
500	Salisbury	Elizabeth	8.30	29	0	0	60,416
Route 500							118,748
560	Elizabeth Station	Salisbury Station	9.13	25	10	8	66,549
560	Salisbury Station	Elizabeth Station	9.13	23	10	8	61,965
Route 560							128,514
900	Elizabeth Station	Salisbury Station	30.6	2	0	0	15,361
900	Salisbury Station	Elizabeth Station	30.6	2	0	0	15,361
Route 900							30,722
Total Annual Public Transport Bus Resources							3,196,202
GC	Adelaide	Gawler Central	42.2	36	30	29	239,755
GC	Gawler Central	Adelaide	42.2	35	30	30	249,745
G	Adelaide	Gawler	39.8	24	0	0	527,762
G	Gawler	Adelaide	39.8	25	0	0	514,511
S	Adelaide	Salisbury	20.2	1	0	0	5,070
S	Salisbury	Adelaide	20.2	1	0	0	5,070
Total Annual Public Transport Train Resources							1,541,913
Total Annual Public Transport Resources							4,738,115

1. Route J1 resources are between Elizabeth and Tea Tree Plaza Interchange only. The km value for the remainder of the route to the City, Adelaide Airport and Glenelg have not been included for the purpose of this plan
2. Route 500 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Paradise and the City has not been included for the purpose of this plan.
3. Route 560 and 224 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to the City has not been included for the purpose of this plan.
4. Route 228 resources are between Smithfield and Salisbury boundary only. The km value for the remainder of the route to the City has not been included for the purpose of this plan.
5. Route 400 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Salisbury North has not been included for the purpose of this plan.

Route information

Route J1

Table B.2 Route J1

	Weekdays	Saturdays	Sundays and PH
Service hours (to city)	4:50 am to 5:40 pm	5:40 am to 5:40 pm	5:40 am to 5:40 pm
Service hours (from city)	6:20 am to 10:00 pm	8:20 am to 12:50 am	8:20 am to 12:50 am
Frequency (peak direction)	15 minutes	60 minutes	60 minutes
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	N/A	N/A
Daily service (to city)	30	13	13
Daily services (from city)	35	13	13
Service kilometres (annual)	341,432 km (within City of Playford only)		
Service type	Radial service		
Stopping pattern	Limited Stops		
Service zones (refer zone map)	E, EE and H		
Monthly patronage (march 2011)	5,659 passenger (within City of Playford only)		
Total route patronage (annual)	61,520 passengers (Elizabeth to City only)		

It should be noted that alterations to the bus service contracts were announced in April 2011 will result in changes to this route. The new service contracts arrangements will see route J1 truncated to operate between Elizabeth and the Adelaide CBD only (it is likely a route number change will occur; details of these changes were not known at the time of publication).

Route 224 and N224

Table B.3 Route 224 and N224

	Weekdays	Saturdays	Sundays and PH
Service hours (to city)	5:30am to 10:05pm	6:25am to 10:30pm	7:25am to 9:30pm
Service hours (from city)	7:50am to 1:05am	8:55am to 12:45am	9:5am to 11:45pm
Service hours (after midnight) ¹	N/A	1:20am to 4:20am	N/A
Frequency (peak direction)	10-30minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to city)	34	21 (includes N224)	15
Daily services (from city)	34/35 – Fridays only	21 (includes N224)	15
Service kilometres (annual)	192,297km (Elizabeth to Salisbury only)		
Service type	Radial service and rail feeder service		
Stopping pattern	All stops/ Express and semi-express		
Service zones (refer zone map)	E, ES, L and S (N224 also include EN, SM, B and M)		
Monthly patronage (march 2011)	22,945 passengers (Elizabeth to Salisbury only) (+71 N224)		
Total route patronage (annual)	259,688 passengers (Elizabeth to Salisbury only) (+71 N224)		

1. After midnight services operate Saturday nights/Sunday mornings as route N224 between the City and Gawler via a modified route 224 to Phillip Highway then via Main North Road to Gawler.

Route 228

Table B.4 Route 228

	Weekdays	Saturdays	Sundays and PH
Service hours (to city)	5:25am to 10:50pm	6:10am to 10:15am	8:10am to 10:15pm
Service hours (from city)	7:10am to 12:20am	9:10am to 12:55am	9:10am to 10:55pm
Frequency (peak direction)	10-15 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to city)	39	17	15
Daily services (from city)	38	17	15
Service kilometres (annual)	235,706km (within City of Playford only)		
Service type	Radial service		
Service pattern	All Stops/Express and semi-express		
Service zones (refer zone map)	SM, ED, Y, EP, EE and H		
Monthly patronage (march 2011)	17,412 passengers (within City of Playford only)		
Total route patronage (annual)	190,132 passengers (within City of Playford only)		

Route 400

Table B.5 Route 400

	Weekdays	Saturdays	Sundays and PH
Service hours (to Salisbury)	6:00am to 11:45pm	6:55am to 10:55pm	7:55am to 9:55pm
Service hours (from Salisbury)	7:35am to 12:00am	7:45am to 11:45am	8:45am to 10:45am
Frequency (peak direction)	15 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Salisbury)	33	17	15
Daily services (from Salisbury)	32	17	15
Service kilometres (annual)	214,344km (within City of Playford only)		
Service type	Rail feeder		
Service pattern	All stops		
Service zones (refer zone map)	E, EP, EE, ES, L and S		
Monthly patronage (march 2011)	21,089 passengers (Elizabeth to Salisbury only)		
Total route patronage (annual)	216,220 passengers (Elizabeth to Salisbury only)		

Route 430

Table B.6 Route 430

	Weekdays	Saturdays	Sundays and PH
Service hours (to Salisbury)	5:20am to 6:05pm	8:20am to 6:20pm	No Service
Service hours (from Salisbury)	7:05am to 7:40pm	8:50am to 6:50pm	No Service
Frequency (peak direction)	30 minutes	N/A	N/A
Frequency (off peak)	60 minutes	60 minutes	No Service
Frequency (night)	No Service	No Service	No Service
Daily service (to Salisbury)	16	11	0
Daily services (from Salisbury)	18	11	0
Service kilometres (annual)	124,176km (Elizabeth to Salisbury)		
Service type	Rail feeder		
Service pattern	All Stops		
Service zones (refer zone map)	E, EP, EE, H, SP and S		
Monthly patronage (march 2011)	5,568 passengers (Elizabeth to Salisbury)		
Total route patronage (annual)	58,515 passengers (Elizabeth to Salisbury)		

Route 440, 441 and 442

Table B.7 Route 440

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	6:20am to 8:45pm	7:45am to 8:50pm	9:15am to 6:50pm
Service hours (from Elizabeth)	6:45am to 8:30pm	7:30am to 8:30pm	9:30am to 6:30pm
Frequency (peak direction)	15-30 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Elizabeth)	31	15	11
Daily services (from Elizabeth)	30	14	10
Service kilometres (annual)	211,459km		
Service type	Rail feeder		
Service pattern	All stops		
Service zones (refer zone map)	MW, M, B, SM, ED, EN and E		
Monthly patronage (march 2011)	20,357 passengers		
Total route patronage (annual)	214,126 passengers		

Table B.8 Route 441

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	5:55am to 8:15pm ¹	6:45am to 7:45pm ¹	9:15am to 6:45pm ¹
Service hours (from Elizabeth)	6:45am to 8:30pm ¹	7:00am to 8:30pm ¹	9:00am to 7:00pm ¹
Frequency (peak direction)	15-30 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Elizabeth)	30	14	11
Daily services (from Elizabeth)	30	14	11
Service kilometres (annual)	189,821km		
Service type	Rail Feeder		
Service pattern	All stops		
Service zones (refer zone map)	SM, BS, CW, ED, Y and E		
Monthly patronage (march 2011)	16,452 passengers		
Total route patronage (annual)	174,578 passengers		

1. Sections of route covered by route 443 at night

Table B.9 Route 442

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	6:30am to 8:45pm	7:45am to 8:45pm	8:45am to 6:45pm
Service hours (from Elizabeth)	7:00am to 8:30am	7:30am to 8:30pm	9:30am to 6:30pm
Frequency (peak direction)	15-30 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Elizabeth)	28	14	11
Daily services (from Elizabeth)	30	14	10
Service kilometres (annual)	219,824 km		
Service type	Rail Feeder		
Service pattern	All Stops		
Service zones (refer zone map)	SM, BS, C, CP, CS, Y and E		
Monthly patronage (march 2011)	17,988 passengers		
Total route patronage (annual)	181,347 passengers		

1. Sections of route covered by route 443 at night

Table B.10 Route 443

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	9:30pm to 10:30pm	9:30pm to 10:30pm	7:30pm to 10:30pm
Service hours (from Elizabeth)	9:30pm to 10:30pm	9:30pm to 10:30pm	7:30pm to 10:30pm
Frequency (peak direction)	N/A	N/A	N/A
Frequency (off peak)	N/A	N/A	N/A
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Elizabeth)	2	2	4
Daily services (from Elizabeth)	2	2	4
Service kilometres (annual)	22,239 km		
Service type	Rail feeder		
Service pattern	All Stops – loop service		
Service zones (refer zone map)	E, EN, ED, SM, B, M, MW, BS, C, CP, CS and Y		
Monthly patronage (march 2011)	339 passengers		
Total route patronage (annual)	3,493 passengers		

Route 451, 452 and 461

Table B.11 Route 451

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	5:00am to 10:30pm	7:00am to 10:30pm	8:00am to 10:30pm
Service hours (from Elizabeth)	5:30am to 11:30pm	8:00am to 11:30pm	8:00am to 11:30pm
Frequency (peak direction)	15-30 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Elizabeth)	40	17	16
Daily services (from Elizabeth)	37	17	16
Service kilometres (annual)	300,906 km		
Service type	Rail Feeder		
Service pattern	All Stops		
Service zones (refer zone map)	E, PA and SM		
Monthly patronage (march 2011)	28,089 passengers		
Total route patronage (annual)	267,310 passengers (estimate)		

Table B.12 Route 452

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	5:30am to 10:45pm	6:30am to 10:30pm	8:30am to 8:30pm
Service hours (from Elizabeth)	6:00am to 11:30pm	8:00am to 11:30pm	8:00am to 11:30pm
Frequency (peak direction)	15-30 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to Elizabeth)	41	17	13
Daily services (from Elizabeth)	34	17	17
Service kilometres (annual)	259,879 km		
Service type	Rail Feeder		
Service pattern	All Stops		
Service zones (refer zone map)	E, P and SM		
Monthly patronage (march 2011)	15,238 passengers		
Total route patronage (annual)	145,013 passengers (approximate)		

Table B.13 Route 461

	Weekdays	Saturdays	Sundays and PH
Service hours (Loop)	6:45am to 8:00pm	No Service	No Service
Frequency (peak direction)	30 minutes	N/A	N/A
Frequency (off peak)	60 minutes	N/A	N/A
Frequency (night)	N/A	N/A	N/A
Daily service (complete loop)	14	N/A	N/A
Daily services (partial loop)	5	N/A	N/A
Service kilometres (annual)	60,765 km		
Service type	Rail Feeder		
Service pattern	All Stops		
Service zones (refer zone map)	PA and SM		
Monthly patronage (march 2011)	1,267 passengers		
Total route patronage (annual)	11,724 passengers (approximate)		

Route AVD

Table B.14 Angle Vale Dial a Ride

	Weekdays	Saturdays	Sundays and PH
Service hours (to Smithfield)	6:15am to 5:45pm	No Service	No Service
Service hours (from Smithfield)	7:0am to 6:30pm	No Service	No Service
Frequency (peak direction)	60 minutes	N/A	N/A
Frequency (off peak)	60-120 minutes	N/A	N/A
Frequency (night)	N/A	N/A	N/A
Daily service (to Smithfield)	9 + 3 to Gawler	N/A	N/A
Daily services (from Smithfield)	9 + 3 from Gawler	N/A	N/A
Service kilometres (annual)	43,825 (Smithfield) + 20,330 (Gawler). Approximate due to roaming		
Service type	Rural Service and Rail Feeder		
Service pattern	Dial a Ride and All Stops fixed route		
Service zones (refer zone map)	R and SM (non-MetroTicket service)		
Monthly patronage (march 2011)	102		
Total route patronage (YTD)	394 (January to July 11 Only) ~approximately 675 per annum		

Route 500

Table B.15 Route 500

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	7:00am to 10:15pm	No Service	No Service
Service hours (from Elizabeth)	5:30am to 5:30pm	No Service	No Service
Frequency (peak direction)	15 minutes	N/A	N/A
Frequency (off peak)	30 minutes	N/A	N/A
Frequency (night)	N/A	N/A	N/A
Daily service (to Elizabeth)	29	N/A	N/A
Daily services (from Elizabeth)	28	N/A	N/A
Service kilometres (annual)	118,748 km (within the City of Playford only)		
Service type	Radial, Cross Suburban and O-Bahn service		
Service pattern	Limited Stops – Transit Link		
Service zones (refer zone map)	E, ES, L and S		
Monthly patronage (march 2011)	11,536 passengers (between Elizabeth and Salisbury)		
Total route patronage (annual)	114,710 passengers (between Elizabeth and Salisbury)		

Route 560

Table B.16 Route 560

	Weekdays	Saturdays	Sundays and PH
Service hours (to city)	8:00am to 6:00pm ¹	7:00am to 5:10pm	9:45am to 4:45pm
Service hours (from city)	7:50am to 8:30pm	8:25am to 6:25pm	10:55am to 5:55pm
Frequency (peak direction)	30 minutes	N/A	N/A
Frequency (off peak)	30 minutes	60 minutes	60 minutes
Frequency (night)	60 minutes	No service	No service
Daily service (to city)	25	10	8
Daily services (from city)	23	10	8
Service kilometres (annual)	128,514 km (Elizabeth to Salisbury only)		
Service type	Cross Suburban		
Stopping pattern	All Stops		
Service zones (refer zone map)	E, ES, L and S		
Monthly patronage (march 2011)	10,211 passengers (Elizabeth to Salisbury only)		
Total route patronage (annual)	110,500 passengers (Elizabeth to Salisbury only)		

1. Services in the AM peak period are covered by route 224.

Route 900

Table B.17 Route 900

	Weekdays	Saturdays	Sundays and PH
Service hours (to Elizabeth)	6:20am to 7:30am	No Service	No Service
Service hours (from Elizabeth)	4:20pm to 5:10pm	No Service	No Service
Frequency (peak direction)	60 minutes	N/A	N/A
Frequency (off peak)	N/A	N/A	N/A
Frequency (night)	N/A	N/A	N/A
Daily service (to Elizabeth)	2	N/A	N/A
Daily services (from Elizabeth)	2	N/A	N/A
Service kilometres (annual)	30,722 km		
Service type	Rail Feeder and Rural Service		
Service pattern	All Stops		
Service zones (refer zone map)	E, R and S		
Monthly patronage (march 2011)	953 passengers		
Total route patronage (annual)	8,705 (including within City of Salisbury)		

Gawler Train Line

Table B.18 Gawler Train Line

	Weekdays	Saturdays	Sundays and PH
Service hours (to City)	5:20am to 11:20pm	6:30am to 11:20pm	7:00am to 11:20pm
Service hours (from City)	6:30am to 12:30am	7:15am to 12:30am	7:15am to 12:30am
Frequency (peak direction)	7/8 – 30 minutes	N/A	N/A
Frequency (off peak)	15 – 30 minutes	30 minutes	30 minutes
Frequency (night)	60 minutes	60 minutes	60 minutes
Daily service (to City)	60	30	29
Daily services (from City)	60	30	30
Service kilometres (annual)	1,537,676 km		
Service type	Mass Transit Corridor		
Service pattern	All Stop, Limited Stop and Skip Stop patterns		
Service zones (refer zone map)	M, SM, P, EN, E, ES, L and S		
Monthly patronage (march 2010)	341,258 passengers (complete route), 79,651 (selected stations)		
Total route patronage (annual)	3,366,940 passengers (complete route), 1,397,920 (selected stations)		

Statistics for the Gawler Train Line incorporate multiple stopping pattern services. This includes all stops to Gawler, all stops to Gawler Central, limited stops to Gawler, limited stops to Gawler Central, semi-express to Gawler and Gawler Central.

Appendix C

Future developments

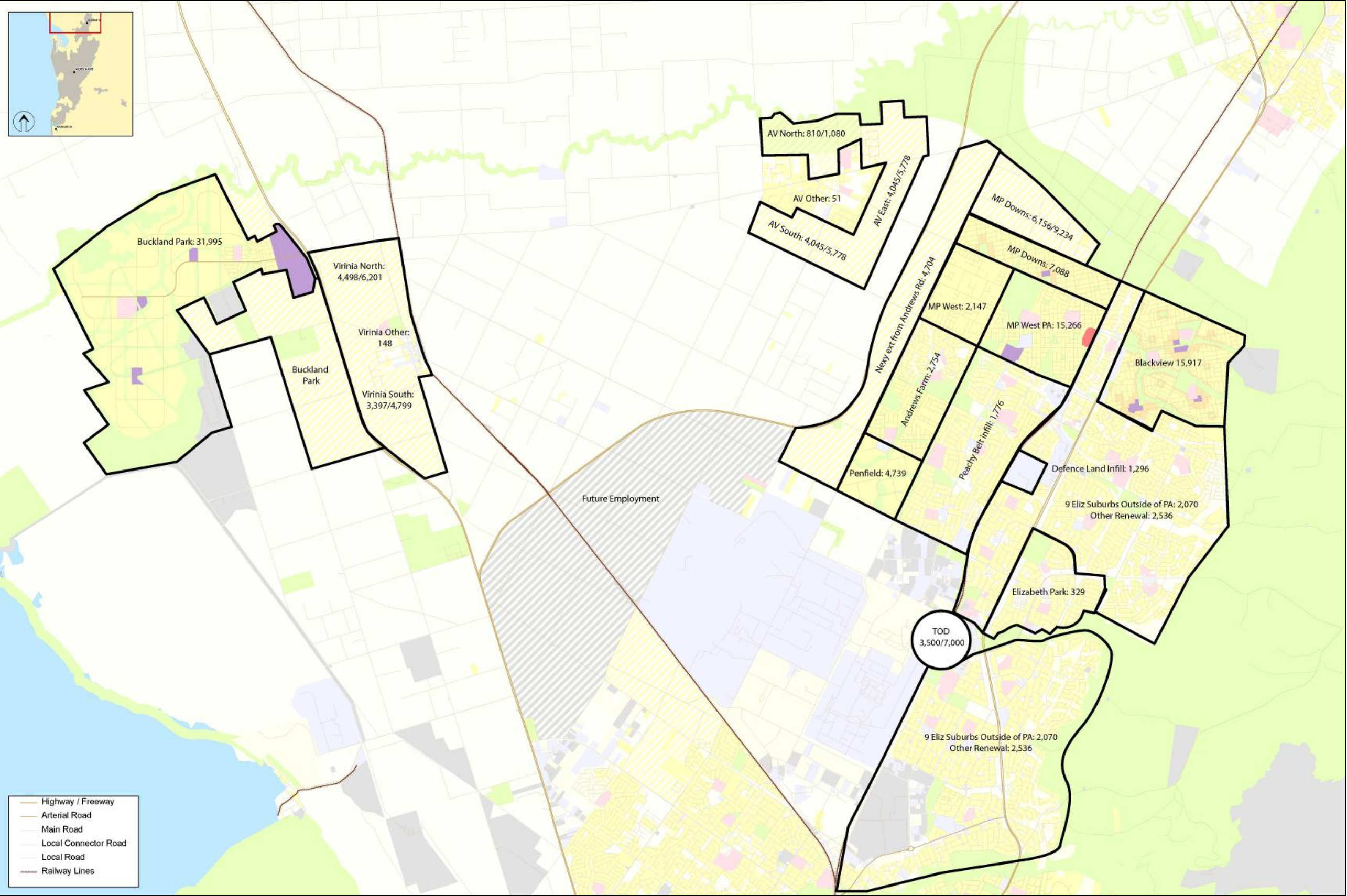


Figure C.1 Future urban lands and population

Appendix D

Key challenges

Key challenges

Table D.1 Patronage growth

Year	Population ¹	Base Patronage ²	Target ³	Multiplier ⁴	Target Patronage ⁵	% Growth pa
2011	84,543	12,810	7.30%	1.00	12,810	0.0%
2012	88,277	13,376	7.68%	1.05	13,968	9.04%
2013	91,304	13,834	8.07%	1.11	15,232	7.94%
2014	95,142	14,416	8.45%	1.16	16,609	8.41%
2015	99,691	15,105	8.84%	1.21	18,111	8.73%
2016	104,241	15,795	9.22%	1.26	19,749	8.36%
2017	108,792	16,484	9.61%	1.32	21,535	8.03%
2018	113,137	17,142	10.00%	1.37	23,483	7.54%
2019	117,483	17,801	10.00%	1.37	24,385	3.70%
2020	121,588	18,423	10.00%	1.37	25,237	3.38%
2025	140,016	21,215	10.00%	1.37	29,062	2.86%
2030	155,574	23,573	10.00%	1.37	32,291	2.13%
2035	169,218	25,640	10.00%	1.37	35,123	1.69%
2040	179,885	27,256	10.00%	1.37	37,337	1.23%
2045	186,582	28,271	10.00%	1.37	38,272	0.73%
2050	191,678	29,043	10.00%	1.37	39,785	0.54%
2050+	198,077	30,012	10.00%	1.37	41,113	N/A

1. Population based on City of Playford Population Model April 2011.
2. Base patronage has been established on average daily total boarding for the month of March 2011. For years beyond 2011 a calculation of 1 boarding per 6.6 residents has been calculated.
3. Target is the State Strategic Plan Target of achieving 10% of metropolitan weekday passenger vehicle kilometres travelled by 2018.
4. Arbitrary multiplier to meet the target has been applied. This includes a gradual increase to the 2018 target for years leading up to the target year. (note that weekday passenger vehicle kilometres and boardings do not directly correspond, however, for the purpose of estimating the increase in public transport based on this target, this basic multiplier has been used as an arbitrary form of estimating targeting public transport boardings. The actual correlation between metropolitan weekday passenger vehicle kilometres and boardings has multiple components which are outside and beyond the scope of the strategic plan).
5. Target patronage is the base patronage estimate multiplied using the State Strategic Plan target multiplier.

Appendix E

Options development

Options development

Table E.1 Existing peak services and vehicles

Route	Direction	Km	Services ¹	Speed ²	Trip/Hr ³	Buses ⁴	Buses ⁵
500	UP	33.96	9	1.69	4.5	7.6	8
500	DOWN	33.96	4	1.69	2	3.4	4
J1	UP	33.48	8	1.67	4	6.7	7
J1	DOWN	33.48	4	1.67	2	3.3	4
560	UP	32.43	2	1.62	1	1.6	2
560	DOWN	32.43	1	1.62	0.5	0.8	1
224	UP	33.96	7	1.69	3.5	5.9	6
224	DOWN	33.96	1	1.69	0.5	0.8	1
228	UP	33.3	11	1.66	5.5	9.1	10
228	DOWN	33.3	2	1.66	1	1.6	2
400	UP	10.75	4	0.53	2	1.1	2
400	DOWN	10.75	4	0.53	2	1.1	2
430	UP	12.86	2	0.64	1	0.6	1
430	DOWN	12.86	2	0.64	1	0.6	1
440	UP	12.3	7	0.61	3.5	2.1	3
440	DOWN	12.3	4	0.61	2	1.2	2
441	UP	10.62	6	0.53	3	1.6	2
441	DOWN	10.62	5	0.53	2.5	1.3	2
442	UP	12.7	5	0.63	2.5	1.6	2
442	DOWN	12.7	4	0.63	2	1.3	2
451	UP	13.81	8	0.65	4	2.8	3
451	DOWN	13.81	6	0.65	3	2.1	3
452	UP	11.92	8	0.69	4	2.4	3
452	DOWN	11.92	6	0.69	3	1.8	2
461	LOOP	13.86	4	0.69	2	1.4	2
900	UP	30.6	2	1.53	1	1.5	2
Approximate Total			126		63	66	79

1. Services departing between 6:30am and 8:30am for UP trips or services arriving between 6:30am and 8:30am for DOWN trips
2. Average speed of 20km/h has been assumed for peak hour services. This is the time taken to complete the route in hours
3. Approximate number of peak trips per hour
4. Buses required based on speed, route distance and trips per hours non-rounded
5. Buses required based on speed, route distance and trips per hour rounded up to the nearest bus for each route

A. Method for calculating passenger operating costs

The Passenger Transport Service Division (PTSD) of the Department for Transport Energy and Infrastructure represents the costs of public transport services as the total annual revenue (in-service) route kilometre operated by a passenger transport vehicle (bus or train carriage). Costs are different for weekdays, nights, Saturdays, Sundays and Public Holidays. Although the exact cost estimates cannot be determined for each service due to the different contract areas and operators, the following equations and calculations provide an approximate total representing the cost to operate public transport services.

Table E.2 Passenger transport service operating costs

Mode	Weekdays		Saturday		Sunday		Public Holidays	
	Day	Night	Day	Night	Day	Night	Day	Night
Bus	\$3.00	\$3.00	\$3.00	\$3.00	\$3.50	\$3.50	\$4.00	\$4.00
Tram	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00
Train	\$4.00	\$4.50	\$4.00	\$5.00	\$4.50	\$5.50	\$4.50	\$6.00

Train are represented as per carriage. The cost to operate each train set is based on the number of carriages. The number of carriages is the multiple for operating kilometre costs. For example a three carriage train on weekdays would cost \$12.00 per revenue kilometre.

Table E.3 Approximate Day types per annum

	Weekdays	Saturdays	Sundays	Public Holidays
Days per year	251	51	52	11

Total annual kilometres and costs are based on the number of route kilometres operate on a particular service by direction. For example: Bus Route X operates from Origin A to Destination B. The route length is 10.00 km. Bus Route X operate 20 trips per weekday and 10 trips on Saturdays, Sundays and public holidays. To estimate the annual revenue kilometres and cost the following calculations are required:

Table E.4 Bus Route X

Weekdays	20 trips x 251 days x 10.00 km	50,200 km
Saturdays	10 trips x 51 days x 10.00 km	5,100 km
Sundays/PH	10 trips x 63 days x 10.00 km	5,100 km
Public Holidays	10 trips x 11 days x 10.00 km	1,100 km
Total		61,600 km
Weekdays	Annual kms x Cost (\$3.00)	\$150,600
Saturdays	Annual kms x Cost (\$3.00)	\$15,300
Sundays	Annual kms x Cost (\$3.50)	\$17,850
Public Holidays	Annual kms x Cost (\$4.00)	\$4,400
Annual Costs for route X from A to B only (return trip times by 2)		\$188,150

Most routes operate in both directions and therefore the cost to operate route X in both directions would be double the cost estimated above ($\$188,150 \times 2 = \$376,300$).

Train services can be estimated using the same calculation. However, train services require additional calculations for night time periods and length of train (i.e. single carriage, two carriages... six carriages). Below is an estimate of the current and proposed train operating kilometres and costs.

Table E.5 Train resources and costs

Origin	Dentation	km	Trips								Annual Kms	Cost
			WDD	WDN	SATD	SATN	SUND	SUNN	PHD	PHN		
Current train resources (current public timetable)												
Gawler	Adelaide	39.8	23	1	0	0	0	0	0	0	239755	\$2387562
Adelaide	Gawler	39.8	24	1	0	0	0	0	0	0	249745	\$2487460
Gawler Central	Adelaide	42.2	29	7.2	23	7	23	7	23	7	527762	\$5063259
Adelaide	Gawler Central	42.2	26	9.2	23	7	23	7	22	7	514511	\$4912325
Salisbury	Adelaide	20.2	1	0	0	0	0	0	0	0	5070	\$50702
Adelaide	Salisbury	20.2	1	0	0	0	0	0	0	0	5070	\$50702
Total										1,541,913	\$14,952,110	
Minimum train resources improvements												
Gawler	Adelaide	39.8	23	1	0	0	0	0	0	0	239,755	2,387,562
Adelaide	Gawler	39.8	24	1	0	0	0	0	0	0	249,745	2,487,460
Gawler Central	Adelaide	42.2	29	10	23	11	23	11	23	11	576,663	5,535,374
Adelaide	Gawler Central	42.2	26	14	23	13	22	13	22	13	594,218	5,677,546
Salisbury	Adelaide	20.2	1	0	0	0	0	0	0	0	5,070	50,702
Adelaide	Salisbury	20.2	1	0	0	0	0	0	0	0	5,070	50,702
Total										1,670,522	16,189,346	
Go Zone Station train resources improvements												
Gawler	Adelaide	39.8	44	4	0	0	0	0	0	0	479,510	4,755,145
Adelaide	Gawler	39.8	44	4	0	0	0	0	0	0	479,510	4,755,145
Gawler Central	Adelaide	42.2	52	24	48	28	48	28	48	28	1,170,628	11,206,463
Adelaide	Gawler Central	42.2	52	24	48	28	48	28	48	28	1,170,628	11,206,463
Total										3,300,277	31,923,216	

Costs are based on:

- \$4.00 per carriage km for weekdays (WDD) and Saturdays days (SATD)
- \$4.50 per carriage km for weekday nights (WDN), Sunday days (SUND) and Public Holiday Days (PHD)
- \$5.00 per carriage km for Saturday Nights (SATN)
- \$5.50 per carriage km for Sunday Nights (SUNN)
- \$6.00 per carriage km for Public Holiday Nights (PHN).

A consists multiplier has been used to estimate the costs per period for trains with multiple carriages. A multiplier of 2.5 carriages per weekday day time train and a multiplier of 2.0 for all other periods (nights and weekends) have been applied to estimate the annual operating costs.

Trips with decimal places represent specific weekday trips only. For example Friday evening only trips are represented as 0.2 trips per weekday night

Table E.6 Option 1 – minimum option resources

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
J1	Elizabeth Station	TTP Interchange	17.91	30	17	16	186,425
J1	TTP Interchange	Elizabeth Station	17.91	34	17	16	204,407
J1 Total							390,832
224	Elizabeth Station	Salisbury Station	9.12	34	21	15	96,216
224	Salisbury Station	Elizabeth Station	9.12	34.2	21	15	96,681
224 Total							192,897
228	Smithfield Station	Adelaide / City	32.34	39	17	15	386,313
228	Adelaide / City	Smithfield Station	32.34	38	17	15	377,955
228 Total							764,268
400	Elizabeth Station	Salisbury Station	10.75	33	17	15	108,521
400	Salisbury Station	Elizabeth Station	10.75	32	17	15	105,823
400 Total							214,344
421	Salisbury	DSTO	8.47	2	0	0	2,127
421	DSTO	Salisbury	8.47	1	0	0	4,254
421 Total							6,381
430	Elizabeth Station	Salisbury Station	12.86	32	17	16	127,404
430	Salisbury Station	Elizabeth Station	12.86	32	17	16	127,404
430 Total							254,808
440	Munno Para Station	Elizabeth Station	12.30	30	16	14	119,679
440	Elizabeth Station	Munno Para Station	12.30	30	17	15	121,081
440	Smithfield Station	Elizabeth Station	7.00	1	0	0	1,757
440 Total							242,517
441	Smithfield Station	Elizabeth Station	10.62	30	14	11	94,910
441	Elizabeth Station	Smithfield Station	10.62	30	14	11	94,910
441 Total							189,821
442	Smithfield Station	Elizabeth Station	12.70	30	16	14	123,571
442	Elizabeth Station	Smithfield Station	12.70	28	16	15	117,996
442 Total							241,567
443	Elizabeth Station	Elizabeth Loop	25.98	0	0	0	0
443 Total							0
451	Munno Para S/C	Elizabeth Station	13.81	34	17	16	138,707
451	Stop 74A	Elizabeth Station	7.76	3	0	0	2,208
451	Munno Para S/C	Stop 74A	6.05	3	0	0	5,843
451	Elizabeth Station	Munno Para S/C	13.81	33	16	15	143,748
451	Elizabeth Station	Stop 74A	6.05	1	1	1	5,843
451	Stop 74A	Munno Para S/C	7.76	3	0	0	4,555
451 Total							300,906

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
452	Munno Para S/C	Elizabeth Station	11.92	35	17	13	117,483
452	Stop 78D	Elizabeth Station	7.32	3	0	0	2,671
452	Munno Para S/C	Stop 71	9.36	3	0	0	2,349
452	Elizabeth Station	Munno Para S/C	11.92	32	16	16	124,814
452	Elizabeth Station	Stop 78D	7.32	1	1	1	7,048
452	Stop 71	Munno Para S/C	9.36	1	0	0	5,511
452 Total							259,879
461	Munno Para S/C	Munno Para S/C	13.86	27	17	16	119,917
461	Stop 77	Munno Para S/C	9.61	5	0	0	12,060
461 Total							131,977
500	Elizabeth	Salisbury	8.30	28	0	0	58,332
500	Salisbury	Elizabeth	8.30	29	0	0	60,416
500 Total							118,748
560	Elizabeth Station	Salisbury Station	9.13	21	17	16	74,410
560	Salisbury Station	Elizabeth Station	9.13	24	17	16	69,826
560 Total							144,236
900	Elizabeth Station	Salisbury Station	30.6	5	0	0	38,403
900	Salisbury Station	Elizabeth Station	30.6	5	0	0	38,403
900 Total							76,806
Total Annual Public Transport Bus Resources							3,535,508
GC	Adelaide	Gawler Central	42.2	39	35	34	578,815
GC	Gawler Central	Adelaide	42.2	40	35	35	592,066
G	Adelaide	Gawler	39.8	24	0	0	525,643
G	Gawler	Adelaide	39.8	25	0	0	512,392
S	Adelaide	Salisbury	20.2	1	0	0	5,070
S	Salisbury	Adelaide	20.2	1	0	0	5,070
Total Annual Public Transport Train Resources							1,670,522
Total Annual Public Transport Resources							4,728,218
Additional Annual Public Transport Resources (compared to current)							339,306

1. Route J1 resources are between Elizabeth and Tea Tree Plaza Interchange only. The km value for the remainder of the route to the City, Adelaide Airport and Glenelg have not been included for the purpose of this plan
2. Route 500 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Paradise and the City has not been induced for the purpose of this plan.
3. Route 560 and 224 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to the City has not been included for the purpose of this plan.
4. Route 400 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Salisbury North has not been included for the purpose of this plan.

Table E.7 Option 2 – existing network upgrade resources

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
J1	Elizabeth Station	TTP Interchange	17.91	30	13	13	161,404
J1	TTP Interchange	Elizabeth Station	17.91	34	13	13	179,389
J1 Total							340,791
224	Elizabeth Station	Salisbury Station	9.12	64	36	36	183,932
224	Salisbury Station	Elizabeth Station	9.12	64	36	36	183,932
224 Total							367,864
228	Smithfield Station	Adelaide / City	32.34	39	17	15	386,313
228	Adelaide / City	Smithfield Station	32.34	38	17	15	377,955
228 Total							764,268
400	Elizabeth Station	Salisbury Station	10.75	64	36	36	216,806
400	Salisbury Station	Elizabeth Station	10.75	64	36	36	216,806
400 Total							433,612
421	Salisbury	Elizabeth	13.15	10	0	0	33,001
421	Elizabeth	Salisbury	13.15	10	0	0	33,001
421 Total							66,003
430	Elizabeth Station	Salisbury Station	12.86	32	17	16	127,404
430	Salisbury Station	Elizabeth Station	12.86	32	17	16	127,404
430 Total							254,808
440	Munno Para Station	Elizabeth Station	12.30	32	18	18	124,033
440	Elizabeth Station	Munno Para Station	12.30	32	18	18	124,033
440A	Smithfield Station	Elizabeth Station	7.00	32	18	18	71,294
440A	Elizabeth Station	Smithfield Station	7.00	32	18	18	71,294
440 Total							319,360
441	Smithfield Station	Elizabeth Station	10.62	34	18	17	111,754
441	Elizabeth Station	Smithfield Station	10.62	34	18	17	111,754
441 Total							223,509
442	Smithfield Station	Elizabeth Station	12.70	34	18	16	132,842
442	Elizabeth Station	Smithfield Station	12.70	32	18	17	127,267
442 Total							260,109
443	Elizabeth Station	Elizabeth Loop	25.98	0	0	0	0
443 Total							0
451	Munno Para S/C	Elizabeth Station	13.81	64	36	36	278,520
451	Stop 74A	Elizabeth Station	7.76	0	0	0	0
451	Munno Para S/C	Stop 74A	6.05	0	0	0	0
451	Elizabeth Station	Munno Para S/C	13.81	64	36	36	278,520
451	Elizabeth Station	Stop 74A	6.05	0	0	0	0
451	Stop 74A	Munno Para S/C	7.76	0	0	0	0
451 Total							557,040

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
452	Munno Para S/C	Elizabeth Station	11.92	35	17	13	117,483
452	Stop 78D	Elizabeth Station	7.32	3	0	0	2,671
452	Munno Para S/C	Stop 71	9.36	3	0	0	2,349
452	Elizabeth Station	Munno Para S/C	11.92	32	16	16	124,814
452	Elizabeth Station	Stop 78D	7.32	1	1	1	7,048
452	Stop 71	Munno Para S/C	9.36	1	0	0	5,511
452 Total							259,879
461	Munno Para S/C	Munno Para S/C	13.86	27	17	16	119,917
461	Stop 77	Munno Para S/C	9.61	5	0	0	12,060
461 Total							131,977
500	Elizabeth	Salisbury	8.30	28	0	0	58,332
500	Salisbury	Elizabeth	8.30	29	0	0	60,416
500 Total							118,748
560	Elizabeth Station	Salisbury Station	9.13	25	10	8	66,549
560	Salisbury Station	Elizabeth Station	9.13	23	10	8	61,965
560 Total							128,514
900	Elizabeth Station	Salisbury Station	30.6	7	0	0	53,764
900	Salisbury Station	Elizabeth Station	30.6	7	0	0	53,764
900 Total							107,528
Total Annual Public Transport Bus Resources							4,404,808
GC	Adelaide	Gawler Central	42.2	39	35	34	578,815
GC	Gawler Central	Adelaide	42.2	40	35	35	592,066
G	Adelaide	Gawler	39.8	24	0	0	525,643
G	Gawler	Adelaide	39.8	25	0	0	512,392
S	Adelaide	Salisbury	20.2	1	0	0	5,070
S	Salisbury	Adelaide	20.2	1	0	0	5,070
Total Annual Public Transport Train Resources							1,670,522
Total Annual Public Transport Resources							6,074,402
Additional Annual Public Transport Resources (compared to current)							1,207,667

1. Route J1 resources are between Elizabeth and Tea Tree Plaza Interchange only. The km value for the remainder of the route to the City, Adelaide Airport and Glenelg have not been included for the purpose of this plan
2. Route 500 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Paradise and the City has not been induced for the purpose of this plan.
3. Route 560 and 224 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to the City has not been included for the purpose of this plan.
4. Route 400 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Salisbury North has not been included for the purpose of this plan.

Table E.8 Option 3 – new network resources

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
J1	Elizabeth Station	TTP Interchange	17.91	30	13	13	161,404
J1	TTP Interchange	Elizabeth Station	17.91	34	13	13	179,389
J1 Total							340,791
227	Elizabeth	Adelaide / City	27.32	39	17	15	316,939
227	Adelaide / City	Elizabeth	27.32	38	17	15	310,082
227 Total							627,021
400	Elizabeth Station	Salisbury Station	10.75	64	36	36	216,806
400	Salisbury Station	Elizabeth Station	10.75	64	36	36	216,806
400 Total							433,612
421	Salisbury	Elizabeth	13.15	10	0	0	33,001
421	Elizabeth	Salisbury	13.15	10	0	0	33,001
421 Total							66,003
430	Elizabeth Station	Salisbury Station	12.86	16	11	11	67,772
430	Salisbury Station	Elizabeth Station	12.86	18	11	11	74,228
431	Elizabeth Station	Elizabeth South	11.0	16	0	0	44,176
431	Elizabeth South	Elizabeth Station	11.0	18	0	0	49,698
430/431 Total							235,874
440	Munno Para Station	Elizabeth Station	12.30	32	18	18	124,033
440	Elizabeth Station	Munno Para Station	12.30	32	18	18	124,033
440A	Smithfield Station	Elizabeth Station	7.00	32	18	18	71,294
440A	Elizabeth Station	Smithfield Station	7.00	32	18	18	71,294
440 Total							319,360
445	Smithfield Station	Elizabeth Station	10.2	33	16	15	102,449
445	Elizabeth Station	Smithfield Station	10.2	33	16	15	102,449
445 Total							204,898
448	Smithfield Station	Elizabeth Station	12.46	64	36	36	251,293
448	Elizabeth Station	Smithfield Station	12.46	64	36	36	251,293
448 Total							502,587
450	Munno Para S/C	Elizabeth Station	9.16	40	17	17	109,718
450	Elizabeth Station	Munno Para S/C	9.16	40	17	17	109,718
450 Total							219,437
453	Munno Para S/C	Elizabeth Station	12.09	40	17	17	144,766
453	Elizabeth Station	Munno Para S/C	12.09	40	17	17	114,766
453 Total							289,532
461	Munno Para S/C	Munno Para S/C	13.86	34	17	16	144,269
461 Total							144,269

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
500	Elizabeth	Salisbury	8.30	64	36	36	167,394
500	Salisbury	Elizabeth	8.30	64	36	36	167,394
500 Total							334,789
900	Elizabeth Station	Salisbury Station	30.6	7	0	0	53,764
900	Salisbury Station	Elizabeth Station	30.6	7	0	0	53,764
900 Total							107,528
Total Annual Public Transport Bus Resources							3,861,500
GC	Adelaide	Gawler Central	42.2	39	35	34	578,815
GC	Gawler Central	Adelaide	42.2	40	35	35	592,066
G	Adelaide	Gawler	39.8	24	0	0	525,643
G	Gawler	Adelaide	39.8	25	0	0	512,392
S	Adelaide	Salisbury	20.2	1	0	0	5,070
S	Salisbury	Adelaide	20.2	1	0	0	5,070
Total Annual Public Transport Train Resources							1,670,522
Total Annual Public Transport Resources							5,540,445
Additional Annual Public Transport Resources (compared to current)							673,721

1. Route J1 resources are between Elizabeth and Tea Tree Plaza Interchange only. The km value for the remainder of the route to the City, Adelaide Airport and Glenelg have not been included for the purpose of this plan
2. Route 500 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Paradise and the City has not been included for the purpose of this plan.
3. Route 400 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Salisbury North has not been included for the purpose of this plan.

Table E.9 Option 4 – Go Zone network resources

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
J1	Elizabeth Station	TTP Interchange	17.91	64	36	36	361,209
J1	TTP Interchange	Elizabeth Station	17.91	64	36	36	361,209
J1 Total							722,418
227	Elizabeth	Adelaide / City	27.32	64	36	36	550,990
227	Adelaide / City	Elizabeth	27.32	64	36	36	550,990
227 Total							1,101,980
400	Elizabeth Station	Salisbury Station	10.75	64	36	36	216,806
400	Salisbury Station	Elizabeth Station	10.75	64	36	36	216,806
400 Total							433,612
421	Salisbury	Elizabeth	13.15	32	16	12	126,273
421	Elizabeth	Salisbury	13.15	32	16	12	126,273
421 Total							252,457
430	Elizabeth Station	Salisbury Station	12.86	32	18	18	128,870
430	Salisbury Station	Elizabeth Station	12.86	32	18	18	128,870
431	Elizabeth Station	Elizabeth South	11.0	32	18	18	110,231
431	Elizabeth South	Elizabeth Station	11.0	32	18	18	110,231
430/431 Total							478,202
440	Munno Para Station	Elizabeth Station	12.30	64	36	36	248,066
440	Elizabeth Station	Munno Para Station	12.30	64	36	36	248,066
440 Total							496,133
445	Smithfield Station	Elizabeth Station	10.2	64	36	36	205,714
445	Elizabeth Station	Smithfield Station	10.2	64	36	36	205,714
445 Total							411,427
448	Smithfield Station	Elizabeth Station	12.46	64	36	36	251,293
448	Elizabeth Station	Smithfield Station	12.46	64	36	36	251,293
448 Total							502,587
450	Munno Para S/C	Elizabeth Station	9.16	64	36	36	184,739
450	Elizabeth Station	Munno Para S/C	9.16	64	36	36	184,739
450 Total							369,478
454	Munno Para S/C	Elizabeth Station	12.6	64	36	36	254,117
454	Elizabeth Station	Munno Para S/C	12.6	64	36	36	254,117
453 Total							508,234
461	Munno Para S/C	Munno Para S/C	13.86	64	36	36	279,528
461 Total							279,528
500	Elizabeth	Salisbury	8.30	64	36	36	167,394
500	Salisbury	Elizabeth	8.30	64	36	36	167,394
500 Total							334,789

Route	Origin	Destination	Km	M-F	Sat	Sun	Annual Km
900	Elizabeth Station	Salisbury Station	30.6	16	16	16	178,704
900	Salisbury Station	Elizabeth Station	30.6	16	16	16	178,704
900 Total							357,408
Total Annual Public Transport Bus Resources							6,212,846
GC	Adelaide	Gawler Central	42.2	76	76	76	1,170,628
GC	Gawler Central	Adelaide	42.2	76	76	76	1,170,628
G	Adelaide	Gawler	39.8	48	0	0	479,510
G	Gawler	Adelaide	39.8	48	0	0	479,510
S	Adelaide	Salisbury	20.2	0	0	0	0
S	Salisbury	Adelaide	20.2	0	0	0	0
Total Annual Public Transport Train Resources							3,300,277
Total Annual Public Transport Resources							9,548,951
Additional Annual Public Transport Resources (compared to current)							3,052,472

1. Route J1 resources are between Elizabeth and Tea Tree Plaza Interchange only. The km value for the remainder of the route to the City, Adelaide Airport and Glenelg have not been included for the purpose of this plan
2. Route 500 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Paradise and the City has not been included for the purpose of this plan.
3. Route 400 resources are between Elizabeth and Salisbury only. The km value for the remainder of the route to Salisbury North has not been included for the purpose of this plan.