

Gawler Rail Corridor Policy Uplift Impact Analysis

Report for the Town of Gawler

August 2020



Jensen PLUS together with
+ Tonkin Consulting

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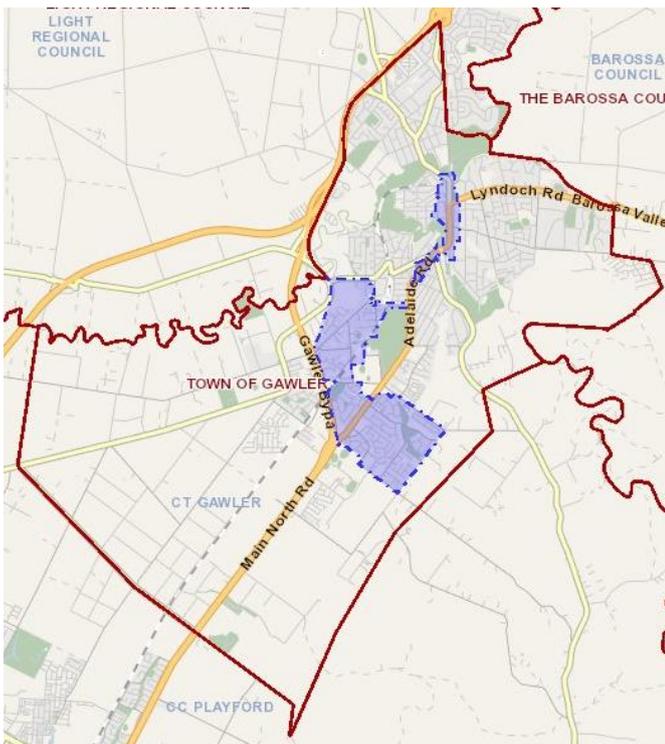


Executive Summary

Purpose of report

Strategically, the Town of Gawler will experience dramatic urban infill pressures over the next 15 years as a result of major planning policy and transport infrastructure changes. Council is eager to understand the implications of the proposed Gawler rail corridor development uplift as to impacts on current heritage, infrastructure and open space assets within the areas identified for review, namely the *Town Centre Historic (Conservation) Zone* and Policy Area 5 - Evanston / Evanston Park and Policy Area 9 – Hillier Road in the *Residential Zone*.

This study was originally instigated by a Ministerial DPA which at this point in time is not proceeding.



Study Area shown in blue within the Town of Gawler Council area.

Yield analysis

To inform the impact assessments, a yield analysis has been undertaken for each of the study areas to determine likely development scenarios. A post-development yield expectation for each of the gross leasable retail and commercial floor areas and for the number of dwellings capable of being created was

established, based on a modelling period up until 2036.

The yields were based on, amongst a number of other elements, policies relating particularly to residential densities (but also including retail and commercial), built forms and intensity of development envisaged within anticipated SA Planning Policy Library Zones or the draft Planning and Design Code.

The yields analysis underpinned the assessment of:

- traffic and stormwater implications (for possible upgrades and headworks)
- the implications on historic character as a result of potential development outcomes
- open space requirements for the additional dwellings associated with increased residential densities.

Key findings relevant to each of the study areas are:

Urban Core Precinct

Applying specific development assumptions for land use and built form configuration, at full development potential, retail and commercial floor areas would increase considerably (nearly double in the case of retail, nearly 7 times for commercial) and result in a substantial residential presence which is currently absent (365 apartments above the non-residential development).

Town Centre (Murray Street) Precinct

The approach taken in this precinct is identical to the Urban Core, but based only on a 1% annual development take-up, and results in a similar outcome in that retail and commercial floor areas would increase considerably (under double in the case of retail, nearly 8 times for commercial) and result in a substantial residential presence which is currently absent (529 apartments above the non-residential development).

Town Centre (Adelaide Road) Precinct

The approach taken in this precinct is identical to the above but the results are more modest in that retail and commercial floor areas would increase to a reasonable extent (3.5 times in the case of retail, just over double for commercial) but negligible change to the existing and moderate residential presence.

Suburban Neighbourhood Precinct

There is significant potential for urban infill opportunities in both these areas although their infill form and mix vary slightly. Based on assumptions regarding infill dwelling rates, a review of the existing lot structures and annual take-up data, it is likely that the total number of potential dwellings would be in the order of 3,161 (1,044 in the Hillier PA and 2,117 in the Evanston / Evanston Gardens PA), and providing an estimated 17.5 year land bank supply.

Infrastructure capacity

This analysis identified key issues associated with the importance of infrastructure deficiencies being addressed across each of the study areas due to the consequences of development uplift, as follows:

Traffic impacts

Within the Urban Core Precinct, the extra yields will significantly increase traffic on Murray Street and the arterial road network which are already near capacity. Associated with the attraction of vehicles is the critical need to increase car parking space to service the future retail and commercial businesses.

This is a similar scenario with the Town Centre Zone, both Murray Street and Adelaide Road Precincts. Significant road upgrades at key locations are required in order to perform at their expected level of service for the anticipated development.

The traffic analysis also identifies possible changes in traffic patterns bypassing Murray Street which will result in pressure placed on the local road network.

The local road system in the Suburban Neighbourhood Precinct will be subject to increased impact from local trips generated, over a wide area, but will likely cause significant issues for the existing arterial road network

The traffic assessment highlights that there is not sufficient capacity within the overall road network to facilitate the uplift growth that the study areas could accommodate.

Further detailed modelling and update of the TTMP is needed to further examine the balance of palatable road upgrade options relative to development potential in the town centre. Given Gawler's current access limitations and capacities, there is likely to be a "limit" to new development opportunities within an acceptable upgraded road network.

Flood risk analysis

Apart from the Hillier Road PA, it is not anticipated that major issues associated with flooding (or the need for significant works to protect land from flooding) within the study areas would result from the envisaged future urban growth. Within Hillier Road PA, the existence of flooding constrains future development opportunities.

Stormwater management

The analysis identifies that there will be impacts on increased stormwater runoff resulting from a denser rate of development. In the case of small-scale and incremental infill development, this can be dealt with via on-site detention basins and tanks. Broader drainage systems are able to be masterplanned through flood control basins and infrastructure upgrades that would effectively address stormwater management and runoff requirements.

Heritage and character

Existing and proposed (ie the Code) planning policy have the ability to provide strong protection for heritage, though not necessarily 'character' in the new planning system, although this will be influenced by the potential uplift densities which will lead to more intensive forms of development. The management of existing desired character and new development proposals will be a challenge, most notably for the Gawler town centre itself, to ensure that the new responds appropriately to articulated historic and streetscape character.

There are no heritage / character implications within the Suburban Neighbourhood Precinct.

Any policy changes as part of the new Code will need to ensure that elements of historic character, not just historic features of these locations, are articulated within Historic Area Statements.

In response to this, Council are currently working with DPTI on the preparation of more detailed Historic Area Statements for incorporation into the new Code. It will be important for future Historic Area Statements to not only provide descriptions of historic attributes, but also articulate how development should respond favourably to these attributes.

Council should also support the creation of a Local Design Review panel as is allowed in the new planning system as an opportunity to input early in

the development process desired character and design goals and expectations.

Open space network

Based on recognised contemporary standards of open space provision, the impact on the existing open space provision in the Suburban Neighbourhood Precinct from increased residential densities will require additional open space being provided to address a shortfall in its provision (an extra 7.5 ha – Hillier PA; 13.6 ha – Evanston / Evanston Gardens PA).

To acquire the desired future open space areas will be a challenge in terms of the reality of the likely prospective development growth being in the form of small-scale, piecemeal and one-on-one developments rather than large 'greenfield' sites.

Council is urged to undertake a masterplanning exercise with the aim of securing and co-ordinating the desired standards of provision. Council's Directions Report continues to have a clear role in this respect. This process will also aid in securing important pedestrian and cycling connections in these locations.

Specific connectivity across and external linkages beyond the Precinct for walking / cycling is generally poor and key components of the *Walking and Cycling Plan 2018-2028* need to be addressed to improve the network and to provide safer access to and from schools in particular. Part of this also involves public works upgrades to existing footpath provision as identified in the report's action plan.

1. Introduction

Context and Purpose

The Town of Gawler is eager to plan appropriately for the future growth within its Council area arising from urban infill. This is needed to address the outcomes sought by the 30 Year Plan for Greater Adelaide, which identifies increased reliance on urban infill in achieving population and housing growth for Adelaide.

The Department of Planning, Transport and Infrastructure (DPTI) is in the process of electrifying and upgrading the Adelaide – Gawler Rail line. Council, in light of the planned infrastructure works and strategic policy setting, sought to review the zoning around the Gawler Central station with the view of facilitating a transit-oriented development outcome.

Opportunities to review zoning at key locations along the rail corridor were also being proposed by DPTI so as to provide uplift that supports the investment being undertaken in the rail infrastructure. As a result, DPTI sought to prepare a Ministerial DPA for the rezoning in place of Council and expanded the scope to include opportunities more broadly associated with other stations including within the City of Playford. For the Town of Gawler, the DPA scope was intended to examine the entire Town Centre, Adelaide Road and residential areas of Evanston and Evanston Gardens.

While a Ministerial DPA was not released, initial discussions with DPTI indicated an approach which sought to implement the following:

- An Urban Core Zone on land surrounding the Gawler Central Station
- Revised Town Centre zone that would allow uplift
- The Suburban Neighbourhood Zone for the residential areas

The zones would be based on the content from the SA Planning Policy Library.

The preparation of the Planning and Design Code, and its (then) intended implementation in July 2020 meant that DPTI sought to separate the policy changes for the residential areas originally sought by the DPA from those of the centre zones.

Concurrently and in response to an identified need for further investigatory work, the key proponent withdrew their request for the land (adjacent the Gawler Central Station) to be rezoned. As a consequence, the Minister withdrew the DPA.

Notwithstanding this, it is likely that the changes imposed by the Planning and Design Code, particularly for the residential areas, would still have the impact of uplift.

While the original scope of this study has evolved, it remains relevant for Council so as to plan for the impacts of the policy change proposed by the Code, as well as understand the implications of any future policy change to the town centre, should Council (or DPTI) seek to recommence any rezoning around the Gawler Central Station by Council (as a Code Amendment within the new planning system).

Specifically, Council is eager to understand the implications on Council's infrastructure responsibilities, particularly in regard to:

- the road network (including how Council roads will integrate with DPTI roads)
- stormwater management and associated infrastructure needs
- open space provision

In addition to the above considerations, Council is also eager to understand how policy changes would potentially impact on historic character, which is valued by its local community and an important asset for the township.

The Study Area

The extent of land subject to this study is identified within Figure 1 and comprises:

- the existing Town Centre Historic (Conservation) Zone
- the Residential Zone Hillier Road Policy Area
- the Residential Zone Evanston / Evanston Park Policy Area.

These locations reflect those were to be covered by the proposed Ministerial DPA that was being considered at time of the investigations.

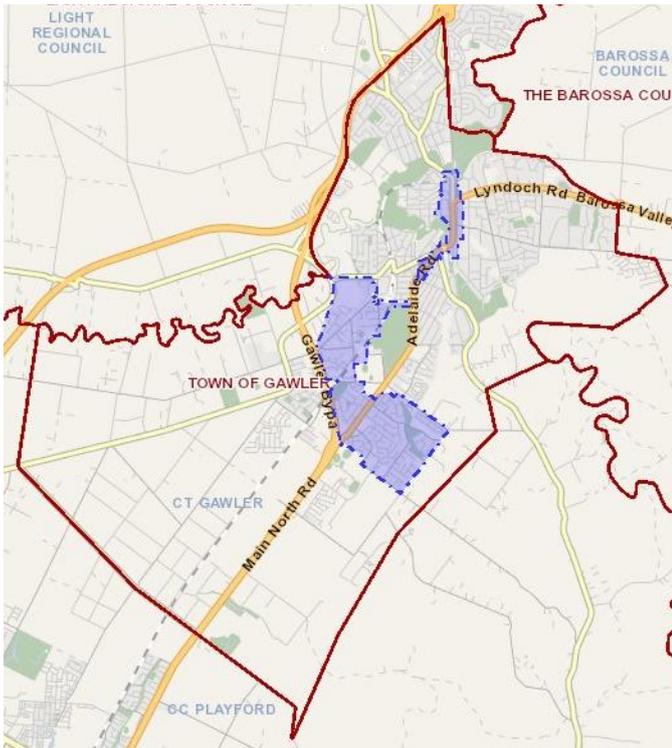


Figure 1: Extent of the Study Area (shown in blue within the Town of Gawler Council area).

Approach

The approach to the study has been formulated on the following components:

- An analysis of the strategic focus for the study area, particularly the town centre – given this will guide an understanding of how the proposed policy amendments respond to Council's desired aims.
- An estimation of a number of yields associated with retail, commercial and residential development across the different parts of the study area.
- An assessment of the traffic and stormwater infrastructure needs arising from the anticipated yields, including implications for upgrades and headworks that may be required.
- Implications of impacts on historic character as a result of potential development outcomes allowed by the proposed zone, including recommendations for key policy coverage amendments or gaps.
- An assessment of open space implications of additional dwellings within the study area, including recommendations around additional open space provision that may be required.
- A summary of investigations findings, including an overall high level Structure Plan.

2. Strategic Review Analysis

Gawler Town Centre Design Framework 2016

The Gawler Town Centre Design Framework 2016 (the Design Framework) sets out the “big picture” vision for the future of the Gawler town centre, to ensure development is consistent with existing context and aligns with the communities and the Council’s vision.

Broadly, the Design Framework seeks to promote retail and commercial growth across the town centre by facilitating the introduction of a policy framework that supports mixed-use and residential development growth. It is anticipated that an increased local population density will be able to counter ‘demand erosion’.

The Design Framework seeks to ensure that growth is respectful of the local context and enhances and capitalises on the character and public realm of the town centre as a point of difference from other retail centres.

The Design Framework contemplates amendments to the Development Plan policy in order to enable the vision to be achieved, particularly in relation to building heights and mixed-use/ residential land use.

The overarching intent of the Design Framework is to operate as a lever to encourage appropriate development outcomes and growth within the Town Centre.

The Design Framework identifies three precincts within the Town Centre – the Gawler North, Gawler Central and Gawler South/Adelaide Road precincts, as identified in Figure 2.

Gawler North

The vision contemplated by the Design Framework for the Gawler North precinct was a vibrant mixed-use zone with an accessible transport hub, well connected to the town centre and nearby open space.

The key actions within the precinct related to the development of a transport interchange, increased retail and commercial floor space, opportunities for mixed-use development, and increase building height (2 – 3 storeys).

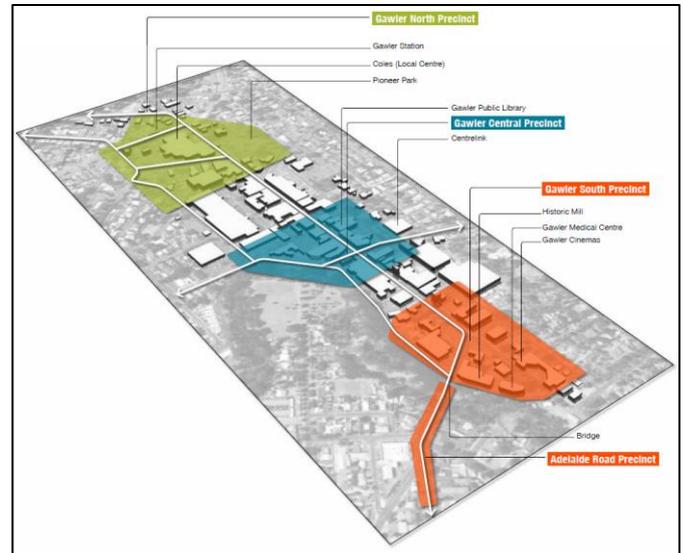


Figure 2 Gawler Town Centre Design Framework - Precincts

Gawler Central

The vision for the Gawler Central precinct is a unique destination with a well-designed and landscaped public realm connecting main street, shopping areas, and open spaces.

The relevant precinct objectives related to the development of public realm upgrades to key identified connections (Walker Place and Tod Street), and facilitation of development along the river (Whitelaw Terrace and Julian Terrace).

Gawler South

The Design Framework sets out a vision for the Gawler South precinct to develop as the residential, hospitality and entertainment hub for the town centre.

The objectives identified for this precinct are to promote adaptive re-use of key heritage sites, develop as a gateway to township, encourage mixed-use development.

Adelaide Road

The vision for Adelaide Road is as the key southern entrance to Gawler, exhibiting predominately single storey building forms, strong heritage character and a focus on public realm.

The key objectives speak to the retention of the established character, maintaining the prevailing single storey form and the areas heritage.

Gawler Town Centre Strategic Framework (Draft)

The key objective of the Gawler Town Centre Strategic Framework (the Strategic Framework) is to introduce strategies that maintain the Gawler town centre as a competitive retail and commercial area and reinforce its role as the major activity centre within the wider district.

The vision for the Gawler Town Centre, set out by the Strategic Framework is of a place that people and businesses want to be, attracted to its authentic heritage, streetscape appeal, green spaces and service offerings.

The Strategic Framework details a series of investigations of key factors affecting the Town Centre, including:

- Management and image
- Heritage
- Urban design
- Traffic and parking
- Retail capacity
- The Development Plan

The key findings of these investigations were as follows:

- Based on 2011 figures, the retail floorspace supply outweighed the demand at the time of writing, indicating that existing shops are likely under economic stress;
- The town centre catchment is experiencing a decrease however population within the catchment is expected to increase significantly;
- A substantial increase (20%) of retail and commercial floorspace along Murray Street is anticipated to result in traffic volumes exceeding the street and intersection capacities;
- Increased competition from surrounding centres, particularly Munno Para, has led to greater economic stress; and,
- The existing floor space for food and non-food retailing is within the demand's estimated range for 2032.

Open Space, Sport & Recreation Plan 2025 Directions Reports (2016)

The Open Space, Sport & Recreation Plan guides the future provision, development and management of open space and sport and recreation facilities in Gawler to the year 2025.

The report provides directions and strategies around six key theme topics.

- Theme 1: Open Space Provision and Design
- Theme 2: Organised Outdoor Sport and Activities
- Theme 3: Recreation and Nature
- Theme 4: Trails and Open Space Connections
- Theme 5: The Environment and Climate Adaptation
- Theme 6: Aquatic and Indoor Sport and Recreation Facilities

A comprehensive analysis of these themes determined a number of key opportunities and challenges. The key analysis findings and directions relevant to this DPA are as follows:

- The anticipated population growth and issues relating to usability of existing open space, justifies the establishment of additional open space;
- New open spaces should be located in areas where there are identified gaps and accessible to new housing developments; and,
- An additional 25 – 30 hectares of sporting open space could be required to the year 2025, through both the expansion of existing facilities and establishment of new grounds.

30 Year Plan for Greater Adelaide

As a Volume of the SA Planning Strategy, the 30 Year Plan for Greater Adelaide guides the spatial planning for Adelaide and needs to be considered in any changes to zoning.

The 2017 update identifies 6 targets, underpinned by a range of policies that will help measure progress on delivering a new urban form and how Greater Adelaide will become a more liveable, sustainable and competitive place. The following are of relevance to this DPA:

Target 1: Containing our urban footprint
85% of all new housing in metropolitan Adelaide will be built in established urban areas by 2045

The existing township of Gawler is included as an infill area for the purposes of this target as it is connected by a railway line, as outlined within Figures 3 and 4.

Target 2: More ways to get around

60% of all new housing in metropolitan Adelaide will be built within close proximity to current and proposed fixed line (rail, tram, O-Bahn and bus) and high frequency bus routes by 2045

Transit corridors will be the focus of renewed activity in delivering Greater Adelaide's new urban form and will be supported by rejuvenated neighbourhoods linked by integrated public transport systems and cycling networks. This speaks to increasing densities for development within a comfortable walking distance around the stations in question.

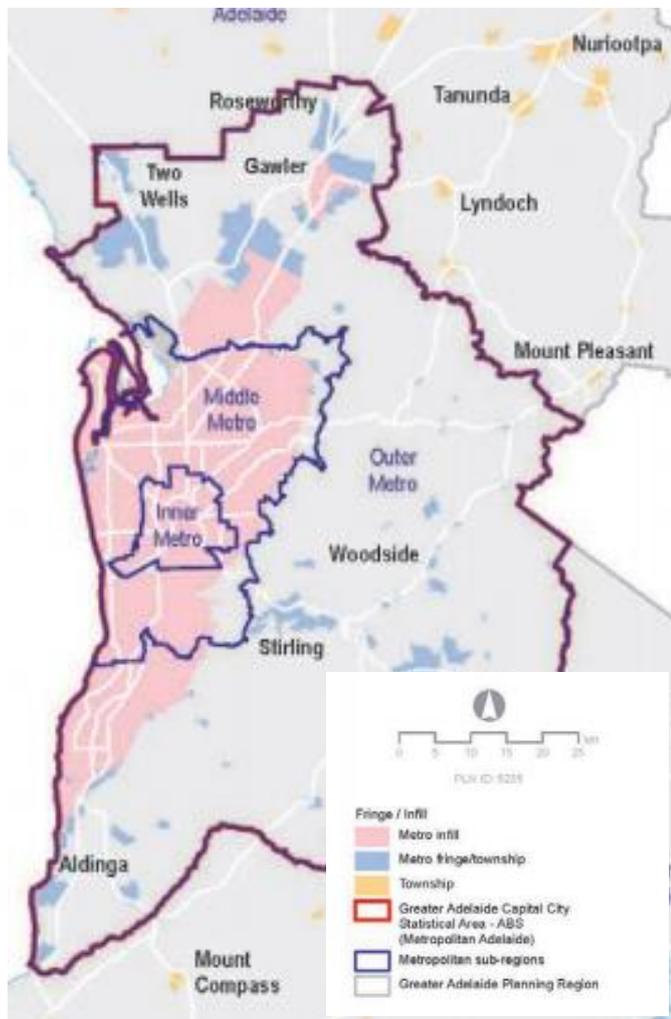


Figure 3: Urban Areas and infill locations for Greater Adelaide



Figure 4: Growth corridor opportunities for Greater Adelaide

Target 4: Walkable neighbourhoods

Increase the percentage of residents living in walkable neighbourhoods in Inner, Middle and Outer Metropolitan Adelaide by 25% by 2045

A key component of walkable neighbourhoods is ease of access (proximity and convenience/safety) to the range of services and facilities required by residential populations. The intent is to have these within a 5 to 10 minute walk of a dwelling and not have reliance on motorised transport to access services. Key benefits are health and wellbeing of

populations, as well as congestion and environmental benefits.

Increasing uplift around stations and the town centre is consistent with the intent of this target and would contribute to the Town of Gawler's contribution to the increase in percentage for Greater Adelaide.

Target 6: Greater housing choice

Increase housing choice by 25% to meet changing household needs in Greater Adelaide by 2045

Increased densities and provision for mixed use development implies a greater range of different housing types to those that currently dominate the urban areas of the Town of Gawler. This includes apartments (in the town centre) as well as group dwelling, residential flat buildings and row dwellings.

The policy intent of the DPA (and incoming Planning and Design Code, is to support and facilitate greater housing diversity, assisted through policy intent, density and design concessions.

Relevant policies that underpin the four identified targets are as follows:

- P2. Increase residential and mixed use development in the walking catchment of appropriate transit corridors and strategic railway stations.
- P3. Increase average gross densities of development within activity centres and transit corridor catchments from 15 to 25 dwellings per hectare to 35 dwellings per hectare.
- P5. Encourage medium rise development along key transport corridors.
- P6. Promote urban renewal opportunities and maximise the use of government-owned land to achieve higher densities along transit corridors.
- P9. Develop activity centres as vibrant places by focusing on mixed-use activity, main streets and public realm improvements.
- P11. Ensure new urban fringe growth occurs only within designated urban areas and township boundaries and outside the Environment and Food Production Areas, as shown on Map 3.
- P25. Develop and promote a distinctive and innovative range of building typologies for residential housing which responds to metropolitan Adelaide's changing housing needs, reflects its character and climate, and provides a diversity of price points.
- P27. Provide for transitions between higher density and multi-storey, mixed-use developments in activity centres, corridors and existing detached housing precincts.
- P28. Promote permeable, safe, attractive, accessible and connected movement networks (streets, paths, trails and greenways) in new growth areas and infill redevelopment areas that incorporate green infrastructure.
- P31. Recognise the unique character of areas by identifying their valued physical attributes.
- P33. Recognise the value that communities place on heritage and ensure that new development is implemented sensitively and respectfully.
- P36. Increase housing supply near jobs, services and public transport to improve affordability and provide opportunities for people to reduce their transport costs.
- P37. Facilitate a diverse range of housing types and tenures (including affordable housing) through increased policy flexibility in residential and mixed-use areas, including: ancillary dwellings such as granny flats, laneway and mews housing
 - ...
 - small lot housing types
 - in-fill housing and renewal opportunities.
- P40. Use government-owned land and large underdeveloped or vacant sites as catalysts for stimulating higher density development and innovative building forms.
- P41. Renew neighbourhoods that have high concentrations of old public housing to improve housing stock, increase the diversity of housing options and tenures, and catalyse private investment.
- P48. Create greenways in transit corridors, along major watercourse linear parks, the coast and other strategic locations to provide walking and cycling linkages.
- P50. Provide diverse areas of quality public open space in neighbourhoods (especially in higher density areas) such as local parks, community gardens, playgrounds, greenways and sporting facilities to encourage active lifestyles and support access to nature within our urban environment.
- P74. Ensure development does not adversely impact the transport function of freight and/or major traffic routes and maintains access to markets (Refer to Map 7).
- P78. Improve, prioritise and extend walking and cycling infrastructure by providing safe, universally accessible and convenient connections to activity centres, open space and public transport (see Map 8).
- P86. Ensure that new urban infill and fringe and township development are aligned with the provision of appropriate community and green infrastructure, including:
 - walking and cycling paths and facilities
 - local stormwater and flood management including water sensitive urban design
 - public open space
 - sports facilities
 - street trees
 - community facilities, such as child care centres, schools, community hubs and libraries



3. Yield Analysis

Approach

In order to inform the various investigations undertaken in this Impact Analysis and to provide the Council with an improved understanding of what levels of uplift could be experienced as a result of potential policy changes, a yield analysis has been undertaken for each of the specific case study areas. The potential yields from these has been determined based on the policies associated with densities, built forms and intensity of development envisaged for the following zones which were identified as potentially applying to the study area into the future (based on advice on potential DPA):

- Urban Core Zone (around the Gawler Central Station and environs).
- Amended Town Centre Zone (derived from the outcomes sought within the Gawler Town Centre Design Framework).
- The Suburban Neighbourhood Zone which would be applied to the residential areas within the study area.

Since the change in approach to the rezoning of the residential areas to the Code equivalent zone (General Neighbourhood Zone), an assessment of the draft Code policies as they were identified to apply to Evanston and Evanston Gardens was undertaken and found that, relative to the Suburban Neighbourhood Zone of the SA Planning Policy Library:

- the density provisions roughly aligned (between 33 – 50 dwellings / hectare) despite minimum lot areas being slightly higher in the Code
- the forms of dwellings envisaged aligned (all forms envisaged)
- building heights were similar (2 storeys, noting that taller forms are allowed – as is the case within the Suburban Neighbourhood Zone which allowed 3 storeys more broadly)
- front, side and rear setbacks align
- maximum site coverage (60%) is applied in the Code, but not in the SAPPL (although Residential Code under current legislation aligns to 60%).

Therefore, despite these changes occurring following the initial yields being established and agreed with Council, the implications of the revised policy framework would not impact on the assumptions made and informing the development potential identified.

The yield analysis provides an estimated post development yield for the following variables for each of the above precincts:

- Gross Leasable Retail Floor Area
- Gross Leasable Commercial Floor Area
- Number of dwellings

The yield analysis takes a contextual approach for each precinct, considering the particular features of each area, including but not limited to:

- land use pattern
- locational features (e.g. proximity to open space, main roads etc.)
- ownership
- existing pattern of development and land division
- environmental constraints and
- proximity to heritage.

This informs how and where development is likely to occur in each precinct under the proposed policy frameworks.

A set of common modelling assumptions is applied across the entirety of all areas, these are as follows:

- Modelling period is up until 2036 (to align with traffic volumes and projections)
- For all commercial and mixed-use areas:
 - Retail will be limited to the ground floor of buildings only
 - Office uses will be either ground floor (off principal streets) or 1st floor only
 - Residential land uses only developed above second floor in mixed use buildings
 - Average household size 2.4 people per household
- State and local heritage places will be retained and in the majority of cases, those sites retained as is
- Contributory Items will be retained and new development undertaken around the existing original fabric (ie to the rear and sides, depending on context).

In addition, a set of specific modelling assumptions is applied to inform the extent and likely arrangement of development within each specific precinct to inform floor area estimates and dwelling yields.

Urban Core Precinct

The Urban Core Precinct surrounds the Gawler Central Railway Station and Coles Gawler. This area will likely be subject to the most intensive redevelopment and uplift from our interpretation of the potential DPA intent. There has been ongoing interest from the land owner to redevelop this area, with an indicative master plan developed, taking advantage of the site's proximity to the Gawler Central Railway Station and proposed future investment in the rail upgrade.

The proposed Urban Core Zone policy framework provides for a mixed-use zone with medium to high density residential development in proximity to public transport. The extent of the precinct is identified in Figure 5 below.

The precinct specific assumptions applying in the yield analysis to the Urban Core precinct are as follows:

- Development up to 6 storeys is accommodated on the site within the zone
- Development at the perimeter of the sites accommodate a base podium of 2 storeys – suggested setback of upper levels 6 metres or 4 metres, except at street frontage interface with Contributory Items – single storey
- Parking will largely be sub-grade, with parking in basement
- Average dwelling size 75m² where in the form of apartments
- Site coverage very high – some laneways for access and permeability
- Imperviousness 100%
- Existing supermarket to be largely retained
- 100% redevelopment of the Precinct

The Urban Core Precinct has been utilised chiefly for retail and commercial use, with some residential development evident north of the railway line. As it stands the existing floor areas within the precinct is understood to be as follows:

- Total existing retail: 6507m²
- Total existing commercial: 1607m²
- Total existing residential: 1 detached dwelling

Applying the proposed policy framework to the precinct and with consideration of the applied assumptions, at the precincts full development potential the following additional yield is estimated:

- **Total Retail GLFA: , 11,890m²**

- **Total Commercial GLFA: 11,690m²**
- **Residential: 365 apartments**



Figure 5 Urban Core Precinct

Town Centre (Murray Street) Precinct

The Town Centre Zone has been split into two distinct precincts, the Murray Street and the Adelaide Road precincts. This is due to the existing distinct differences and differing development patterns anticipated for each of these areas. The two Precincts also align with the Town Centre Light Policy Area and the Town Centre Gawler South Policy Area.

The Town Centre (Murray Street) Precinct covers land from Ayers Street in the South to Main North Road/Flinders Street in the northern extent. The precinct is more clearly identified in Figure 6 below.

The Town Centre Zone policy provides for a range of retail office, administrative, community, cultural, and entertainment facilities. Ancillary residential developments are also anticipated.

The precinct specific assumptions applying in the yield analysis for this precinct are as follows:

- Parking to be at grade, with floorspace above car parks
- 100% site cover and imperviousness
- Development up to 4 storeys, with base podiums up to 2 storeys – setback of upper levels of 3 – 6 metres
- 16% redevelopment of the zone is anticipated (1% a year based on evidence from Churchill and Prospect Road examples).

In the absence of market analysis of likely growth and take-up of development, this ratio has been used as an example of an Adelaide corridor / centre that has experienced uplift zoning and public realm improvements. The actual take-up could be higher or lower, but this provides a useful guide for the assumptions for this precinct. The ramifications of the current COVID-19 pandemic will likely have an impact upon the growth and up-take of development in the area, although the extent of which is unknown.



Figure 6 Town Centre (Murray Street) Precinct

The Town Centre (Murray Street) Precinct has developed predominately with retail and commercial uses along Murray Street, with some residential development evident along the eastern perimeter of the area. The precinct has a clear historic character

with numerous State, Local and Contributory heritage places.

For the purpose of this assessment 12 separate development sites were randomly selected to represent a diversity of potential site areas and locations. These 12 sites comprised of 33 allotments, representing 16% of the total number of allotments in the precinct.

The existing floor areas for these sites is as follows:

- Existing retail: 6017m²
- Existing commercial: 4135m²
- Existing residential: 2 detached dwellings

Applying the proposed policy framework to the precinct and with consideration of the applied assumptions, at the precincts anticipated development potential the following additional yield is estimated:

- **Total Retail GLFA: 11,297 m²**
- **Total Commercial GLFA: 32,796 m²**
- **Residential: 529 apartments**

Town Centre (Adelaide Road) Precinct

The Town Centre (Adelaide Road) Precinct covers the extent of the Town Centre Zone fronting Adelaide Road from the South Para River to Nineteenth Street, as detailed in Figure 7 below.



Figure 7: Town Centre (Adelaide Road) Precinct

The Precinct is located more specifically within the Town Centre Gawler South Policy Area which provides for office, consulting room and community uses, with limited retail development at a small-scale. It also seeks the retention of the domestic pattern and form of buildings.

The precinct specific assumptions applying in the yield analysis for this precinct have taken account of the historic policy context and intent desired in this location, as distinct from the remainder of the town centre, and are as follows:

- New buildings up to 2 storeys only
- Retail and office uses at ground (50% distribution of each)
- Offices only above ground
- Limited residential development opportunities
- Site cover of 50% to accommodate at grade parking (basement or decked parking unlikely given scales and site areas)
- Only minimal redevelopment as a result – 7 indicative locations identified utilising existing vacant lots and lower quality properties
- 90% imperviousness (allow some landscaping for parking areas and front of properties).

The existing floor areas across the 7 nominated sites is as follows:

- Total existing retail: 1191m²
- Total existing commercial: 1841m²
- Total existing residential: 3 dwellings

At the precinct's nominated development potential, the following additional yield is estimated:

- **Total Retail GLFA: 4179m²**
- **Total Commercial GLFA: 4179m²**
- **Residential: 2 additional dwellings.**

Suburban Neighbourhood Precinct

The Suburban Neighbourhood Precinct covers the extent of the residential areas of the Study Area as identified in Figure 8 below.

These locations are currently within two policy areas of the Regimental Zone – Hillier Road and Evanston/Evanston Park. This is important as analysis has identified a significant difference between the two areas as to the potential for infill development due to the distribution of allotment sizes: specifically:

- 52% of allotments in the Hillier Road Policy Area within the study area are below 500m² and therefore far less likely to be utilised for infill development opportunities compared to Evanston / Evanston Park Policy Area where nearly 80% of allotments are over 500m²
- The Hillier Road Policy Area has double the greenfield allotments (sites over 3,000m²) and provides opportunities for growth in a different manner (noting that these sites are more likely to be developed ahead of infill development due to ease of this process over purchasing and subdividing individual allotments with dwellings on them.).



Figure 8: Suburban Neighbourhood Precinct

Potential yields possible from the Suburban Neighbourhood Zone provide for 35 – 45 dwellings per hectare generally, and 45-70 dwellings per hectare in locations adjacent centres and open space. The broad-brush application of these densities across the precinct is not considered appropriate as the area is unlikely to be developed in its entirety within the identified timeframe.

DPTI's factsheet 'Minor Infill – Greater Adelaide, 2012-2018' has been used to identify infill dwelling rates and is based on actual infill data across metropolitan Adelaide. These rates identify:

- 1.91 average replacement rate on demolition sites
- 1.51 average number of additional dwellings constructed on resubdivision sites (sites where existing dwelling is retained).

There is only 1 local heritage place in the precinct study area (on Hillier Road), and therefore, heritage and character is not considered to be a constraint to be applied to the yield assumptions.

Annual take-up data is more complex given the characteristics of this location and the broader metropolitan DPTI rates are not considered to accurately reflect potential take up (these are

potentially higher for a range of reasons, including property prices, returns and location attractors driving market demand).

Instead, an area of Kilburn / Blair Athol has been examined as it contains very similar mix and type of housing stock to the Evanston neighbourhood, and is likely to be at a closer market and price bracket to broader areas of the Adelaide metropolitan area. In addition, land has been recently rezoned at Kilburn/Blair Athol for the purpose of renewal and uplift, and some development activity has occurred providing a useful comparative example. Utilising this data (provided by the City of Port Adelaide Enfield) a take up rate of 180 dwellings per year has been used to aid the yield assumptions.

Therefore, for the purpose of estimating residential allotment yields from the Suburban Neighbourhood Precinct, the following factors have been applied:

- Existing, yet un developed land division data from the SA Property and Planning Atlas (proposed and approved)
- Existing greenfield or underutilised sites developed at up to an average of 90% for dwellings at an average site area of 325m²
- Infill that will potentially occur – at an average of DPTI's infill rates – 1.7 dwellings per development
- Assumed annual take up of 180 dwellings/ year to inform the land bank from the Suburban Neighbourhood Precinct.

The following yields (additional dwellings) have been determined for the two different areas using the above factors:

	Hillier Rd PA	Evanston/ Evanston Gdns PA
Existing land division data	132	71
Greenfield / underutilised large lots	224	127
Infill from existing dwelling sites	688	1,919
Total number of potential dwellings	1044	2,117
	3161	
Housing land bank pipeline	17.5 years	



4. Infrastructure Capacity Analysis

Traffic Impact Assessment

Tonkin Consulting were engaged to perform a traffic impact assessment for the designated DPA area. A literature review of existing Council traffic reports and an analysis of current traffic conditions information was sourced to determine recommendations for road infrastructure upgrades within the proposed DPA. Specific reports and data considered includes:

- Traffic and Transport Management Plan developed by Mott MacDonald for Council in 2016
- Gawler Town Centre 2017-2020 Car Parking Strategy by GTA Consultants
- Town of Gawler Walking and Cycling Plan 2018-2028 by InfraPlan
- King Street Bridge Planning Report by Aurecon
- Gawler Town Centre Strategic Framework Report
- Gawler Growth Areas Transport Framework (2009) by DPTI.

Based on the Traffic and Transport Management Plan, it is assumed that 10–20% of traffic will be redistributed to new road infrastructure with the construction of projects such as the Gawler-East Link Road.

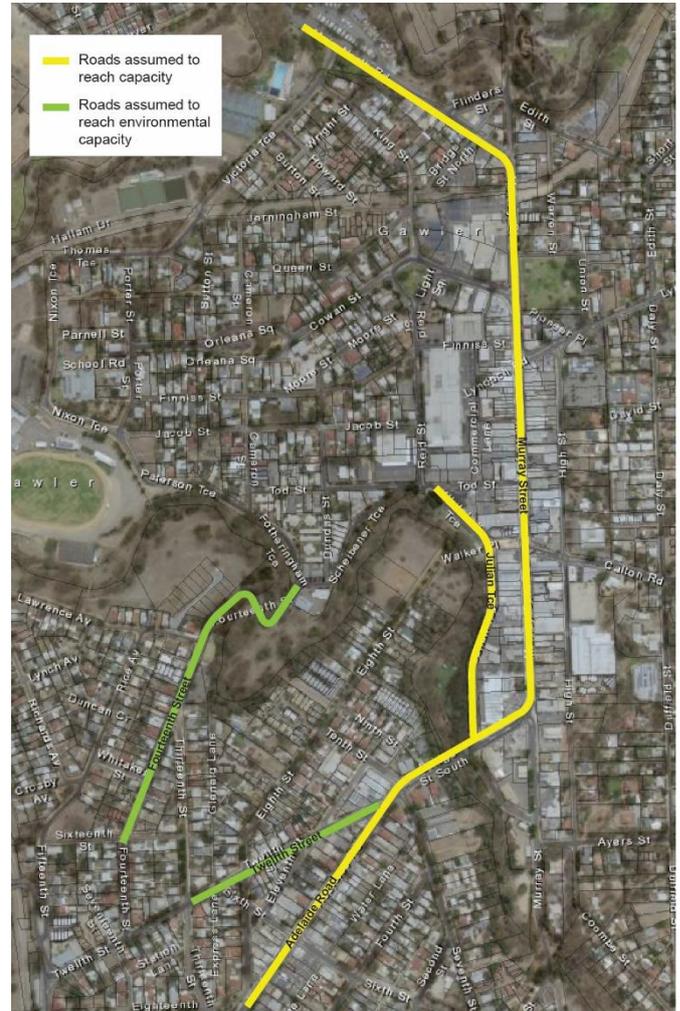
Urban Core Precinct

The Urban Core Precinct largely consists of the Gawler Central Shopping Centre and associated carpark. This Precinct is centred around the Gawler Central Rail Station. Given the land use in the area there is likely to be a large volume of pedestrians.

Traffic information gathered by Tonkin suggests there are delays experienced throughout the day along Murray Street for the length of the Precinct which also impacts on intersections with Murray Street, particularly Cowan Street in the afternoon peak times. Murray Street has been identified for potential road upgrades to improve congestion and the road environment. The construction of the Gawler East Link Road is identified as likely to assist with this congestion.

The analysis identified that an additional 5,800–7,000 vehicle trips per day were expected due to the anticipated increases in retail, commercial and residential yields arising from the uplift in this Precinct alone. These additional trips for this precinct

alone will significantly increase traffic on Murray Street and the arterial road network which are already near capacity.



The principal concern is with traffic generated by the commercial and retail developments which are likely to attract traffic from external areas, whereas local residents within the precinct are more likely to utilise alternative modes of transport such as walking or cycling for local journeys.

Approximately 930 spaces have been calculated as the theoretical parking demand of the anticipated growth in yields within the precinct. This has been based on a rate of 4 spaces / 100m² of commercial or retail floor space (derived from Aurecon's 'Parking Spaces for Urban Places' report).

This estimate is quite significant and will require the construction of additional car parking. The parking

supply around the Gawler Central shopping centre is currently operating at a medium-high occupancy, therefore, a significant increase in parking supply would be required to accommodate the proposed DPA growth. This will likely need to be in the form of basement and / or decked parking solutions.

Town Centre Zone (Murray Street) and (Adelaide Road) Precincts

These two precincts mainly consist of commercial, industrial and residential land uses.

Traffic information collated by Tonkin suggests that Murray Street, Cowan Street, Reid Street, Todd Street and Julian Terrace all experience significant delays, with Whitelaw Terrace experiencing moderate delays.

The following roads have been identified as requiring upgrades due to reaching their level of service:

- Murray Street
- Calton Road / Murray Street / Walker Place intersection
- Murray Street / Bridge Street South / Murray Street (south) intersection
- Bridge Street / Julian Terrace
- Adelaide Road / Twelfth Street

The yield analysis suggested that an additional 7,500-9,000 vehicle trips per day will be expected due to the potential developments within the Murray Street area and an additional 1,500-2,500 vehicle trips per day within the Adelaide Road area.

The theoretical increase in parking demand (based on same ratios as applied to the Urban Core Precinct) is estimated to be 1,760 spaces in the Murray Street area and 335 spaces in the Adelaide Road area.

The estimated increased parking demand in the Adelaide Road area is not considered to pose as a major concern as carparks in this area are currently operating at a relatively low occupancy.

However, a high theoretical parking demand in the Murray Street area is seen as a significant concern which will be amplified by the pressure on parking created by development growth within the adjacent Urban Core Precinct. These two locations imply a need to strategically manage parking through a new decked parking facility into the future.

Suburban Neighbourhood Precinct

The Suburban Neighbourhood Precinct largely consists of residential land uses with some community facilities and reserves.

Existing traffic data suggests that Main North Road, the intersection of Main North Road and Potts Road, the intersection of Main North Road and Trinity Drive, Para Road and the intersection of Para Road and Farrow Road all currently experience some delays throughout the day. It is noted that the Potts Road and Main North Road intersection is now signalised, however there is no data yet to understand the extent of the impact on flows.

The anticipated housing yields envisaged for this location was considered to determine traffic impacts.

The traffic analysis suggested an additional 18,950 vehicle trips per day would be expected within the precinct as a result of additional dwelling yields envisaged. It was concluded that the increased impact on the local road network would likely be a significant concern with the traffic generated from the Precinct distributed over a large area. It is acknowledged that some people will utilise alternative modes of transport such as train, bus or bike which will reduce the number of vehicle trips, however, notwithstanding this, the significant number of estimated vehicle trips estimated from the precinct will likely cause significant issues to the existing arterial road network.

King Street Bridge

Tonkin concluded that the proposed DPA changes may increase the volume of vehicles using King Street to bypass Murray Street due to the increased traffic volumes. This change in current traffic patterns will increase demand on the local road network when travelling northbound.



Figure 9: King Street Bridge location

Tonkin considered three scenarios to assess the impacts of the operation of King Street Bridge on the surrounding traffic network, and the impact additional growth would have on this.

The three scenarios included:

- Scenario 1 - No changes to the operation of King Street Bridge (it will remain 2-way and open to traffic)
- Scenario 2 - King Street Bridge will remain in place, however it will be made one-way
- Scenario 3 - Removal of the King Street Bridge and a pedestrian/cyclist bridge be installed in its place (currently planned by DPTI as part of the rail infrastructure upgrade works).

Tonkin's preferred recommendation is to remove the King Street Bridge and install a pedestrian/cyclist bridge in its place as a way to encourage vehicles to use the arterial network. If the bridge is removed, a pedestrian/cyclist bridge should be provided to allow movement between the development on the southern side of the railway line and the railway station/proposed development on the northern side of the rail line.

A pedestrian/cycling bridge will encourage walking/cycling between the proposed developments on either side of the railway line which provides traffic benefits in less vehicular traffic and parking demand.

Tonkin considers that additional traffic in the local road network will be considered to have a much larger impact when compared to additional traffic on the arterial network (Murray Street), noting its existing capacity limitations and the need for upgrades as a result of any additional yields arising

from the potential uplifts associated with future zone changes.

Traffic control devices are recommended to reduce rat-running and increase the reliance on the arterial road network, however the most effective control measure is to remove the link in the local network altogether (i.e. remove of the bridge).

Potential Interventions Needed

The traffic assessment highlights that there is not sufficient capacity within the road network to facilitate the growth that future uplift zoning in the study area could accommodate.

This implies that the objectives of achieving significant uplift within the Precincts, and for the surrounding residential areas generally are in direct conflict of the capacity of the town's road network, the desire for liveability and manageable congestion for businesses and occupants in and surrounding Gawler, as well as the historic character attributes which pose significant limitations on the potential options available to resolve traffic issues (particularly at intersections and for road where historic buildings and structures exist).

This study has particularly highlighted as a priority a need for Council to investigate how best to balance the ability to achieve growth within Gawler (the Precincts) with valued character, heritage and amenity attributes that exist.

It is beyond the scope of this study to explore in detail specific design options and opportunities at specific locations, however, an analysis of potential road upgrade options has been undertaken by Tonkin in an attempt to deal with traffic issues from potential development.

The potential options presented have different impacts, yet pose real challenges for accommodating the expected traffic volumes from future development without making significant changes to existing roads.

The following priority measures are identified:

- Duplicating Murray Street and Adelaide Road to two lanes in each direction from Redbanks Road to Gawler Bypass. This option on the format suggested, is not likely to be a palatable option as this would remove all on-street parking options for Murray Street, change the character of the street and make it less attractive as a pedestrian

and main street environment. However, it is clear that achieving increased capacity within Murray Street is a key element in accommodating the growth in traffic volumes expected into the future.

- Delineating an alternative higher order street network / route to complement Murray Street and “take up some slack” in the demand on the road. Options considered include:
 - utilising Julian Terrace, Reid Street, King Street with a possible route through to Jermingham Street and Victoria Terrace
 - increasing the capacity of High street through providing a minimum of two 3.5m wide lanes which are formally marked.
- Duplication of the South Para bridge. It is noted that the bridge is adjacent a number of trees, some of which are significant and have heritage value. Further consideration of design options for placement would need to be undertaken to understand how this can be accommodated although it is likely that a design solution is possible within the width available.
- Upgrade of Redbanks Road. This may require four traffic lanes, however this will be dependent on detailed modelling
- Construction of a multi-story carpark (likely 4-5 levels) in the town centre, where there are existing parking concerns. This may potentially be adjacent the station (and also act as a park and ride), but will most likely need to be located on private land. Council may need to seek acquisition to facilitate this if a private party does not fulfil this need.
- Various Local Area Traffic Management treatments across the network. Further modelling would be required to determine the location and extent of the works, however it is likely that devices will be required to manage the local traffic network, particularly adjacent to the centre itself.
- Upgrade Ryde Street and Twelfth Street, including an upgrade of the bridge over the rail line. This is to provide an alternative link to the Gawler Bypass.
- Undertake a more detailed traffic analysis, including a computer software-based traffic modelling, of the anticipated traffic generated by the potential development anticipated from the uplift. An investigation such as this would provide

more detailed data and could be used to investigate the impacts of a combination of upgraded works and aid in further prioritising and potentially discounting options, based on broader impacts of the solutions. This analysis would further underline traffic interventions required to support the level of growth anticipated by any future policy changes that result in uplift within the town centre. They may also guide the extent of uplift able to realistically be achieved, given the limitations of the road infrastructure, historic character and township amenity.

Other, secondary priority works were identified, noting that in many cases these works are likely or would be beneficial in conjunction with the priority works to avoid relocation of issues):

- Duplication of the Gawler Rail line to allow additional train trips and better support the road network. Whilst this option is not required for based on this investigation, it is recommended given the extent of the impact to the road network and the other options proposed. Alternatively, a passing loop to increase frequency of train services would also assist (and be more cost effective).
- An update to Council's TTMP is suggested. Given the anticipated changes to the traffic generation and the recently completed works, the TTMP requires updating to reflect the future conditions. It is possible that if development only occurs in the Suburban Neighbourhood Precinct (not in the Town Centre or Urban Core Precincts) then the TTMP can just be updated. However, if all of the anticipated development is sought and encouraged to occur, then it is likely that the TTMP would need to be entirely redone as the modelling is significantly different to the expected impacts of this Study.

Additional works likely to be required following further modelling would potentially include:

- Upgrade of the Julian Terrace/Murray Street intersection
- Upgrade of the Murray Street/Carlton Road/Walker Place intersection
- Upgrade of the Adelaide Road/Twelfth Street intersection

Indicative Costings

Tonkin have provided high level estimates of the costs associated with the road upgrade requirements for Council. Note that the following estimates are



indicative and an assessment of the feasibility of options has not been undertaken.

Suggested Works	Indicative Cost
Murray Street upgrade	\$4-6 million (inc signal modifications)
Adelaide Road (including intersections)	\$6-8 million (more if land acquisition required between 5 th St and Racecourse)
Main North Road widening and services (to Redbanks Rd roundabout)	\$6 million
Julian / Reid Streets link (may require acquisition north of Cowan Street)	\$15-20 million (excluding acquisition)
Redbanks Rd (minor widening / services)	\$2-4 million
Gawler Rail line duplication	\$30-40 million (includes new bridge over river)
Ryde Street	\$15-20 million (inc new bridge and alignment)
Multi-storey decked car park (500 spaces)	\$10 million (excl land acquisition)

These indicative costs have significant ramifications for Council and whilst partially able to be shared with the State government and developers (such as that for the Urban Core Precinct), will require a strategic program of planning and budgeting.

Importantly, should Council seek to achieve the growth objectives for the town centre that can be realised through uplift in zoning and future transit-oriented development, then there will be a need to address the “bottleneck” to development potential that is road infrastructure capacities.

Stormwater Infrastructure Assessment

Tonkin Consulting were engaged to perform a flood immunity assessment by assessing flood levels within the relevant development zones. The Gawler River Floodplain Mapping Report (FMR) and the Gawler and Surrounds Stormwater Management Plan (SMP) were used to inform the analysis.

Flood Risk Analysis

Town Centre Precincts

The Town Centre Precincts are generally outside major zones of flooding in the 100 year Average Recurrence Interval (ARI) flood scenario. Due to the low severity of flooding and the existing high density / high imperviousness of these locations, it is not envisaged that further growth anticipated will result in either major issues with flooding or significant works to protect land from flooding.

Hillier Road policy area

The Hillier Road policy area has two key areas significantly affected by flooding, as identified within the Draft Stormwater Management Plan. There is significant ponding of water upstream of the Gawler Bypass as culverts under the road are insufficient to convey flows further downstream. The first area is land that is located directly to the east of the Gawler Bypass and is subject to some flooding. This first area contains existing development, however if it is developed further through anticipated infill development, it would be subject to some flooding and would require works to be protected from this potential flooding.

The second area lies within the Gawler River floodplain. This area is a large vacant block of land located south of Ryde Street and due to its location within the floodplain, Tonkin advises that only a limited area of the land can be developed as full development will adversely impact on the hydraulic capacity of the river. If development does occur within this area, significant works would be required to protect new dwellings from flooding such as raising floor levels above the flood levels.

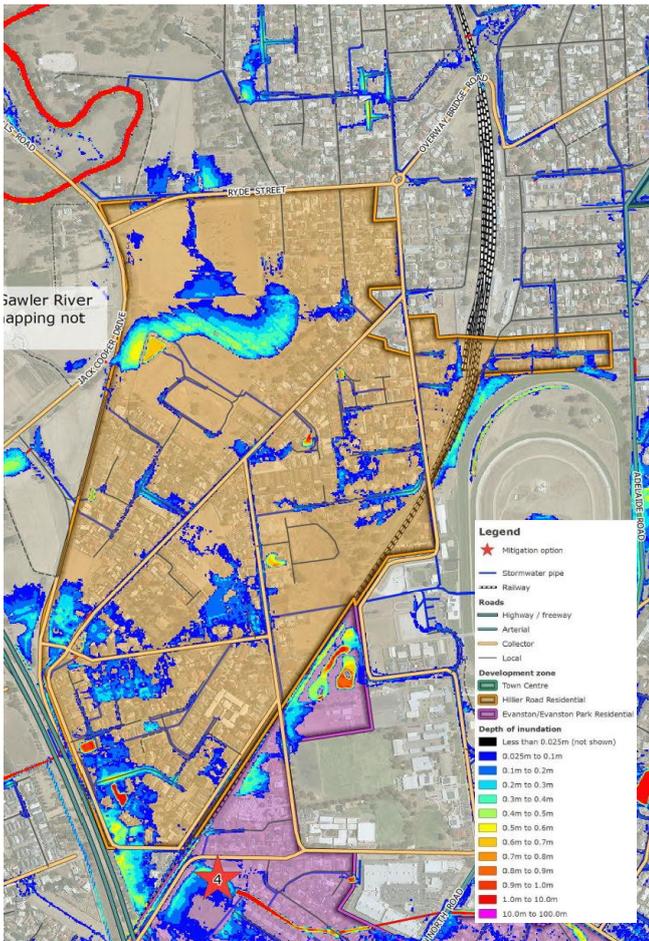


Figure 10: Hillier Road Policy Area flood extent as shown in draft Stormwater Management Plan

Evanston Park policy area

A range of natural water courses, overland flow paths and detention basins exist within this policy area which must not be impacted by the development generated by the DPA. In some areas of the policy area localised flooding occurs which is generally not a major impediment to development, however, development must be protected from flooding and ensure adjacent properties aren't impacted by flooding if development at increased densities occurs.

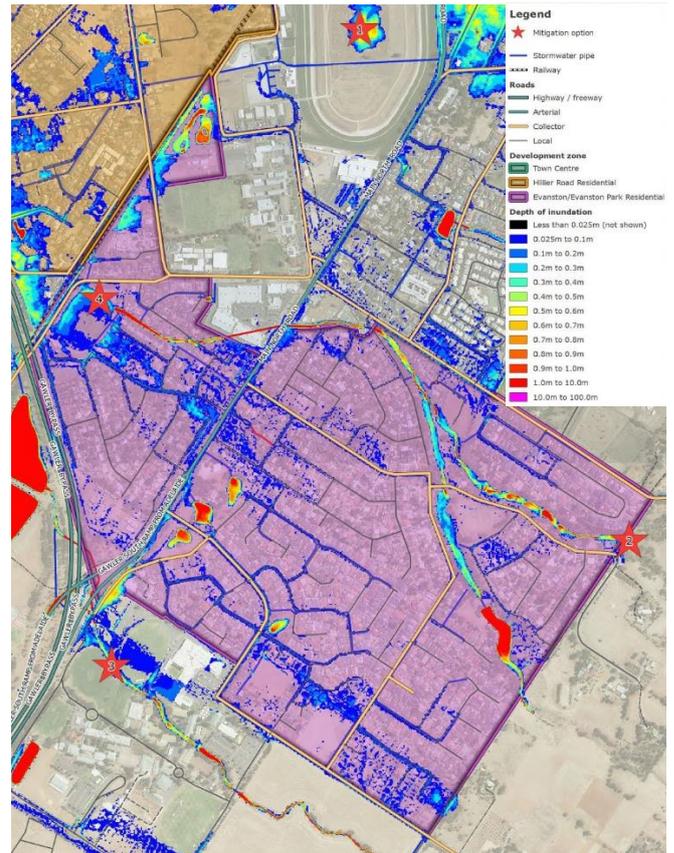


Figure 11: Evanston Park flooding as shown in Draft Stormwater Management Plan

Stormwater Management

Tonkin have assessed the potential for change of runoff generated by the proposed growth in development within each residential policy area. These have previously been forecast as part of the modelling of the Draft Gawler and Surrounds Stormwater Management Plan. The modelling undertaken examined development opportunities and likely changes in imperviousness, with a view to identifying run-off impacts on existing stormwater infrastructure.

Within the Town Centre precincts, given the proposed development of multi-story buildings replacing existing buildings and parking areas, it is anticipated that future development will not significantly increase the proportion of directly connected impervious area (DCIA) and consequently runoff.

Within the Hiller Road policy area, a large increase in the future developed DCIA of 45-50% has been assumed (currently at 29%) based on the anticipated potential yields. As such, the potential for flooding will increase however, the changes anticipated are

broadly in line with those predicted within the draft SMP with only about a 10% increase.

Within the Evanston Park policy area, yields and extent of imperviousness as a result of growth has suggested a result in a DCIA of 45-50%. The potential for flooding will increase, however, the changes will be relatively minimal compared to the values predicted in the draft SMP (~5% increase).

Assessment of potential augmentation / upgrade works

Development within the large vacant parcels of land in the Hiller Road and Evanston Park policy areas is likely to result in a significant increase in runoff beyond what could be accommodated by on-site measures within individual allotments. Therefore, Tonkin suggest for the addition of detention basins within the individual developments to maintain the standard of the downstream drainage systems.

This is more likely to be able to be achieved for these sites, but can be further supported by a masterplanning exercise of these locations, to equitably share land areas required for these purposes between land owners.

Incremental small scale infill development is likely to be more easily implemented in mitigating increased runoff impacts through on-site detention systems, currently sought by Councils across Adelaide (and soon to be required by the Planning and Design Code).

The Gawler and Surround SMP has outlined several flood mitigation works that are within or upstream of the Hillier Road and Evanston Park policy areas to reduce the key flooding areas. These works include:

- establishing a flood control basin at the top end of Tingara Avenue to mitigate flood flows from the upstream catchment in this location; and
- installation of a duplicate pipe under Evanston Oval to increase capacity to convey water under the Gawler Bypass Road.

Both these projects are assigned as high priority projects within the Draft Stormwater Management Plan.

Implementation of these works would effectively address the additional stormwater management and run-off requirements of infill development in these locations.

However, it is noted that as a draft document, there has been no commitment for the recommended flood mitigation works to be constructed. The potential growth of these locations, and its resultant impacts on existing stormwater infrastructure, potentially highlights a need to prioritise these specific mitigation projects, particularly if the market commences implementing additional infill development in response to any planning regime change.

Walking and Cycling Infrastructure

The Town of Gawler *Walking and Cycling Plan 2018-2028* was undertaken to establish a long-term walking and cycling network, and an action plan to implement the network, based on safety, connectivity, permeability, amenity, access for all abilities, tourism and planning for future growth. Key components associated with major, regionally-focussed, walking and cycling projects are:

- provision of cycle lanes along Adelaide Road
- provision of and upgrading section of the Gawler Greenway
- connecting the Barossa Trail and Stuart O'Grady cycleway
- connections within the Evanston Gardens area

Other key components of the action plan call for safer access to and from schools and for a city-wide upgrade and widening of footpaths and footbridges, and identifies individual projects that should be implemented accordingly.

Significantly, the report also notes that Hillier Road in particular and part of the Evanston Park Policy Areas have poor footpath provision and a low walking/cycling connectivity. The former, however, is an infrastructure matter.

The structure plan shows graphically the core spatial elements of the accessibility framework and the main connectors to generation sources.



5. Heritage & Character Impact Assessment

This assessment will investigate the potential impact of development uplift on heritage and character in the affected areas. The Suburban Neighbourhood Precinct contains one heritage item, a Local Heritage Place (Former Osmington Farmhouse at 22 Hillier Road, Evanston), which is unlikely to be subject to significant impact as a result of this DPA. Therefore, this assessment will focus on the Town Centre and Urban Core Precincts, where likely impacts and interface issues with Heritage places and areas will be greater.

Heritage and historic character assets are identified as comprising:

- Gawler Church Hill State Heritage Area
- State Heritage Places
- Local Heritage Places
- Contributory Items

These are identified within Figure 12.

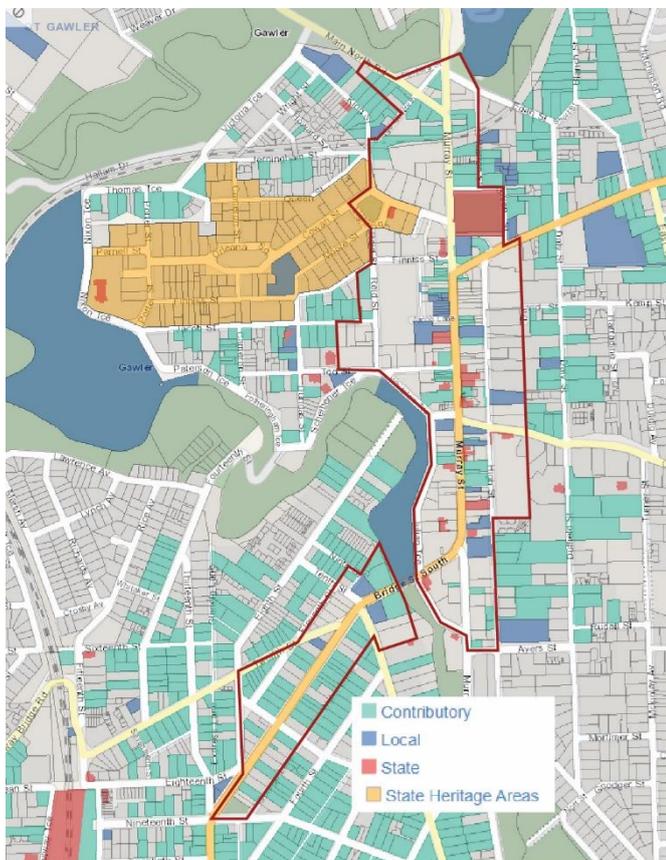


Figure 12: Heritage Assets across the Urban Core and Town Centre Precincts

The existing zoning integrates Historic (Conservation) protections and any future policy change will separate this from the specific zone policy into an Overlay. This in itself, does not impact on the level of protection afforded to heritage assets (within the new Planning System, Overlay policy takes precedence over zone policy in the event of a conflict).

It is noted that as part of the proposed Gawler Heritage Transition DPA, a heritage survey of all of the Town of Gawler's contributory items is currently underway. This is a response to contributory items not transitioning into the Planning and Design Code.

The removal of the existing control provided by non-complying listing of demolition of a contributory item within the current Development Plan is a critical tool being lost in the future and will have ramifications for those places currently identified. However, these changes extend beyond the potential uplift policy changes and are outside of the scope of this specific assessment.

This assessment has been undertaken having regard to both the existing SA Planning Policy Library / Structure, and the draft Planning and Design Code. As such, commentary in relation to the Code's potential impact in terms of heritage and historic character, is limited to the draft Code released for consultation, as well as documentation available on the SA Planning Portal at the time of writing.

Contributory Items

There are a significant number of contributory items positioned throughout the Urban Core and Town Centre precincts, as identified within Figure 12 above. They are mostly fronting Adelaide Road and Murray Street, and often positioned in cohesive groupings.

The Urban Core precinct policy framework will allow for an increased intensity of development within this area (as would the Planning and Design Code equivalent). By increasing the development potential of the land, this will consequently increase the value and interest of these sites to potential developers.

The application of the Historic Area Overlay and statement to this location maintains a level of protection of the important historic attributes that the contributory items provide, particularly scale,

materiality and rhythm in the streetscape. The Overlay (as contained within the draft form of the Code) would seek the retention of these places that contribute to the historic character.

Notwithstanding this, the potential uplift in this location will have a direct impact and therefore, to appropriately manage the impact on historic character in the streetscape, there is a need to ensure new development responds appropriately (covered in more detail below).

This is also likely to be similar within the Town Centre Precincts (Murray Street and Adelaide Road), where future policy changes would potentially open up opportunities for redevelopment of sites, potentially up to four storeys in height, creating a greater need to ensure they are developed to complement existing historic assets and streetscape character.

Gawler Church Hill State Heritage Area

The Gawler Church Hill State Heritage Area (the Area) is located to the immediate south-west of the Urban Core Zone. The Area identifies a section of the initial town that has remained relatively intact, and where development has not adversely affected its historic and visual character. Cowan Street is the single most dominant feature within Church Hill as it links Light, Orleana and Parnell Squares to form a major feature of the area.

The Old Bushman Hotel on Cowan Street is one of the two listed State Heritage Places within the Area, and is located immediately opposite the defined Urban Core Zone.

It will be important for new development within the Urban Core Precinct to appropriately interface with the State Heritage Area, especially in respect to building height and form.

There is more control afforded to any future development here as proposals in this location will trigger a referral to the Department of Environment and Heritage who have direction to the relevant authority.

State and Local Heritage Places

State and Local Heritage Places will continue to be afforded protection from demolition with policy supporting their retention and adaptive re-use. The policy within the SA Planning Policy Library, as well as the draft Planning and Design Code will provide an equivalent level of support for development that

would directly affect a place, or the setting of the place (i.e. adjacent development). This however should be further supported by better articulation of the important character attributes of value to the town centre.

The Historic Area Statement prepared by Council is an important element in ensuring that this occurs.

Articulation of Appropriate Responses to Historic Character

The intent of uplift is for new development at a more intense nature and form to occur within the township. This is also reflected within the Strategic Framework for the Town Centre. This, by its very nature, implies a desire for some level of change in character to the established low rise form of the town centre represented by one and two storey buildings.

Without appropriately articulating both the elements of historic character that are of value, and how specifically new development should respond to this and the new form of development envisaged, there is a risk that development will begin to undermine the historic character of the township that is so highly valued by the community. Any policy change (whether it be via a new Historic Conservation Area policy within the General section of the Development Plan, or a Historic Area Statement as part of the Planning and Design Code) will need to ensure that both these elements are articulated, and not just historic features of these locations.

Council are currently working with DPTI on the preparation of Historic Area Statements, with the process being fairly positive to date and the outcomes to be likely consistent with the existing Development Plan Desired Character Statements.

It will be important for future Historic Area Statements to not only provide descriptions of historic attributes, but also articulate how development should respond favourably to these attributes.

The existing Town Centre Zone and relevant policy areas already do a good job in articulating the historic elements of value to the township and the distinct locations of difference between them (such as Adelaide Road Precinct for this study). In essence these are:

- Consistent patterning of buildings to the street
- Traditional shop fronts

- Buildings up to the street alignment with verandahs
- Minimal or nil side setbacks
- One or two storey forms
- Prominence of important townscape features such as civic, institutional and hotel buildings
- Fine grain frontages and scale
- High solid-to-void ratios
- Traditional materials and colours
- Simple orthogonal built forms
- Residential / domestic scale and setbacks for Adelaide Road

Given there is a desire for new buildings and building forms, it is essential that the following is articulated within the policy as appropriate responses to this valued character:

- Establishment of base podiums that maintain consistent datums to that of historic assets in the streetscape, and placed on street frontages (noting that building floor level heights differ between new development and historic buildings).
- Setting back from street frontages of taller elements behind the base podium of a distance to be further clarified by Council's heritage adviser (potentially somewhere between 3 and 6 metres).
- Limiting building heights to 4 storeys generally for the town centre, but potentially 6 storeys centrally to the Urban Core Precinct (not at interfaces) and 3 storeys for the Adelaide Terrace Precinct.
- Retention of consistent scale and frontage widths to the heritage assets, particularly retaining a fine grain street frontage at the podium levels. This is particularly important where there is a large site being redeveloped, or sites are consolidated to provide for redevelopment.
- Screening of parking to street frontages through sleeving of decked parking levels with retail or commercial floor space, or the provision of parking within a basement or above ground level (but appropriately screened).
- Ensuring verandahs are established to the street front which are not cantilevered, but maintain a consistent height and materials to those of heritage assets
- Retention of a high solid-to-void ratio for the design treatment of the base podium, utilising materials and colours consistent with historic assets (stone, rendered masonry etc).
- Design language and architectural features that provide a horizontal emphasis rather than a vertical emphasis (particularly for the podium elements of buildings).
- Where heritage assets are set back from the street alignment, new building placement and design maintaining prominence of the asset

through vistas and sight lines. This can be achieved either through setting / stepping the building frontage and/or setting back the building from the adjacent side boundary to the asset.

- Retention of primacy of pedestrian movements within the streetscape, limiting vehicle access points to coordinated entries and exits on minor streets.
- Maintaining a landscaped edge to site frontages for Adelaide Road Precinct, which reinforces the original domestic function of this location.

It is unlikely that these can be appropriately integrated as part of the transition of the Development Plan into the Planning and Design Code (particularly if only achieved through currently drafted Historic Area Statements) and would likely require a formal Code Amendment, with more detailed analysis and support from Council's heritage advisor and community engagement, as the next step in implementing the Town Centre Design Framework.

Local Design Review

DPTI have commenced a process of introducing potential for a Local Design Review process for development. There is significant value in such a process for the following reasons:

- it allows for an open dialogue between applicants, designers and Council on development objectives, and expectations for the site
- it allows input into thinking about how a site is developed early in the process, potentially where designers are not yet engaged, or would not otherwise be involved in the process
- it has a track record of improving development outcomes and streamlining development proposals through the planning system.

It is highly recommended that Council supports the introduction of this process and seeks to implement it for the Urban Core and Town Centre Precincts in particular. This process should be seen as an opportunity to seek input from Council's Heritage advisor early in the process, rather than after an application is lodged.

6. Open Space Network Impact

A review has been undertaken into open space provision within the existing Hillier Road and Evanston/ Evanston Park Policy Areas of the Residential Zone with a view towards identifying open space deficiencies (extent and locations), particularly in the context of future infill and increased housing densities, and to recommend strategies to address current and/or future deficiencies.

To inform this investigation, the following documents helped in providing some parameters regarding open space provision, accessibility and needs for the area affected:

- Barossa, Light and Lower North Region – Open Space, Recreation and Public Realm Strategy (September 2013)
- Town of Gawler Open Space, Sport and Recreation Plan 2025 – Directions Report (June 2016)
- Town of Gawler Walking and Cycling Plan 2018-2028 (August 2018)
- Summary Report: Best Practice Open Space in Higher Density Developments Project (a Local Government Research Project managed by the City of Charles Sturt).

Current Open Space Provision

The coverage of open space has been considered within the Regional Open Space, Recreation and Public Realm Strategy. The following key characteristics are identified for the Council area generally, and the study area:

- Gawler exceeds the proposed open space supply benchmark of 9 ha per 1,000 people adopted for the Region with a rate of 12.8 hectares per 1,000 people.
- Open space is not evenly distributed and is lacking at local and neighbourhood levels in some locations such as the inner south east of the town and the areas to the west of the railway line.
- Predicted population increases to 2036 will result in an overall open space deficit of 124 ha if the 9 hectares / 1,000 benchmark is to be maintained (noting that this benchmark is very generous in comparison to the 2.83 – 4.25 hectares per 1,000 people used across Australia, a benchmark based on an aim that seeks to maintain the rural and peri urban settings which the community has chosen to live).

- There is a shortfall of play spaces in Gawler that provide for basic play equipment and related small-scale facilities and passive activities with a benchmark of 1 play space per 825 people suggested. This requires an additional 6 playspaces to be provided in existing or new open space, and targeted in areas west of the railway line, south of Ryde Street and Eldrid Riggs Reserve.
- Recreation open space is not high in Evanston, particularly west of the rail line along with a gap within the Hillier Road Policy Area and is mostly in the form of passive spaces rather than structured active recreation areas.



Figure 13: Existing Open Space areas across the residential study area

The Directions Report stated that the main focus of the study for the existing and future Town of Gawler population adopted a region-wide approach to planning. In this regard, it accepted the regional

population catchment of Gawler could be around 130,000 by 2036 based on the current and projected population figures (which included Hewett, Concordia and Roseworthy). Accordingly, in regard to the higher order hierarchy of open space, ie regional and district, the Directions Report articulates the needs for and strategies to address future provision for these.

This Report remains relevant to the open space investigations contained in this assessment covering the two Policy Areas. The projected infill will have some implications for the long-term strategies identified but it is not likely that these key strategies will need to be fundamentally reviewed as a result of the infill conclusions associated with this assessment.

This local growth would form a minor part of the large regional catchment planned for and, in any event, will evolve over a considerable number of years and not all at once such as to overwhelm the capacity of existing facilities. The context of the Report's regional and district open space requirements continues to be relevant. The important consequence resulting from the anticipated Policy Area infill is clearly focussed on the local open space demands.

The Directions Report also identifies an Open Space Framework, contained within Appendix C, which defines the hierarchy and activity for open spaces, along with consideration and standards of provision. Of relevance the following is important for this assessment:

- Local open spaces being within 400 metres of all residents they need to service and 250 metres where higher density areas
- Local open space at least 0.2 hectares in size and at least 20 metres in width
- no more than 20% of land allocated as public open space having a slope in excess of 1 in 4 or comprise drainage areas unless that space forms part of a regional integrated open space network
- Neighbourhood open space should be at least 0.5 hectares in size for destination parks
- sportsgrounds forming district-level open space at least 3.5 hectares

Within the study area, an assessment of open space provision has been undertaken and is summarised within Figure 14 below and the following table:

Parameter	Hillier Rd PA	Evanston/ Evanston Gdns PA
Existing dwelling	853	1,440
Existing population (assuming average 2.4 people / household)	2,047	3,456
Local Open Space requirement (based on 3ha/1,000 people) *	6.1 ha	10.4 ha
Estimated existing area of open space available	6.1 ha	12 ha

* derived from the standard recommended in both the Town of Gawler Directions Report and in the Best Practice Open Space in Higher Density Developments Project for medium density development

Whilst the above table suggests an adequacy in supply of open space, these figures include areas that comprise or are constrained by:

- the fact that they partly serve as waterways of creeks
- barriers to accessing them either via a major road or rail corridor
- their shape, location and safety is questionable for useful local open space function.

As some of these open space areas (particularly for Evanston Park) will comprise natural waterways having a parallel drainage function, it is not unreasonable to assume that up to 20% of the identified land areas are not functional open space, meaning there is in fact a deficiency in provision for the study area (1.2 hectare in Hillier Policy Area and 2.4 hectare in Evanston / Evanston Gardens Policy Area).

An analysis of the open space needs for Higher Density development has been undertaken by the Local Government Association within the "Summary Report: Best Practice Open Space in Higher Density Developments Project". This report identifies that different criteria for open space provision for higher density communities which are:

- residents should be within 250 metres of a usable open space, park or recreation space of at least 0.25 hectares
- accessibility and walkable neighbourhood principles suggest a 250m radius for open space areas.

The spatial implications of this revised accessibility standard are identified within Figure 15 below.

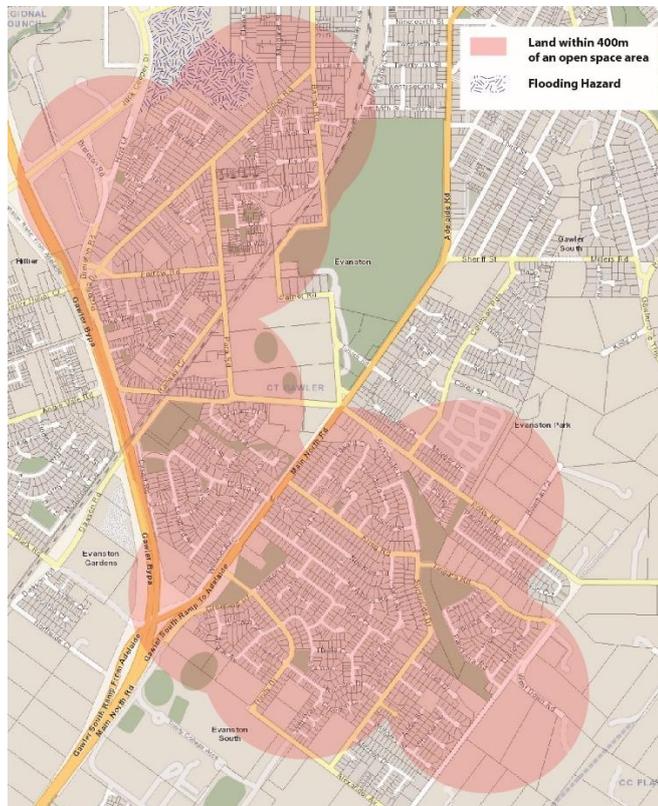


Figure 14: 400 metre walking catchment of existing open space areas

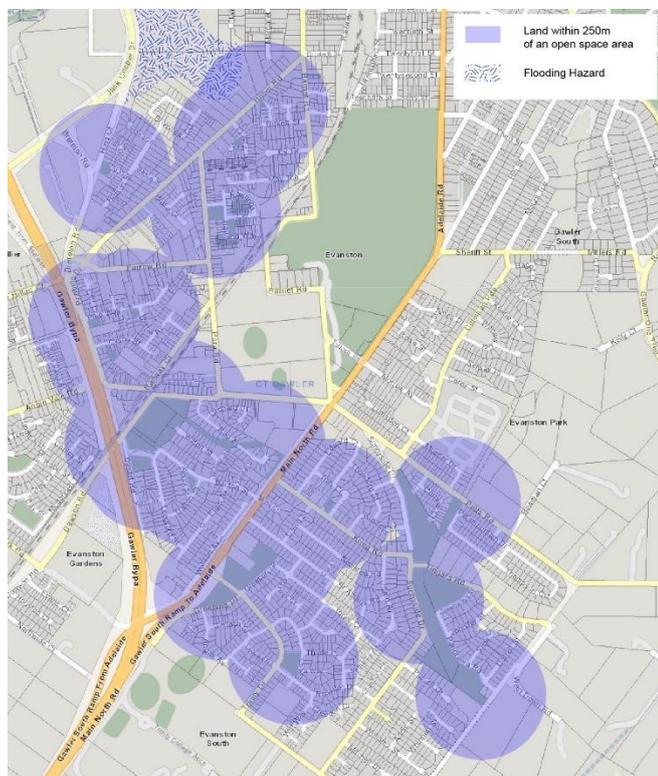


Figure 15: 250 metre walking catchment of existing open spaces.

Parameter	Hillier Rd PA	Evanston/Evanston Gdns PA
Existing dwelling	853	1,440
Potential Future dwellings	1,044	2,117
Potential future population (ave. 2.4 person household)	4,553	8,537
Desired future Local Open Space requirement (based on 3ha/1,000 people)	13.6 ha	25.6 ha
Shortage of open space provision	7.5 ha	13.6 ha

In addition, there are important qualifications to the availability and accessibility of open space within the identified study area. These include:

- the size and layout of some of the reserve spaces, particularly the small areas within Hillier Road PA, and whether they are under-size compared to the desired standard of having a minimum area of 0.2 ha (meaning the shortage could be even greater)
- the functionality/usability of the some of the open space areas having regard to slope and extent to which they perform drainage / waterway functions
- barriers to accessibility of open space – transport corridors (Adelaide Road and Sturt Highway and the railway line) limiting access
- the location of the open space areas, particularly Hillier Road PA once more, inhibits the potential for convenient walking trail connections.

It should be noted that the Trinity College and the Gawler and District College, which both contain an abundance of open space, are situated on the boundary of the study area. However, for the purposes of this assessment, the Gawler Racecourse and all existing public and private schools have not been included as accessible open space areas as these are largely fenced and not freely available for use at this point in time (although recommendations for gaining general community access into the future are suggested).

The shortfall in the open space areas points to a need for the open space required in each Policy Area to be planned for in advance of development progressing. However, the reality is that much of the subdivision activity will tend to be small-scale, one-by-one developments and not major 'greenfield' type projects involving large land parcels. The latter enables negotiation on the development outcomes to achieve a suitable open space provision, both location and amount; the former makes it difficult to secure reserve area let alone a scheme that is able to co-ordinate a multitude of separate small developments. It also relies on open space funds to be sourced through the fund, in competition with other projects across the metropolitan area. This represents a real risk to Council in the future.

There is limited opportunity for 'greenfield' style subdivision in the Evanston/Evanston Park PA. Only two large blocks are available, both fronting Alexander Avenue and just over 2 ha in area, whose subdivision designs could make allowance for some public open space provision. Greater scope is possible in the Hillier Road PA as there is a wider range in existing lot sizes but there are also constraints in subdividing the bigger lots to extract a public open space benefit. These include:

- flood risk, in the north eastern corner abutting Ryde Street/Jack Cooper Drive
- lot configuration - a number are deep and skinny in form which hinder acceptable layouts being achieved
- accessibility - numerous battle-axe lots many with the houses near to and facing the street.

It would be difficult to collectively align separate subdivision proposals lodged at various times to secure open space that conforms with the desired standards of provision unless Council undertakes masterplanning for how these specific strategic locations will be developed into the future, including the identified of key road connections and open space allocation and locations.

There is clearly a role for Council in planning ahead for future infill development opportunities, and, as identified in Council's Directions Report, this will include:

- acquisition of land in gap areas of Evanston and Gawler South (identified as 1 hectare in total), potentially focussed on identified locations, but also opportunities that may arise for expanding and upgrading existing open space

- in greenfield locations, ensure all future land divisions that require open space provision (i.e. more than 20 lots) provide the full 12.5% of area
- negotiate the community use of the recreation and sports fields of the existing schools in the area, noting these are well located and provide large areas suitable to meeting the open space and recreation needs of the community (as range of incentives maybe able to be used, including fiscal)
- work with Renewal SA in identifying public housing renewal opportunities and in particular, seek integration of open spaces into any coordinated redevelopment sites.

The Structure Plan shows indicatively where additional open space needs to be found in order to address and provision and access deficiencies. None of these areas are likely to provide sufficient space to support organised or structured sports facilities. The Directions Report contains a series of strategies and recommendations for addressing these higher order functions.

The Report's strategy in this regard relevant to Gawler South is for a major expansion around the existing Karbeethan Reserve. The Report also acknowledges that the Gawler South Oval/Eldred Riggs Reserve is a tight site with little potential for expansion.

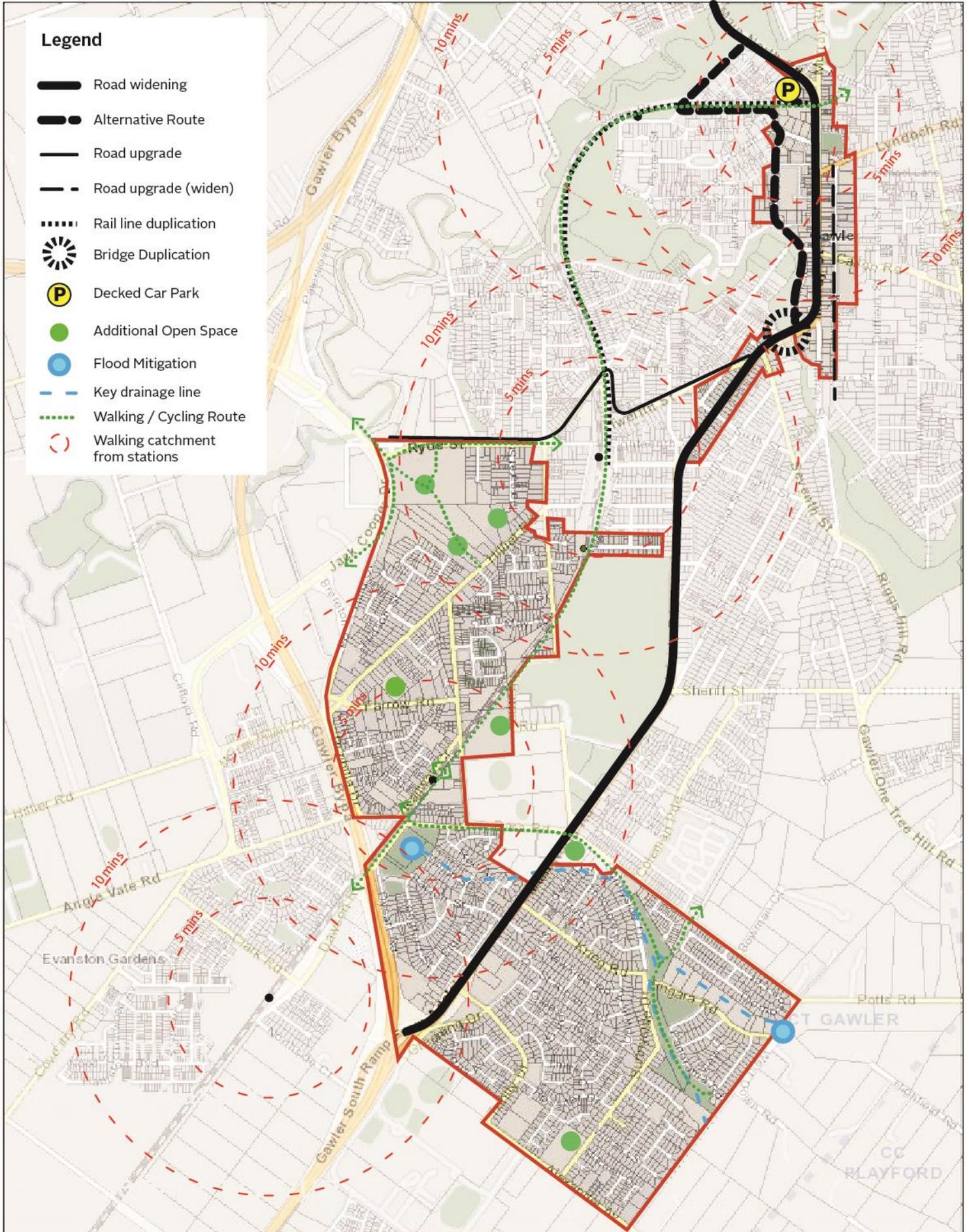
Because of the limited size and the configuration of the existing local open spaces in the suburbs of Evanston and Evanston Park, it is not realistic to expect their physical expansion or undergo upgrades that are able to support more structured recreation activities to cater for district open space or higher.

However, these suburbs are deficient in local and neighbourhood open space. The areas identified on the Structure Plan are focussed on local and neighbourhood open space provision. The planning and design requirements for these are directed at low-key facilities and amenities, such as for play spaces and playgrounds, landscaping, walking paths, shade and shelter, seating and security lighting, for family-orientated recreation purposes for the local community.

In terms of land size, catchment and ease of accessibility within the suburbs, neighbourhood level open space may possibly be developed at the sites identified on the Structure Plan, but this prospect is likely to be dependent upon Council acquisition of the potential areas.

The area adjacent Ryde Street in particular shows promise in that it is a greenfield site, it is affected by flooding (meaning it cannot be developed for housing anyway), a sizeable area is potentially available and it provides good access to the residential areas to the

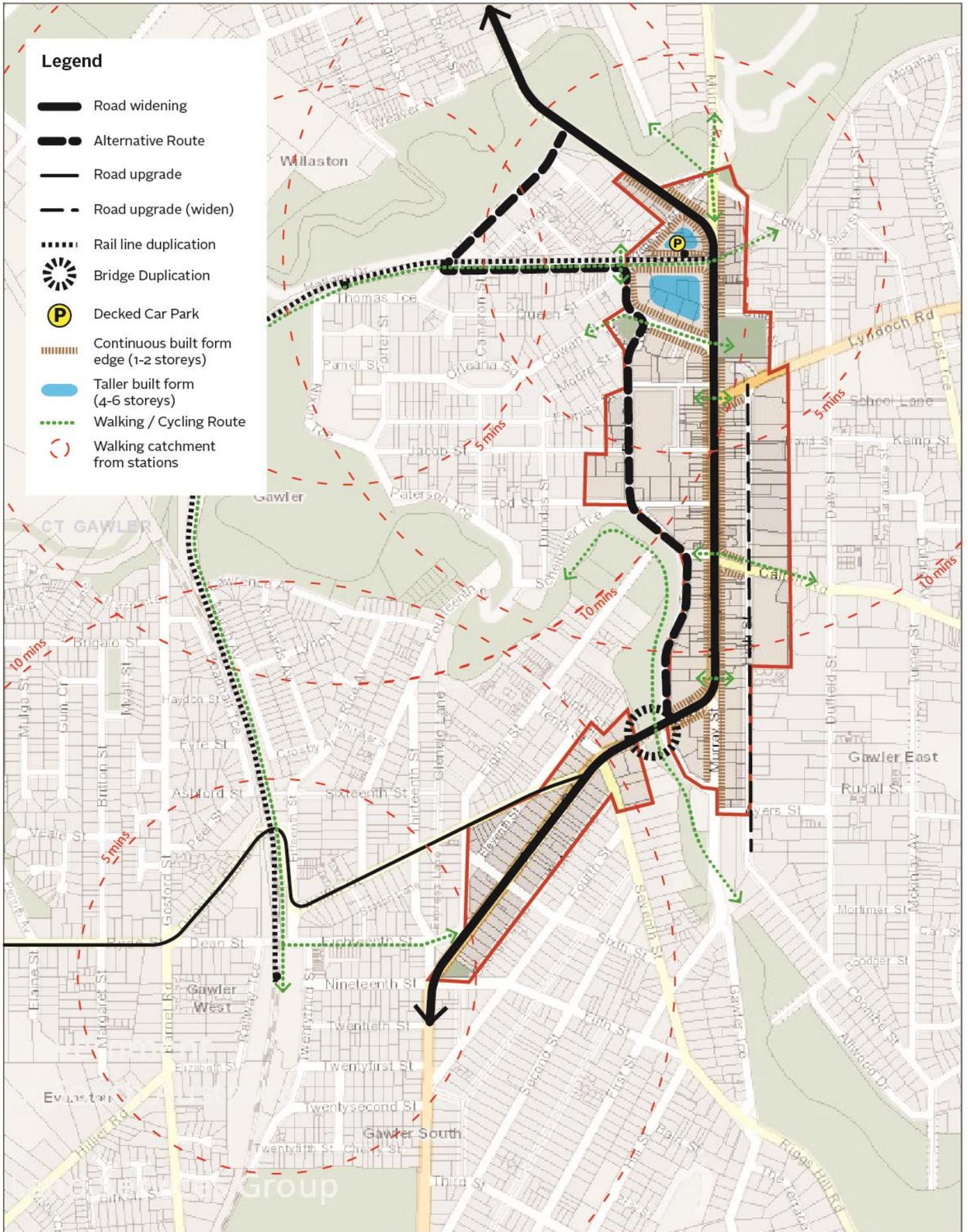
south, north and to the east. The flood aspect of the land can be built into a safe floodway/water sensitive neighbourhood park design and used as an asset.



Legend

- Road widening
- Alternative Route
- Road upgrade
- Road upgrade (widen)
- Rail line duplication
- Bridge Duplication
- Decked Car Park
- Additional Open Space
- Flood Mitigation
- Key drainage line
- Walking / Cycling Route
- Walking catchment from stations





Appendix A

Traffic Impact Assessment, Tonkin Consulting

Gawler Rail Line Uplift DPA

Transport Review

Jensen Plus

17 August 2020
Ref: 20191012R002



Building exceptional
outcomes together



Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	Draft	AN	RB	RB	8/11/2019
B	Update with list of recommendations	AN	RB	RB	21/02/2020
C	Updated based on Council Review	AN	RB	RB	29/06/2020
D	Minor Updates	AN	RB	RB	10/07/2020
E	Minor Updates	AN	RB	RB	17/08/2020

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Project: Gawler Rail Line Uplift DPA | Transport Review

Client: Jensen Plus

Ref: 20191012R002

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Appendices

Appendix A – Map of Recommendations

Appendix B – Map of Roads at Capacity



1 Background

The Town of Gawler (Council) budgeted to prepare and undertake a Transit Oriented Town Centre Development Plan Amendment (DPA) in the 2018/19 financial year.

The notion of a Transit Oriented DPA has been identified in numerous Council documents as a priority for Council, including the Gawler Town Centre Design Framework, the significance of which was more recently emphasized by the Commonwealth and State Government funding commitment of \$615 million to electrify and modernise the Adelaide to Gawler Rail Line.

In addition, there has been an ongoing push for land use policy reform in the Gawler Central Train Station Precinct to capitalise on the impending electrification.

In April 2018, Council resolved to proceed with a 'Transit Orientated and Mixed Use Development Plan Amendment' and gives in principle support for a Transit Orientated and Mixed Use Development Plan Amendment to be prepared, involving land adjacent to the Gawler Central Train Station, which seeks to:

- Capitalise on the impending electrification of the Adelaide to Gawler Train Line
- Improve pedestrian connectivity/linkages from the Gawler Central Train Station back into the Town Centre.
- Create a land use policy framework conducive to attracting investment from all levels of government and the private sector
- Develop a contemporary approach to Transit Orientated and Mixed Use (residential and commercial) development through land uses, building forms, heritage management, augmented building heights, increased densities and the integration of possible transport modes

Staff made contact shortly after with the Department of Planning Transport and Infrastructure (DPTI) notifying them of Council's intention to proceed with a DPA in an attempt to gain an understanding of DPTI's sentiment towards the project prior to proceeding with the development of the 'Statement of Intent' and subsequent investigations. Contact was ultimately made from DPTI and in September 2018. It became apparent that DPTI had also been investigating the need and benefit of a DPA in response to the electrification of the entire Adelaide to Gawler Rail Line.

DPTI and indicated that Council's 'Transit Oriented Gawler Town Centre DPA' be incorporated into the Ministerial 'Adelaide-Gawler Rail Corridor Uplift Development Plan Amendment'.

DPTI appear to be progressing this DPA swiftly for a number of reasons, including the Planning Reform process currently under way as well as achieving implementation of the growth policy complementing the electrification of the Adelaide-Gawler rail line, and Council are concerned that the effects of such proposed land use policy change and uplift are not being considered appropriately. Through this exercise Council is seeking to obtain a clear understanding of how this DPA and the proposed policies will impact upon:

- The local infrastructure network, largely traffic and stormwater
- The removal of the King Street bridge
- Heritage
- Open Space
- Cost implications

This information will be utilised by Council to inform our formal response to DPTI, as well as investigate the possible requirement for future infrastructure deeds. This is to hopefully avoid the somewhat familiar situation where development exceeds the local infrastructure's capacity due to uninformed policy change and Council is left to solely fund the upgrades.



1.1 Review of Existing Information

In developing the review, the following documents have been referenced:

- Traffic and Transport Management Plan developed by Mott MacDonald for Council in 2016. This details existing concerns with the road network, likely increases in traffic, pedestrian and cyclist volumes and recommended treatments at key locations. It is noted that the Plan does not explicitly identify increased density (or impacts) within the Town Centre as identified in the proposed DPA but concentrates growth forecasts for outer growth areas.
- Gawler Town Centre 2017-2020 Car Parking Strategy by GTA Consultants
- Town of Gawler Walking and Cycling Plan 2018-2028 by InfraPlan
- King Street Bridge Planning Report by Aurecon
- Gawler Town Centre Strategic Framework Report
- Gawler Growth Areas Transport Framework (2009) by DPTI.

Based on the Traffic and Transport Management Plan, it is assumed that 10-20% of traffic will be redistributed to new road infrastructure with the construction of projects such as the Gawler-East Link Road.

Information specific to each precinct is documented individually under the section for the respective precinct.



2 Existing Conditions

The assessment for the transport condition has separated the area into three main precincts

Urban Core Zone

Town Centre Zone

Suburban Neighbourhood Zone

2.1 Precinct 1: Urban Core Zone

The extent of Precinct 1 is shown in Figure 2.1 below.

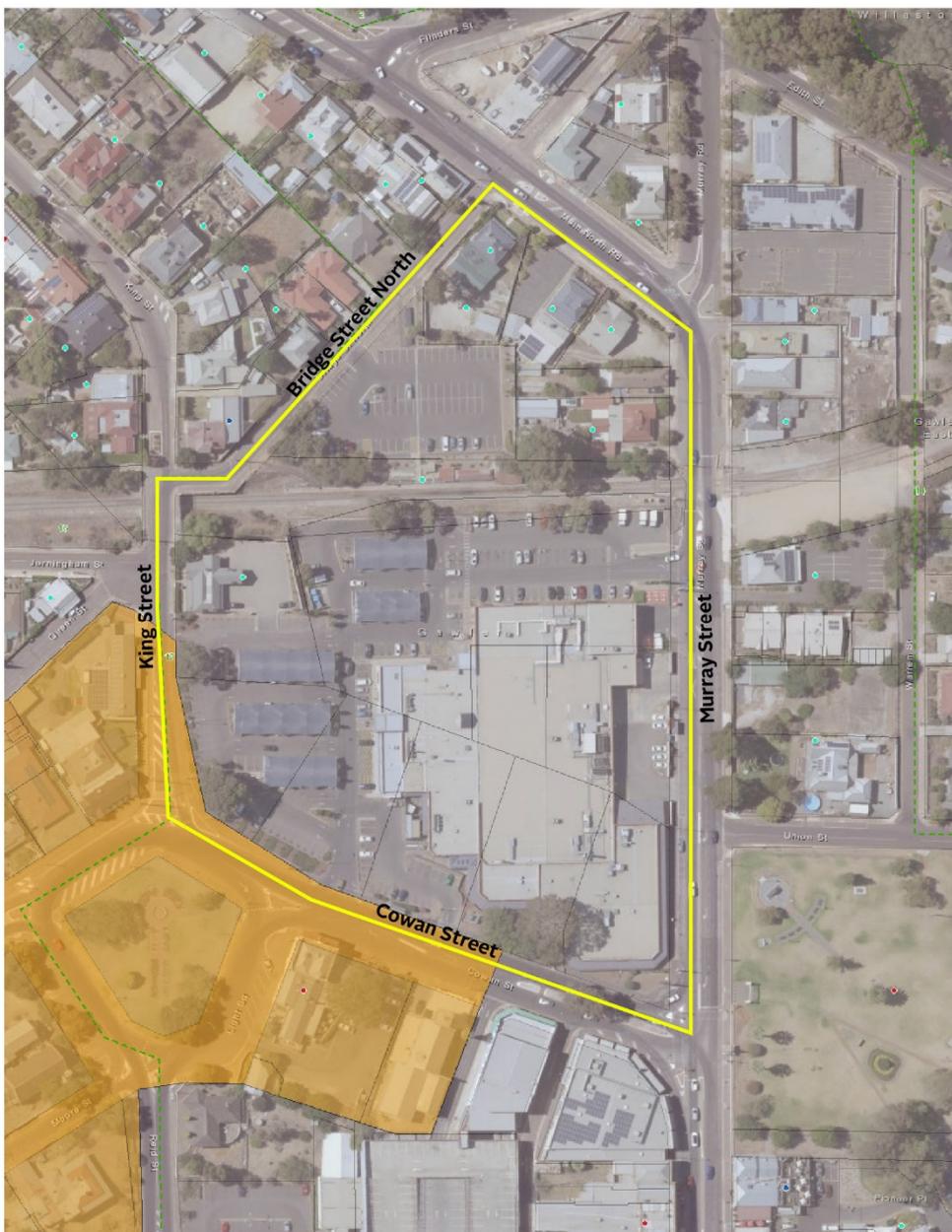


Figure 2.1 Precinct 1 Location Plan



The following are key characteristics of the area:

- Mainly consists of commercial land uses
- Largely consists of Gawler Central shopping centre and associated carpark
- Gawler Central Railway Station located to the north of the shopping centre, with a carpark to the northern side of the station
- Level crossing on Murray Street. This level crossing is considered to not be in use given that trains terminate at Gawler Central Station and the crossing does not activate in general use
- King Street road bridge across the railway line to the west of the precinct
- Signalised intersection of Cowan Street and Murray Street to the south-east of the precinct, with pedestrian crossing across the northern and western legs of the intersection
- Murray Street has an annual average daily traffic (AADT) volume of 17,400 vehicles with a commercial vehicle (CV) percentage of 5%. This is based on 2016 data
- Bridge Street North has an AADT of 600 vehicles with 1.3% CV (estimated from 2018 11-hour counts)
- King Street has an AADT of 1,700 vehicles with 0.5% CV (estimated from 2018 11-hour counts)
- Cowan Street has an AADT of 7,600 vehicles with 2.6% CV (estimated from 2018 11-hour counts)
- King Street has a load limit of 5 tonnes (Victoria Terrace to Jerningham Street) and Murray Street has a load limit of 10 tonnes (Horrocks Place south to Bridge Street South)

Given the land use in the area there is likely to be a large volume of pedestrians.

Traffic information suggests that Murray Street from Bridge Street North to the southern extent of the precinct experiences delays throughout the day. Due to this, delays are also seen at the intersections with Murray Street, with significant delays along Cowan Street in the afternoon peak times.

The following roads have been identified as approaching their capacity based on the level of service:

- Murray Street

It is noted that the Traffic and Transport Management Plan suggests further investigations into Murray Street. The construction of the Gawler East Link Road (Link Road) is likely to improve the traffic conditions along Murray Street and so this could be re-evaluated once the Link Road is fully operational.

Key roads in the area are as follows:

- Cowan Street – Collector Road under care and control of Council
- Murray Street – Arterial (DPTI maintained) and Distributor Road (Council maintained) north and south of Barossa Valley Way respectively

The Walking and Cycling Plan indicates various proposals to improve the cycling network in the zone with key components including:

- Provision of extending the shared path along the rail line through to Concordia (if and when developed)
- Provision of on road cycle paths for Cowan Street
- Connecting The Barossa Trail (formally Jack Bobridge) and Stuart O'Grady cycleways



2.2 Precinct 2: Town Centre Zone

This precinct mainly consists of commercial and some industrial and residential land uses. This precinct consists of two areas, Murray Street and Adelaide Road, which are shown in Figure 2.2 and 2.3 below.

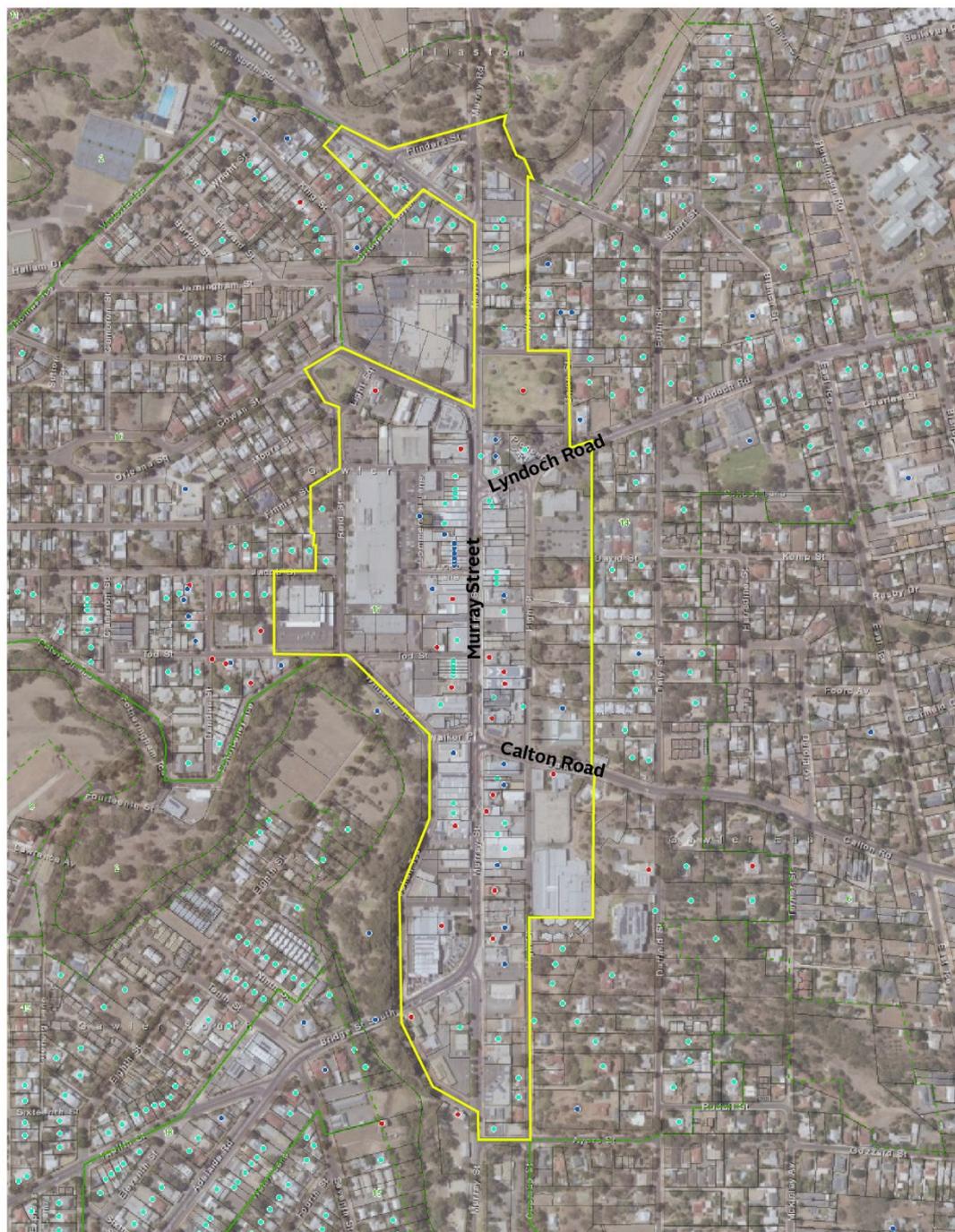


Figure 2.2 Precinct 2 – Murray Street Location Plan



Figure 2.3 Precinct 1 – Adelaide Road Location Plan

The following are key characteristics of the area:

- Murray Street
 - Level crossing (currently not in use) on Murray Street
 - Signalised intersection of Cowan Street and Murray Street, with pedestrian crossing across the northern and western legs of the intersection



- Pioneer Park
- Large number of commercial retail properties directly adjacent to Murray Street, some of which has associated parking
- Murray Street has an AADT of 17,400 vehicles with 5% CVs. This is based on 2016 data
- Lyndoch Road has an AADT of 13,700 vehicles with 5.5% CVs. This is based on 2016 data
- Cowan Street has an AADT of 7,600 vehicles with 2.6% CV (estimated from 2018 11-hour counts).
- Calton Road has a load limit of 10 tonnes (Murray Street to boundary 8pm to 6am) and Murray Street has a load limit of 10 tonnes (Horrocks Place south to Bridge Street South)
- Adelaide Road
 - Roundabout intersections with Adelaide Road / Sixth Street and Adelaide Road / Fifth Street
 - Mix of commercial retail and services along Adelaide Road
 - Eleventh Street between Twelfth Street and Sixth Street consists of a road through a car park
 - Adelaide Road has an AADT of 20,400 vehicles with 3% CVs. This is based on 2014 data
 - Seventh Street has an AADT of 1,200 vehicles with 2% CVs. This is based on 2014 data
 - Twelfth Street has an AADT of 5,300 vehicles with 3% CVs. This is based on 2014 data.

Traffic information suggests that Murray Street from Bridge Street North to the southern extent of the precinct experiences delays throughout the day. Due to this, delays are also seen at the intersections with Murray Street, with significant delays along Cowan Street in the afternoon peak times.

Reid Street, Todd Street and Julian Terrace all experience significant delays, with Whitelaw Terrace experiencing moderate delays.

The following roads have been identified as approaching their capacity in terms of level of service or have been flagged as requiring upgrades:

- Murray Street
- Calton Road / Murray Road / Walker Place intersection
- Murray Street / Bridge Street South / Murray Street (south) intersection
- Bridge Street / Julian Terrace
- Adelaide Road / Twelfth Street

Key roads in the area are as follows:

- Murray Street – Distributor Road under care and control of Council
- Adelaide Road – Distributor Road under care and control of Council to Twelfth Street
- Adelaide Road – Arterial Road south of Twelfth Street

The Walking and Cycling Plan indicates various proposals to improve the cycling network in the Town Centre zone with key components including:

- Provision of extending the shared path along the rail line through to Concordia (if and when developed)
- Provision of on road cycle paths for Cowan Street
- Connecting The Barossa Trail and Stuart O'Grady cycleways



2.3 Precinct 3: Suburban Neighbourhood Zone

The extent of Precinct 3 is shown in Figure 2.4 below.



Figure 2.4 Precinct 3 Location Plan



The following are key characteristics of the area:

- Mainly consists of residential land use
- Largely residential with some community areas such as Eldred Riggs Recreational Reserve, Kingdom Hall of Jehovah's Witnesses and Stepping Stone Evanston Childcare
- There are two level crossing in the precinct, one along Barnet Road and the other on Para Road
- Main North Road passes through the residential area and has an AADT of 21,200 vehicles with 3% CVs. This is based on 2017 data.
- Gawler Bypass borders the western side of the precinct and has an AADT of 12,600 vehicles with 7% CVs. This is based on 2018 data.

Traffic information suggests that Main North Road, the intersection of Main North Road and Potts Road, the intersection of Main North Road and Trinity Drive, Para Road and the intersection of Para Road and Farrow Road all experience some delays throughout the day.

It is noted that since the initial investigations the intersection of Potts Road and Main North Road has been upgraded to a signalised intersection. This is likely to impact delays along both of these roads, however given the upgrade was only recently completed, there is a lack of data to show the extent of the impacts.

Key roads in the area are as follows:

- Adelaide Road – Arterial Road under care and control of DPTI
- Gawler Bypass – Arterial Road under care and control of DPTI
- Potts Road – Distributor Road under care and control of Council
- Para Road – Collector Road under care and control of Council
- Barnet Road – Collector Road under care and control of Council
- Hillier Road – Collector Road under care and control of Council
- Trinity Drive– Collector Road under care and control of Council

The Walking and Cycling plan indicates various proposals to improve the cycling network in the Suburban Neighbourhood zone with key components including:

- Provision of cycle lanes along Adelaide Road
- Provision of and upgrading section of the Greenways
- Connecting The Barossa Trail and Stuart O'Grady cycleways
- Connections within the Evanston Gardens area



3 Transport Review

It is noted that the transport review is a high-level assessment of the transport impacts of the DPA. This considers the impacts and potential options from a transport perspective only and does not consider implications to vegetation, land acquisition and heritage character. The assessment is only based on the development totals provided, there has been no assessment of the capacity of the system (servicing) or timing of development to cater for the proposed residential and commercial areas.

Further detailed analysis would be required to determine these impacts.

3.1 General Overview

The current layout of the Gawler is such that Main North Road (Horrocks Highway) to Murray Street to Adelaide Road provides the only continuous north-south connection through the town centre. Given the location of the South Para River, vehicle movements in the north-south direction are restricted. Apart from Murray Street/Adelaide Road, the two alternative crossing points are Fourteenth Street and Murray Street/Frist Street. Both of these roads are considered residential in nature and are less suitable for large volumes of traffic.

The Gawler Bypass provides a route for north-south traffic to bypass the Gawler town centre, however this is only suitable for traffic which is not generated from the Gawler area or which is not visiting/using the services in Gawler.

The focus of this review is on the existing traffic demands and the traffic which is assumed to be generated as part of the development associated with the DPA. It is assumed that the existing traffic demands are either generated from Gawler or utilising the services in Gawler, and as such the distribution of this traffic is assumed to not change significantly (such as bypass the town centre as this is a key route for this traffic). The traffic generated as part of the assumed development will be generated from the town centre area of the southern section of Gawler. As such this traffic will need to utilise the key routes through the centre of Gawler.

Based on the above, potential bypass/ring routes were not considered as part of the traffic investigations as it was considered that this would not be utilised by the traffic and would not provide the services required. It is expected that as the capacity of the key roads are reached that additional traffic would then be diverted to other local roads which are assumed to be minor in nature and not expected to cater for large volumes of traffic.

North of the South Para River, Murray Street is the only road designed to transport significant volumes of vehicles in the north-south direction. Apart from Murray Street, the other road connections (Fourteenth Street and First Street) are local roads which have a lower capacity and are designed for local traffic. Distributing additional traffic to these roads has the risk to reduce road safety and will have social implications with the local residents.



3.2 Precinct 1: Urban Core Zone

This precinct mainly is essentially the zone centred around the Gawler Central Rail Station will comprise of residential, retail and commercial land uses but of greater density with two level development fronting the roadways and increasing to six storeys.

3.2.1 Literature Review

The literature review suggested the following:

Traffic and Transport Management Plan

- Investigate feasibility, traffic and car parking impacts of an activity node development surrounding the Gawler Central Rail Station.
- Continue with fringe Town Centre car parks and reduce impact of car park building form in the Gawler Town Centre and optimise existing car park use, e.g. TAFE.
- Develop a public transport interchange in vicinity Gawler Central and/or Gawler Stations.

Town Centre Design Framework

- Access into area from the north may need to consider an alternative to Murray Street that connects to Julian Terrace Route, particularly the development of Bridge Street North and will need to be included in the upgrade of the bridge crossing (refer page 34 & 35: Ring Road Option 2).
- With the transport interchange, there is a need to consider bus access and the development of looped access on to the existing bus network. In addition, parking capacity for the transport interchange needs to be increased.
- Removing other car parks and centralising in north may create congestions issues and further investigation will be required. This approach will need to be mitigated by new car parks along High Street in Gawler South Precinct
- Pedestrian crossing of Murray Street needs to be focused on key movements and locations

3.2.2 Demand Requirements

A review of literature suggests the following increase in traffic without the DPA changes:

Road	AADT			
	2013	2018	2023	2038
Main North Road	18,100	20,100-21,600	22,300-25,600	29,200-38,900
Murray Street	15,900	18,400-19,700	20,800-23,700	26,200-34,700

These volumes are based on Gawler Transport and Traffic Management Plan (2016) and DPTI Gawler Growth Areas Transport Framework (2009).

The proposed developed changes are estimated to result in an additional yield of 11,890m² total retail Gross Leasable Floor Area (GLFA), 12,030m² commercial GLFA and 33,015m² of residential area (equates to 364 apartments). Daily trips are based on a rate of 50 trips/day/100m² GLFA for retail, 10 trips/day/100m² GLFA for commercial and 6 trips/day/dwelling for residential.

It is expected that there will be a reduction in total trips with overlap between different land uses. For example, a trip from a residential land use may be to a commercial land use. This would be counted as two trips when it is actually a single trip. As such the trips generated from the residential land use were



not counted which discounts for trips between a residential land use and a commercial land use, residential land use and retail land use and commercial land use and retail land use. It is acknowledged that not all of the residential traffic will travel to/from the proposed commercial or retail land uses, however this estimate allows for other shared trips between the other land uses.

The literature review suggested that there is expected to be an additional 5,800-7,000 vehicle trips per day due to the proposed developments. This is expected to be traffic that is external to the Urban Core Zone area and likely to use either Murray Street, Main North Road (north), Reid Street / Julian Terrace, Barossa Valley Way or Fourteenth Street depending on destination. Further detailed modelling would be required to determine actual distribution.

The additional parking requirement is based on a rate of 4/100m² of commercial and retail GLFA (based on Aurecon 'Parking Spaces for Urban Places' report, allowing for appropriate discount rates). This was assuming that the commercial land uses will operate more as commercial-retail and so will have a similar parking demand to the retail land uses. It is assumed that the residential developments will provide parking on site and so there will be no additional parking demand on the network as a result of these developments.

The parking rate of 4/100m² accounts for some shared parking between developments, where someone will park at one place and visit multiple developments.

The theoretical parking demand of the proposed development is approximately 930 spaces.

3.2.3 Considerations

The increase in traffic volumes predicted in the Gawler Transport and Traffic Management Plan are on the higher end of the range provided. This suggests an increase in AADT of up to 34,700 vehicles on Murray Street and 38,900 vehicles on Main North Road. These roads are unlikely to have the capacity to support this volume of traffic and so it is unlikely that these volumes will be reached. Instead it is likely that vehicles will utilise other roads in the network to avoid congestion, or other modes of transport will be used.

The assessment of the capacity of a road in this study is based on the theoretical lane capacity of 900 to 1,400 vehicles per lane per hour as per Austroads Guide to Traffic Management Part 3. Using a standard daily volume conversion of 10%, the daily traffic capacities equate to 9,000 to 14,000 vehicles per day per lane for a standard urban arterial road. The higher values are for lanes that have no adjacent parking or turning movements (such as into side roads or off-street carparks). See Appendix B for a map of roads assumed to reach capacity. This only includes the major roads in the network as the actual path of vehicles is unknown at this stage and will differ depending on the works undertaken by Council.

An increase of 5,800-7,000 vehicle trips per day due to the assumed development resulting from the DPA changes will significantly increase traffic on Murray Street and the arterial road network. It is likely that this will cause significant issues given the predicted future traffic volumes and the existing capacity concerns on these roads. The main concern is with traffic generated by the commercial and retail developments which are likely to attract traffic from external areas, whereas local residents are more likely to utilise alternative modes of transport such as walking or cycling. It is anticipated that traffic (both existing and generated by DPA) would be diverted to Fourteenth Street as it is the only alternative crossing of the North or South Para Rivers.

There is also likely to be significant concerns on the local road network with vehicles entering and exiting the developments and due to vehicles utilising this network to avoid congestion on the arterial network. This issue should be minimised if possible.

The theoretical parking demand for the assumed development is quite significant and will require the construction of additional car parking. The Gawler Town Centre Parking Strategy Report suggests that



there is an abundance of parking, however people prefer to park as close as possible to their destination and so the parking supply around the Gawler Central shopping centre is operating at a medium-high occupancy. As such, a significant increase in parking supply would be required, with potential for a shared multi-story carpark which would provide a benefit of shared parking.

3.3 Precinct 2: Town Centre Zone

This precinct includes the area adjacent Murray Street and Adelaide Road from Bridge Street South to Fifth/Nineteenth Street. This precinct has separate policies for the Murray Street and Adelaide Road areas.

Murray Street area will have a focus on parking with 50% of the site area to be dedicated to parking. Development will be up to 4 storeys with 16% redevelopment anticipated.

Adelaide Road area will allow for up to 2 storeys with a 50:50 split between retail and office uses. Site cover is to be 50% to allow for at grade parking. Only minimal redevelopment is expected.

3.3.1 Literature Review

The literature review suggested the following:

Traffic and Transport Management Plan

- Upgrade of the following intersections:
 - Calton Road/Murray Street/Walker Place (Stage 1 has been completed but Stage 2 has not)
 - Murray Street/Bridge Street South/Murray Street (South)
 - Bridge Street South/Julian Terrace (note this has been completed)
 - Adelaide Road/Twelfth Street
- Investigate upgrades to Twelfth Street including exclusive bicycle lanes and the removal of the drainage dip at Eighth Street
- Investigate Murray Street transport and traffic improvements / enhancements, including potential 40km/h speed limit, pedestrian improvements, signage and wayfinding, entry LATM treatments and bike facilities.

Town Centre Design Framework

- Increase pedestrian permeability, removing existing barriers and increase permeability to and from Walker Place and South Para River
- Open access between NAB carpark and Julian Terrace
- Increase east-west links to Gawler Connect and through to High Street
- Increase/review carparking capacity of commercial and cinema complex
- Increase safe pedestrian access across Murray Street (signalised crossing)
- Upgrade Julian Terrace and upgrade pedestrian crossing at the intersection with Bridge Street South
- Assess intersection of Twelfth Street and Adelaide Road to reduce vehicular and pedestrian conflicts
- Consider modifications to Tenth Street
- Increase pedestrian crossing points across Adelaide Road



3.3.2 Demand Requirements

A Review of literature suggests the following increase in traffic without the DPA changes:

Road	AADT			
	2013	2018	2023	2038
Main North Road	18,100	20,100-21,600	22,300-25,600	29,200-38,900
Murray Street	15,900	18,400-19,700	20,800-23,700	26,200-34,700
Bridge Street South / Adelaide Road	19,500	25,200-26,800	25,800-29,400	32,400-42,900

3.3.2.1 Murray Street Area

The proposed developed changes are estimated to result in an additional yield of 11,297m² total retail Gross Leasable Floor Area (GLFA), 32,796m² commercial GLFA and 45,424m² of residential area (equates to 529 apartments). Daily trips are based on a rate of 50 trips/day/100m² GLFA for retail, 10 trips/day/100m² GLFA for commercial and 6 trips/day/dwelling for residential.

As with Precinct 1, the trips generated from the residential land use were not counted due to the reduction in total trips with overlap between different land uses.

The literature review suggested that there is expected to be an additional 7,500-9,000 vehicle trips per day due to the proposed developments. This is expected to be traffic that is external to the northern portion of the Town Centre Zone area. The development areas north of Tod Street are expected to use either Murray Street, Main North Road, Reid Street / Julian Terrace, Barossa Valley Way, Calton Road or Fourteenth Street. Whilst the southern areas are expected to use Julian Terrace Bridge Street, Calton Road and Murray Street. Further detailed modelling would be required to determine actual distribution.

Based on the parking rate of 4/100m² of GLFA, the theoretical parking demand of the proposed development is 1,760 spaces.

3.3.2.2 Adelaide Road Area

The proposed developed changes are estimated to result in an additional yield of 4,179m² total retail Gross Leasable Floor Area (GLFA), 4,179m² commercial GLFA and 1,566m² of residential area (equates to 2 dwellings).

The literature review suggested that there is expected to be an additional 1,500-2,500 vehicle trips per day due to the proposed developments. This is expected to be traffic that is external to the Town Centre Zone area and likely to use either Adelaide Road, Bridge Street south or Twelfth Street. Further detailed modelling would be required to determine actual distribution.

Based on the parking rate of 4/100m² of GLFA, the theoretical parking demand of the proposed development is 335 spaces.



3.3.3 Considerations

3.3.3.1 Murray Street Area

As with Precinct 1, the traffic volumes predicted in the Gawler Transport and Traffic Management Plan are not likely to be reached due to the capacity of the road network and the increase in congestion.

As with Precinct 1, the increase in traffic volumes is likely to have a significant impact on the arterial road network. Precinct 2 is estimated to generate a total of 7,500-9,000 vehicles trips per day, which combined with the 7,000-8,500 vehicles trips per day generated from Precinct 1 is likely to cause a very large increase in traffic. This is highly likely to cause capacity and congestion issues along the arterial and local road network. It is expected that there would be diversion of traffic through Murray Street south to First Street and further south to connect to Adelaide Road. This is considered undesirable from an amenity viewpoint and also would require significant upgrade to key local roads and the river crossing.

The theoretical increase in parking demand is estimated to be 1,760 spaces in the Murray Street area and 335 spaces in the Adelaide Road area. The parking demand in the Adelaide Road area is not a huge concern with the Gawler Town Centre Parking Strategy Report showing that carparks in this area are operating at a relatively low occupancy. Regardless, additional parking is still likely to be required to some degree and parking provisions should be considered in new developments.

Parking in the Murray Street area is likely to be a significant concern with a high theoretical parking demand which will be amplified by the pressure on parking created by the Precinct 1 development. A large number of additional parking spaces are likely to be required, which should be located close to the developments.

3.4 Precinct 3: Suburban Neighbourhood Zone

This precinct includes the areas of Hillier and Evanston Park, which primarily consists of residential development. Two scenarios are assessed being:

- Scenario A: the application of 45 dwellings per hectare across the entire study area
- Scenario B: a direct analysis of key sites and the application of a practical infill rate (1.7) for remaining areas

Scenario A results in a potential 4,839 new dwellings with a housing land bank of 27 years, whereas Scenario B results in a potential 3,161 new dwellings with a housing land bank of 17.5 years.

3.4.1 Literature Review

There were no key considerations for these areas in the available literature.

3.4.2 Demand Requirements

The proposed developed changes are estimated to result in an additional yield of 3,161-4,839 dwellings.

The literature review suggested that there is expected to be an additional 18,950-29,050 vehicle trips per day due to the proposed developments. This is expected to be traffic that is both internal and external to the Suburban Neighbourhood Zone area and likely to use either Adelaide Road, Ryde Street, Gawler Bypass, Potts Road, Para Road, Barnet Road, Hillier Road and Trinity Drive. Further detailed modelling would be required to determine actual distribution.

It is assumed that there will be no increase in parking demand with the developments to provide onsite parking. It is likely that there would be some additional parking demand however it is assumed to be met by available on-street parking.



3.4.3 Considerations

The impact on the local road network is not likely to be a significant concern with the traffic generated from the Precinct distributed over a large area. It is likely that some people will utilise alternative modes of transport such as train (with a train station located in the precinct), bus and bike, which will reduce the number of vehicle trips. There is likely to be an increase in these modes of transport particularly if there is an increase in congestion on the arterial road network due to the other precincts.

There is a significant number of estimated vehicle trips from the precinct which is likely to cause significant issues to the arterial road network where the sparse traffic is likely to congregate.

The development in this area mainly consists of a residential land use, and so it is assumed that parking will be accommodated by off-street provisions in new developments or by the existing on-street provisions.

3.5 Summary

Based on the assessment of the development areas, the main concerns are related to the north-south route through Gawler with limited connections due to the road network and the location of the South Para River.

Development areas identified for Precinct 1 and Precinct 2 (Murray Street) have frontage directly onto Murray Street. Given this it is considered highly likely that traffic generated from these sites will utilise Murray Street. Even if alternative routes are upgraded, traffic generated from these precincts are still likely to utilise Murray Street as it will provide the most direct route to the major road network.

Given the above, Murray Street along with Bridge Street South (which provides the primary crossing of South Para River) are expected to develop a significant volume of vehicles. There is expected to be some diversion of traffic to Fourteenth and First Streets that provide alternative crossing points of the South Para River. If the development levels indicated are considered feasible then it is expected that these two local streets would require significant upgrading and have significant amenity and cost impacts.

On this basis, it is considered preferable to upgrade the main north south route within the Gawler Town centre to cater for the future traffic demands than the two local roads. However, this needs to be confirmed with detailed traffic modelling that assesses the capacity of the existing network and considers future development patterns. The traffic modelling can then be undertaken to identify and confirm preferred traffic interventions.



4 King Street Bridge

King Street is currently one-way (in the southern direction) between Victoria Terrace and Bridge Street North, and two way south of the intersection with Bridge Street North. Bridge Street North is a two-way road. These roads form part of the local road network, servicing local residents and the train station carpark.

The location of King Street Bridge is shown in Figure 4.1 below:



Figure 4.1 King Street Bridge Location Plan

There are existing concerns that King Street could be used as a longer distance through traffic (rat-running) route as it provides an alternate route to Murray Street. Based on previous DPTI studies, it has been identified that longer distance through traffic occurs through the local road network, using King Street Bridge as a link across the rail line. This was mainly identified as occurring from the north to the south, with available traffic data suggesting that in the current conditions this was not as much of a concern with traffic travelling south to north. It is noted that with changes in traffic volumes and increased use of Murray Street, his pattern may change with more vehicles likely to use longer through movements in the local road network when travelling northbound. The proposed DPA changes may increase the volume of vehicles using King Street to bypass Murray Street.



Three scenarios have been considered to assess the impacts of the operation of King Street Bridge on the surrounding traffic network, and the impact the DPA may have on this.

The scenarios considered are as follows:

- Scenario 1: Leave King Street Bridge as existing
- Scenario 2: Make King Street Bridge one-way
- Scenario 3: Remove King Street Bridge

The assessment is based on the ability for the King Street Bridge to be retained as part of the rail electrification project. Based on advice from DPTI it is unlikely that this will be possible due to the requirements for the rail upgrades.

It is also assumed in this assessment that the hierarchy of the roads surrounding the bridge will remain the same, i.e. King Street will remain a local road and not be upgraded to a collector or distributor. The upgrade of roads in the local area is discussed as an option for the broader traffic management to service the increased traffic generated by the potential development. This would change the nature of the roads and have an impact on this assessment. In this situation, the existing bridge is not likely to be suitable for the increased traffic utilising the route.

4.1 Scenario 1: Leave as Existing:

This scenario involves no changes to the operation of King Street Bridge, it will remain 2-way and open to traffic.

With the development promoted by the DPA there is likely to be the following impacts:

- Increased traffic from development associated with the DPA across the King Street Bridge, using this as a link between the development to the north of the railway line and development to the south of the railway line. This will increase vehicle traffic in the local network surrounding the Town Centre area
- Southbound traffic from the development on the northern side of the rail line is likely to use King Street and Reid Street to avoid Murray Street. Likely increase in traffic on the local streets. Assuming a trip generation rate of 0.5 per dwelling, this could equate to a total trip generation of approximately 150 from the development. If two thirds of this traffic travels south bound, this could be approximately 100 trips to the south. This would depend on the actual development of the site, the type of development and the traffic distribution.
- It is likely that traffic from the development south of the rail line will use King Street and then Bridge Street North to access Main North Road (Gawler Bypass/Northern Expressway), rather than exiting onto Murray Street as Murray Street is considered to be operating close to capacity. The intersection of Bridge Street North and Main North Road has been identified as having poor exit sight distances and is not considered appropriate for the increased volume of traffic unless upgrade works are undertaken. The increases of vehicles using this route is likely to be due to increased volume of vehicles using Murray Street.
- Although difficult to predict, there is expected to be a transfer of through traffic from Murray Street to King Street if the level crossing was to be activated on Murray Street if/when Concordia is in development. This would not only occur for DPA generated traffic but also for existing traffic.
- The operation of King Street Bridge would allow police and emergency services easier access over the rail line and allow them to bypass Murray Street.

External developments (Roseworthy and Concordia) are likely to have the following impacts:

- Increased use of King Street for Roseworthy generated traffic to access the Town Centre area (approximately 6,000 allotments once completed). The number of trips and distribution expected would depend on the final developments and an origin/destination analysis.
- Concordia development whilst not directly affecting King Street could have an impact by increasing congestion levels around the Murray Street junctions with Barossa valley way and Cowan Street



- Increase in the existing longer through movements in the local network due to the increase in traffic volumes and congestion in Murray Street

4.2 Scenario 2: Make King Street Bridge One-Way

In this scenario, King Street Bridge will remain in place, however it will be made one-way. Note that only the bridge would be made one-way and King Street would be two way to the south (noting that it is one-way southbound to the north of the bridge). The preferred direction for the traffic flow is north as this will prevent longer through movements southbound and vehicles will only be able to use Bridge Street North on the northern side of the bridge. As mentioned, the southbound movements have been highlighted as a larger traffic concern.

Impacts without development:

- Police and emergency services will still be able to use King Street Bridge in either direction during an emergency.
- Reduce existing southbound rat-running on King Street.

With the development promoted by the DPA there is likely to be the following impacts:

- As with Scenario 1 there will be more traffic using King Street Bridge as a link between development on either side of the rail line. This will be greatly reduced due to the one-way control.
- As with Scenario 1 it is likely that traffic from the development to the south of the rail line will use King Street Bridge to access Main North Road rather than exiting onto Murray Street.
- The one-way control will prevent longer through movements on local roads from the north to the new development and will prevent rat-running to the south to avoid Murray Street and the potential future level crossing.
- Restricting King Street Bridge to northbound only with the northern section of King Street restricted to southbound only will limit the access for rat-running through the local road network. This will be restricted to Bridge Street North, however it is noted that there is expected to be additional traffic directed to the intersection of Bridge Street North and Main North Road compared to the current existing conditions. This intersection has safety concerns particularly with the additional traffic.
- As for Scenario 1 although difficult to predict, there is expected to be a transfer of through traffic from Murray Street to King Street if the level crossing was to be activated on Murray Street if/when Concordia is in development. This would not only occur for DPA generated traffic but also for existing traffic. Note though will be less than Scenario 1

The external developments are likely to have the following impacts:

- Reduced southbound rat-running

4.3 Scenario 3: Remove King Street Bridge

This scenario involves the removal of the King Street Bridge, and it is recommended that a pedestrian/cyclist bridge be installed in its place.

Impacts without development:

- Reduce existing southbound rat-running on King Street.
- Promote walking/cycling trips, reducing traffic and parking demands as it makes it more difficult for short vehicle trips between proposed developments.
- Potentially impact emergency response times especially if the level crossings are in use at the time of the emergency. This has been reviewed and it is not expected to have a major impact. Particularly as Howard Street crossing is only 100m away
- Unlikely to have major impacts to the traffic network as shown in previous reports.

With the development promoted by the DPA there is likely to be the following impacts:



- Limit rat-running between the developments.
- Limit rat-running southbound from the northern development area.
- Prevent the development from the south from using Bridge Street North to access Main North Road.
- Promote and increase walking/cycling trips between the developments and between the northern development and the shopping centre. This will reduce traffic and reduce the parking demand at the shopping centre.
- Reduce traffic connections between the developments and the local network.

The external developments are likely to have the following impacts:

- Additional traffic on Murray Street/Main North Road rather than the local road network. May have capacity issues with Murray Street/Main North Road, however it is preferable to using the local network.

Although Murray Street is near capacity, there is benefit in directing traffic to this route rather than the local traffic network. 2018 traffic counts suggest that the peak hour traffic volume on King Street is 138-147 vehicles, compared to the peak hour traffic volume of 1,413-1,811 vehicles on Murray Street. It is noted that the peak hour traffic volume on King Street is less than 10% of that on Murray Street, and so for an example, an additional 140 vehicles on King Street would cause a 100% increase in traffic volumes compared to a 9% increase on Murray Street.

This highlights how additional traffic in the local network has a large impact compared to additional traffic on the arterial network and shows why we recommend encouraging vehicles to use the arterial network.

It is noted that new residential developments (Concordia, Gawler East, Evanston Gardens and Roseworthy) combined with the proposed developments resulting from the DPA changes are likely to increase traffic on Murray Street. It is likely that this will encourage further rat-running in the local road network, giving reason to implement strategies to manage this traffic. Impacts such as a level crossing on Murray Street would also congest this route causing vehicles to divert to the local road network and utilise King Street.

Traffic control devices could be used to reduce rat-running and increase the reliance on the arterial road network, however the most effective control measure is to remove the link in the local network altogether (i.e. remove of the bridge).

Based on the above assessment the recommendation based on traffic impacts is to either remove King Street Bridge or make it one-way northbound.

Aurecon developed the King Street Bridge Planning Report which considers the removal of King Street Bridge. This was highlighted to have no issues/constraints when considering future works. All other options considered had issues/constraints highlighted with potentially high costs. The removal of the bridge was considered to be more feasible than other options.

Given the above, the overall recommendation is to remove the King Street Bridge.

If the bridge is removed, a pedestrian/cyclist bridge should be provided to allow movement between the development on the southern side of the railway line and the railway station/proposed development on the northern side of the rail line. This would also provide a link from the shared path on the northern side of Main North Road, along Bridge Street North and onto King Street/into the proposed development. A pedestrian/cycling bridge will encourage walking/cycling between the proposed developments on either side of the railway line which provides traffic benefits in less vehicular traffic and parking demand.



5 Potential Interventions Necessary

The following are the assumed upgrades which will be required to facilitate the proposed development (refer to Appendix A for a visual representation of the proposed works). These are based on the data available and the findings from the level of investigation undertaken. Further investigation/modelling may suggest alternative recommendations to the below. These are based on the transport requirements and consideration should be given to other aspects such as historical buildings, land acquisition, community impact and character.

It is understood that the major recommendations listed below may not be considered to be feasible and would require significant work and would result in a significant impact to the environment of Gawler. However alternative routes using Fourteenth and First Streets would also result in significant impacts. Based on the available data used in this investigation, these are the requirements to support the traffic demands to an acceptable degree.

The recommendations are divided into Priority and Secondary, however it is noted that a number of the recommendations are likely to be required in conjunction (if only some are undertaken then the issues could just be relocated rather than addressed).

Priority:

1. Widening of Murray Street and Adelaide Road (between Redbanks Road and Gawler Bypass) to four traffic lanes, two in each direction.

An alternative to the duplication of Murray Street is to upgrade selective roads in the local road network to a similar standard to Murray Street, which would provide a second key link through the town centre. One possible option for this is Julian Terrace, Reid Street, King Street and provide a two-way vehicle bridge across the rail line (with a possible alternative route to Jerningham Street and Victoria Terrace to avoid the rail bridge). This alternative option will also have significant impacts and will greatly change the roll of the roads and distribution of traffic in the network. Significant work is likely to be required to upgrade the local roads to the required level to support Murray Street. Overall the option of upgrading Murray Street is considered to be a more favourable option to upgrading the local road network (this option is consistent with the removal of King Street Bridge).

In addition to the above, Murray Street provides a significant connection given that a number of services along with the proposed Precincts 1 and 2 have frontage directly onto the road. Given this, a secondary key link through the town centre will likely cater for some of the existing through traffic, but not the traffic visiting the town centre or being generated by either of these two precincts. Based on this, the option to upgrade Murray Street is considered to have a greater traffic benefit to creating an alternative key link to the town centre.
2. Duplication of South Para River bridge to provide four through lanes in addition to the turning lanes. Concept designs of this upgrade would be required to determine the impact to vegetation and infrastructure adjacent to the bridge.
3. Upgrade of Redbanks Road. This may require four traffic lanes, however this will be dependent on detailed modelling.
4. Construction of a multi-story carpark (likely 4-5 levels) in the town centre, where there are existing parking concerns.
5. Various LATM treatments across the network. Further modelling would be required to determine the location and extent of the works, however it is likely that devices will be required to manage the local traffic network.
6. Upgrade Ryde Road and Twelfth Street, including an upgrade of the bridge over the rail line. This is to provide a link to the Gawler Bypass.
7. Undertake a detailed traffic analysis, including computer software-based traffic modelling, of the traffic generated by the predicted development. This should include an investigation of the existing conditions, conditions post development and upgrade works considered by Council. An investigation such as this would provide more detailed data and could be used to investigate the impacts of a combination of upgrade works. This should be used to underline traffic interventions required to support the growth proposed.



Secondary

1. Upgrade of High Street to provide a minimum of two 3.5m wide lanes which are formally marked. This is to upgrade the hierarchy of the road and improve the capacity to safely move large volumes of vehicles. This will support Murray Street.
2. Duplication of the Gawler Rail line to allow additional train trips. This will support the road network by providing additional public transport. This option is not considered to be required based on this investigation, but should be considered given the extent of the impact to the road network and the other options proposed. An alternative to this could be to provide a passing loop (rather than full duplication) to increase the frequency of train services. This would need further investigations and discussion with DPTI to determine the feasibility of each option.
3. Update Council's TTMP. Given the changes to the traffic generation and the recently completed works, the TTMP requires updating to reflect the future conditions. It is possible that if development only occurs in the Suburban Neighbourhood Zone (not in the Town Centre or Urban Core Zones) then the TTMP can just be updated. If all of the development is to occur, then it is likely that the TTMP would need to be entirely redone as the modelling is significantly different to the expected impacts of the DPA. In either case it is recommended that Council undertakes modelling of development capacity, considering the timing and location of development.

Additional works likely to be required following further modelling (note these will likely be impacted by the works above):

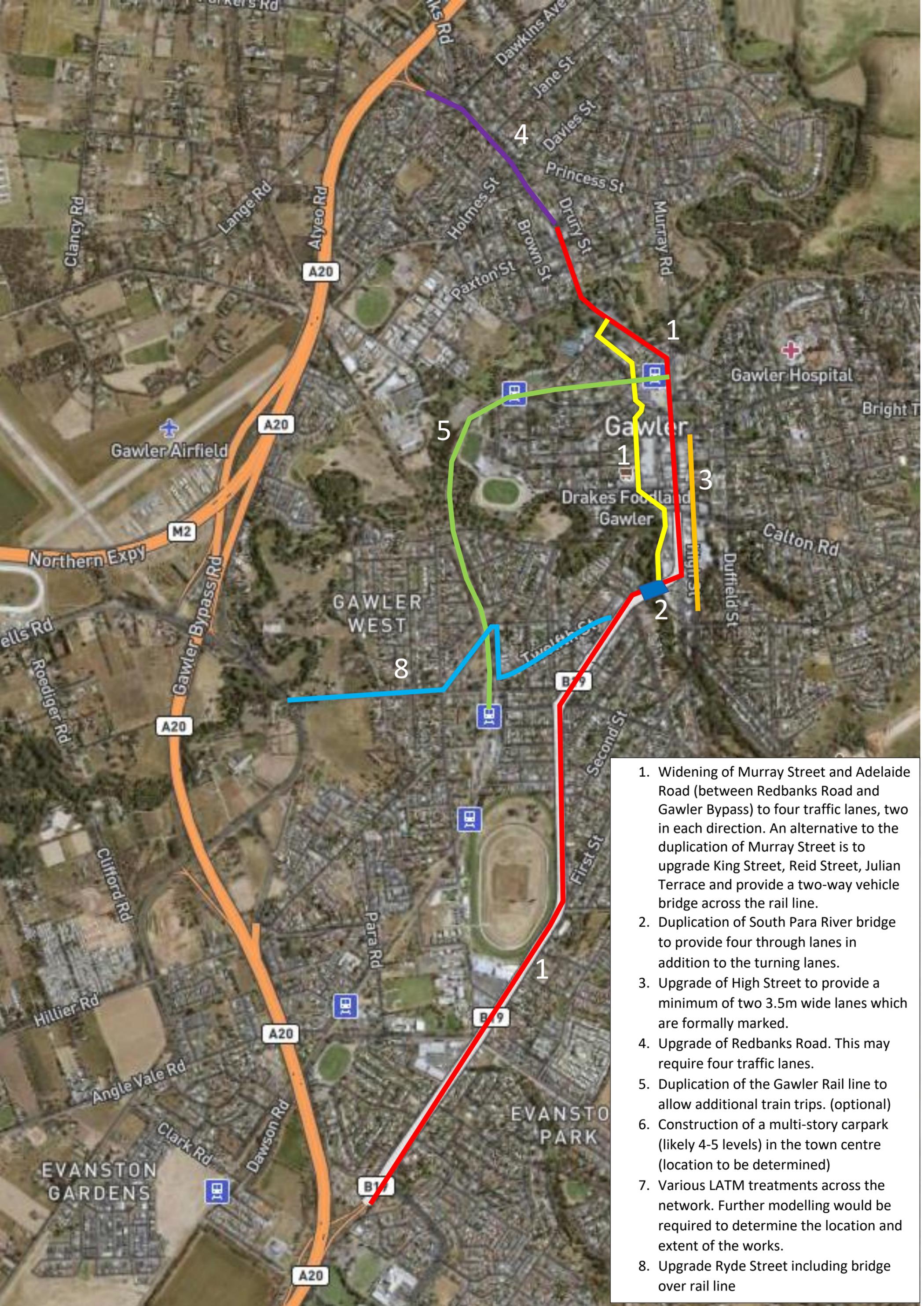
- Upgrade of the Julian Terrace/Murray Street intersection
- Upgrade of the Murray Street/Calton Road/Walker Place intersection
- Upgrade of the Adelaide Road/Twelfth Street intersection

These works are based on the following assumptions:

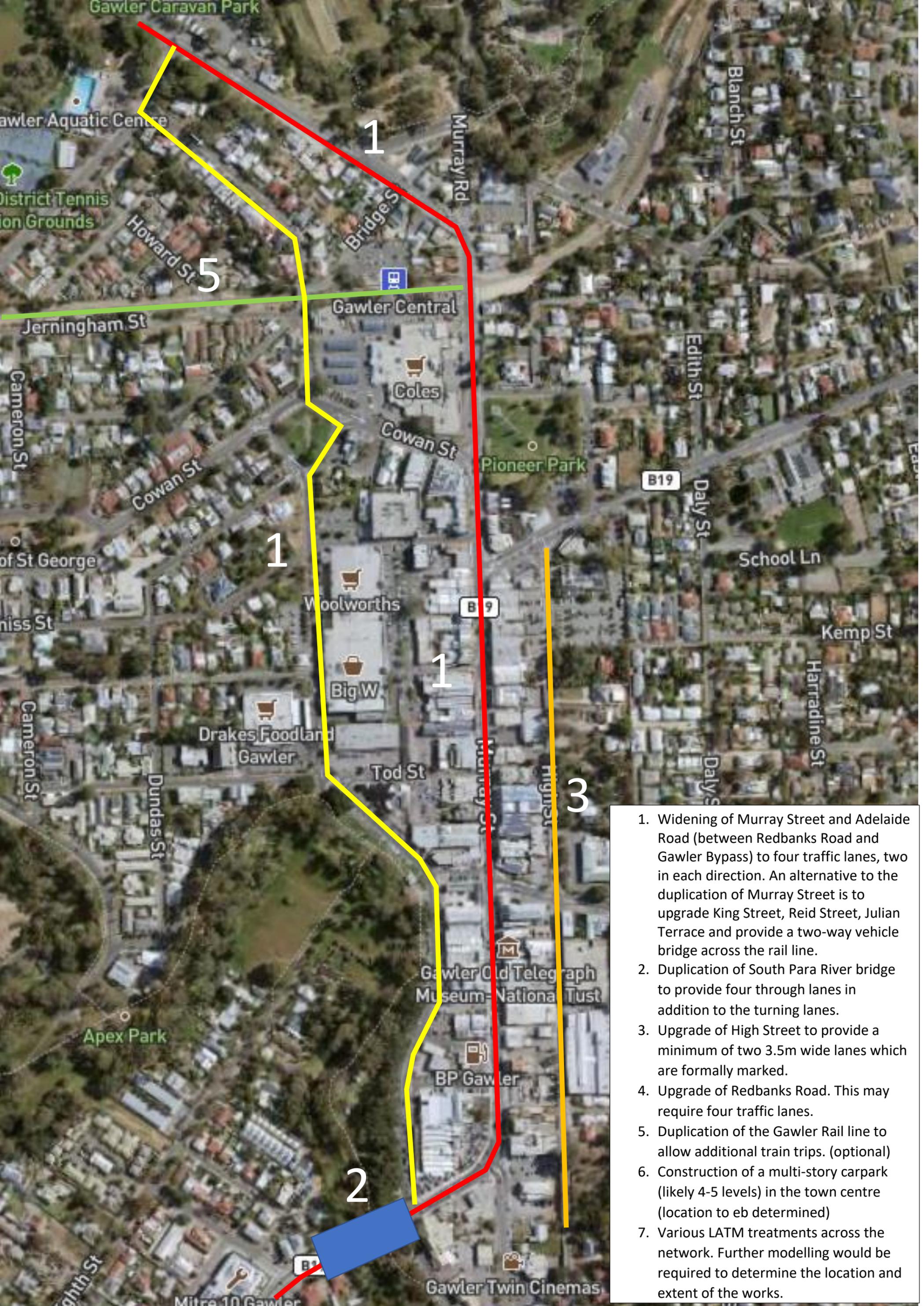
- Note that traffic modelling using computer software has not been undertaken and this is based on high level assumptions. To determine the distribution of traffic, impact of the rail upgrades and impact of congestion and delay, detailed modelling would need to be undertaken.
- The type, timing and location of development will likely impact the traffic generation and the impact to the traffic network
- The investigation assumes that maximum development occurs, which may not be the case.
- The distribution of traffic is not known with the exact type and location of development unknown. It has been assumed that the main access to the town centre is by Redbanks Road, Main North Road and Ryde Street.
- The recommendations are based on a transport perspective only and provide the likely upgrades to facilitate the proposed development. These do not consider the impacts to other aspects and a number of the recommendations are considered to be extreme with significant implications. Despite this, this is the level of upgrade that is considered to be required and so these options have been put forward to show the order of magnitude the traffic impacts will have.
- The increase in development will likely increase the usage of pedestrian and cyclist paths, however it is assumed that this won't have a significant impact and further upgrade works won't be required as a direct result of the DPA.



Appendix A – Map of Recommendations



1. Widening of Murray Street and Adelaide Road (between Redbanks Road and Gawler Bypass) to four traffic lanes, two in each direction. An alternative to the duplication of Murray Street is to upgrade King Street, Reid Street, Julian Terrace and provide a two-way vehicle bridge across the rail line.
2. Duplication of South Para River bridge to provide four through lanes in addition to the turning lanes.
3. Upgrade of High Street to provide a minimum of two 3.5m wide lanes which are formally marked.
4. Upgrade of Redbanks Road. This may require four traffic lanes.
5. Duplication of the Gawler Rail line to allow additional train trips. (optional)
6. Construction of a multi-story carpark (likely 4-5 levels) in the town centre (location to be determined)
7. Various LATM treatments across the network. Further modelling would be required to determine the location and extent of the works.
8. Upgrade Ryde Street including bridge over rail line



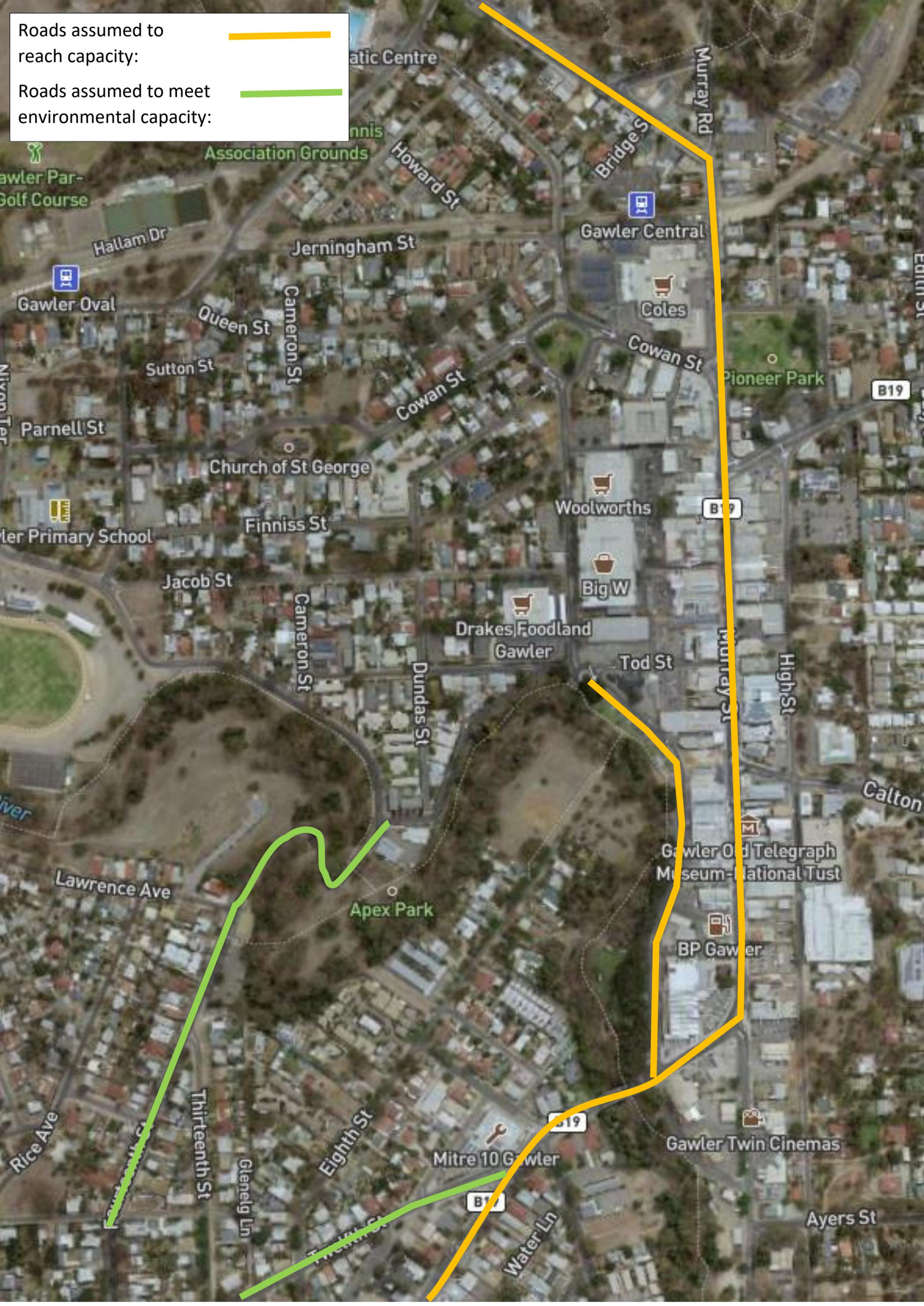
1. Widening of Murray Street and Adelaide Road (between Redbanks Road and Gawler Bypass) to four traffic lanes, two in each direction. An alternative to the duplication of Murray Street is to upgrade King Street, Reid Street, Julian Terrace and provide a two-way vehicle bridge across the rail line.
2. Duplication of South Para River bridge to provide four through lanes in addition to the turning lanes.
3. Upgrade of High Street to provide a minimum of two 3.5m wide lanes which are formally marked.
4. Upgrade of Redbanks Road. This may require four traffic lanes.
5. Duplication of the Gawler Rail line to allow additional train trips. (optional)
6. Construction of a multi-story carpark (likely 4-5 levels) in the town centre (location to be determined)
7. Various LATM treatments across the network. Further modelling would be required to determine the location and extent of the works.



Appendix B – Map of Roads at Capacity

Roads assumed to reach capacity: 

Roads assumed to meet environmental capacity: 



Appendix B

Stormwater Infrastructure Assessment, Tonkin Consulting



20191012L001B

25 February 2020

Nick Wilson
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Level 1, 21 Roper Street
Adelaide SA 5000

Attention: Nick Wilson

ADELAIDE – GAWLER RAIL CORRIDOR UPLIFT DEVELOPMENT PLAN AMENDMENT – STORMWATER IMPACT ANALYSIS

DPTI are currently undertaking a Development Plan Amendment (DPA) in response to the electrification of the Adelaide to Gawler Rail Line. The Town of Gawler is seeking to gain a clear understanding of the impact of this DPA across a range of issues and has engaged Jensen Plus to undertake a broader study of these issues. This letter outlines the key impacts of the Gawler Rail Corridor DPA in relation to stormwater infrastructure.

It is understood that the DPA impacts three key policy areas which have been earmarked for uplift: the Town Centre, Evanston / Evanston Park and Hillier Road. It is understood that the town centre is to become a Town Centre Zone in accordance with the South Australian Planning Policy Library (SAPPL) with an Urban Core Zone around the Gawler Central site. Two sites to the south in Evanston / Evanston Park and Hillier Road are understood to be likely rezoned to a Suburban Neighbourhood Zone.

Flood immunity assessment

Flood immunity assessment has been undertaken by assessing flooding within the relevant development zones as outlined in the Gawler and Surrounds Stormwater Management Plan (Tonkin, 2019) as well as the Gawler River Floodplain Mapping Report (AWE, 2015).

Town Centre policy area

The Town Centre policy zone is generally outside major zones of flooding in the 100 year Average Recurrence Interval (ARI) flood scenario (refer Figure 1). There are areas with some localized ponding especially along Carlton Street / Walker Place / Whitelaw Terrace / Reid Street.

Inspection of existing flood mapping shows that the South Para River does not create flood prone areas within this zone in the 100 year ARI event.

It is anticipated that works resulting from the DPA will more entail replacement of existing buildings rather than greenfield development. Due to the low severity of flooding and the existing high density of development, it is not envisaged that implementation of the DPA will result in either major issues with flooding or significant works to protect land from flooding.

Hillier Road policy area

The Hillier Road policy zone has two key areas significantly affected by flooding (refer Figure 2). The first area is land directly to the east of the Gawler Bypass. In this location there is significant ponding of water upstream of the Bypass as culverts under the road are insufficient to convey flows further downstream. While this area contains existing development, there are some large blocks of



land in the area which if developed under the DPA would undergo some flooding and would require some works to be protected from flooding, such as raising floor levels.

The second area is a large block of vacant land to the south of Ryde Street, which lies within the Gawler River floodplain. Only a limited area of land can be developed at this location as full development will adversely impact on the hydraulic capacity of the river. It should be noted development of the land will require significant works to protect new dwellings from flooding (i.e. raise dwelling levels above the flood levels). It should be noted that Figure 2 only shows local flooding and that Gawler River flooding has not been shown.

Evanston Park policy area

The Evanston / Evanston Park policy area contains a range of natural water courses, overland flow paths and detention basins which must not be impacted by the development generated by the DPA (refer Figure 2). The policy area is mainly affected by localized flooding which generally is not anticipated to cause an impediment to development. However some works will be required in some locations to ensure any development is protected from flooding and does not increase flood risk for adjacent properties. This is likely to include some of the following elements:

- Maintaining an overland flood flow path between Sunnyside Drive and Creedon Close along the northern edge of the vacant land
- Extending the amount of underground drainage in the area west of Main North Road and in the area north of Gleeson Grove to reduce the amount of flow having to be conveyed by the road network.

The key area affected by flooding is near the Evanston oval and housing to the south east of the railway line. In this location there is significant ponding of water upstream of the railway as culverts under the line are insufficient to convey flows further downstream. While this area appears to contain current housing, there are some properties which if developed under the DPA would undergo some flooding and would require some works to be protected from flooding, such as raising of floor levels for new dwellings.

Change in runoff assessment

Town Centre policy area

Within the Town Centre zone, because the town centre is already highly developed, it is anticipated development will more entail multi-story buildings replacing existing buildings. As such it is not anticipated that the DPA will significantly increase the proportion of directly connected impervious area (DCIA) and consequently runoff.

Residential areas

Jensen Plus have produced a study of the impact of the DPA on potential increases in residential yield for the Hillier Road and Evanston Park policy areas. It is understood that council have indicated that Scenario B of this study, which involved a direct analysis of sites and applying an infill rate of 1.7 across the rest of the area, is acceptable to use in assessing any changes in runoff from the DPA.

Hillier Road policy area

Within the Hillier Road zone, the Gawler and Surrounds SMP assumed a relatively large increase in the future developed DCIA to 42% (currently 29%) based on interpretation of the Jensen Plus development discussion paper (Jensen, 2016). An analysis of the more recent analysis of Jensen Plus suburban yields as a result of the DPA has suggested this may result in a DCIA of 45-50%. As such, it is anticipated development within the Hillier Road area will increase the potential for



flooding, but that the changes are broadly in line with those predicted within the SMP with about a 10% increase. It is likely the stormwater related impacts due to infill development will be partly offset by Council's existing policy that requires allotment scale on-site detention.

Evanston Park policy area

Within the Evanston Park zone, the Gawler and Surrounds SMP assumed a fairly minor increase in the future developed DCIA to 44% (currently 40%) based on interpretation of the Jensen Plus development discussion paper (Jensen, 2016). An analysis of the more recent analysis of Jensen Plus suburban yields as a result of the DPA has suggested this also may result in a DCIA of 45-50%. As such, it is anticipated development within the Evanston Park zone will increase the potential for flooding, but the changes will be relatively minimal compared to the values predicted in the SMP (~5% increase).

Assessment of potential augmentation / upgrade works

There are some large parcels of land that are yet to be developed in the Hillier Road (south of Dyson Street, south of Hidson Street) and the Evanston Park (near Creedon Close and Dodd Street) zones. Development of these areas is likely to result in a large increase in runoff beyond what could be accommodated by on-site measures within individual allotments. It is likely that the downstream drainage system has already allowed for the development of these areas. However, small detention basins may be required if either the downstream systems haven't been allowed to accommodate for the development of the parcels, or the densities are above what had been allowed for.

On-site measures are likely to be more easily implemented in mitigating impacts in areas of infill development, where existing allotments are subdivided.

While wholesale upgrading of lateral and trunk drainage systems would offset the increase in runoff from increased dwelling densities, it would be a very expensive exercise and would require many kilometres of drain upgrades. It is unlikely to be an economically viable option. However, an extension of lateral drains within the areas of higher development are recommended, particularly in the older areas of the Hillier Road policy area (west of Main North Road and north of Gleeson Grove).

If infill development occurs within areas of public owned housing land, there is the potential opportunity to incorporate detention basins into redevelopment of the area by converting existing allotments into basins.

There are a number of mitigation works outlined in the Gawler and Surrounds SMP that are within or upstream of the Hillier Road and Evanston Park zones (refer Figure 2), but no works are proposed in the vicinity of the Town Centre Zone. These works do help to reduce the flooding hot spots that were outlined above (other than at Ryde Street). It should be noted that there is no firm commitment for any of these works to be constructed and it could be many years before they are built (if at all). If the works don't proceed, the existing flood prone areas at the following locations won't improve:

- Near the southern end of Greening Drive
- Dyson Street
- Gawler South oval

A brief review of the mitigation works, in the context of potentially higher density development is provided below.



Gawler Racecourse flood control basin (mitigation option 1 on Figure 2)

There is the potential for the discharge rate from the proposed detention basin within the centre of the Gawler Racecourse to be slightly smaller than originally modelled in the SMP. This would allow for additional inflows into the drain downstream of the basin (within a portion of the Hillier Road zone). However, the main focus of the basin is to reduce upstream flooding risk, rather than downstream flooding and the basin still requires consultation with third parties and a significant financial commitment before any works could commence.

Tingara Road flood control basin (mitigation option 2 on Figure 2)

This basin is already close to the maximum size that can be accommodated in its proposed location so no significant changes can be made to its capacity, unless it was relocated to become two separate basins further upstream.

Trinity College creek upgrades (mitigation option 3 on Figure 2)

These works would remain unchanged and help to reduce flood risk within a portion of the Evanston Park policy area.

Evanston Oval parallel pipe (mitigation option 4 on Figure 2)

The size of the proposed parallel pipe is limited by the capacity of the downstream drainage system. Therefore there is no scope to increase the size of the drain to allow for additional runoff.

If you have any queries about the above assessment please contact the undersigned on 8273 3100.

Yours sincerely,

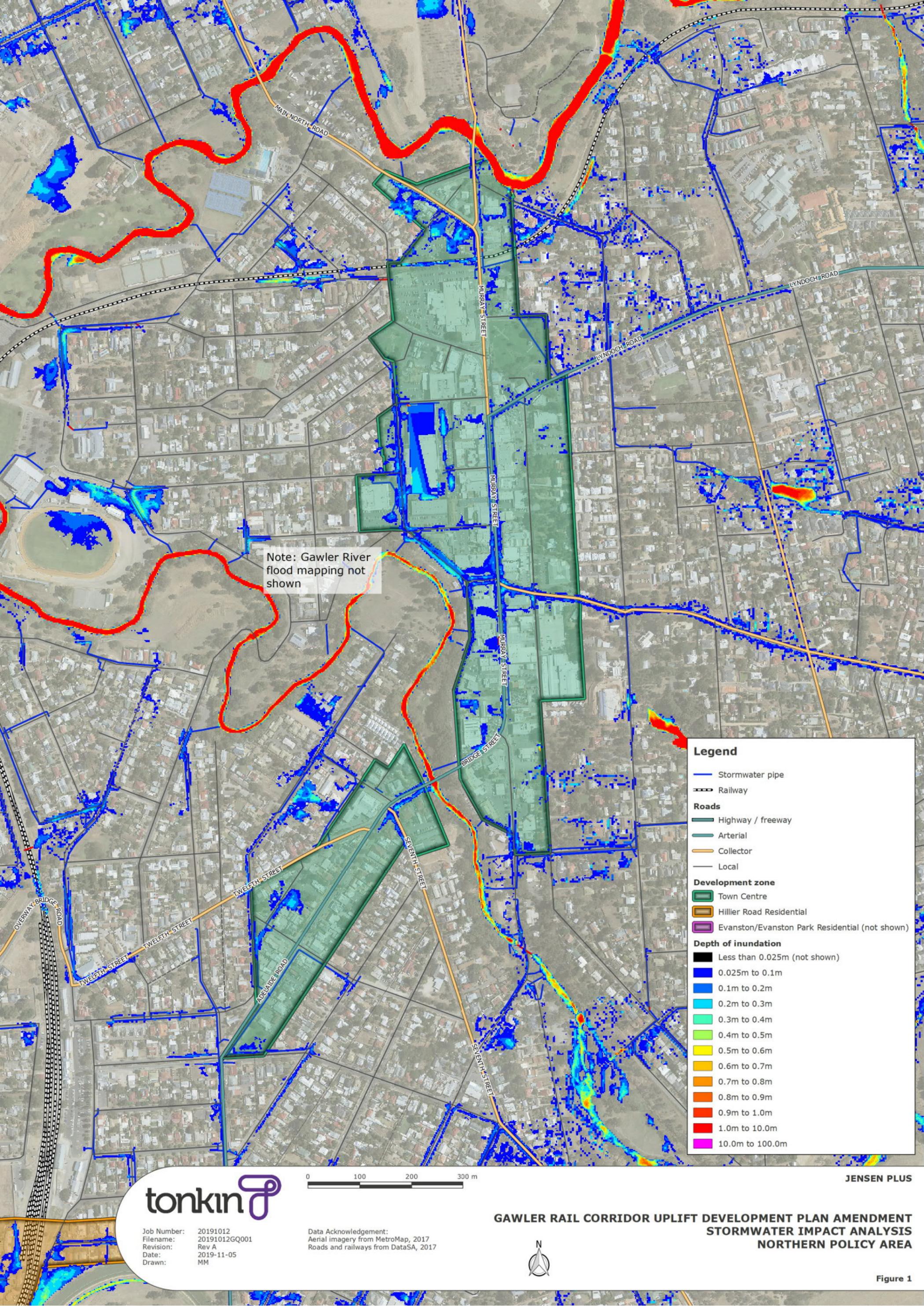
Tim Kerby

Senior Engineer

Tonkin

Enc Figure 1: Northern policy area, 100 year ARI floodplain extents

Figure 2: Southern policy areas, 100 year ARI floodplain extents



Note: Gawler River flood mapping not shown

Legend

- Stormwater pipe
- Railway

Roads

- Highway / freeway
- Arterial
- Collector
- Local

Development zone

- Town Centre
- Hillier Road Residential
- Evanston/Evanston Park Residential (not shown)

Depth of inundation

- Less than 0.025m (not shown)
- 0.025m to 0.1m
- 0.1m to 0.2m
- 0.2m to 0.3m
- 0.3m to 0.4m
- 0.4m to 0.5m
- 0.5m to 0.6m
- 0.6m to 0.7m
- 0.7m to 0.8m
- 0.8m to 0.9m
- 0.9m to 1.0m
- 1.0m to 10.0m
- 10.0m to 100.0m

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Job Number: 20191012
 Filename: 20191012GGQ001
 Revision: Rev A
 Date: 2019-11-05
 Drawn: MM



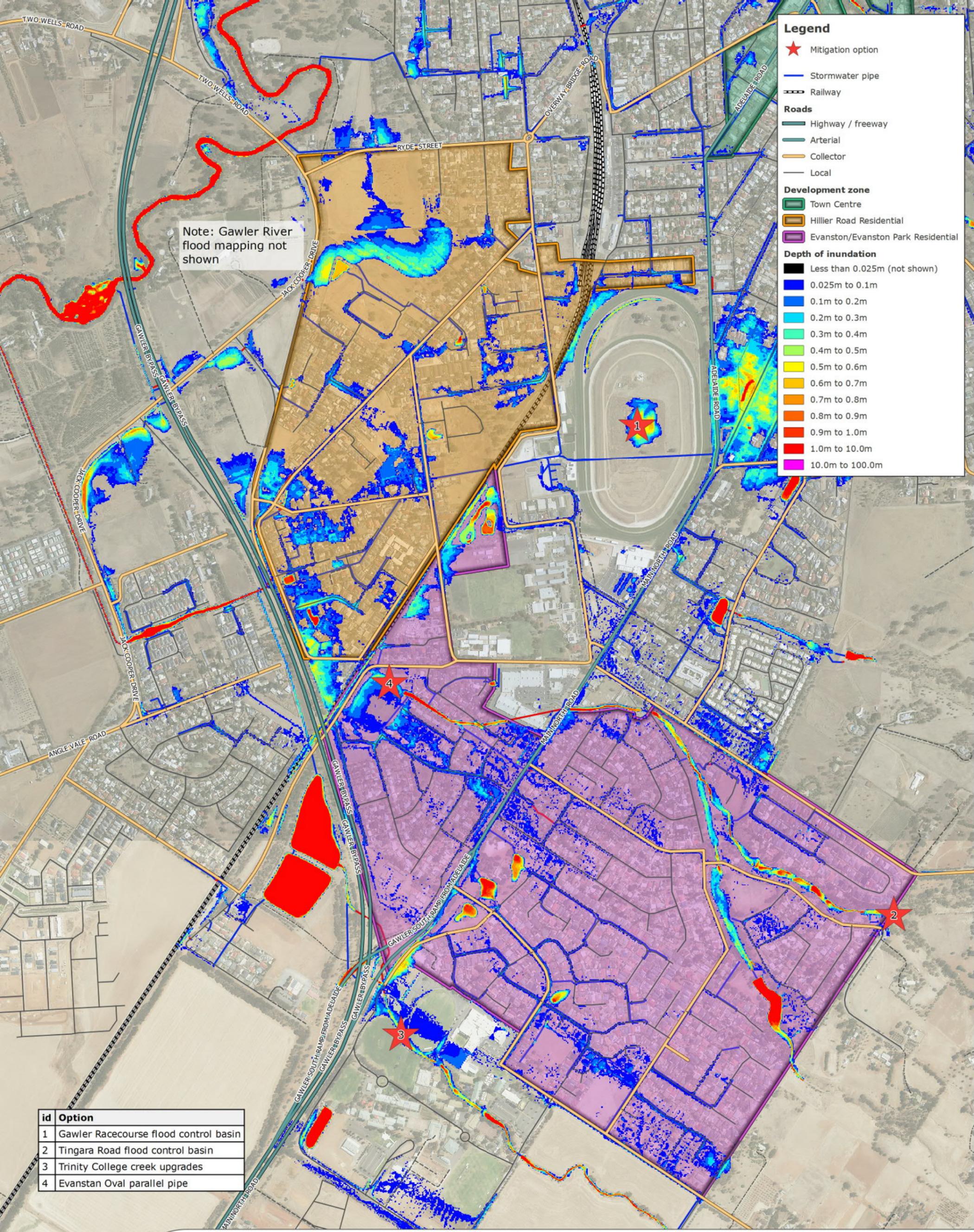
Data Acknowledgement:
 Aerial imagery from MetroMap, 2017
 Roads and railways from DataSA, 2017



**GAWLER RAIL CORRIDOR UPLIFT DEVELOPMENT PLAN AMENDMENT
 STORMWATER IMPACT ANALYSIS
 NORTHERN POLICY AREA**

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Figure 1



Note: Gawler River flood mapping not shown

Legend

- ★ Mitigation option
- Stormwater pipe
- Railway

Roads

- Highway / freeway
- Arterial
- Collector
- Local

Development zone

- Town Centre
- Hillier Road Residential
- Evanston/Evanston Park Residential

Depth of inundation

- Less than 0.025m (not shown)
- 0.025m to 0.1m
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- 0.6m to 0.7m
- 0.7m to 0.8m
- 0.8m to 0.9m
- 0.9m to 1.0m
- 1.0m to 10.0m
- 10.0m to 100.0m

id	Option
1	Gawler Racecourse flood control basin
2	Tingara Road flood control basin
3	Trinity College creek upgrades
4	Evanstan Oval parallel pipe



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**GAWLER RAIL CORRIDOR UPLIFT DEVELOPMENT PLAN AMENDMENT
 STORMWATER IMPACT ANALYSIS
 SOUTHERN POLICY AREAS**

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Figure 2

Appendix C

Open Space Framework (Open Space, Recreation and Plan 2025 - Directions Report)

This Appendix forms part of the above *Directions Report* and establishes a framework to guide firstly, the provision and development of different levels of open space (which is catchment-based) and secondly, the development of key types and hierarchy levels of open space. The following guidelines or information associated with local and neighbourhood open space have been summarised below:

Hierarchy	Definitions	Potential activity level
Neighbourhood open space	Cater for people across a number of suburbs. They are: <ul style="list-style-type: none"> – smaller in size – lower in profile – less developed than Regional/District spaces. 	Provide recreation opportunities for suburbs and neighbourhoods.
Local open space	Focus on local level use. Cater for residents in the local area and/or immediate adjoining suburbs. They are generally: <ul style="list-style-type: none"> – smaller parks and/or have a lesser profile – of basic quality – appealing and safe. 	Cater for local activities such as play and walking

The development principles and new open space considerations for planning purposes that are outlined in this Appendix are summarised below:

Hierarchy	Broad development principles	Considerations	Standards of provision
Neighbourhood open space	<ul style="list-style-type: none"> – should be developed to include appealing settings and landscapes – contain appropriate infrastructure to support neighbourhoods (seating, shade and play) – accommodate various activity and play opportunities 	<ul style="list-style-type: none"> – aim for quality open space having potential to be functional and to meet community needs – open space should be usable and of sufficient size and layout to accommodate the intended uses – well located and accessible open space with good connections to other open space or urban centres 	<ul style="list-style-type: none"> – sportsgrounds should be a minimum of 3.5 ha in area – ‘destination’ parks, which provides a ‘destination’ for the community and may include a neighbourhood park, should be a place to gather and for children and other age groups to pursue activities – ‘destination’ parks should be at least 0.5 ha in size
Local open space	<ul style="list-style-type: none"> – should be developed to cater for local communities, likely to have a minimal infrastructure and a greater landscape focus – should support people to use open space, eg through seating and shade – could include a local playspace 	<ul style="list-style-type: none"> – when open space is too small and does not meet community needs (ie less than 0.1 ha in size), it should be increased in size <p>Open space type - Parks</p> <ul style="list-style-type: none"> – generally standalone parcels that are maintained to a good standard to support community activity, enhance amenity – focus on recreation and community activity, including playspaces, seating, shelter and other infrastructure – could have landscape value with minimal development, eg grassed/treed area with seating – should aim to enhance amenity and aesthetics of the area 	<ul style="list-style-type: none"> – aim to achieve at least 3 ha per 1,000 people – all residents should be within 400m – higher density areas should be within 250m – open space parcels should be at least 0.2 ha in size – should generally be 20m in width to promote usability