

Fairfield City Transport Study

Final Report



Prepared by: GTA Consultants (Group) Pty Ltd for Fairfield City Council

on 12/05/2021

Reference: N189470

Issue #: A

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A-Dr	20/01/2021	Draft Report	Z. Abbasi, L. Clark	V. Buhl	N. Buchanan	N. Buchanan
A	12/05/2021	Final Report	Z. Abbasi, L. Clark	V. Buhl	N. Buchanan	

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1. INTRODUCTION

01

1.1. Introduction and Background

GTA Consultants (GTA) has been commissioned by Fairfield City Council (Council) to prepare the Fairfield Transport Study.

Recent amendments to the Environmental Planning and Assessment Act 1979 (the Act) require Fairfield Council to review and amend the Fairfield Local Environmental Plan 2013 (LEP) as soon as practicable, to address the requirements in the Western City District Plan. To this end, this Transport Study supports a number of planning directions contained in the Fairfield Local Strategic Planning Statement (LSPS) 2040 including a Stage 2 Planning Proposal prepared under the NSW Accelerated LEP Program.

In addition to this Study, Fairfield Council also commissioned GTA to undertake detailed traffic modelling for the eastern area (i.e. east of the Cumberland Highway) of Fairfield City that is the focus for additional population growth to 2040 as identified in the Fairfield LSPS and Stage 2 Planning Proposal. The findings of the traffic modelling have been factored into the preparation of this Transport Study.

1.2. Scope

This report provides an overview of the existing transport situation and relevant transport opportunities and constraints across the Fairfield Local Government Area (LGA). In particular, the study examines existing and known future conditions relating to:

- Assess long-term transport networks and land-use planning impacts
- Provide conceptual advice on achieving the 30-minute vision
- Identify key transport corridors, desirable upgrades and their protection for the future
- Identify key constraints on the movement of freight and options to improve its efficiency
- Review car parking rates and their suitability for local conditions
- Align with State Government transport initiatives. This is to include the potential for new rail stations along the Parramatta to Western Sydney Airport metro passenger line (Parramatta Town Centre and Cecil Park initially)
- Identify the long-term development of transport corridors and connecting various facilities e.g. Connecting Fairfield Showground, Parramatta Leisure Centre and Fairfield Hospital through a Transitway along Smithfield Road and Polding Street.

1.3. Study Area

The Fairfield City LGA is located in Greater Sydney's Western Parklands City and is home to over 210,000 people and nearly 74,000 jobs¹. The City covers an area of 104 square km, including 27 suburbs. The LGA provides a mix of medium to high density development in the established centres of Fairfield and Cabramatta with predominantly low to medium residential areas throughout the rest of the LGA. The semi-rural suburbs of Horsley and Cecil Park have been covered by urban investigation area which covers approximately one third of the LGA.

The diversity in land use in Fairfield City extends to its populace as well, with nearly 20 per cent of residents having Vietnamese ancestry and 14 per cent having Chinese ancestry, which are higher than the Greater Sydney average.

¹ Data related to 2018, Fairfield City LSPS 2040 – Shaping a Diverse City

INTRODUCTION

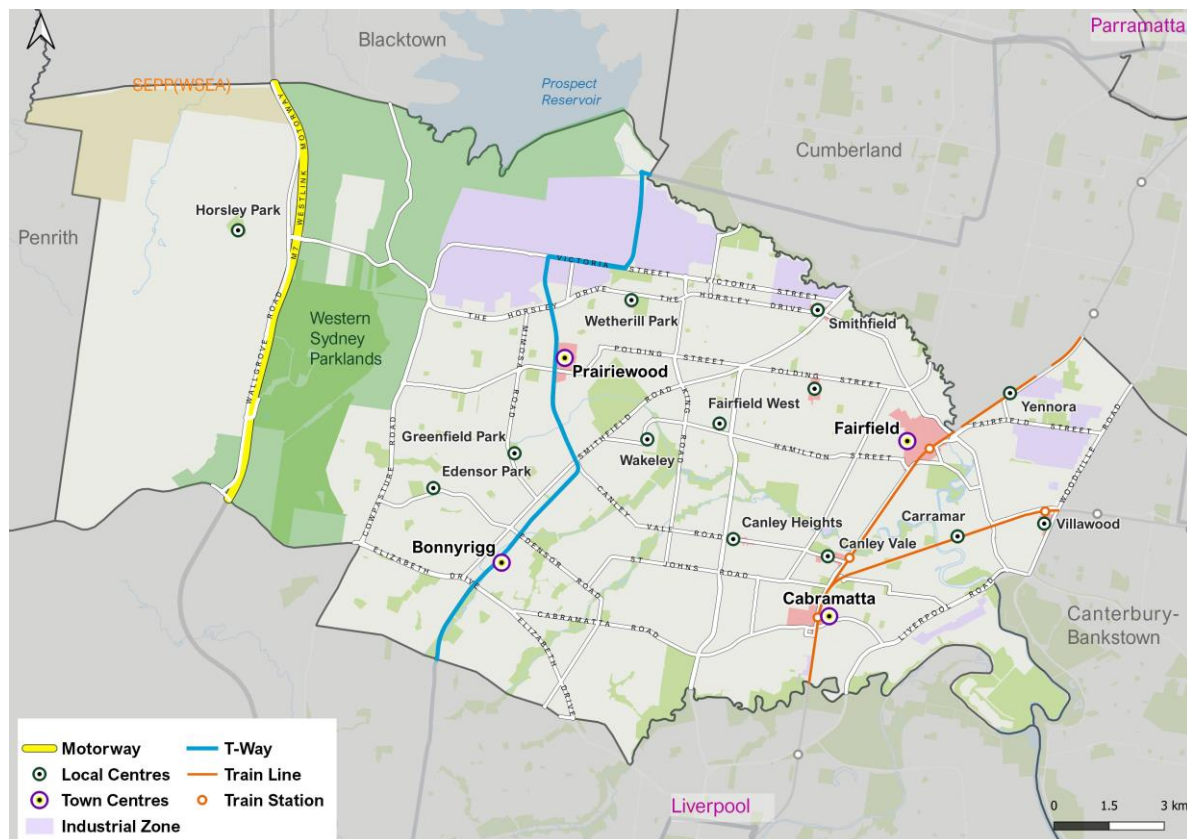
The LGA is supported by established industrial areas such as Wetherill Park as well as parklands and pastoral lands in the western parts. These industrial areas attract many commuters and heavy vehicle movements from outside and inside of the LGA.

The transport network is dominated by several major north-south roads such as the M7 Motorway and the A28 Cumberland Highway, major east-west axis such as The Horsley Drive and Cabramatta Road/ Elizabeth Drive, all of which are accessed via a predominantly suburban road and street network that serves primarily low to medium density residential suburbs in the LGA. The LGA also benefits from existing passenger rail connections that connect the LGA with Liverpool, Blacktown, Richmond and the central and eastern parts of Greater Sydney, though the train stations are concentrated in the eastern side of the LGA. Nonetheless, the central portion of the LGA is serviced by the Liverpool-Parramatta T-way, providing a primarily separated and rapid transit connection to the major destinations of Parramatta and Liverpool from the LGA's suburban and industrial areas.

In relation to active transport, the LGA features major regional cycle routes on east-west and north-south axis such as the Orphans School Creek and Prospect Creek shared paths as well as cycleways parallel to the T-way, the M7 Motorway and the railway line towards Parramatta.

As Figure 1.1 shows, the LGA includes the four town centres of Fairfield, Cabramatta, Prairiewood and Bonnyrigg located mainly in the eastern and central parts of the LGA, and these are supported by several local centres, as well as numerous smaller neighbourhood centres, which provide local shopping, fresh food, restaurants and services for the surrounding residential areas' neighbourhoods.

Figure 1.1: Fairfield LGA



Source: GTA

2. POLICY CONTEXT

02

2.1. Policy and Strategic Context

2.1.1. A Metropolis of Three Cities – The Greater Sydney Region Plan

A Metropolis of Three Cities -The Greater Sydney Region Plan by the Greater Sydney Commission establishes a 40-year strategic land use plan for Sydney. The plan was developed concurrently with Future Transport Strategy 2056 prepared by Transport for NSW (TfNSW), which aims to deliver better connectivity and accessibility for the residents of Greater Sydney. The land use vision for Greater Sydney is a metropolis of three cities; the Eastern Harbour City (Sydney CBD), the Central River City (Greater Parramatta) and the Western Parkland City (around the new Western Sydney Airport).

Consistent with Future Transport Strategy 2056, one of the key elements of the plan is the vision of a 30-minute city which aims to provide transport infrastructure and services that enable people to reach their nearest Metropolitan or Strategic Centre within 30 minutes, seven days a week.

The Fairfield LGA is located in the Western City District, with Fairfield identified as the Strategic Centre with numerous Local Centres spread throughout the area.

The Strategic Centre and Local Centres are expected to be:

- supported by infrastructures that improves walkability access
- highly connected by public transport
- achieve the 30-minute aspirations set by the NSW government.

2.1.2. The Western City District Plan

The *South District Plan* was also produced by the Greater Sydney Commission. It presents a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney. It contains the planning priorities and actions for implementing the *Metropolis of Three Cities*, at a district level and is a bridge between regional and local planning.

The plan introduces several priorities of relevance to the Fairfield LGA including:

- Planning Priority W1 - Planning for a city supported by infrastructure
 - Infrastructure investments to connecting the three cities and local areas to them.
 - Maximise the potential and capacity of infrastructure with effective land use and infrastructure planning.
 - Public transport and complementary subsidiaries to help customers reach Metropolitan/ Strategic Centres (Fairfield) within 30 minutes.
- Planning Priority W2 – Working through collaboration
 - Identify, prioritise and deliver Collaboration Areas which are a new way for stakeholders to work together to deliver coordinated planning in locations that have great potential to grow their vibrancy, diversity and productivity, with improved employment and education opportunities, enhanced liveability and sustainability.
- Planning Priority W3 - Providing services and social infrastructure to meet people's changing needs
 - High quality walking and cycling access to public and natural infrastructures.
 - Infrastructure that is suitable for all accessibility needs.

- Planning Priority W6 – Creating and renewing great places and local centres, and respecting the District
 - “Streets as Places”, appreciate the “Place” purpose and sensitivities of an area, and enhance people movements in a multi-modal lens. Aiming to improve the accessibility, connectivity and amenity of places in order to induce a higher mode-shift away from private vehicle use.
- Planning Priority W7 - Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City
 - Integrate land use and transport planning to realise the concept of a 30-minute city, which is championed by Future Transport 2056 and A Metropolis of Three Cities.
 - Investigate, plan and protect future transport and infrastructure corridors.
 - In the Western Parklands City context, this includes the Western Economic Corridor, Western Sydney Airport and Badgerys Creek Aerotropolis, Liverpool, Greater Penrith, Campbelltown-Macarthur and the Western Sydney Employment Area. Many of which are tightly related to the Fairfield area.
- Planning Priority W10 - Maximising freight and logistics opportunities and planning and managing industrial and urban services land
 - The Western City District has the potential to become a national freight hub, with Fairfield along an existing freight trainline surrounded by industrial areas.
- Planning Priority W19 - Planning Priority E19 Reducing carbon emissions and managing energy, water and waste efficiently
 - New public transport promotions and initiatives.
 - Demand and modal managements to encourage low-carbon approaches.

2.1.3. Future Transport 2056 Strategy

The *Future Transport Strategy 2056* (Future Transport) is a 40-year strategy for Sydney and regional NSW prepared by TfNSW. The plan includes several initiatives related to the City of Fairfield including:

- Sydney-wide infrastructure:
 - Increase in service frequencies on selected train lines and bus services to address capacity constraints or as part of new infrastructure (e.g. Sydney Metro).
 - Cycling and pedestrian infrastructure.
 - Bus Priority Infrastructure program.
 - Projects to help ease congestion at pinch points include widening small sections of road or intersection, lengthening and adding turning lanes, replacing heavily used roundabouts with traffic signals, and monitoring traffic to provide real-time information to motorists to help them make informed travel decisions.
 - Investigating and analysing future transport demands, developing multi-modal corridor plans and identifying and preserving corridors for future transport links and providing greater east-west and north-south connections.
- New infrastructure
 - new north-south mass transit/train links to Greater Parramatta
 - M7 and M12 upgrades on the western side of Fairfield (Cecil Park and Horsley Park), connecting to the new Western Sydney Aerotropolis.

- Western Sydney Growth Roads Program
 - Smithfield Road upgrade
 - Wetherill Street upgrade
 - Southern Link Road
- Western Sydney Airport – Badgerys Creek Aerotropolis – Parramatta Rail Link
- safe cycleway network within 10km of Parramatta
- Western Sydney Freight Line
- additional capacity on Southern Sydney Freight Line.

Additionally, the strategy includes a long-term corridor (20+ years), including:

- high capacity service between Liverpool and Parramatta via Cabramatta and Fairfield.

2.1.4. State Infrastructure Strategy 2018-2038

The *State Infrastructure Strategy* by Infrastructure NSW sets out the government's priorities for the next 20 years. Combined with the *Future Transport* and the *Metropolis of Three Cities*, it brings together infrastructure investment and land-use planning for the cities and regions. The most relevant element of the strategy is to:

- link integrated strategic land use and infrastructure planning
- unlock capacity in existing assets
- continue to invest in new network links.

Specific recommendations relating to Fairfield are:

- Western Sydney Infrastructure Plan, which provides key road infrastructure to support the early development of the city. This program aims to improve connectivity between the main centres of Greater Penrith, Liverpool, Campbelltown and the Western Sydney Airport. Fairfield can potentially be a major waypoint between them and the City of Parramatta.
- Reallocation of road space for more efficient and sustainable transport modes.
- Infrastructure NSW recommends that TfNSW develop a business case by the end of 2019 to augment the capacity and productivity of the Liverpool to Parramatta and North West T-Ways with additional services, enhanced signal priority and a Wentworthville T-Way-to-T-Way connection to link the two separate lines.

2.1.5. Fairfield Local Strategic Planning Statement (LSPS) 2040

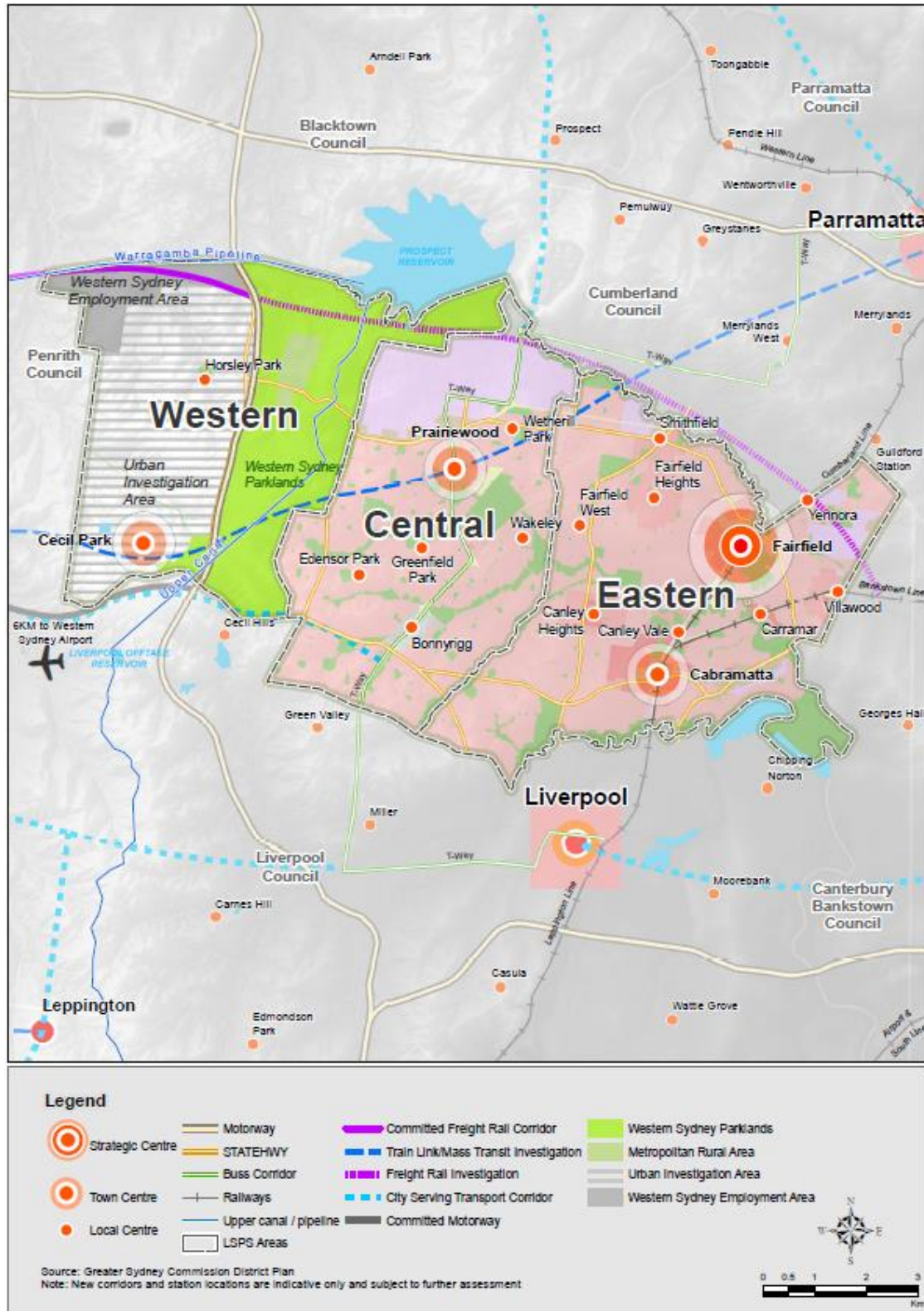
Fairfield has prepared a Local Strategic Planning Statement (LSPS) that sets out their 20-year vision for land use of all purpose and how they can be effectively managed to facilitate growth. The LSPS also serves as a mechanism that amalgamates various plans, strategies and studies from Council in one place. This is done to inform the development of an updated Local Environmental Plan (LEP) and Development Control Plan (DCP).

Among the top ten priorities as identified by the community were the following transport related priorities:

- local traffic flow and road safety
- connected transport systems
- car parking spaces
- access to schools, universities, colleges and TAFE.

The Fairfield LGA is divided to three areas based off settlement periods and other land use features as shown in Figure 2.1.

Figure 2.1: Fairfield Areas



Source: Adopted Fairfield City Local Strategic Planning statement 2040

Council has identified broad opportunities for each area in the LSPS outlined in Figure 2.2.

Figure 2.2: Fairfield Local Opportunities

Western Area	Central Area	Eastern Area
<ul style="list-style-type: none"> Managing opportunities and impacts associated with close proximity to Western Sydney Airport and Aerotropolis. Involvement in planning investigations for potential east west rail line linking Parramatta and Western Sydney Airport and Western Sydney freight line. Identify opportunities associated with the new and upgraded major corridors (including Southern Sydney Link Rd, M12, Elizabeth Dr widening and new local road connections). 	<ul style="list-style-type: none"> Provision of an east west rail line linking Parramatta and Western Sydney Airport creates opportunities for Prairiewood to evolve as a district centre. Reduced reliance on private motor vehicles. Improved public transport capacity through the upgrading of the Parramatta to Liverpool Bus T-Way to higher order mass transit. 	<ul style="list-style-type: none"> Need for improved public transport infrastructure and bike/pedestrian links in parts of the area.

Following on from the opportunities identified above, Council has established a multitude of Planning Priorities with a corresponding action plan. The actions that are relevant for this study are:

- Action 3.2 & 4.7 – “Council will collaborate with Greater Sydney Commission, Department of Planning, Industry and Environment and TfNSW to investigate Prairiewood Town Centre as a future strategic centre based on the potential future railway station.”
- Action 3.3 – “Council will examine the potential for other areas for future urban renewal based on the delivery of new regional infrastructure.”
- Action 4.1 – “Council will undertake urban design studies for key town and neighbourhood centres that deliver attractive, healthy, accessible and safe places in Fairfield, Cabramatta, Smithfield, Canley Vale, Carramar and Yennora.”
- Action 4.2 – “Council will update its Development Control Plans to include tailored development controls which reflect the recommendations and outcomes of the Urban Design Studies and provide attractive, healthy, accessible and safe town centres.”
- Action 4.5 – “Council will encourage high- quality developments in suitable locations with supported infrastructure that improve the local character of the area with a focus on sustainability and technology.”
- Action 6.6 – “Council will undertake a Transport Strategy to identify the existing and future traffic and transport infrastructure needs.”
- Action 6.7 – “Council will update the LEP, DCP and development contributions plans to reflect the outcomes and recommendations of the Transport Strategy.”
- Action 6.8 – “Council will update its development contributions plans to incorporate the findings and recommendations of the Community and Open Space Needs Study, Open Space Strategy and Transport Strategy.”
- Action 7.1 – “Council will work with the relevant State Government agencies to ensure transport decisions promote the best outcome for Fairfield City.”
- Action 7.2 – “Council will undertake a Transport Strategy which will align with State Government transport initiatives and advocate for the best land use and transport outcomes for Fairfield City, including new rail stations along the potential Parramatta to Western Sydney Airport passenger line.”

- Action 7.4 – “Council will collaborate with State Government agencies to leverage the best opportunities, including mitigating and/or offsetting impacts for the Fairfield City community arising from major infrastructure projects, including (but not limited to): Western Sydney Freight Line, Parramatta to Western Sydney Airport rail link, Elizabeth Drive upgrade, T-way to Liverpool and Parramatta, and strategic bus routes and upgrades to arterial roads.”
- Action 7.7 – “Council will leverage off potential major Western Sydney Airport-related transport infrastructure at Prairiewood Town Centre to evolve a new strategic centre or the City.”
- Action 11.5 – “Council will as part of the Transport Strategy investigate car parking management strategies/ approaches in town centres to ensure viable and accessible centres.”
- Action 11.8 – “Council will undertake Urban Design Studies for its local centres that incorporate land use and transport approaches which provide both jobs and housing in close proximity to railway stations to promote the 30-minute city.”
- Action 12.1 – “Council will continue to work with the GSC and adjoining Councils to review and manage urban services land, including addressing forecast increases in freight and logistics servicing needs.”

2.1.6. Urban Design Studies, Fairfield Council

The urban design studies are a series of masterplans envisioning what the town centres in the future aspire to be. The study takes a holistic look across all aspects of a town centre’s functions, with transport being an important component. The transport components for each town centres are shown in Table 2.1. These centres are also the subject of detailed mesoscopic modelling being undertaken by GTA.

Table 2.1: Urban Design Studies – Transport Opportunities

Centre	Transport opportunities
Cabramatta	<ul style="list-style-type: none"> • Enhance local active transport amenity and connectivity • Discourage unwanted traffic in town centre • Improve east-west connection over rail corridor • Improve access to public car parks
Canley Vale	<ul style="list-style-type: none"> • Enhance local active transport amenity and connectivity • Improve access to public car parks
Carramar	<ul style="list-style-type: none"> • Enhance local active transport amenity and connectivity • Promote commuter parking and encourage more visitors to town centre
Fairfield	<ul style="list-style-type: none"> • Enhance local active transport amenity and connectivity • Improve access to nearby green infrastructure • Create low speed zone
Fairfield Heights	<ul style="list-style-type: none"> • Enhance local active transport amenity and connectivity • Potential road and shared path links
Smithfield	<ul style="list-style-type: none"> • Enhance local active transport amenity and connectivity • New public car parking • Discourage through traffic on the Horsley Drive
Yennora	<ul style="list-style-type: none"> • Improve and expand the active transport infrastructure network • Parking management for schools and commuters • Improve bus services • Potential road and shared path links • Local area traffic management plan

3. LAND USE AND TRANSPORT OPPORTUNITIES AND CONSTRAINTS

03

3.1. Land Use

The Fairfield LGA is in Western Sydney and bounded by the regional cities of Parramatta and Liverpool, as well as the councils of Cumberland, Canterbury Bankstown, Blacktown and Penrith. The LGA is chiefly residential with strategic, town and local centres distributed across the LGA which serves varying community needs including retail, commercial, social and local employment opportunities. Major features include Fairfield City Centre (Strategic Centre), Cabramatta Town Centre, Prairiewood Town Centre, Bonnyrigg Town Centre and several local centres which provide retail and commercial services primarily for the local community.

Fairfield City Centre

The Fairfield City Centre is marked by Barbara Street to the west, Nelson Street and Fairfield Forum to the north, The Horsley Drive and Prospect Creek to east and Fairfield Park to the south. The Fairfield City Centre contains the Fairfield railway station providing connections to Liverpool, Parramatta and Sydney CBD, as well as other smaller nearby centres such as Cabramatta.

The City Centre comprises a combination of two storey retail/ commercial buildings with retail at ground level, commercial above and service access to the rear, arcades and standalone format shopping centres with mini-majors such as Kmart and Big W, specialty retail, café/restaurant/take away foods, supermarkets, and personal services. Fairfield Park is a large area of parkland situated in the south of the city centre. It includes an aquatic centre and an adventure playground. One obstacle to access the Park is the railway corridor, which acts as a physical barrier between residents living in the high-density areas around the Centre.

The suburb of Fairfield has a population of approximately 18,000. The Centre is anchored by commuters accessing the rail and bus services at the Fairfield railway station and bus interchange during peak times. Outside of commuting times, the weekends host a wide variety of gatherings throughout its various function centres.

Cabramatta Town Centre

Cabramatta is a specialised centre that is famed for its diverse image which is highlighted by retail, tourism and cultural experiences from South East Asia. Businesses in Cabramatta comprise fresh foods, dining and fabrics. The centre has become a focus for day trippers from across the Greater Sydney Region who visit for its fares and food.

Cabramatta is located at the junction of two railway lines including three services. The T3 rail service links Liverpool to Sydney via Bankstown, the T2 links Leppington to Sydney via Clyde and the T5 links Leppington to Richmond via Parramatta. Express services stop at Cabramatta ensuring good regional connections to centres throughout Sydney. A dedicated freight line also passes through the centre.

The north-south railway line splits the LGA in two. John Street is the main high street in the centre supporting a wide range of commercial and retail businesses and pedestrian activity. Cabra-Vale Memorial Park is located directly to the north of the town centre with the Cabramatta Diggers club located immediately to the north of the park. The suburb had the population of approximately 21,700 people.

Prairiewood Town Centre

Prairiewood town centre consists of a broad range of facilities including medical, retail, commercial, educational, recreational and service facilities, including Fairfield Showground, Fairfield Hospital, schools, a leisure centre and a major shopping. Fairfield Showground hosts a variety of cultural events and the Fairfield Markets, which are a common attraction every Saturday morning. Stockland Wetherill Park is a major shopping centre that is located in north-western Prairiewood.

According to the 2016 census, Prairiewood had a population of 3,246, with only 44.5 per cent of these residents being born in Australia. In the Fairfield LSPS 2040, Prairiewood is identified as the possible location of a future rail station servicing the Western Sydney Airport, having regard to the broad range of facilities and services located in the centre and capacity for it to grow into a major strategic centre servicing the western part of the City.

Bonnyrigg Town Centre

Bonnyrigg's commercial area consists of a main hub around Bonnyrigg Plaza, a shopping centre located on Bonnyrigg Avenue. This commercial area also has several community facilities such as a PCYC, an office of the Housing NSW department and a public library. Surrounding the Bonnyrigg Plaza there are also additional shops and a primary school.

Bonnyrigg is served by several bus routes which includes the Liverpool to Parramatta T-way transitway service, the T80, operates via Bonnyrigg, stopping near Bonnyrigg Plaza. According to the 2016 census of population, Bonnyrigg had a population of 8,670 residents. The NSW Land & Housing Commission (LAHC) is currently undertaking a major urban renewal project of the Bonnyrigg Housing Estate (Newleaf) to the east of the town centre, that on completion will result in approximately 2,000 additional dwellings on the site.

3.1.1. Local Centres

Several local centres including Villawood, Yennora, Carramar, Canley Vale, Smithfield, Fairfield Heights, Fairfield West, Canley Heights, Wetherill Park, Greenfield Park, Edensor Park, and Horsley Park which provide day to day services to the community.

Table 3.1: Local centres across Fairfield LGA

Local Centres	Descriptions
Villawood	The main commercial area of the Villawood Town Centre includes a supermarket, shops, grocers and other shops. It is located in proximity to Villawood railway station. The NSW LAHC is a major landowner in the centre, comprising the Kamira Court site that is subject of a masterplan for urban renewal and new social/private housing. Villawood also contains a business park which produces a wide range of goods and hardware. Leightonfield railway station services an industrial area in the eastern part of Villawood. Villawood also offers many major recreational attractions. At the 2016 census, Villawood recorded a population of 6,032.
Yennora	The residential portion sits within Fairfield, whilst the industrial area is predominantly a part of Cumberland Council, general and light industrial lands also exist in the Fairfield LGA east of Yennora Railway Station.
Carramar	Carramar has a commercial shopping centre along Carramar Train station and a small industrial area. According to the 2016 census, there were approximately 3,550 residents in Carramar.
Canley Vale	Canley Vale consists of retail, commercial, recreational and service facilities close to Canley Vale Train Station. According to the 2016 census, there were approximately 10,000 residents in Canley Vale.
Smithfield	Smithfield is a mix of residential, industrial and commercial areas, but is mostly characterized by low-density housing. the Smithfield-Wetherill Park Industrial Estate is the largest industrial estate in the southern hemisphere and is the centre of manufacturing and distribution in greater western Sydney. Smithfield had a population of approximately 12,000 in 2016.
Fairfield Heights	Fairfield Heights local centre has retail, commercial and service facilities. The commercial area is centred on The Boulevard. The area includes many different types of shops and services. Fairfield Heights had 7,500 residents in 2016.
Fairfield West	Fairfield West consists of retail, commercial, recreational and service facilities. Educational facilities are located within close proximity to the local centre and include Fairfield West Public School. The Endeavour Sports Reserve, located near Orphan School Creek, is a large parking/sporting complex that features shared soccer, cricket, league and hockey fields, and tennis courts. The suburb of Fairfield West has a population of approximately 11,500 residents.

Local Centres	Descriptions
Canley Heights	The local centre consists mostly of retail, commercial, recreational and service facilities, including restaurants, hotels and banks. The large number of restaurants are the focus of an active night-time economy. The suburb has a population of approximately 11,000 people.
Wetherill Park	Wetherill Park is mostly an industrial area with some residential sections in the south-east corner. Wetherill Park has a major shopping centre which acts as the commercial/civic centre. The suburb was home for 6,000 people in 2016.
Greenfield Park	Greenfield Park has local centre and retail centres. Its educational facilities are located near the local centre which include Sy Hurmizd Assyrian Primary School. The suburb had a population of 5,100 in 2016.
Edensor Park	Edensor Park local centre has retail, recreational, commercial and service facilities including Edensor Park Plaza and medical centre. Edensor Park also has a number of recreation areas including Angle Vale Reserve, Allambie Reserve and Bosnjak Park. The suburb had a population of 10,000 in 2016.
Horsley Village	Horsley Village is a smaller scale local centre that provides a range of commercial services to the surrounding rural/residential suburbs of Horsley Park and Cecil Park that have a current total population of approximately 2,800.

3.1.2. Fairfield Showground

Fairfield Showground is a multi-purpose events venue located at Prairiewood. The site is approximately 33 hectares, has a frontage of about 950 metres to Smithfield Road and is bounded by the Fairfield Golf Course to the north. The site has a land use zoning classification of E2 (Environmental Conservation) and RE1 (Public Recreation). The surrounding properties predominantly include low density residential dwellings with some commercial and industrial uses located north of the site.

The Fairfield Showground Master Plan (November 2017) considered a range of facilities that Council had previously determined would address perceived needs. Key aspirations and objectives identified were:

- Community focus: The showground must remain primarily an asset for use by the local community.
- Modern sporting and cultural hub: The showground post harness racing should become a “modern sporting and cultural hub”.
- Retention of existing uses and improvement of facilities: The current operation of the showground where markets, events, expositions and interior use within the Parklands Functions Centre will continue and likely to grow.

In 2018, Fairfield City Council sought a Development Application for Stage 1 redevelopment works, which consisted of the following:

- a new market area north-east of the existing market site
- removal of the existing harness racing track
- construction of a new cricket and AFL field north of the existing Showground, that can be utilised for other events concurrently
- construction of a synthetic turf soccer field and an elite turf football field south of the existing showground
- amenities building north of the proposed synthetic turf soccer field.

The general aim of the Stage 1 development is to replace the now de-commissioned harness racing track with three sports fields, increase in the market area and the construction of new amenities building to enable increased community usage of the facility and to enable future increase in concurrent events operating within the Fairfield Showground.

As part of the Stage 3 redevelopment, a new Grandstand with 750 seats is proposed for the international sports field in Stage 1. The new and existing Grandstands combined will allow for a total of 5,000 spectators, consists of 2,000 spectators at the Grandstands and an additional 3,000 around the field.

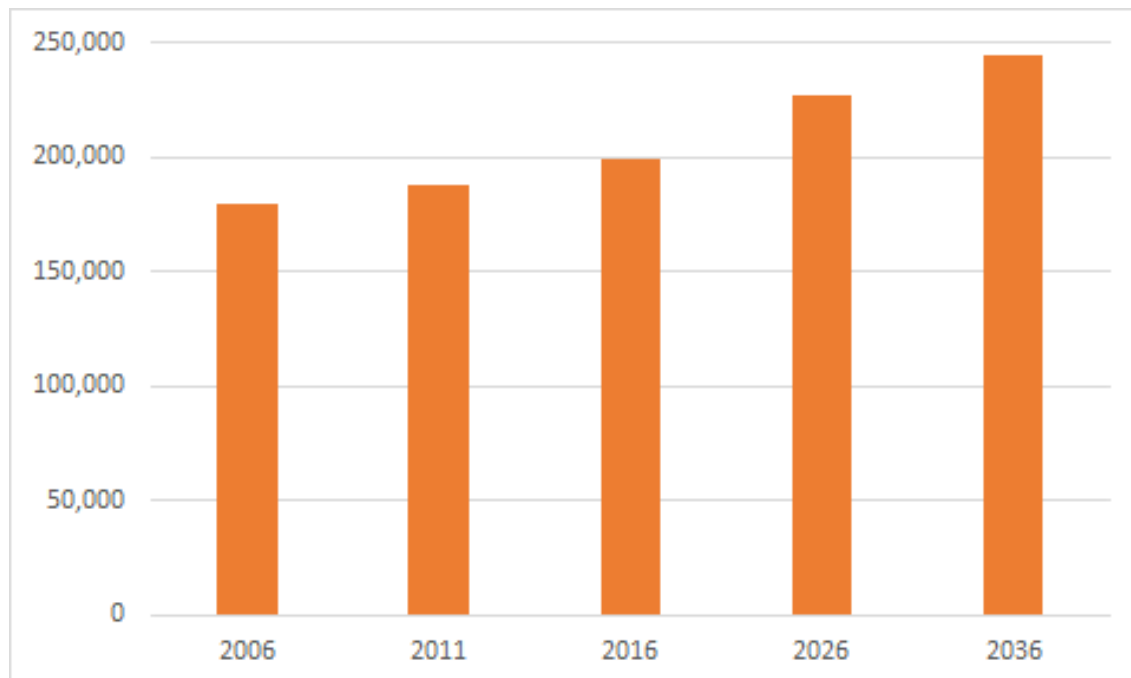
The Showground site and nearby Prairiewood Leisure Centre/Aquatopia Water Park are located in close proximity to the Prairiewood Town Centre and would be directly served by a potential rail station in the Centre.

3.2. Population Employment and Demographics

3.2.1. Population Growth

Figure 3.1 provides a summary of growth in population from 2006 to 2016 and projections through to 2036 for the Fairfield LGA, based on Australian Bureau of Statistics (ABS) data. The population of the area is forecast to grow from approximately 199,000 in 2016 to 245,145 in 2036. The population has grown by 11 per cent between 2006 and 2016 and is expected to grow a further 23 per cent from 2016 to 2036. Based on population forecast, the population for Fairfield City is forecast to increase by 38,709 persons (18.75 per cent growth), between 2016 and 2036, at an average annual change of 0.86 per cent.²

Figure 3.1: Population Growth in Fairfield LGA



Source: ABS, Census data from 2006 to 2016, Population forecasts, 2016 to 2036, prepared by .id

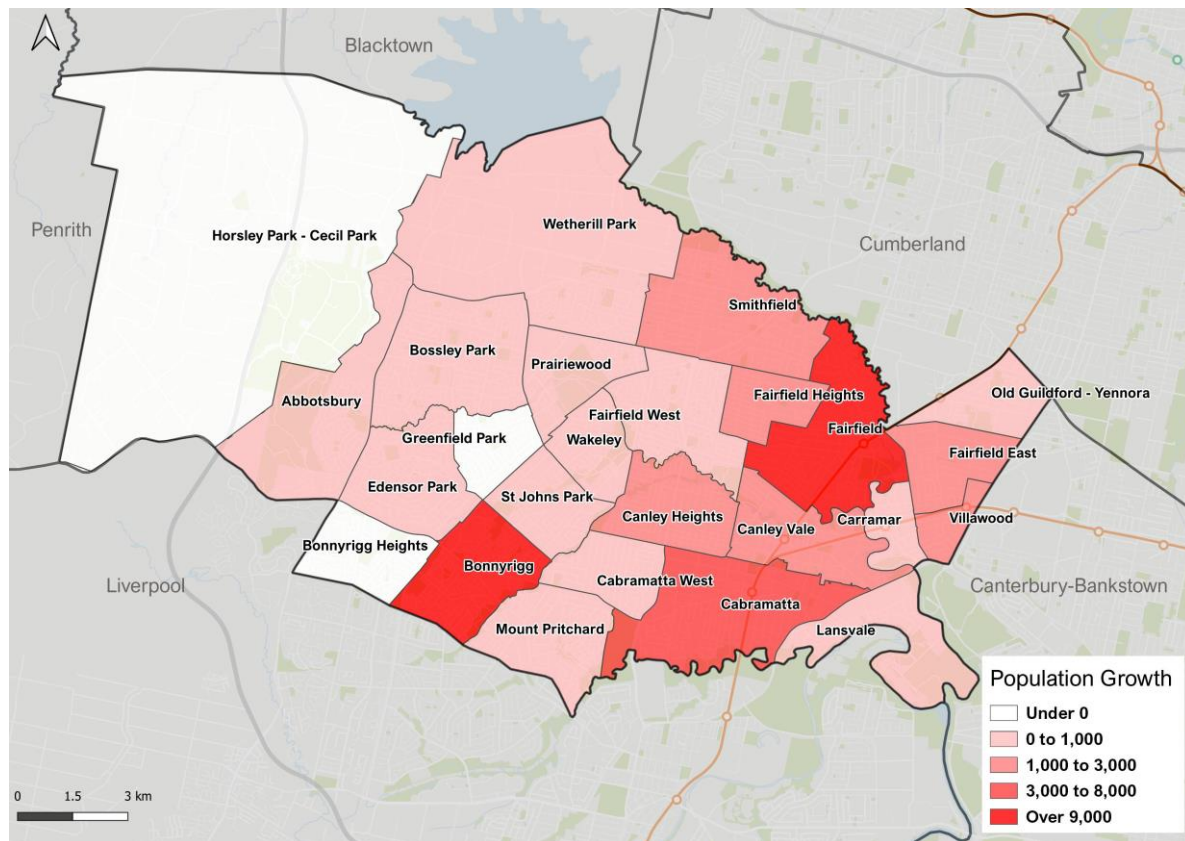
² Population and household forecasts, 2016 to 2036, prepared by .id, the population experts, October 2017.

In 2016, Fairfield and Cabramatta had the highest population density across the LGA based. Going forward, Figure 3.2 shows the population growth expected over the next 20 years by suburb for the Fairfield LGA. In total, the population is forecast to increase by a total of around 40,000 people between 2016 and 2036 with the following suburbs having the highest growth:

- Fairfield and Fairfield Heights (11,000)
- Bonnyrigg (9,000)
- Cabramatta (3,600).

Between 2016 and 2020, approximately 12,552 humanitarian entrants settled in the Fairfield LGA on arrival in Australia. The overwhelming number of these humanitarian entrants initially settled in the suburbs located in the eastern area of the City.

Figure 3.2: Population Growth (2016- 2036)



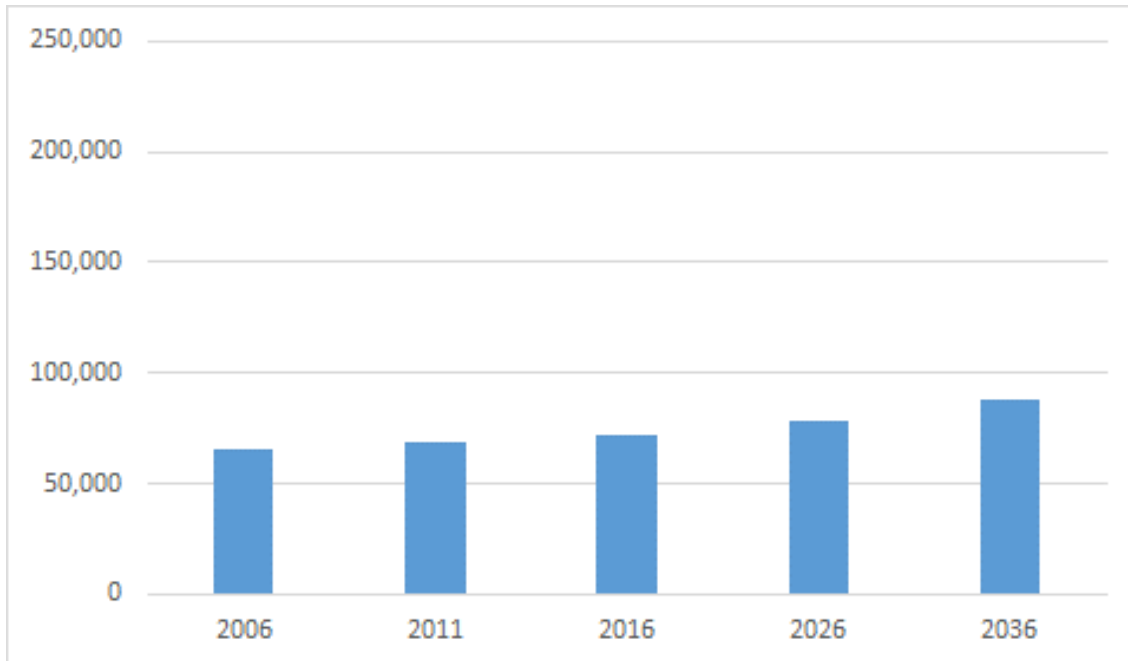
Source: Population and household forecasts, 2016 to 2036, prepared by [J.D.](#), the population experts, October 2017

3.2.2. Employment Growth

Fairfield LGA had approximately 71,900 jobs in 2016. Manufacturing, retail, trade and construction are the most popular industry sectors across the LGA. Employment trend from 2006 to 2016 and projections by 2036 for Fairfield LGA are shown in Figure 3.3.

As evident from Figure 3.3, by 2036, the number of jobs within the LGA are expected to reach approximately 88,300. The number of employed persons in the LGA (by place of work), has steadily increased between 2006 and 2016.

Figure 3.3: Employment Growth in Fairfield LGA



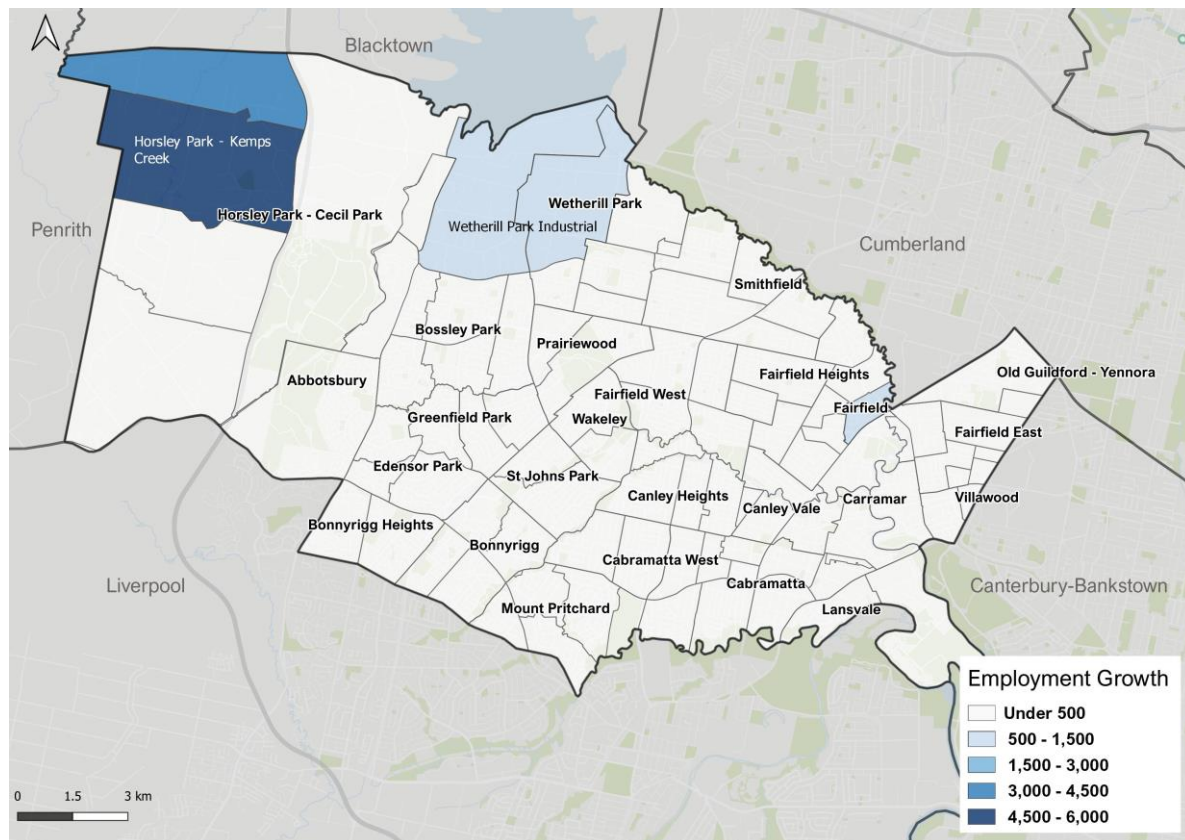
Source: ABS, Census data from 2006 to 2016, employment projection data by Travel Zones from 2011 to 2056 (TfNSW)

Figure 3.4 illustrates forecast employment number changes, which are mostly focused around the Travel Zones (TZs)³ of Horsley Park- Kemps Creek, Wetherill Park Industrial and Fairfield. There is an estimated increase of 19,000 jobs between these TZs alone during these 20 years.

Horsley Park - Kemps Creek are expected to provide approximately 9,000 new jobs as part of the Western Sydney employment area. The Wetherill Park industrial area, with its estimated addition of 2,000 jobs, is the second largest job generator, and following is Fairfield with approximately 700 jobs. The remaining travel zones are not expected to experience substantial employment growth.

³ Travel Zones (TZs) are the spatial base of TfNSW's Transport Data Centre's (TDC) data collection, transport modelling and analysis.

Figure 3.4: Employment Growth (2016- 2036)



Source: Employment projection data by Travel Zones from 2011 to 2056 (TfNSW)

3.3. Demographic Trend

3.3.1. Age Breakdown and Demographic overview of Fairfield City

Figure 3.5 shows the age distribution for Fairfield City in 2016, compared to Greater Sydney. As illustrated in this figure, Fairfield City had higher proportion of children (under 18) and a higher proportion of persons aged 60 or older than Greater Sydney. The median age of the area is 36 which is the same as Greater Sydney's.

Analysis of these differences suggest the LGA is a popular location for families with children. "Couple with Children" is 42 per cent of population in the LGA which is higher than 35 per cent in Greater Sydney.⁴

Based on ABS Census data in 2016, 53.9 per cent of people in Fairfield City were born overseas, compared with 36.7 per cent in Greater Sydney.⁵

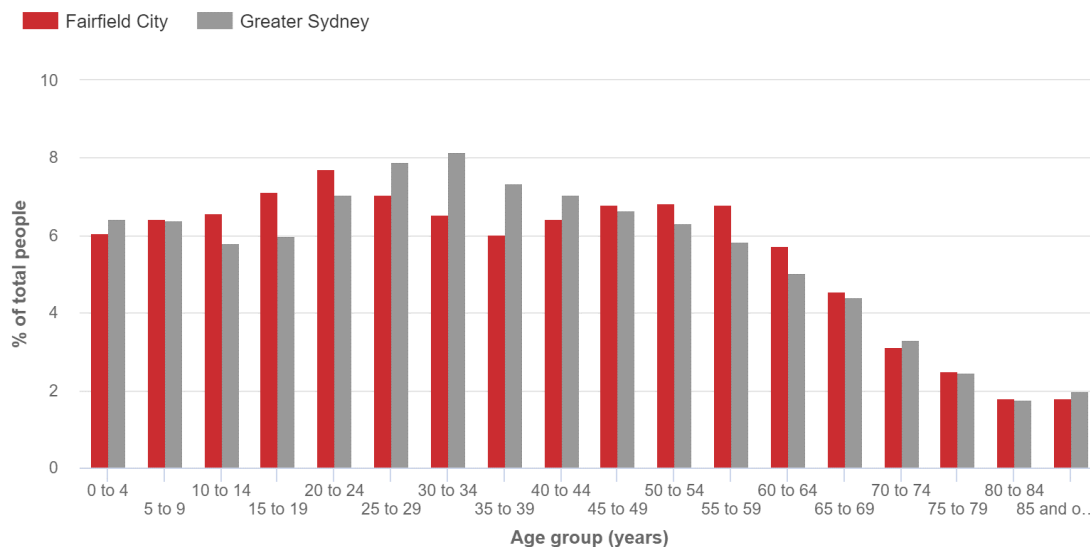
The Socio-Economic Indexes for Areas (SEIFA) Index of Disadvantage measures the relative level of socio-economic disadvantage based on a range of Census characteristics. For the SEIFA Index of Disadvantage, a higher score on the index means a lower level of disadvantage. In the case for Fairfield City, it scored 856 in 2016 compared to Greater Sydney 1,018 which is less than NSW with 1,001 and Australia 1,002.

⁴ <https://profile.id.com.au/fairfield/highlights-2016>

⁵ <https://profile.id.com.au/australia/birthplace?WebID=250#:~:text=In%202016%2C%2036.7%25%20of%20people,cultural%20diversity%20in%20Greater%20Sydney.>

Compared to other areas of Greater Sydney, this reflects the higher levels of socio-economic disadvantage occurring in parts of Fairfield City, and highlights the need for improved public transport services to provide access to local and regional employment opportunities, education, community facilities and services. Improved public transport services are also desirable in meeting the needs to support the ageing population of the city. The community's desire and need for improved public transport is also reflected in the actions and themes of the Fairfield City Plan 2016-2026, that were developed through extensive community consultation. The City has an average household size of 3.3 which is higher than Greater Sydney average household size of 2.8.

Figure 3.5: Age Structure – Five year age group, 2016



Source: ABS, Census of Population and Housing 2016

3.3.2. Language Status

In Fairfield City, approximately 71 per cent of people spoke a language other than English at home in 2016 compared to Greater Sydney's 36 per cent. According to ABS data, in Fairfield, there was a lower proportion of people who spoke English only, and a higher proportion of people who spoke another language and English not well or not at all. This creates challenges related to communicating information on the transport network and projects and major developments.⁶

Overall, 24.8 per cent of people spoke English only, and 21.6 per cent spoke another language and English not well or not at all, compared with 58.4 per cent and 6.5 per cent respectively for Greater Sydney.

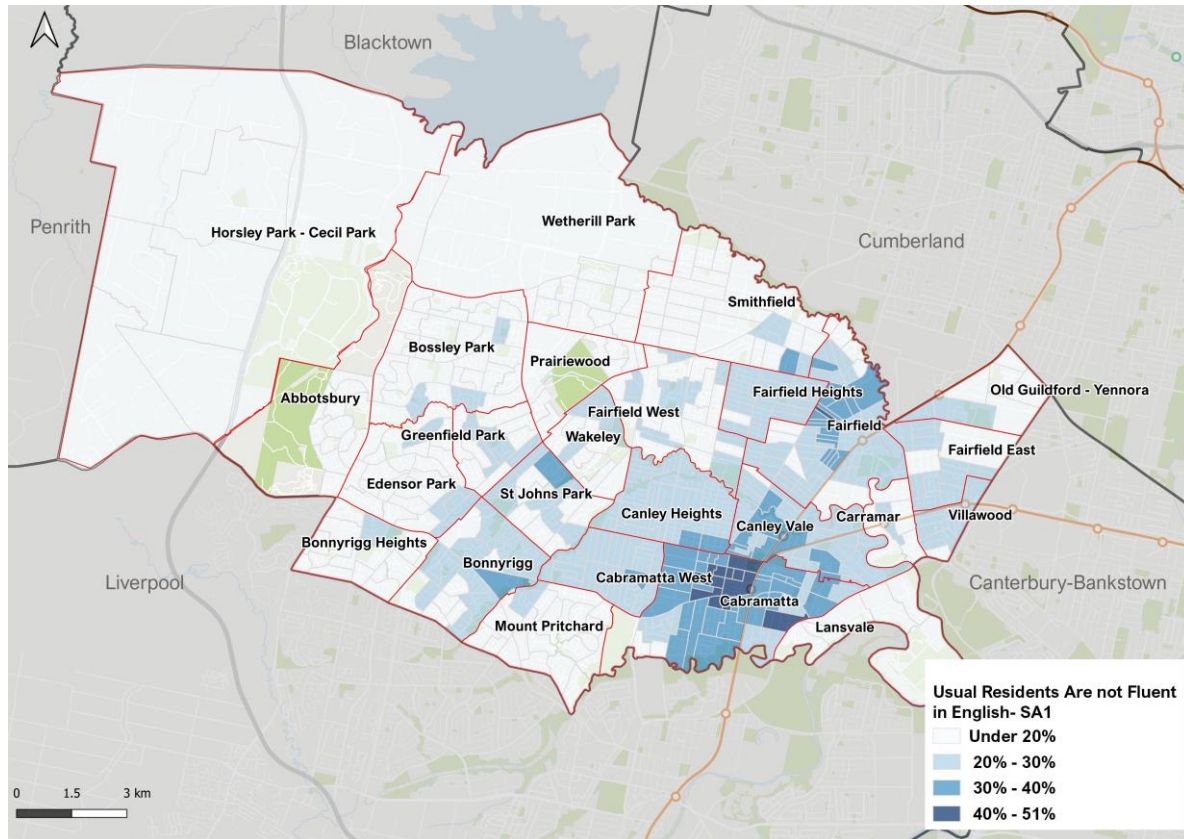
This information may help public transport providers determine whether they need to intensify communication with the local population in languages other than English.

Figure 3.6 shows the per centage persons who are not fluent in English of all people in each SA1s⁷. It can be seen the concentration of whose people live reside around frequent public transport such as Fairfield Train Station and Cabramatta Train Station. However, this language barrier may cause reluctance for them to take public transport.

⁶ Ibid at 1

⁷ Statistical Areas Level 1 (SA1) are geographical areas built from whole Mesh Blocks. The SA1s have generally been designed as the smallest unit for the release of census data. SA1s have a population of between 200 and 800 people with an average population size of approximately 400 people.

Figure 3.6: Distribution of Usual Residents Are not Fluent in English- SA1



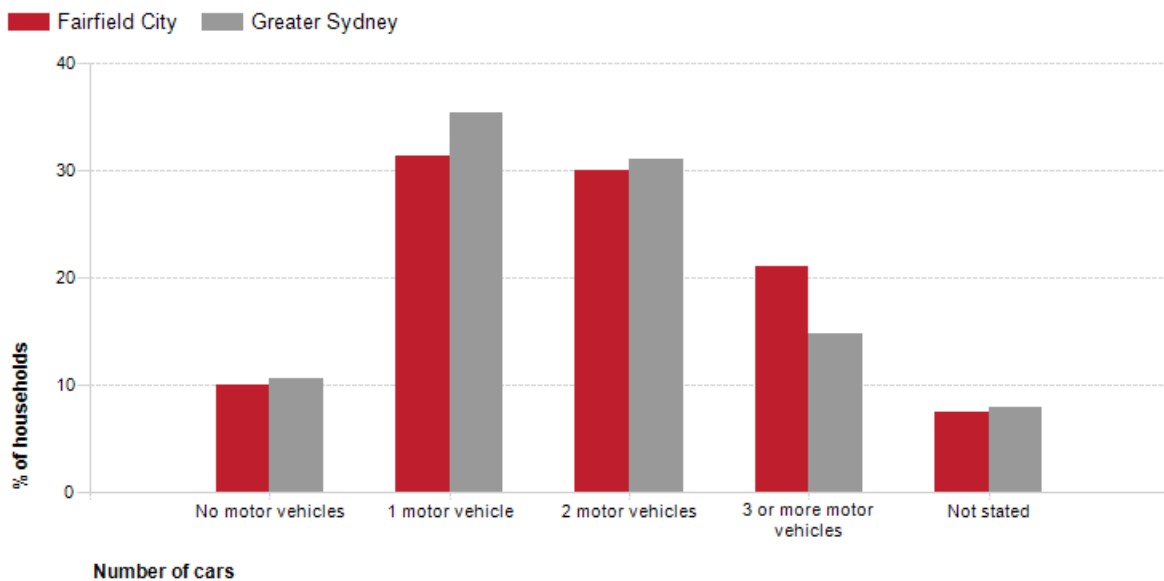
Source: ABS, Census of Population and Housing 2016

3.3.3. Car Ownership

The ability of the population to access services and employment is strongly influenced by access to transport. Analysis of household car ownership in the Fairfield LGA from the 2016 Census compared to Greater Sydney is shown in Figure 3.7.

The data indicates that 31 per cent of households in the LGA owned one car, while 10 per cent did not own a car, compared with 35 per cent and 11 per cent respectively in Greater Sydney. Furthermore, the analysis shows 21 per cent of households had access to three or more vehicles in 2016, compared to 15 per cent in Greater Sydney. The average motor vehicles per dwelling of 1.8 across the LGA is slightly higher than Greater Sydney with 1.7 per dwelling.

Figure 3.7: Comparison of Car Ownership Percentage Between Fairfield and Greater Sydney



Source: ABS, Census of Population and Housing 2016

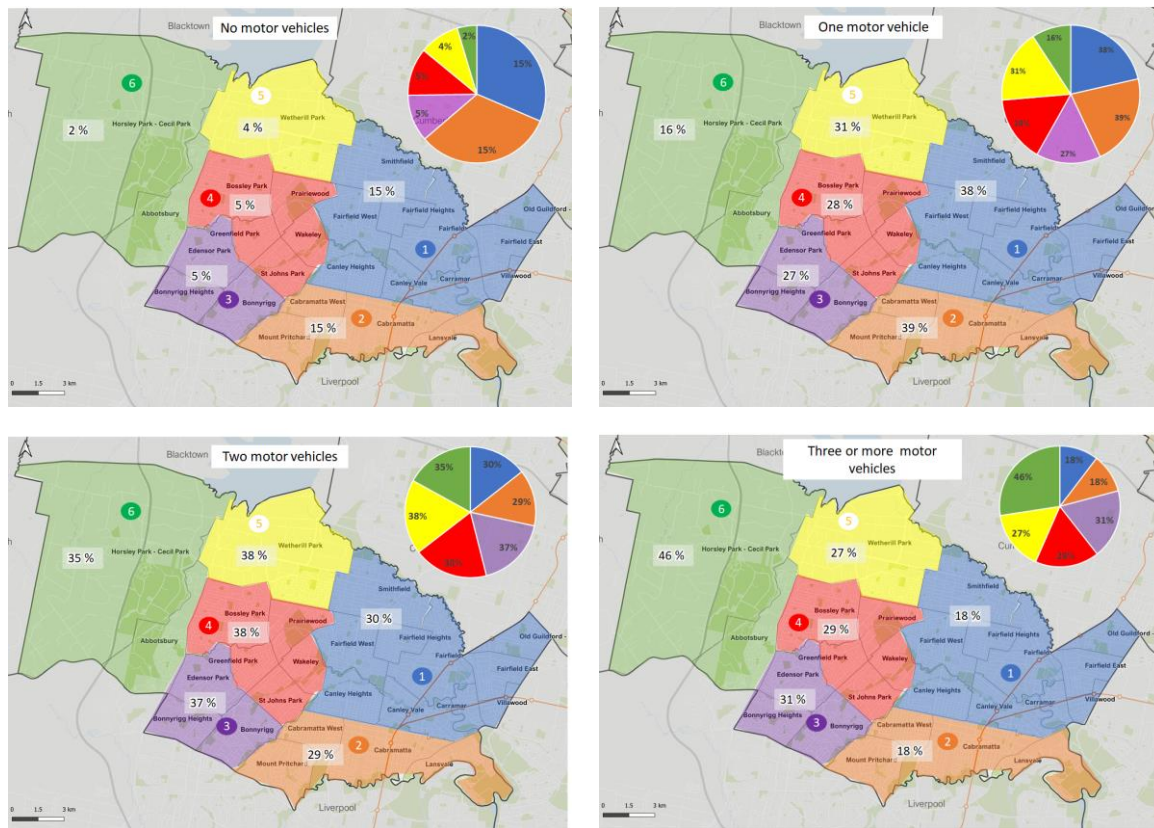
Figure 3.8 shows a comparison of car ownership between eastern, central, and western part of the LGA. The data was extracted for individual suburbs and then combined in order to show better comparison while taking in consideration of the existing access to the transit hubs in the eastern and central parts of the LGA.

Key findings include:

- Households living in the eastern parts of the LGA have a higher percentage (15 per cent) of no motor vehicle compared to the central part with an average percentage around 5 per cent, likely related to the proximity to train stations in the eastern part.
- Although households living in the eastern part of the LGA have better accessibility to public transport, they have higher percentage of owning one motor vehicle.
- Western part of the LGA has the highest percentage of households owning three or more cars, coinciding with a lack of frequent public transport in these areas.

LAND USE AND TRANSPORT OPPORTUNITIES AND CONSTRAINTS

Figure 3.8: Comparison of Car Ownership Per centage Between Suburbs



ABS, Census of Population and Housing 2016

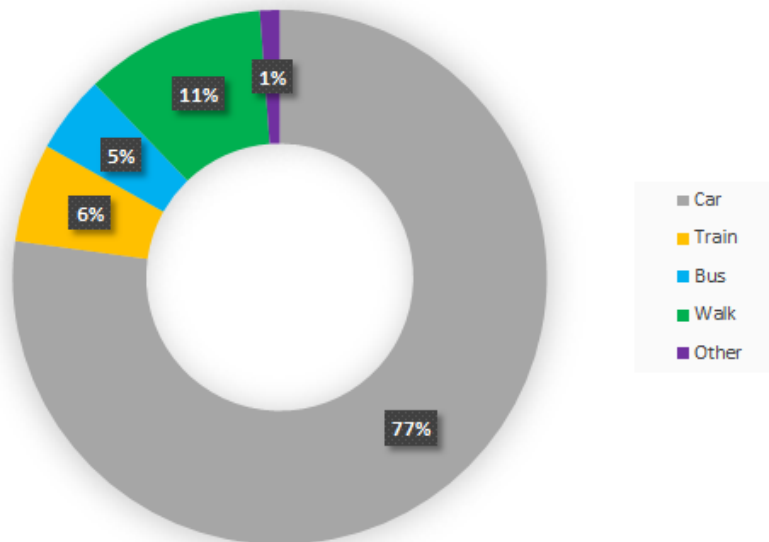
3.4. Travel Patterns and Demand

3.4.1. Mode Split

Figure 3.9 shows the all-day travel mode share for residents in the LGA based on the TfNSW Household Travel Survey Data from 2018-2019. It is shown that 77 per cent of all trips are undertaken by private vehicle (car driver, car passengers and taxi). Private vehicle trips are likely a reflection of the isolated location of the western suburbs from other parts of Greater Sydney as well as the absence of a high frequency and rapid transit network (trains, metro, light rail or frequent buses). This mode share is higher than the Greater Sydney average of 69 per cent of all trips taken with private vehicle. In spite of the LGA's existing Paramatta-Liverpool T-way bus and train services.

A further six per cent of trips are undertaken on train and five per cent of trips by bus. About 11 per cent of trips are undertaken by walking and the average distance of these trips is 800 metres. The percentage of people walking is lower than the Greater Sydney walking mode share of 17.5 per cent. The low percentage of walking mode share can have different reasons and is not only due to constraints in the pedestrian infrastructure but also due to safety and environmental factors. For instance, the temperature in the LGA is on average 5 degree lower than in the Sydney CBD in winter and 5 degrees higher in summer.

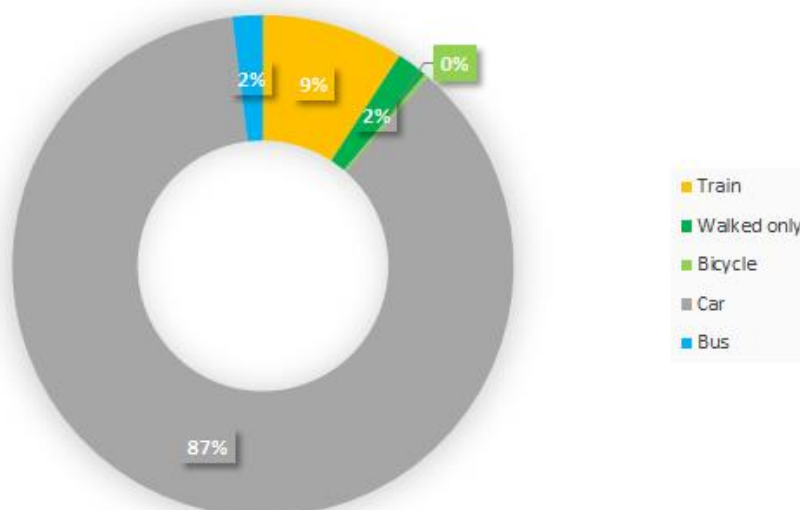
Figure 3.9: Mode Share for All Trips by Residents in Fairfield LGA



Source: Household Travel Survey (HTS), TfNSW

Figure 3.10 shows the mode share for commuting trips from Fairfield LGA based on the Census data collected in 2016⁸. Approximately 87 per cent of commute trips were made by private vehicle versus 11 per cent on public transport and two per cent by walking. Biking to work mode share is less than one per cent. Car reliance for commuters is substantially higher than the Greater Sydney average of 53 per cent.

Figure 3.10: Mode Share Journey to Work



Source: ABS - 2016 Census of Population and Housing

⁸ Working from home data are excluded.

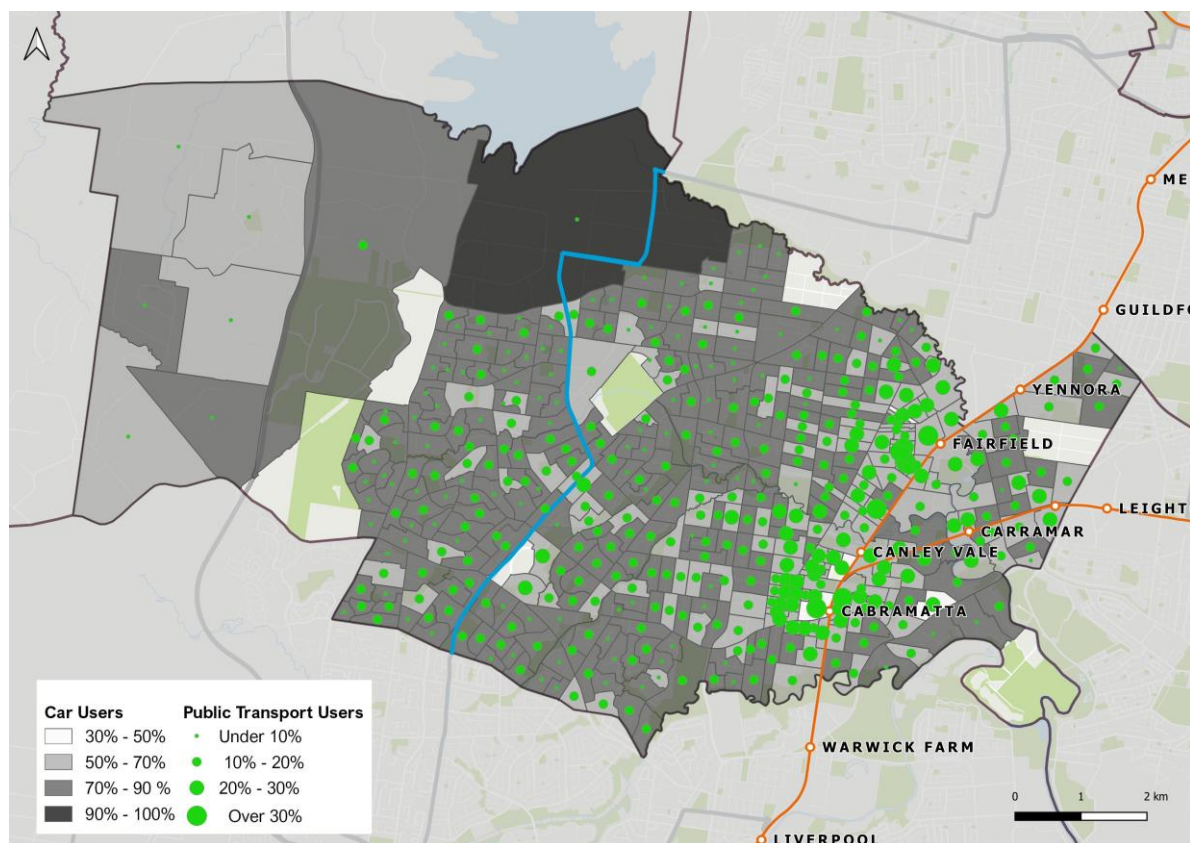
LAND USE AND TRANSPORT OPPORTUNITIES AND CONSTRAINTS

Figure 3.11 illustrates the per centage of Fairfield LGA's residents who use public transport to travel to work in comparison with those who drive to work based on Statistical Area 1 polygons (SA1). Although, the map outlines that the key town centres around train stations have the highest public transport (or non-car) mode share, only around 30 per cent of residents are using public transport for their commute. This part of Fairfield is well serviced by train services toward destinations such as the Sydney city centre.

In areas in the west of the LGA and away from the train network between 70 and 90 per cent using car despite having access to frequent and rapid public transport (T-way). For example, in Wetherill Park, more than 90 per cent of residents use the car for their commute. This low public transport mode share around the T-way is potentially caused by the slow and indirect operations of the T-way services to satisfy customer expectations or not reaching key destinations.

The western part of the LGA (including Horsley Park and Cecil Park) are characterised by low density living, mostly single dwellings with plenty of on-street and off-street parking available. The area in general is served poorly or not at all by public transport. Therefore, between 50 to 90 per cent residents use a car for their commute versus under 20 per cent of residents using public transport for their travel to work.

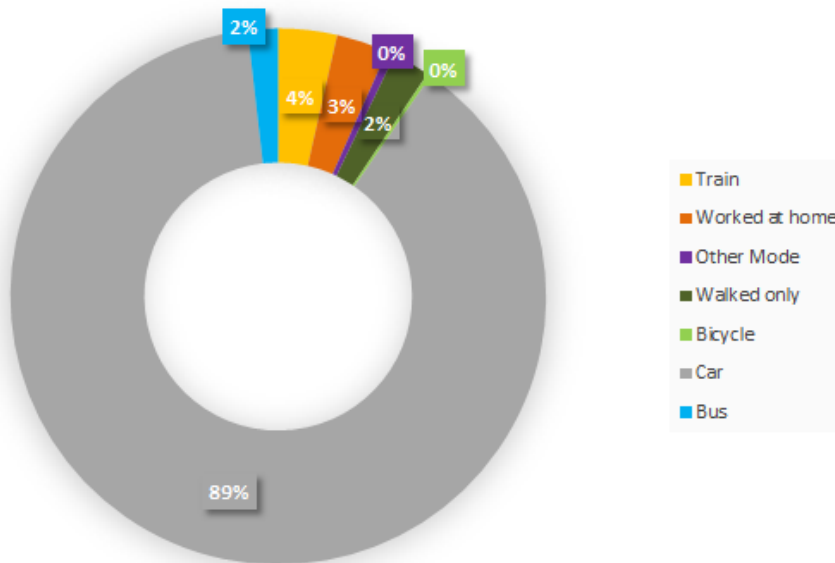
Figure 3.11: Car Use vs. Public Transport Use Map (JTW)



Source: GTA Consultants based on ABS 2016 Census data

Figure 3.12 illustrates the mode of travel for those who travel from outside into the Fairfield LGA for work based on data extracted from the 2016 Census. Of the approximate 52,000 people who work in the LGA, 89 per cent travel by private vehicle including car as a driver and car as a passenger, while 6 per cent of them used a bus or train to travel to work. The remaining two per cent walk to work and less than one per cent cycle to work.

Figure 3.12: Workers' Mode of Travel to Place of Work within Fairfield LGA

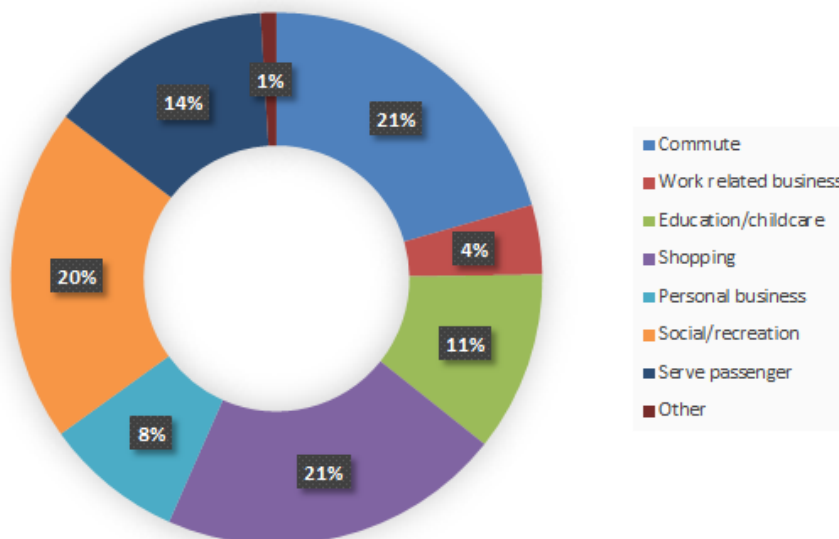


Source: ABS Census 2016

3.4.2. Trip Purpose

Trips of all purposes for residents in the Fairfield LGA based on Household Travel Survey data are shown in Figure 3.13 for 2018/2019. The most common trip purpose was commuting and shopping with 21 per cent, followed by social or recreational activities at 20 per cent, serving passengers (e.g. dropping someone off) at 14 per cent, followed by education/ childcare at 11 per cent. Trips for personal business are only 8 per cent of all trips throughout the LGA.

Figure 3.13: Trip Purpose for the Fairfield LGA



Source: Household Travel Survey (HTS), TfNSW

3.4.3. Work Origin and Destination

Approximately 30 per cent of residents of Fairfield work within the LGA. The most popular work destinations outside the LGA are Liverpool LGA (9.5 per cent) and City of Sydney (9.3 per cent), followed by Cumberland LGA, Paramatta LGA and Canterbury-Bankstown LGA.

3.4.4. Trip containment

The proportion of individuals living and working in the same labour market region is referred to as the level of self-containment and is seen as a positive as it reduces the length of trips and can also lead to greater flexibility at what time the trips are undertaken (e.g. outside peak times).

Trip containment has important environmental consequences in its capacity to increase the likelihood of transport to work via methods other than private cars, given distances between home and work are probably shorter. Despite the shorter distances, car use may be the only viable commuting option unless appropriate public transport and safe active transport facilities is available between nearby areas within the LGA, rather than a focus on transport infrastructure and services for trips toward employment destinations outside of the LGA.

Figure 3.14 indicates that that 38 per cent of workers live and work in Fairfield while approximately 62 per cent of workers in Fairfield live outside the area. As a comparison, Greater Sydney has a 43 per cent trip containment for workers at a Statistical Area Level 4 (SA4)⁹.

Figure 3.14: Percentage of Residential Location of Local Workers, 2016

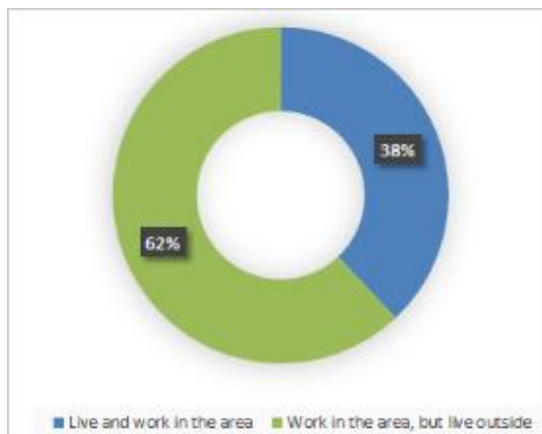
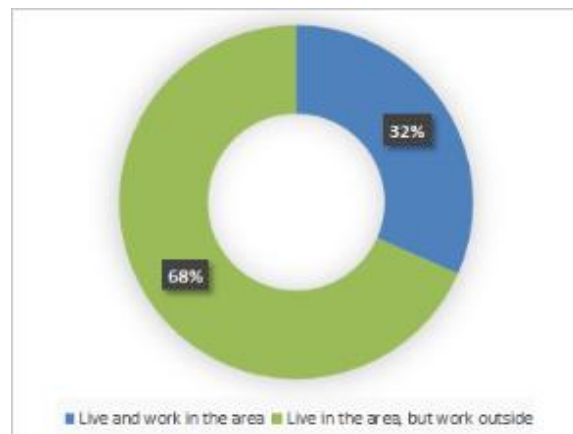


Figure 3.15: Percentage of Employment Location of Fairfield Residents, 2016



Source: ABS, Census of Population and Housing 2016

In comparison, Figure 3.15 indicates the employment location of local Fairfield residents. As shown, 32 per cent of residents also work in Fairfield, while 68 per cent of residents work outside the LGA, which makes having good transport connections to major employment centres an ongoing priority. To provide some comparative context, 68 per cent of residents within the Liverpool LGA travel outside of the LGA for work, while 69 per cent of Canterbury-Bankstown Council Residents commute outside of the LGA, indicating that comparable LGAs close to the LGA have similar trip containment rates as Fairfield LGA.

⁹ SA4s are geographical sub-regions and have been designed for the output of a variety of regional data

4. EXISTING TRAVEL NETWORKS

04

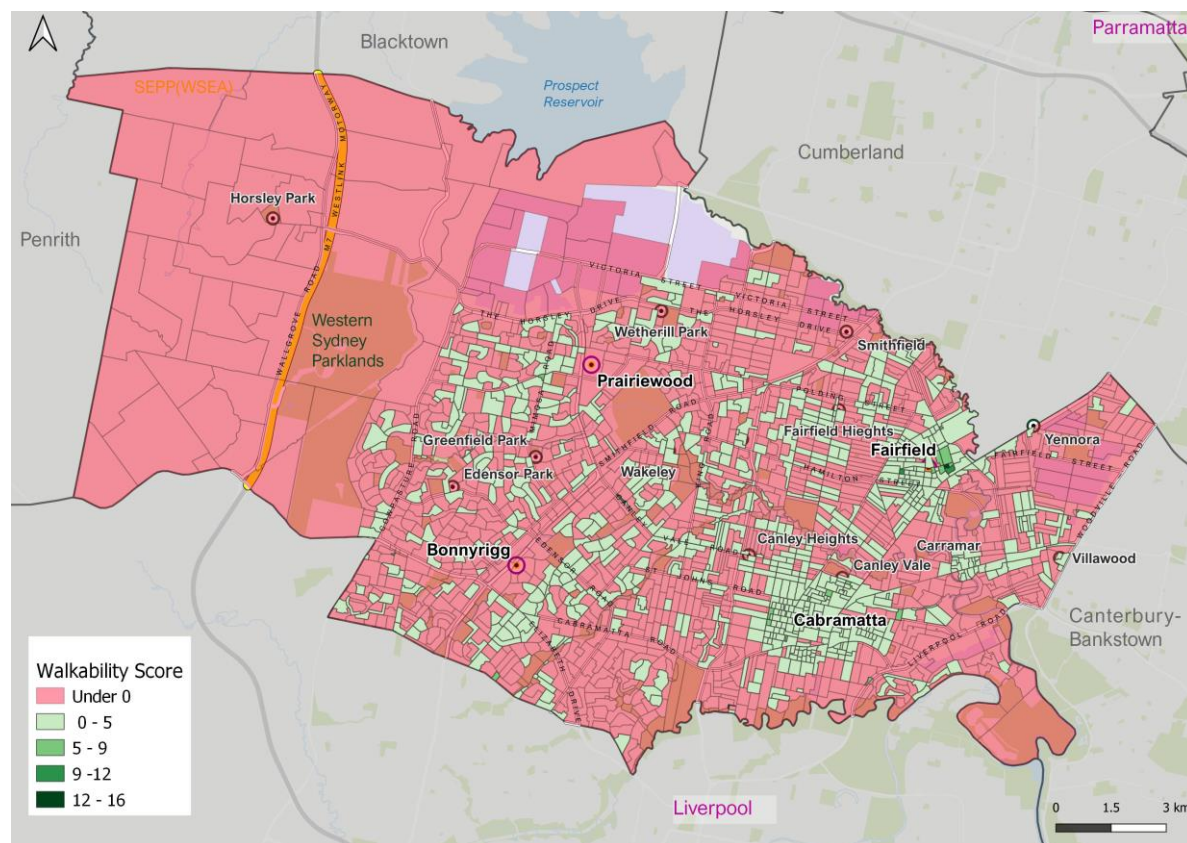
4.1. Active Transport Network

4.1.1. Walking

In general, the majority of streets within the established urban areas of the City of Fairfield have a sealed footpath on at least one side and in high pedestrian activity areas (schools and town centres), footpaths are provided on both sides of streets. Key intersections have signalised pedestrian crossings, while other intersections have zebra crossings or refuge islands and, in some cases, pedestrian footbridges. However, one observation is that there are many cul-de-sacs which do not have paths available at the ends connecting to their adjacent main roads.

Walkability is an indicative measurement of the convenience for walking in a general area or address. Conceptually, it can be used as a proxy measure for land use diversity. Studies consistently demonstrate a correlation between propensity to walk, health and land use diversity. By calculating an entropy score (measures of equal distributions of walkable land use categories), a high-level indicator of neighbourhood walkability can be produced for the entire Fairfield LGA. An area with a high score will be more suitable for walking as opposed to an area with a low score.

Figure 4.1: Fairfield Walkability Score



Source: GTA

The town centres of Cabramatta, Fairfield and Prairiewood all have relatively high walkability scores due to their proximity to transport and shops. In terms of infrastructure, these centres have pedestrian priority measures such as zebra crossings or traffic signals. Permeability is also high for Fairfield and Cabramatta with both town centres contain relatively small blocks to reduce midblock walking distance.

The low scoring areas are common within the LGA and tend to be of either two characteristics:

- Suburban areas where there is no public transport or town centres nearby, i.e. Abbotsbury.
- Industrial zones: limited amenity, low permeability due to large-scale building footprints, road network designed to support industrial uses and motor traffic, i.e. Wetherill Park.

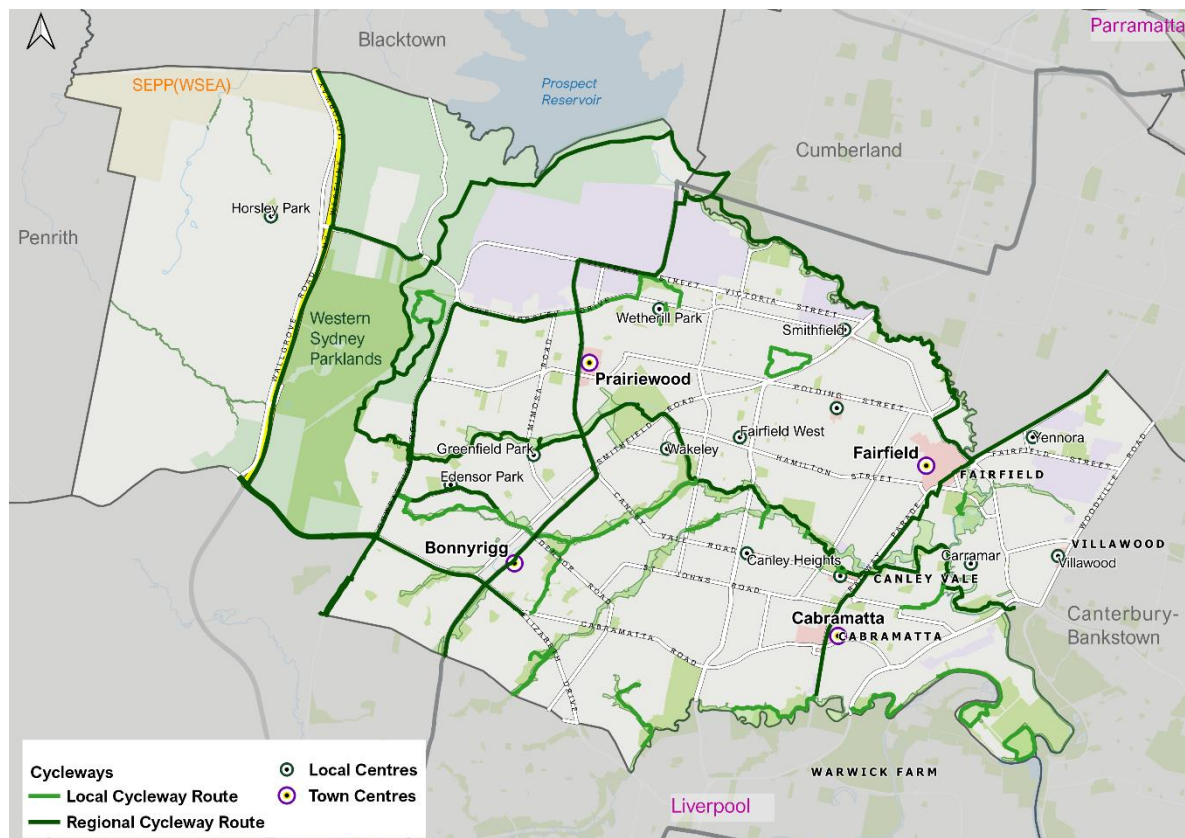
4.1.2. Cycling

Figure 4.2 shows local and regional cycling routes across Fairfield. The LGA features major regional cycle routes on east-west and north-south axes such as the Liverpool-Parramatta rail trail and the M7 shared path. This major cycling infrastructure has the capacity to convey large volumes of cyclists to and from major destinations within and outside of the LGA.

Given most of the regional level routes are along the outskirts of Fairfield LGA, cycling on a local level is limited to only Elizabeth Drive and local creeks that are offering some form of continuous separated facility. While the existing facilities can be effectively utilised as spines for the wider network, it requires additional links and connections into residential areas and town centres. Without additional infrastructure, it will be hard for cyclists to find a continuous route that permeates throughout the LGA. Additionally, there are limited or no cycling/ shared infrastructure within the major centres in Fairfield LGA.

A review of five year crash data from July 2015 to June 2020 has revealed there were two pedestrian injury crashes on Elizabeth Drive, eight pedestrian injury crashes on Cabramatta Road, one pedestrian was killed and a pedal cyclist injured on Smithfield Road, and four pedestrian crashes and three cyclist crashes on Canley Vale Road.

Figure 4.2: Existing Bicycle Routes within Fairfield LGA



Source: Fairfield City Council

4.2. Public Transport Network

4.2.1. Train

The City of Fairfield is served by the T2 Inner West & Leppington line with stations within the LGA located at Yennora, Fairfield, Canley Vale and Cabramatta. The T2 service provides connections from the LGA Central and City Circle toward inbound and to Leppington outbound. Services at all train stations generally run at 15-minute intervals, with express services from some stations in the AM and PM peak.

The second train line servicing Fairfield LGA is the T5 Cumberland line with stations located Yennora, Fairfield, Canley Vale and Cabramatta. The T5 line provides connections from the LGA to Blacktown and the Leppington. Services at all train stations generally run at 30-minute intervals, with express services from some stations in the AM and PM peak.

The third train line is T3 Bankstown which provide services to the City Circle via Bankstown and services to Liverpool or Lidcombe, with stations located within the Fairfield City including Cabramatta, Carramar, Villawood. Generally, this line provides services every 10 minutes during peak hours and every 20 minutes during interpeak.

The T3 Bankstown Line is being upgraded and converted to a Metro line between Sydenham and Bankstown. This standalone line will free up capacity into Central Station for a range of other lines, such as the T2 and T8 lines. Fairfield commuters will have access Sydney CBD via Lidcombe.

The impacts on Fairfield City include no direct train to Bankstown and at this stage there will be no access for Fairfield residents to the broader Metro line network. Rather Fairfield commuters will need to change at Regents Park to travel to Bankstown and beyond via the Metro network.

4.2.2. Bus

Bus services within the Fairfield LGA are provided by Transit Systems Australia, which operates 30 bus routes and Transdev NSW, with 26 bus routes. Figure 4.3 shows all bus routes within the LGA and identifies frequent services. The data extracted from GTFS¹⁰ timetables in February 2020 and analysed to highlight frequent bus routes and bus stops. Liverpool to Parramatta via T-way (T80) provide frequent services with intervals every 5 minutes during weekdays and 8 to 15 minutes during weekends which is operated from approximately 4:20am to 1:10am during weekdays and weekends. Liverpool to Parramatta via Hinchinbrook (804) and Liverpool to Burwood (M90) are other frequent bus routes within the LGA. 804 provides services with 15-minute intervals during the day (weekday and Saturdays), 30-minute frequency on Sundays and 60-minute frequency at nights (10:00pm-11:00pm).

The Liverpool to Burwood route (M90) serves the area with services every 4 to 8 minutes during the week and every 10 to 15 minutes on Saturdays and every 20 minutes on Sundays.

As the map illustrates most of the bus routes within the LGA are not frequent and have intervals between 30 and 60 minutes.

¹⁰ The General Transit Feed Specification defines a common format for public transportation schedules and associated geographic information

Figure 4.3: Public Transport Network with the LGA



Source Data: GTFS Timetables in February 2020

4.2.3. Public Transport Patronage

Bus and rail boarding and alighting statistics in the LGA are shown in Figure 4.4 to Figure 4.7, based on Opal data obtained from TfNSW for a selected Thursday and Saturday in September 2019. It is worth noting that the Opal data received anonymises trips from stops with fewer than 18 boarding or alighting on unique trip pairs, which explains the numerous white dots indicating 'fewer than 18 or no data' boardings in Figure 4.4 to Figure 4.7.

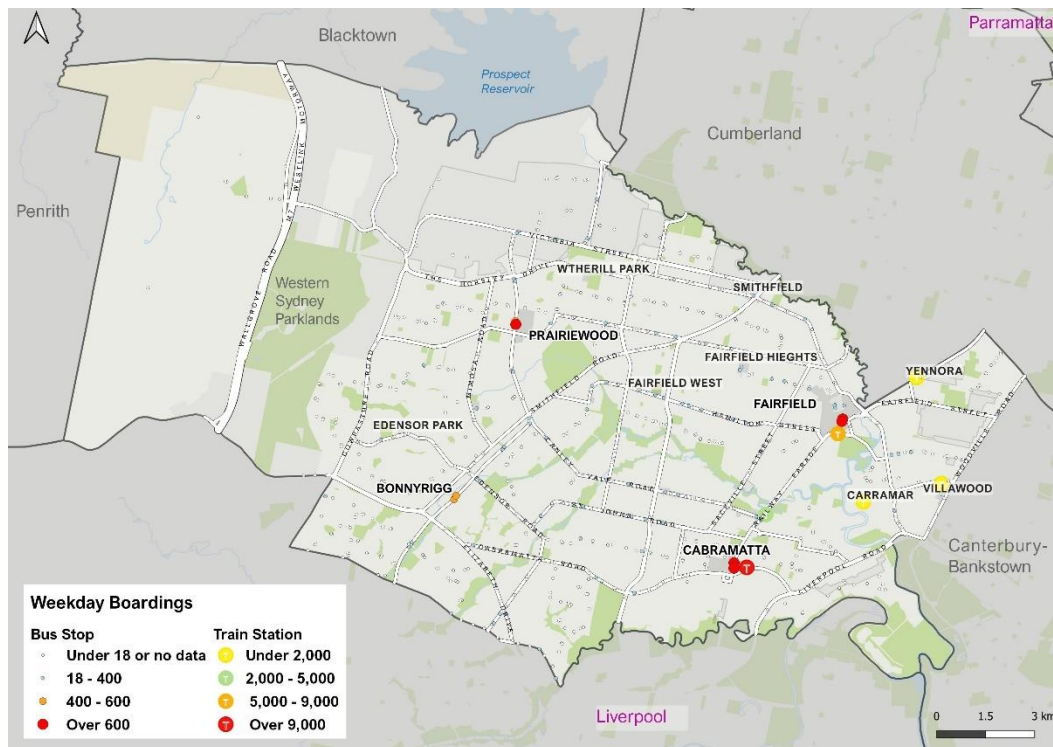
Key findings from this patronage analysis are:

- Cabramatta Train Station has both the highest number of boarding rail passengers and the highest number of alighting rail passengers on weekdays and weekends.
- Prairiewood has a high number of bus stop boarding and alighting as does the bus stop at Cabramatta.

Patronage data analysis outlines that main outside destinations for patronages include Sydney Inner City, Merrylands – Guildford, Parramatta and Liverpool. In addition, those LGAs are exactly the main origins for patronages.

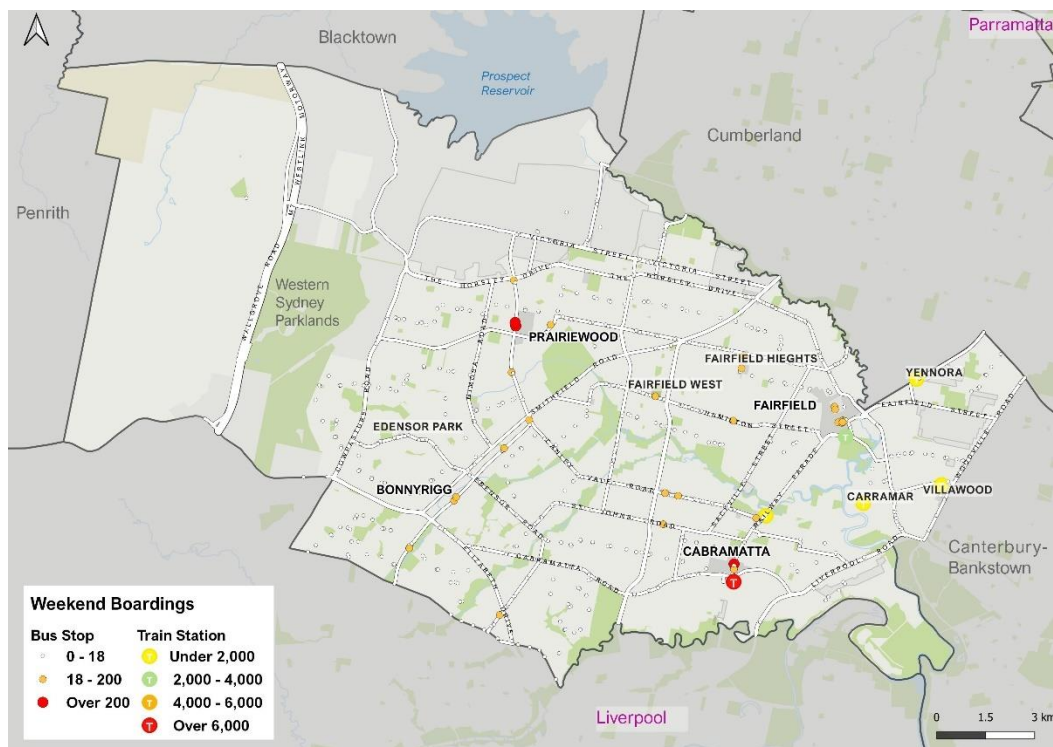
EXISTING TRAVEL NETWORKS

Figure 4.4: Public Transport Boardings, Selected Thursday in September 2019



Source Data: Transport for NSW

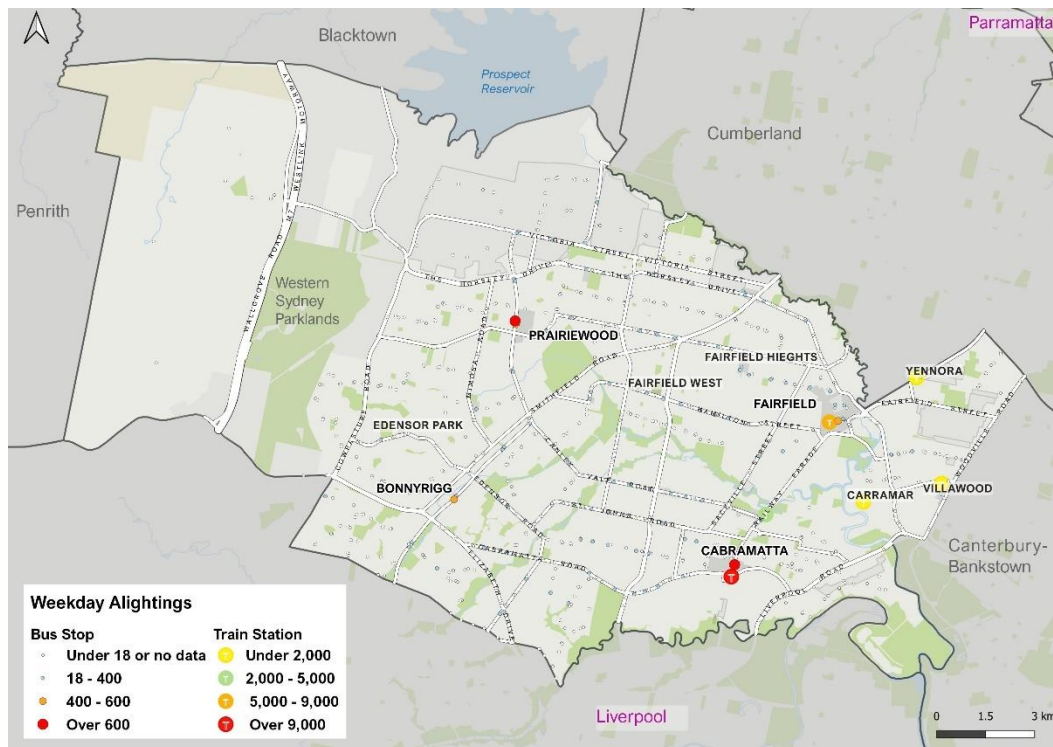
Figure 4.5: Public Transport Boardings, Selected Saturday in September 2019



Source Data: Transport for NSW

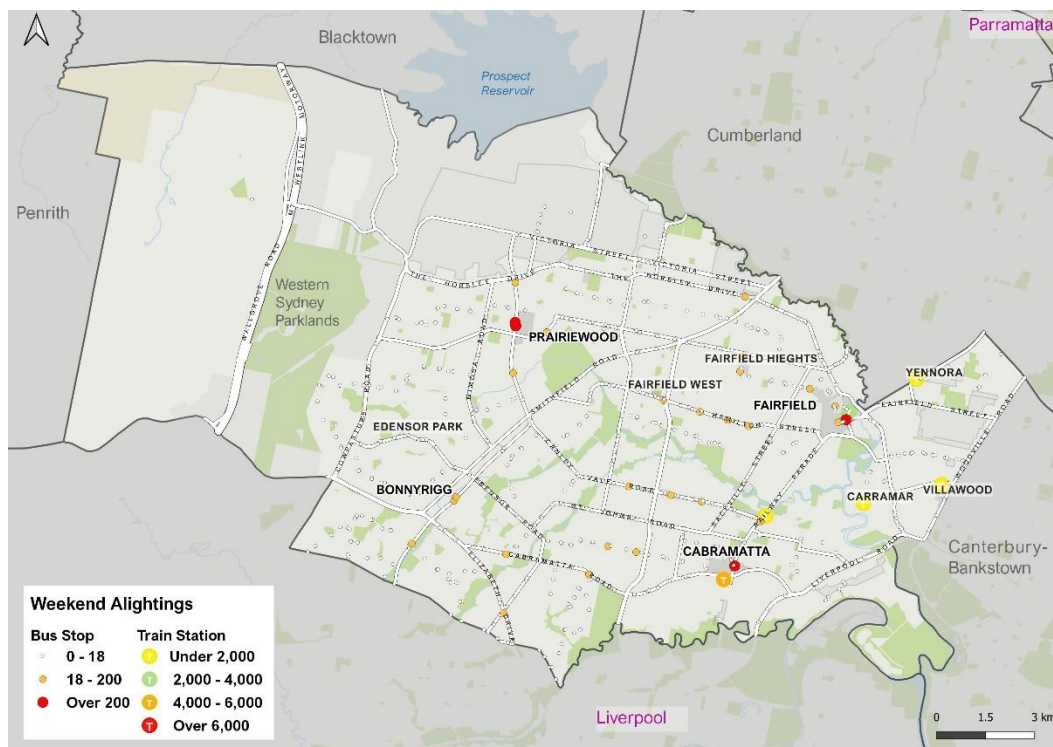
EXISTING TRAVEL NETWORKS

Figure 4.6: Public Transport Alightings, Selected Thursday in September 2019



Source Data: Transport for NSW

Figure 4.7: Public Transport Alightings, Selected Saturday in September 2019



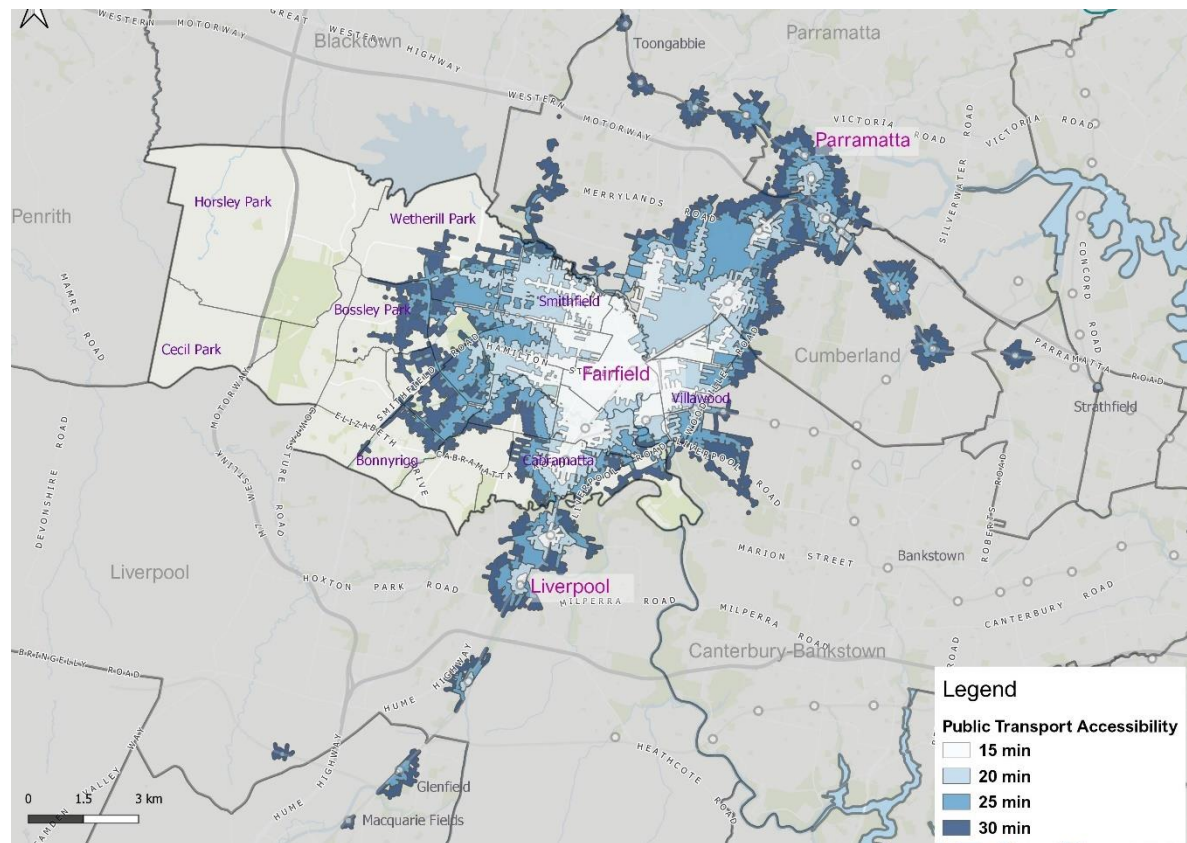
Source Data: Transport for NSW

4.2.4. Accessibility

30-minute public transport accessibility from selected centres, including Fairfield, Cabramatta, Prairiewood and Bonnyrigg as local centres and Cecil Park is shown in Figure 4.8 to Figure 4.12. This analysis is based on timetable data from March 2019 which is the most recent publicly available General Transit Feed Specification (GTFS) dataset available. The data is related to a normal weekday (Wednesday) at 8:00am.

Figure 4.8 illustrates the 30-minute public transport catchment from Fairfield Town Centre. It shows the easy access to both Parramatta and Liverpool within 15 to 20 minutes. It also shows that Fairfield Station towards the east, Toongabbie towards the north and Macquarie Field towards the south are accessible using public transport from the Fairfield Town Centre within 30 minutes in the morning peak. At the same time, the catchment shows that large areas within the LGA are not accessible from Fairfield Town Centre by public transport within 30 minutes, including Cabramatta West and Mount Pritchard in the south and suburbs west of Bonnyrigg. The Fairfield City Plan 2016-2026 highlights the community need for improvements to public transport to help enhance accessibility levels across the City.

Figure 4.8: Public Transport Accessibility from Fairfield

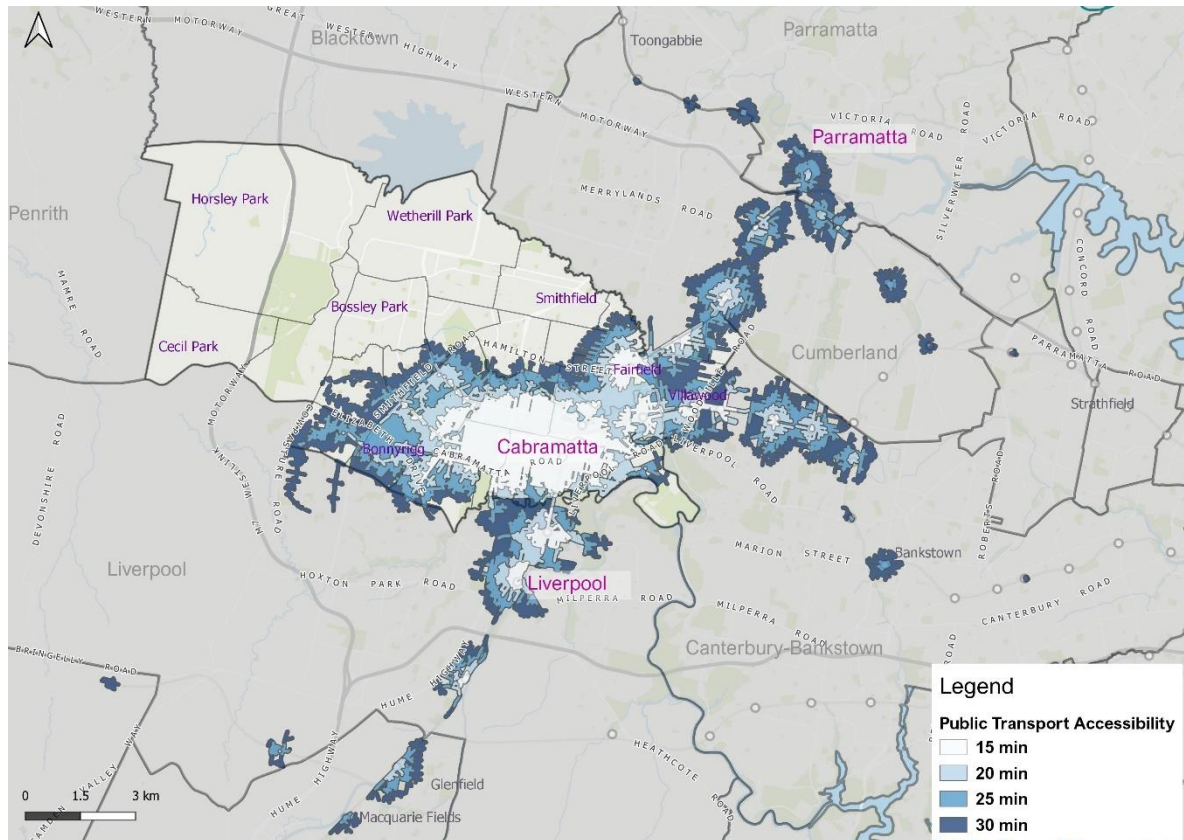


Source: GTA

EXISTING TRAVEL NETWORKS

Figure 4.9 shows residents from Cabramatta Town Centre have the option to access Liverpool, Parramatta and Bankstown with 30 minutes by public transport. However, one third of the LGA, primarily the northwest and west of the LGA, is not within the catchment.

Figure 4.9: Public Transport Accessibility from Cabramatta

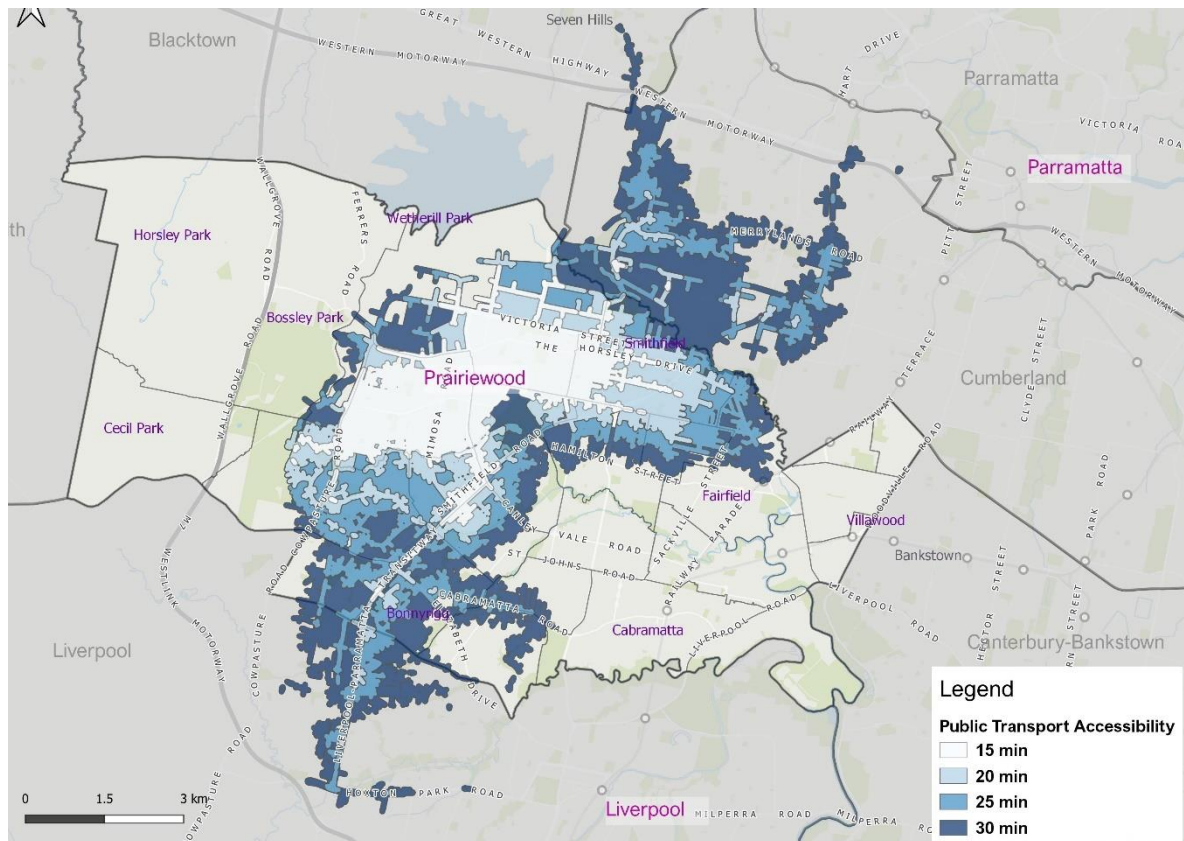


Source: GTA

EXISTING TRAVEL NETWORKS

As Figure 4.3 shows, the T-way passes the Prairiewood Town centre and provides rapid services to Liverpool and Paramatta, however, the 30-minute catchment does not cover Liverpool and Paramatta due to the indirect nature of the T-Way line. In addition, this catchment only covers suburbs in central part of the LGA and residents are not able to access to western part and eastern parts such as Cabramatta, Villawood and most of the Fairfield suburb within 30 minutes.

Figure 4.10: Public Transport Accessibility from Prairiewood

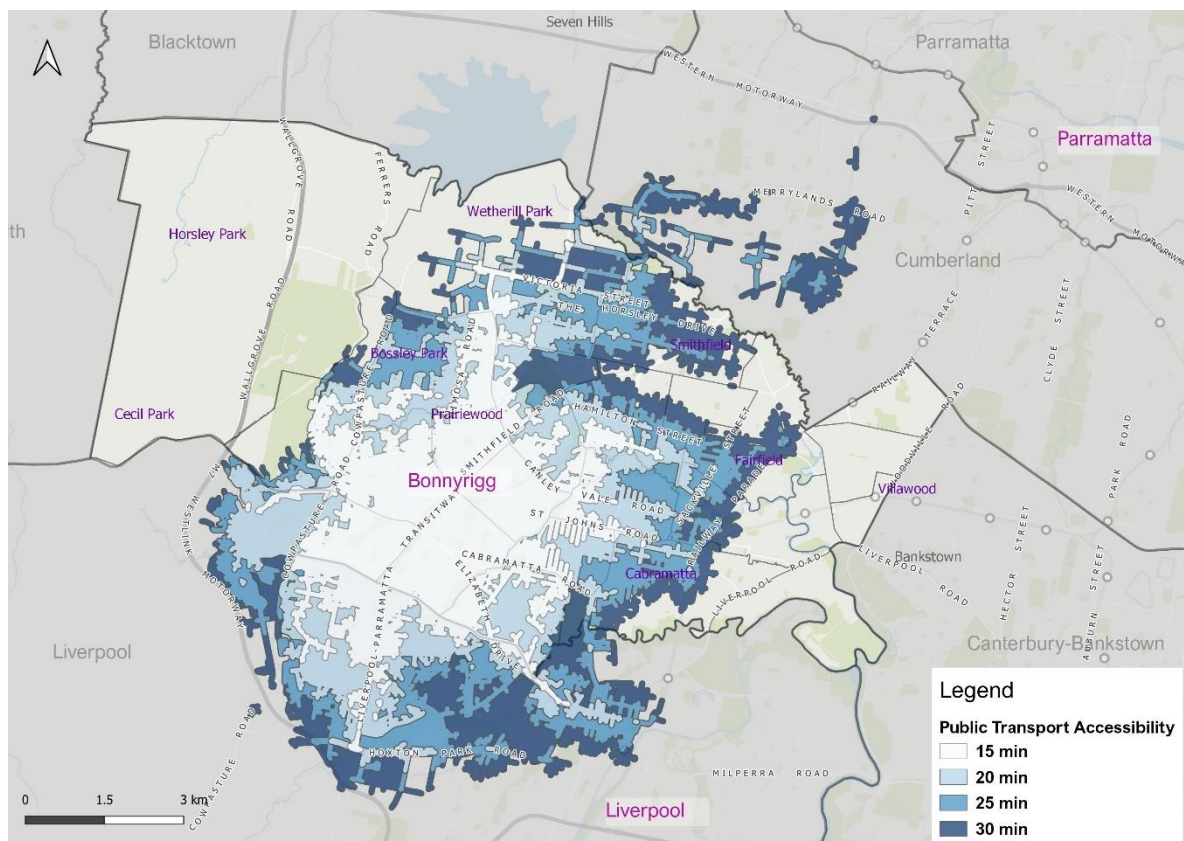


Source: GTA

EXISTING TRAVEL NETWORKS

A big portion of populated areas in the LGA are accessible from the Bonnyrigg Town Centre, as shown in Figure 4.11. However, Horsley Park and Cecile Park as well as eastern suburbs including Villawood, Fairfield Heights, Fairfield East, Yennora are not within the 30-minute public transport catchment from the town centre.

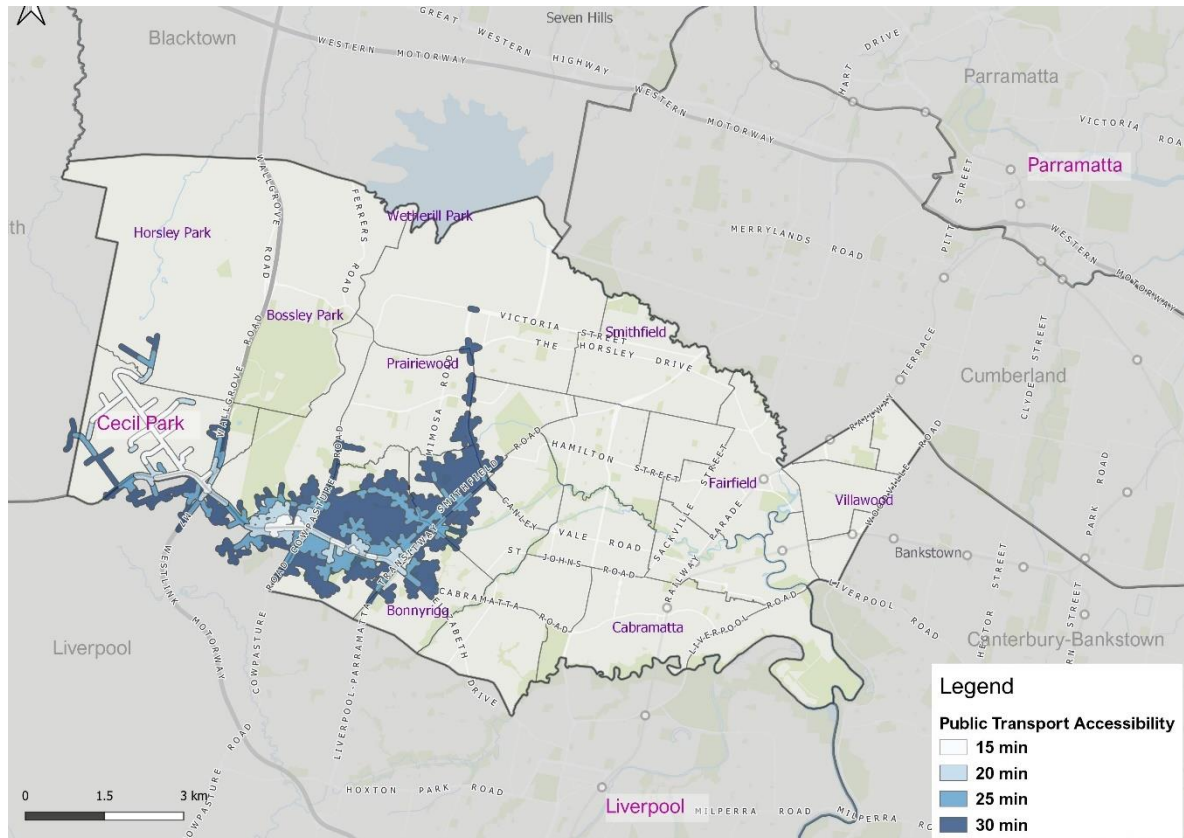
Figure 4.11: Public Transport Accessibility from Bonnyrigg



Source: GTA

Figure 4.12 shows the overall level of public transport accessibility from Cecil Park to other suburbs of the LGA, highlighting a dearth of frequent bus routes from the southern parts of the LGA; conversely indicating long journey times on public transport.

Figure 4.12: Public Transport Accessibility from Cecil Park



Source: GTA

4.3. Road Network

4.3.1. Road network characteristics

The road network within the Fairfield LGA consists of State Roads, Regional Roads and Local Roads. State Roads are managed and funded by TfNSW while Regional and Local Roads are generally managed and funded by local councils. However, due to their network significance TfNSW provides financial assistance to councils for the management of their Regional Roads.

The State Network is the main arterial network which connects strategic centres and supports high volumes of traffic. Regional Roads are sub-arterial roads that perform an intermediate function between the main arterial network of State Roads and council controlled Local Roads. The existing state and regional road network surrounding and within the LGA is shown in Figure 4.13.

Figure 4.13: Road Hierarchy Map

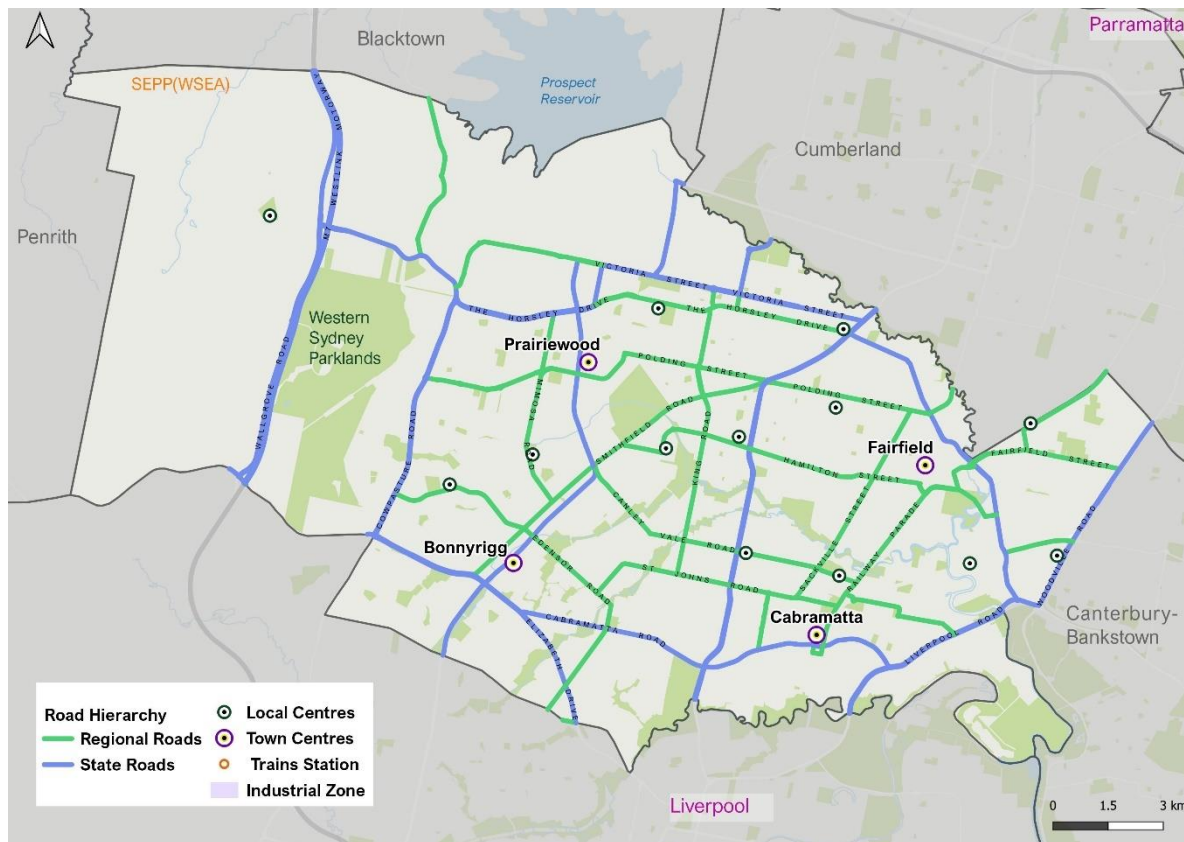


Table 4.1: Key State and Regional Roads

Road Name	Road Classification	Key Function
Westlink M7	State	A major component of Sydney's orbital motorway network, connecting Fairfield to Blacktown in the north and Campbelltown in the south. Future connection to M12 which will be used as access to Aerotropolis.
Hume Highway (A22)	State	Major state road that runs through southeast Fairfield, connecting Summerhill in the Inner West to Liverpool.
Cumberland Highway (A28)	State	Major state road that runs through the centre of the Fairfield LGA, connecting Liverpool and Parramatta. Freight Route and B-double truck route Main north/south connection on the eastern side of Fairfield
Woodville Road	State	Major state road connection Parramatta and Hume Highway. Freight Route and B-double truck route.
Victoria Street	State/local	Partially state and local road connecting Cumberland Highway and Hume Highway, runs along the industrial zones. Freight Route and B-double truck route.
The Horsley Drive	State/Local	Partially state and local road connecting Cumberland Highway and Hume Highway, runs along the industrial zones. Running parallel to Victoria Street. Freight Route and B-double truck route (partially).

Road Name	Road Classification	Key Function
Canley Vale Road (north)	State	Short state road connecting Horsley Drive and Victoria Street (T-way only)
Cabramatta Road	State	Main state road for Cabramatta and south-east Fairfield. Connecting to Hume Highway (A22), Cumberland Highway (A28) and Elizabeth Drive. Freight Route and B-double truck route.
Cowpasture Road	State	State road which serves as a north/south connection on the western side of Fairfield. Connects to the Westlink M7 Motorway. Freight Route and B-double truck route
Elizabeth Drive	State	State road running through Bonnyrigg that runs between Liverpool and the Westlink M7 Motorway. Direct connection to Aerotropolis. Freight Route and B-double truck route.
Smithfield Road	State/Regional	A regional road (between Elizabeth Drive and Polding Street) and a state road (Polding Street to Prospect Creek). Main north/south connection in central Fairfield LGA.
Ferrers Drive	Regional	Regional road connecting to Doonside via Western Sydney Parklands
Canley Vale Road	Regional	Regional road connecting Canley Vale to the centre of Fairfield LGA.
Meadows Road	Regional	Regional road connection between Cabramatta Road and Elizabeth Drive.
Mimosa Road	Regional	Regional road connection between The Horsley Drive and Smithfield Road.
Polding Street/Prairie Vale Road/ Restwell Road	Regional	Main east/west connections on the northern part of Fairfield LGA.

4.3.2. Road Network Performance

The road network within the Fairfield LGA is characterised by State and Regional roads. These roads generally carry volumes under 5,000 vehicles in the AM and PM peak (2-hour) periods, with the exception of the M7 Westlink. As access to outside of LGA is heavily reliant on the State/regional road network, the traffic converges onto them to access other parts of Sydney, having to also compete with through traffic. This may cause congestion as demand increases during commute hours.

The volume of traffic along roads within the LGA are shown in Figure 4.14 for the AM two-hour peak period and Figure 4.15 for the PM two-hour peak period (2017).

Figure 4.14: Traffic Volume AM peak (2017)

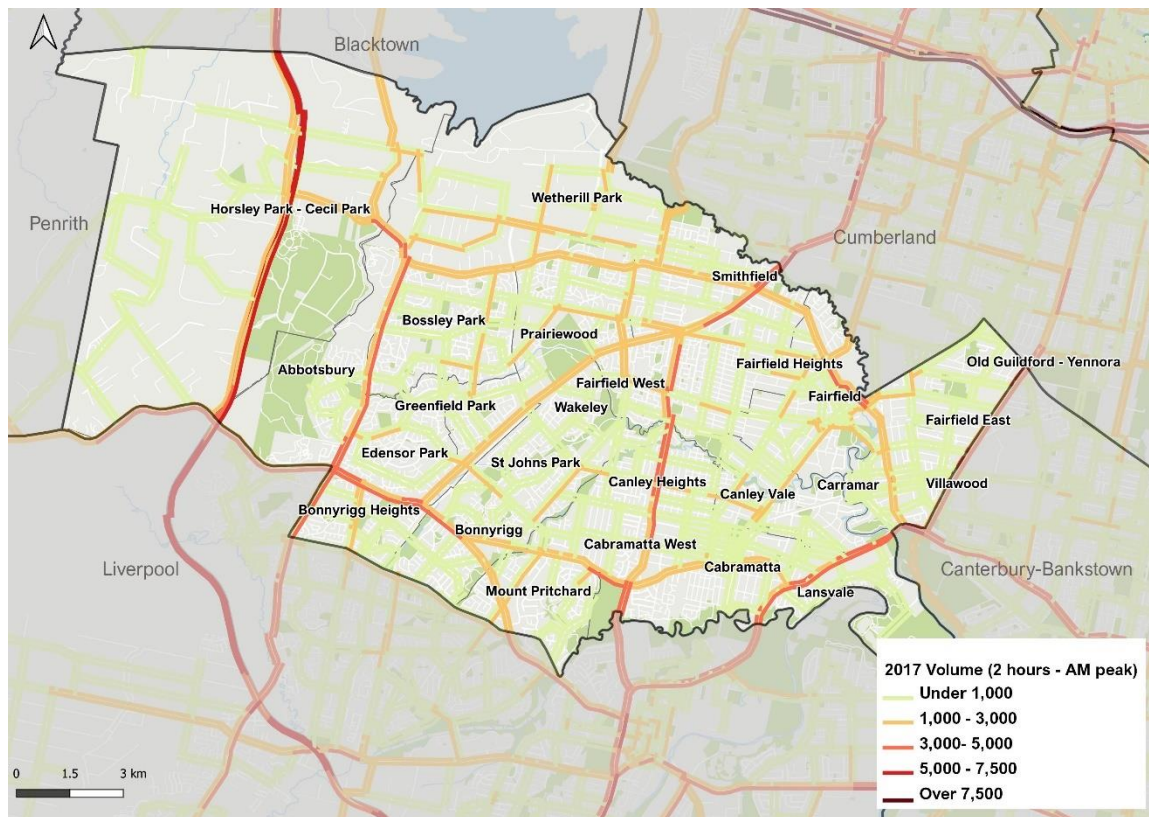
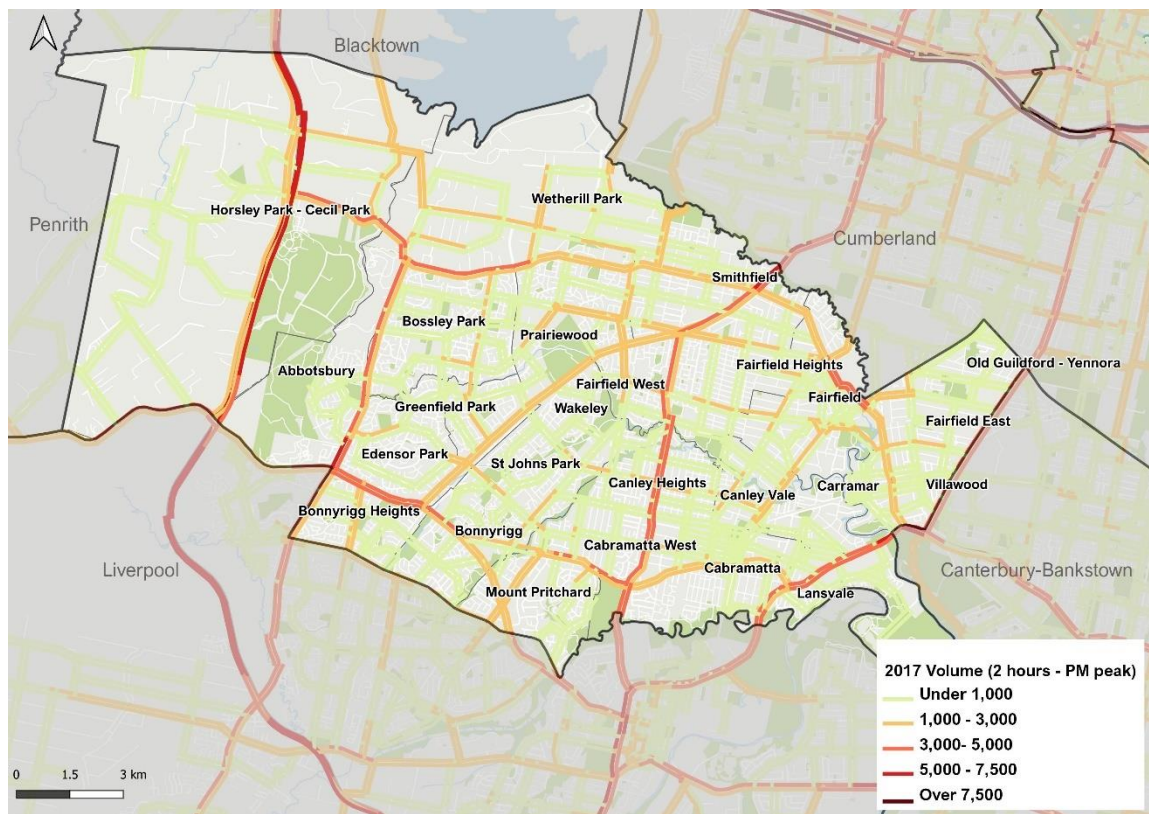


Figure 4.15: Traffic Volume PM peak (2017)



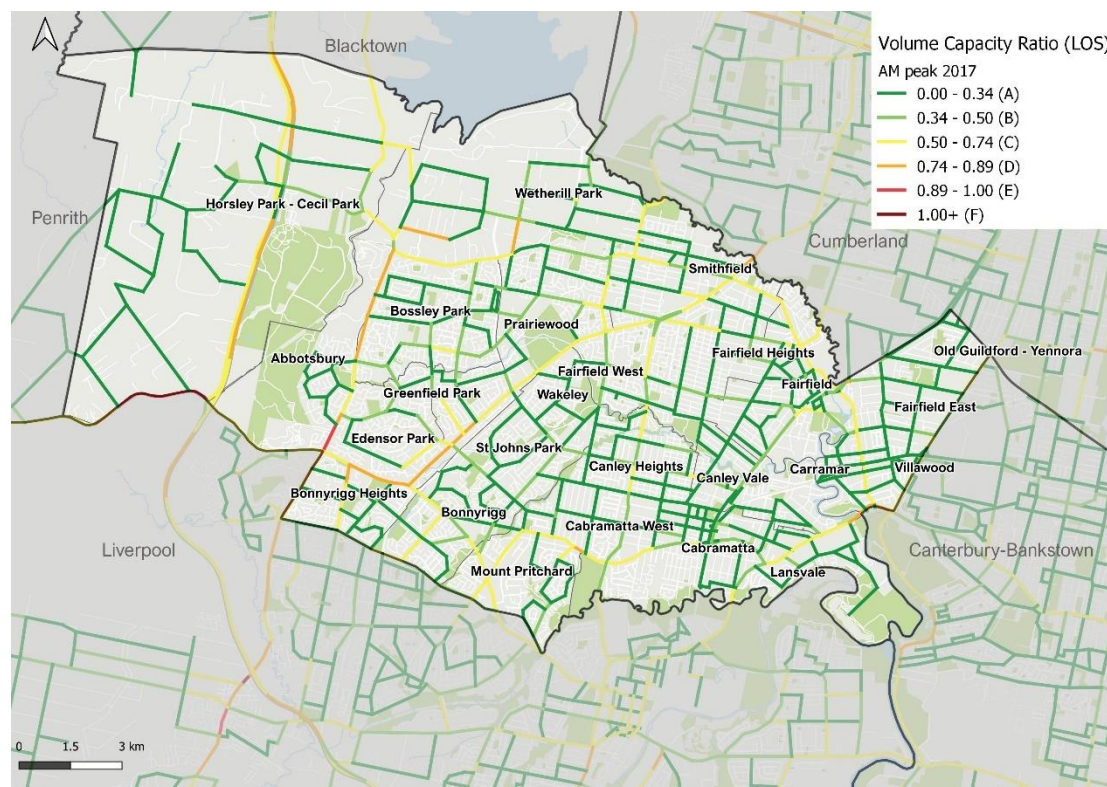
EXISTING TRAVEL NETWORKS

Volumes compared to capacity along key roads within the LGA are presented in Figure 4.16 and Figure 4.17. The V/C ratio reflects the traffic throughput per lane of road. A V/C ratio of 1 indicates the road or lane is at capacity.

The level of service is based off NSW standards for midblock capacity, where E is at capacity and F is over capacity.¹¹

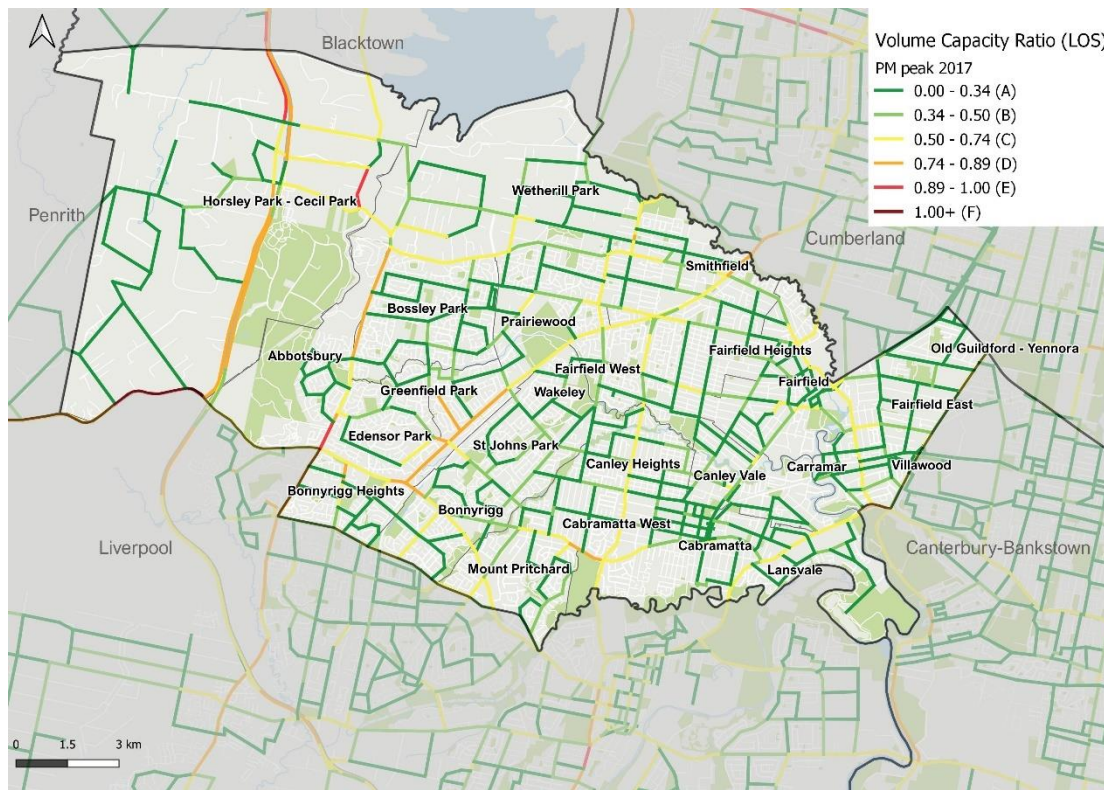
Overall, the modelling shows that the road network still has some capacity to accommodate more traffic, the only exception is Cowpasture Road between Edensor Road and Elizabeth Drive currently operating at or near maximum capacity.

Figure 4.16: Volume capacity ratio AM



¹¹ <https://www.rms.nsw.gov.au/business-industry/partners-suppliers/documents/guides-manuals/guide-to-generating-traffic-developments.pdf>

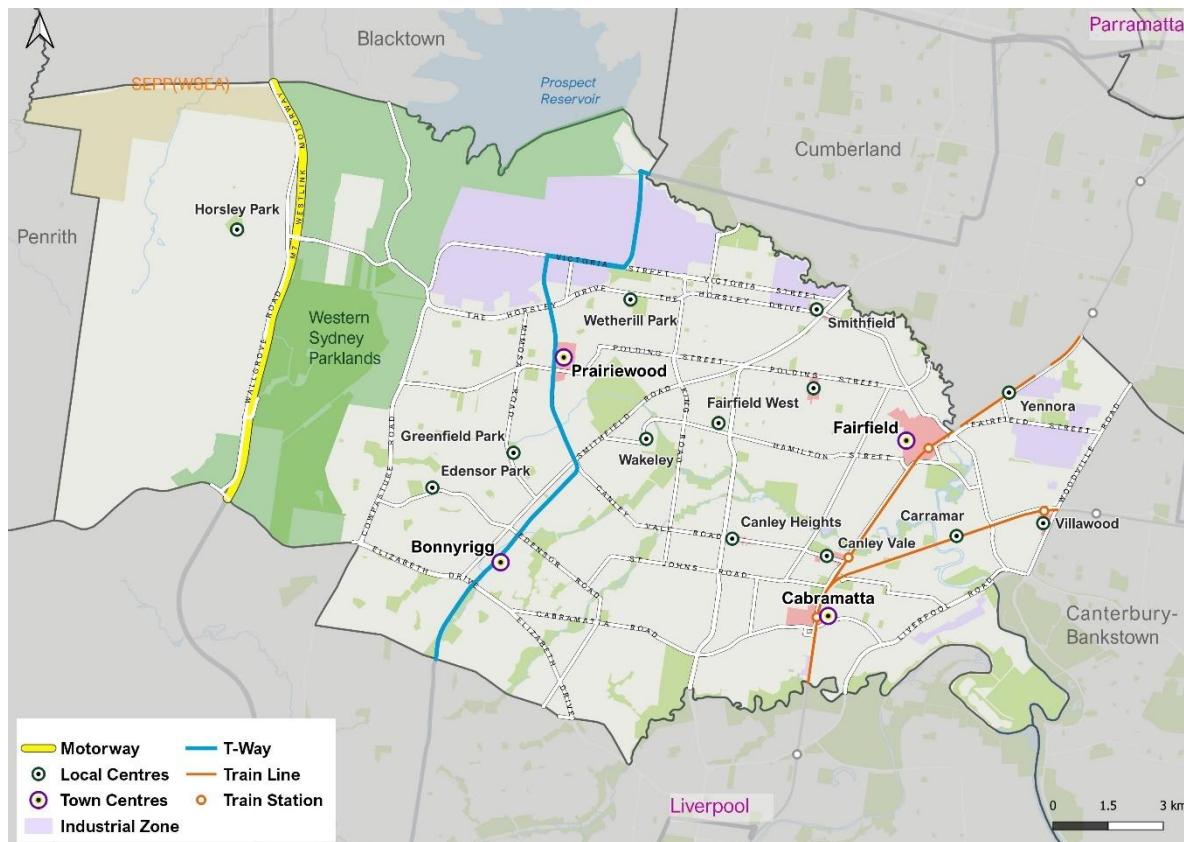
Figure 4.17: Volume capacity ratio PM



4.4. Freight

Fairfield contains major industrial areas within boundaries at Fairfield East, Smithfield and the largest of which, Wetherill Park, can be seen in Figure 4.18. This industrial area has the largest scale in the entire hemisphere. Generally, most industrial areas are situated adjacent or very close to Prospect Creek, where it acts as a natural border between Fairfield and Cumberland.

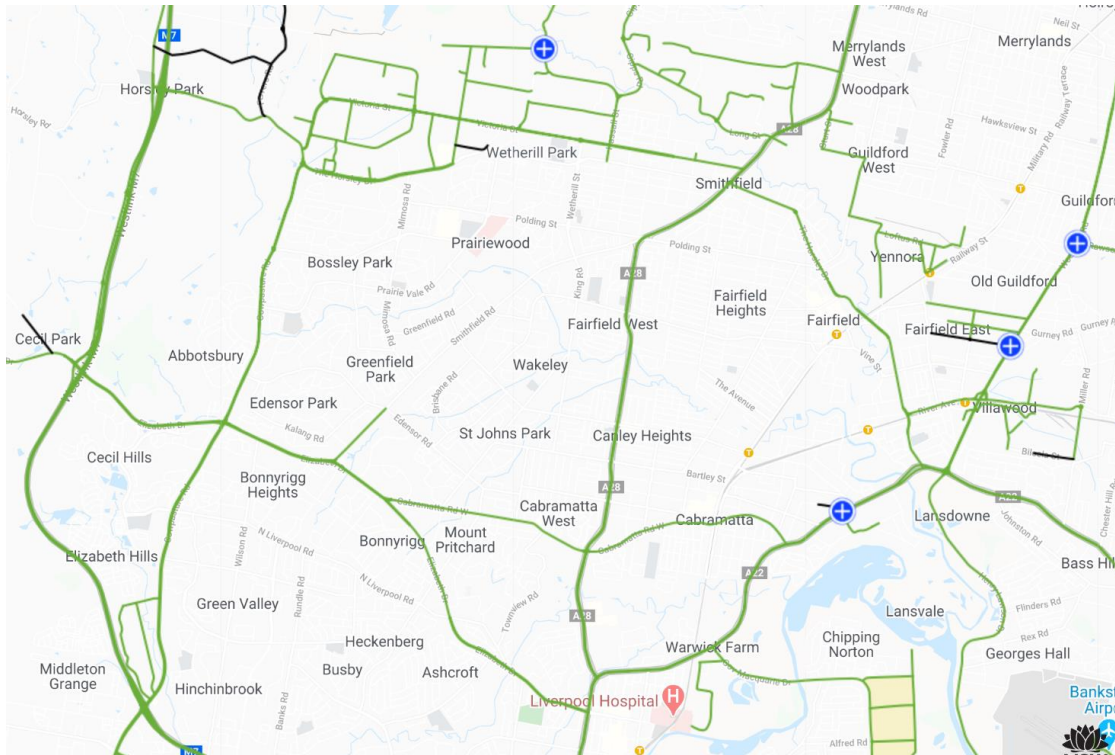
Figure 4.18: Fairfield Industrial Zoning (combine)



Source: GTA

Similar to Fairfield, the neighbouring Cumberland LGA also has a high concentration of industrial zones along Prospect Creek. The majority of the heavy vehicles are expected to be directly using higher order roads of Horsley Drive, Victoria Street and Cumberland Highway as access to their sites. These roads form part of the 25/ 26 metre-long B-double truck route within the restricted vehicle access networks, as shown in Figure 4.19.

Figure 4.19: B-Double Route

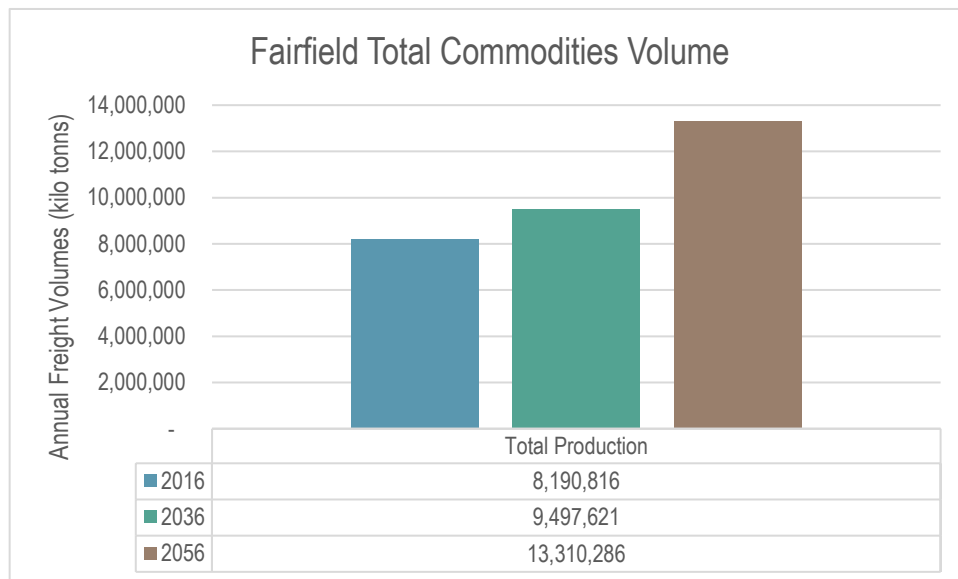


Source: TfNSW

TfNSW has released the aggregated, de-identified GPS data generated by vehicles monitored through the IAP that can be accessed publicly online. While this does not account for all heavy vehicles on the network, however, it is representative of a sizeable majority across a 12-month period.

Shown in Figure 4.20, as expected, high freight traffic is prevalent in north Fairfield and Yennora where the industrial zones are concentrated. The majority of the heavy traffic move in and out of the industrial areas by the way of M7 Motorway and Hume Highway/ Woodville Road intersection.

Figure 4.21: Fairfield Commodities Volume



Source: TfNSW

4.4.1. Smithfield-Wetherill Industrial Park

The Smithfield-Wetherill Park Industrial Estate is the largest industrial estate in the southern hemisphere and the hub of manufacturing and distribution in Greater Western Sydney. It has the highest concentration of economic and commercial activities along with the largest employment source in the Fairfield LGA. It is responsible for creating 20,000 jobs with potential to grow even larger.

Due to the high level of activity and an unconventional road layout in the area, traffic congestion is common. With the freight projected to grow significantly, the transport system at Smithfield-Wetherill Park including the road network will be required to accommodate even greater future demand. The Horsley Drive and Cowpasture Road dog-leg intersections are congestion hotspots, where the signalised intersection and roundabout are located next to each other, causing conflicting demands and right of way. The section of Victoria Street between Elizabeth Street and the T-way is also a point of congestion.

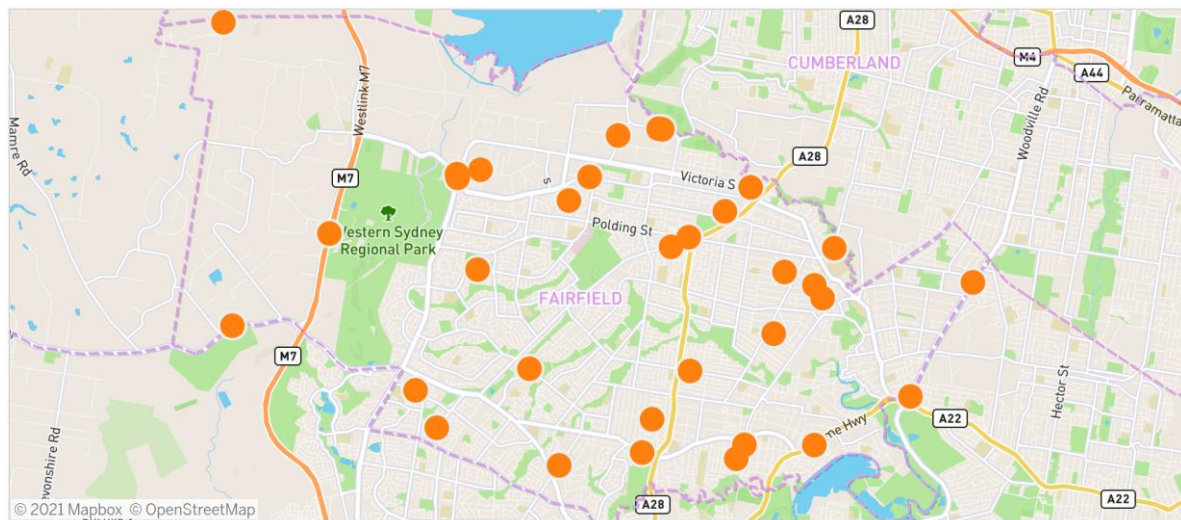
There is a noticeable lack of east-west corridors in the internal network. All traffic demands are heavily dependent on Victoria Street as the sole corridor for east-west movements. Finally, the road layout means that there are no direct connections northwards between the Industrial Estate and the M4 Motorway.

4.5. Road Safety

Road safety forms part of the Premier's Priorities relating to Safer Communities. The intent is to reduce road fatalities by at least 30 percent between the years of 2011 and 2021. Whilst most road fatalities occur in rural areas, the 2021 Road Safety Plan outlines a number of priority actions including creating liveable and safe urban communities; this includes the expansion of 40km/h high pedestrian activity areas, safety upgrades at intersections and safety integration in bicycle network programs.

Crash maps of the study area for a five-year history from 2013 to 2018 are shown in Figure 4.22 and Figure 4.23, separated into fatal and serious injury crashes. Further analysis of the crash history of the study area indicates that the most frequent location for crashes is along the major roads and town centres including Fairfield and Cabramatta.

Figure 4.22: Map of Crashes Resulting in a Fatality

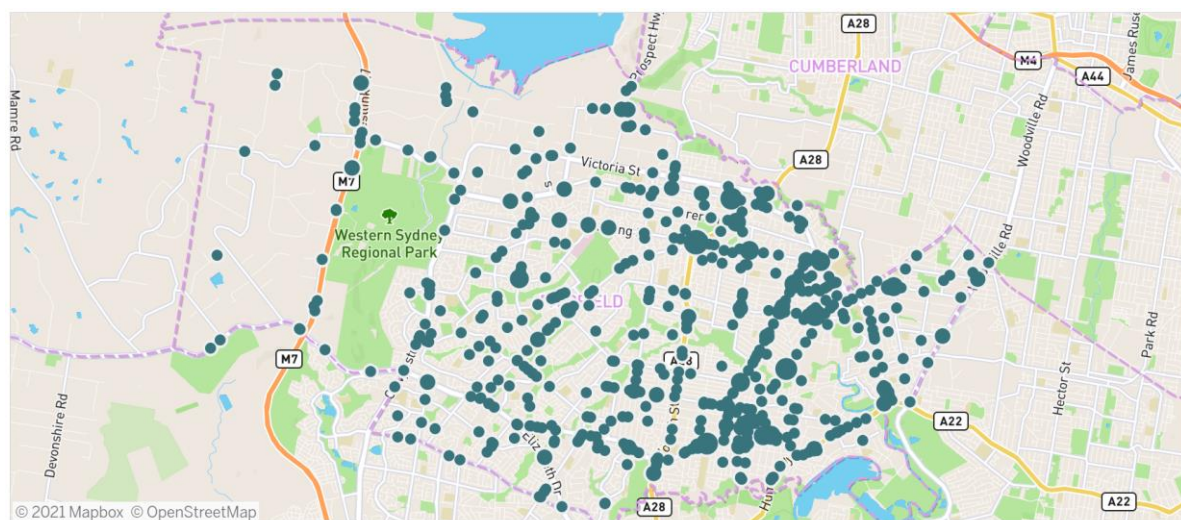


Degree of crash

Fatal

Source: TfNSW

Figure 4.23: Map of Crashes Resulting in a Serious Injury



Degree of crash

Serious Injury

Source: TfNSW

Overall, the trends of crashes and casualties suggests a progressive reduction in crashes. As observed, the number of crashes decreased from a total of 1,081 in 2013 to 581 in 2018. Similar reductions also occur for casualties.

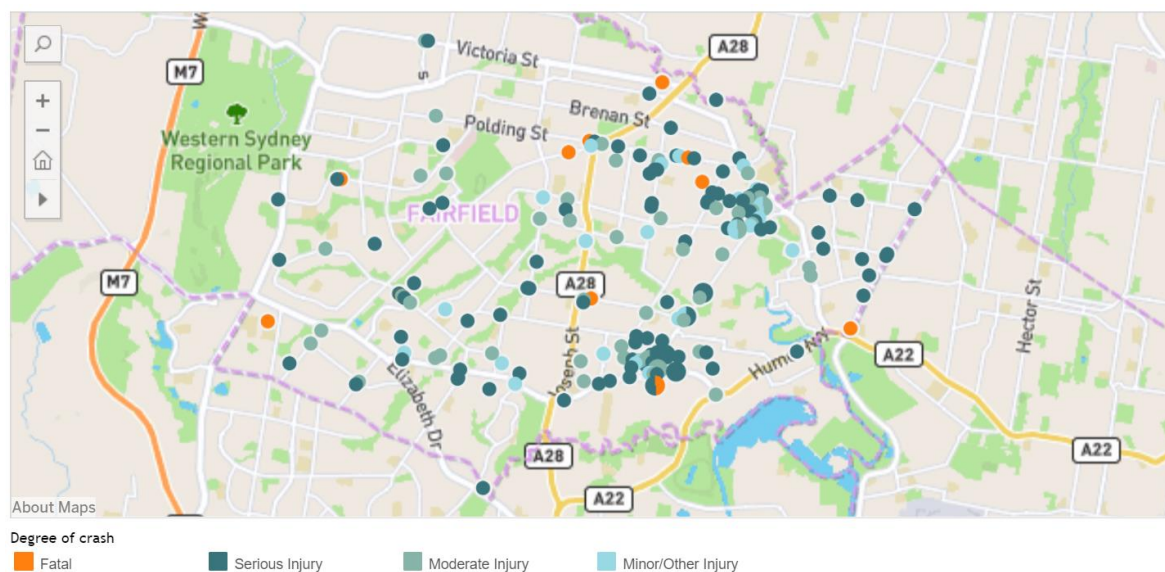
In total, 4,240 crashes were recorded in the study area during this period of 2013 to 2018. In terms of severity of crashes, 1,424 crashes resulted in no injuries while of the remaining 2,784 crashes, 663 resulted in serious injury and 32 incurred fatalities. Overall, the trends of crashes and casualties suggests a progressive reduction in crashes. As observed, the number of crashes decreased from a total of 1081 in 2013 to 581 in 2018. Similar reductions also occur for casualties.

4.5.1. Pedestrian Crashes

Figure 4.24 shows the distribution of pedestrian crashes within the Fairfield LGA. As expected, the pedestrian crash density close to town centres is high as the volume of traffic and number of pedestrians is higher than other types of areas. Some roads outside of the town centre frequently registered high number of crashes, including Cabramatta Road and Polding Street, and are areas of high risk for pedestrian crashes.

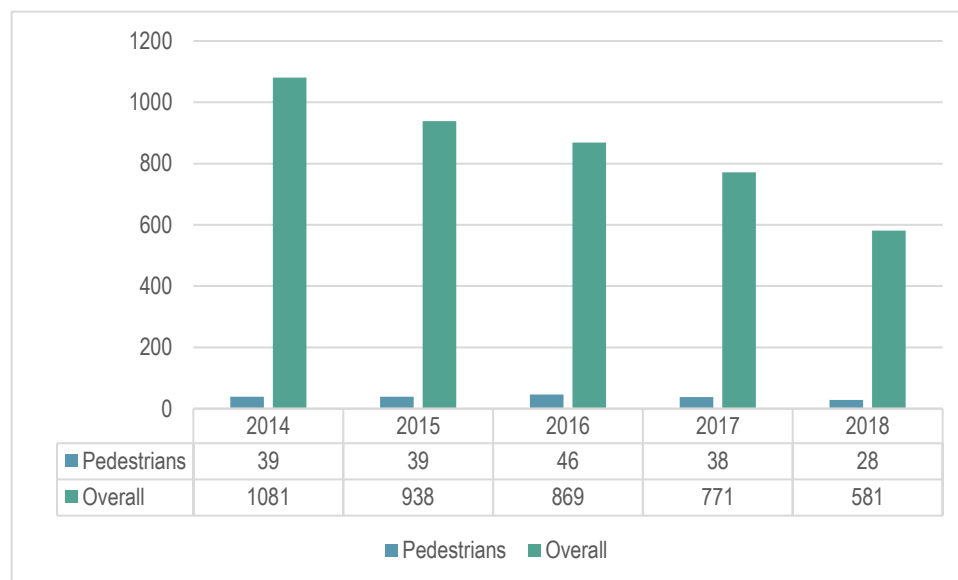
Figure 4.25 illustrates the trend of pedestrian crashes from 2013 to end of 2018. The chart indicates that generally pedestrian crashes have remained the same until a noticeable decline in 2018. As such, the reduction is not keeping pace with the total crash reduction in Fairfield, resulting in percentage of pedestrian crashes getting higher in comparison with total crashes.

Figure 4.24: Pedestrian Crash Map



Source: TfNSW

Figure 4.25: Trends of Crashes with Pedestrian Involvement from 2013 to 2018



Source: TfNSW

4.6. Parking

On-street parking within the City of Fairfield generally consists of:

- Parking within town and local centres which are mostly characterised by short to medium stay restricted parking (usually under two hours).
- Unrestricted parking outside of town and local centres which is mostly used by residents.

Off-street parking within the LGA is provided around clusters of commercial and retail uses such as supermarkets, dining and specialty retail within town and local centres. These car parking spaces are provided either at the rear of the developments in the form of at-grade car parks or basement parking as part of larger shopping centre developments.

Off-street parking is set in basement car parks for specific large developments such as the Stockland Wetherill Park, which consists of three hours free parking with paid parking thereafter. This is generally used to deter long term parking thereby encouraging higher turnover.

Commuter parking is available on-street at all train stations within the Fairfield LGA, with an off-street facility provided at Canley Vale.

4.6.1. Fairfield

Fairfield is the largest town centre of the LGA, with a high number of shops and services, including several big shopping malls. Time restricted parking applies in most of the busy streets in Fairfield town centre, this is done to encourage high turnover to accommodate for shops and high demands. Loading zones also persists in the area for business stocking purposes.

There is a high supply of off-street carparks in the Fairfield area, usually free to use for one to three hours. The car parks are spread out across the town centre with most blocks providing either business or Council owned carparks, several of which are multi-story such as Fairfield Chase (private) and Downey Lane Carpark (Council).

Commuter parking is available on either side of the train station.

4.6.2. Cabramatta

Time restricted parking applies in most of the busy streets in Cabramatta town centre, this is done to encourage high turnover to accommodate for shops and high demands. Loading zones also persists in the area for business stocking purposes.

Off-street carparks are abundant in the Cabramatta town centre, for which most are free to use for two hours. Most shopping blocks containing their own park such as Woolworths. Cabramatta also has several multi-level car parks existing on both sides of the railway.

4.6.3. Prairiewood

The Prairiewood centre footprint is largely dominated by the Wetherill Park shopping mall and the Fairfield and Braeside hospitals. The shopping mall reports a 2636 parking spaces which are free for the first three hours of usage. There is no commuter parking present for the T-way bus interchange on Wheller Street, as it is time restricted to four hours during daytime.

4.6.4. Canley Vale

Time restricted parking applies on Canley Vale Road and its branching side streets. Commuter parking areas are available on both sides of the railway, with the town centre western side having more provisions.

4.7. Summary and Findings

A summary of current conditions is presented below. These are intended to form the development of the traffic study.

Area/ Mode	Opportunity/ Constraints
Centres	<ul style="list-style-type: none"> Expecting more population at Fairfield, Bonnyrigg and Cabramatta will provide more pressure on public transport and road volumes as well as more request for active transport infrastructure as those area already have high vehicle and pedestrian conflicts. More population expected around those centres requiring better parking management. More jobs are expected within Horsley Park while the area has no public and active transport facilities around. Fairfield and Cabramatta are major attractions.
LGA-wide	<ul style="list-style-type: none"> The LGA is one of the most disadvantaged LGA's within NSW, so providing more public transport facilities can improve accessibility to services and facilities within the LGA, as well as the Regional Centres. The high number of people which cannot speak English, especially around Fairfield and Cabramatta is a challenge, requiring signage, public transport timetables and parking access in multiple languages. Community awareness programs may also be required in different languages.
Public Transport	<ul style="list-style-type: none"> Second most important destination of residents for work is Liverpool but T-way is indirect Public transport coverage in the eastern and central parts of the LGA is generally adequate but not frequent and direct enough Public transport coverage for the western parts of the LGA is poor Public transport is infrequent especially weekends. Concentration of public transport in the eastern part. Although there are north-south T-way transit links connecting Liverpool to Parramatta, the overall public transport network is not well connected (another top priority for the LGA based on LSPS) Lack of east-west public transport in southern part of the LGA.
Car	<ul style="list-style-type: none"> High car reliance requires households to own private vehicles which requires parking spaces and parking management (another priority from LSPS) High car mode share for residents and employment despite being close to frequent public transport hub. Lots of on/off street parking around the town centres Parking management and enforcement is important
Active transport	<ul style="list-style-type: none"> Cycling routes are good for recreational cycling but not integrated for other purposes including commuting Limited cycling facilities within and around town centres including Fairfield, Cabramatta High pedestrian volumes around Cabramatta at weekends Security and environment another barrier for active transport users Safety and conflict between different road users Opportunity for electric bikes as an emerging technology
Road	<ul style="list-style-type: none"> Major road corridors are required to move high volumes of traffic, with much traffic travelling through the LGA rather than to or from the LGA Major roads surrounding the LGA have adequate capacity (V.C <0.8) High traffic volumes along key regional roads High traffic volumes through local centres
Freight	<ul style="list-style-type: none"> High freight numbers generated by Wetherill Park and Smithfield situated in northern Fairfield High number of freight movements in all directions
Parking	<ul style="list-style-type: none"> The majority of on-street car parking is time restricted and readily available in many town centres, potentially reducing the capacity of the local roads Almost all shopping centres and supermarkets only charge for parking after a certain period Parking overflows onto the local streets from town centres during peak demands

5. FUTURE CHANGES TO TRANSPORT AND LAND USE

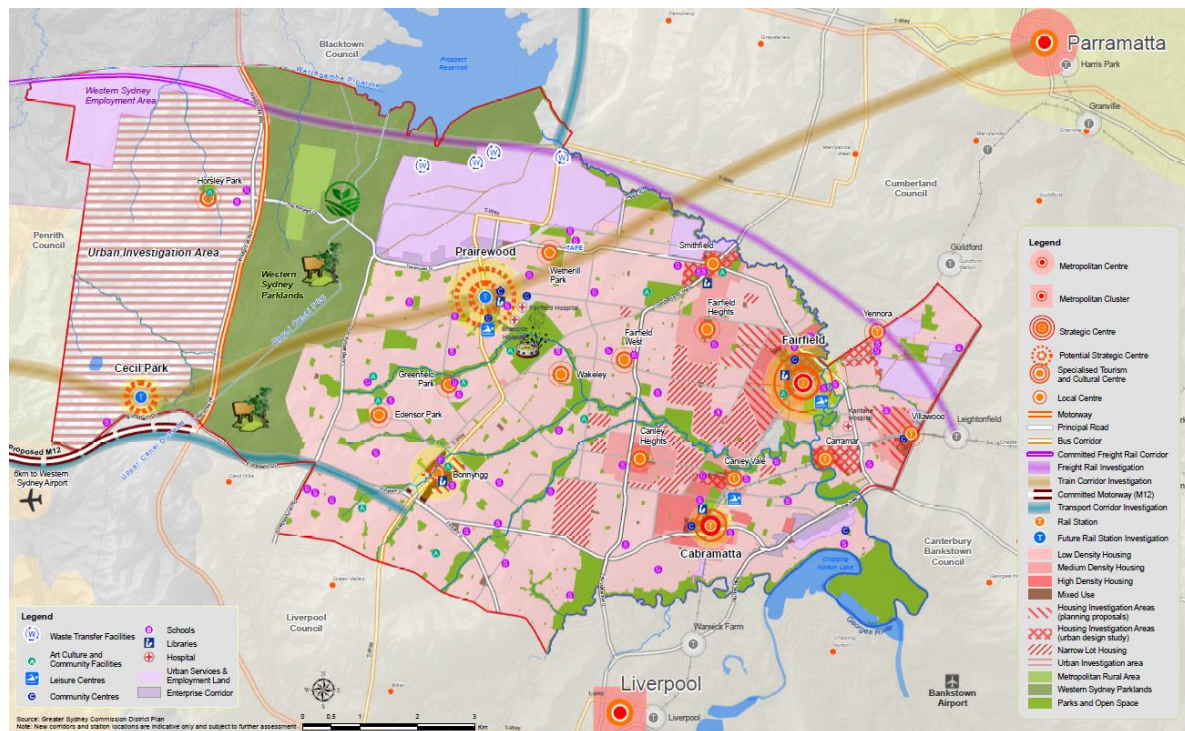
05

5.1. Overview

Figure 5.1 illustrates future changes within and around Fairfield LGA in both transport and land use perspectives by 2040. The future changes highlight two main categories policies and strategies for the council to cope with, including:

- Policies and strategies which not only solve the current challenges in the eastern and central parts of Fairfield, but also cater for future population growth and more frequent public transport, mainly around current town centres.
- Policies and strategies which support new regional land use and transport infrastructure changes within and around the LGA including Western Sydney Airport and Aerotropolis, New Rail Link between Western Sydney Airport and Parramatta (Sydney Metro Greater West), Western Sydney Freight Line and Sydney Metro West. Although these new changes provide great opportunities for the LGA, they will change movement characteristics of the LGA and develop new centres for jobs and housing within 20 years mostly in the western and central parts of Fairfield City.

Figure 5.1: Fairfield Structure Plan



Source: Fairfield City 2040, Local Strategic Planning Statement

5.2. Committed and Planned Transport Projects

5.2.1. Future Transport 2056

Future Transport 2056 sets the 40-year vision, directions and outcomes framework for customer mobility in NSW, which will guide transport investment over the longer term. It will be delivered through a series of supporting plans.

The Services and Infrastructure Plans develop the customer outcomes for Greater Sydney and regional NSW for the movement of people and freight to meet customer needs and deliver responsive, innovative services.

FUTURE CHANGES TO TRANSPORT AND LAND USE

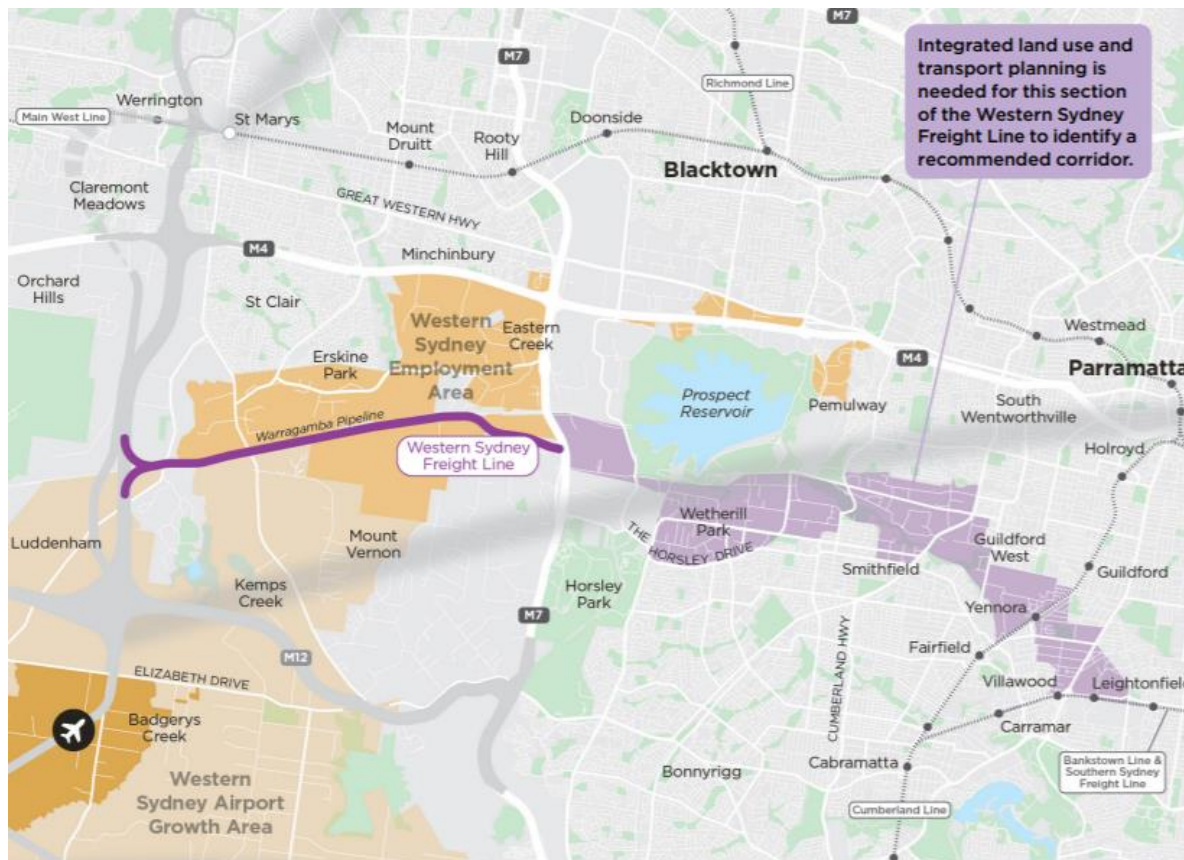
The key transport initiatives set out in the Greater Sydney Services and Infrastructure Plan that have a direct impact on the LGA are described as adapted directly from this document. Significant investments are expected in public transport and active transport in the local area, which will further improve accessibility for different user groups via non-car modes.

Initiative	Description and Benefit
New Rail Link between Western Sydney Airport and Parramatta (Sydney Metro Greater West)	Direct passenger rail link between the proposed Western Sydney Airport and Parramatta CBD. Facilitating a greater movement of people between the two major centres.
Sydney Metro West	Major construction project for metro rail line from CBD to Westmead. This will greatly add people moving capacity for the public transport system and influence mode shift across the metropolitan area.
Western Sydney Freight Line	Additional freight line connecting Western Sydney Airport with Port Botany, establishing a Sydney wide freight line. Increases the capacity of the rail network while reducing scheduling conflicts between freight and passenger rail.
Western Sydney Growth Roads Program	Road upgrade package aimed at improving the journey times for the growing Western Sydney areas, projects include major roads in Fairfield LGA

5.2.2. Greater Sydney Principal Bicycle Network 2056

The Greater Sydney Principal Bicycle Network (PBN) 2056 is a main component of Future Transport 2056, outlining the major and aspirational cycling infrastructure network in 2056. By 2056, the Principal Bicycle Network is intended to allow people to travel within and between the three major cities and associated strategic and local centres across Greater Sydney, so more short trips less than 10 km are done by bicycle rather than the private car, this leads to a desirable mode shift away from car dependency in Greater Sydney. Which effectively contributes to better public health outcomes, relieving congestion and improving accessibility to major destinations. The 2056 Principal Bicycle Network is shown below.

Figure 5.3: Western Sydney Freight Line Alignment



Source: TfNSW

From Wetherill Park to Leightonfield alignment is still unconfirmed and require further integrated transport planning and investigation.

- A continuous freight line serving the current and future industrial areas across a large section of Sydney
- Reduce demand for on-road freight traffic
- Separation of freight rail and passenger rail services, reducing traffic on passenger lines.

The line has been identified as a key priority project in Future Transport 2056 and the NSW Freight and Ports Plan.

5.2.4. T3 Line changes west of Bankstown

The T3 Bankstown Line upgrade is a response to the introduction of Sydney Metro in the Sydney's south west area. The newly introduced Metro line replaces the existing T3 train service from Sydenham to Bankstown. The proposed upgrades to the T3 Line include service to the City Centre via Lidcombe from Cabramatta.

5.2.5. M12 Motorway - Elizabeth Drive Upgrades

The proposed M12 Motorway will provide direct access to the upcoming Western Sydney Airport from Sydney's motorway network. The Environmental Impact Statement (EIS) for the M12 was on exhibition in October 2019, with the start of major construction expected in early 2022.

Elizabeth Drive is set to increase capacity with the widening of 14 km stretch between the M7 Motorway and Cecil Hills and The Northern Road at Luddenham. This is a complimentary project to the M12 works and Western Sydney Airport, which will serve as the major east west link from Fairfield to the proposed airport and surrounding development zones.

5.2.6. Smithfield Road Upgrade

Included as part of the Western Sydney Infrastructure Plan, the Smithfield Road upgrades are considered an essential investment in anticipation of the Western Sydney Airport.

Completed as a four-lane, two-way carriageway between Polding Street and Elizabeth Drive, the extra capacity will improve the performance of the local roads and reduce travel time.

With the completion of these planned road projects, Fairfield will be seen as a gateway to the Aerotropolis from south west Sydney.

5.3. Land Use Changes

5.3.1. Housing Growth

The population for Fairfield City is forecast to increase by approximately 39,000 persons (19 per cent growth) by 2036. The main population growth is expected to be located in the suburbs closest to centres, services, facilities and heavy rail including Fairfield, Cabramatta and Villawood in east part of Fairfield City. For the remainder of the city, growth is anticipated in Bonnyrigg due to the redevelopment of the public housing estate and the emergence of the town centre as a higher-density residential environment. There is potential for additional housing in Prairiewood Town Centre subject to provision of a metro station associated with the Parramatta to Western Sydney Airport passenger rail line.

In general, dwellings are projected to increase to 78,797 by 2036, which is an increase of 16,064 dwellings. The city's 0 to 5-year housing supply target is 3,050 dwellings between 2016 to 2021 based on the Western District Plan.

The Fairfield draft Local Housing Strategy identifies more detailed housing outcomes for the City. Based on strategic directions of the Fairfield LSPS, future housing growth will be located primarily in the eastern areas of the City (above) mainly around train stations, which profit from the availability of infrastructure and services. Apartment buildings ranging from 3–4 storeys will be the main housing types close to train stations with higher-scale buildings within town centres.

Fairfield (East)

Recently gazetted planning proposals to up-zone a number of residential precincts in proximity to town centres and public transport include:

- Fairfield Heights and Villawood town centres were proposed for increased building heights to permit more shop-top housing with the capacity for additional 2,000 apartments.

A current planning proposal under assessment includes:

- Amendment to maximum building heights, floor space ratios and town centre precinct provisions for land bounded by Fisher Street, Broomfield Street and Cabramatta Road East, Cabramatta adjacent to Cabramatta Railway Station. The total area of the land is approximately 1,285ha and the site will aim to provide:

- place making the site as a destination with improved connections across the rail line via a new overhead pedestrian bridge
- facilitate and incentivise redevelopment of multi storey apartment living close to public transport, retail and other amenities. Number of new dwellings is 582 with approximately 879 car park space for residential and commercial usage
- reinvigorating shops and public spaces to activate the commercial area will provide around 367 new jobs.
- The redevelopment of the Fairfield Forum site located at 8-36 Station Street, Fairfield (Lot 1031 DP 1049068) into a mixed-use centre, supporting a range of residential, commercial, community and recreational uses. The intended development outcome is based upon a conceptual master plan which seeks to redevelop the site to contain:
 - 1,489 dwellings within apartment buildings ranging in height from 5 to 25 storeys
 - 17,600 square metre of new retail gross floor space with a market square concept and increased pedestrian movements through the site with 2,919 car parking spaces.
 - a new road connection through the site linking the northern portion of Ware Street with Station Street
 - open space including a 4,000 square metre neighbourhood park on the corner of Station and Cunninghame Streets.

Fairfield (Central)

Higher-density housing is proposed around the Bonnyrigg Town Centre with access to extensive open space, including the LAHC Newleaf urban renewal project which will result in new social and private housing as well as new infrastructure and community facilities. The proposed east–west rail line linking Parramatta and Western Sydney Airport may create opportunities for new centres to evolve around potential station locations like Prairiewood as a future district centre.

Fairfield (West)

Greenfield growth opportunities for Fairfield City are in the Horsley Park and Cecil Park Urban Investigation Area (UIA), located in the western part of the LGA.

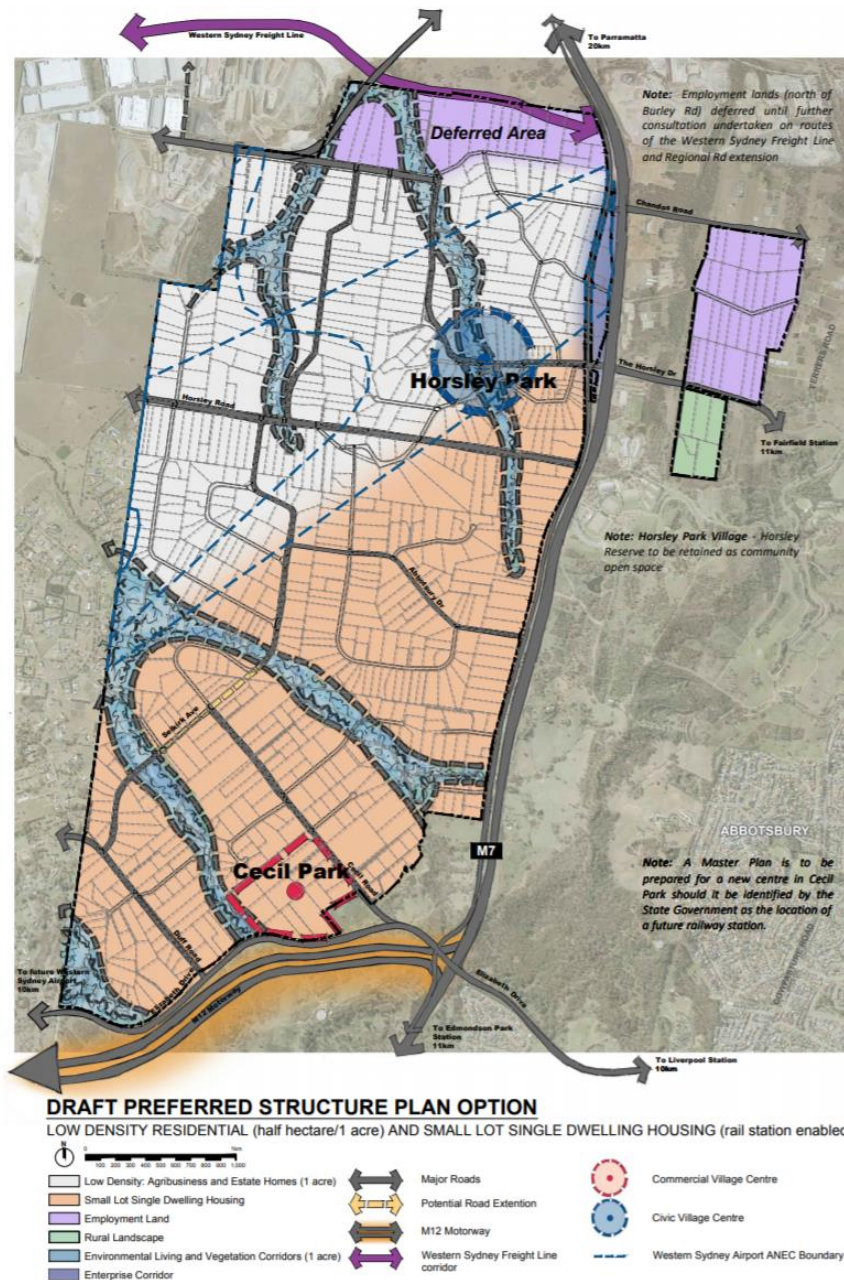
Fairfield/ Penrith Rural Lands Urban Investigation Area (UIA) was identified as a potential area for urban development by The Western City District Plan.

This UIA is located in close proximity to the Western Sydney Airport (WSA) and Western Sydney Aerotropolis precinct. These two areas represent catalysts for significant transformation and provision of major infrastructure to service growth within Fairfield and the Western City.

The draft preferred structure plan for the UIA is shown in Figure 5.4 and includes 33 per cent low density (agricultural and Estate Homes), 44 per cent small lot single dwellings and 11 per cent employment. The plan identified Horsley Park as a civic village centre and Cecil Park as a commercial village centre. The area currently has poor public transport and active transport infrastructure. With more development and jobs within and in close proximity, it will require the provision of more frequent public transport accessibility to/from not only the east and central parts of the Fairfield LGA but also to the Western Sydney Airport and Western Sydney Employment Area.

FUTURE CHANGES TO TRANSPORT AND LAND USE

Figure 5.4: Rural Lands Urban Investigation Area Draft preferred structure plan option



Source: <https://www.fairfieldcity.nsw.gov.au/Planning-and-Building/Strategies-and-Studies/Fairfield-Rural-Lands-Urban-Investigation-Area>

5.3.2. Centres

Table 5.1 summarises future changes and opportunities for centres across the LGA regarding the Urban Design Studies and Public Domain Studies undertaken by Fairfield Council.

Table 5.1: Future Changes

Centre	Future Changes
Cabramatta	<ul style="list-style-type: none"> Enhance local active transport amenity and connectivity Discourage unwanted traffic in town centre Improve east-west connection over rail corridor Improve access to public car parks Improve pedestrian safety
Canley Vale	<ul style="list-style-type: none"> Enhance local active transport amenity and connectivity Improve access to public car parks
Carramar	<ul style="list-style-type: none"> Enhance local active transport amenity and connectivity Promote commuter parking and encourage more visitors to town centre
Fairfield	<ul style="list-style-type: none"> Enhance local active transport amenity and connectivity Improve access to nearby green infrastructure Create low speed zone Improve pedestrian safety
Fairfield West	<ul style="list-style-type: none"> Enhance local active transport amenity and connectivity Improve access to public car parks Discourage through traffic on The Boulevard Changes following a Local Area Traffic Management (LATM) plan
Smithfield	<ul style="list-style-type: none"> Enhance local active transport amenity and connectivity New public car parking Discourage through traffic on the Horsley Drive
Yennora	<ul style="list-style-type: none"> Improve and expand the active transport infrastructure network Parking management for schools and commuters Improve bus services Potential road and shared path links Local area traffic management plan
Cecil Park	<ul style="list-style-type: none"> Future commercial village centre
Prairiewood	<ul style="list-style-type: none"> Potential future strategic centre
Horsley Park	<ul style="list-style-type: none"> Future civic village centre

5.3.3. Western Sydney Airport and Aerotropolis

The Western Sydney Airport and Badgerys Creek Aerotropolis will deliver major economic growth to the Greater Western Sydney region. Featured in the heart of the Western Parkland City, construction of Western Sydney International (Nancy-Bird Walton) Airport is underway and on track to begin operations in 2026. The airport is expected to support almost 28,000 direct and indirect jobs by 2031, five years after the airport opens. To support the airport and aerotropolis core, strategic planning is underway for the greenfield land around the proposed airport. Other confirmed land use changes include:

- Northern Gateway (including Sydney Science Park)
- Agribusiness Precinct
- Wianamatta – South Creek Precinct
- Badgerys Creek enterprise district.

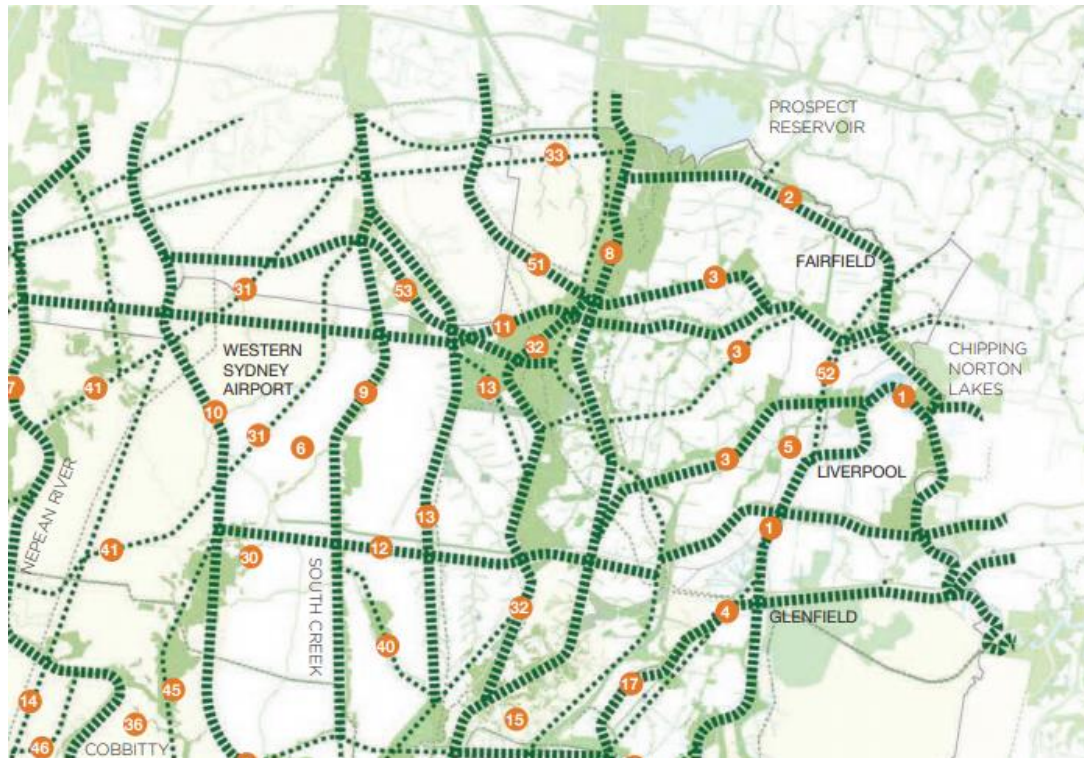
5.3.4. Sydney Green Grid-South West District

The Sydney Green Grid is a network of natural open spaces identified by the state government as important connectors to major town centres and other attractors. The corridors and open spaces of the Green Grid

FUTURE CHANGES TO TRANSPORT AND LAND USE

consists of all green/ natural environments in metropolitan Sydney, ranges from parks to creeks and playgrounds.

Figure 5.5: Green Grid project opportunities



Source: <https://www.governmentarchitect.nsw.gov.au/projects/sydney-green-grid>

The study area includes major Green Grid project opportunities, which are:

- Georges River and Chipping Norton Lakes
- Prospect Creek and Reservoir Parklands
- Five Fairfield Creeks
- Remembrance Drive
- Western Sydney Parklands and Eastern Creek
- Elizabeth Dr Green Boulevarde
- Ropes Creek Corridor.

While the Green Grid will provide excellent links through the LGA, access to the Green Grid can be improved to enable a more integrated active transport network. Completing the Green Grid projects and filling in the gaps will improve recreational active transport opportunities throughout the LGA, creating a healthy lifestyle for residents and providing a regional attraction for more recreational cycling and walking.

6. FUTURE TRANSPORT TRENDS AND FRAMEWORKS

06

6.1. Movement and Place

6.1.1. Overview of Movement and Place

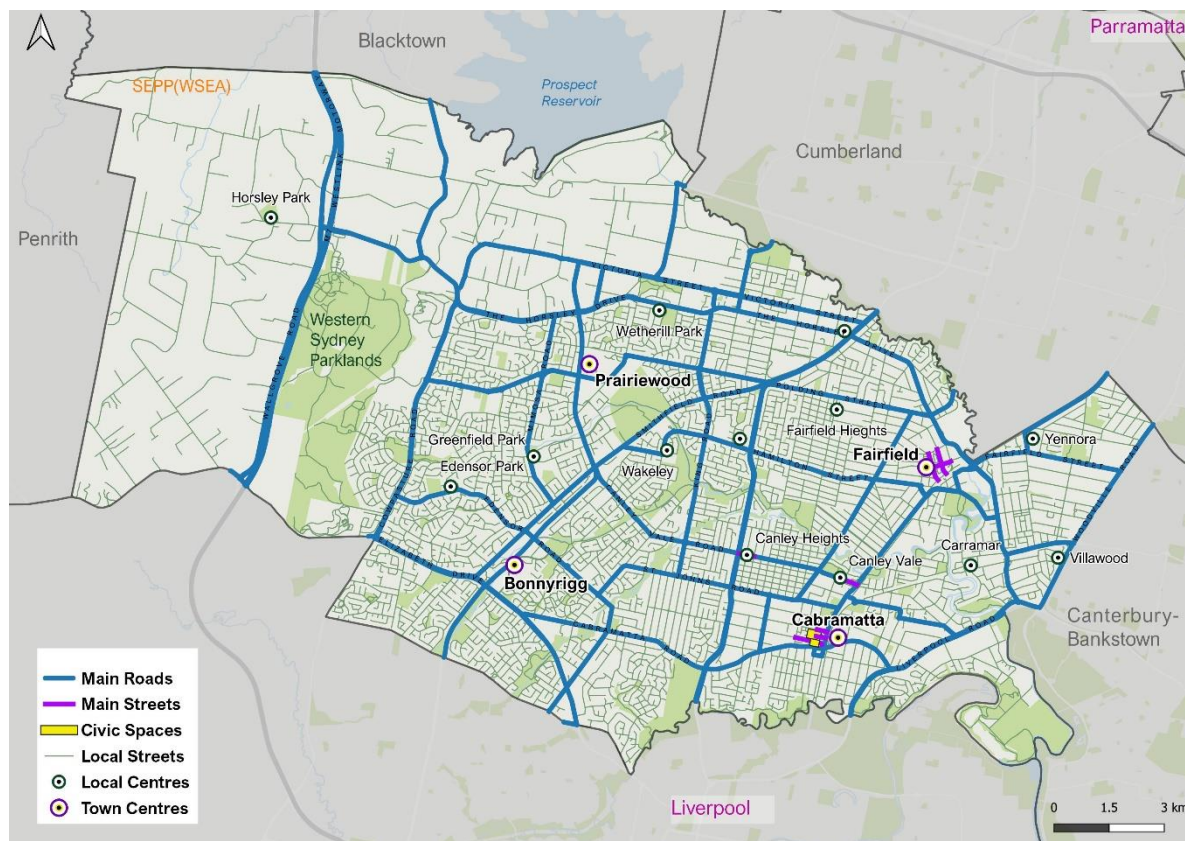
The function of the LGA's existing roads and streets network, the intensity of movement activity and the intensity and types of place activities distributed throughout this network contribute to its classification under the NSW Movement and Place Framework. Classification is informed by version 0.1 of the *Practitioner's Guide to Movement and Place*, published by the New South Wales Government Architect in March 2020.

6.1.2. Current Movement and Place in Fairfield

Figure 6.1 illustrates an indicative current Movement and Place classification for the road network of the LGA. As the map indicates, street sections within and close to the key centres including, Fairfield, Cabramatta, Canley Heights Canley Vale are classified as "Main Streets" while most of the other state and regional roads categorised as "Main Roads".

Links between John Street and Arthur Street, and Dutton Lane and Arthur Street within Cabramatta Town Centre have the classification of place, so they are considered "Civic Spaces".

Figure 6.1: Current Movement and Place Network



Source: GTA

6.1.3. Future Classifications

The Movement and Place framework encourages to transform streets within and around town centres into Civic Spaces. Consequently, it is proposed to change roads in selected centres from a "Main Street" to

FUTURE TRANSPORT TRENDS AND FRAMEWORKS

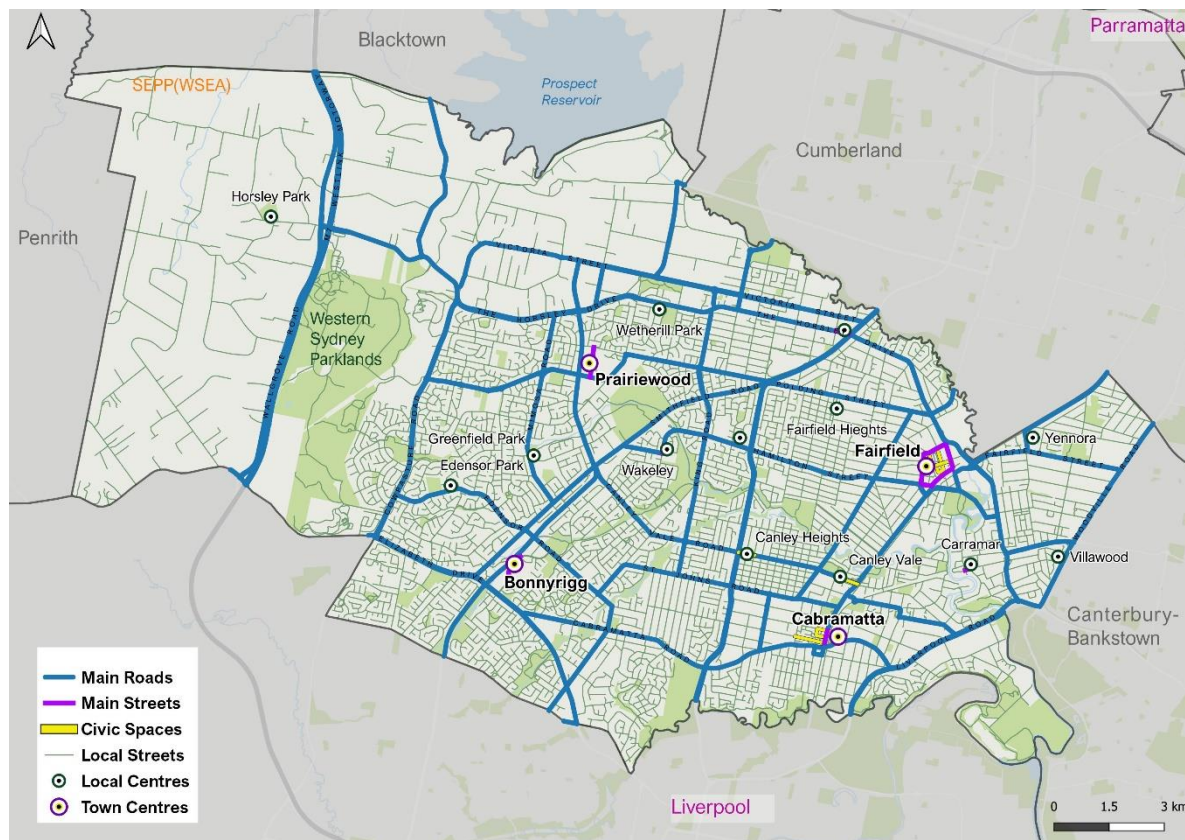
“Civic Spaces”. In addition, some town centres are located along major road corridors, namely Railway Parade and Canley Vale Road. These centres are currently lacking amenity and pedestrian facilities. It is proposed to change selected sections along these roads from Main Roads to Main Streets, accompanied by infrastructural upgrades including pedestrian facilities and amenities. This will improve the overall attractiveness of these centres. Figure 6.2 indicates the proposed high level movement and place classifications for Fairfield in 2036. It can be seen that centres such as Fairfield, Cabramatta, Canley Heights and Canley Vale have been classified to support more place function of the streets.

Street sections of following streets in each centre have been classified as “Main Streets”.

- Within Fairfield Town Centre: Nelson Street from Barbara Street to Court Road, Court Road Between Nelson Street to The Crescent, The Crescent to Hamilton Road and Barbara Street between Nelson Street and Hamilton Road
- Within Cabramatta Town Centre: Railway Parade between Cabramatta Road West and Hughes Street
- Within Prairiewood Town Centre
- Within Bonnyrigg Town Centre: Bonnyrigg Avenue from Tarlington Parade to Bibbys Place.

These streets will be supported by a network of Local Streets.

Figure 6.2: Proposed Fairfield Movement and Place Network



Source: GTA

6.2. Emerging Transport Trends

Technology is improving at an ever-increasing pace. It has significantly shaped and will continue to shape the future of transport and mobility. Initial research indicates that the evolution of transport technologies will likely generate a broad spectrum of human responses and TfNSW has developed four different scenarios.

While these scenarios are the most likely to eventuate, others cannot be ruled out. It also remains unclear which, if any, scenario will become the dominant paradigm for future mobility. Consequently, strategies are needed that accommodate this end-state uncertainty and enable multiple potential outcomes.

Table 6.1: Transport for NSW's Future Scenarios

Scenario	Description
Scenario 1: My (autonomous) car is (still) king	<ul style="list-style-type: none"> Individual point-to-point trips in personally owned vehicles. Customers have access to more personal point to point transport options using connected and automated vehicles that are increasingly customised to their needs (e.g. cars, pods).
Scenario 2: We're all in this together	<ul style="list-style-type: none"> Aggregated demand, shared-use and network optimisation. Customers access a broad range of automated (shared and personal) on-demand and mass transport modes with dynamic demand management and integrated payments.
Scenario 3: Super-commuting with public, active and shared transport	<ul style="list-style-type: none"> A lifestyle based on mass transit, flexible and active transport. Customers use an extended public transport, active and flexible shared-service network. Autonomous vehicles are for specific high-productivity uses only.
Scenario 4: Why travel so much	<ul style="list-style-type: none"> Technology reduces demand for mobility. Customers choose where they wish to work, shop, learn, socialise and be entertained. Technology enables travel to be minimised as services are 'delivered' in or near the home.

Source: Future Transport Technology | Roadmap 2016

It is critical to note that these four scenarios are not mutually exclusive. Rather, they represent 'use-cases' that are likely to co-exist. Table 6.2 shows the likelihood or possibility of each of the key characteristics materialising in the LGA, the impact of each characteristic and what outcomes may occur in the LGA as a result. The identified preliminary outcomes do not happen without intervention and there are aspects over which Council can play an active role in facilitating. There are also other actions identified that fall within other state agencies' responsibility.

Table 6.2: Preliminary Outcomes for Fairfield

Key Characteristic	Possibility for Fairfield (2036)	Preliminary Outcomes for Fairfield LGA
Decentralised Development (across Sydney's three cities)	High	<ul style="list-style-type: none"> Increased travel demand to Parramatta, Liverpool and the Aerotropolis Better accessibility to Fairfield as strategic centre and other town centres like Cabramatta, Prairiewood and Bonnyrigg
Connected and Automated Vehicles (CAVs)	Low	<ul style="list-style-type: none"> Low mix of CAVs / non-CAVs, some increase in discretionary trips, additional vehicle circulation Less available road space for vehicles
Intelligent Transport Systems (Smart Motorways)	High	<ul style="list-style-type: none"> Increased throughput of motorways as attracting more car trips needs connected and smart infrastructure

FUTURE TRANSPORT TRENDS AND FRAMEWORKS

Key Characteristic	Possibility for Fairfield (2036)	Preliminary Outcomes for Fairfield LGA
Shared Mobility (Car sharing)	Low	<ul style="list-style-type: none"> • More car sharing • Fewer privately owned cars • Later and lower take up of driver's licences
On-demand transport (buses)	Moderate	<ul style="list-style-type: none"> • Increases access to local services and centres, especially at areas not covered by bus services
Smart Parking Management	High	<ul style="list-style-type: none"> • May shift the time of travel for some drivers • Better utilisation of car parks, reduction in vehicle circulation
Mass Transit (High priority bus lanes and new metro lines)	Moderate	<ul style="list-style-type: none"> • Increased public transport capacity and bus, cycle and walking networks are re-orientated towards new potential station at Prairiewood • Kerbside lanes used for higher priority use • Reallocation of road space and kerbside parking restrictions • Increase in bicycle use, reduction of car ownership
Reclaiming public spaces	High	<ul style="list-style-type: none"> • More local trips by walking and cycling • Increase in shorter, more local trips • Opportunity for more outdoor spaces, cafes etc
Road Pricing	Moderate	<ul style="list-style-type: none"> • Depending on the type of pricing, it could: <ul style="list-style-type: none"> ◦ Increase use of non-toll roads ◦ Decrease overall car usage
Improvement of urban freight logistics	High	<ul style="list-style-type: none"> • A slight shift of freight to off-peak periods • Increase consolidation and reduce freight trips
Automated drones/deliveries	Moderate	<ul style="list-style-type: none"> • Potentially small parcel delivery occurs by drone
Electric vehicles	Moderate	<ul style="list-style-type: none"> • More vehicle charging stations required (either private or public stations) • Standards and legal infrastructure considerations during LEP and DCP reviews (likely influenced by Federal and State Government direction)
Ageing Population	Moderate	<ul style="list-style-type: none"> • Investment on more accessible and walkable streets • Increase short trips • Increasing opportunity for on-demand trips • Investment on more pedestrian infrastructure and amenities along with tree canopies
TOD (development around major public transport nodes)	Moderate	<ul style="list-style-type: none"> • Development concentrated around nodes reduces car dependence and overall car trips • Network redundancy more prevalent • Fewer requirements for parking
Flexible Work Arrangements and Tele-working	High	<ul style="list-style-type: none"> • Increase in non-work and non-peak hour trips • Work from home, reduce commuting trips • Modified working hours shift the peak over a longer period, including staggered school hours • Increased access to local shops • Possible decline in public transport patronage
Road space allocation	High	<ul style="list-style-type: none"> • Bus priority measures • Active transport modes (walking and cycling)
Gig economy	High	<ul style="list-style-type: none"> • On-demand passenger/ride services • On-demand delivery services

6.3. Covid-19 transport implications

6.3.1. Introduction

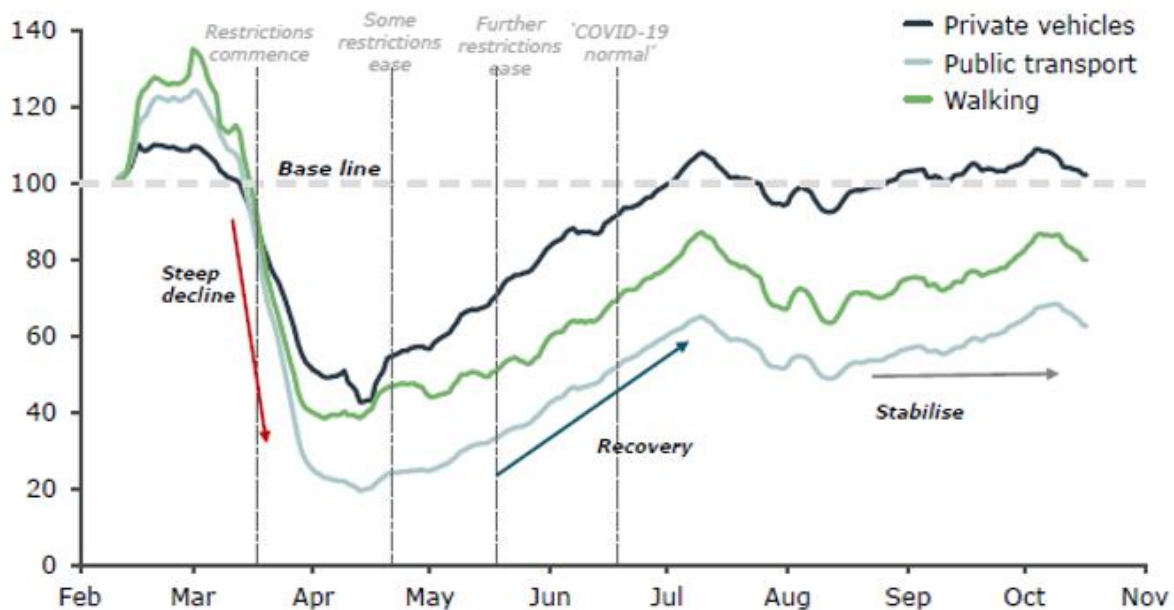
The effects of the global COVID-19 pandemic have had and continue to have far-reaching impacts on personal mobility and travel behaviour in all Australian cities. The impact of the initial lockdowns in March 2020, subsequent government-imposed travel and mobility restrictions and the general fear of contracting COVID-19 outside of people's homes have fundamentally changed the way people travel for work and other purposes in Australia. With continual uncertainty around the duration of this pandemic in the near future, changes to travel behaviour caused by COVID-19 are expected to remain in the interim. This section outlines the nature and scale of the travel-related impacts in Australia and sets out potential future implications for cities including Fairfield City Council in the short and longer terms.

6.3.2. Impacts on travel behaviour in Sydney and Australian cities

Initial shock, recovery and stabilisation

Across all transport modes in 2020, personal mobility demand has undergone a steep decline from the initial impact of the pandemic, to phases of recovery and stabilisation as community transmission cases of COVID-19 reduced and stabilised (Figure 6.3).

Figure 6.3: Transport demand in Sydney, January to October 2020, percentage of baseline demand



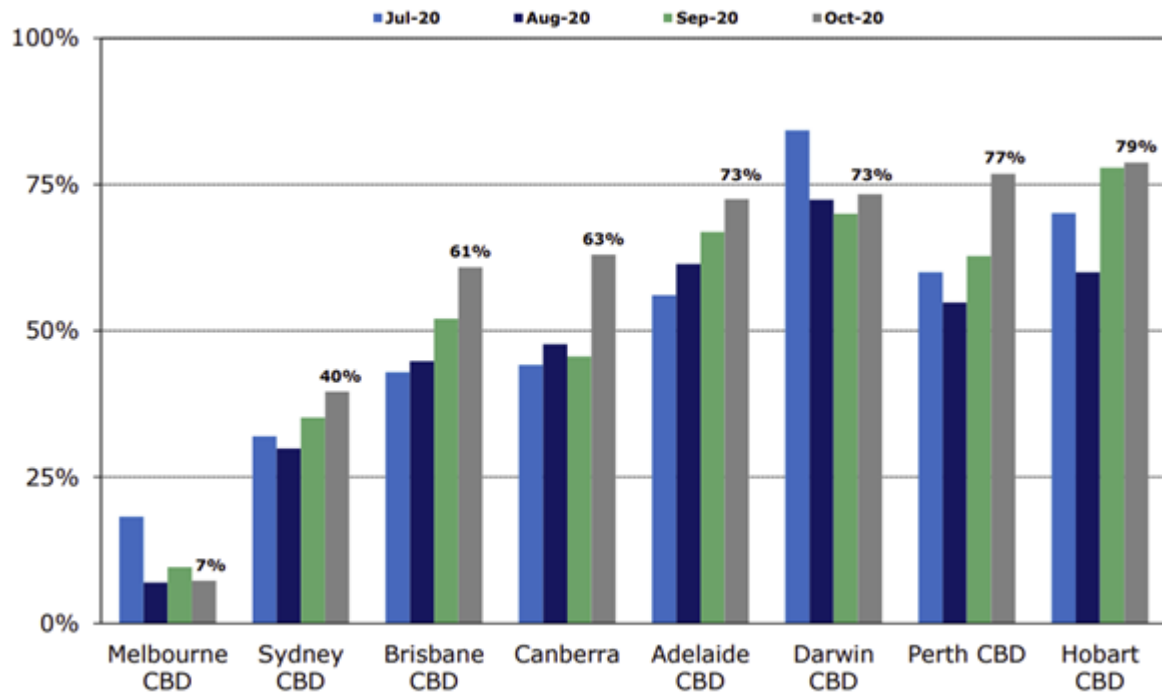
Source: Apple Mobility data - <https://covid19.apple.com/mobility> and L.E.K. research and analysis in *Infrastructure beyond COVID-19 – A national study on the impacts of the pandemic on Australia* (Infrastructure Australia, 2019)

Uneven recovery

Despite the stabilisation of COVID-19 case numbers and transport demand in Sydney, not all modes have yet returned to their pre-COVID-19 level of demand, with public transport lagging in its recovery compared to driving with driving demand back at or in some cases exceeding pre-COVID-19 levels (Figure 6.3). This trend suggests that the attractiveness of working from home and the fear of COVID-19 infection while using public transport are strong determinants of public transport use rather than actual COVID-19 case numbers.

Working from home has caused sharp declines in Sydney city centre office occupancy rates, although this is gradually increasing in line with the slow public transport patronage recovery (Figure 6.4).

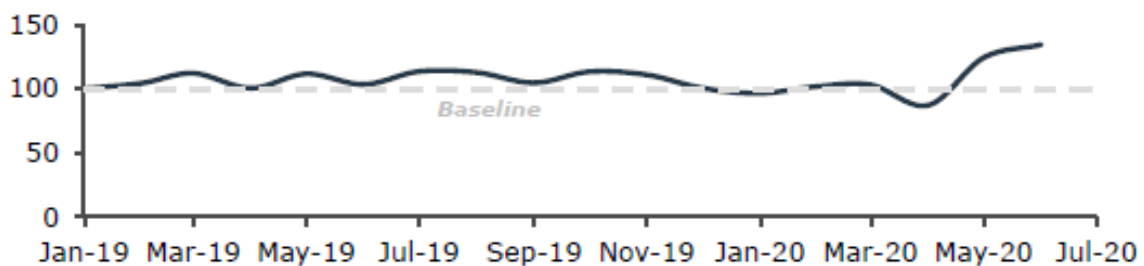
Figure 6.4: Office occupancy levels compared to the pre-COVID-19 period



Source: Property Council of Australia

The shift away from public transport use to more private vehicle use may also become an enduring trend, as demonstrated in the growth of second hand vehicle registrations in NSW in 2020, which suggests more households were purchasing an additional car, shown in Figure 6.5.

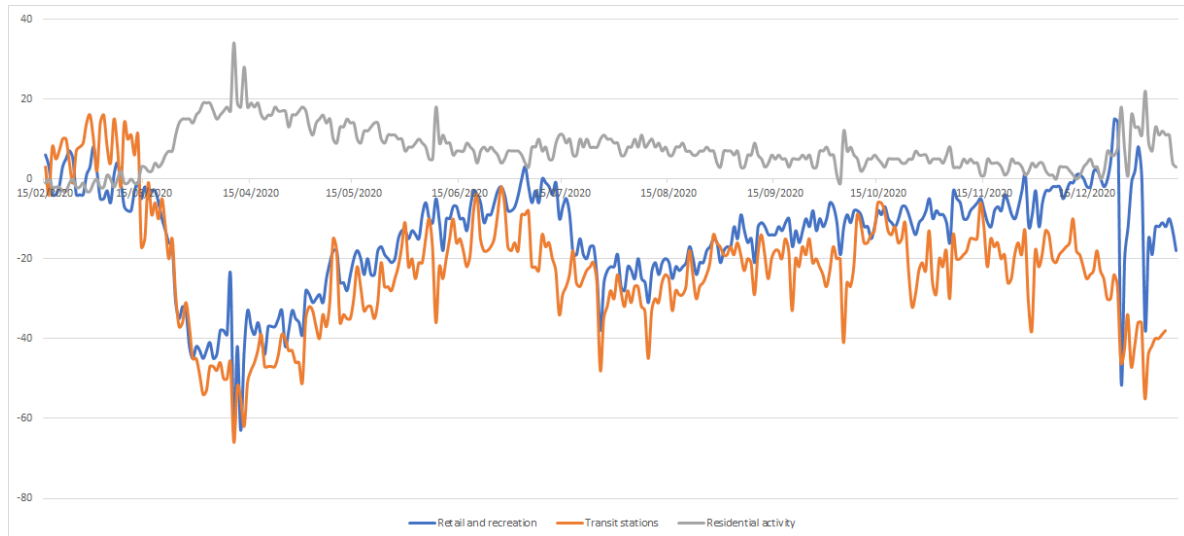
Figure 6.5: Growth in second hand vehicle registrations in NSW, June 2017 – June 2020, percentage of baseline demand



Source: Transport for NSW registration data table 1.3.2 in *Infrastructure beyond COVID-19 – A national study on the impacts of the pandemic on Australia* (Infrastructure Australia, 2019)

In terms of mobility trends for Fairfield City, Google Mobility data reveals a similar trend of a steep decline followed by recovery and stabilisation in line with Greater Sydney's transport demand trends in Figure 6.3.

Figure 6.6: Percentage change in visitation to retail and recreational activities, transit stations and residential activity from the baseline in Fairfield City



Source: Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/> Accessed: 14/01/2021

Figure 6.6 shows that visitation to retail and recreational activities as well as transit stations in Fairfield City experienced a steep decline during March before going through a recovery and stabilisation process throughout 2020 compared to the baseline. The baseline is defined from a five-week period across January and February 2020. At the same time, Figure 6.6 shows residential activity rising during March 2020, as more people stayed at home due to lockdown measures. This stay-at-home activity declined slightly as the months progressed in 2020 but remained above the baseline throughout the year.

Growth in cycling

While people in Sydney have moved away from public transport, there has also been growth in cycling across the inner areas of Sydney. The City of Sydney reported an increase in cycle traffic of around 25 to 50 per cent as measured by its cycle counters¹². In response, TfNSW has worked with local councils to deliver over 10 km of pop-up cycleways in Sydney to cater for this increased demand and to incentivise socially distanced active transport.

Decentralised freight

The continued popularity of working from home, reduced travel to the Sydney city centre and the fear of contracting COVID-19 while shopping has led to a significant growth in online shopping and home deliveries. Online shopping in NSW grew by 102 per cent in April 2020 compared to April 2019, while usage of Australia Post parcel lockers outside of CBD locations increased by 25 per cent while CBD usage was down by 25 per cent between March and May 2020.¹³ This increase in freight to decentralised locations has increased demand for loading in dispersed suburban locations.

Implications for the future

As Australia embarks on its ongoing recovery from the COVID-19 pandemic and the prospect of a vaccine may encourage more social interaction and mobility, the extent to which the impacts of COVID-19 on travel behaviour become enduring in the longer term is a question that policymakers across all levels of government

¹² <https://www.afr.com/companies/infrastructure/bike-lanes-in-demand-as-cycling-is-rediscovered-20200612-p551xy>

¹³ Australia Post 2020 eCommerce Industry Report

must grapple with. In light of the trends observed in 2020, GTA has outlined a number of scenarios that may prevail in cities and LGAs throughout Australia, including Fairfield City. These scenarios include:

- **Hitting the Road** – desire for socially distanced transport and the fear of contracting COVID-19 leads to strong growth in car use and ownership that persists beyond the pandemic
- **Getting Active** – growth in cycling to avoid public transport leads to growing confidence in cycling and discovery of local cycle routes, which drives an ongoing uplift in active travel
- **Flex Working** – attractiveness of working from home leads to flexible working arrangements post-pandemic (e.g. half a week at home, half a week at the office)
- **Back to Business As Usual** – the success of Australia's recovery from COVID-19 and the roll-out of a vaccine provides confidence for greater social interaction and mobility on par with pre-COVID-19 trends. Office work returns largely to the office in city centres and public transport patronage returns to pre-COVID-19 levels.

The transport phenomena and future implications associated with each of these scenarios are summarised in Table 6.3 below.

Table 6.3: Potential post-pandemic scenarios

Scenario	What could change?	Implications
Hitting the Road	<ul style="list-style-type: none"> Continued high vehicle kilometres travelled and car ownership Greater traffic volumes and longer peaks Greater parking demand Deterioration in road safety due to greater conflicts between vehicles and other users 	<ul style="list-style-type: none"> Demand for more road capacity to relieve growth in traffic Demand management techniques such as road or congestion pricing to be explored Rising parking costs and calls for more parking supply Road space allocation away from cars becomes more difficult Growth in tailpipe and greenhouse gas emissions
Getting Active	<ul style="list-style-type: none"> Growth in cycling, walking and other forms of micro-mobility for short trips Increased safety risks to people walking and cycling 	<ul style="list-style-type: none"> Demand for more safe and socially distanced walking and cycling infrastructure (e.g. wider paths) Demand for more end-of-trip facilities at workplaces Greater prevalence of e-mobility devices
Flex Working	<ul style="list-style-type: none"> Reduced commuting demand as workers work from home for a part of the week Variable start and finish times lead to spreading of peak commutes Emergence of satellite offices leads to localised trips 	<ul style="list-style-type: none"> Reduced peak demand reduces the need to provide transport capacity based on peak requirements Reduced interpeak demand due to more virtual meetings Demand for major transport infrastructure softens. Push for smaller scale local transport infrastructure
Business as Usual	<ul style="list-style-type: none"> Same mode-share as pre-COVID 19 and associated pressures on transport networks. Public transport will return to pre-COVID 19 levels. 	<ul style="list-style-type: none"> Continued impetus for delivery of the current pipeline of public transport and road network infrastructure. A missed opportunity to build on lessons learnt during the pandemic – e.g. the need for safe and socially distanced active transport infrastructure, less travel for meetings, flexible working arrangements

Given the dynamic nature of the pandemic and the uncertainties that lie ahead, it is likely that the scenarios highlighted above will not play out in a mutually exclusive manner; cities will likely adapt and evolve and pick up on the travel behaviours that have proved advantageous moving forward. This could mean a mix of the possible changes will eventuate, rather than completely going back to business as usual or completely adopting travel behaviours observed at the height of COVID-19 lockdowns. Proactive planning and activity by governments, business and organisations can make the most of the silver lining of COVID-19.

7. TRAFFIC MODELLING

07

7.1. Overview

A key element of this study is the recognition that land use, transport infrastructure and planning policy are all inter-connected, and that changes to one can impact on the others. The Sydney Strategic Travel Model (STM) estimates travel demand in response to land use intensification, transport accessibility, destination and mode choice within the study area. Utilising these outputs, a base case scenario assessment of the 2021, 2031 and 2041 'business-as-usual' scenarios was conducted. The evidence-based findings of this assessment are presented in Section 7.2.

Additionally, a localised assessment of the Prairiewood and Bonnyrigg centres was conducted using SIDRA intersection modelling software. Using traffic signal phasing, cycle length and linking information, as well as forecast 2031 traffic volumes from the STM, 2031 conditions for 26 intersections were modelled, and issues subsequently identified. Section 7.3 contains the summary report of this analysis. Additional details for both modelling exercises are contained in Appendix A. GTA has also undertaken detailed mesoscopic modelling for key town centres in the Fairfield East precinct including Fairfield, Cabramatta and Canley Vale. The findings of this Study and the outputs of the mesoscopic model will be integrated into the mesoscopic model report.

7.2. Strategic Modelling

7.2.1. Model Assumptions

New Road Connections

Three new road connections were identified and assumed to be in operation in 2031. These are:

- Burley Road
- Horsley Road (extension of existing)
- South-West M7 Ramp

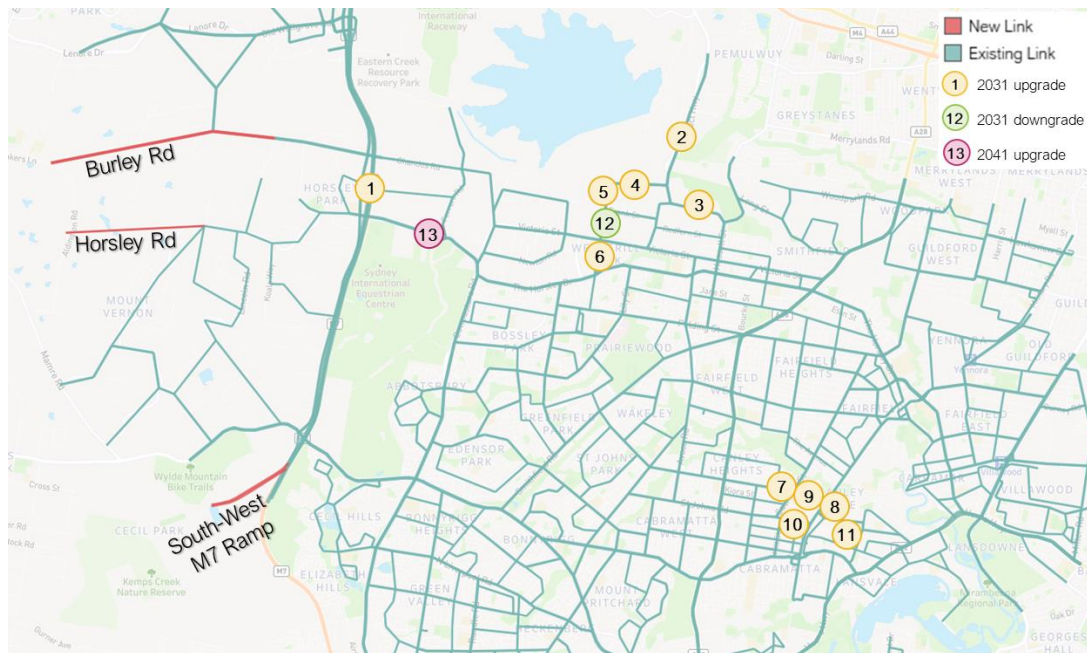
Assumed Capacity Changes

A series of assumed capacity upgrades and downgrades are also included in the future base models. 2031 included the following upgrades:

1. Upgrade on Westlink M7 between Chandos Rd and The Horsley Dr
2. Upgrade on Prospect Hwy/ Widemere Rd between Reconciliation Rise and Hassall St
3. Upgrade on Hassall St between Widemere Rd and Gipps Rd
4. Upgrade on Davis Rd between Elizabeth St and Widemere Rd
5. Upgrade on Elizabeth St between Davis St and Frank St
6. Upgrade on Elizabeth St between Victoria St and The Horsley Dr
7. Upgrade on Sackville St between The Avenue and Bartley St/ St Johns Rd
8. Upgrade on Railway Pde between The Avenue and Cabramatta Rd E
9. Upgrade on Canley Vale Rd between Sackville St and Railway Pde
10. Upgrade on Bartley St between Sackville St and Railway Pde
11. Upgrade on Bareena St between Railway Pde and Vale St

The sole 2031 downgrade (12) is on Elizabeth Street between Frank Street and Victoria Street. The 2041 model contains one upgrade (13) on The Horsley Drive between M7 Westlink and Cowpasture Road. Figure 7.1 below depicts both the new road connections and capacity changes.

Figure 7.1: Study Area, New Links and Road Capacity Changes



Source: GTA

7.2.2. Model Results

Figure 7.2 through to Figure 7.5 show the volume capacity ratio (VCR) and VCR change from 2021 to 2041 for both the AM and PM peaks. VCR provides a reliable indication of not only the traffic volume but also the physical capacity of the road network to carry the traffic. A VCR greater than 100% means that the theoretical road capacity has been reached or exceeded.

Figure 7.2: 2041 VCR – AM Peak



Source: GTA

Figure 7.3: 2041/2021 VCR Change – AM Peak



Source: GTA

Figure 7.4: 2041 VCR – PM Peak



Source: GTA

Figure 7.5: 2041/2021 VCR Change – PM Peak



Source: GTA

Figure 7.6: 2041/2021 Travel Speed Change – AM Peak



Source: GTA

Figure 7.7: 2041/2021 Travel Speed Change – PM Peak



Source: GTA

7.2.3. Summary

Identified Areas of Congestion

Utilising the Volume Capacity Ratio (VCR) and Travel Speed outputs above, as well as Vehicle Kilometres Travelled (VKT) and Vehicle Hours Travelled (VHT) outputs detailed in Appendix A, analysis has produced several high-level findings. Firstly, VKT statistics show that the anticipated increase in traffic will be distributed across all road types (motorway, state highway, arterial, sub-arterial and local). Additionally, a significant increase (+30 per cent) in the number of hours users spend in traffic (VHT) is anticipated, with a disproportionate amount of this increase to occur on arterial roads.

Four specific areas of congestion have been identified, relevant to both the 2041 AM and PM peak. Listed with their 2041/ 2021 VCR change, these areas are:

1. Elizabeth Drive and Smithfield Road, Bonnyrigg Heights (nearby the Elizabeth Drive-Smithfield Road intersection): +10 to 14 per cent
2. Cabramatta Road, Cabramatta W (north of Cabramatta Golf Club): +16 to 19 per cent
3. Hume Highway, Lansvale (at Lansvale industrial area): +19 to 20 per cent
4. Hassall Street, Wetherill Park (north-eastern corner of Wetherill Park industrial area): +10 to 14 per cent.

One street also had a significant VCR change in only the AM peak:

5. Montgomery Road, Bonnyrigg (south of Brown Road): +19 per cent

These areas of congestion are shown in Figure 7.8.

Figure 7.8: Areas of Congestion 2041



Source: GTA

7.3. Operational Modelling (Intersection Modelling)

To assess the implications of the Fairfield Transport Study, the existing and future operation of key intersections within Prairiewood and Bonnyrigg have been assessed using SIDRA INTERSECTION 8¹⁴, a computer-based modelling package which calculates intersection performance.

7.3.1. Summary of Base Model Results

The base results demonstrate that the Prairiewood sites appear to operate satisfactorily during both peak periods. The highest Level of Service (LOS) recorded was LOS D at the Polding Street/ Prairie Vale Road/ Lily Street (2784) intersection during the AM peak.

The base results suggest that some Bonnyrigg sites are not performing satisfactorily and are approaching capacity, particularly along Elizabeth Drive and Cabramatta Road. A LOS E was recorded at the Edensor Road/ Smithfield Road (3214) intersection during the AM peak and the Cabramatta Road West/ Meadows Road (2654) intersection during the PM peak. Further details on the base model's data collection, intersection geometry, intersection volumes, signal timing calibration, full base model results and mapping are included in Appendix A.

7.3.2. Future Year Model Development

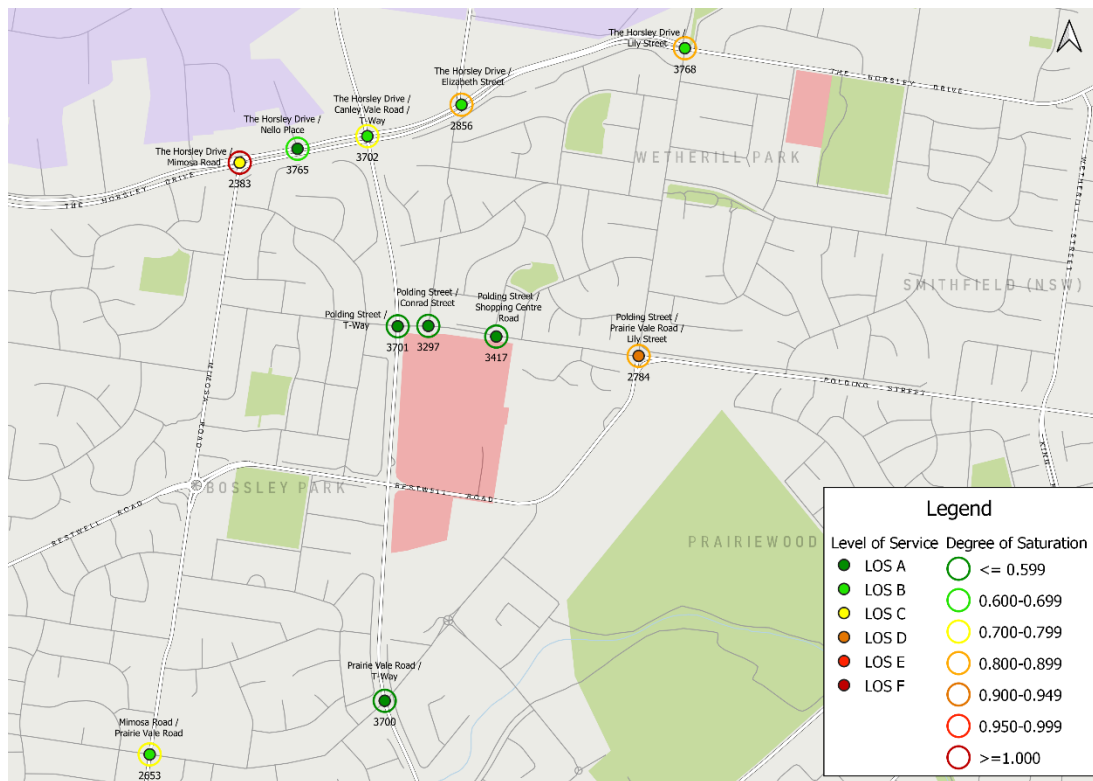
The future volumes were developed from STFM (Sydney GMA Strategic Traffic Forecasting Model) outputs for the 2031 design year. The existing volumes for each intersection approach were scaled based on the respective link growth.

Prairiewood

The 2031 model results for Prairiewood are presented in Figure 7.9 and Figure 7.10 for the AM and PM peak, respectively.

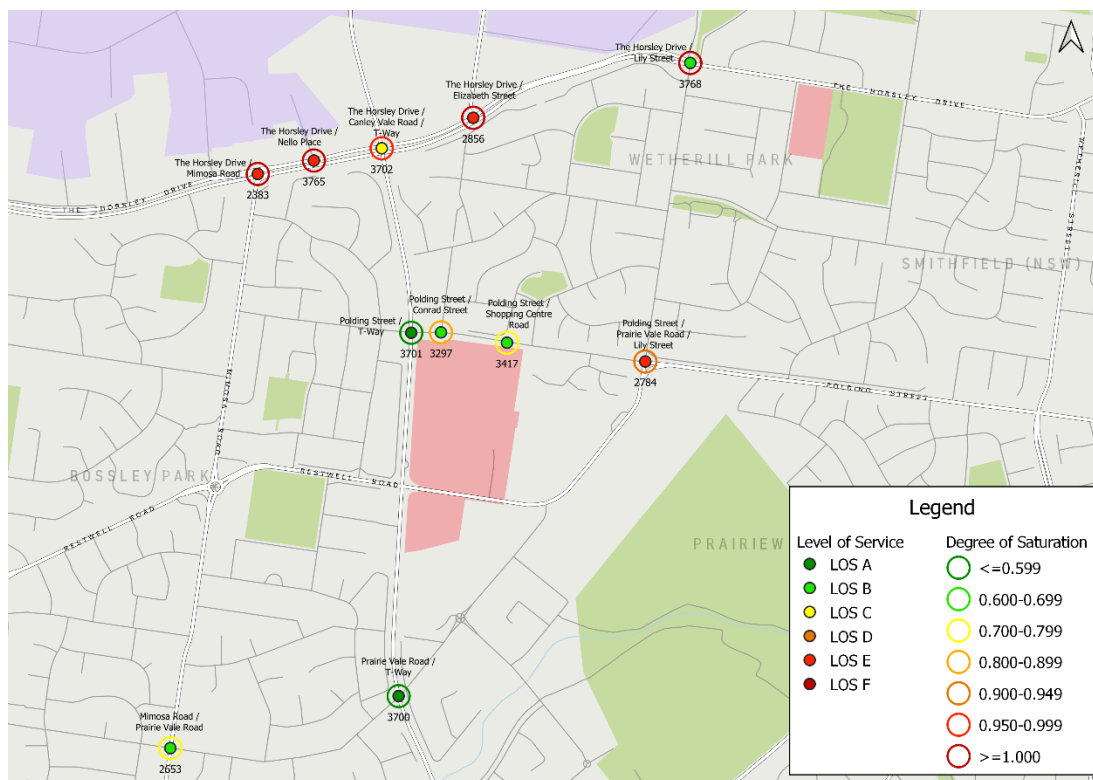
¹⁴ Program used under license from Akcelik & Associates Pty Ltd.

Figure 7.9: 2031 SIDRA Model Results Output Summary – Prairiewood – AM Peak



Source: GTA

Figure 7.10: 2031 SIDRA Model Results Output Summary – Prairiewood – PM Peak



Source: GTA

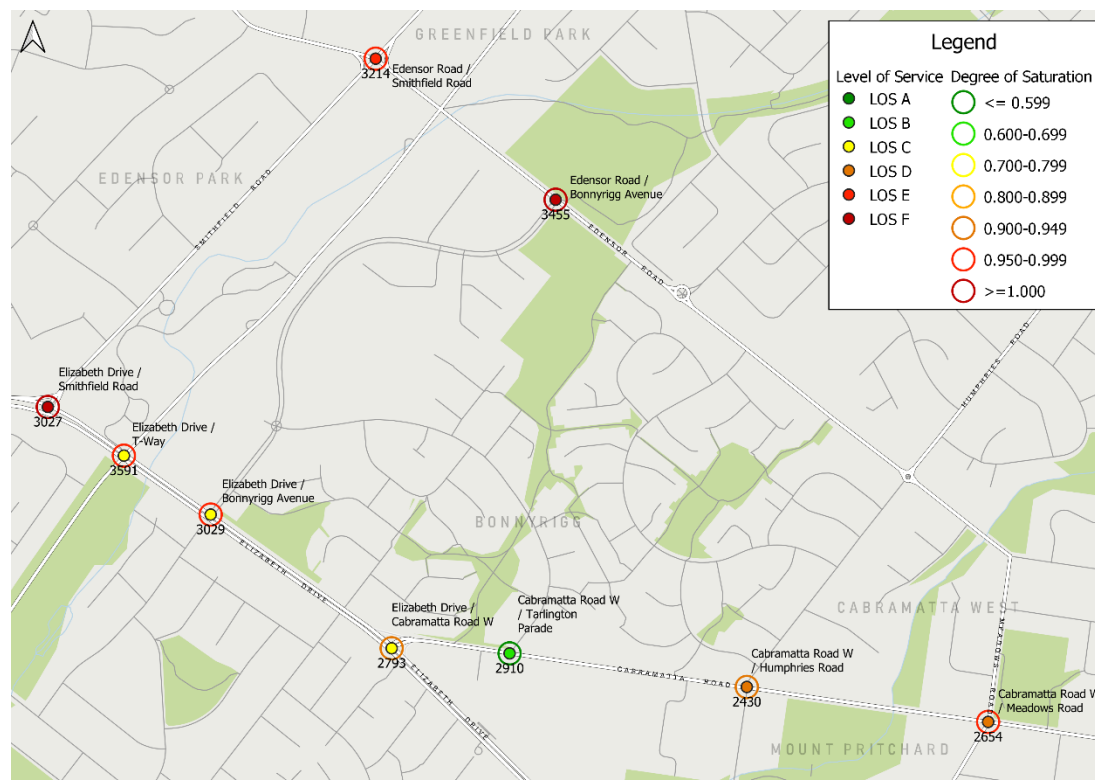
The 2031 results demonstrate that multiple sites surrounding the Prairiewood town centre are likely to fail to operate satisfactorily in the future, particularly at the following intersections:

- AM Peak
 - 2383 – The Horsley Drive/ Mimosa Road
- PM Peak
 - 2383 – The Horsley Drive/ Mimosa Road
 - 3765 – The Horsley Drive/ Nello Place
 - 3702 – The Horsley Drive/ Canley Vale Road/ T-way
 - 2586 – The Horsley Drive/ Elizabeth Street.

Bonnyrigg

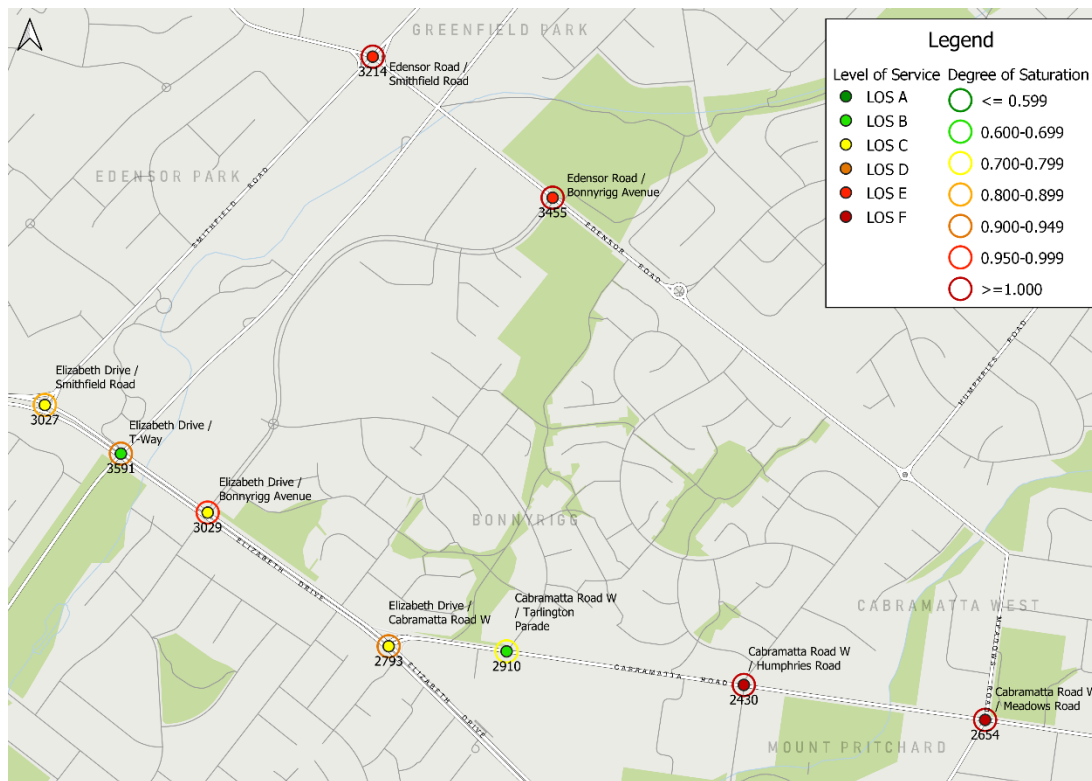
The 2031 model results for Bonnyrigg are presented in Figure 7.11 and Figure 7.12 for the AM and PM peak, respectively.

Figure 7.11: 2031 SIDRA Model Results Output Summary – Bonnyrigg – AM Peak



Source: GTA

Figure 7.12: 2031 SIDRA Model Results Output Summary – Bonnyrigg – PM Peak



Source: GTA

The 2031 results demonstrate that multiple sites surrounding Bonnyrigg town centre are not likely to operate satisfactorily in the future, particularly at the following intersections:

- AM Peak
 - 3027 – Elizabeth Drive/ Smithfield Road
 - 3591 – Elizabeth Drive/ T-way
 - 3029 – Elizabeth Drive/ Bonnyrigg Avenue
 - 2793 – Elizabeth Drive/ Cabramatta Road
 - 3455 – Edensor Road/ Bonnyrigg Avenue
 - 3214 – Edensor Road/ Smithfield Road
 - 2654 – Cabramatta Road West/ Meadows Road
- PM Peak
 - 3029 – Elizabeth Drive/ Bonnyrigg Avenue
 - 3455 – Edensor Road/ Bonnyrigg Avenue
 - 3214 – Edensor Road/ Smithfield Road
 - 2430 – Cabramatta Road/ Humphries Road
 - 2654 – Cabramatta Road West/ Meadows Road.

7.3.3. Mitigation Measures

Following a review of the demands and the limitations of the existing intersection layouts, some ideas for mitigations have been proposed which may address some of the capacity constraints. It is noted that these ideas have not been tested specifically in the model and are instead intended to be discussed with Council to understand if there are proposed projects for the subject intersections, whether similar changes have been discussed in the past and potentially discounted or if there would be other reasons which make these ideas not feasible. Details on these initial ideas are presented in Appendix A and recommendations are included in Section 9.4.2.

7.3.4. Summary

The analysis completed for this project identifies that there are several intersections around the Prairiewood and Bonnyrigg town centres which could be expected to operate poorly in the future if the anticipated intersection demands are realised. Therefore, it is recommended that Council review whether mitigation treatments are available for the intersections and further modelling undertaken.

8. ISSUES AND OPPORTUNITIES

08

8.1. Summary of Priorities

A summary of key issues and opportunities is presented in Table 8.1 to Table 8.4. The summary outlines the issues and opportunities that were identified in the preceding analysis of the existing transport conditions and categorises them by travel mode or focus area. The identified issues and opportunities will be used to inform ideas around the potential future transport changes that are required and the recommended actions going forward.

Key transport issues and opportunities identified earlier by Council and various documents such as the LSPS and Urban Studies have also been set out in Table 8.1 to Table 8.4, with the purpose of ensuring earlier identified issues and opportunities have alignment with the findings of this transport study.

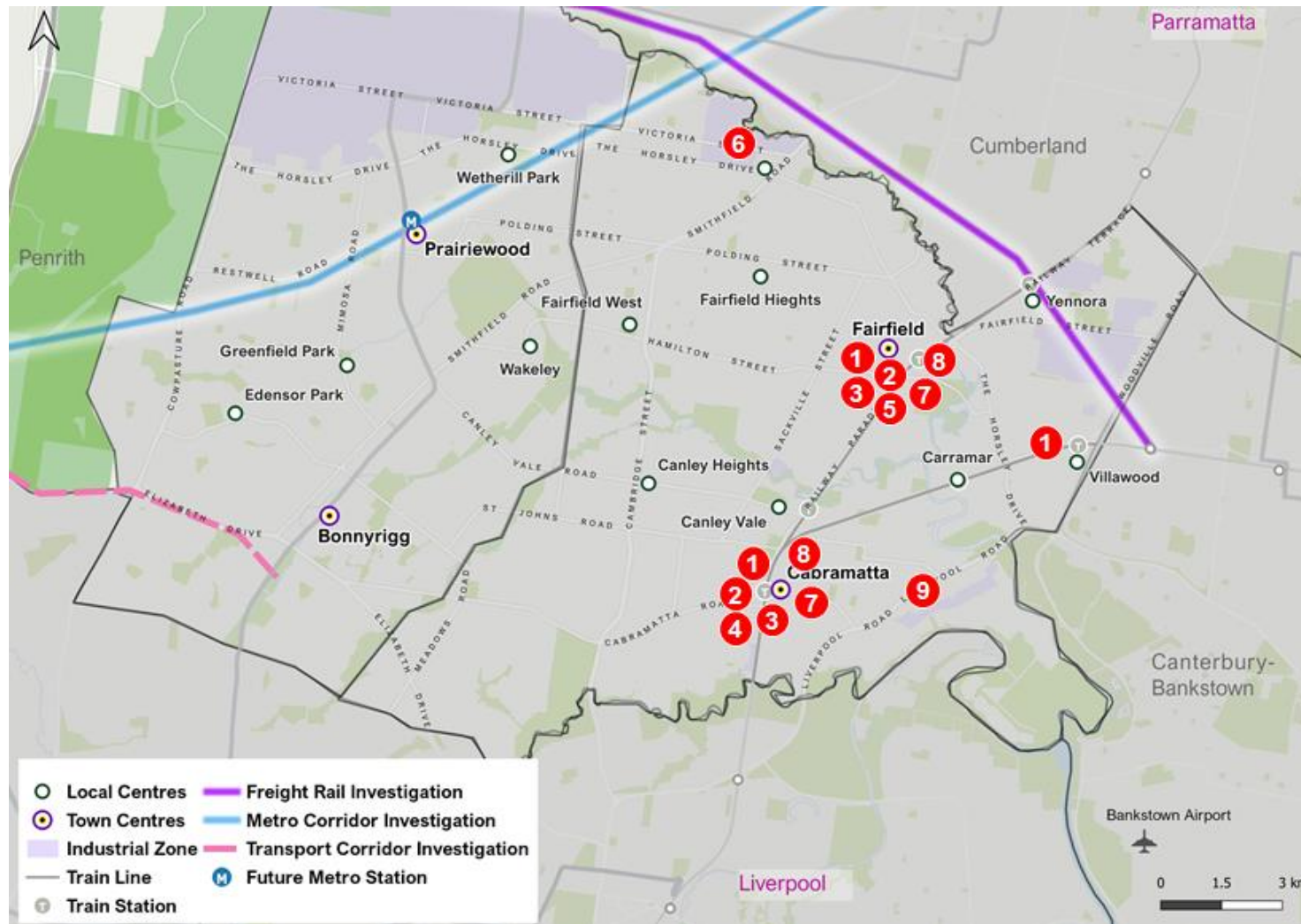
These have been broken into the three different LSPS areas (West, Central and East) in the following section.

Table 8.1: Key Issues and Opportunities in the Eastern Area

Reference Number	Issues and Opportunities
1	Growing population in Fairfield, Villawood and Cabramatta will lead to more pressure on public transport and road infrastructure and is likely to increase the need for active transport infrastructure.
2	The high number of people which have limited English language skills, especially around Fairfield and Cabramatta, is a challenge for Council. It requires a focus on signage for information such as public transport timetables and parking access.
3	High car mode share for residents and employees despite being close to frequent public transport hubs.
4	Public Transport is infrequent, especially on weekends.
5	Bus interchange at Fairfield is at capacity.
6	High number of freight movements through the LGA related to Smithfield and Wetherill Park.
7	Readily available on-street parking is preferred and reduces use of off-street car parks in town centres.
8	Lack of high-quality pedestrian facilities around town centres such as Fairfield and Cabramatta
9	Potential future congestion on Hume Highway.

ISSUES AND OPPORTUNITIES

Figure 8.1: Key Issues and Opportunities in the Eastern Area



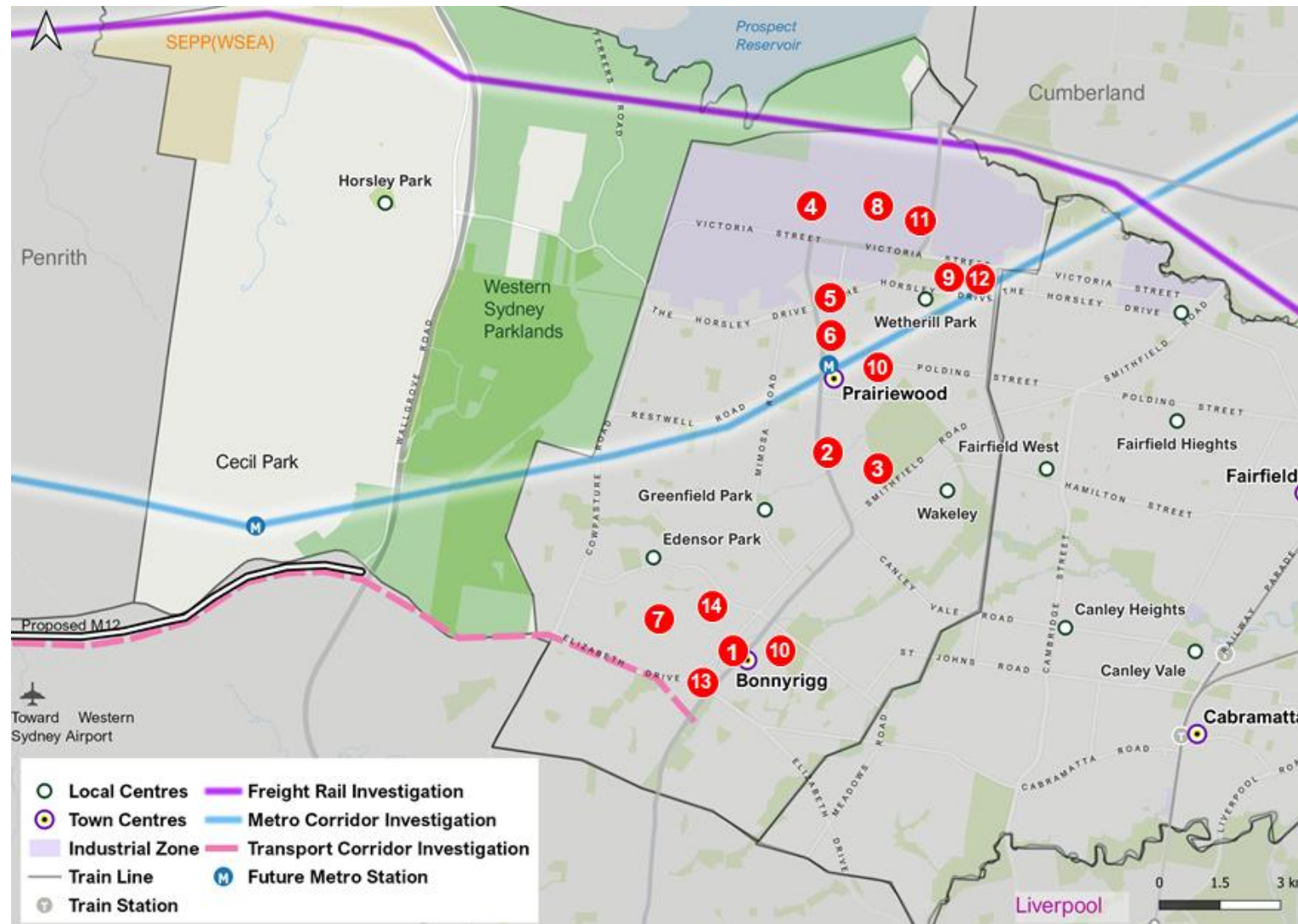
Source: GTA

Table 8.2: Key Issues and Opportunities in the Central Area

Ref	Issues and Opportunities
1	Growing population at Bonnyrigg will lead to more pressure on public transport and road infrastructure and is likely to increase the need for active transport infrastructure.
2	T-way is indirect and long winded; no access from Prairiewood to Parramatta or Liverpool within 30 minutes.
3	Public Transport is infrequent, especially around Fairfield Showground
4	Lack of public transport across Wetherill Park as the T-way only runs through the centre.
5	Multiple intersections on The Horsley Drive will stop to operate satisfactorily by 2031.
6	T-way intersections are inefficient for traffic within Wetherill Park.
7	Three schools at Bonnyrigg Heights add to AM peak congestion along Elizabeth Drive.
8	High number of freight movements related to Wetherill Park
9	Poor permeability for traffic at Wetherill Park due to several cul-de-sacs and large blocks
10	Deficiency on parking restrictions causing congestion and parking overflows to local streets at Centres, e.g. Prairiewood
11	Large trucks parking on-street for at Wetherill Park blocking sightlines at intersections and driveway accesses. Trade parking is not accommodated for on-site within the industrial estate.
12	Poor permeability for active transport users in Wetherill Park.
13	Future increasing traffic congestion on Elizabeth Drive and Smithfield Road.
14	Multiple intersections across local Bonnyrigg road network expected to operate unsatisfactorily by 2031.

ISSUES AND OPPORTUNITIES

Figure 8.2: Key Issues and Opportunities in the Central Area



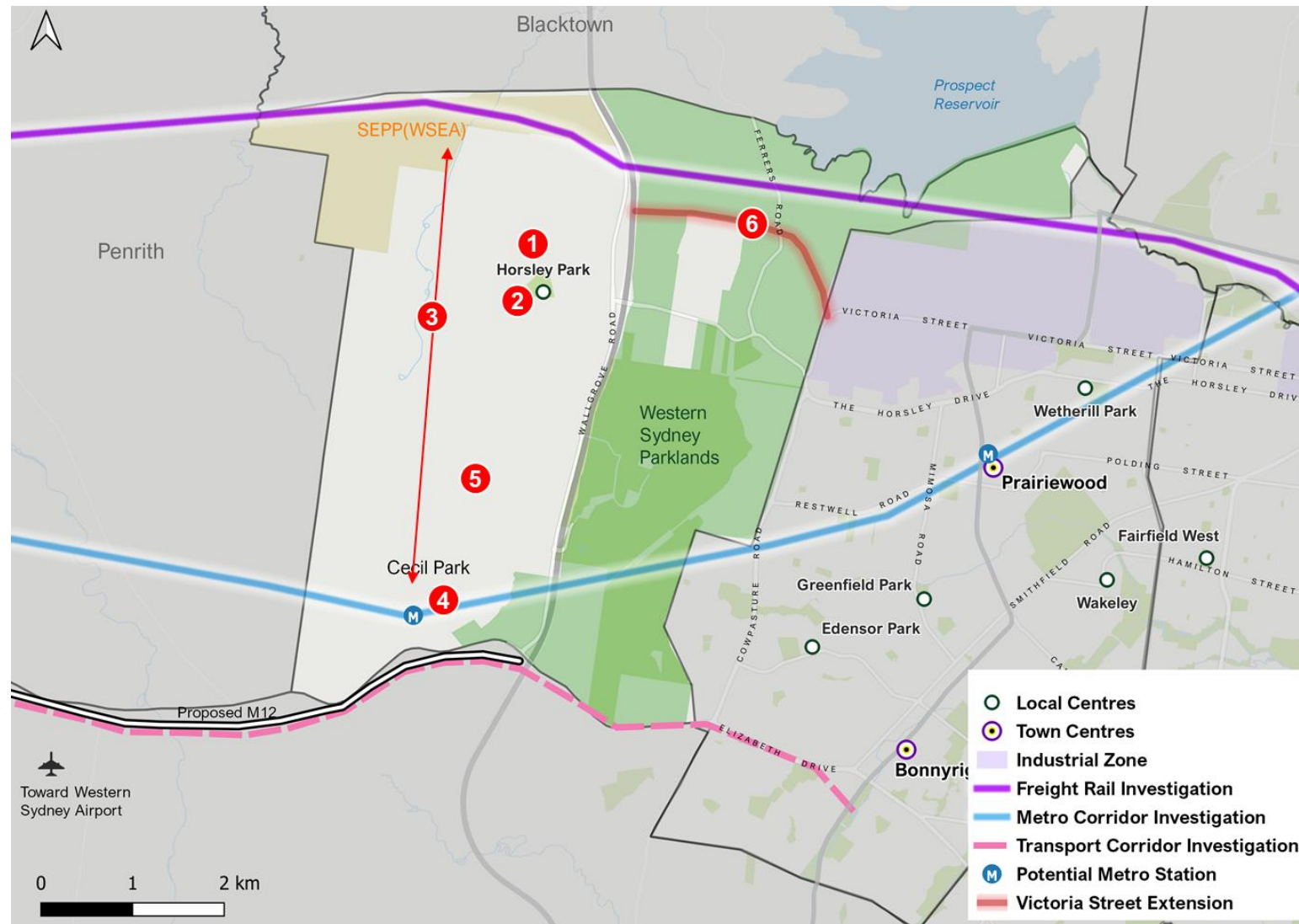
Source: GTA

Table 8.3: Key Issues and Opportunities in the Western Area

Ref	Issues and Opportunities
1	More jobs are expected within Horsley Park which will require more active and public transport facilities.
2	Public transport coverage for the western sections of the LGA is poor.
3	There is no north-south public transport to connect Western Sydney Employment Area to Horsley Park and Cecil Park.
4	Future mass-transit station at Cecil Park attracts more population to Cecil Park with more demand for active transport facilities around the station.
5	Opportunity to plan for and deliver the future road network in the UIA works program.
6	Victoria Street extension from Wetherill Park industrial estate to improve regional connectivity.

ISSUES AND OPPORTUNITIES

Figure 8.3: Key Issues and Opportunities in the Western Area



ISSUES AND OPPORTUNITIES

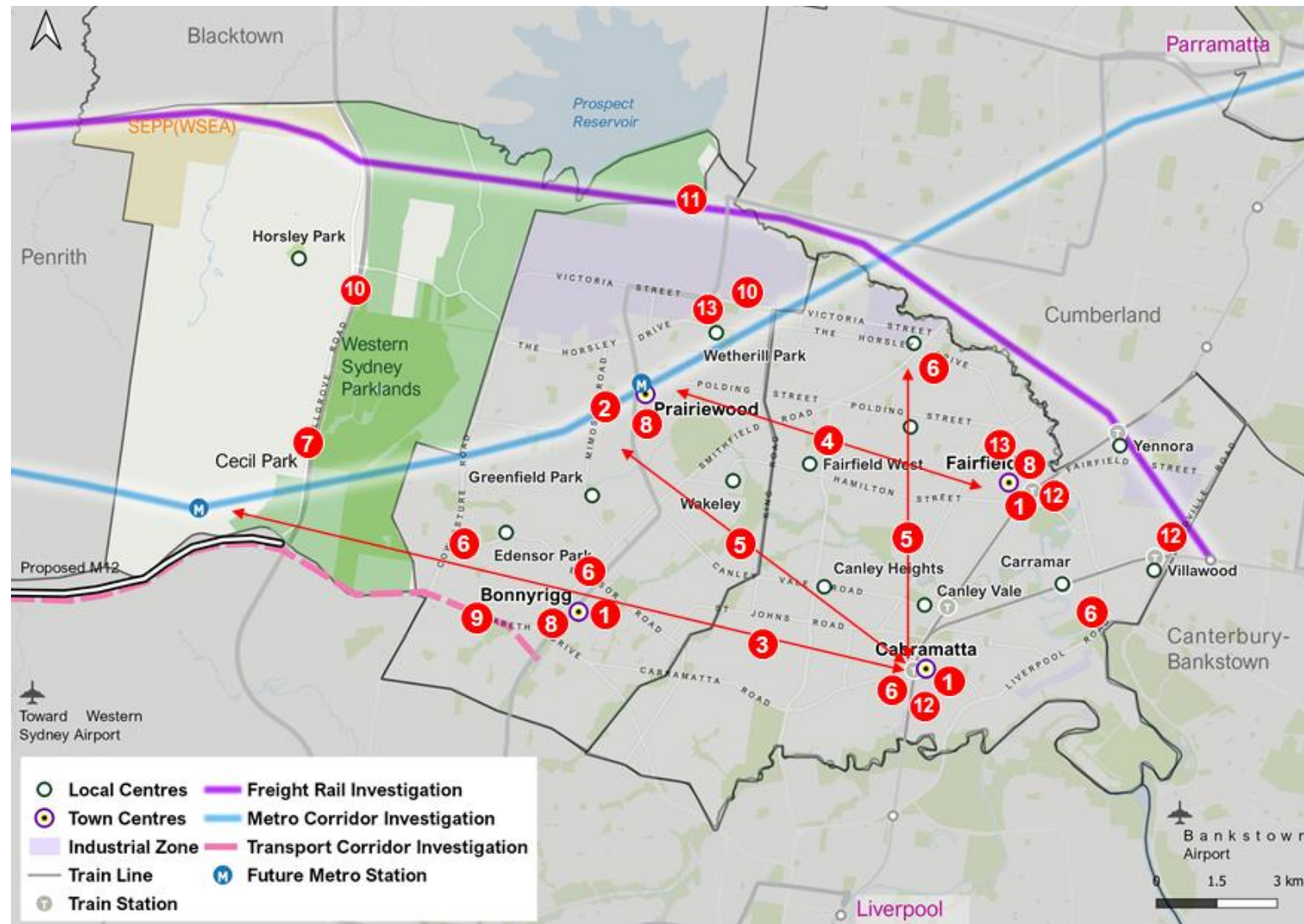
Source: GTA

Table 8.4: Key Issues and Opportunities LGA-wide

Ref	Issues and Opportunities
1	Safety concerns at high volume intersections in town centres.
2	Upcoming major rail infrastructure including Sydney Metro in Parramatta and Western Sydney Airport, and Western Sydney Airport to Parramatta line.
3	Lack of east-west public transport link in southern section of the LGA.
4	Lack of direct and frequent public transport connection between Fairfield and Prairiewood.
5	Lack of accessibility from Cabramatta to northern, north-western and western precincts of the LGA within 30 minutes.
6	High traffic volumes along key regional roads and through local centres.
7A	Major road corridors are being required to move high volumes of traffic, with much traffic travelling through the LGA rather than to or from the LGA.
7B	Major road corridors separate the LGA with poor permeability for regional traffic travelling through the LGA, including buses.
8	Localized congestions at town centres, reducing level of service and preventing access to them.
9	Elizabeth Drive upgrade as part of the M12 motorway constructions for Western Sydney Airport. Expecting increased travel demand in the east-west movement.
10	Freight routes are experiencing high demand and congestion.
11	Western Sydney Freight Line has the potential to relieve road freight demand.
12	Population growth expected around centres, which requires better parking management to meet the additional demands.
13	Safety issues due to pedestrians and heavy vehicle conflicts.
14	Cycling routes exist for recreational cycling but not integrated for other purpose, leading to a lack of commuter cycling across the LGA.
15	Competing demands for on-street parking between residents, businesses, schools and commuters.

ISSUES AND OPPORTUNITIES

Figure 8.4: Key Issues and Opportunities LGA-wide



Source: GTA

9. PROPOSED ACTIONS

09

9.1. Introduction

The Fairfield Transport Study has developed a vision, strategic themes and objectives and actions that address the key issues, opportunities and priorities identified in the preceding chapters. The vision for the study reflects the transport-related priorities from the Fairfield City LSPS. This vision flows into a series of strategic themes and objectives which were co-designed with the project team from Council.

The proposed actions subsequently realise the proposed objectives and reflect the strategic themes and are categorised as short term (within three years), medium term (within the next five years) and long-term (beyond five years). The actions support the proposed mode share targets to allow Council to monitor progress in implementing this strategy. The actions, objectives, themes and overall vision were developed based on previous document reviews, data analysis, ideas from stakeholder discussions, and GTA's local and interstate experience and research. The process that has led to the development of the actions is indicated in Figure 9.1

Figure 9.1: Study Roadmap



Source: GTA

9.2. Vision

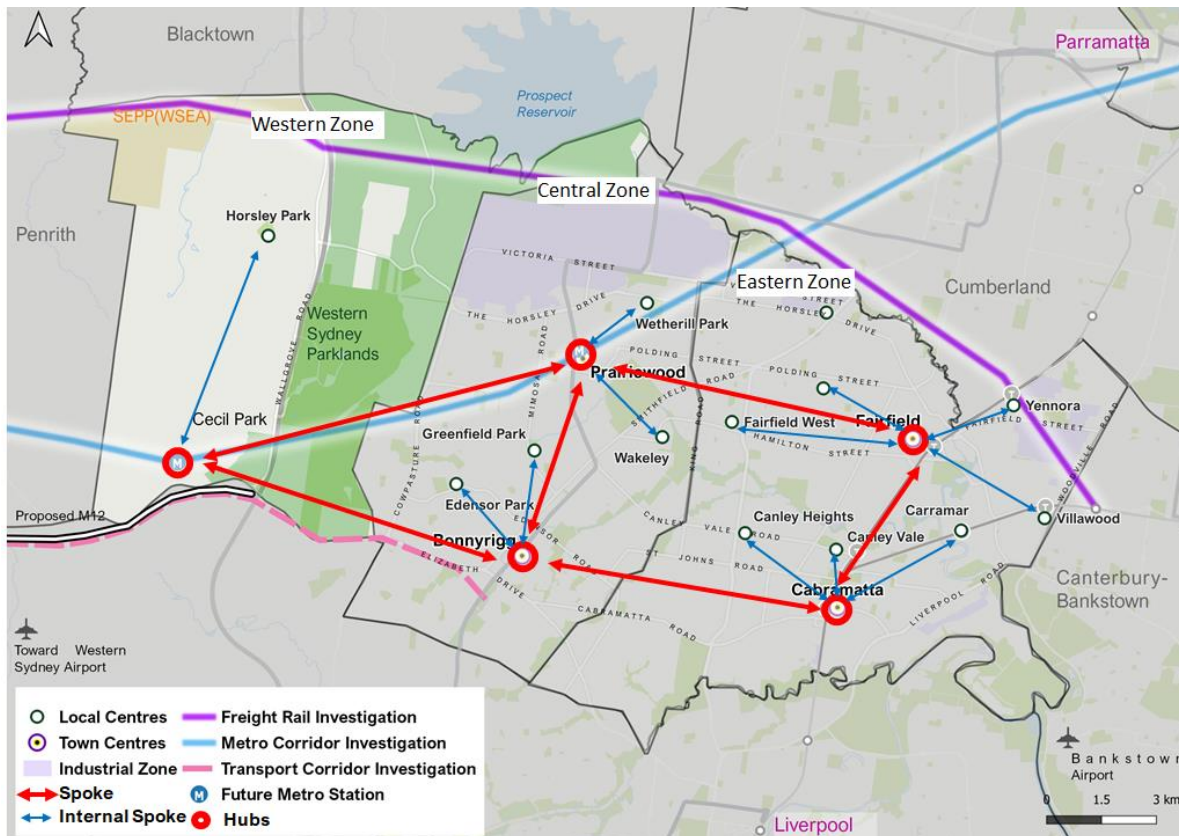
The vision for Fairfield LGA is to connect people to their homes, jobs, centres, community and recreational areas through connected, integrated, efficient and accessible movement options.

Given the size of the LGA, spread of centres, its population and jobs within the LGA, and existing and future issues and opportunities, the vision is to build on the existing hubs of Fairfield, Cabramatta, Prairiewood and Bonnyrigg with the addition of Cecil Park as a future hub. The hubs all include major facilities and act as strategic centres in the LGA. They will be connected with each other via frequent public transport services and a cycling network (where possible) to reduce the demand on the road network.

Figure 9.2 shows the identified hubs including Fairfield Town Centre, Cabramatta Town Centre in the Eastern Zone, Prairiewood Town Centre and Bonnyrigg Town Centre within the Central Zone, and Cecil Park in the Western Zone.

Other centres across the LGA will connect to the hubs based on their proximity in order to benefit from multimodal transport facilities at each hub.

Figure 9.2: Integrated Local Access Strategy Indicative Framework



Source: GTA

9.3. Strategic Themes and Objectives

The following strategic themes and objectives in Table 9.1 were identified as an outcome of the issues, challenges and opportunities identified early in the study and set out to achieve the overarching vision and objectives for Fairfield City.

Table 9.1: Strategic Themes and Objectives

Access and Connectivity between Hubs	Enhance the Function of Hubs	Improve Safety	Encourage Behavioural Change
Improve bus, walking and cycling access to town centres, employment locations and major destinations	Manage movement impacts on place and improve place function of the hubs	Improve safety for people walking, cycling and driving	Encourage and facilitate behaviour change to achieve mode shift, vehicle travel reduction and peak spreading
Enable multi-modal cross-regional connectivity	Allocating more road space to sustainable modes and people activities	Reduce barriers to people walking and cycling	Invest in active and public transport by leveraging off new developments to shape sustainable land use

The themes and supporting objectives are explained further below.

9.3.1. Access and Connectivity between Hubs

Improve bus, walking and cycling access to town centres, employment locations and major destinations

Access to town centres, employment locations, major destinations and markets in the LGA is essential to improving the economic and social well-being of Fairfield's residents and workers. Access provided to these locations via walking and cycling or bus is important as they represent safe, space-efficient and environmentally sustainable ways of moving large volumes of people to centres without the negative impacts associated with access by car (e.g. congestion and parking needs). Strategies to improve access by walking and cycling include the establishment of new safe active transport connections and facilities to centres and key destinations, but also include creating safe walking and cycling conditions within centres to prioritise people walking and cycling through design measures that lower vehicle speeds and allocate more space for people.

Recognising that not everyone within the LGA is within a reasonable walking and cycling distance to centres and key destinations in Fairfield, the provision of convenient and direct access to hubs via public transport is equally as important to ensure equitable access to jobs and services throughout the LGA. To do so, introducing on-demand services in the LGA can provide improved travel times for customers and facilitate a mode shift from car to public transport.

Enable multi-modal cross-regional connectivity

Fairfield is connected to neighbouring LGAs and Greater Sydney via existing road, rail, bus and cycling networks. With the emergence of the new Western Sydney Airport and Bankstown Health and Educational hub in adjoining LGAs, it is equally important to focus on advocating frequent public transport which connects the hubs within the LGA to destinations outside the LGA. In addition, high quality and safe cross-regional walking and cycling connections to key destinations in neighbouring LGAs are required. In doing so, these connections expand Fairfield's residents' reach to other parts of Greater Sydney and equally make Fairfield a more accessible destination for employment, shopping and recreation.

9.3.2. Enhance the Function of Hubs

Manage movement impacts on place and improve place function of the hubs and

Allocate more road space to sustainable modes and people activities

The NSW Movement and Place Framework identifies streets which support a high intensity of place activity (e.g. people, trade, shopping, social interactions, residential activity) and a high intensity of movement activity (e.g. high traffic volumes), which are known as Main Streets. Such streets are often found in existing town centres such as Cabramatta or emerging centres of development such as Bonnyrigg and Prairiewood. It is important that Council identify ways to manage the adverse impacts of movement on place activity in these centres to ensure these centres continue to be attractive destinations for people. Example measures include street space allocation for people activity and redistributing parking to peripheral parts of a centre.

Furthermore, there are also roads with predominantly high movement activity that hold special importance for certain groups of people, which are known as Main Roads. In these locations, interventions that improve safe access to these places and foster a balanced level of place activity will be important.

In addition to reallocating space for people activities, other ways to support a place function in places throughout the LGA includes allocating space for public transport and cycling. For example, this may involve repurposing a vehicle lane to a bus priority lane or redesigning bus stops to allow greater space for kerb buildouts and floating bus stops for cycling. Such measures assist with reducing the movement intensity associated with motorised modes, which in turn contributes to a greater appreciation of local places.

9.3.3. Improve Safety

Improve safety for people walking, cycling and driving

Creating safe conditions for people walking and cycling will enable and normalise walking and cycling as the preferred day-to-day transport mode for short trips. This can be achieved by providing new facilities that make active transport more accessible and safer. Where possible, walking and cycling should have their own spaces that are not shared with other transport modes. In areas of high pedestrian and bicycle volumes, street configurations should be amended to reflect this, for example Cabramatta Town Centre.

To provide an overall safer road environment for drivers, speed limits should be reviewed and reduced where possible to lower crash severities and the probability of fatalities and serious injury. The design of streets and roads in environments where there is a conflict between large volumes of vehicles and people walking and cycling should also be reviewed, as the design may be encouraging speeds higher than the posted speed limit. This is especially relevant for areas where there are high numbers of vulnerable road users, including the elderly and disabled, who may require extended time to cross wide busy roads.

Reduce barriers to people walking and cycling

The propensity to walk and cycle is inversely related to the presence of missing connections, safe crossing opportunities and safe route facilities to reach key destinations. Providing a network of priority walking and cycling links will help to make walking and cycling safer, more accessible and a more attractive mode choice for journeys within the Fairfield. Identifying and targeting roads and streets with infrequent crossing facilities and missing safe connections will encourage more people to try walking and cycling as their preferred mode of choice for shorter trips.

9.3.4. Encourage Behaviour Change

Encourage behaviour change to achieve mode shift, vehicle travel reduction and peak spreading

Behavioural change to achieve greater mode shift to public transport and active transport, a reduction in vehicle kilometres travelled and peak spreading can be realised through the previously discussed objectives as well as travel demand management.

Travel demand management balances the transport network by first understanding where there are current and forecast pressures, and then working out where there is spare capacity for these to move to. These movements are then redistributed to different modes, times, and routes with spare capacity. Behaviour change is the key, and effective travel demand management measures can:

- Manage expectations – so that reasonable expectations are set.
- Manage demand at hotspots – re-time, re-mode, re-route, spread the peak.
- Help optimise the transport network – by providing users with guidance on the most appropriate routes.
- Provide foundations for long-term positive behavioural change.

Invest in active and public transport by leveraging of new development to shape sustainable land use

Council has direct control over the maintenance and operation of local roads, footpaths, bus shelters and shared paths for people walking and cycling and are charged with reviewing and approving development applications. When reviewing applications, Council's role is to ensure development is consistent with local and State planning policy. Council can also propose changes to influence car parking, the provision of footpaths, bicycle parking and land use planning controls to shape and influence the way our cities are created.

Council should also pursue opportunities for large sites to provide new walking and cycling connections as part of new development applications, to ensure new developments create attractive environments for walking and cycling and demonstrate a genuine commitment to sustainable travel.

9.3.5. Linkage with actions

Each of the mode or place-specific actions identified in the following section is aligned to at least one of the strategic themes outlined above. These actions present direct, practical initiatives which Council can own and bring to life to realise the strategy's vision and objectives. The reference numbers used in the table and map of actions do not denote priority.

9.4. Actions

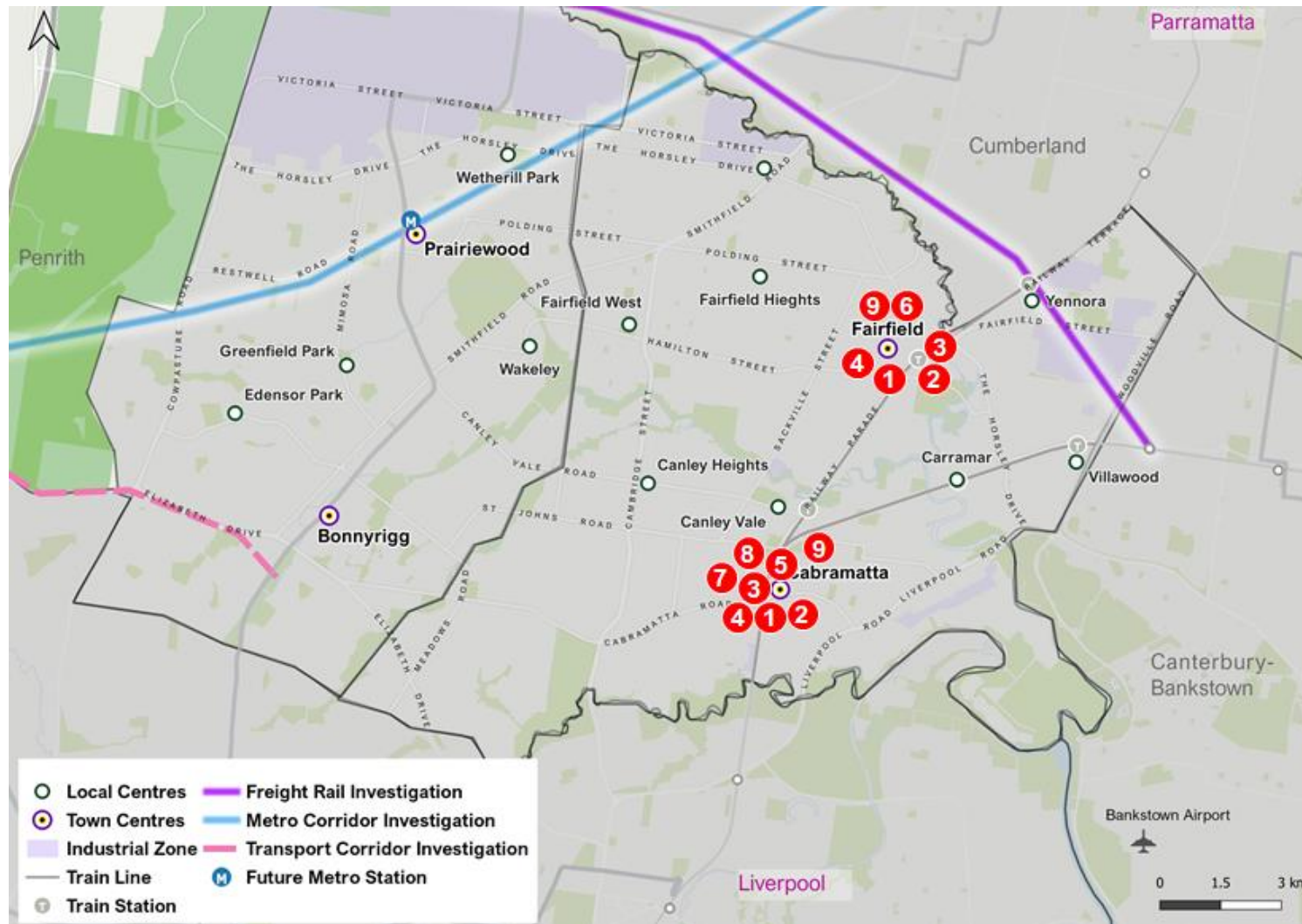
9.4.1. Eastern Area

Table 9.2: Eastern Area Recommended Actions

Ref	Recommended Action	Principles	Priority	Timing	Responsibility
1	Implement the recommendations of public domain studies and urban design studies to provide more walking and cycling facilities around Fairfield and Cabramatta Town Centres	Enhance Function of Hubs, Improve Safety	high	Medium	Council/ TfNSW
2	Increase community awareness programs in multiple languages, provide more multi-lingual signs and pamphlets, especially around Fairfield and Cabramatta	Encourage Behavioural Change	Medium	Long	Council/ TfNSW
3	Investigate high risk locations for safety improvements around Fairfield and Cabramatta Town Centres	Enhance Function of Hubs, Improve Safety	High	Short	Council/ TfNSW
4	Consider introduction of car sharing and dedicated car sharing parking spaces around centres, within developments over a certain size	Access and Connectivity between Hubs, Enhance Function of Hubs	Medium	Long	Council and other relevant stakeholders
5	Investigate more frequent train services at Cabramatta Station on weekends to help mode shift from car to public transport	Access and Connectivity between Hubs	High	Short	Council/ TfNSW
6	Investigate redeveloping the bus interchange to facilitate more buses at Fairfield Station	Enhance Function of Hubs	Medium	Medium	Council/ TfNSW
7	Investigate parking management on Cabramatta and Fairfield town centres to manage the parking supply and revise the restrictions, enforcements and signage.	Enhance Function of Hubs, Encourage Behaviour Change	High	Short	Council/ TfNSW
8	Investigate resident parking schemes on local roads around Cabramatta Town Centre	Enhance Function of Hubs	Low	Long	Council/ TfNSW
9	Investigate more walking links and pedestrian-only laneways at Fairfield and Cabramatta Town Centres	Enhance Function of Hubs	High	Short	Council/ TfNSW
10	Identify, investigate and implement local cycling links to connect regional network to the centres and residential areas	Access and Connectivity between Hubs	High	Medium to Long	Council/ TfNSW
11	Identify, investigate and implement end of trip facilities at train stations and centres, educational facilities to encourage more cycling	Enhance Function of Hubs, Encourage Behaviour Change	Medium	Short	Council/ Private developers/ Department of Education

PROPOSED ACTIONS

Figure 9.3: Eastern Zone Recommended Actions



Source: GTA

PROPOSED ACTIONS

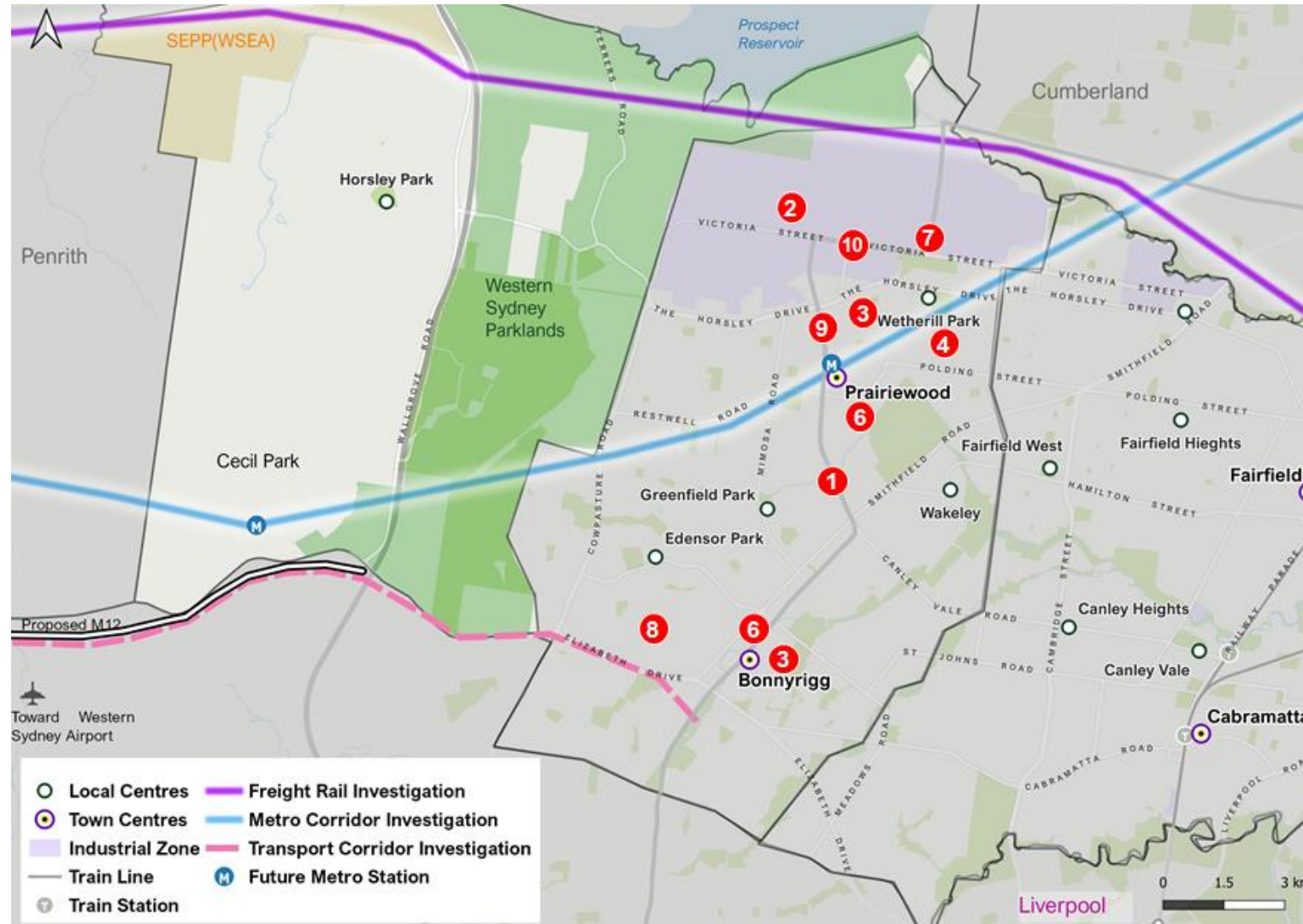
9.4.2. Central Area

Table 9.3: Central Area Recommended Actions

Ref	Recommended Action	Principles	Priority	Timing	Responsibility
1	Investigate and provide more express services along the T-Way with limited stops	Access and Connectivity between Hubs	High	Short	TfNSW/ Council
2	Investigate new public transport services from frequent public transport hubs to the industrial estate in Wetherill Park	Access and Connectivity between Hubs	High	Medium	TfNSW/ Council
3	Investigate resident parking schemes on local roads around Prairiewood Town Centre and Fairfield Showground	Enhance Function of Hubs	Medium	Medium	TfNSW/ Council
4	Review the sightlines and restrict parking accordingly at intersections and driveway accesses at Wetherill Park	Improve Safety	High	Short	TfNSW/ Council
5	Extend cul-de-sacs to connect to the closest main road at Wetherill Park	Access and Connectivity between Hubs	Low	Short	Council
6	Investigate walking and cycling facilities at Bonnyrigg and Prairiewood	Access and Connectivity between Hubs, Enhance Function of Hubs	High	Medium	TfNSW/ Council
7	Rationalise freight access to road network to limit freight related conflicts on roads and streets round industrial area at Wetherill Park	Access and Connectivity between Hubs, Improve Safety	High	Medium	TfNSW/ Council
8	Investigate low performance at Wilson Road/ Elizabeth Drive intersection particularly during AM peak, and provide mitigation measures	Access and Connectivity between Hubs	Medium	Medium	Council/ TfNSW
9	Investigate low performance intersections and provide mitigation measures along T-Way, especially around Wetherill Park	Access and Connectivity between Hubs	High	Short	Council/ TfNSW
10	Identify the problematic intersections and realign them for more efficient throughput, explore additional east-west connection to Victoria Street along Wetherill Park road network	Access and Connectivity between Hubs	High	Short to Medium	Council/ TfNSW

PROPOSED ACTIONS

Figure 9.4: Central Zone Recommended Actions



Source: GTA

PROPOSED ACTIONS

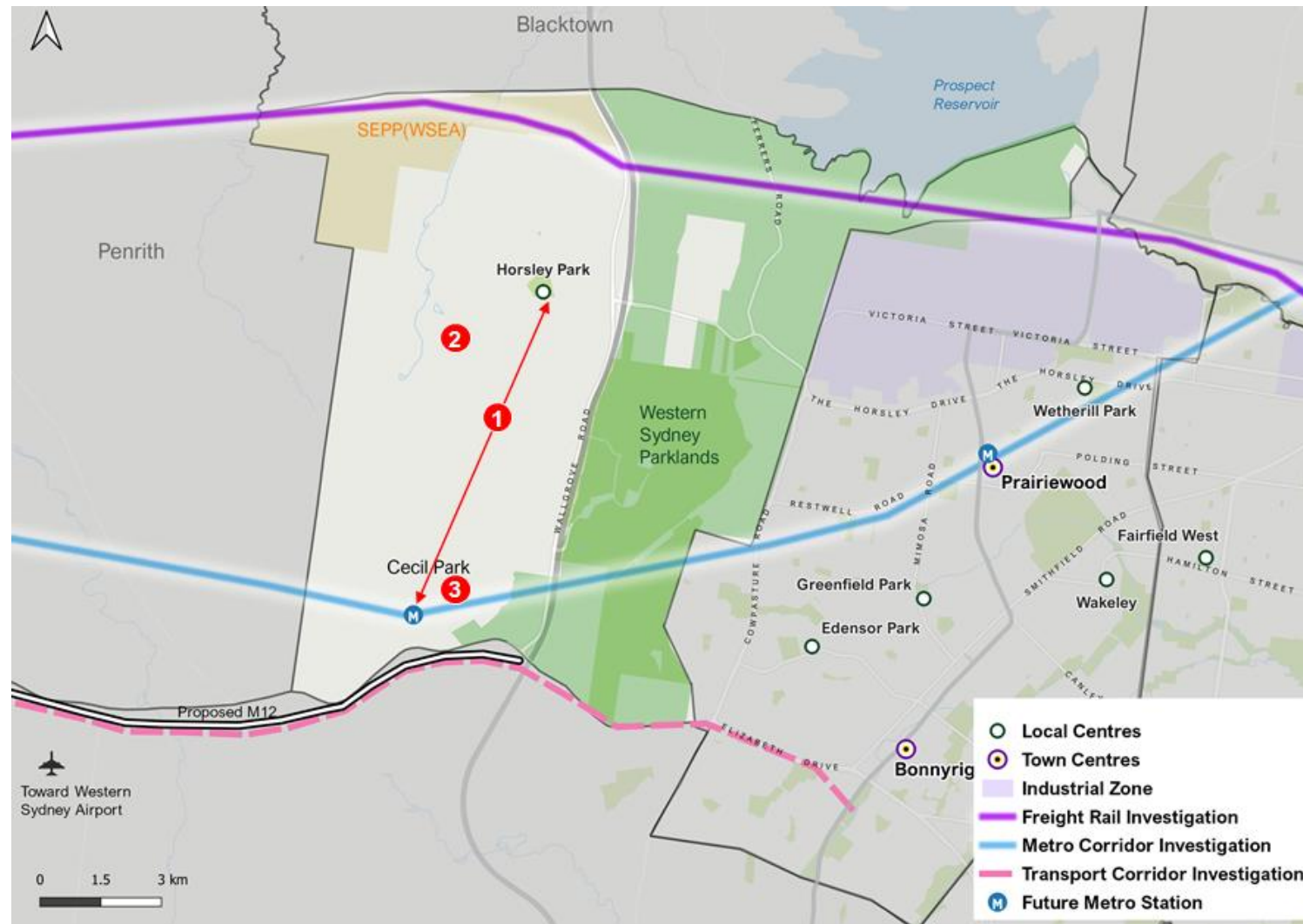
9.4.3. Western Area

Table 9.4: Western Area Recommended Actions

Ref	Recommended Action	Principles	Priority	Timing	Responsibility
1	Investigate more frequent bus services around Horsley Park	Access and Connectivity between Hubs	Medium	Long	TfNSW/ Council
2	Investigate bus services to cover western sections of the LGA	Access and Connectivity between Hubs	High	Medium	TfNSW/ Council
3	Investigate walking and cycling facilities to support Cecil Park as future transport hub	Enhance Function of Hubs	Medium	Medium	TfNSW/ Council

PROPOSED ACTIONS

Figure 9.5: Western Area Recommended Actions



Source: GTA

PROPOSED ACTIONS

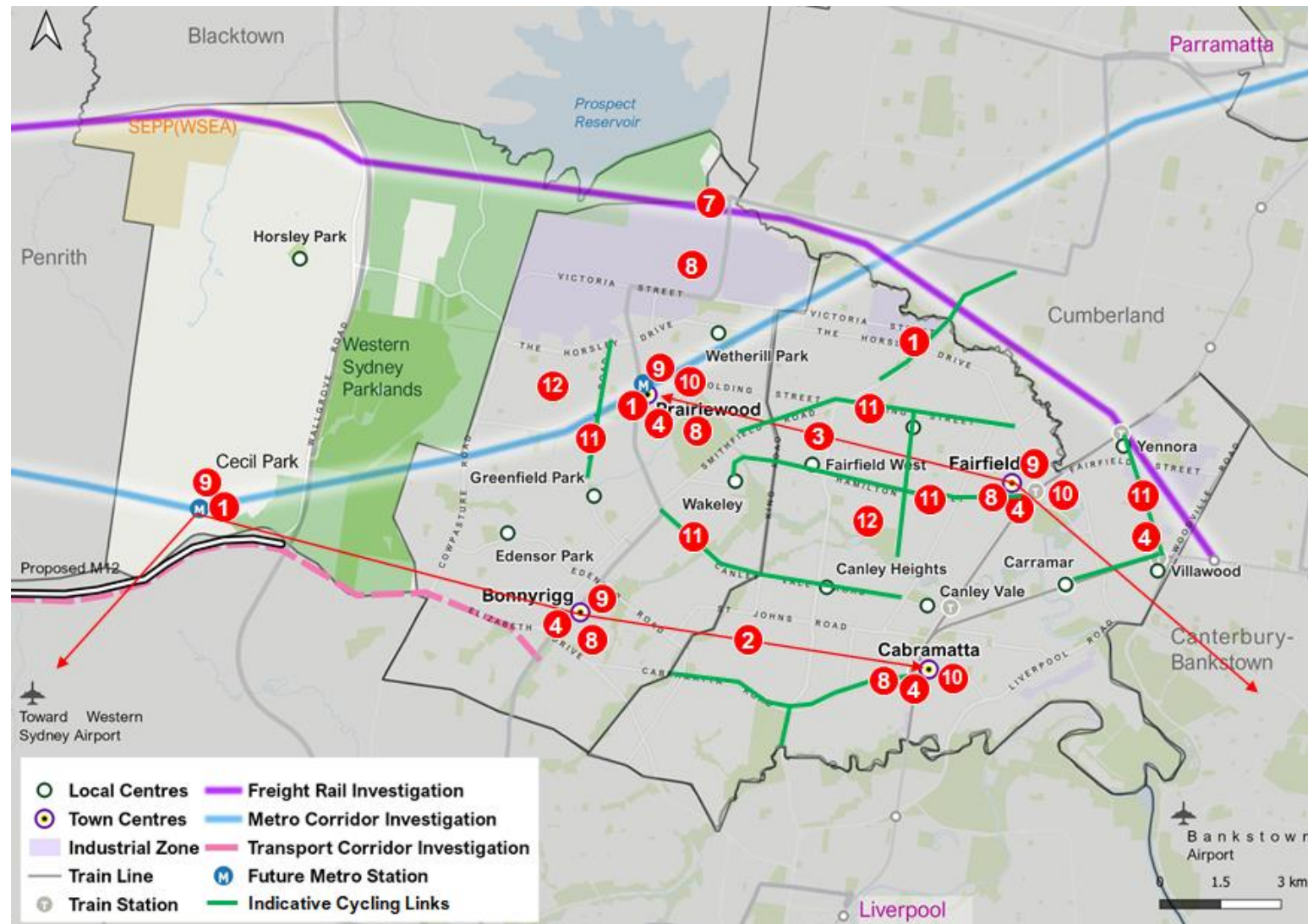
9.4.4. LGA-Wide Actions

Table 9.5: LGA-wide Recommended Actions

Ref	Recommended Action	Principles	Priority	Timing	Responsibility
1	Investigate additional train or metro stations at Cecil Park, Bonnyrigg and/or Smithfield. This includes collaboration on determining the alignment of the Parramatta to Western Sydney Airport passenger line	Access and Connectivity between Hubs	High	Long	TfNSW/ Council
2	Investigate east-west bus services to connect the southern section of the LGA to the Western Sydney Airport	Access and Connectivity between Hubs	Medium	Medium	TfNSW/ Council
3	Investigate new east west frequent public transport service between Fairfield and Prairiewood and Bankstown	Access and Connectivity between Hubs	High	Short to Medium	TfNSW/ Council
4	Investigate the performance of pinch points and constraints, especially at town centres and railway crossings	Enhance Function of Hubs	High	Short	TfNSW/ Council
5	Rationalise and encourage through traffic to be using the motorway instead of local roads	Access and Connectivity between Hubs	Medium	Medium	TfNSW/ Council
6	Investigate low performance intersections and provide mitigation measures at town centres	Access and Connectivity between Hubs, Enhance Function of Hubs	High	Medium	TfNSW/ Council
7	Council to work with TfNSW and Cumberland Council to investigate and establish the eastern section of the Western Sydney Freight Line	Access and Connectivity between Hubs	Medium	Medium to long	TfNSW/ Council
8	Increase in smaller sized ecommerce vehicles to provide better access to freight related destinations	Access and Connectivity between Hubs, Improve Safety	High	Short	TfNSW/ Council
9	Develop a parking strategy for public on-street and off-street parking and loading hubs	Enhance Function of Hubs	High	Medium	TfNSW/ Council
10	Review crash hotspots and mitigate safety issues for pedestrians and heavy vehicle conflicts	Improve Safety	High	Short	Council/ TfNSW
11	Investigate separated cycling infrastructures leading towards all town centres and major bike routes	Access and Connectivity between Hubs	High	Short to Medium	Council
12	Council working with relevant stakeholders to investigate internal bus network in terms of timetables and route selections	Access and Connectivity between Hubs, Enhance Function of Hubs	High	Short to Medium	Council
LGA- wide	Support and implement travel behaviour change programs to help manage demand on the transport network, including by encouraging new developments to implement Travel Demand Management measures to increase the use of sustainable transport choices	Encourage Behavioural Change	High	Long	Council/ TfNSW

PROPOSED ACTIONS

Figure 9.6: LGA-wide Recommended Actions



Source: GTA

A.COMPLETE MODELLING DETAILS

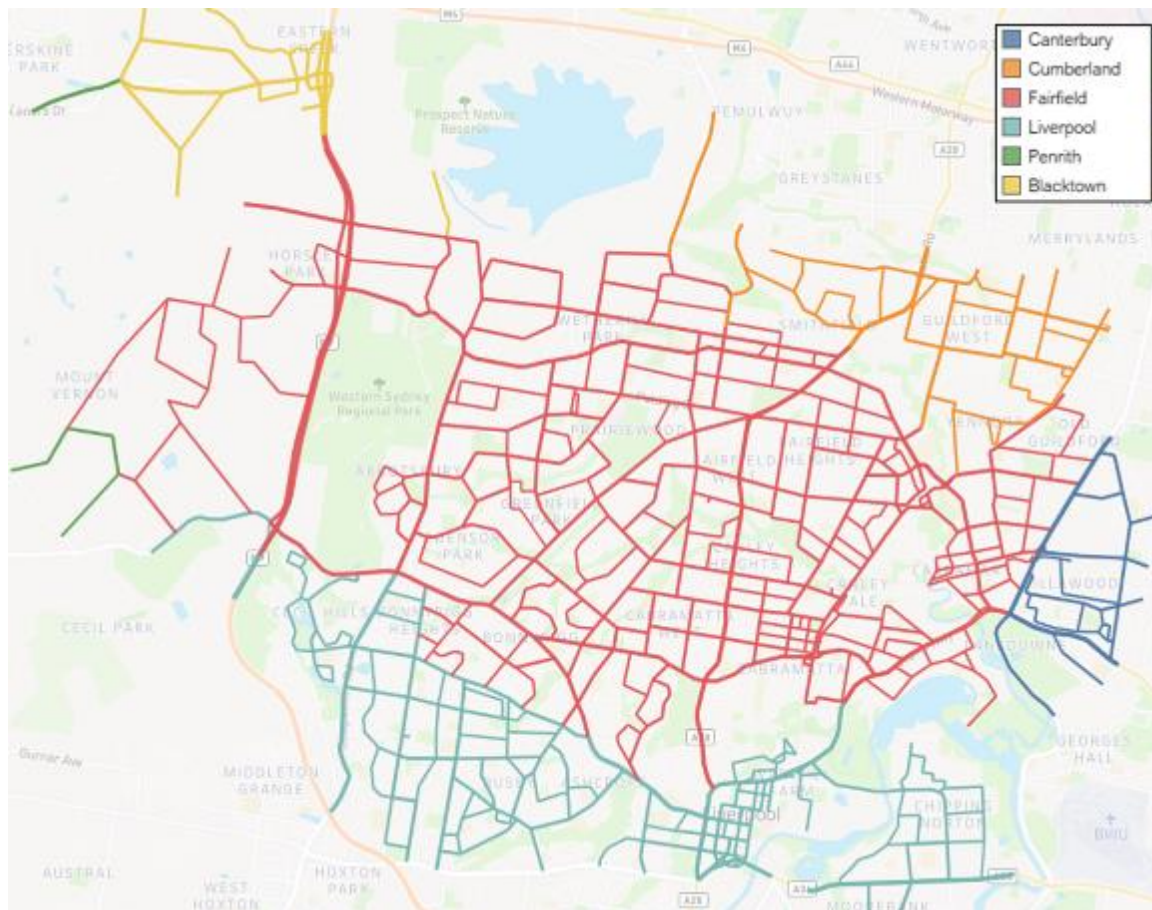


A.1. Strategic Modelling

A.1.1. Study Area

The following Figure A.6 depicts the study area of the network analysis.

Figure A.1: Network Analysis Study Area



Source: GTA

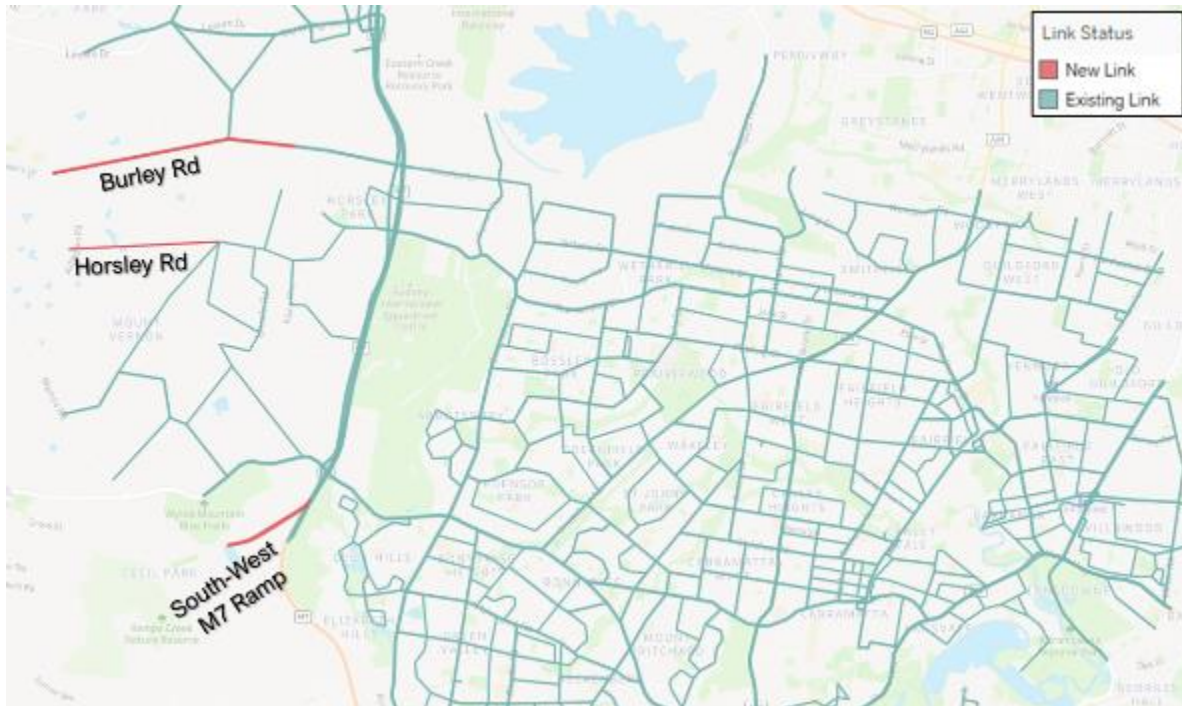
A.1.2. Model Assumptions

New Road Connections

Three new road connections were identified and assumed to be in operation in 2031. These are:

- Burley Road
- Horsley Road (extension of existing)
- South-West M7 Ramp

Figure A.2: New road connections



Source: GTA

Assumed Capacity Changes

A series of assumed capacity upgrades and downgrades are also included in the future base models. 2031 included the following upgrades:

1. Upgrade on Westlink M7 between Chandos St and The Horsley Dr
2. Upgrade on Prospect Hwy/ Widemere Rd between Reconciliation Rise and Hassall St
3. Upgrade on Hassall St between Widemere Rd and Gipps Rd
4. Upgrade on Davis Rd between Elizabeth St and Widemere Rd
5. Upgrade on Elizabeth St between Davis St and Frank St
6. Upgrade on Elizabeth St between Victoria St and The Horsley Dr
7. Upgrade on Sackville St between The Avenue and Bartley St/ St Johns Rd
8. Upgrade on Railway Pde between The Avenue and Cabramatta Rd E
9. Upgrade on Canley Vale Rd between Sackville St and Railway Pde
10. Upgrade on Bartley St between Sackville St and Railway Pde
11. Upgrade on Bareena St between Railway Pde and Vale St

The sole downgrade is on Elizabeth Street between Frank Street and Victoria Street. These upgrades and downgrades are shown subsequently.

Figure A.3: Assumed capacity upgrades 2031



Source: GTA

Figure A.4: Assumed capacity downgrades 2031



Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

The 2041 model contains one upgrade on The Horsley Drive between M7 Westlink and Cowpasture Road, shown below Figure A.5

Figure A.5: Assumed capacity upgrades 2041



Source: GTA

A.1.3. Model Results

Traffic Volumes – One Hour AM Peak

The following figures show the AM peak traffic volumes and vehicle kilometres travelled (VKT) for the 2021 and 2041 models.

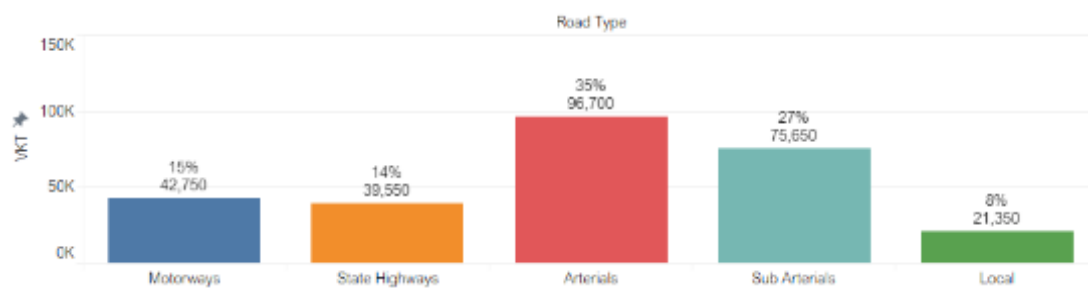
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.6: 2021 Traffic Volumes – AM Peak



Source: GTA

Figure A.7: 2021 Vehicle Kilometres Travelled (VKT) – AM Peak



Source: GTA

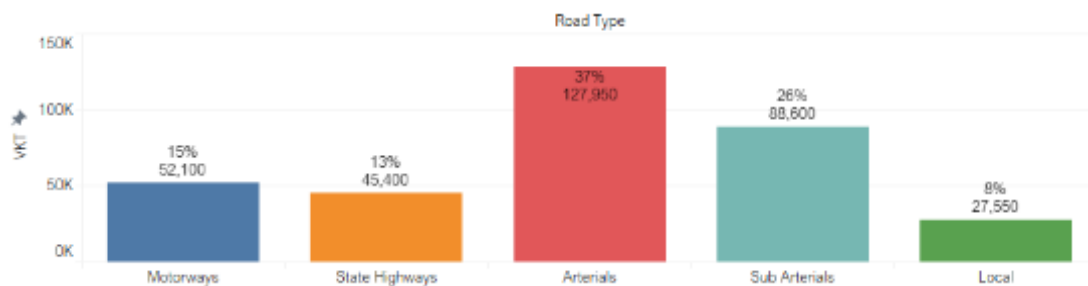
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.8: 2041 Traffic Volumes – AM Peak



Source: GTA

Figure A.9: 2041 Vehicle Kilometres Travelled (VKT) – AM Peak



Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

Traffic Volumes – One Hour PM Peak

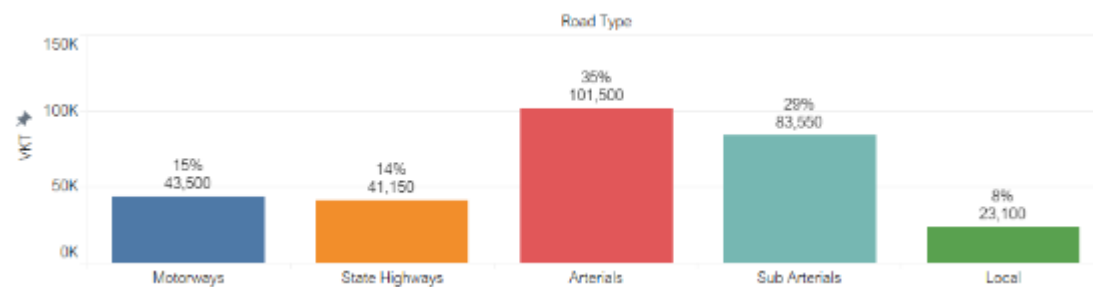
The following figures show the PM peak traffic volumes and vehicle kilometres travelled (VKT) for the 2021 and 2041 models.

Figure A.10: 2021 Traffic Volumes – PM Peak



Source: GTA

Figure A.11: 2021 Vehicle Kilometres Travelled (VKT) – AM Peak



Source: GTA

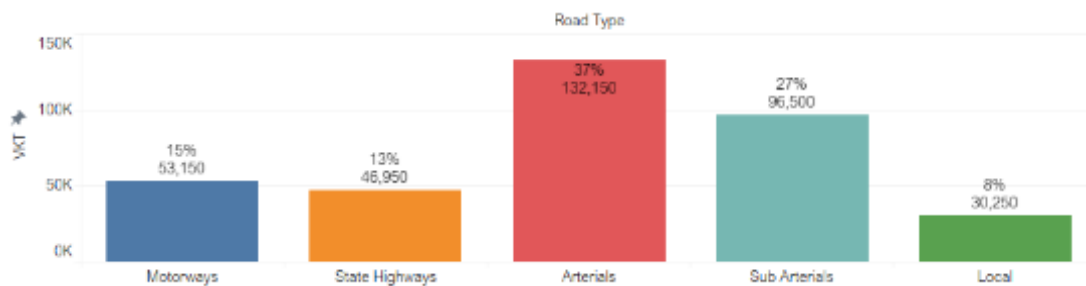
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.12: 2041 Traffic Volumes – PM Peak



Source: GTA

Figure A.13: 2041 Vehicle Kilometres Travelled (VKT) – PM Peak



Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

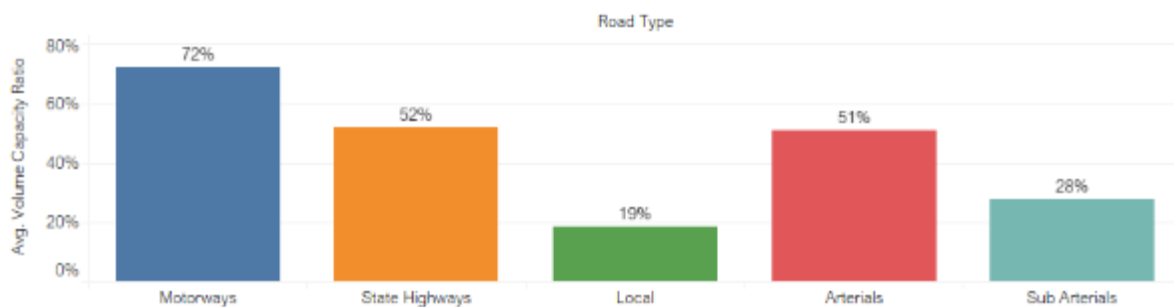
Level of Service

Figure A.14: 2021 VCR – AM Peak



Source: GTA

Figure A.15: 2021 Level of Service by Road Type – AM Peak



Source: GTA

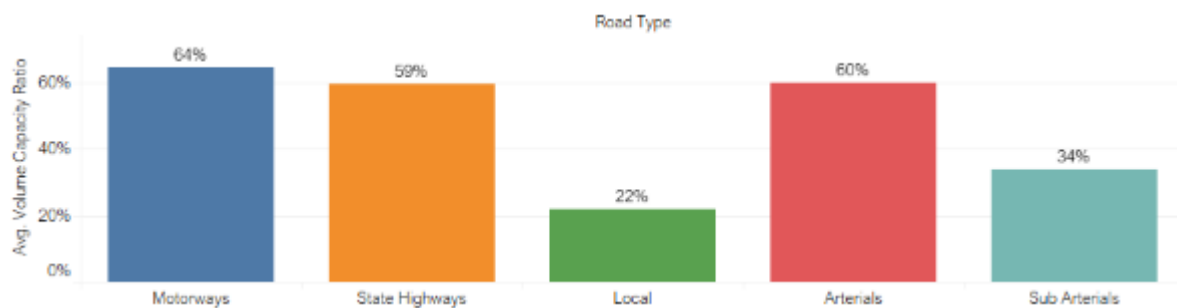
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.16: 2041 VCR – AM Peak



Source: GTA

Figure A.17: 2041 Level of Service by Road Type – AM Peak



Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.18: 2041/2021 VCR Change – AM Peak



Source: GTA

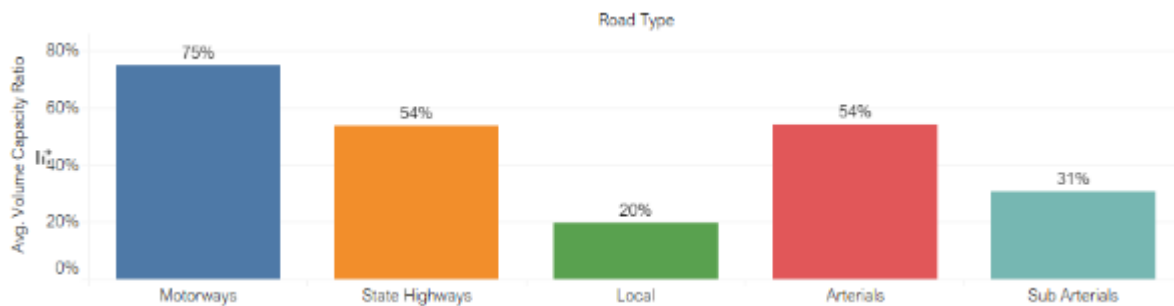
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.19: 2021 VCR – PM Peak



Source: GTA

Figure A.20: 2021 Level of Service by Road Type – PM Peak



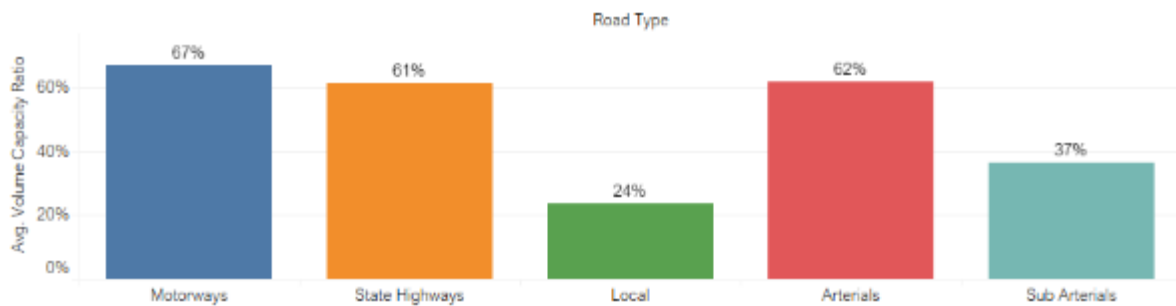
Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.21: 2041 VCR – PM Peak



Figure A.22: 2041 Level of Service by Road Type – PM Peak



Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.23: 2041/2021 VCR Change – PM Peak



Source: GTA

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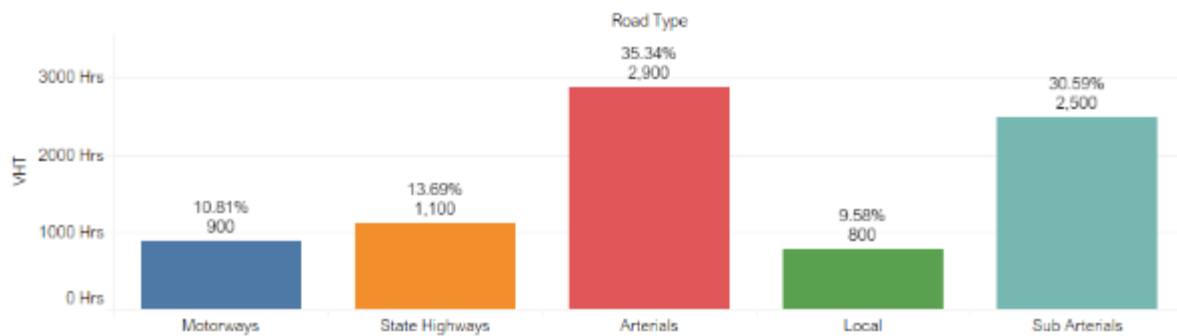
Estimated Travel Speed

Figure A.24: 2021 Estimated Travel Speeds – AM Peak



Source: GTA

Figure A.25: 2021 Vehicle Hours Travelled – AM Peak



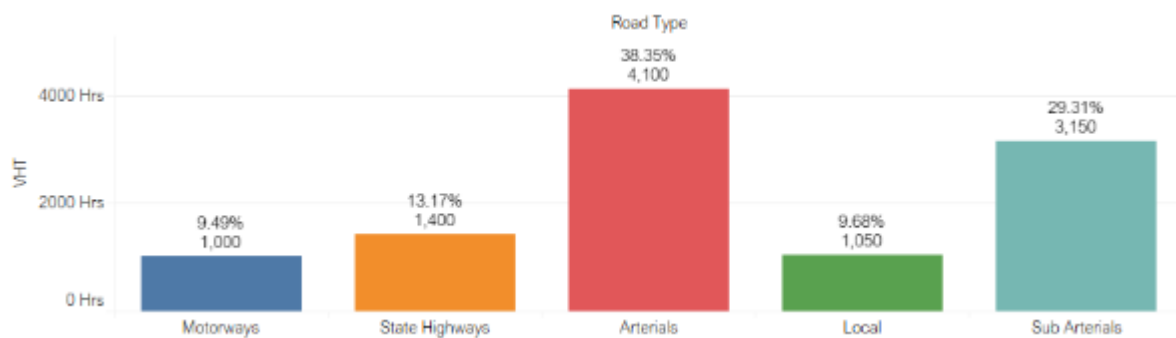
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.26: 2041 Estimated Travel Speeds – AM Peak



Source: GTA

Figure A.27: 2041 Vehicle Hours Travelled – AM Peak



Source: GTA

Figure A.28: 2041/2021 Travel Speed Change – AM Peak



Source: GTA

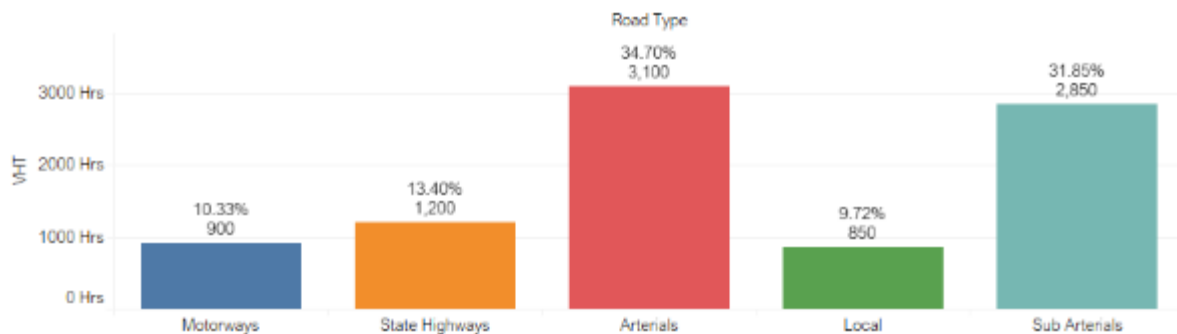
APPENDIX: COMPLETE MODELLING DETAILS

Figure A.29: 2021 Estimated Travel Speeds – PM Peak



Source: GTA

Figure A.30: 2021 Vehicle Hours Travelled – PM Peak



Source: GTA

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.31: 2041 Estimated Travel Speeds – PM Peak



Source: GTA

Figure A.32: 2041 Vehicle Hours Travelled – PM Peak

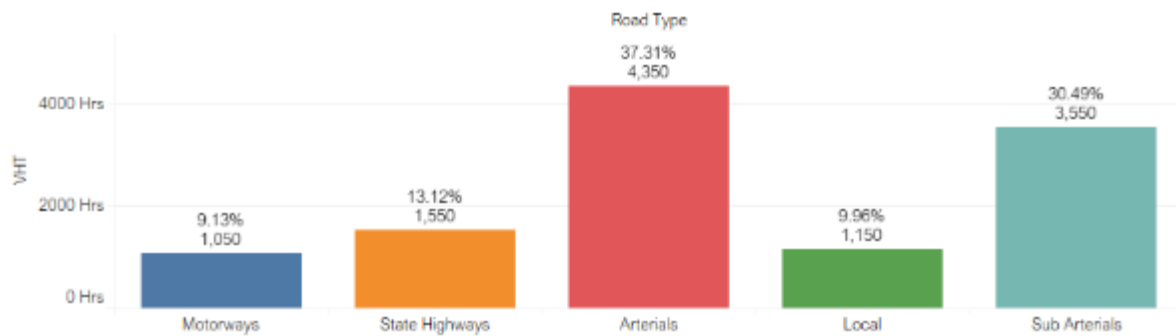


Figure A.33: 2041/2021 Travel Speed Change – PM Peak



A.2. Operational Modelling (Intersection Modelling)

A.2.1. Study Area

To assess the implications of the Fairfield Transport Study, the existing and future operation of key intersections within Prairiewood and Bonnyrigg have been assessed using SIDRA INTERSECTION 8¹⁵, a computer-based modelling package which calculates intersection performance. The modelled intersections are outlined below:

<u>Prairiewood</u>	<u>Bonnyrigg</u>
2383 – The Horsley Drive/ Mimosa Road	3027 – Elizabeth Drive/ Smithfield Road
3127 – Mimosa Road/ Polding Street	3591 – Elizabeth Drive/ T-Way
2653 – Mimosa Road/ Prairie Vale Road	3029 – Elizabeth Drive/ Bonnyrigg Avenue
3700 – Restwell Road/ T-Way	2793 – Elizabeth Drive/ Cabramatta Road West
3520 – Restwell Road/ Prairie Vale Road	2910 – Cabramatta Road West/ Tarlington Parade
2784 – Polding Road/ Prairie Vale Road/ Lily Street	2430 – Cabramatta Road West/ Humphries Road
3768 – The Horsley Drive/ Lily Street	2654 – Cabramatta Road West/ Meadows Road
2856 – The Horsley Drive/ Elizabeth Street	3455 – Edensor Road/ Bonnyrigg Avenue
3702 – The Horsley Drive/ Canley Vale Road/ T-Way	3560 – Edensor Road/ T-Way
3765 – The Horsley Drive/ Nello Place	3214 – Edensor Road/ Smithfield Road
3701 – Polding Street/ T-Way	4345 – Porteous Street/ Smithfield Road
3297 – Polding Street / Conrad Street	
3417 – Polding Street/ Shopping Centre Road	
3703 – Prairie Vale Road/ T-Way	
3741 – Restwell Road/ Shopping Centre Access	

¹⁵ Program used under license from Akcelik & Associates Pty Ltd.

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.34: Prairiewood Study Area

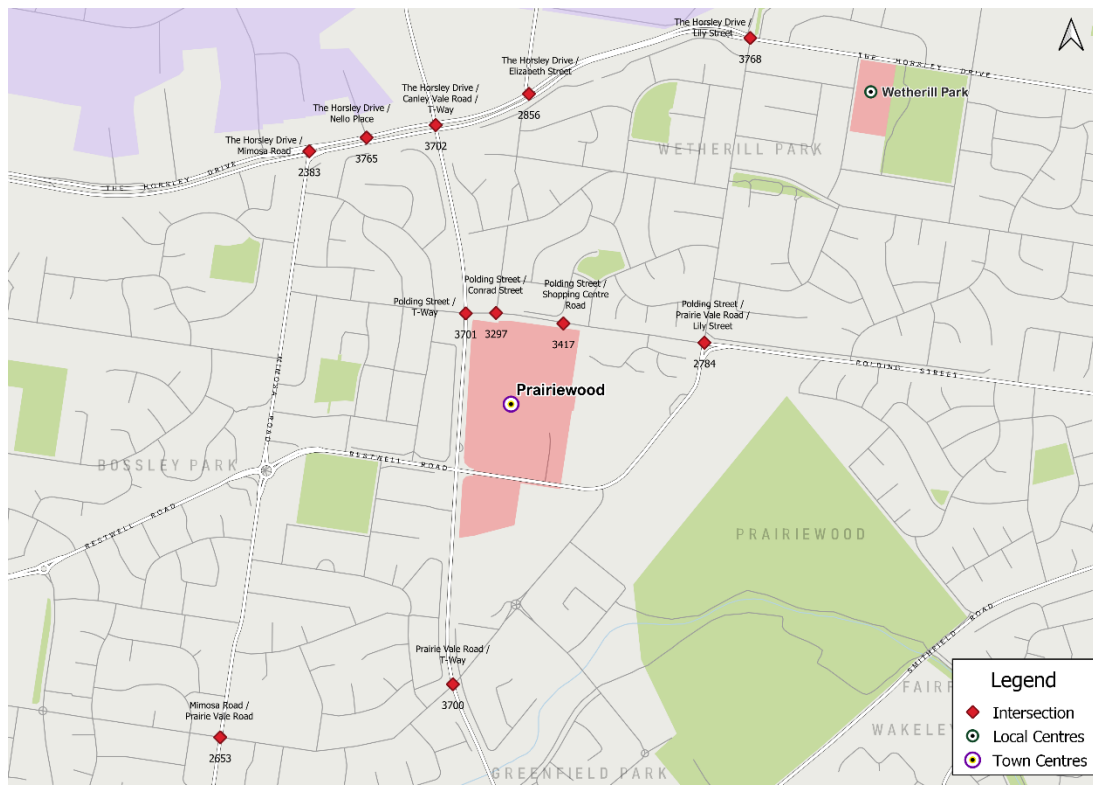
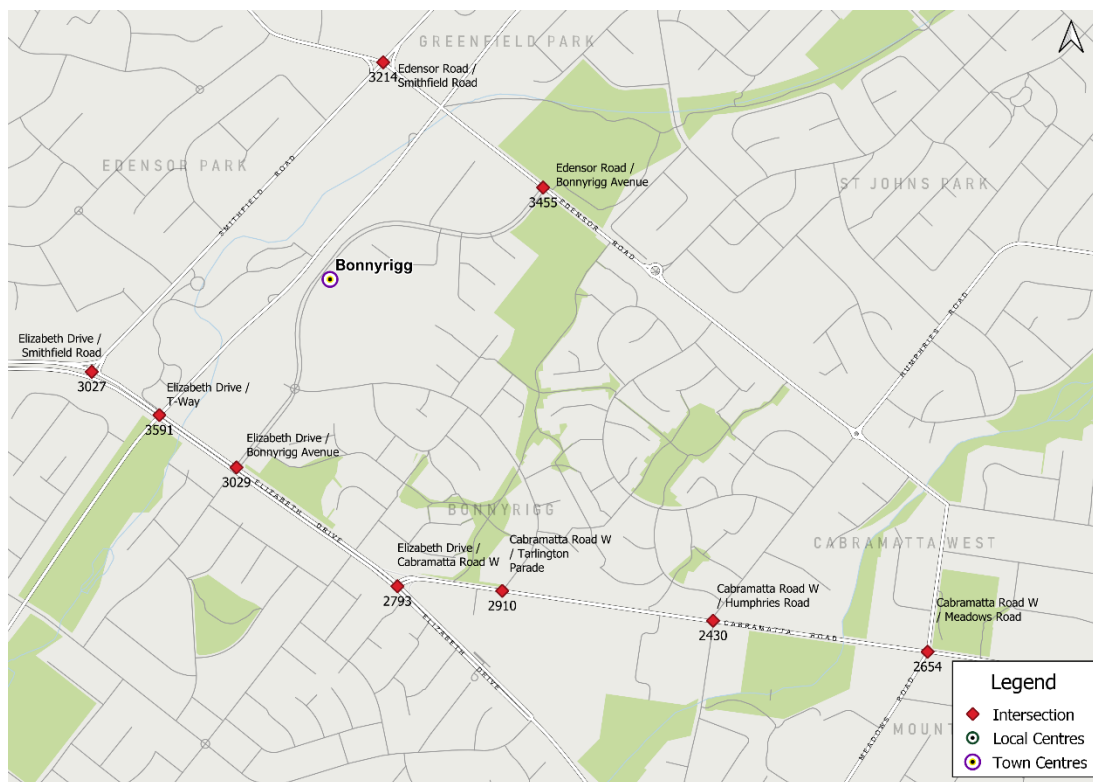


Figure A.35: Bonnyrigg Study Area



A.2.2. Base Model Development

Data Collection

A range of traffic data was collected to develop and calibrate the existing conditions models. A summary of the data collected was:

- Transport for NSW
 - SCATS TCS plans
 - SCATS Graphics
 - SCATS Detector Volume Data
 - SCATS Traffic Signal Timing Data
 - SCATS Sys.LX files for the FAI, FID01, FID02, WAR regions
 - Turning movement count surveys for Bonnyrigg

Intersection Geometry

The intersection geometries were developed based on the TCS plans and latest Nearmap aerial imagery to replicate existing conditions. Most of the intersections have been modelled as standalone intersections, however following the review of the SCATS Sys.LX files, it was identified that the following sites are linked at various times of the day. As such these intersections were set up as a network:

- Prairiewood
 - 2856 – The Horsley Drive / Elizabeth Street
 - 3702 – The Horsley Drive / Canley Vale Road / T-Way
 - 3765 – The Horsley Drive / Nello Place (PM peak only)
- Bonnyrigg
 - 3027 – Elizabeth Drive / Smithfield Road
 - 3591 – Elizabeth Drive / T-Way
 - 3029 – Elizabeth Drive / Bonnyrigg Avenue
 - 2793 – Elizabeth Drive / Cabramatta Road West

Intersection Volumes

The intersection volumes for the modelled intersections were developed using the aforementioned SCATS detector count data in conjunction with previous turning movement count surveys for certain Bonnyrigg sites.

The SCATS detector volume data was analysed to determine a standard weekday to supply the volume inputs to the model. Wednesday 13 November 2019 was chosen along with the associated peak periods:

- Prairiewood
 - AM peak 8:15am – 9:15am
 - PM peak 3:15pm – 4:15pm
- Bonnyrigg
 - AM peak 8:00am – 9:00am
 - PM peak 3:00pm – 4:00pm

APPENDIX: COMPLETE MODELLING DETAILS

There are a number of shared left turn/through and right turn/through lanes through the town centres. For Bonnyrigg, the previous turning movement count surveys at the following sites were utilised to identify the turning movement splits and these splits have been applied to the SCATS detector counts.

- 2910 – Cabramatta Road West/ Tarlington Parade
- 2430 – Cabramatta Road West/ Humphries Road
- 3455 – Edensor Road/ Bonnyrigg Avenue
- 3214 – Edensor Road/ Smithfield Road

However, for the remaining sites, there was no information available for the existing conditions turning movement splits. As such, turning splits have been assumed using the following methodology and priority:

1. Where possible, match site throughput demands with neighbouring sites to identify the volumes for left and right turners.
2. Alternatively, apply the following base rule assumption:

Detector Volume (shared lane)	Assumed Turn Volume
0 – 50 vehicles	50/ 50 detector volume split
50 – 100 vehicles	30 vehicles
100 – 200 vehicles	40 vehicles
200 – 300 vehicles	50 vehicles
300 – 400 vehicles	60 vehicles
400 – 500 vehicles	70 vehicles

Signal Timing Calibration

The traffic signal phasing was adopted from the TCS plans, and the operational phases identified from the SCATS signal timing data which was processed for the selected day and peak time periods.

The methodology adopted to align the SCATS phase splits within the SIDRA models is as follows:

- Adopt “User Given Cycle Length” and allow SIDRA to determine the phase splits.
- Compare the SIDRA determined phase splits against the SCATS phase splits. If they are very close for each phase (+/-2 seconds) keep the model as is and move on to the next intersection or peak.
- If the difference is further than +/- 2 seconds, apply limits to the maximum or minimum green times within the vehicle movement data, or amend the pedestrian phase actuation in order to match the phase time.

Following the calibration process, the SIDRA model phase splits align closely to the SCATS signal timing and therefore the models are considered suitable for use in assessing the existing and future conditions.

A.2.3. Performance Analysis Criteria

The operation of the aforementioned intersections have been assessed using SIDRA which calculate the intersection’s performance.

APPENDIX: COMPLETE MODELLING DETAILS

The commonly used measure of intersection performance, as defined by the Roads and Maritime Traffic Modelling Guidelines (version 1.0 – February 2013), is vehicle delay. SIDRA determines the average delay that vehicles encounter and provide a measure of the level of service.

For each intersection, the overall intersection delay and degree of saturation are reported. Delay and queue length results for the worst movement are also reported.

Table A.1 shows the criteria that are adopted in assessing the level of service.

Table A.1: Level of Service Criteria

Level of Service (LoS)	Average Delay per vehicle (secs/ veh)	Traffic Signals Performance
A	Less than 14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity, at signals incidents will cause excessive delays
F	Greater than 70	Extra capacity required

Source: Table 14.3 in the Roads and Maritime Traffic Modelling Guidelines (version 1.0 – February 2013)

A.2.4. Existing Conditions Model Results

Prairiewood

The existing base model results for Prairiewood are detailed in Table A.2 and presented in Figure A.36 and Figure A.37 for the AM and PM peak respectively.

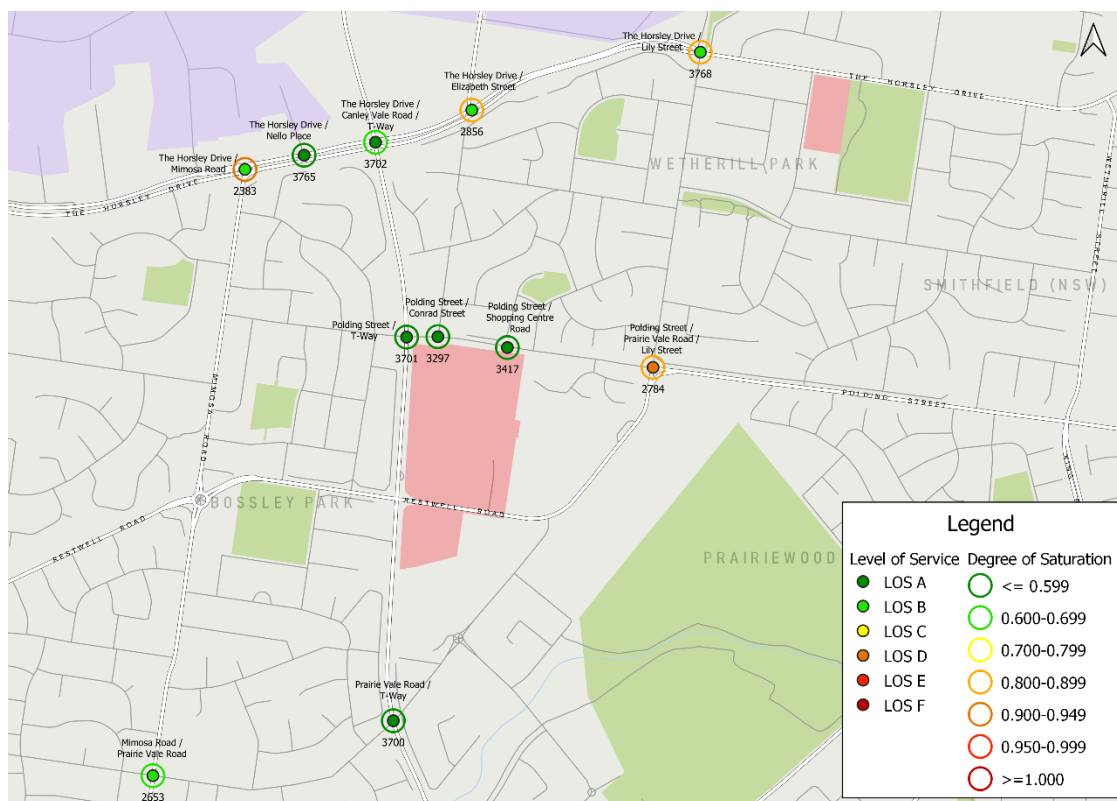
Table A.2: Existing Base SIDRA Model Results Output Summary - Prairiewood

Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
AM	2383	The Horsley Drive/ Mimosa Road	0.91	B	25s	161m
	2653	Mimosa Road/ Prairie Vale Road	0.70	B	18s	58m
	3700	Prairie Vale Road/ T-Way	0.28	A	3s	34m
	2784	Polding Street/ Prairie Vale Road/ Lily Street	0.87	D	44s	210m
	3768	The Horsley Drive/ Lily Street	0.80	B	15s	82m
	2856	The Horsley Drive/ Elizabeth Street	0.83	B	16s	84m
	3702	The Horsley Drive/ Canley Vale Road/ T-Way	0.69	A	14s	185m
	3765	The Horsley Drive/ Nello Place	0.59	A	7s	149m
	3701	Polding Street/ T-Way	0.26	A	5s	34m
	3297	Polding Street/ Conrad Street	0.31	A	10s	36m
	3417	Polding Street/ Shopping Centre Road	0.30	A	10s	33m
PM	2383	The Horsley Drive/ Mimosa Road	0.87	B	28s	219m
	2653	Mimosa Road/ Prairie Vale Road	0.82	B	20s	75m
	3700	Prairie Vale Road/ T-Way	0.21	A	5s	26m

APPENDIX: COMPLETE MODELLING DETAILS

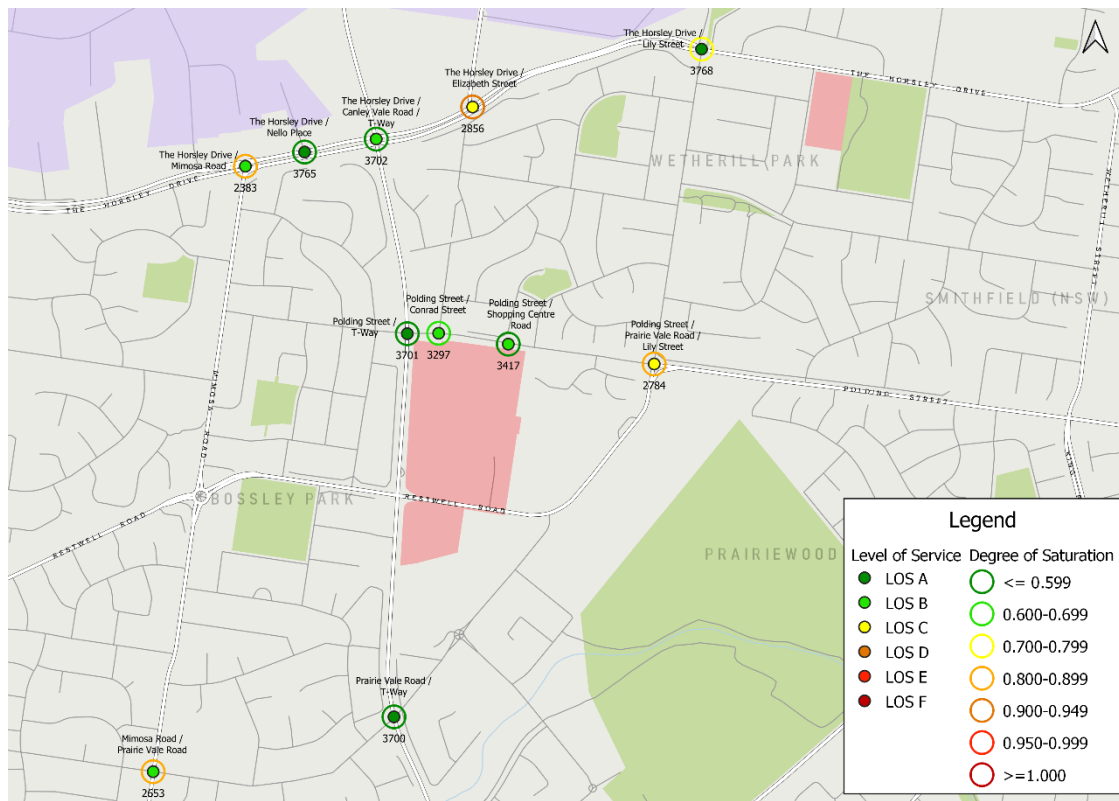
Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
	2784	Polding Street/ Prairie Vale Road/ Lily Street	0.87	C	42s	138m
	3768	The Horsley Drive/ Lily Street	0.76	A	12s	87m
	2856	The Horsley Drive/ Elizabeth Street	0.92	C	32s	167m
	3702	The Horsley Drive/ Canley Vale Road/ T-Way	0.57	B	18s	185m
	3765	The Horsley Drive/ Nello Place	0.46	A	5s	97m
	3701	Polding Street/ T-Way	0.44	A	5s	71m
	3297	Polding Street/ Conrad Street	0.65	B	15s	130m
	3417	Polding Street/ Shopping Centre Road	0.51	B	16s	69m

Figure A.36: Existing Base SIDRA Model Results Output Summary – Prairiewood – AM Peak



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Figure A.37: Existing Base SIDRA Model Results Output Summary – Prairiewood – PM Peak



The base results demonstrate that the Prairiewood sites appear to operate satisfactorily during both peak periods. The highest LOS recorded was LOS D at the Polding Street/ Prairie Vale Road/ Lily Street (2784) intersection during the AM peak.

Bonnyrigg

The existing base model results for Bonnyrigg are detailed in Table A.3 and presented in Figure A.38 and Figure A.39 for the AM and PM peak, respectively.

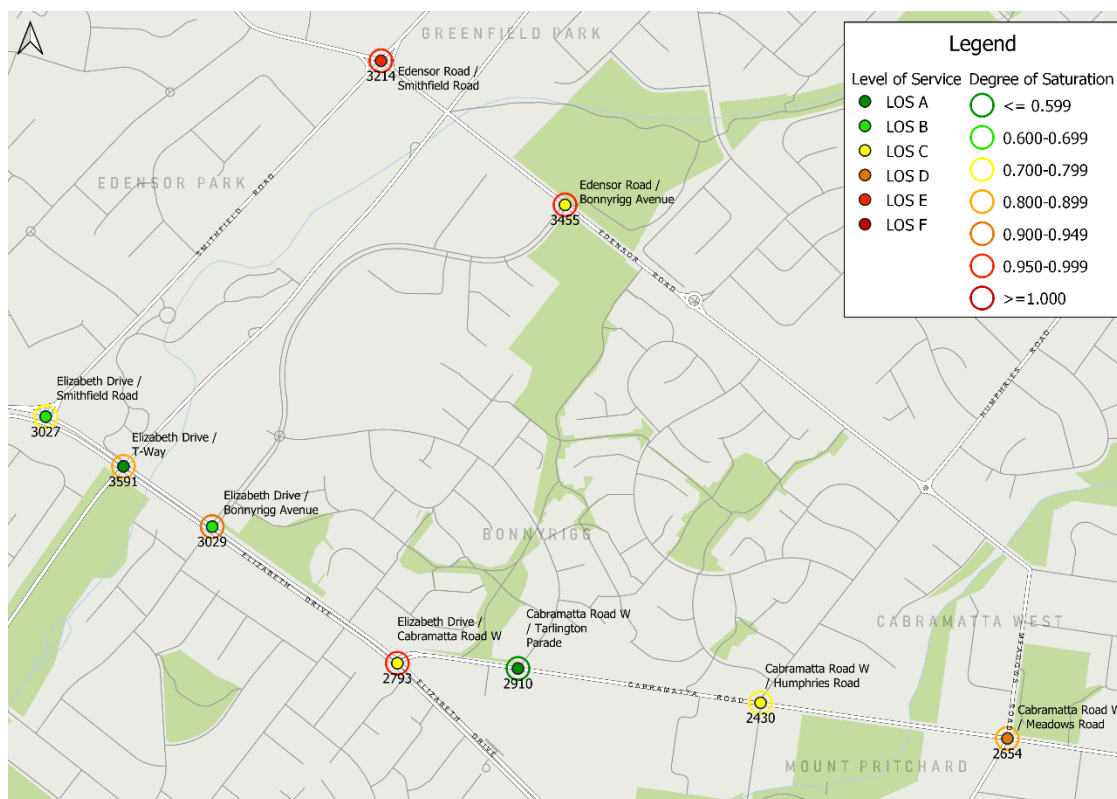
Table A.3: Existing Base SIDRA Model Results Output Summary – Bonnyrigg

Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
AM	3027	Elizabeth Drive/ Smithfield Road	0.79	B	24s	315m
	3591	Elizabeth Drive/ T-Way	0.87	A	6s	142m
	3039	Elizabeth Drive/ Bonnyrigg Avenue	0.91	B	26s	323m
	2793	Elizabeth Drive/ Cabramatta Road	0.97	C	38s	268m
	2910	Cabramatta Road/ Tarlington Parade	0.46	A	14s	62m
	2430	Cabramatta Road/ Humphries Road	0.77	C	39s	143m
	3455	Edensor Road/ Bonnyrigg Avenue	0.95	C	32s	172m
	3214	Edensor Road/ Smithfield Road	0.98	E	65s	348m
	2654	Cabramatta Road West/ Meadows Road	0.86	D	41s	161m

APPENDIX: COMPLETE MODELLING DETAILS

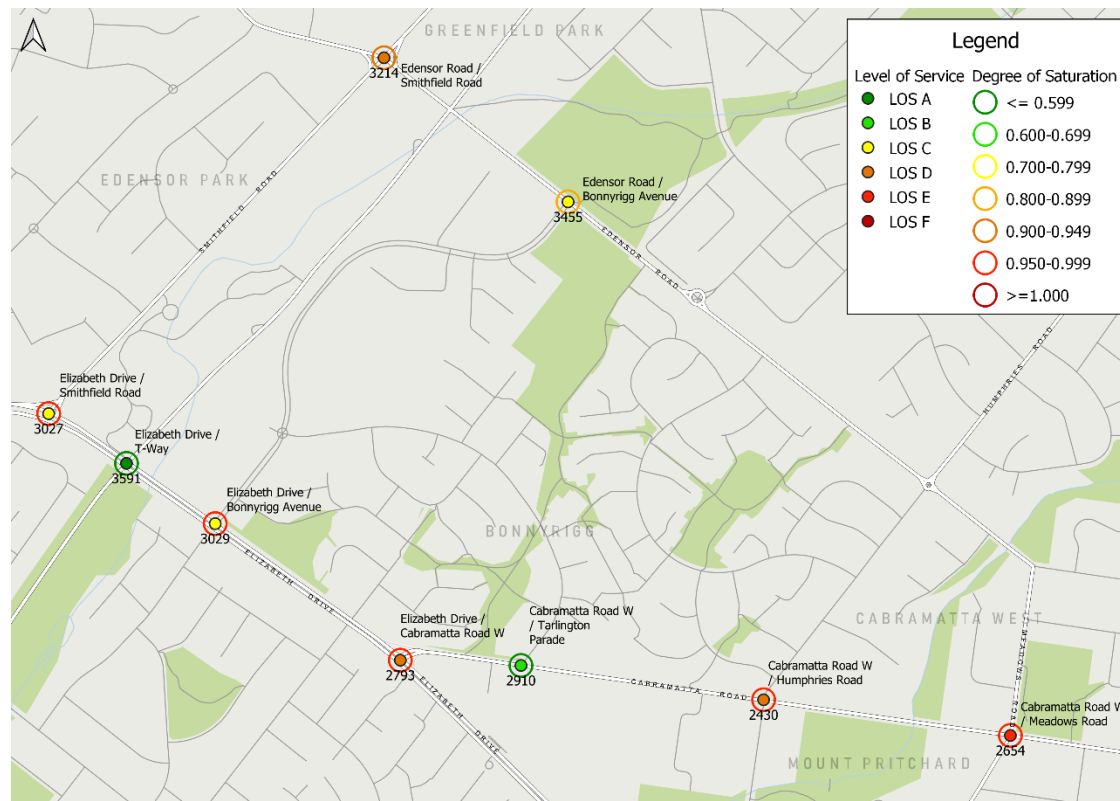
Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
PM	3027	Elizabeth Drive/ Smithfield Road	0.96	C	34s	280m
	3591	Elizabeth Drive/ T-Way	0.54	A	6s	110m
	3039	Elizabeth Drive/ Bonnyrigg Avenue	0.99	C	29s	199m
	2793	Elizabeth Drive/ Cabramatta Road	0.98	D	46s	367m
	2910	Cabramatta Road/ Tarlington Parade	0.51	B	15s	72m
	2430	Cabramatta Road/ Humphries Road	1.00	D	49s	291m
	3455	Edensor Road/ Bonnyrigg Avenue	0.88	C	37s	198m
	3214	Edensor Road/ Smithfield Road	0.95	D	51s	254m
	2654	Cabramatta Road West/ Meadows Road	0.98	E	66s	381m

Figure A.38: Existing Base SIDRA Model Results Output Summary – Bonnyrigg – AM Peak



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Figure A.39: Existing Base SIDRA Model Results Output Summary – Bonnyrigg – PM Peak



The base results suggest that some Bonnyrigg sites are not performing satisfactorily and are approaching capacity, particularly along Elizabeth Drive and Cabramatta Road. A LOS E was recorded at the Edensor Road / Smithfield Road (3214) intersection during the AM peak and the Cabramatta Road West / Meadows Road (2654) intersection during the PM peak.

A.2.5. Future Year Model Development

The future volumes were developed from STFM (Sydney GMA Strategic Traffic Forecasting Model) outputs for the 2031 design year. The existing volumes for each intersection approach were scaled based on the respective link growth.

Prairiewood

The 2031 model results for Prairiewood are detailed in Table A.4 and presented in Figure 7.9 and Figure 7.10 for the AM and PM peak, respectively.

Table A.4: 2031 SIDRA Model Results Output Summary – Prairiewood

Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
AM	2383	The Horsley Drive / Mimosa Road	1.05	C	33s	180m
	2653	Mimosa Road / Prairie Vale Road	0.76	B	19s	69m
	3700	Prairie Vale Road / T-Way	0.29	A	3s	36m
	2784	Polding Street / Prairie Vale Road / Lily Street	0.89	D	55s	301m

APPENDIX: COMPLETE MODELLING DETAILS

Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
	3768	The Horsley Drive / Lily Street	0.86	B	16s	90m
	2856	The Horsley Drive / Elizabeth Street	0.89	B	20s	101m
	3702	The Horsley Drive / Canley Vale Road / T-Way	0.79	B	15s	234m
	3765	The Horsley Drive / Nello Place	0.68	A	8s	193m
	3701	Polding Street / T-Way	0.29	A	5s	40m
	3297	Polding Street / Conrad Street	0.34	A	11s	41m
	3417	Polding Street / Shopping Centre Road	0.34	A	10s	39m
PM	2383	The Horsley Drive / Mimosa Road	1.05	E	60s	455m
	2653	Mimosa Road / Prairie Vale Road	0.78	B	22s	100m
	3700	Prairie Vale Road / T-Way	0.25	A	5s	32m
	2784	Polding Street / Prairie Vale Road / Lily Street	0.91	E	62s	270m
	3768	The Horsley Drive / Lily Street	1.08	B	27s	291m
	2856	The Horsley Drive / Elizabeth Street	1.04	E	67s	352m
	3702	The Horsley Drive / Canley Vale Road / T-Way	0.99	C	39s	269m
	3765	The Horsley Drive / Nello Place	1.08	E	87s	633m
	3701	Polding Street / T-Way	0.58	A	6s	115m
	3297	Polding Street / Conrad Street	0.83	B	19s	224m
	3417	Polding Street / Shopping Centre Road	0.76	B	18s	102m

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.40: 2031 SIDRA Model Results Output Summary – Prairiewood – AM Peak

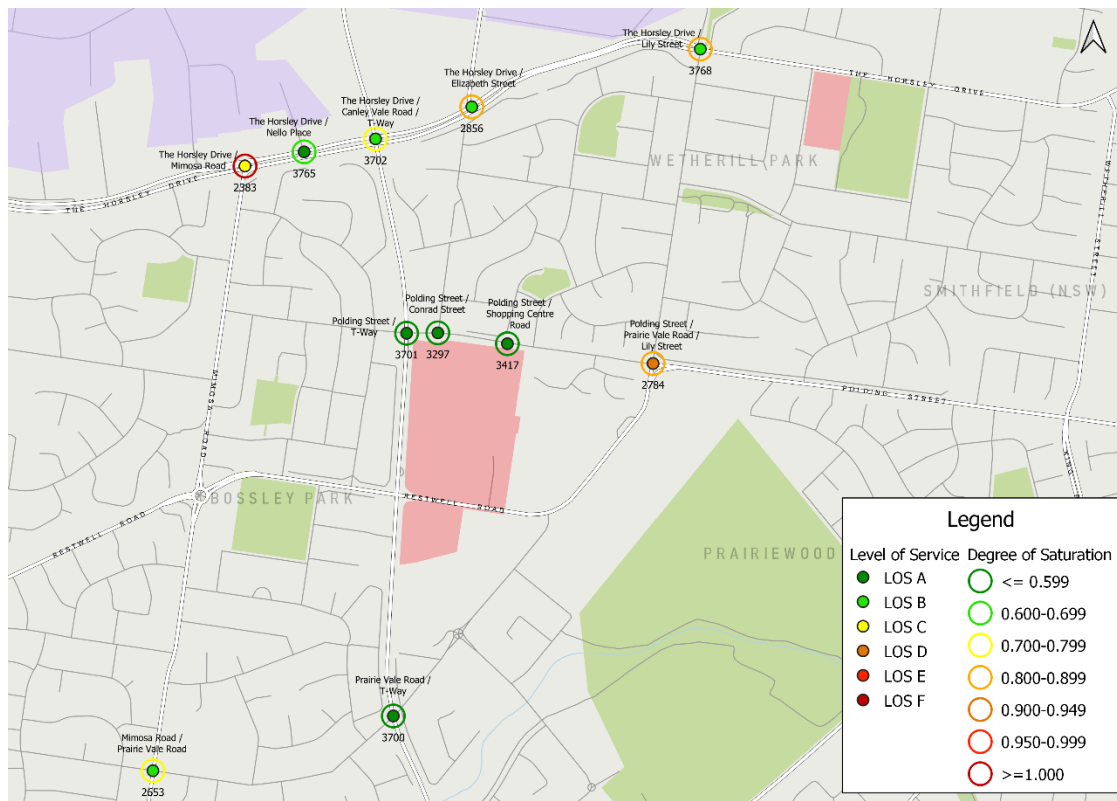
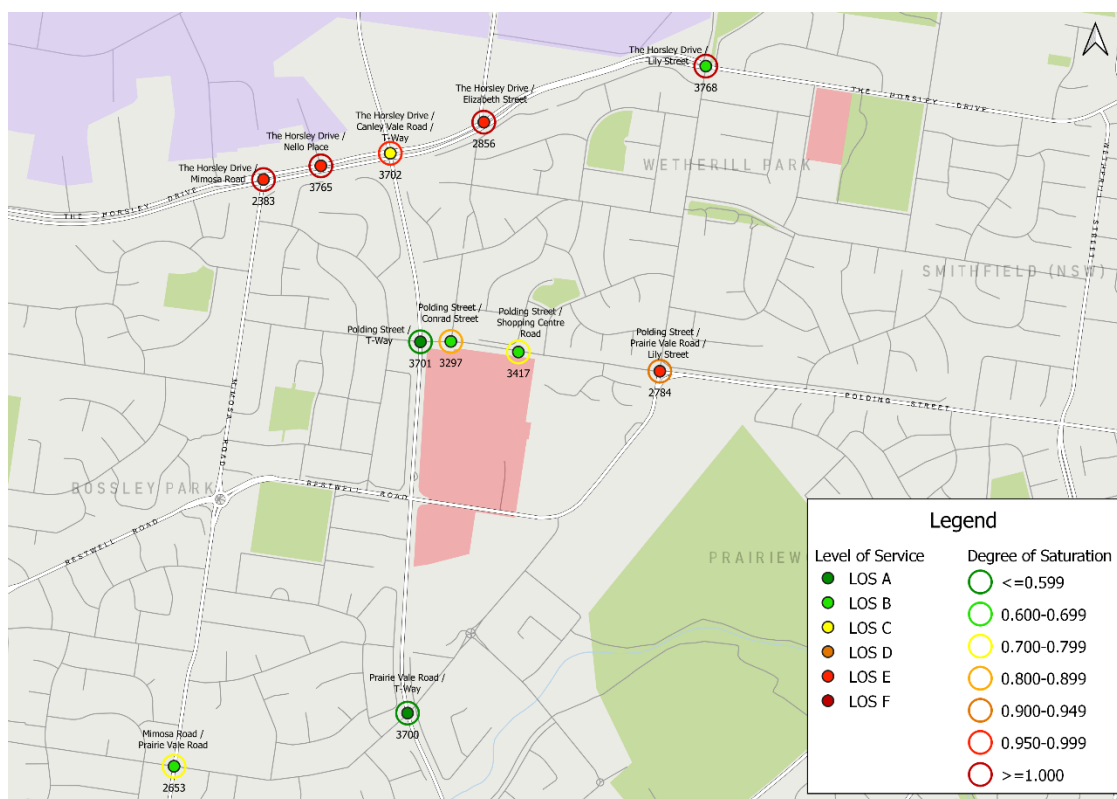


Figure A.41: 2031 SIDRA Model Results Output Summary – Prairiewood – PM Peak



APPENDIX: COMPLETE MODELLING DETAILS

The 2031 results demonstrate that multiple sites surrounding the Prairiewood town centre are likely to fail to operate satisfactorily in the future, particularly at the following intersections:

- AM Peak
 - 2383 – The Horsley Drive/ Mimosa Road
- PM Peak
 - 2383 – The Horsley Drive/ Mimosa Road
 - 3765 – The Horsley Drive/ Nello Place
 - 3702 – The Horsley Drive/ Canley Vale Road/ T-way
 - 2586 – The Horsley Drive/ Elizabeth Street

Bonnyrigg

The 2031 model results for Bonnyrigg are detailed in Table A.5 and presented in Figure A.42 and Figure A.43 for the AM and PM peak, respectively.

Table A.5: 2031 SIDRA Model Results Output Summary – Bonnyrigg

Peak Period	Site Number	Intersection	DOS	LOS	Average Delay (sec)	95th Percentile Queue
AM	3027	Elizabeth Drive/ Smithfield Road	1.38	F	196s	1,387m
	3591	Elizabeth Drive/ T-Way	0.99	C	39s	273m
	3039	Elizabeth Drive/ Bonnyrigg Avenue	0.98	C	30s	323m
	2793	Elizabeth Drive/ Cabramatta Road	0.90	C	41s	370m
	2910	Cabramatta Road/ Tarlington Parade	0.53	B	15s	75m
	2430	Cabramatta Road/ Humphries Road	0.92	D	47s	192m
	3455	Edensor Road/ Bonnyrigg Avenue	1.30	F	98s	601m
	3214	Edensor Road/ Smithfield Road	0.97	E	62s	357m
	2654	Cabramatta Road West/ Meadows Road	0.97	D	47s	243m
PM	3027	Elizabeth Drive/ Smithfield Road	0.89	C	36s	364m
	3591	Elizabeth Drive/ T-Way	0.91	B	15s	238m
	3039	Elizabeth Drive/ Bonnyrigg Avenue	0.98	C	37s	323m
	2793	Elizabeth Drive/ Cabramatta Road	0.94	C	39s	341m
	2910	Cabramatta Road/ Tarlington Parade	0.72	B	18s	138m
	2430	Cabramatta Road/ Humphries Road	1.33	F	159s	919m
	3455	Edensor Road/ Bonnyrigg Avenue	1.12	E	66s	332m
	3214	Edensor Road/ Smithfield Road	1.00	E	62s	322m
	2654	Cabramatta Road West/ Meadows Road	1.22	F	166s	815m

APPENDIX: COMPLETE MODELLING DETAILS

Figure A.42: 2031 SIDRA Model Results Output Summary – Bonnyrigg – AM Peak

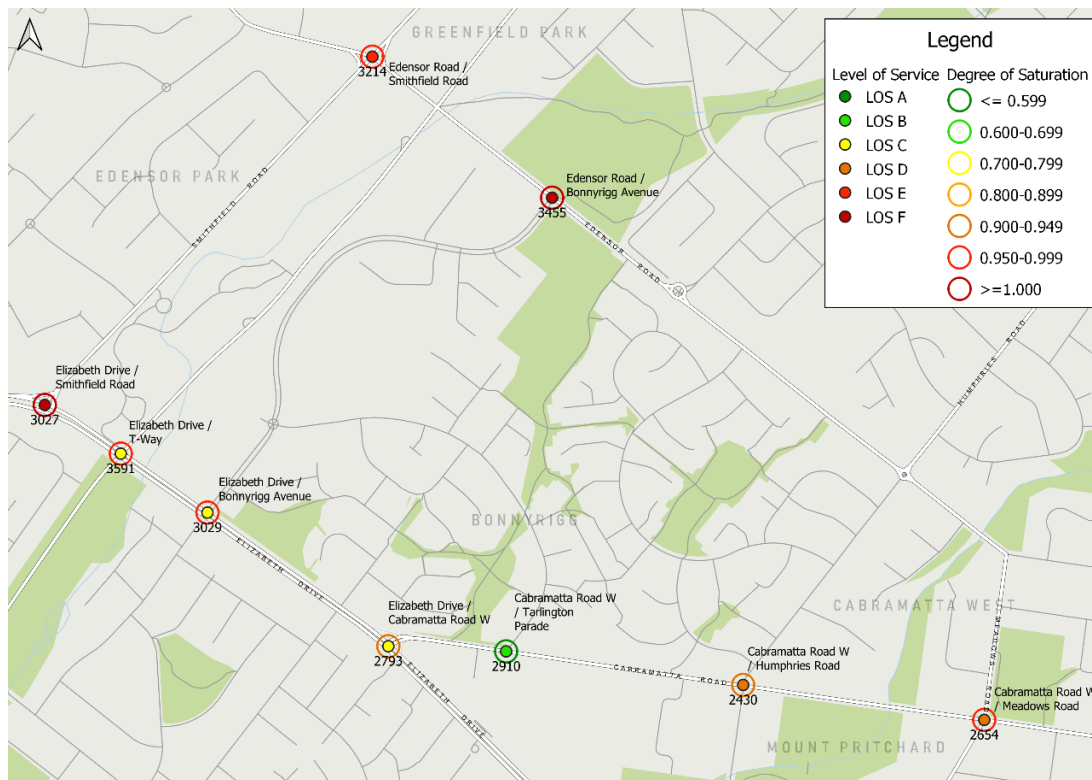
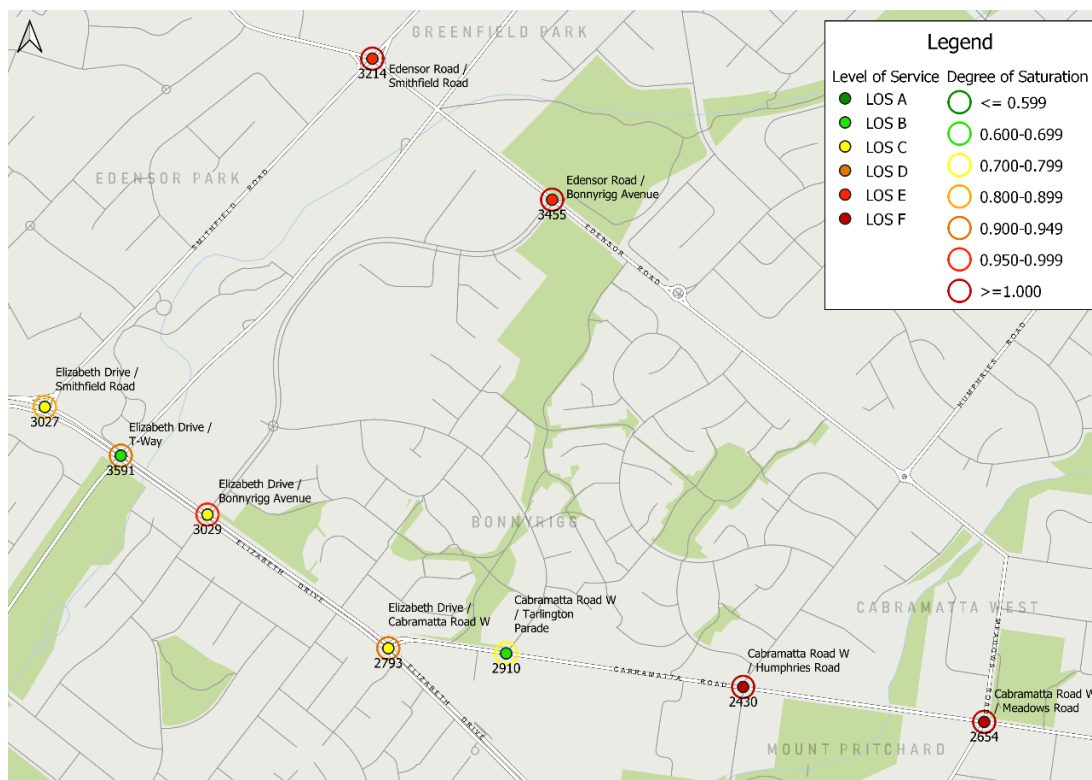


Figure A.43: 2031 SIDRA Model Results Output Summary – Bonnyrigg – PM Peak



The 2031 results demonstrate that multiple sites surrounding the Bonnyrigg town centre are likely to fail to operate satisfactorily in the future, particularly at the following intersections:

- AM Peak
 - 3027 – Elizabeth Drive/ Smithfield Road
 - 3591 – Elizabeth Drive/ T-way
 - 3029 – Elizabeth Drive/ Bonnyrigg Avenue
 - 2793 – Elizabeth Drive/ Cabramatta Road
 - 3455 – Edensor Road/ Bonnyrigg Avenue
 - 3214 – Edensor Road/ Smithfield Road
 - 2654 – Cabramatta Road West/ Meadows Road
- PM Peak
 - 3029 – Elizabeth Drive/ Bonnyrigg Avenue
 - 3455 – Edensor Road/ Bonnyrigg Avenue
 - 3214 – Edensor Road/ Smithfield Road
 - 2430 – Cabramatta Road/ Humphries Road
 - 2654 – Cabramatta Road West/ Meadows Road

A.2.6. Mitigation Measures

Prairiewood

As highlighted in Section A.2.5, mitigation measures would be required at these intersections in order to try and accommodate the forecast demands for 2031:

- 2383 – The Horsley Drive/ Mimosa Road
- 3765 – The Horsley Drive/ Nello Place
- 3702 – The Horsley Drive/ Canley Vale Road/ T-way
- 2586 – The Horsley Drive/ Elizabeth Street

Following a review of the demands and the limitations of the existing intersection layouts, some ideas for mitigations have been proposed which may address some of the capacity constraints. It is noted that these ideas have not been tested specifically in the model and are instead intended to be discussed with Council to understand if there are proposed projects for the subject intersections, whether similar changes have been discussed in the past and potentially discounted or if there would be other reasons which make these ideas not feasible.

APPENDIX: COMPLETE MODELLING DETAILS

Intersection	Potential Mitigation
2383 – The Horsley Drive/ Mimosa Road	Provide a double right turn from Mimosa Road (south approach). The double right turn would conflict with the pedestrian across the east approach and providing full pedestrian protection for this crossing would likely be detrimental to the operation of the intersection. Therefore, consideration may need to be given to removing the pedestrian crossing on the east approach and a new crossing installed on the western approach. Alternatively, investigate if it is possible to provide three through lanes in one or both direction on The Horsley Drive.
3768 - The Horsley Drive/ Lily Street	Investigate opportunities to provide double right turns from The Horsley Drive west approach. Alternatively, increase the length of storage available for the right turn from The Horsley Drive west approach.
2586 – The Horsley Drive/ Elizabeth Street	Investigate opportunities to provide a double right turn from The Horsley Drive east approach. Alternatively provide three through lanes in the eastbound direction
3702 - The Horsley Drive/ Canley Vale Road/ T-way	Dependant on solution at The Horsley Drive/ Elizabeth Street
3765 – The Horsley Drive/ Nello Place	Dependant on solution at The Horsley Drive/ Elizabeth Street

Bonnyrigg

As highlighted in Section A.2.5, mitigation measures would be required at these intersections in order to try and accommodate the forecast demands for 2031:

- 3027 – Elizabeth Drive/ Smithfield Road
- 3591 – Elizabeth Drive/ T-way
- 3029 – Elizabeth Drive/ Bonnyrigg Avenue
- 2793 – Elizabeth Drive/ Cabramatta Road
- 3455 – Edensor Road/ Bonnyrigg Avenue
- 3214 – Edensor Road/ Smithfield Road
- 2654 – Cabramatta Road West/ Meadows Road
- 2430 – Cabramatta Road/ Humphries Road

Following a review of the demands and the limitations of the existing intersection layouts, some ideas for mitigations have been proposed which may address some of the capacity constraints. It is noted that these ideas have not been tested specifically in the model and are instead intended to be discussed with Council to understand if there are proposed projects for the subject intersections, whether similar changes have been discussed in the past and potentially discounted or if there would be other reasons which make these ideas not feasible.

APPENDIX: COMPLETE MODELLING DETAILS

Intersection	Potential Mitigation
3027 – Elizabeth Drive/ Smithfield Road	Investigate opportunities to provide additional lanes, particularly in the eastbound direction
3591 – Elizabeth Drive/ T-way	Investigate opportunities to provide additional lanes, particularly in the eastbound direction
3029 – Elizabeth Drive/ Bonnyrigg Avenue	Investigate opportunities to provide double right turns from the Elizabeth Drive east approach
2793 – Elizabeth Drive/ Cabramatta Road	Dependent on capacity improvements at Elizabeth Drive / Bonnyrigg Avenue
3455 – Edensor Road/ Bonnyrigg Avenue	Investigate opportunities to provide an additional right turn lane from Bonnyrigg Avenue and increase capacity for through movements on Edensor Road
3214 – Edensor Road/ Smithfield Road	Investigate opportunities to provide additional lanes, particularly for the eastbound and westbound directions
2654 – Cabramatta Road West/ Meadows Road	Consider left turn slip lanes on north and east approaches and / or opportunities to provided dedicated right turn lanes on the north and south approaches.
2430 – Cabramatta Road/ Humphries Road	Refer below

GTA Consultants has been involved with another project for Fairfield City Council which has proposed intersection geometry changes at the intersection of Cabramatta Road West and Humphries Road, as shown in Figure A.44 and Figure A.45. It is noted that initial modelling of this intersection layout with the anticipated future volumes shows that the intersection could still be expected to operate with a DOS over 1.0 and LOS F in the future. As such it is recommended that the anticipated volumes developed for this project are compared with the design project and if significantly different, the intersection layout may need further review.

Figure A.44: Cabramatta Road/ Humphries Road – Existing Layout

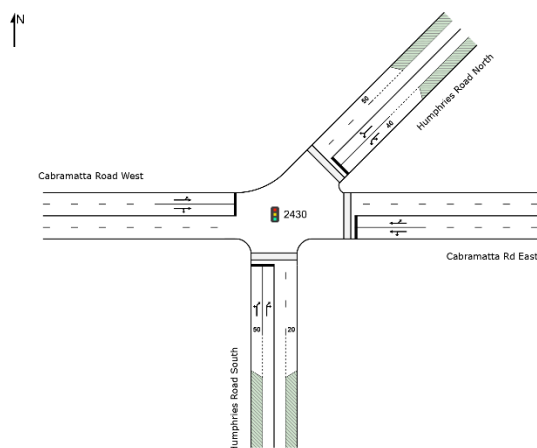
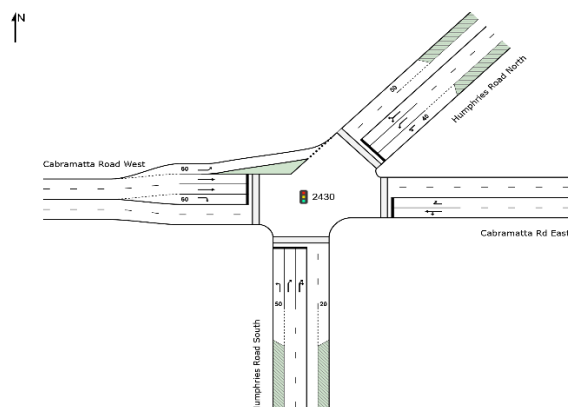


Figure A.45: Cabramatta Road/ Humphries Road – Proposed Layout



A.2.7. Summary

The analysis completed for this project identifies that there are a number of intersections around the Prairiewood and Bonnyrigg town centres which could be expected to operate poorly in the future if the anticipated intersection demands are realised. Therefore, it is recommended that Council review whether mitigation treatments are available for the intersections and further modelling undertaken.

