

NL150007

30th June 2017

Huntlee Pty Ltd

Mr Glenn Swan

PO Box 199

BRANXTON NSW 2335

Dear Glenn,

Re: Huntlee Subdivision – (MP 10_0137 MOD 8) request for information from TfNSW

As requested we have reviewed the correspondence from Transport for NSW (TfNSW) relating to the submission to modify the approval of the development (MOD 8). Further to this correspondence, we provide the additional information below on a number of points made by TfNSW regarding road design and Bus Stops within the development.

The design of the Huntlee development with regard to Public Transport has been guided by the DCP and the '*Huntlee Stage 1 Bus Servicing Strategy*' completed by Hyder and dated 18th November 2013 (BSS). A copy of this strategy is contained in Annexure A.

Based on the BSS the development will be designed to ensure final Bus routes / transit lanes encompass the following:

- Lane widths of 3.5m. It is note that some interim lane widths are shown in the BSS as being 3m wide with parking;
- 3m reserved for Bus bays; and
- Turning movements to accommodate 14.5m Buses including intersections and any traffic calming devices.

Further to the above, the BSS identifies both interim and final bus networks within the development including locations for Bus Stops. Below is an extract from this report showing the proposed Stage 1 Bus route through the development. Figure 1 also shows the proposed location of Bus Stops and a 400m radius from each stop, which depicts the walkable. Based on this figure the walkable catchment of each stop covers the vast majority of the development area in Stage 1.

Prepared	BC	30/06/2017
Reviewed	BC	30/06/2017
Admin	LB	30/06/2017



We note that design of each stage is progressing in accordance with minimum road widths contained in the Huntlee DCP.

Yours sincerely

Ben Clark
Principal

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Huntlee Stage 1 Bus Servicing Strategy' completed by Hyder and dated 18th November 2013



HUNTLEE STAGE 1 BUS SERVICING STRATEGY

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WORLEY PARSONS

HUNTLEE STAGE 1

Bus Servicing Strategy

Author

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A handwritten signature in blue ink, appearing to read "S Manahan", is positioned above a horizontal line.

Report No

AA006181-01_V1.0

Date

18 November 2013

This report has been prepared for Worley Parsons in accordance with the terms and conditions of appointment for Huntlee Stage 1 . Hyder Consulting Pty Ltd (ABN 76 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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EXECUTIVE SUMMARY

This report defines a bus network servicing plan for Stage 1 of the Huntlee Precinct, located to the south of the town of Branxton in the Hunter Valley of NSW. The site straddles Wine Country Drive (MR 220) linking Cessnock with the New England Highway. Within the overall site, the proposed urban area is bounded to the north and east by the Main North Railway and the Hunter Expressway corridor, to the south by the village of North Rothbury and to the west by the Black Creek floodplain.

When fully developed, the Huntlee proposal would provide for up to 7,500 dwellings. Of that the Stage 1 subdivision will include approximately 2,345 dwellings. In conjunction with residential development it is proposed to develop about 200 hectares (ha) of mixed use/employment lands including a mixed use Town Centre. A Town Centre area is proposed to the west of Wine Country Drive and south of the Hunter Expressway Corridor. Land use within the Town Centre would be designed to ensure that a mix of retail, commercial, educational, recreational, entertainment and residential uses will be concentrated in a core retail/mixed use area concentrated along the Main Street. Approximately 55.7 ha of Town Centre are proposed within the Stage 1 development.

The Huntlee is proposed to be planned and developed as a series of staged neighbourhoods over a 20+ year period. Each phase of the staging will determine access requirements and then determines the road and intersection capacity needed to service the demand from residential and employment yields. Huntlee Stage 1 is expected to be fully developed by year 2020. Commencement of subdivision construction is programmed to commence in the second half of 2013 with a development period of approximately 7-8 years.

1 INTRODUCTION AND REPORT CONTEXT

1.1 BACKGROUND

The Huntlee development is a major residential land release at Branxton, NSW. Traffic generating features of the development include:

- up to 5,600 dwellings in residential zones of varying sizes;
- around 200 hectares of employment lands including a mixed use Town Centre with up to 1,700 residential dwellings; and
- up to 200 dwellings on rural residential (large) lots.

Stage 1 of the development comprises up to 1,900 residential lots, 120 rural residential lots, and a 68 hectare town centre with up to 300 dwellings.

The development has been previously assessed in two traffic reports. The first being the "Transport Management and Accessibility Plan" (TMAP) prepared by Better Transport Futures and a "Traffic Modelling Report" prepared by Hyder. The TMAP includes a brief overview of likely bus requirements based on Transport for NSW (TfNSW) Guidelines.

The Bus Servicing Strategy for Huntlee Stage 1 will require an understanding of existing services in the area and the opportunity to extend and provide new services that link into Huntlee. Services will essentially link Huntlee to Branxton at the Railway Station.

Internally, the design of the strategy needs to be able to accommodate the ultimate road network for Stage 2 without significant route changes. It is the objective to conceptualise the bus route services to enable easy integration of the staged services and ensure infrastructure investment in bus stops, shelters, and bus bays will not be wasted. Identification of the routes

also assists in placement of bus stops that future residents can be made aware of when considering purchasing land.

Ultimately bus services are funded through TfNSW and hence their concurrence to any plan is required. This is a core component of the project. We will liaise closely with the department to ensure that this is achieved.

1.2 REPORT PURPOSE AND SCOPE

This report is intended to address the Statement of Commitment relating to the preparation of a Bus Servicing Strategy. The aim of the strategy is to identify an appropriate and affordable strategy that complements the Huntlee development increasing its attractiveness to new residents.

This report documents the key inputs and assumptions considered in the analysis in the development of a long-term and short-term bus network and staging strategy for the Huntlee development area.

2 THE HUNTLEE DEVELOPMENT

2.1 STAGES

The Huntlee New Town is proposed to be planned and developed as a series of staged neighbourhoods over a 20+ year period in accordance with the SSS Study framework. Stage 1 development will involve the initial development of the mixed use Town Centre, including a component of residential development, as well as the development of the first residential village and the first component of the large lot of residential areas. Stage 1 will comprise up to 2,345 dwellings, which includes 300 town residential dwellings. It will contain a range of lot types and sizes which will cater for traditional residential dwellings through to medium density large units and town houses.

It is assumed that Huntlee will be staged over four (4) villages. Figure 1 shows an indicative staging plan for the entire site. Each phase of the staging will determine access requirements and then determines the road and intersection capacity needed to service the demand from residential and employment yields.

Huntlee Stage 1 is expected to be fully developed by year 2020. Commencement of subdivision construction is programmed to commence in the late 2013 with a development period of approximately 7-8 years.

Table 1 presents an indicative time frame for staged development. Key points to note:

- The full Huntlee development is assumed to be completed by 2036. The Huntlee is likely to exceed the Lower Hunter Regional Strategy time frame which is 2031.
- Stage 1 (Village 1) development is expected to be completed by 2020. The Stage 1 subdivision will include approximately 2,345 dwellings. About 21.4 ha GFA of mixed use/employment land is expected to be developed over the same timeframe.
- Stage 2 (Village 2) development is expected to be completed in the following 5-6 years by 2025. The Stage 2 subdivision will include up to 1,895 dwellings. About 9 ha GFA of mixed use/employment land is expected to be developed over the same timeframe.
- Stage 3 (Village 3) development is expected to be completed between 2025 and 2032. The Stage 3 subdivision will include up to 1,935 dwellings. About 9 ha GFA of mixed use/employment land is expected to be developed over the same timeframe.

- Stage 4 (Village 4) development is expected to be completed between 2032 and 2036. The Stage 4 subdivision will include up to 1,325 dwellings. About 9 ha GFA of mixed use/employment land is expected to be developed over the same timeframe.

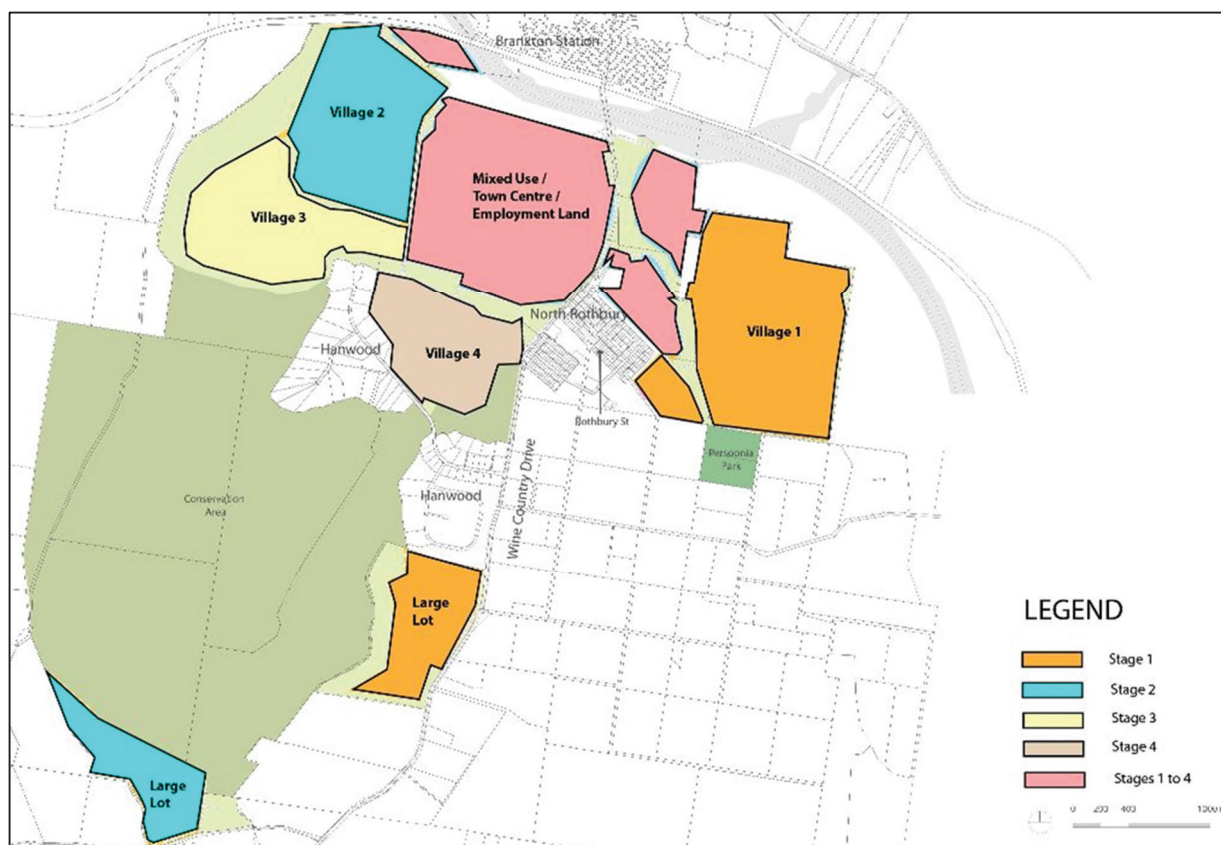


Figure 1 Staging of the Huntlee Development

Table 1 Indicative Staging of Huntlee Development

Item ID	Development Type	SSS Development (Full by 2036)	Stage 1 (Year 2020)	Stage 2 (Year 2025)	Stage 3 (Year 2032)	Stage 4 (Year 2036)
RL	Residential Land					
V1	Village One	1,900 Dwellings	1,900			
VC1	Village Centre (mixed use)	3,000 GFA (m2)	3,000			
V2	Village Two	1,515 Dwellings		1,515		
V3	Village Three	1,435 Dwellings			1,435	
V4	Village Four	700 Dwellings				700
L1	Large Lot 1 (Part of Village 1)	25 Dwellings	25			
L2	Large Lot 2 (Part of Village 4)	25 Dwellings				25
L3	Large Lot Residential 3 (Wine Country Drive)	120 Dwellings	120			

Item ID	Development Type	SSS Development (Full by 2036)	Stage 1 (Year 2020)	Stage 2 (Year 2025)	Stage 3 (Year 2032)	Stage 4 (Year 2036)
L4	Large Lot Residential 4 (Old North Road)	80 Dwellings		80		
EL	Employment Land / Mixed Use(200 ha)					
TCR	Town Centre Residential	1,700 Dwellings	300	300	500	600
TCM	Town Centre Stage 1 (Mixed use 55.7 ha)					
CR	Retail	6.5 GFA (ha)	6.5 ha			
MX	Mixed Use	14.9 GFA (ha)	14.9 ha			
RE	Remaining Employment Land / Mixed Use (118 ha)					
RE1	Mixed Use	27.0 GFA (ha)		9.0	9.0	9.0

2.2 STRUCTURE PLAN

The Structure Plan consists of a series of residential neighbourhoods each connected to the Town Centre via the road network. Each neighbourhood will be distinctive in character, each located within a different landscape.

The Town Centre is the primary commercial centre for the neighbourhood villages. It comprises a mixed use area of approximately 200 hectares catering for a range of uses including retail, service industries, bulky goods, commercial, entertainment, residential, educational and community including open space. The Town Centre will ultimately serve the residents of Huntlee and surrounding areas.

The Village centres will provide for low level retail and community facilities and complement the Town Centre. The village centres will be approximately 5 hectares in area and contain uses including neighbourhood retail premises, community facilities, a primary school and a village centre park. There will be four village centres in the overall Huntlee development.

Table 2 Centre Types and Elements

Centre Type	Radii	Summary
Town Centre	800 metres	Town centres have one or two supermarkets, community facilities, medical centre, schools, etc. Usually a residential origin than an employment destination
Village Centre	600 metres	A strip of shops and adjacent residential area within a 5 to 10 minute walk. Contain between 800 and 2700 dwellings
Neighbourhood Centre	150 metres	One or a small cluster of shops and services. Contain between 150 and 900 dwellings

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2.3 INTERNAL ROAD NETWORK

The internal road network will comprise of a hierarchy of streets. This is shown in Figure 3.

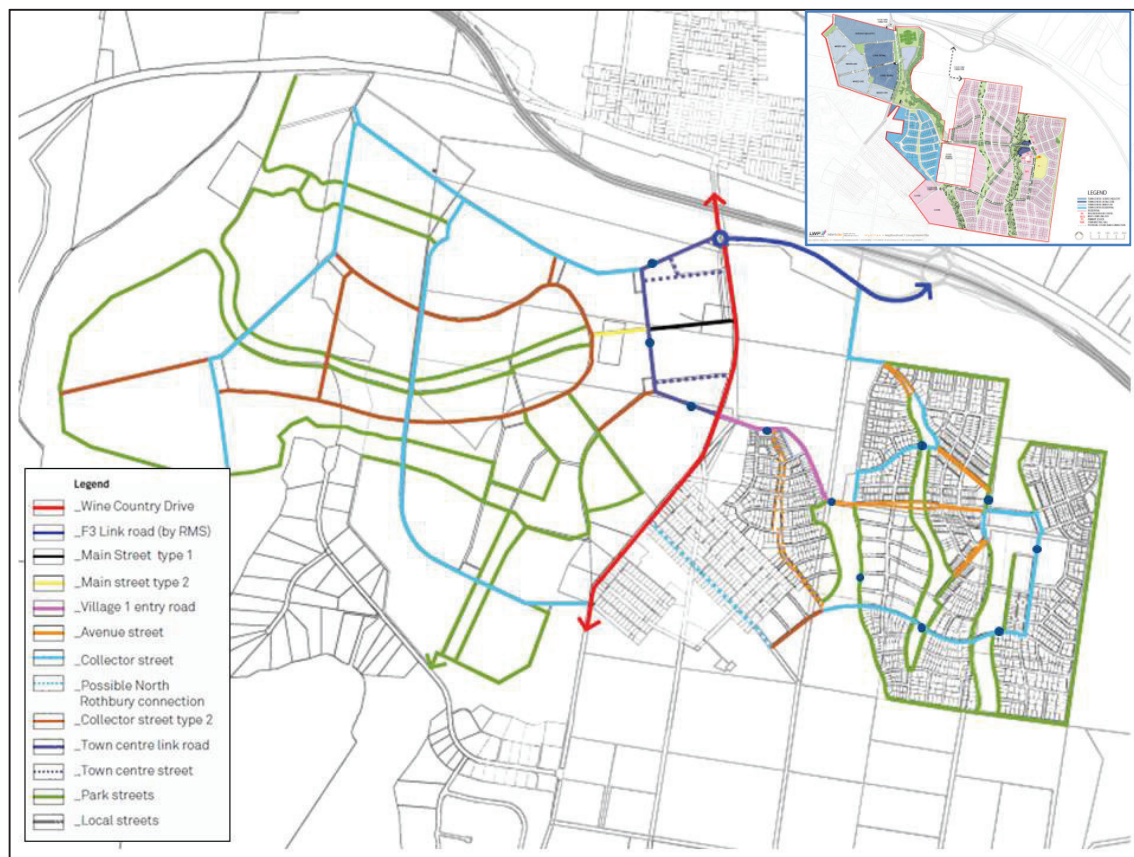


Figure 3 Internal Road Network

3 INPUTS AND ASSUMPTIONS

3.1 CONSULTATION

This Bus Servicing Strategy has been developed in consultation with TfNSW, RMS and Council.

3.2 SUPPORTING INFORMATION

- Huntlee Development Control Plan (Department of Planning and infrastructure, March 2013)
- Outer Metropolitan Bus Service Planning Guidelines 2006 (Transport for New South Wales, November 2009)
- Journey to Work data (Census 2011);
- Household Travel Survey data Summary Report from (Bureau of Transport Statistics, 2011 release)

3.3 DESIGN PRINCIPLES

The following sections describe the design principles as set out in the Outer Metropolitan Bus Service Planning Guidelines (Transport for New South Wales, November 2009). The guidelines provide a framework for the planning and review of bus services for the Outer Metropolitan area so that well-designed bus networks operate at reasonable frequencies with reliable trip times.

3.3.1 DESIGN OF THE NETWORK

The proposed bus network within Huntlee has been designed to:

- Provide an optimal bus network operating at reasonable frequencies and reliable trip times appropriate for the level of development;
- Facilitate integration and inter-connections with the regional, district and local bus routes that link the villages with key centres of activity such as schools, shops, recreational facilities and the Huntlee Town Centre.; and
- Maximise coverage of the development.

The Outer Metropolitan Service Planning Guidelines define a set of principles to be applied to each contract area.

Table 3 Bus Planning Principles

Bus Planning Principle	Criteria
Network (Area Coverage)	Maximum distance of 400 metres to a bus stop or rail line during the daytime and 800 metres to a bus route or rail line during the night time to apply to built-up residential areas with higher population densities. For areas with low population densities, a very low service frequency (primarily provided for shopping purposes, e.g. one trip in mid-morning and one trip in the early afternoon one or two days a week) may be feasible, without unduly reducing service levels elsewhere in the contract region.
Network Legibility	Peak and off-peak services should use the same routes wherever possible to increase passenger awareness of the network and allow for efficiencies in the provision of infrastructure and passenger information.
Service Directness	Routes should be as direct as possible with a major portion of the route using major roads or main collector residential roads.
Accessibility	Accessible buses should be timetabled on the routes and identified as accessible trips in the public timetable.
School Services	Dedicated school services should be kept to a minimum in order to maximise the frequency and availability of normal route services

Source: Service Planning Guidelines, Outer Metropolitan Contract Regions

Furthermore, the Service Planning Guidelines provide a hierarchy of three categories of route types shown in Table 4. The hierarchy defines the required frequencies for the routes

Table 4 Hierarchy of Routes

Hierarchy	Description
Regional Routes	Provides a direct and frequent link for residential areas to their nearest regional centre. Regional routes are designed to pass through patronage generators such as district centres, hospitals, colleges and industrial areas while connecting with other modes serving multiple trip purposes. Bus services operating on regional routes operate from pre peak period through to the evening and provide weekend daytime and evening services, at frequencies generally of 30 minutes or better.
District routes	Links residential areas to either the nearest district centre and a strategic transport corridor; the nearest district centre and other mode operating to the nearest regional centre or to the nearest regional centre. Bus services operating on district routes generally operate during the peak, inter-peak and weekend daytime periods at a frequency of 60 minutes or better.
Local Routes Fixed routes Flexible transport routes Currently un-served communities	Local routes are infrequent routes for communities that lack the density and/or street connectivity to support a 60-minute service. They operate during off-peak periods and are implemented to meet a specific need.

3.3.2 SERVICE TIME PERIODS AND FREQUENCIES

Bus service frequencies and service time periods are defined for each level of route service provision.

Table 5 Service Time Periods and Frequencies

Hierarchy	Service Frequency
Regional Routes	Pre peak – 60 mins Peak – 30 mins Inter peak – 30 mins Night time – 60 mins Saturday daytime – 60 mins Sunday daytime – 60 mins
District routes	Peak – 60 mins Inter peak – 60 mins Saturday daytime – 60 mins Sunday daytime – 120 mins

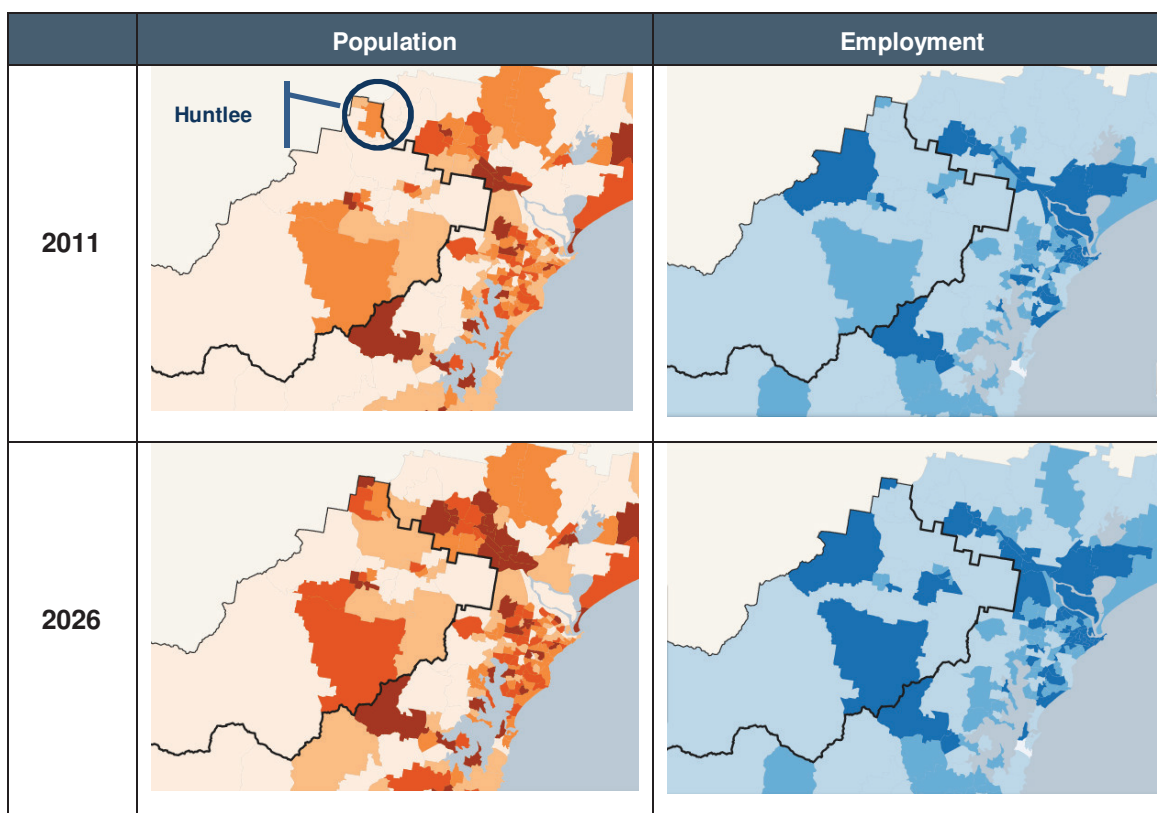
Hierarchy	Service Frequency
Local Routes	Inter peak – 120 mins
Fixed routes	As required (negotiated with the Department)
Flexible transport routes	
Currently un-served communities	

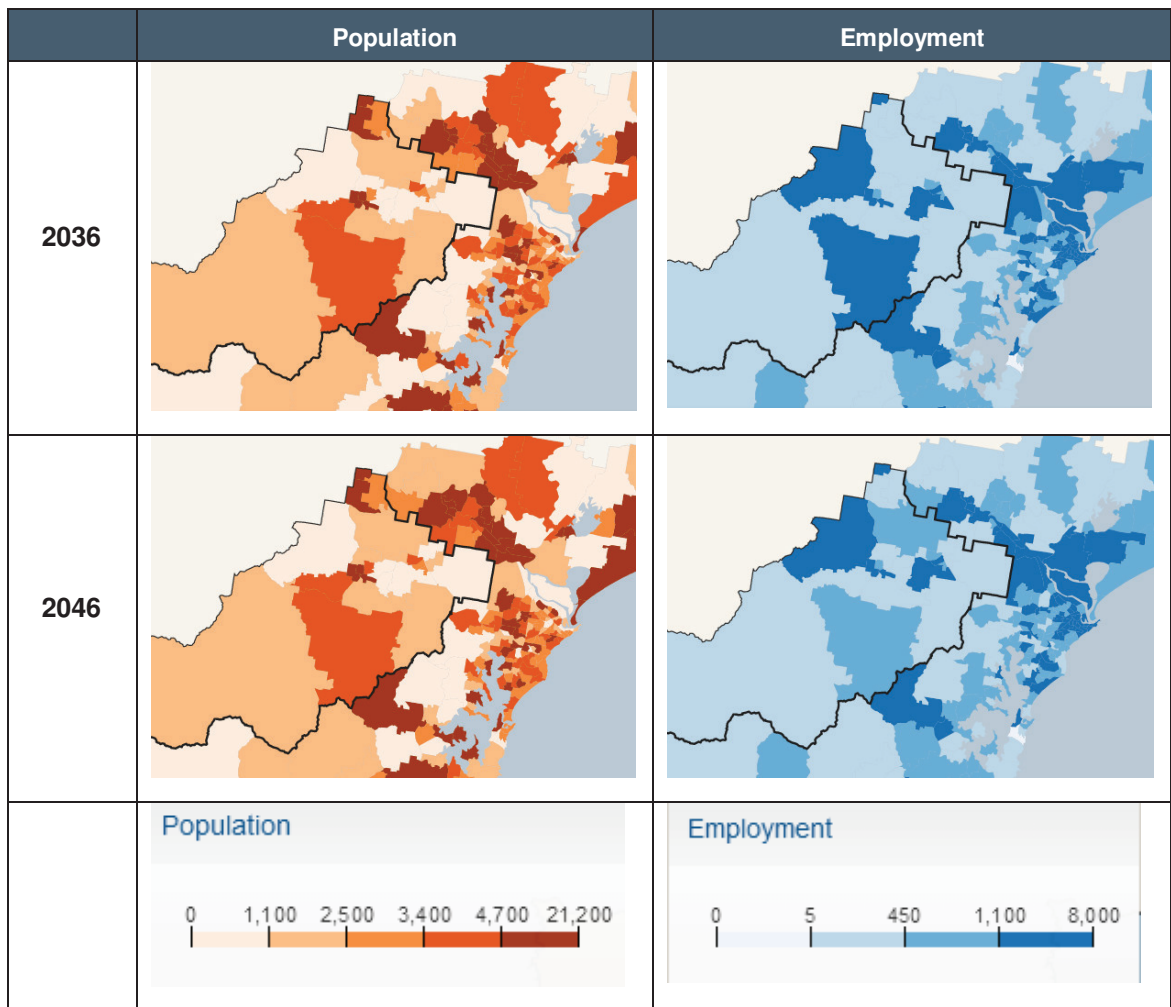
3.4 POPULATION / EMPLOYMENT FORECASTS AND TARGETS

Population and employment forecasts are derived from the Bureau of Transport Statistic (BTS)

In considering the land use and population distribution for Huntlee and the immediate vicinity Figure 4 has been prepared to demonstrate broader land use changes at model travel zones between 2011 and 2046 measured by population in the Lower Hunter. The maps show average population growth for whole travel zones, not at actual locations where residential and development is proposed. For example, population growth from Huntlee would alter the population growth from a range of 2,500-10,000 to a range of 20,000-30,000. However, the actual footprint of the Huntlee development could occur in a small portion of the relevant travel zone.

Figure 4 Population and Employment Forecasts 2026, 2036 and 2046





Source: Bureau of Transport Statistics

Figure 4 shows population and employment changes from 2011 to 2046 mainly for the Cessnock and Maitland areas. A review of the statistics indicates the following:

- Significant population increases at both the eastern and western end of the proposed F3 to Branxton Link. This comprises mainly the Huntlee development at Branxton and the Coal and Allied development near Minmi;
- Significant population increase in Maitland between Branxton and Thornton. This would put additional traffic on the New England Highway, which provides a key access between Maitland and Newcastle;
- Forecast population growth has shifted away from the established major regional centre of Newcastle/Lake Macquarie and has moved west towards the local government areas of Cessnock and Maitland.

3.5 TRAVEL PATTERNS AND DISTRIBUTION

An overview of all types of personal travel is provided by the Journey to Work (2010/11) and Household Travel Surveys. The JTW data for Huntlee study area catchment suggests that car travel is the dominant mode, with 98% of all trips being made by car. Similarly, about 88% of trips by Cessnock residents are made by car. Public transport use in the study area catchment is extremely low (2%). Bus use in Cessnock is relatively high, with 6.4% of trips being made by bus.

3.5.1 2011 HOUSEHOLD TRAVEL SURVEY

An overview of all types of personal travel is provided by the Household Travel Survey (HTS), a continuous survey undertaken by the State Government within the Greater Metropolitan Area. The survey includes the Newcastle Statistical Subdivision which covers the Cessnock and Maitland Local Government Areas.

Trip purpose

Overall residents of Cessnock made 166,000 trips on an average weekday, and those of Maitland made 239,000 trips. This amounted to 3.4 trips per person on a weekday for Cessnock and 3.4 trips per person on a weekday for Maitland. On weekends, the average trip is 3.0 and 2.4, respectively.

Table 6 and Figure 5 identify the number of trips undertaken by residents of Cessnock SLA and Maitland SLA by trip purpose.

Table 6 Number of trips on an average weekday per purpose

Trip purpose	Trips per average weekday	
	Cessnock	Maitland
Commute	27,000	33,000
Work related business	24,000	28,000
Education/childcare	17,000	19,000
Shopping	26,000	42,000
Personal business	15,000	18,000
Social/recreation	32,000	60,000
Serve passenger	20,000	35,000
Other	6,000	3,000
Total	166,000	239,000

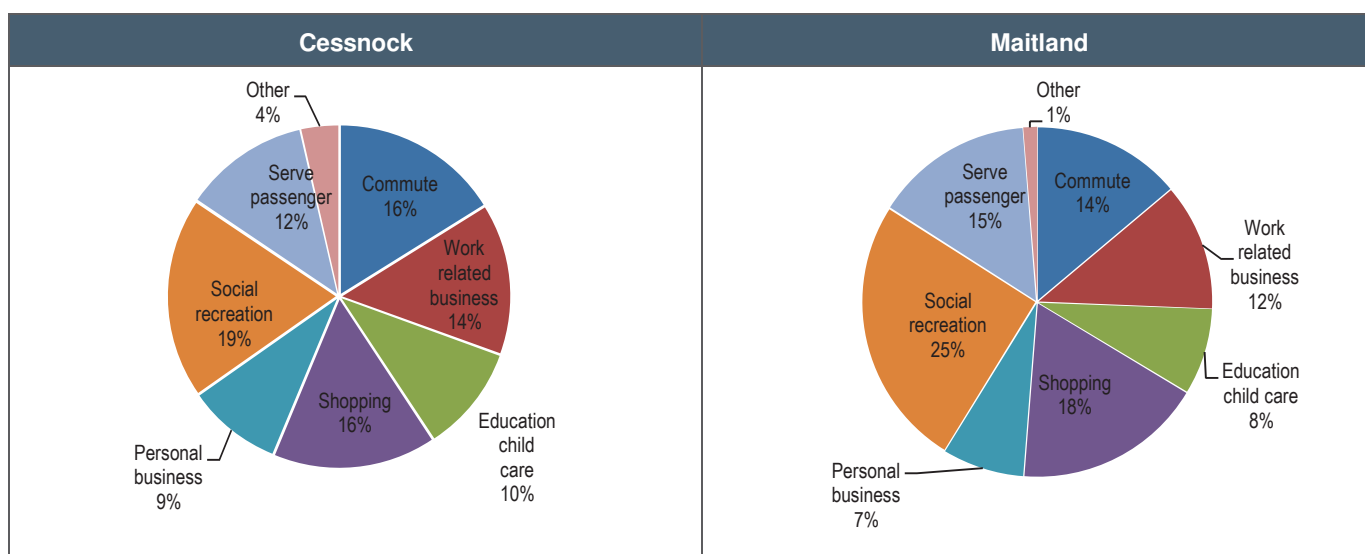


Figure 5 Trip Purpose

Social and recreational trips are the most numerous, about 19% for Cessnock and 25% of the total for Maitland followed by shopping and commute for Cessnock (16%) and shopping for Maitland (18%), then serve passenger or dropping someone else somewhere (12% and 15% respectively).

Trip length

On average, Cessnock residents make longer trips (12.1 km) than those of Maitland (10.3 km), an indication that key activities are located further from the population base. While social/recreational was the most numerous trip purpose, the average trip length was 14.3 km for Cessnock and 11.2 km for Maitland. Work related business and commute trips are relatively longer than most other travel for both Cessnock and Maitland. Table 7 presents the average trip length by trip purpose.

Table 7 Average trip length of weekday trips per purpose

Trip purpose	Average length of weekday trips (km)	
	Cessnock	Maitland
Commute	12.8	15.7
Work related business	18.4	11.9
Education/childcare	7.2	6.8
Shopping	10.1	6.8
Personal business	11.9	10.2
Social/recreation	14.3	11.2
Serve passenger	5.8	8.3
Other	15.8	16.0
All purposes	12.1	10.3

Mode of Travel

Overall, car travel is the dominant mode throughout the Cessnock with 85% of all trips being made by car, either as driver (65%) or passenger (20%), whereas 84% of trips by Maitland residents are made by car. Public transport use is extremely low. Bus accounts for 5.0% and 3.0% of trips respectively. Table 8 gives a breakdown for the percentage share of travel modes.

Table 8 Mode of Travel

Mode	Percentage Share	
	Cessnock	Maitland
Vehicle Driver	65 %	57 %
Vehicle passenger	20 %	27 %
Bus	5 %	3 %
Walk only	9 %	11 %
Other Modes	2 %	2 %

3.5.2 2011 JOURNEY TO WORK

The 2011 Journey to Work (JTW) data enables an understanding of the mode used to travel to work as a degree to which residents travel within or outside their local area of employment. While trips between work and home comprise 12-14% of all trips, the ability to access the workplace is an important component in ensuring economic productivity. The mode share for the Cessnock SLA as an origin and destination is shown in Figure 6.

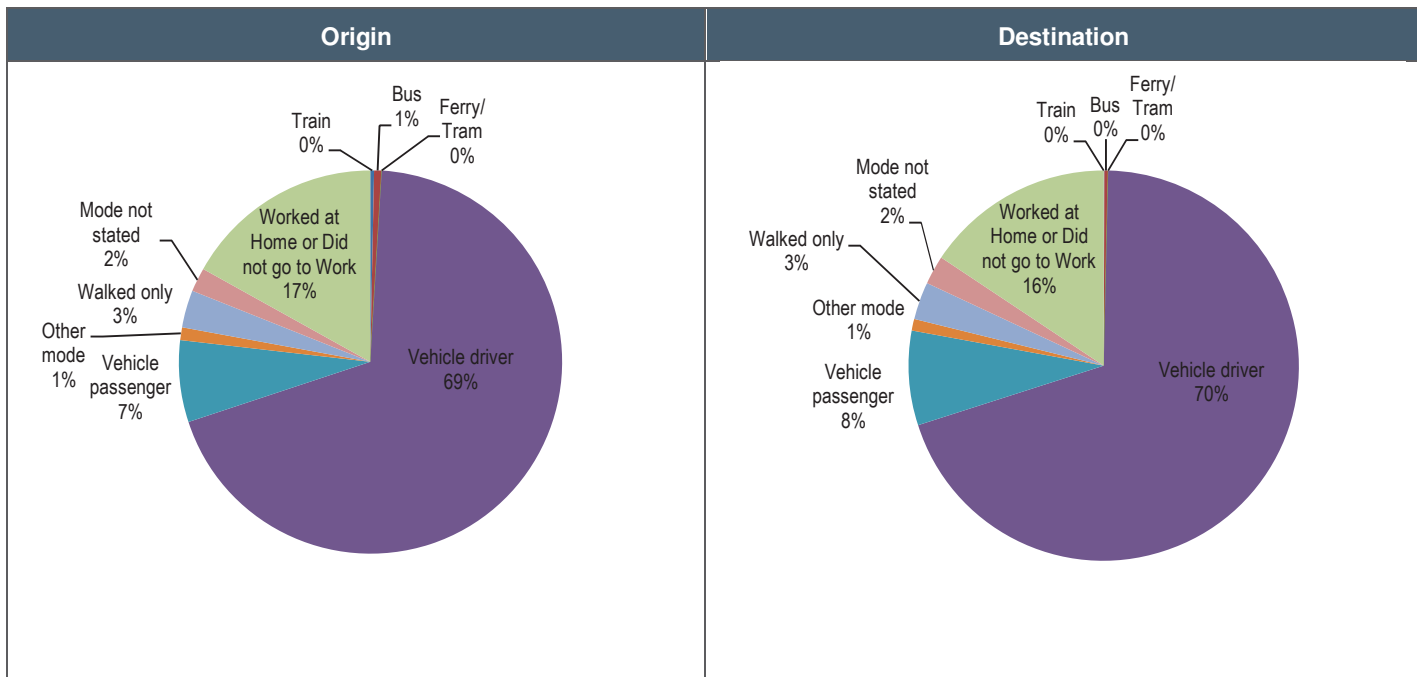


Figure 6 2011 Journey to Work Mode Share, Cessnock

The mode share for the Cessnock SLA as an origin and destination is shown in Figure 7.

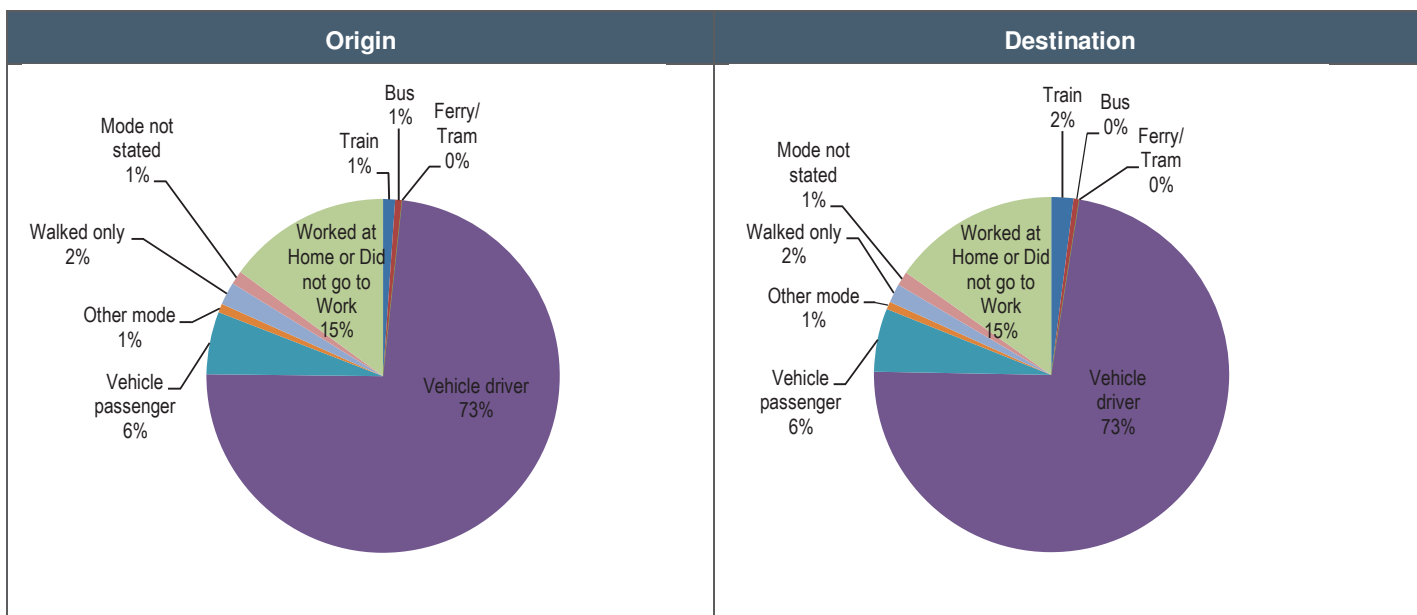


Figure 7 2011 Journey to Work Mode Share, Maitland

For both Cessnock and Maitland, travel to and from work is predominantly done by car mode as a vehicle drive or vehicle passenger (around 79 %).

3.6 EXISTING TRANSPORT ACCESS AND SERVICES

3.6.1 ACCESS

The main access roads to the development are the New England Highway, Wine Country Drive and Hunter Expressway. The Main North Rail Line and Branxton Railway Station are located to the north of the site.

The New England Highway is the main arterial road connecting the Upper Hunter Valley with Newcastle as well as providing regional and interstate connections to the New England, north-west regions of NSW and Brisbane. Wine Country Drive provides the main connection between Branxton and Cessnock and serves the village of North Rothbury. It is generally a two lane road.

The Hunter Expressway is a dual carriageway link between the F3 Freeway at the Newcastle Link Road and the New England Highway approximately 2km west of Branxton. The Branxton Interchange is located just immediately north of the site and connects to New England Highway and Wine Country Drive.

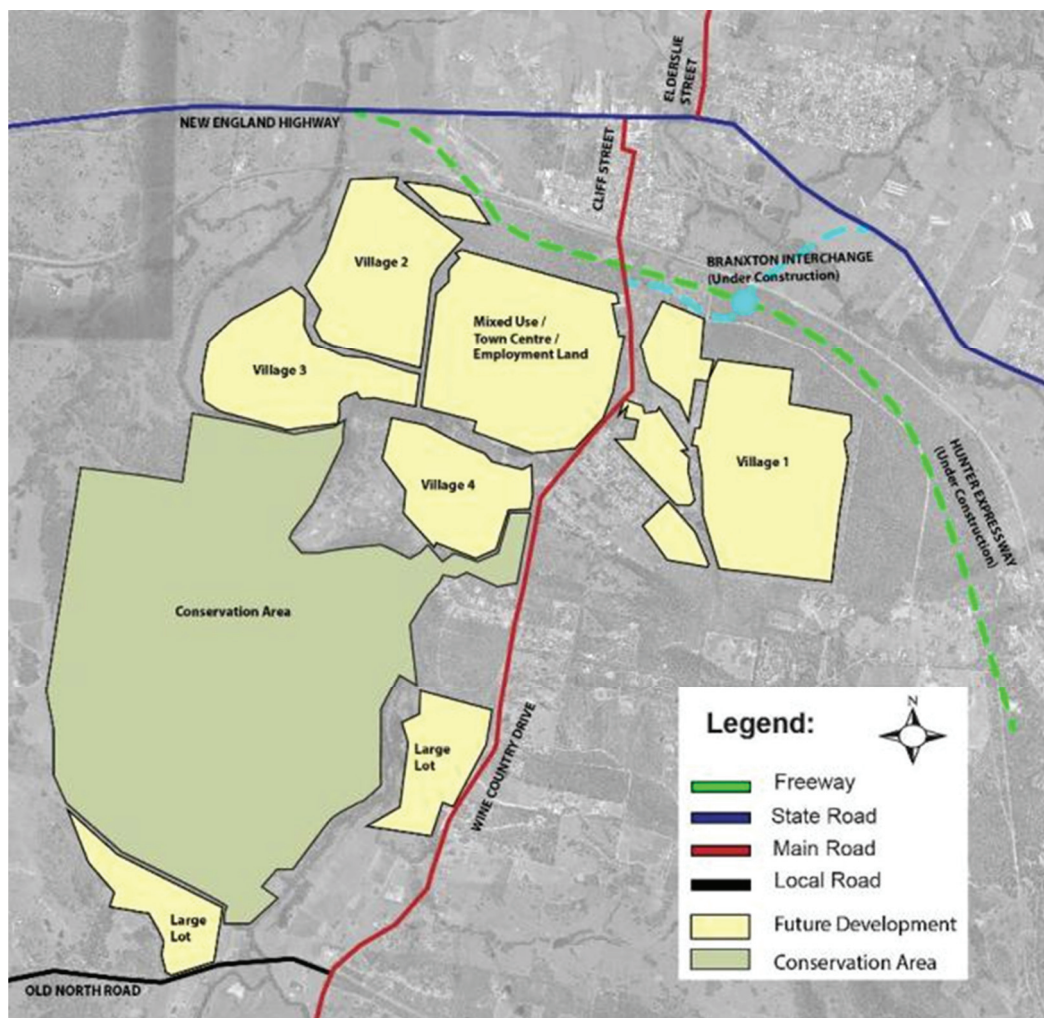


Figure 8 Road Hierarchy for the Huntlee Development

3.6.2 TRANSPORT SERVICES

In general, Cessnock, Maitland and Singleton residents have a high dependence on private car travel. The public transport system serving the area comprises mainly bus services, Hunter Regional passenger rail services, and long-distance country trains from Sydney through Maitland to Armidale and Brisbane. The bus and rail services are generally of low frequency being only several services each day between towns and to Newcastle. Local travel between the towns is by bus.

The current bus route (Route 179) services North Rothbury to Stockland Greenhills via Maitland and operates Monday to Saturday with no services on Sundays and public holidays. The frequency is low at roughly 8-10 trips a day between 6 a.m. and 6 p.m. Only five trips currently have stops at the North Rothbury area.

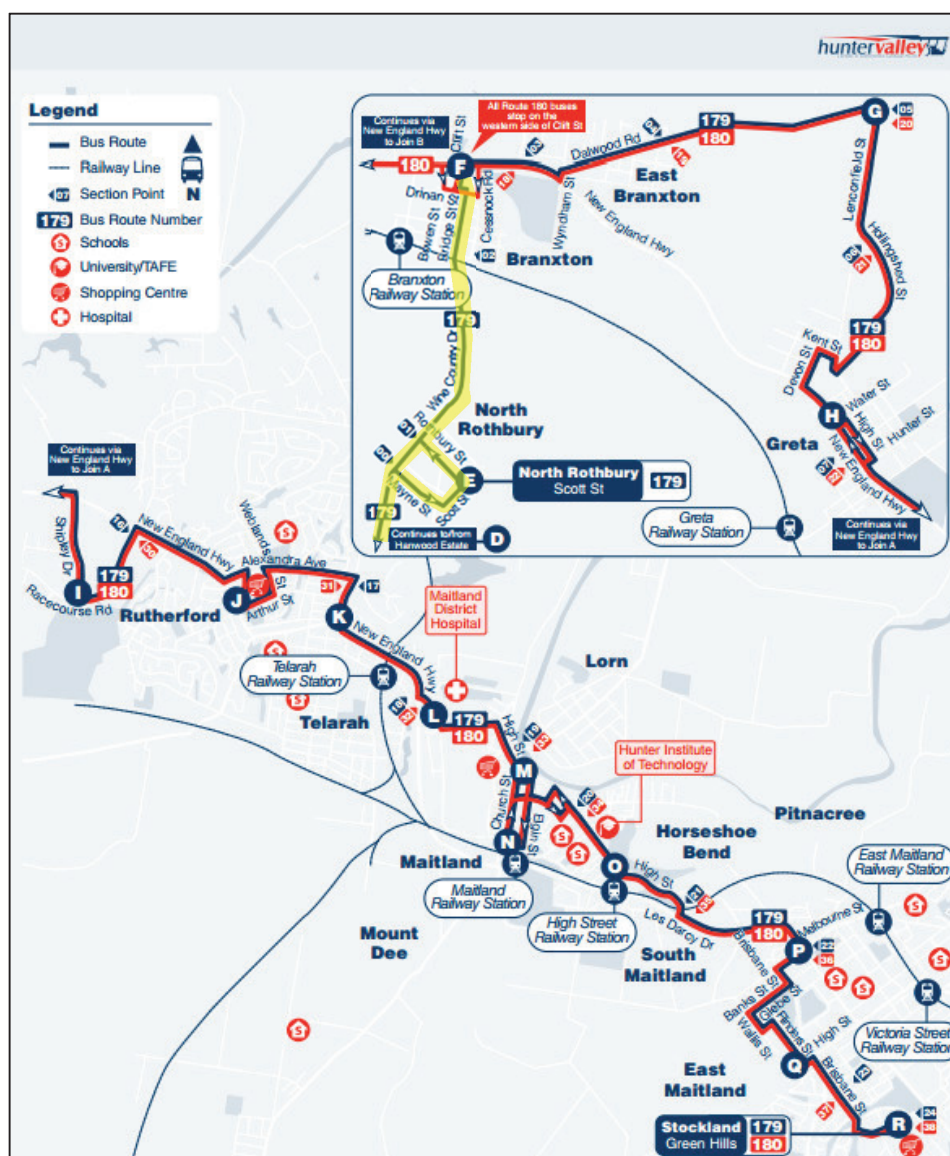


Figure 9 Existing Bus Route (Hunter Valley Buses)

3.7 IMPLIED MODE SHARE

An overview of all types of personal travel is provided by the Journey to Work (2011) and Household Travel Surveys (2011). The JTW data for Huntlee study area¹ catchment suggests that car travel is the dominant mode, with 95% of all trips being made by car. Similarly, about 85% of trips by Cessnock residents are made by car. Public transport use in the study area catchment is low (3-5%).

It is expected that during initial stages of the development, public transport use will be low. As development progress, there will be an increasing use of the choice of available transport and reducing dependence on cars. This should reduce car trip generation rates currently used.

3.8 IMPLEMENTATION STRATEGY

Public transport is an integral component of Huntlee's urban design and social and economic investment into reduced car dependency. The focus for Huntlee will be the provision of bus services both within Huntlee and connections to other centres. It is proposed that a bus service linking Village One to Huntlee town centre be commenced at Stage 1 phase of development. A bus interchange is proposed to be located within the Huntlee Town Centre which could service the Branxton Train Station in the longer term.

The basic principles of the public transport facilities proposed in the Huntlee TMAP² include the following:

- Priority Internal Routes connecting high intensity centres e.g. town centre, schools. Shops, business park area;
- Bus interchange located centrally within the Huntlee Town Centre, connecting internal Village bus routes with trunk routes to major centres external to the site;
- Cycling and Walking Network as an integral component of the development of Huntlee to supplement and support local public transport initiatives
- Consultation with TfNSW and stakeholders to ensure delivery of adequate services as required.

Huntlee aims to deliver a level of local public transport, walking and cycling in line with NSW Government targets, which are consistent with the long term Huntlee transport principles documented for the project. The following targets have been identified:

- 30% non car mode share for Journey to work
- 50% walk/cycle mode share for education trips
- 30% walk/cycle mode share for town centre travel
- 20% public transport mode share for town centre travel

¹ Study area catchment includes Branxton, East Branxton and North Rothbury (Travel zones 3397, 3398, and 3399).

² Huntlee TMAP, Mark Waugh Pty, Ltd, December 2010

4 DEVELOPMENT OF THE LONG-TERM NETWORK

The proposed development site is currently serviced by one bus route, linking the area to interchanges at Branxton and Maitland Railway Station. New road links are proposed within the development, with major spine roads linking areas to the east and the west of the development through the proposed town centre. The general planning criteria from the Outer Metropolitan Bus Service Planning Guidelines is that 90% of the proposed development should be within 400 metres of a bus route. The Huntlee New Town would be planned and developed as a series of staged neighbourhood over a 20+ year period. The bus routes will be developed in agreement with relevant authorities. The future bus routes will provide connections to regional destinations as development progress. Bus stops will be provided within walking catchment along agreed bus routes. An indicative bus routes are shown in Figure 10.



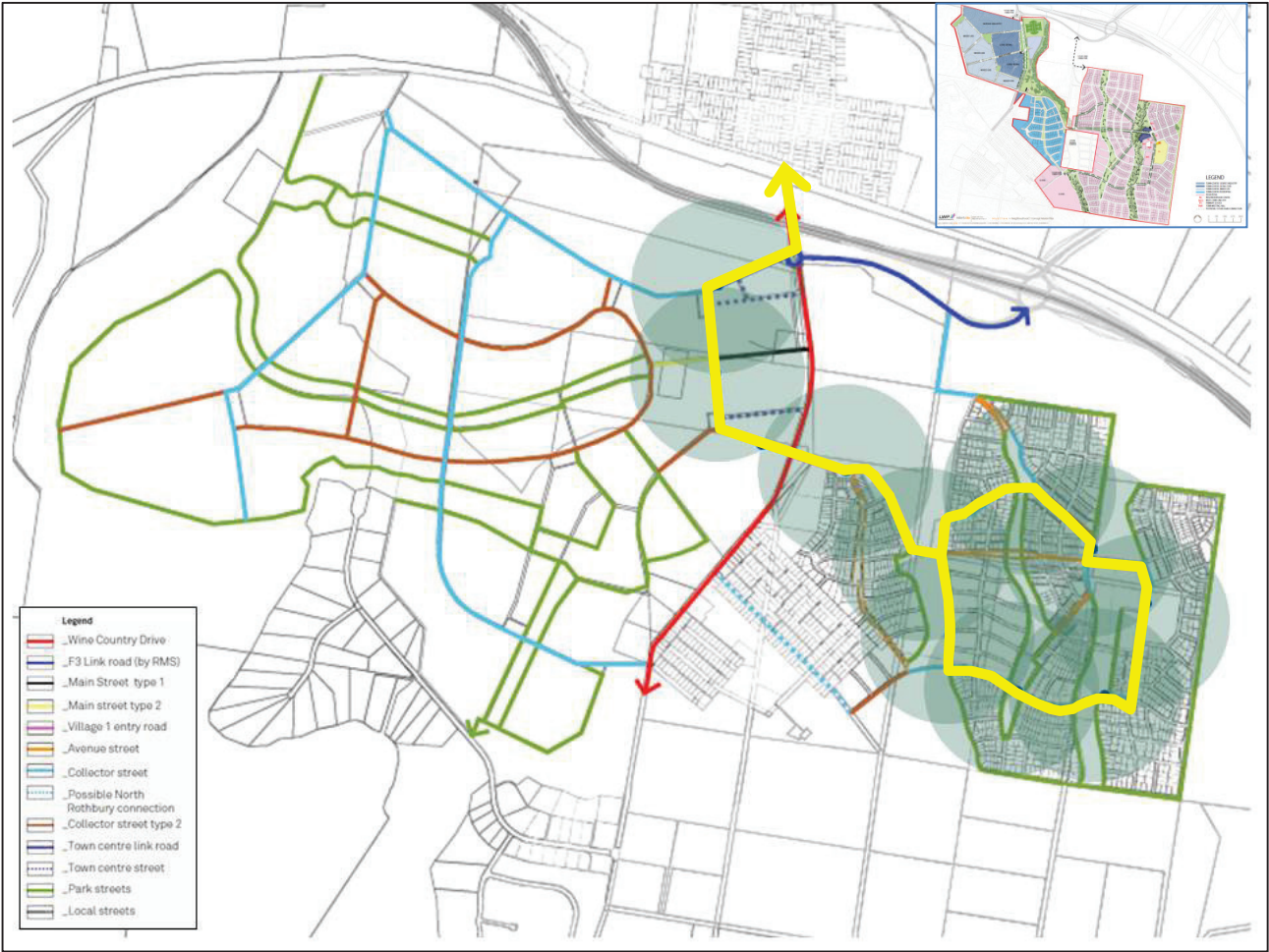
Figure 10 Initial Indicative Bus Route Network Plan

5 DEVELOPMENT OF THE SHORT TERM NETWORK

This section identifies the segments of the recommended network that will be required within the next ten years given that Stage 1 is expected to be completed only after at least seven years. It will be very difficult to predict the exact years for which certain services will be required. However, the current guiding parameter would be the anticipated release of land and the likely take up.

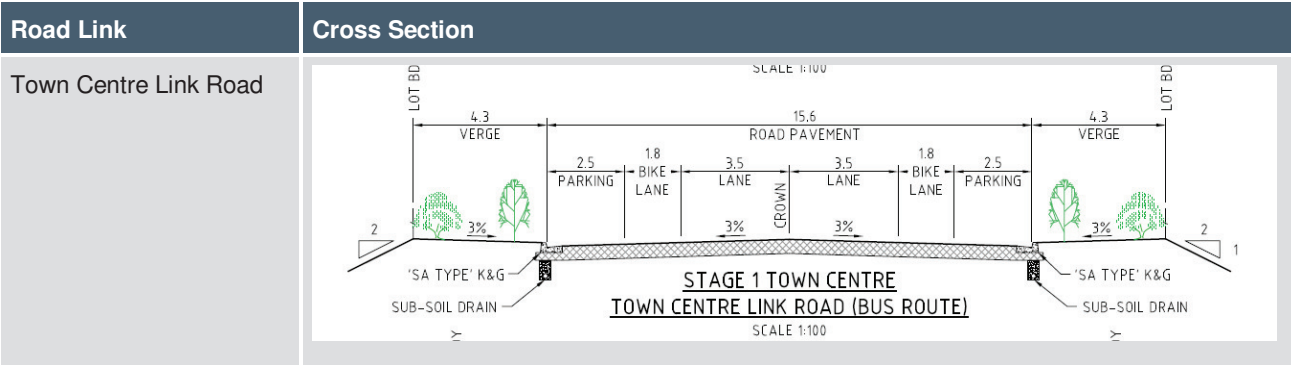
As a starting point, the strategy for the short term bus network considers the existing bus services as the initial route service to be modified to include Stage 1 development of Huntlee. The proposed bus route for Stage 1 is shown in Figure 11. The proposed bus route will the Town Centre Link Road, Village 1 Entry Road, Avenue Street, Collector Road and Park Road. It is intended for the bus route to operate as a one-way loop.

Figure 11 Proposed Stage 1 Bus Route



The road cross sections for the bus route provide a minimum travel lane of 3.5 metres in each direction. The proposed road cross sections are shown in Figure 12. A total of 10 bus stops will be constructed. Each bus stop will have a catchment of 400 metres.

Figure 12 Proposed Road Cross Sections



Road Link	Cross Section
Village 1 Entry Drive	STAGE 1 RELEASE AREA VILLAGE 1 ENTRY DRIVE SCALE 1:100
Avenue Street	STAGE 1 RELEASE AREA AVENUE STREET (BUS ROUTE) SCALE 1:100
Collector Street	STAGE 1 TOWN CENTRE COLLECTOR STREET
Park Street	STAGE 1 RELEASE AREA PARK STREET SCALE 1:100 NOTE: LOCAL ROAD (ROAD 2) HAS A 4.5m VERGE

The bus stop at the Town Centre is designed to accommodate 2 bus lengths on each side of Town Centre Link Road. The proposed configuration is shown in Figure 13.

Local widening is being proposed at Village 1 Entry Road to accommodate a bus stop. The proposed treatment is shown in Figure 14.

Figure 13 Town Centre Bus Stop Configuration

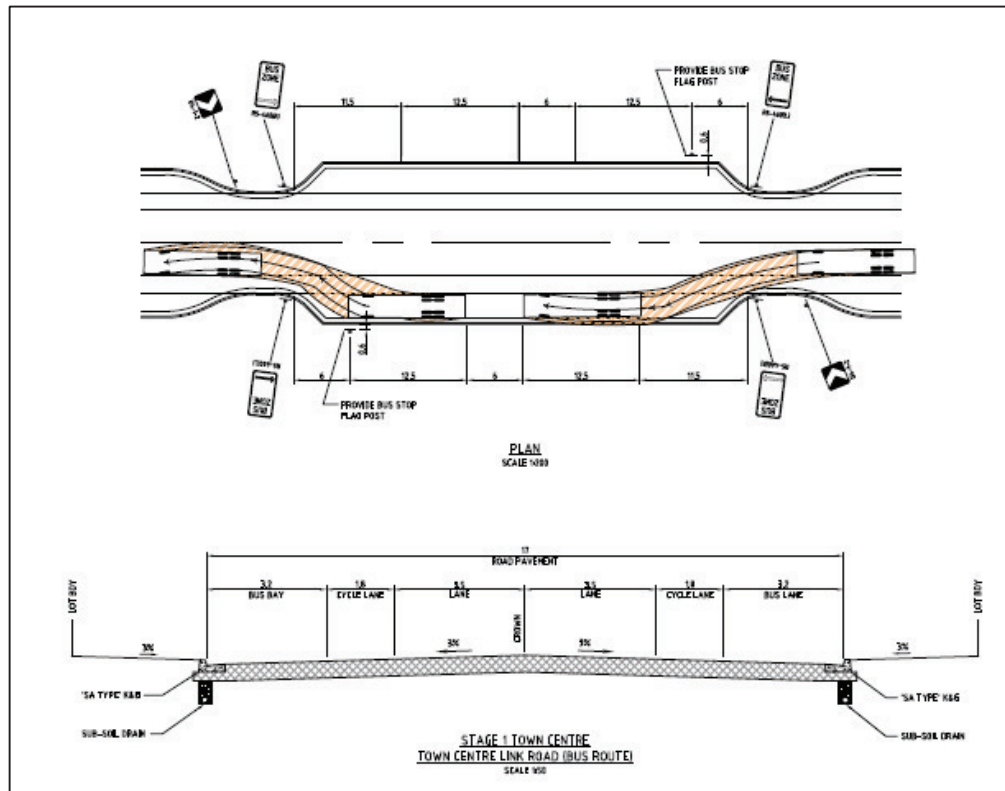
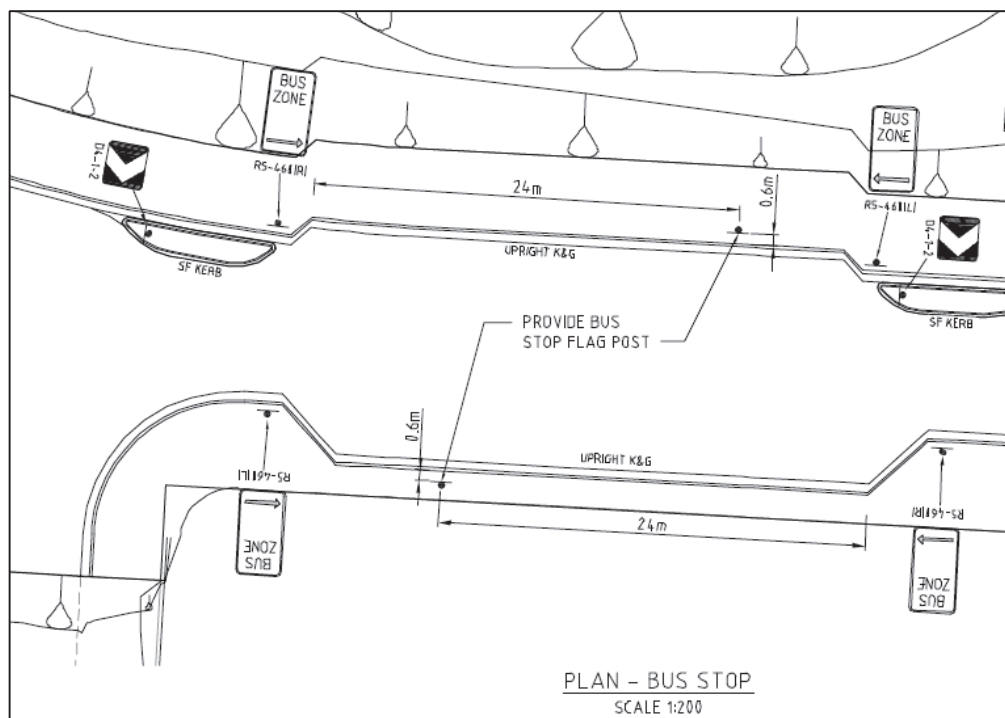


Figure 14 Proposed Local Widening at Village 1 Entry Road



Stage 1 is intended to be released in phases as development progresses from 2014 to 2020, as shown in Figure 15. Bus stops may be deferred in accordance with the proposed phasing of the Stage 1 delivery. Consequently, the bus route coverage will be limited to the released phases where land occupancy has commenced. By such, interim bus route turnarounds are proposed. The proposed turnarounds will utilise bus-capable streets. Restrictions to on street parking may be temporarily imposed where necessary.

Figure 15 Proposing Stage 1 Phasing

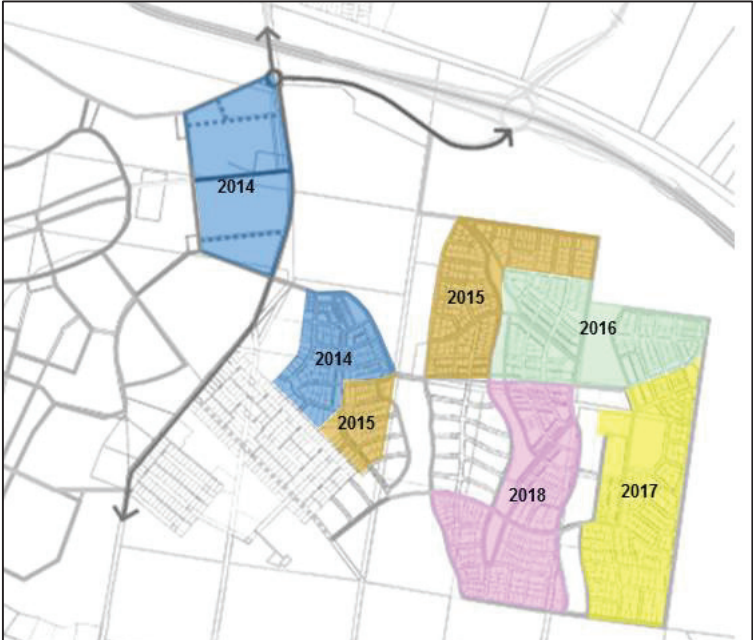
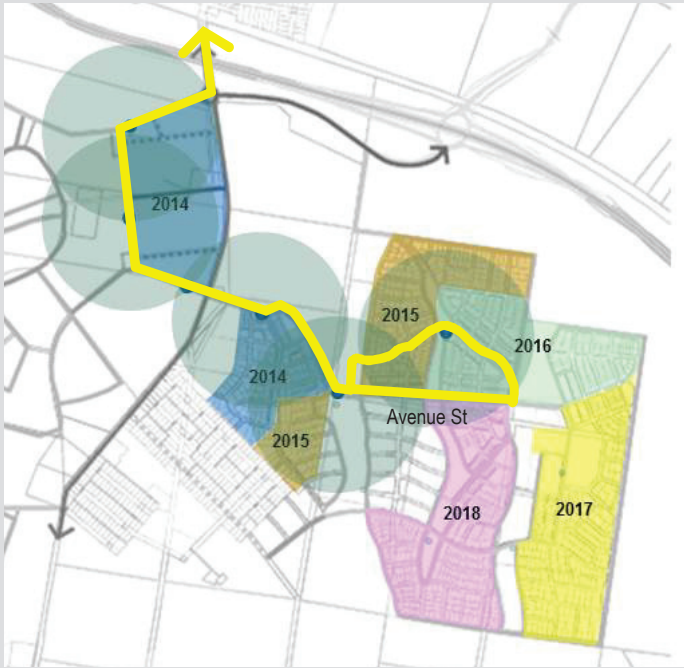
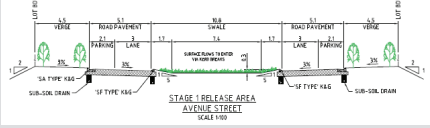
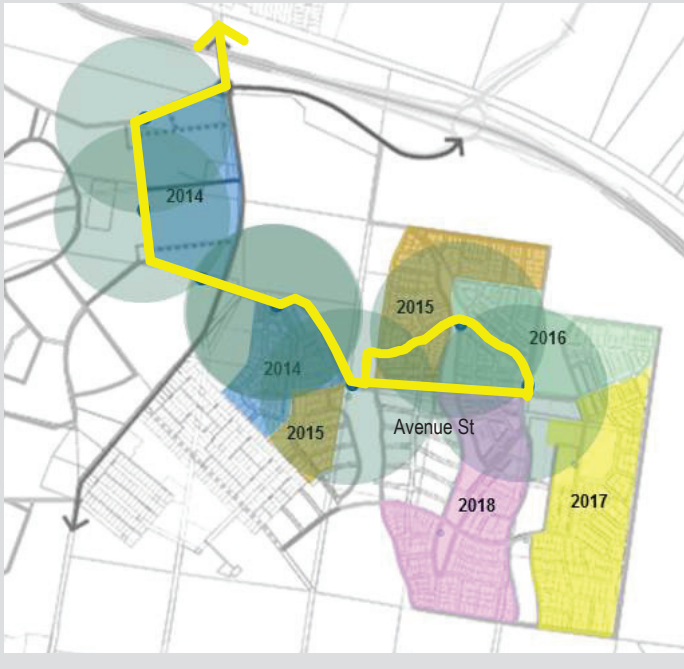
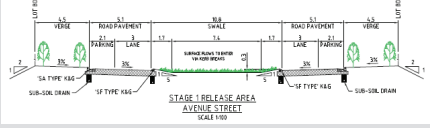
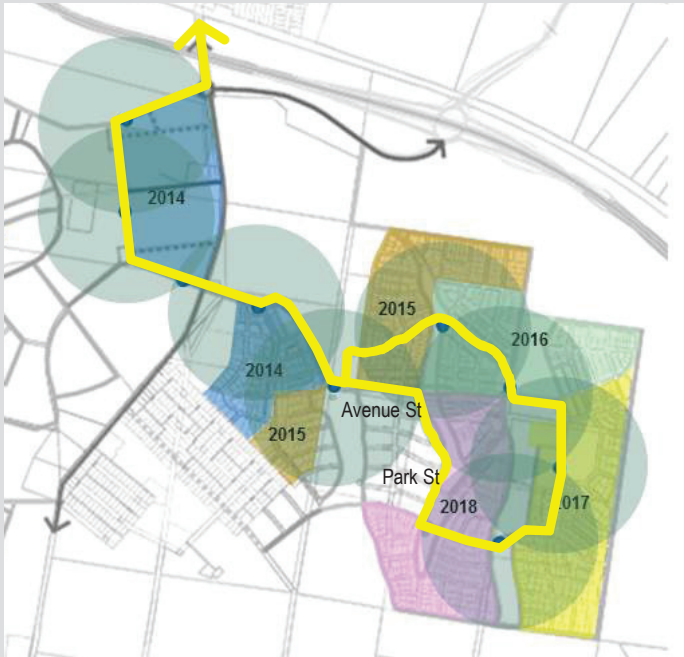
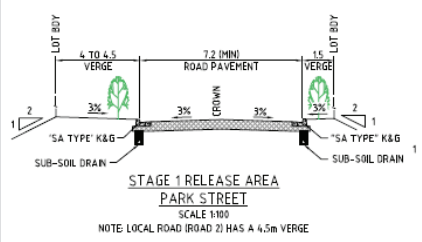
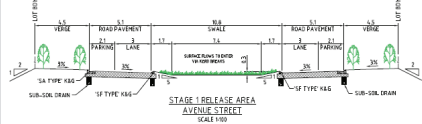
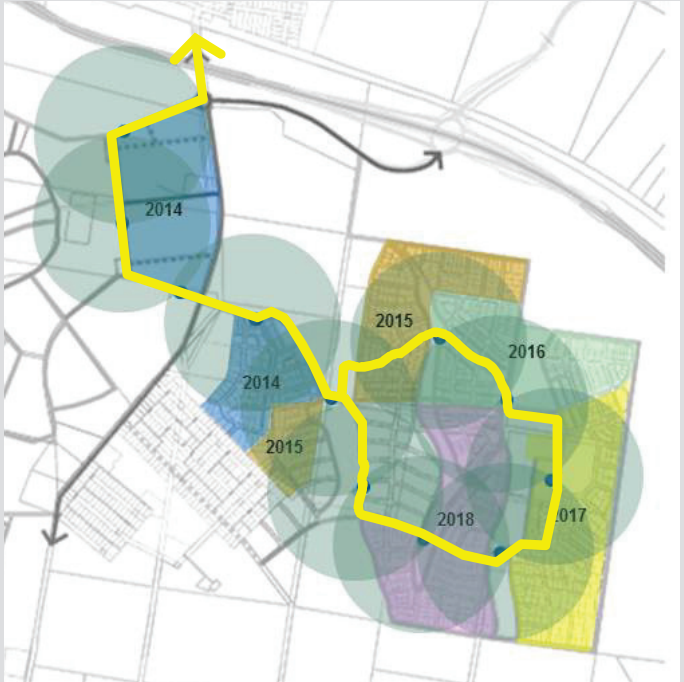


Figure 16 Bus Route Phasing

Phasing	Interim Bus Route	Bus Turnaround
2014		The bus turnaround route will utilise Park Street

Phasing	Interim Bus Route	Bus Turnaround
2015		The bus turnaround route will utilise Avenue Street. The southern section of Avenue Street that is not intended to be part of the final bus route will require temporary no parking restrictions when designated as a bus turnaround route. 
2016		The bus turnaround route will utilise Avenue Street. The southern section of Avenue Street that is not intended to be part of the final bus route will require temporary no parking restrictions when designated as a bus turnaround route. 

Phasing	Interim Bus Route	Bus Turnaround
2017		The bus turnaround route will utilise Park St and Avenue Street.  NOTE: LOCAL ROAD (ROAD 2) HAS A 4.5m VERGE The southern section of Avenue Street that is not intended to be part of the final bus route will require temporary no parking restrictions when designated as a bus turnaround route. 
2018		The Stage 1 Bus route will operate as a one way loop.