



# **New England Highway bypass of Muswellbrook**

Chapter 6.5 Traffic and transport

Transport for NSW | September 2021

## 6.5 Traffic and Transport

### 6.5.1 Methodology

A comprehensive traffic study was carried out which involved analysing traffic data, updating, recalibrating and revalidating an existing road based Paramics traffic model for the morning (AM) and afternoon (PM) peak traffic conditions and assessing future traffic performance of bypass options. Refer to *Muswellbrook Bypass, Traffic and Options Modelling Report* (Arcadis, 2018) and *Addendum No. 1 – The Proposal: Additional Traffic Modelling* (Arcadis, July 2021) (Appendix K).

### 6.5.2 Existing environment

#### *Existing road network*

The New England Highway is a key strategic road forming part of the Sydney to Brisbane corridor of the National Land Transport Network. It is a major freight and commuter route between Newcastle and the Upper Hunter with about 14 per cent of traffic movements being heavy vehicles. The route of the New England Highway through Muswellbrook causes safety and local amenity concerns, does not cater well for the movement of over-dimension loads, and reduces heavy vehicle efficiency. Within the town centre, there are conflicting demands on the New England Highway (Bridge Street), between light vehicles undertaking local trips (shopping, employment and school), and heavy vehicles, particularly longer articulated vehicles which predominantly undertake long haul trips.

The highway currently passes through multiple sets of traffic signals and a roundabout, through a school zone and under a narrow railway overpass.

The highway largely has a four-lane cross-section for the majority of the route through Muswellbrook, but includes a two-lane section between the Sydney Street (Denman Road) intersection, and the Bridge Street roundabout, passing over Muscle Creek, and under the Main North railway line.

#### Key Roads

The New England Highway, shown in Figure 6-11 runs north-south through the centre of Muswellbrook, and is the major road corridor in the area. From the southern extent of the bypass corridor near the Muscle Creek Road intersection, the highway traverses undulating terrain on the approach to the southern outskirts of the town. After making a 90 degree right turn at the Muswellbrook – Denman Road/Sydney Street intersection, it passes under the railway before proceeding through the CBD. Further north, it again crosses the railway and traverses the river flats on the approach to Sandy Creek Road and the effective highway departure from Muswellbrook continuing toward Aberdeen and Scone.

In addition to the highway there are two major roads that run west of the town along the Hunter River, namely Denman Road to Denman and Wybong Road to Wybong.

There are two local road accesses to Muswellbrook from the east, effectively joining the existing highway at either end of the bypass corridor namely Muscle Creek Road and Sandy Creek Road. They provide highway connections for farming properties south and north of the town respectively, and in the case of Sandy Creek Road, access to the St Helliers Correctional Centre on the northern outskirts of town.

A third road to the east of the township is Coal Road which provides access to Muswellbrook Waste Management Facility. Bell Street and Victoria Street, also to the east of the township, provide the current heavy vehicle bypass due to access constraints from the rail underpass. Further to the south-east, Muscle Creek Road connects to Muswellbrook Coal Mine for access to its operations via a section of private haul road within the mine property holdings.

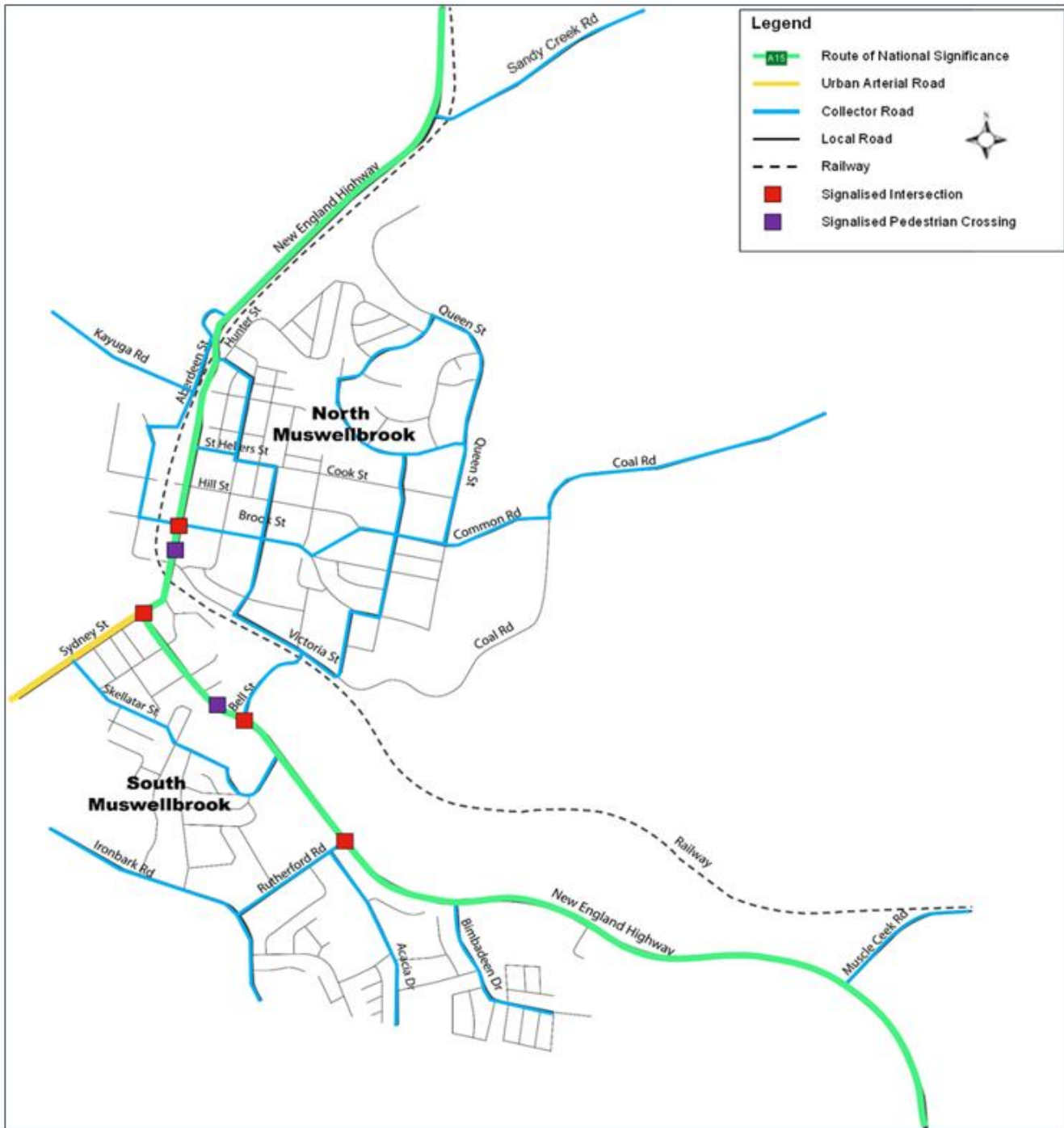


Figure 6-11: Existing road network for the Muswellbrook area

### Parking facilities

On-street kerbside parking (parallel) is provided on one or both sides of New England Highway as it passes through the commercial area of Muswellbrook. The majority of the on-street kerbside parking has timed restrictions in place as it serves retail establishments.

### Heavy vehicles

The New England Highway is a major freight route between Newcastle, Maitland and the Upper Hunter. It is classified as a B-double route for trucks up to 25/26 metres in length, as shown in Figure 6-12. Sandy Creek Road is also classified as a B-double route for trucks up to 19 metres in length, with some time-of-day restrictions on school days.



Figure 6-12: B-double routes

### Existing traffic conditions

#### Traffic volumes

Traffic data including daily midblock traffic counts, intersection turning movement counts, travel time surveys and 24-hour origin destination (OD) surveys were collected to support the development of the proposal traffic modelling. The results are documented in the *Muswellbrook Bypass, Traffic and Options Modelling Report*, 2018 (refer to Appendix K) and summarised in Table 6-16 and Source Arcadis 2018 Figure 6-13.

The traffic surveys (light and heavy vehicles) identified:

- On an average weekday, the New England Highway carried 9,600 and 19,500 vehicles per day depending on locations
- Daily traffic on the New England Highway in the southern part of Muswellbrook varied significantly, with 9,600 vehicles per day south of Muscle Creek Road increasing to about 18,900 vehicles per day west of Rutherford Road. The increase in traffic along the New England Highway is contributed to by local traffic predominately generated to and from the southern Muswellbrook urban area
- Traffic on New England Highway (Bridge Street) increases from about 18,900 to 19,500 vehicles per day through the Muswellbrook town centre, south of Brook Street. The higher traffic volumes on this section of New England Highway, compared to those to the north and south, demonstrate the high contribution made by local trips within the study area, particularly from Muswellbrook South via Denman Road and Sydney Street
- Denman Road and Sydney Street provide key access between local mining and agricultural industries and the New England Highway and Muswellbrook Town Centre. The roads carry about 10,200 vehicles per day on the average weekday.

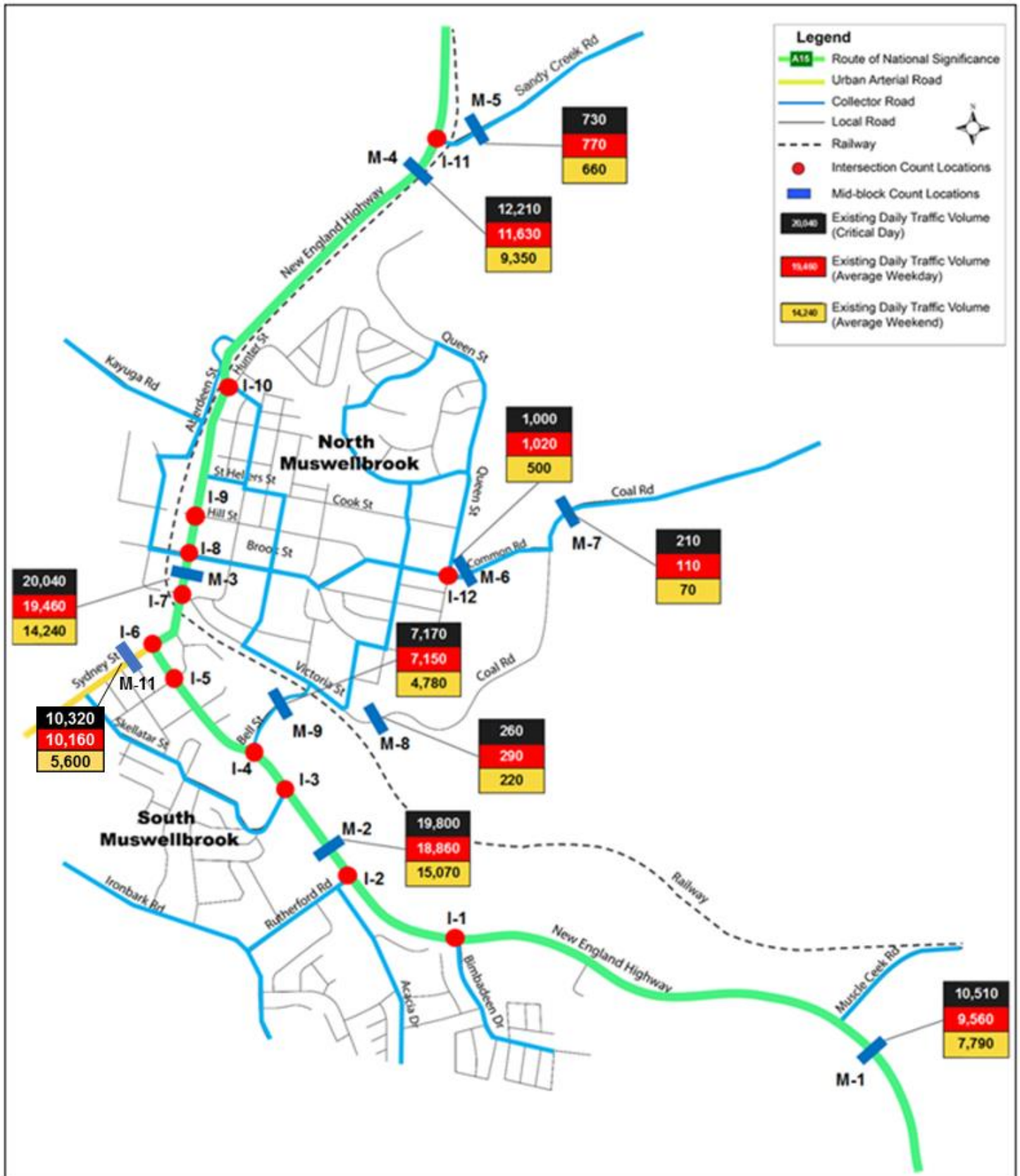
Table 6-16: 2016 traffic volumes – all vehicles

Site ID <sup>1</sup>	Road Sections	Average Weekday	Average Weekend	Critical day (Friday)
<b>New England Highway</b>				
M 1	South of Muscle Creek Road	9,560	7,790	10,510
M 2	West of Rutherford Road	18,860	15,070	19,800
M 3	(Bridge Street), South of Brook Street	19,460	14,240	20,040
M 4	South of Sandy Creek Road	11,630	9,350	12,210
<b>Local roads</b>				
M 5	Sandy Creek Road, East of rail crossing	770	660	730
M 6	Common Road, East of Queen Street	1,020	500	1,000
M 7	Coal Road, East of Common Road	220	140	210
M 8	Coal Road, East of Victoria Street	290	220	260
M 9	Bell Street, South of Victoria Street	7,150	4,780	7,170
M 11	Sydney Street, South of Jordan Street(1)	10,160	5,600	10,320

Source: Arcadis, 2018

Note: Volumes are rounded to the nearest ten units. (1) Traffic volumes on Sydney Street, south of Jordan Street (M-11) were obtained from supplemented traffic counts collected in December 2017

1. The location of traffic surveys are illustrated in Source Arcadis 2018
2. Figure 6-13



Source Arcadis 2018

Figure 6-13: Muswellbrook traffic volumes

## Heavy vehicles

The New England Highway in Muswellbrook carries a relatively high volume of heavy vehicles. Heavy vehicle analysis showed that on an average weekday:

- The number of heavy vehicles recorded on the New England Highway varied between 1,600 and 2,700 vehicles per day (see Table 6-17)
- On the New England Highway north and south of Muswellbrook, heavy vehicles represented about 24 per cent on the southern side and about 14 per cent on the northern side of the Muswellbrook town centre
- Through the town centre, the proportion of heavy vehicles on the New England Highway, west of Rutherford Road and south of Brook Street was found to be between 10 and 14 per cent of total traffic. The lower proportion of heavy vehicles at these locations is a result of a higher proportion of local light vehicles.

Table 6-17: 2016 traffic volumes – heavy vehicles

Site ID	Road Sections	Average Weekday	Average Weekend	Critical day (Friday)	% Heavy vehicles of total volume	
					Average weekday	Critical Friday
<b>New England Highway</b>						
M 1	South of Muscle Creek Road	2,290	1,030	2,340	24%	22%
M 2	West of Rutherford Road	1,780	890	1,780	10%	9%
M 3	(Bridge Street), South of Brook Street	2,740	1,230	2,710	14%	14%
M 4	South of Sandy Creek Road	1,630	720	1,540	14%	13%
<b>Local Roads</b>						
M 5	Sandy Creek Road, East of rail crossing	100	10	80	13%	11%
M 6	Common Road, East of Queen Street	110	10	130	11%	13%
M 7	Coal Road, East of Common Road	80	5	70	35%	33%
M 8	Coal Road, East of Victoria Street	70	10	50	24%	19%
M 9	Bell Street, South of Victoria Street	450	230	470	6%	7%
M 11	Sydney Street, South of Jordan Street(1)	610	170	570	6%	6%

Source: Arcadis, 2018

## Origin destination survey

- OD surveys were carried out for the development of the traffic model. For all traffic (heavy and light vehicles), the through traffic proportion on the New England Highway was found to be about 35 per cent in the northbound direction and about 29 per cent in the southbound direction
- Heavy vehicle through traffic contributed over half, with 56 per cent northbound and 59 per cent in the southbound direction.

## Travel times and speeds

- Travel time analysis of the existing highway through Muswellbrook shows that vehicles took between 10 and 11 minutes to travel on the New England Highway between Muscle Creek Road and Sandy Creek Road. The average travel speed was between 49 and 51 kilometres per hour, less than the posted speeds of 50 and 60 kilometres per hour in urban areas, and 100 kilometres per hour on the urban fringe
- The travel speed on the New England Highway between Lorne Street and Brook Street (through the town centre) was lower still at between 18 kilometres per hour and 28 kilometres per hour, which is considerably lower than the posted speed limit of 50 kilometres per hour.

## ***Existing intersection performance***

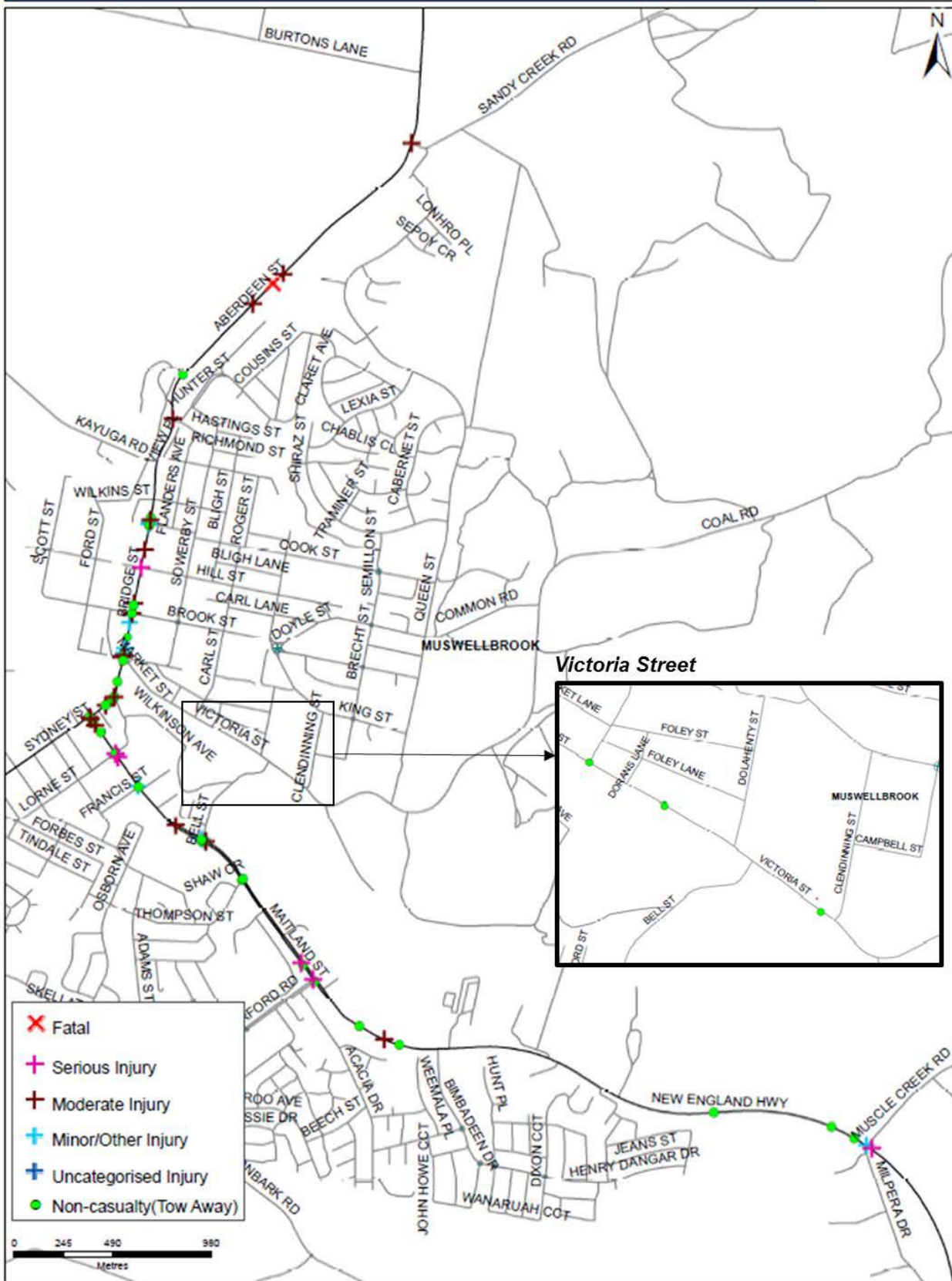
Level of service (LoS) is the standard measure, based on the average delay per vehicle, used to assess the operational performance of intersections. There are six levels of service, ranging from LoS A (the best) to LoS F (the worst). LoS D or better is considered to be an acceptable level of service. Traffic modelling shows that intersections within the study area along the New England Highway currently operate at acceptable LoS of D or better.

## ***Crash data***

Source: Arcadis 2018

Figure 6-14 summarises crash data between January 2011 and December 2015 along the New England Highway, and on Victoria Street between Bridge Street and Coal Road within the proposed road corridor. A total of 77 crashes were recorded, which involved 47 casualties. One fatality was recorded during this period. A breakdown of crash severity along the New England Highway is shown in Table 6-18.





Map data copyright (C) 2007 Roads and Traffic Authority, NSW. Some spatial data courtesy of NSW Department of Lands. Andrew Hampson November 2016

Source: Arcadis 2018

Figure 6-14: Crash location and types between 2011 and 2015

Table 6-18: Crash data summary between January 2011 and December 2015

Type	Crashes	Casualties
<b>New England Highway, between Muscle Creek Road and Sandy Creek Road</b>		
Fatal	1	1
Injury	34	46
Non casualty	42	-
<b>Total New England Highway</b>	<b>77</b>	<b>47</b>

Source: Arcadis, 2018

Analysis of the crash data for the New England Highway between Muscle Creek Road and Sandy Creek Road indicated the following:

- About 30 per cent of crashes were rear-ends
- About 58 per cent of crashes occurred at an intersection
- More than half of casualty crashes on the New England Highway involved heavy vehicles despite heavy vehicles constituting only about 10 to 20 per cent of the vehicle fleet.

**Mode of travel**

Travel characteristics for Muswellbrook were based on 2016 Census data. This data provides details on the mode of transport by which residents travelled to work on the day of the Census. The assessment of traffic and transport impacts considered the traffic environment within the boundary of Muswellbrook statistical area SA2 and the Muswellbrook Region statistical area SA2 shown in Figure 6-15. The mode of travel shared for these two key areas are summarised in Table 6-19.

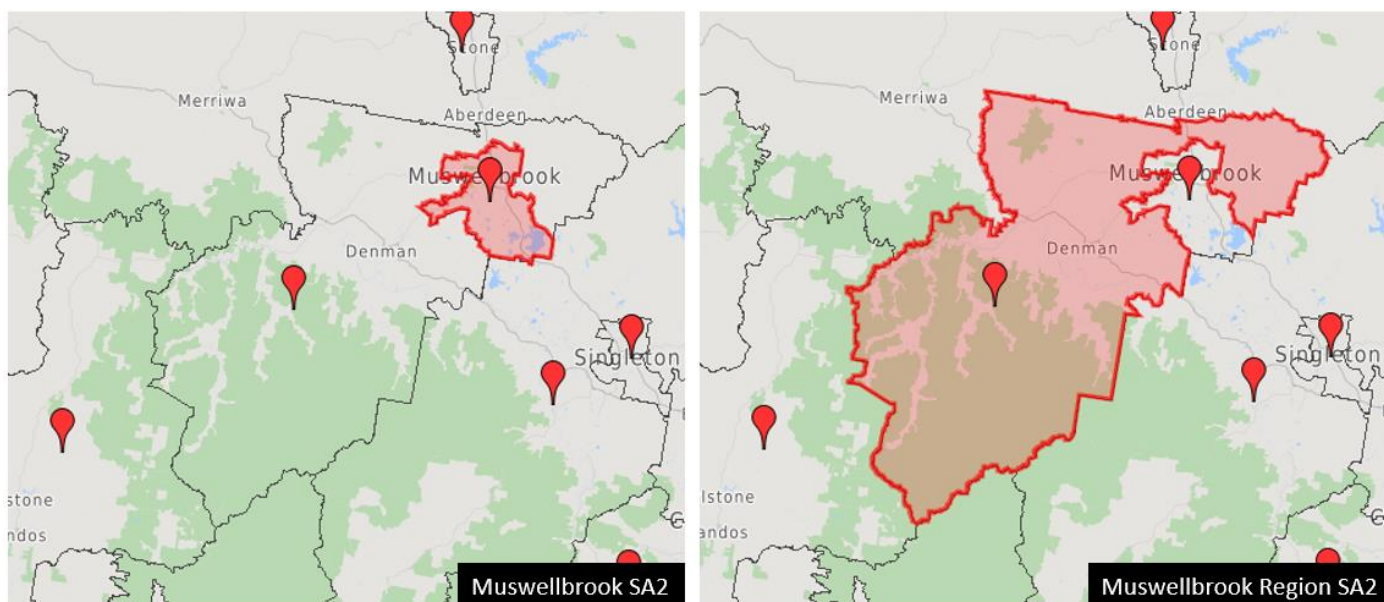


Figure 6-15: Muswellbrook and Muswellbrook Region statistical area boundaries

Private vehicles are the predominant mode of transport for travel to work in Muswellbrook, accounting for about 97 per cent of trips. This could be attributed to the limited public transport services to key employment areas, which is reflected by the low reliance on public transport, accounting for less than one per cent of commuter trips.

Table 6-19: Method of travel to work (2016 Census)

Boundary	Walked	Public transport	Car driver or passenger	Other
Muswellbrook (SA2)	2%	<1%	97%	<1%
Muswellbrook Region (SA2)	5%	<1%	93%	1%

Source: Australian Bureau of Statistics Interactive Map – Journey to Work Place of Work

Note: excludes those who worked from home or whose mode was not stated

### ***Walking and cycling facilities***

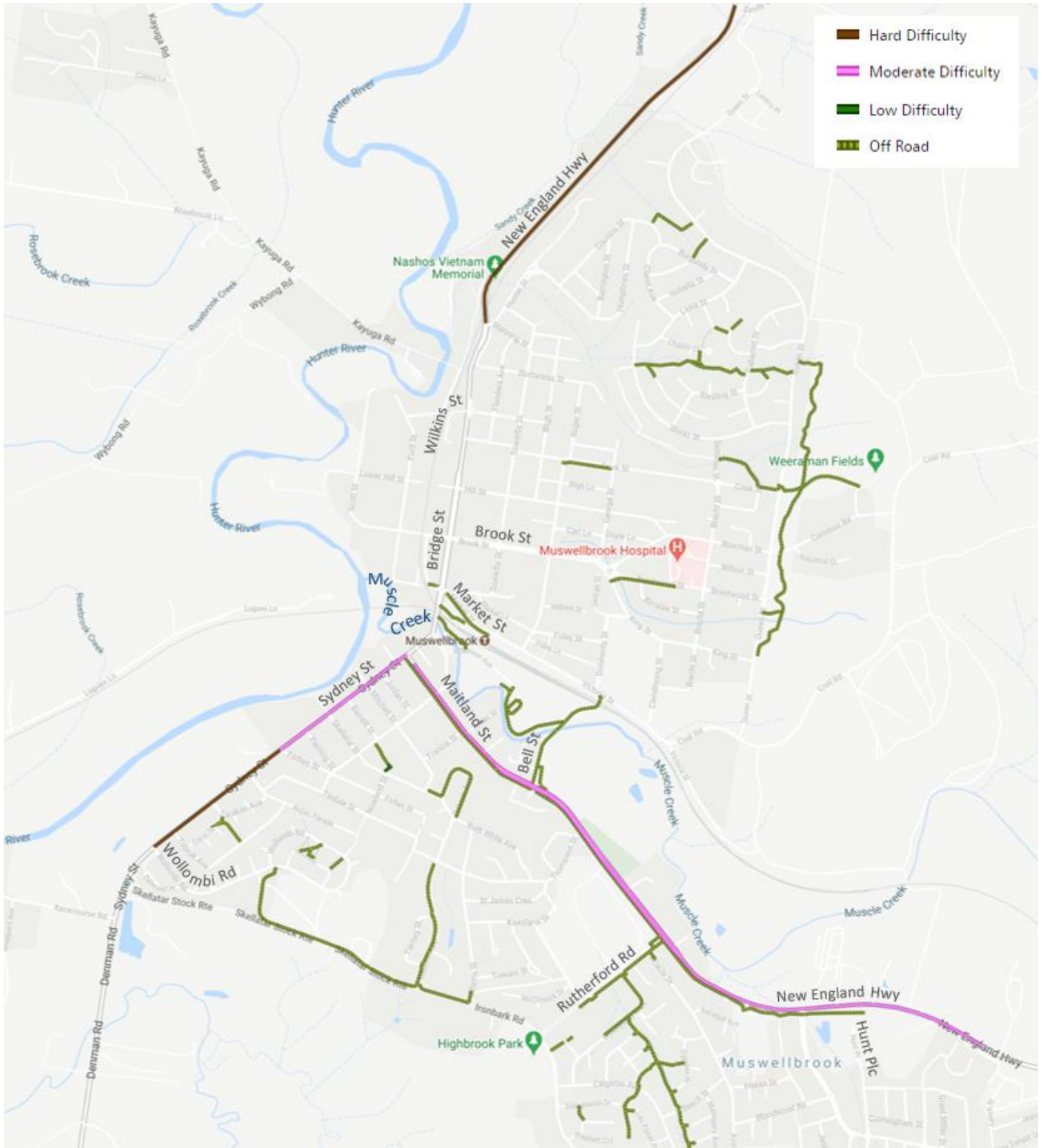
Pedestrian footpaths are provided on both sides of the New England Highway as it passes through Muswellbrook, between Bell Street in the south and Wilkins Street in the north. Footpaths on one side of the New England Highway are also provided as the highway enters Muswellbrook from the east, between Hunt Place and Bell Street.

Along the New England Highway, marked (signalised) pedestrian crossings are provided at the Maitland Street/Bell Street intersection, in front of Muswellbrook South Public School, at the Maitland Street/Sydney Street intersection, and at the Bridge Street/Brook Street intersection.

Cycle routes are provided in select locations close to the New England Highway as shown in Source: Transport for NSW Roads and Maritime Services Cycleway Finder

Figure 6-16:

- An off-road shared path provides cycle access along the southern side of the New England Highway between Hunt Place and Sydney Street
- On-road marked cycle lanes provide an on-road route connecting to the New England Highway from the west along Sydney Street between Wollombi Road and Maitland Street
- Several off-road cycle paths connect into the New England Highway including a connection from the residential area south of the New England Highway at Rutherford Road, and short connections from the north at Bell Street, Muscle Creek and Market Street.



Source: Transport for NSW Roads and Maritime Services Cycleway Finder

Figure 6-16: Bicycle network near Muswellbrook

### Public transport services

#### Rail services

Muswellbrook Station, which is served by the Hunter Line and North Western NSW Line, both operated by NSW TrainLink, is adjacent to the proposed road corridor:

- The Hunter Line through Muswellbrook provides an intercity service between Newcastle and Scone

- The North Western NSW Line is a regional service through the Hunter, New England and North West Slopes and Plains regions.

Table 6-20 summarises the number of train services at Muswellbrook Station.

Table 6-20: Rail services at Muswellbrook Station

Boundary	Description	No. of weekday services	No. of weekend services
Hunter Line	Scone to Newcastle	4	2
	Newcastle to Scone	4	2
North Western NSW Line	Central to Armidale	1	1
	Armidale to Central	1	1

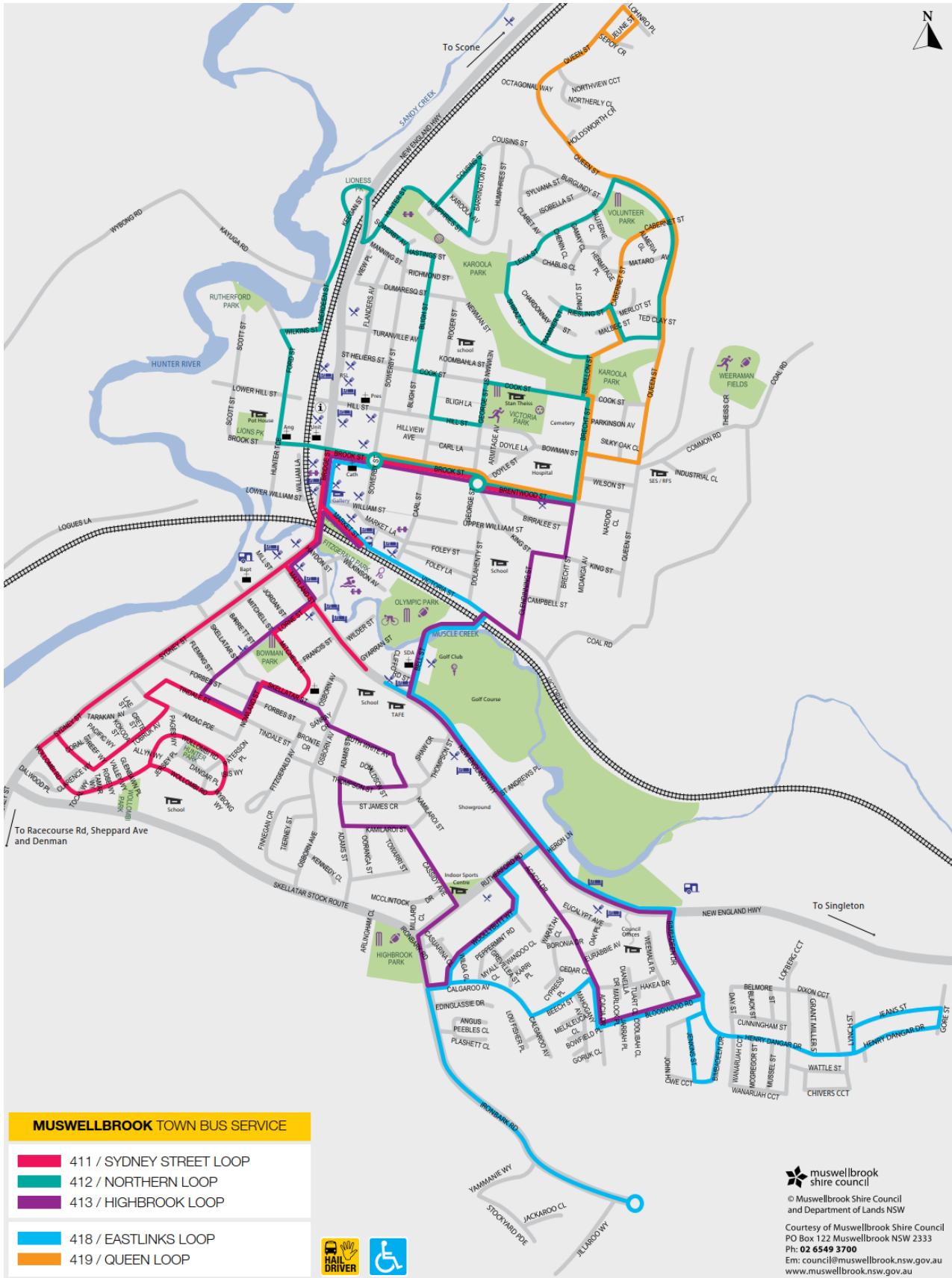
### Bus services

Table 6-21 shows the local bus routes and services provided by Osborn's Transport. These are illustrated in Source: Osborn's Transport Muswellbrook Town Bus Service Timetable (routes to Scone, Denman and Aberdeen not shown on map) Figure 6-17.

Regional connections to Scone, Aberdeen and Dennam and the number of weekday services are also shown on Table 6-21.

Table 6-21: Bus services at Muswellbrook

Route	Description	No. of weekday services	No. of Saturday services
Muswellbrook town services			
411	Sydney Street Loop (Central town area)	4	3
412	Northern Loop (Northern Town area)	4	3
413	Highbrook Loop (Central town area)	5	3
418	Eastlinks Loop (Southern town area)	5	3
419	Queen Loop (Northern Town area)	4	3
Muswellbrook regional services			
414	Muswellbrook to Scone via Aberdeen	2	-
	Scone to Muswellbrook via Aberdeen	2	-
415	Muswellbrook to Denman Loop	2	-
	Muswellbrook to Denman via Aberdeen and Scone Loop	1	-



Source: Osborn’s Transport Muswellbrook Town Bus Service Timetable (routes to Scone, Denman and Aberdeen not shown on map)

Figure 6-17: Bus routes serving Muswellbrook and surrounding areas

### 6.5.3 Potential impacts

#### **Construction**

A qualitative traffic impact assessment has been carried out and is summarised below.

#### Construction footprint and construction site locations

The construction footprint for the proposal is shown in Figure 3-6 along with construction compounds and facilities at the following locations:

- Southern connection main site construction compound
- Northern connection main site construction compound
- Skellatar Ridge cutting satellite compound
- Coal Road satellite compound
- Sandy Creek and Main North rail line laydown area.

#### Traffic impacts

Construction vehicles would access the site via arterial roads wherever possible. Indicative construction traffic access points are shown in Figure 3-6 and would generally be via the New England Highway and Denman Road, with use of Sandy Creek Road and Muscle Creek Road to access the construction footprint.

Indicative heavy vehicle haulage routes have been identified for the movement of spoil between different areas of the proposal. The routes to and from the New England Highway are also shown Figure 3-6. The haulage routes have been designed to avoid use of local roads, where possible. As shown in Figure 6-12, the New England Highway, Denman Road and the section of Muscle Creek Road utilised for the proposed haulage routes are classified as B-double routes for vehicles 25 to 26 meters in length. Sandy Creek Road is also classified as a B-double route but with a restriction to 19 meter B-double trucks only, and with travel not permitted between 7.30 am and 8.30 am, and 3.45 pm and 4.45 pm on school days.

The number of construction vehicle movements has been estimated to be up to 220 light and 300 heavy vehicles per day during peak construction periods across all ancillary facilities.

Heavy vehicle movements, which are likely to have the largest impact, would mainly be related to earthworks or spoil movement, but would also include other movements such as girder delivery and plant delivery. As noted, heavy vehicles would only access construction sites from approved heavy vehicle routes.

Existing traffic flows on the New England Highway are substantially greater than the proposed construction traffic numbers. The existing traffic flows are over 1,500 heavy vehicles from 7am to 6pm each weekday and over 350 heavy vehicles from 8am to 1pm each Saturday. During peak construction periods, it is expected that 300 heavy vehicle movements would be generated by construction works along the proposal per day. Broken down across the 11-hour weekday construction period, from 7am to 6pm, this means that on average there would be one heavy vehicle movement every two minutes. Modelling results for existing intersection performance shows that the intersections which would be used by heavy vehicles to access the construction sites from the New England Highway, have excess capacity and generally perform at LoS A or B. Therefore, construction traffic, including earthworks truck movement, is likely to have a minor impact on existing traffic operations.

While it is expected that construction activities would generate fewer light vehicles compared to heavy vehicles, the light vehicle movements are likely to occur during the AM and PM peak periods as workers access the northern connection main site construction compound and the southern connection main site construction compound, which are the two construction sites with parking. These two construction compounds would need to be accessed via the New England Highway/Sandy Creek Road and the New England Highway/Muscle Creek Road intersections. As previously mentioned, it is expected that these

intersections would have excess capacity, and it is therefore expected that they would have enough capacity to accommodate the additional light vehicle movements generated by construction activities.

Most construction work would be carried out separate to the existing road network, during standard working hours and so would be unlikely to impact traffic operations. It is expected that some work, including tie-in work would be undertaken outside of standard working hours under a Road Occupancy Licence (ROL) to avoid impacts during peak traffic periods. Where practical, heavy vehicle movements would be outside the traffic peak hours to minimise impacts on the existing road network operation during construction.

Impacts to traffic on the New England Highway during construction would be temporary in nature. The movement of construction and service vehicles along New England Highway and access roads, for the haulage of construction materials would give rise to traffic impacts. As described above, construction sites would be primarily accessed via approved heavy vehicle routes.

Potential traffic impacts arising from the construction of the proposal include:

- Increased travel time due to reduced speed limits around construction sites
- Increased travel time due to increased truck and construction machinery movements
- Temporary lane closure and altered property accesses during construction. Property access would be maintained as far as practicable throughout construction.

Measures to manage potential construction traffic impacts are listed in Section 6.5.4.

### Walking and cycling facilities

It is not expected construction work would impact any existing pedestrian access routes or crossings. Construction work is also not expected to impact off-road cycle paths or on-road cycle lanes with the exception of the on-road cycle route shown in Source: Transport for NSW Roads and Maritime Services Cycleway Finder

Figure 6-16, along the New England Highway, near the intersection of Sandy Creek Road. This route could be temporarily impacted during activities required for the tie-in of the New England Highway at the northern connection.

It is anticipated that construction work would be carried out in a manner to ensure that public access routes are maintained and pedestrian and cyclist diversions are minimised. This would be documented in the Traffic Management Plan (TMP) for the proposal.

### Public transport

The proposal is not expected to disrupt public transport. All existing bus and train services would be maintained during construction, with potential for minor delays to bus services due to construction speed limits. Through the implementation of the community engagement plan, the community, including public transport operators, would be informed of upcoming activities that may affect the operation of public transport.

## **Operational**

### Traffic impacts

The traffic assessment included modelling for future years 2027, 2034 and 2044 to assess the impact of the proposal once operational. On year of opening (2027), the proposal is expected to remove up to 4,800 vehicles per day (including about 1,900 heavy vehicles).

Table 6-22 shows forecast average weekday traffic volumes and heavy vehicles on the bypass.



Table 6-22: Daily traffic forecasts on bypass

Road section	Vehicle type	Forecast average weekday traffic (vehicles)	
		2027	2044
Bypass northern section between Sandy Creek Road and Coal Road	All vehicles	5,080	6,420
	Heavy vehicles	1,920	2,710
	% Heavy vehicles	38%	42%
Bypass southern section between Coal Road and Muscle Creek Road	All vehicles	4,770	6,040
	Heavy vehicles	1,870	2,650
	% Heavy vehicles	39%	44%

Figure 6-18 and Table 6-23 summarise traffic forecast (all vehicles) in future year 2044 at key locations with and without the bypass.

In 2044, the proposal would reduce through traffic volumes by up to 5,900 vehicles per day from New England Highway between Muscle Creek Road and Sandy Creek Road. This represents an expected traffic reduction of between 23 and 46 per cent, along sections of the New England Highway through Muswellbrook Town Centre. The bypass would reduce traffic flows on Bell Street by about 14 per cent. Traffic increase is predicted on Common Road and Coal Road by about 2,060 vehicles per day.

Table 6-23: Forecast 2044 daily traffic volumes

Site ID	Road / Location	Forecast Average Weekday Traffic (All Vehicles) in 2044			
		Without Bypass	With Bypass	Change	% Change
M 1	New England Highway, South of Muscle Creek Road	12,900	12,900	0	0%
M 10	New England Highway, East of Bimbadeen Drive	11,700	6,260	▼-5,440	▼-46%
M 2	New England Highway, West of Rutherford Road	24,900	19,460	▼-5,440	▼-22%
M 3	New England Highway, South of Brook Street	26,000	20,070	▼-5,930	▼-23%
M 4	New England Highway, South of Sandy Creek Road	15,000	10,180	▼-4,820	▼-32%
M 9	Bell Street, South of Victoria Street	10,000	8,670	▼-1330	▼-14%

Site ID	Road / Location	Forecast Average Weekday Traffic (All Vehicles) in 2044			
		Without Bypass	With Bypass	Change	% Change
M 6	Common Road, East of Queen Street	1,160	3,220	▲2,060	▲178%
M 7	Coal Road, east of Common Road	260	2,320	▲2060	▲792%
B 1	Bypass, between Muscle Creek Road and Coal Road	-	6,420	6,420	-
B 2	Bypass, between Coal Road and Sandy Creek Road	-	6,040	6,040	-

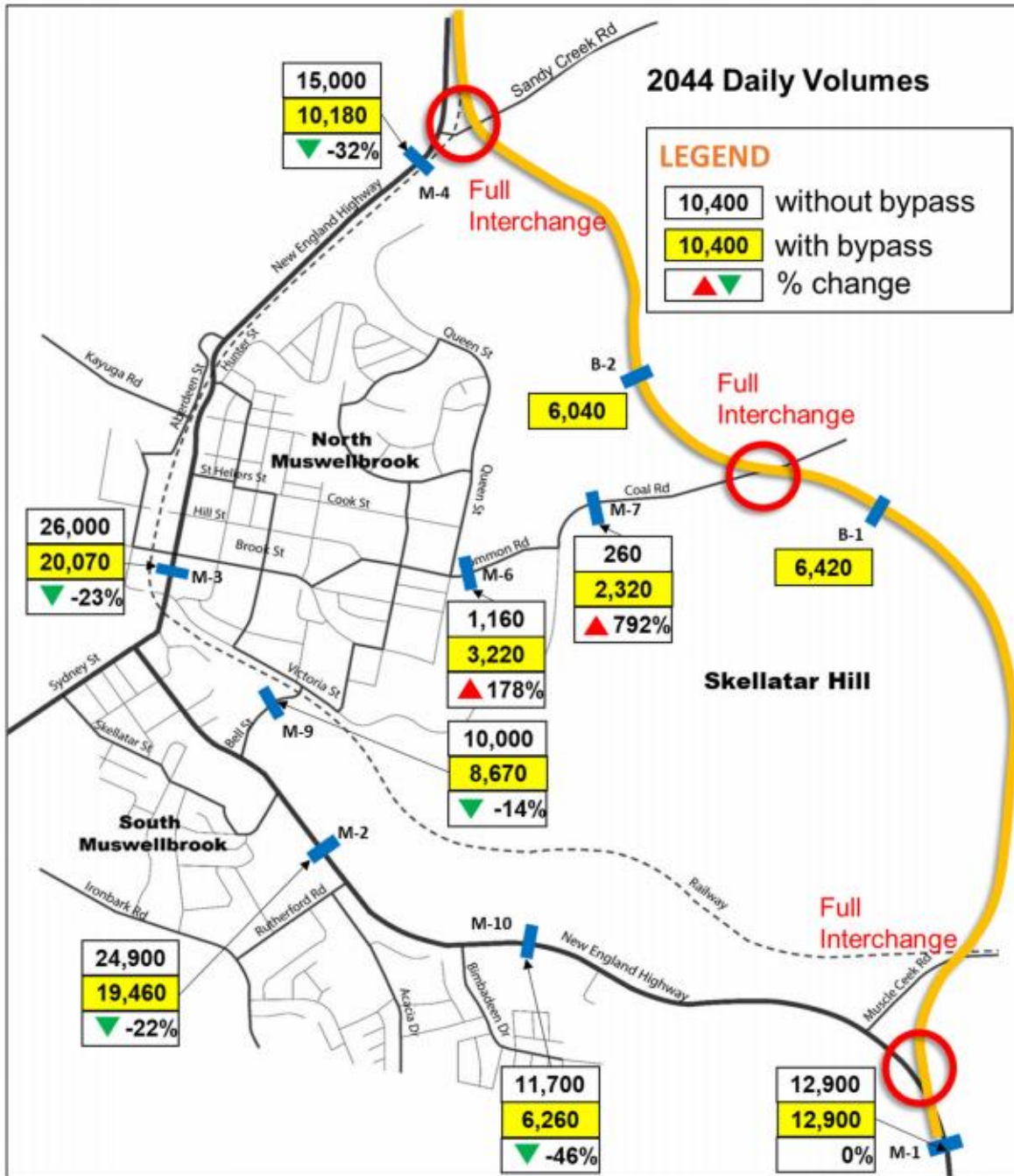


Figure 6-18: Impact of bypass on New England Highway

### Forecast heavy vehicles on Bypass

Table 6-24 summarises forecast heavy vehicles at key locations with and without the bypass in 2044. The heavy vehicle reductions on the New England Highway are shown in Figure 6-19.

In 2044, the bypass would remove up to 2,500 heavy vehicles per day from the New England Highway between Muscle Creek Road and Sandy Creek Road. The heavy vehicle reductions are estimated to be between 58 and 86 per cent on the New England Highway through the Muswellbrook Town Centre.

As a consequence, the bypass would:

- Improve network efficiency on the New England Highway; particularly travel times for long haul freight movements.
- Improve safety for all road users in the town centre, particularly relating to heavy/light vehicle interaction.

- Improve amenity of Muswellbrook Town Centre.

The bypass would fundamentally change the traffic conditions on the existing New England Highway through Muswellbrook, reducing traffic and noise, reducing traffic-related mental and physical health impacts for both motorists and residents living near major arterial surface roads in the area such as Maitland Road and Bridge Street, and enable urban revitalisation, in line with council's Muswellbrook Town Centre Strategy (2017). The bypass would also be likely to reduce the number of casualty crashes in Muswellbrook, considering more than half of casualty crashes currently involve a heavy vehicle.

Table 6-24: Forecast 2044 daily heavy traffic volumes

Site ID	Road / Location	Forecast Average Weekday Traffic (All Vehicles) in 2044			
		Without Bypass	With Bypass	Change	% Change
M 1	New England Highway, South of Muscle Creek Road	3,580	3,580	0	0%
M 10	New England Highway, East of Bimbadeen Drive	3,470	1,320	▼-2,150	▼-62%
M 2	New England Highway, West of Rutherford Road	2,770	620	▼-2150	▼-78%
M 3	New England Highway, South of Brook Street	4,370	1,830	▼-2,540	▼-58%
M 4	New England Highway, South of Sandy Creek Road	2,680	370	▼-2,310	▼-86%
M 9	Bell Street, South of Victoria Street	710	430	▼-280	▼-39%
M 6	Common Road, East of Queen Street	160	440	▲280	▲175%
M 7	Coal Road, east of Common Road	130	410	▲280	▲215%
B 1	Bypass, between Muscle Creek Road and Coal Road	-	2,710	2710	-
B 2	Bypass, between Coal Road and Sandy Creek Road	-	2,650	2650	-

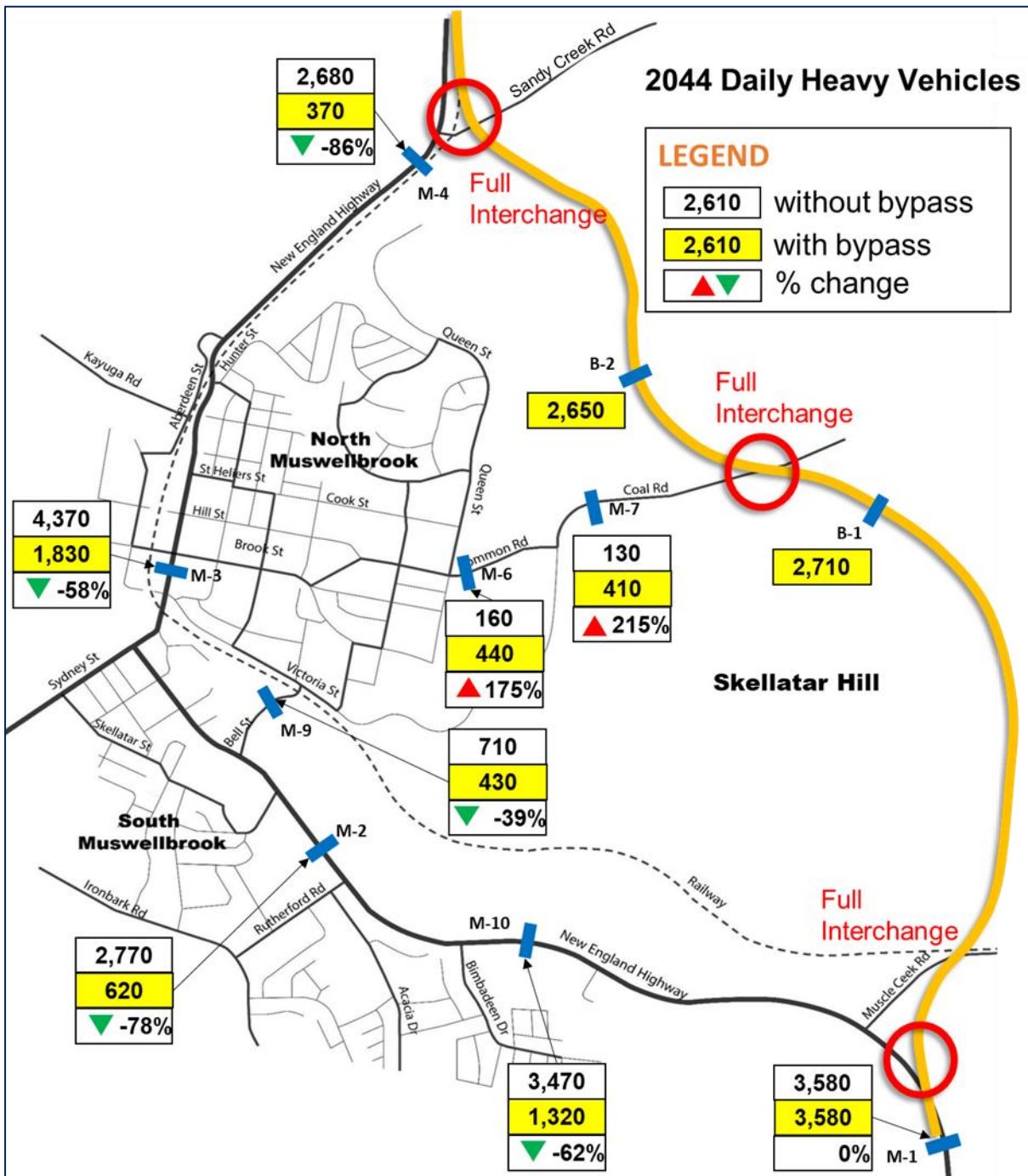


Figure 6-19: Forecast 2044 daily heavy vehicles with bypass

## Future intersection performance

Traffic modelling indicates without the proposal in 2044, there would be significant delays for vehicles with the New England Highway/Hill Street intersection operating at LoS F in the AM peak and LoS F at several intersections along the New England Highway within the study area in the PM peak. With the proposal, an overall improvement in the performance of key intersections in the study area including Muswellbrook town centre is expected, with most forecast to operate at LoS C or better during the peak periods assessed.

## Travel time savings

The forecasted travel times for the base case and travel time saving with the proposal for the 2044 AM and PM peak are shown in Table 6-25.

Table 6-25: Forecast 2044 Travel Time Saving for Bypass vs Base Case

Travel time via	Distance*	Forecast 2044 Travel Time (minutes)			
		AM Peak		PM Peak	
		Northbound	Southbound	Northbound	Southbound
New England Highway	10.7 km	13.6	13.2	14.8	13.9
Full bypass (the proposal)	9.5 km	7.4	7.9	7.7	8.4
Travel time savings		6.1 ▼	5.3 ▼	7.1 ▼	5.5 ▼

\* New England Highway between 1.3 kilometres south of Muscle Creek Road and 1.1 kilometres north of Sandy Creek Road

On the existing New England Highway (base case), motorists travel 10.7 kilometres between 1.3 kilometres south of Muscle Creek Road and 1.1 kilometres north of Sandy Creek Road, and pass multiple sets of traffic signals with speed limits between 50 kilometres per hour and 70 kilometres per hour (including a temporary 40 kilometres per hour school zone). On the bypass, motorists would travel 9.5 kilometres at a posted speed limit of 100 kilometres per hour.

In 2044, base case journey time during peak periods on the New England Highway between Muscle Creek Road and Sandy Creek Road without the proposal is predicted to vary between 13.2 and 14.8 minutes.

The bypass provides a shorter travel distance (9.5 kilometres) and with a posted speed limit of 100 kilometres per hour is predicted to save between 5.3 and 7.1 minutes during peak travel times by 2044. The highest travel time saving is predicted in the PM peak (northbound) of 7.1 minutes.

## On-street parking

The operation of the proposal would not impact on-street parking.

## Pedestrian and cycling facilities

There are no anticipated impacts on existing pedestrian and cyclist facilities because of the proposal.

The reduction of traffic along the New England Highway through Muswellbrook could improve traffic conditions for cyclists, potentially allowing this section of the New England Highway to form part of the on-road cycle route. Cyclists would be able to use the road shoulders on the bypass.

## Public transport

There are no anticipated impacts on local public transport because of the proposal. No dedicated bus facilities would be removed or provided by the proposal.

Some bus services could experience travel time improvements due to the reduction in traffic volumes along the New England Highway.

#### Road user safety

The safety of all road users including pedestrians, cyclists and motorists would be expected to improve once the bypass is operational. The diversion of traffic, in particular heavy vehicles, to the bypass would reduce the volume of traffic through Muswellbrook and this in turn is expected to reduce the number of crashes.

#### Property access

Any properties affected by changed access arrangements, as a result of the proposal, would be provided with restored or new permanent access arrangements. This includes modifications to the existing connections of the New England Highway with Milpera Drive, Muscle Creek Road, Burtons Lane and Koolbury Flats Row, as detailed in Section 3.

### 6.5.4 Safeguards and management measures

Impact	Environmental Safeguards	Responsibility	Timing	Reference
Traffic and Transport	<p>A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Transport for NSW <i>Traffic Control at Work Sites Manual</i> (Transport for NSW, 2020) and <i>QA Specification G10 Control of Traffic</i> (Transport for NSW, 2020). The TMP will include:</p> <ul style="list-style-type: none"> <li>• Confirmation of haulage routes</li> <li>• Measures to maintain access to local roads and properties</li> <li>• Site specific traffic control measures (including signage) to manage and regulate traffic movement</li> <li>• Measures to maintain pedestrian and cyclist access</li> <li>• Requirements and methods to consult and inform the local community of impacts on the local road network</li> <li>• Access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads.</li> <li>• A response plan for any construction traffic incident</li> <li>• Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the</li> </ul>	Construction contractor	Pre-construction	Additional safeguard

Impact	Environmental Safeguards	Responsibility	Timing	Reference
	<p>cumulative increase in construction vehicle traffic</p> <ul style="list-style-type: none"> <li>Monitoring, review and amendment mechanisms</li> </ul>			
Access to properties	Disruptions to property access and traffic will be notified to landowners at least five days prior in accordance with the relevant community consultation processes outlined in the TMP	Transport	Detailed design	Additional safeguard
Access to properties	Where any legal access to property is permanently affected, arrangements for appropriate alternative access will be determined in consultation with the affected landowner and local road authority	Construction contractor and Transport	Detailed design	Additional safeguard
Access to properties	Access to properties will be maintained during construction. Where that is not feasible or necessary, temporary alternative access arrangements will be provided following consultation with affected landowners and the relevant local road authority	Construction contractor and Transport	Construction	Additional safeguard
Local road condition	Pre-construction and post construction road condition reports for local roads likely to be used during construction will be prepared. Any damage resulting from construction (not normal wear and tear) will be repaired unless alternative arrangements are made with the relevant road authority. Copies of road condition reports will be provided to the local roads authority	Construction contractor	Pre and post construction	Additional safeguard
Pedestrian and cyclist access	Pedestrian and cyclist access will be maintained throughout construction. Where that is not feasible or necessary, temporary alternative access arrangements will be provided following consultation with affected landowners and the local road authority	Construction contractor	Construction	Additional safeguard