MUSWELLBROOK HOSPITAL REDEVELOPMENT - STAGE 3

REVIEW OF ENVIRONMENTAL FACTORS
TRANSPORT IMPACT ASSESSMENT

PREPARED FOR HEALTH INFRASTRUCTURE
22 FEBRUARY 2024 | 300303682

Stantec

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1 Introduction

1.1 Background and Proposal

Muswellbrook Hospital is a regional hospital located in Muswellbrook and is part of the Hunter New England Local Health District (HNELHD).

Health Infrastructure commissioned Stantec to prepare a transport impact assessment to accompany the Review of Environmental Factors (REF) for the Muswellbrook Stage 3 Community Health Relocation Project.

Generally, the proposed activity comprises internal alterations and additions to the Lower Ground level of the hospital's main building to convert existing shell space retained from the Stage 2 Redevelopment to relocate community health services.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- existing traffic and parking conditions surrounding the site
- operational parking impact of the Project
- preliminary construction traffic management and impact of the Project
- the transport impact of the development proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds
- Muswellbrook Development Control Plan 2009 (DCP 2009)
- Muswellbrook Local Environmental Plan 2009 (LEP 2009)
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2018
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- other documents and data as referenced in this report.

2 Existing Conditions

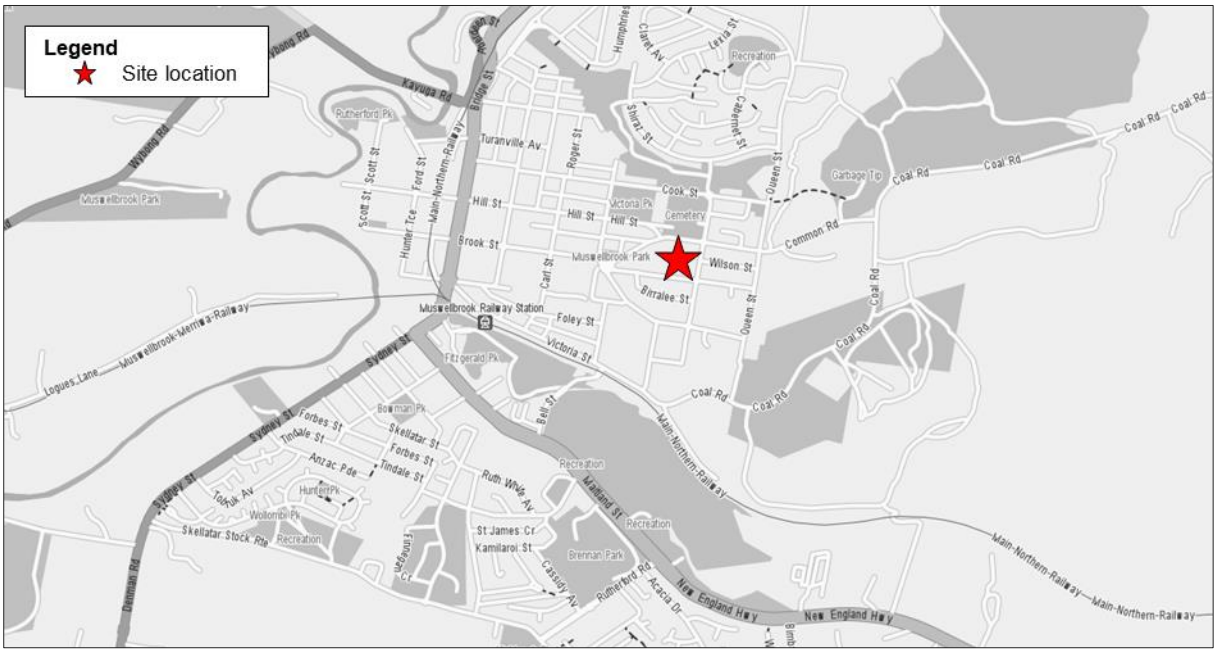
2.1 Location

Muswellbrook Hospital is located at 20-36 Brentwood Street, Muswellbrook within the Muswellbrook Local Government Area. The hospital has a frontage of approximately 160 metres to Brentwood Street along its southern boundary, 200 metres to Brecht Street along its eastern boundary and 160 metres to Bowman Street along its northern boundary.

The surrounding properties predominantly include low density residential uses, with Muswellbrook town centre located around one kilometre west of the site.

The location of the subject site and its surrounding environs is shown in Figure 1 and Figure 2.

Figure 1: Muswellbrook Hospital and its environs



Base image source: http://www.street-directory.com.au/

Figure 2: Aerial image of Muswellbrook Hospital

Base image source: Nearmap

2.2 Surrounding Road Network

Brentwood Street

Brentwood Street is classified as a local road aligned in an east-west direction along the southern boundary of the site. It is a two-way road with one lane in each direction, set within a carriageway of around 11 metres wide. Brentwood Street facilitates access to the main car park for the hospital, the main entrance pick-up and drop-off area and ambulance access to the hospital. An informal access also exists providing connection to the helipad. A crossover is also provided further east of the main car park access which functions as an exit for service vehicles accessing the medical gases for the hospital.

Unrestricted kerbside parking is available on both sides of the road. Brentwood Street has a posted speed limit of 50 kilometres per hour.

Brecht Street

Brecht Street is classified as a local road aligned in a north-south direction along the eastern boundary of the site. It is a two-way road with one lane in each direction, set within a carriageway of around 11 metres wide. Brecht Street facilitates access to the loading dock and entry to a service road for servicing the medical gases for the hospital. A separate access is also provided further north to the staff accommodation and Emergency Department staff car parking spaces.

Unrestricted kerbside parking is available on both sides of the road. Brecht Street has a posted speed limit of 50 kilometres per hour.

Bowman Street

Bowman Street is classified as a local road aligned in an east-west direction along the northern boundary of the site. It is a two-way road with one lane in each direction, set within a carriageway of around 13 metres wide. Bowman Street facilitates access to the staff car park for the hospital and a one-way southbound link road that provides connection to the main car park along the western side of the hospital.

Unrestricted kerbside parking is available on both sides of the road. Bowman Street has a posted speed limit of 50 kilometres per hour.

Figure 3: Brentwood Street (looking west)

Figure 4: Brecht Street (looking north)

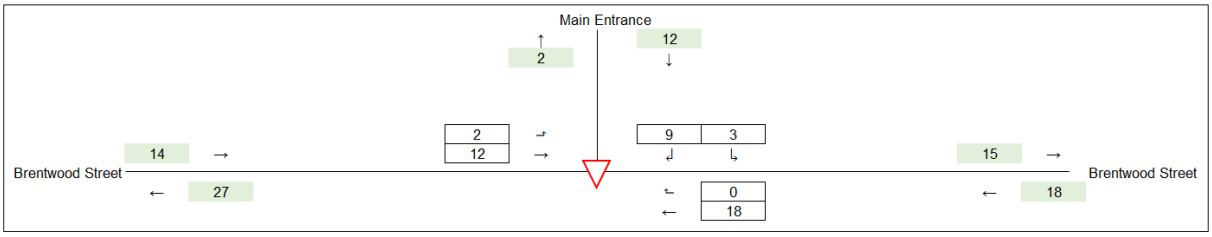
Figure 5: Bowman Street (looking west)

2.3 Traffic Volumes

Stantec completed spot counts at the hospital main entrance on Brentwood Street on Wednesday 25 May 2022 from 2:30pm to 3:00pm which corresponded with when peak activity was observed to occur in the hospital main car park and drop-off area. The main car park and ambulance access was observed to generate around 14 vehicle movements during the 30-minute period, with through traffic

volumes on Brentwood Street minor and equating to around 30 vehicle trips (two-way). The recorded traffic volumes at the site access during the 30-minute period are shown in Figure 6.

Figure 6: Main entrance traffic volumes between 2:30pm and 3:00pm



Based on the above, the main car park at the hospital is estimated to generate around 30 vehicle trips during the hospital peak hour (based on doubling the 30-minute counts). Minimal traffic activity was observed to occur at the other accesses to the hospital on Bowman Street and Brecht Street during this period.

2.4 Intersection Operation

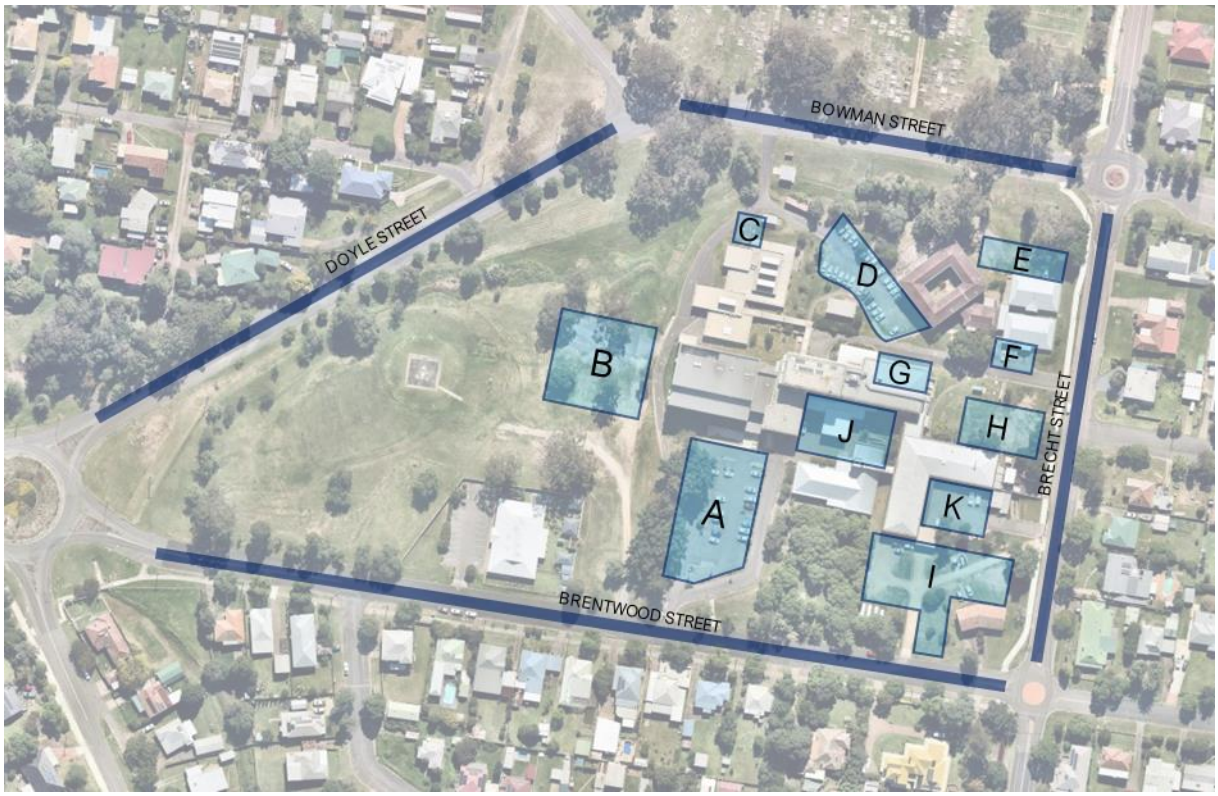
Noting the roads surrounding the hospital are local roads with relatively low traffic volumes throughout the day, a site visit completed in May 2022 confirmed that key surrounding intersections including the roundabouts at Bowman Street/ Brecht Street, Brecht Street/ Brentwood Street and Brentwood Street/ King Street/ Doyle Street/ Brook Street currently operate well with minimal queues and delay observed generally on all approaches to the intersections throughout the day.

2.5 Car Parking

Stantec completed car parking demand surveys on Wednesday 25 May 2022 for off-street car parking provided at the hospital and on-street along the frontages of the hospital. It is noted that while most of the parking demand was observed to occur off-street on the hospital site, a significant amount of this parking was informal and involved cars parking on unmarked gravel or grassed areas.

The car parking survey area is shown indicatively in Figure 7, with the breakdown of the car parking supply, corresponding restrictions and parking demand detailed in Table 1.

Figure 7: Car parking survey area



Base image source: Nearmap

Table 1: Car parking supply and demand

Location	Area	Restriction/ description	Supply	Demand						
				9am	10am	11am	12pm	1pm	2pm	3pm
Off-street	A	Standard	44	26	30	34	36	29	31	30
		Accessible	3	0	3	2	1	2	1	1
		Reserved	4	3	3	2	0	1	1	2
	B	Asphalt	-	13	13	14	13	11	12	12
		Grass	-	11	11	11	11	11	11	11
	C	Accessible	1	0	0	0	0	0	0	0
		Ambulance	1	0	0	0	0	0	0	0
	D	Standard	18	27	25	27	28	28	30	29
	E	Grass	-	8	8	8	7	8	8	7
	F	Standard (staff accom.)	5	5	5	5	5	5	5	4
	G	ED Staff Parking Only	5	4	4	3	3	4	5	5
	H	No Parking - Home Mods Only	-	1	2	2	2	2	1	2
	I	Grass	-	18	19	20	19	17	18	14
	J	5 min drop off	2	0	1	1	1	1	2	1
		Marked bay	1	0	1	1	2	2	2	0
	K	Standard	4	0	0	0	0	0	0	1
		Courier	1	0	0	0	0	0	0	0
		Loading area	-	2	2	3	3	3	3	3
	Off-street total		**89**	**118**	**127**	**133**	**131**	**124**	**130**	**122**
On-street	Doyle Street	Unrestricted	51	0	0	0	0	0	0	0
	Bowman Street	Unrestricted	33	5	5	5	4	4	4	4
	Brecht Street	Unrestricted	86	16	17	17	18	16	16	12
	Brentwood Street	Unrestricted	72	0	0	0	0	0	0	0
	On-street total		**242**	**21**	**22**	**22**	**22**	**20**	**20**	**16**

Table 1 indicates that peak parking demand at the hospital peaked at around 11am with 130 vehicles (not including loading vehicles) observed to be parked on-site. It is understood that Muswellbrook Hospital currently has around 166 Full Time Equivalent (FTE) staff and 44 beds. As such, this demand equates to a rate of around 0.78 spaces per FTE staff or 2.95 spaces per bed.

On-street parking demand was relatively low throughout the day, with peak demand generally equating to only around nine per cent of the total available on-street parking supply along roads surrounding the hospital.

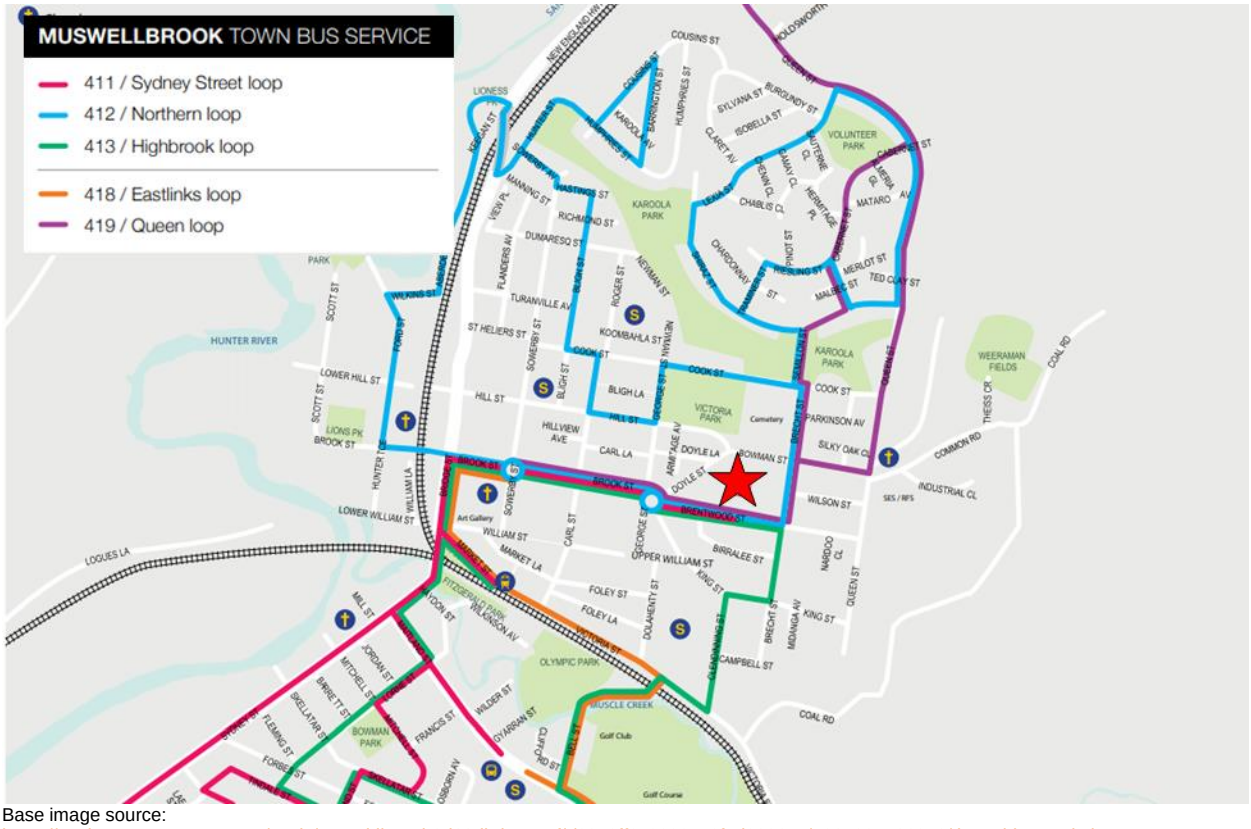
2.6 Public Transport

The site is supported well by the surrounding bus network, with bus stops located on Brentwood Street adjacent to the main entrance to the hospital which service the 412, 413, 415, 418 and 419 local bus routes, with some of these routes providing connection to Muswellbrook Railway Station to the southwest of the site. A review of the public transport available near the site is summarised in Table 2 and shown indicatively in Figure 8.

Table 2: Public transport provision

Service	Route number	Route description	Location of stop	Distance to nearest stop	Frequency on/ off-peak
Bus	412	Muswellbrook to Muswellbrook North (Loop Service)	Brentwood Street adjacent to hospital main entrance	0m	4 services per day
	413	Muswellbrook Town Centre to Highbrook (Loop Service)			4 services per day
	415	Muswellbrook to Denman (Loop Service)			2 services per day
	418	Muswellbrook to Eastlinks (Loop Service)			4 services per day
	419	Muswellbrook to Queen St (Loop Service)			4 services per day

Figure 8: Surrounding public network



Base image source:
https://static1.squarespace.com/static/54a5ddb4e4b0d88dbdaac15f/t/6340ff9c98994c6f1d3206c7/1665204126910/timetables_website_town_Aug-2022.pdf , accessed February 2024

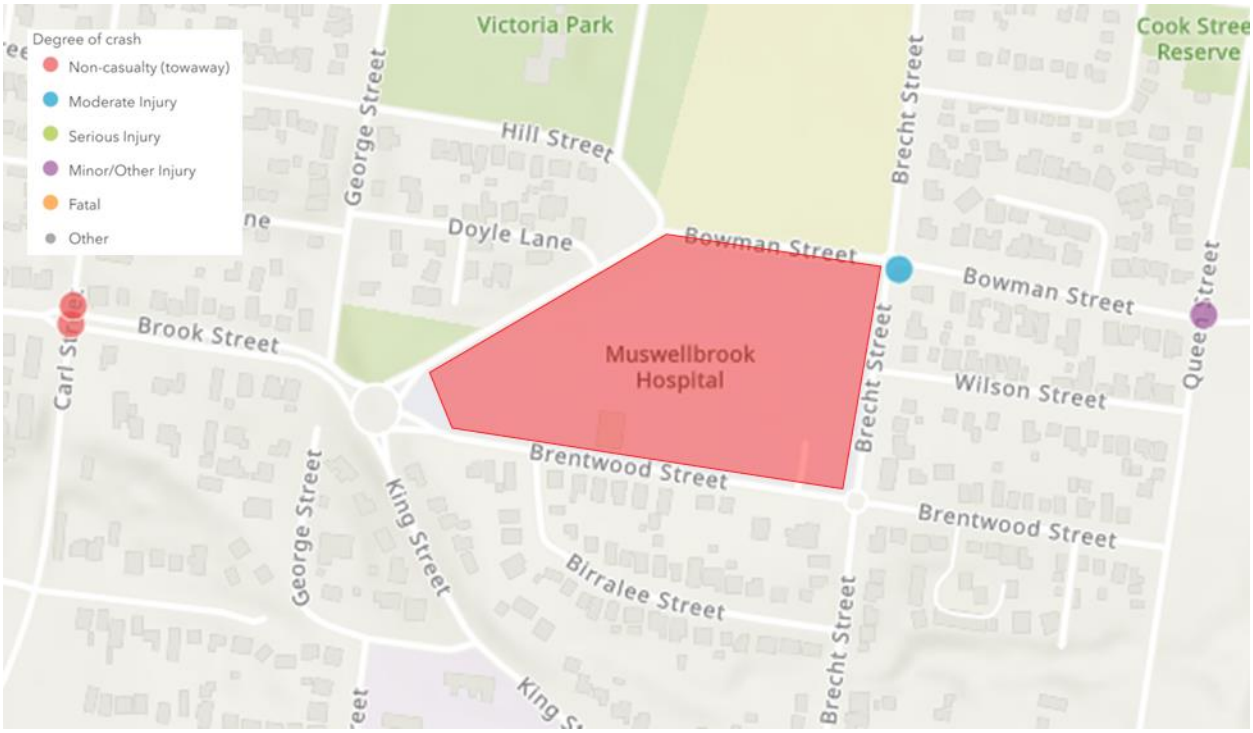
2.7 Walking and Cycling Infrastructure

Pedestrian paths are provided on the southern side of Brentwood Street and the western side of Brecht Street. Limited cycling infrastructure in the form of shared paths and separated cycle lanes are located near the site other than the shared path on the western side of Brecht Street along the frontage of the site between Brentwood Street and Bowman Street.

2.8 Crash History

An analysis the most recent five-year period of available crash data from 2018 to 2022 has been undertaken based on crash data obtained from the Transport for NSW Centre for road safety for the roads surrounding the site. The locations and severity of the crash data for the five-year period is shown in Figure 9.

Figure 9: Crash map from 2018 to 2022



Base image source: https://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/index.html, accessed February 2024

Figure 9 indicates that there has been one crash reported within the immediate vicinity of the site near the Bowman Street/ Bretcht Street roundabout. The crash is classified as a cross traffic incident and resulted in one moderate injury. Given only one crash has occurred on the roads immediately surrounding the site, it is unlikely that the proposed redevelopment will affect the safety and function of the surrounding road network.

3 Proposed Development

The Muswellbrook Stage 3 Community Health Relocation Project comprises internal alterations and additions to the Lower Ground level of the hospital's main building to convert existing shell space retained from the Stage 2 Redevelopment to relocate community health services.

The proposed site plan is shown in Figure 10.

Figure 10: Proposed site plan

Source: dwp, Drawing Number AR-MW-A1042 Rev D dated 16 February 2024

There are no proposed changes to access or parking as part of the Project.

4 Car Parking and Loading

4.1 Car Parking Requirements

As outlined in Section 2.5 while most of the parking demand was observed to occur off-street on the hospital site, a significant amount of this parking is informal and involves cars parking on unmarked gravel or grassed areas. As there is no proposed uplift in staff numbers or onsite activity as part of the Project there are no proposed changes to parking onsite from the existing.

4.2 Loading Requirements

As there is no proposed uplift in staff numbers or onsite activity as part of the Project there are no proposed changes to loading requirements from existing.

5 Traffic Impact Assessment

As there is no proposed uplift in staff numbers or onsite activity as part of the Project there is no expected traffic impact associated with proposal.

Further to the above, given no increase in traffic generation is anticipated, the Muswellbrook Stage 3 Community Health Relocation Project does not warrant any traffic modelling assessment.

6 Preliminary Construction Traffic and Pedestrian Management Plan

6.1 Overview

The Community Health Relocation consists of internal building works focusing on the fit-out of the shell space created during the Stage 2 redevelopment specifically community health services within the existing Muswellbrook Hospital Lower Ground Floor.

This overview of construction traffic impacts associated with construction activity aims to ensure the safety of all workers and road users in the vicinity of the construction site. The primary objectives of the Construction Traffic and Pedestrian Management Plan (CTPMP) outlined below includes the following:

- To identify the need for adequate and compliant traffic management requirements within the vicinity of Muswellbrook Hospital.
- To ensure continuous, safe and efficient movement of traffic for both the general public and construction workers.
- Establishment of a safe pedestrian environment in the vicinity of the site.
- To inform the Principal Contractor and set the ground rules for managing the construction traffic associated with the construction site.

6.2 Key Objectives

The overall principles of traffic management during the construction activity include:

- Provide an appropriate and convenient environment for pedestrians.
- Minimise the impact on pedestrian movements.
- Maintain appropriate capacity for pedestrians at all times on footpaths around the site.
- Maintain appropriate public transport access.
- Maintain current levels of parking within the precinct.
- Maintain permanent access to/ from the hospital accesses for emergency services.
- Restrict construction vehicle movements to designated routes to/ from the site.
- Manage and control construction vehicle activity in the vicinity of the site.
- Minimise impacts to general traffic around the site.

6.3 Work Hours

Works associated with the development will be carried out in accordance with the approved consent conditions, with the anticipated work hours of construction as follows:

- Monday to Friday 7:00am and 5:00pm
- Saturday 8:00am and 1:00pm
- Sunday/ public holiday no work.

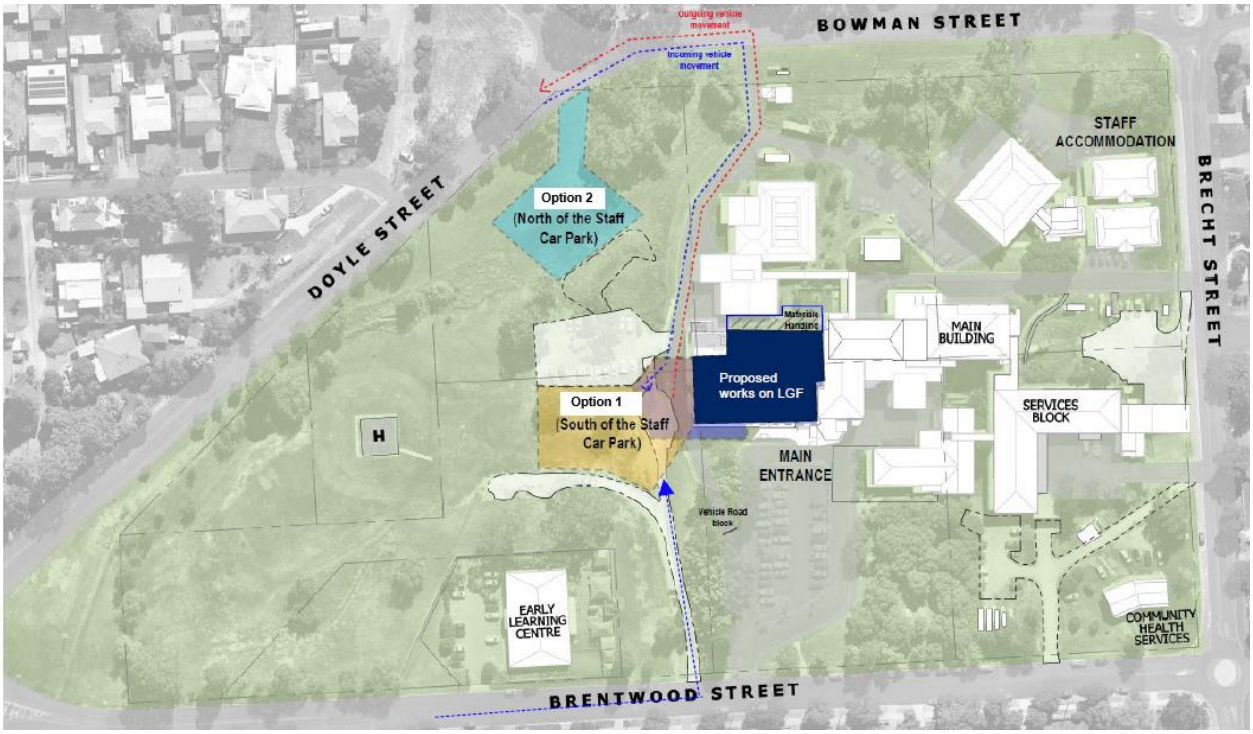
In addition to regular work hours, there will be occasions where specific out-of-hours works are required. The Principal Contractor will be responsible for instructing and controlling all subcontractors regarding the hours of work. Any work outside the approved construction hours would be subject to specific prior approval from Council.

6.4 Construction Worker Parking and Traffic

The number of construction workers is unknown at this preliminary stage and will be confirmed as part of the detailed Construction Traffic Management Plan prepared by the appointed contractor.

Parking at the site is highly constrained with limited space to provide any significant on-site parking for construction workers, with some worker parking likely to be possible in the indicative contractor site compound area indicated in Figure 11.

Figure 11: Potential contractor site establishment options



As outlined in Section 2.5 there is on-street parking available near the site. It is recommended that Construction Workers are advised not to park in the streets immediately surrounding the site as to not impact parking for the hospital.

Appropriate arrangements should be made for any equipment/ tool storage and drop-off requirements.

Workers would also be encouraged to park away for the immediate vicinity of the hospital, to car pool and use public transport to access the site where practical. During site induction, workers should be informed of options and recommendations.

Any construction worker arrivals and departures by vehicle would typically be outside of road network peak hours and as such is unlikely to impact the surrounding road network.

6.5 Construction Traffic Volumes

The site will have various types of construction vehicles accessing the site. The largest construction vehicles could potentially be up to 19-metre articulated vehicles.

Exact construction vehicle sizes and volumes are not known at this stage of planning and would be outlined in the detailed construction traffic and pedestrian management plan to be prepared by the appointed Principal Contractor prior to the commencement of construction works along with measures to minimise the construction traffic impact on the operation of the surrounding road network as much as possible.

6.6 Site Access

At this stage of planning construction methodology is unknown and access to and from the site will be required to be in a forward direction. Access and site compound arrangements to be confirmed by the appointed contractor.

The proposed access arrangements for the project are shown indicatively in Figure 11.

As part of the detailed CPTMP, Traffic Guidance Schemes (previously referred to as Traffic Control Plans) will be prepared in accordance with the principles of the Traffic Control at Work Sites manual (TfNSW, 2022). The Traffic Guidance Schemes primarily show where construction signs will be located at specific locations (such as uncontrolled intersections) along the approved truck routes to warn other road users of the increase in construction vehicle movements.

Access to the neighbouring sites by emergency vehicles would not be affected by the works as the road and footpath frontages would be unaffected. Emergency protocols on the site would include a requirement for site personnel to assist with emergency access from the street. All truck movements to the site and/or incident point would be suspended and cleared.

6.7 Construction Vehicle Routes

Generally, construction vehicles will have origins and destinations from a wide variety of locations. However, all construction vehicles will be restricted to the State and Regional Road network where practicable, noting local roads would be required closer to the site.

The construction vehicle routes are outlined below and shown in Figure 12, however are subject to the access arrangements determined by the appointed contractor. No queuing or marshalling of construction vehicle will be permitted on public roads.

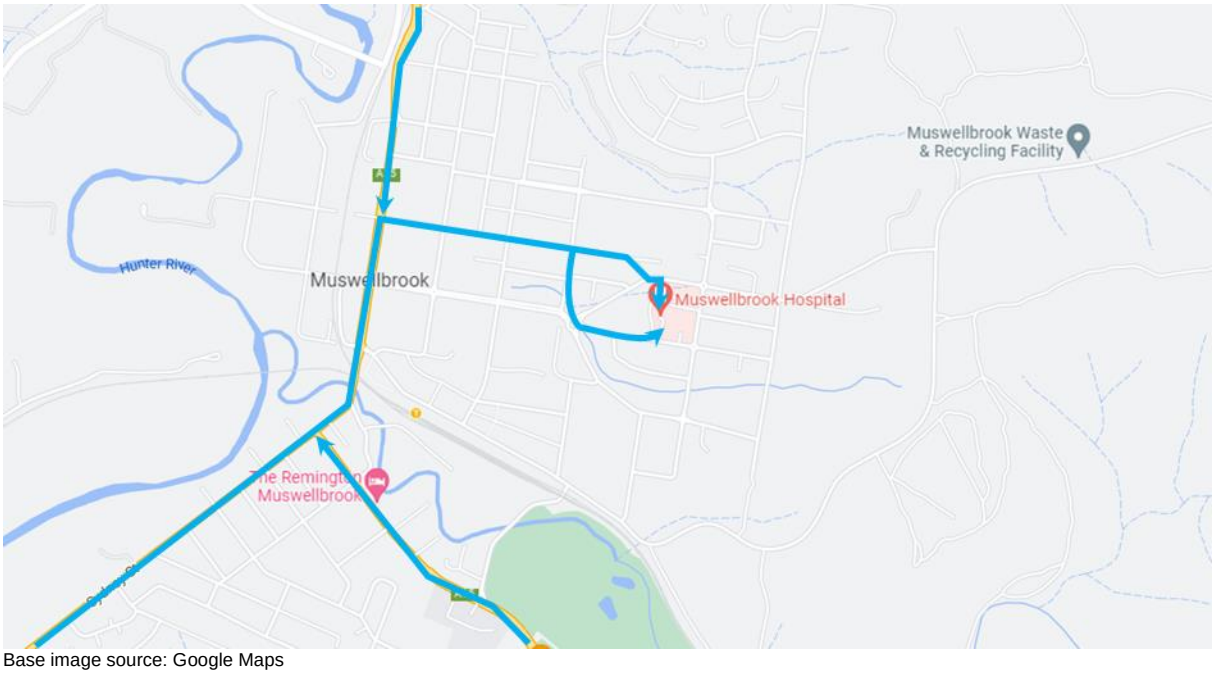
Approach Routes

- New England Highway/ Bridge Street, Hill Street, Bowman Street

Departure Routes

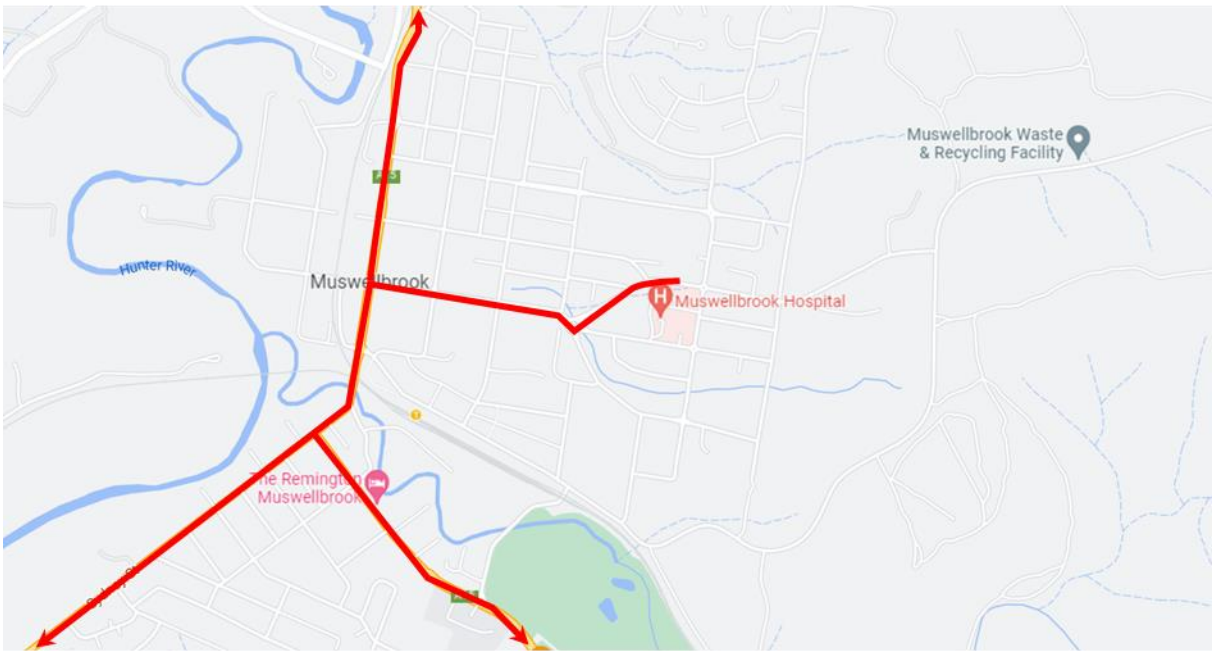
- Brentwood Street, Doyle Street, Brook Street and the New England Highway.

Figure 12: Construction vehicle approach routes



Base image source: Google Maps

Figure 13: Construction vehicle departure routes



Base image source: Google Maps

6.8 Traffic Guidance Schemes

Detailed information for work site operations is contained in the Traffic Control at Work Sites manual (TfNSW, 2022). The control of traffic at work sites must be undertaken with reference to SafeWork NSW requirements and any other Workplace Health and Safety manuals.

The Principal Contractor will be required to provide Traffic Guidance Schemes (TGS') for the proposed works which will generally consider the following:

- Construction vehicle activity, including the loading/ unloading of trucks to be conducted within the work site.
- Pedestrians and all passing vehicles will maintain priority.
- Clear definition of the work site boundary to be provided by erection of A Class hoardings/ fencing around the site boundaries.
- All construction vehicle activity will be minimised during peak periods, where possible.

6.9 Pedestrian and Cyclist Management

During the construction period, pedestrian and cyclist movements throughout are to be maintained as much as feasible. Where works require the closure of an existing pedestrian route, a suitable alternative is to be provided. A-Class hoarding/ fencing would be provided between pedestrian paths and any work site. As mentioned, reverse manoeuvres from the western access road may be required at times throughout the duration of the works. A traffic controller would be positioned at site accesses when in use to temporarily hold traffic (and/ or other road users as required including pedestrians) when construction vehicles are accessing the site.

It is not expected that cyclist routes will be impacted by the proposed construction works.

6.10 Public Transport

Given the infrequent heavy vehicle movements associated with the construction works, the overall impact to existing public transport services is expected to be negligible. This includes the impact on the identified local area bus services.

6.11 Emergency Vehicles and Heavy Vehicles

During construction, the Principal Contractor will ensure that there is no disruption to emergency vehicles on public and internal Hospital roads.

The construction area on the opposite side of the hospital to the emergency services and departments will ensure any potential impacts on emergency access would be able to be effectively managed throughout the works. The proposed site access arrangement seeks to have construction vehicles exit via

the western-most hospital access on Brentwood Street directly from the western access road so as to avoid construction vehicles travelling through the main hospital car park and potentially delaying emergency vehicles.

6.12 Existing and Future Developments

It is the Principal Contractor's responsibility to liaise with Health Infrastructure and other landowners should there be other potential future developments under construction at the same time. A coordinated approach to traffic management and wayfinding signage is logical in such instances.

6.13 Traffic Movements in Adjoining Areas

No adverse effects are expected from the movement of heavy vehicles through adjacent council areas.

7 Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

1. The Project comprises of internal alterations and additions to the Lower Ground level of the hospital's main building to convert existing shell space retained from the Stage 2 Redevelopment to relocate community health services.
2. Muswellbrook Hospital is situated near to bus public transport services, with several routes and services operating throughout the day directly adjacent to the hospital.
3. It is understood that Muswellbrook Hospital currently has around 166 FTE staff and 44 beds. As part of the community health relocation existing staff levels will be maintained, and no increase in bed numbers are proposed.
4. Given no anticipated increase in bed or staffing numbers from existing conditions, the Community Health relocation is not anticipated to result in an increase in parking demand or traffic generation for the hospital.
5. Based on the above, there is unlikely to be any traffic impact on the surrounding intersections as a result of the Project.
6. Given no increase in traffic generation is expected for the site, the Project also does not warrant any traffic modelling assessment.
7. A detailed Construction Traffic Management Plan will be prepared once a Contractor is appointed.