

## 6.7 Traffic and transport

The potential impacts on traffic and transport during construction and operation of the proposal have been assessed as part of the *Traffic and Transport Assessment Report* (Aurecon, 2022c), provided in Appendix I.

### 6.7.1 Methodology

The methodology for the traffic and transport assessment included:

- collecting traffic volume data, including mid-block and intersection counts, at six locations along the Great Western Highway in March and April 2021
- reviewing the existing and future conditions of the transport network within and surrounding the proposal, using publicly available information, data collected for the proposal and traffic growth forecasts prepared by Transport
- modelling the traffic performance of the concept design, using SIDRA modelling software for intersection performance analysis, for the following scenarios within the study area:
  - 2021 existing conditions – existing traffic network
  - 2026 with the proposal – proposed transport network with projected 2026 weekday and weekend peak traffic volumes
  - 2031 with the proposal – proposed transport network with projected 2031 weekday and weekend peak traffic volumes
  - 2036 with the proposal – proposed transport network with projected 2036 weekday and weekend peak traffic volumes
  - 2036 without the proposal – existing transport network with projected 2036 weekday and weekend peak traffic volumes
- assessing the impacts of the proposal on traffic and transport performance during construction and operation
- recommending mitigation measures to minimise potential traffic or transport impacts from the proposal.

There have been recent changes to the Nellies Glen Road and Foy Avenue intersections after completion of the traffic modelling. These intersections were modelled as follows:

- Nellies Glen Road – left-in, left-out only
- Foy Avenue – left-in, left-out only.

No modelling changes for the existing scenario were deemed necessary as intersection performance would not be impacted.

### 6.7.2 Criteria

The key intersection performance indicators extracted from the SIDRA network analysis for assessment of traffic and transport impacts in the Katoomba to Medlow Bath section include level of service (LOS). The LOS criteria adopted for intersection performance analysis within this section are outlined in Table 6-43.

The performance of non-intersection road conditions for the Medlow Bath to Blackheath section was assessed using a mid-block capacity analysis in accordance with the *Austroads Guide to Traffic Management Part 3* guidelines. The basic freeway segments LOS criteria adopted for mid-block analysis within this section are outlined in Table 6-44.

LOS range from LOS A (best possible operating conditions) to LOS F (worst possible operating conditions) and identify the performance of an intersection or freeway segment.

Table 6-43: Transport LOS criteria – intersection performance

LOS	Average vehicle delay (seconds)	Traffic signal and roundabout	Give-way and Stop signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity	At capacity, requires other control mode
F	Greater than 71	At signals, incidents will cause excessive delays	Unsatisfactory with excessive queueing, requires other control mode

Table 6-44: Austroads LOS criteria – basic freeway segments

LOS	Maximum density (passenger car per kilometre per lane)	Basic freeway segments
A	7	Free-flow operations
B	11	Reasonably free-flow operations
C	16	Speeds near the free flow speed (the speed at which motorists would feel comfortable to drive with no congestion on the highway)
D	22	Speeds decreased from the free flow speed
E	28	Operation at or near capacity
F	> 28	Unstable flow

### 6.7.3 Existing environment

#### Road conditions

The Great Western Highway is a State highway located within the Blue Mountains LGA and managed by Transport. The existing road conditions for the proposal are outlined in Table 6-45.

Table 6-45: Existing road conditions near the proposal

Road	Description	Access	Posted speed limit	Lanes
<b>Great Western Highway – Katoomba to Medlow Bath section</b>	About 3.5 km east-west between Rowan Lane, Katoomba and Bellevue Crescent, Medlow Bath	Access to: <ul style="list-style-type: none"> <li>the local roads of Nellies Glen Road, Explorers Road and Foy Avenue</li> <li>active transport trails</li> <li>the rail corridor</li> </ul>	70 km/h	Mostly a two-lane single carriageway
<b>Great Western Highway – Medlow Bath to Blackheath section</b>	About 1.8 km east-west between the Great Western Highway and Railway Parade intersection and Tennyson Road, Blackheath (in the Blue Mountains National Park)	Access to the rail corridor	60 km/h for about 800 m north of Railway Parade, Medlow Bath and then 80 km/h for about one km until Tennyson Road, Blackheath	Two-lane single carriageway

Road	Description	Access	Posted speed limit	Lanes
<b>Nellies Glen Road</b>	Local road	Access to Pulpit Hill Road, Explorers Road, Six Foot Track (a walking trail) and surrounding properties	50 km/h	Two-lane single carriageway
<b>Explorers Road</b>	Local road	Access to Saywell Road, Pulpit Hill Road, Nellies Glen Road and surrounding properties	50 km/h	Two-lane single carriageway
<b>Foy Avenue</b>	Local road	Access to residential properties and active transport trails	50 km/h	Two-lane single carriageway

There are no parking provisions along the Great Western Highway within the proposal area. However, there are informal emergency stopping locations along areas of the Great Western Highway where the road shoulder is wider. There is also informal parking for about 20 vehicles available on Nellies Glen Road for people to access the heritage interpretation area and surrounding walking trails.

The nearest rest areas on the Great Western Highway for light and heavy vehicles are Kedumba Park in Wentworth Falls and Sutton Park in Blackheath.

### **Key intersections**

The key intersections with the Great Western Highway that are within the proposal area are detailed in Table 6-46. As noted in Table 6-45, there are no intersections within the Medlow Bath to Blackheath section of the proposal.

Table 6-46: Summary of key intersections within the proposal area

Intersection	Existing layout
<b>Great Western Highway / Nellies Glen Road</b>	<ul style="list-style-type: none"> <li>Priority controlled one-way intersection, with left-in westbound travel movement only with Nellies Glen Road.</li> <li>Great Western Highway westbound has a short left-turn lane into Nellies Glen Road and one through lane.</li> <li>Great Western Highway eastbound has one through lane.</li> </ul>
<b>Great Western Highway / Explorers Road</b>	<ul style="list-style-type: none"> <li>Priority controlled three-way intersection with all traffic movements.</li> <li>Left or right turn permitted out of Explorers Road onto the Great Western Highway.</li> <li>Great Western Highway westbound has one through lane, with left turn permitted into Explorers Road.</li> <li>Great Western Highway eastbound has one dedicated right turn lane into Explorers Road. This lane continues as a short waiting bay for vehicles exiting Explorers Road turning eastbound onto the Great Western Highway. There is also one through lane.</li> </ul>
<b>Great Western Highway / Foy Avenue</b>	<ul style="list-style-type: none"> <li>Priority controlled three-way intersection with all traffic movements.</li> <li>Left or right turn permitted out of Foy Avenue onto the Great Western Highway.</li> <li>Great Western Highway westbound has one through lane, with left turn permitted into Foy Avenue.</li> <li>Great Western Highway eastbound has one through lane, with a dedicated right turn lane into Foy Avenue.</li> </ul>

## Traffic volumes

The traffic counts carried out in March and April 2021 have been analysed to identify average daily traffic volumes for the proposal (refer to Table 6-47). This data was calibrated with data collected near the proposal in 2019 and 2020. This found that COVID-19 conditions at that time did not materially affect traffic numbers.

Traffic counts revealed that average traffic volumes were higher on weekends compared with weekdays, which emphasises the importance of the Great Western Highway for regional and recreational travel. Westbound traffic volumes were higher for both sections of the proposal on weekdays, with eastbound traffic volumes being the dominant direction on weekends. Table 6-47 also shows the importance of the Great Western Highway as a freight route with a high proportion of heavy vehicles. Heavy vehicles made up about 16 to 23 per cent of 24-hour traffic on a weekday and about six to 14 per cent of 24-hour traffic on a weekend. The Great Western Highway forms part of the freight and heavy vehicles network connecting the Central West and Orana, Blue Mountains, Western Sydney and Greater Sydney regions. It currently accommodates freight and heavy vehicles up to 19 metre B-Doubles (over 50 tonnes).

Table 6-47: Average daily traffic volumes for the proposal

Section		Weekday			Weekend		
		Eastbound	Westbound	Total	Eastbound	Westbound	Total
<b>Katoomba to Medlow Bath section</b>	Average daily traffic volume	10,700	11,980	22,680	12,099	11,293	23,392
	Per cent heavy vehicles	22	25	23	13	15	14
<b>Medlow Bath to Blackheath section</b>	Average daily traffic volume	10,053	10,543	20,596	11,608	10,779	22,387
	Per cent heavy vehicles	16	27	22	6	15	11

Hourly traffic volumes show relatively constant weekday traffic volumes throughout the day. On an average weekday:

- During the AM peak (6 – 9am), heavy vehicle volumes are higher, comprising about 29 per cent of total combined traffic on the Katoomba to Medlow Bath section. On the Medlow Bath to Blackheath section, heavy vehicles comprised about 27 per cent of total combined traffic.
- Combined hourly traffic volumes are highest between 3 – 4pm, with 1771 vehicles through the Katoomba to Medlow Bath section and 1656 on the Medlow Bath to Blackheath Section.

On an average weekend:

- Westbound flows are higher than eastbound flows during the AM peak (6 – 9am) while eastbound flows are higher than westbound flows during the PM peak (4 – 7pm), which could be explained by day trips by the local community and tourists within the Blue Mountains.
- Combined hourly traffic volumes are highest between 11am – 12pm, with 2137 vehicles on the Katoomba to Medlow Bath section and 2091 vehicles on the Medlow Bath to Blackheath section.

## Existing road performance

Existing intersection performance were assessed for the three key intersections within the proposal. The worst performing approach for these intersections was consistently the local road leg of the intersection. The weekday performance during the most congested hour in the AM and PM peak periods of the local road leg of the intersections are detailed in Table 6-48. The Great Western Highway / Nellies Glen Road and Great Western Highway / Foy Avenue intersections operate at LOS A. The Great Western Highway / Explorers Road intersection was the worst performing intersection. It operates near capacity at LOS D in

the weekday PM peak (with the most congested hour being 3.30 – 4.30pm) due to the right turn movement onto the highway, where it is required to give way to the highway traffic. The performance of this intersection improved to good condition (LOS A) for the weekend PM peak (with the most congested hour being 3 – 4pm) scenario, with lower hourly traffic volumes recorded than the weekday PM peak scenario.

Table 6-48: Existing 2021 weekday intersection performance (local road leg)

Intersection	Peak hour	Traffic volume (vehicles/hour)	Average vehicle delay (seconds)	LOS
Great Western Highway / Nellies Glen Road	AM (8.30 – 9.30am)	1383	10.7	A
	PM (3.30 – 4.30pm)	1632	12.8	A
Great Western Highway / Explorers Road	AM (8.30 – 9.30am)	1376	25.5	B
	PM (3.30 – 4.30pm)	1628	46.0	D
Great Western Highway / Foy Avenue	AM (8.30 – 9.30am)	1356	9.3	A
	PM (3.30 – 4.30pm)	1617	8.5	A

For the Medlow Bath to Blackheath section, mid-block capacity analysis was carried out to determine the road performance as there are no intersections within this section. Results from the analysis during the most congested hour of the AM and PM peak periods are detailed in Table 6-49. The existing performance of this section was satisfactory (LOS C) during weekday conditions, with performance deteriorating on weekends to LOS D. In all scenarios except the weekend PM peak (4 – 7pm) scenario, the LOS decreased on weekends due to increased traffic density on the road corridor in this section.

Table 6-49: Existing 2021 performance – Medlow Bath to Blackheath section

Scenario	Peak hour	Traffic volume per hour	Density (pc/km/ln)	LOS
Eastbound – weekday	AM (6 – 9am)	1014	14.5	C
	PM (4 – 7pm)	1112	15.9	C
Westbound – weekday	AM (6 – 9am)	1014	14.5	C
	PM (4 – 7pm)	1112	15.9	C
Eastbound – weekend	AM (6 – 9am)	1126	16.1	D
	PM (4 – 7pm)	1164	16.6	D
Westbound – weekend	AM (6 – 9am)	1341	19.2	D
	PM (4 – 7pm)	1065	15.2	C

### Crash data

Over the 12-year period ending in 2021, there were 37 crashes along the Katoomba to Medlow Bath section. These included:

- one fatal crash due to an opposite head-on collision
- six serious injury crashes, at Nellies Glen Road intersection, west of Explorers Road and near Bellevue Crescenteleven moderate injury crashes
- four minor/other injury crashes
- fifteen non-casualty towaway crashes
- one uncategorised crash.

Most accidents occurred between Nellies Glen Road and to the west of Explorers Road. Most of these accidents are head on collisions, with a small number of rear end and run off bend crashes.

Within the same period, 65 crashes were recorded along the Medlow Bath to Blackheath section of the proposal. These included:

- one fatal crash due to an opposite head-on collision
- seven serious injury crashes
- twenty-nine moderate injury crashes
- no minor/other injury crashes
- twenty-nine non-casualty towaway crashes.

Within the Medlow Bath to Blackheath section, most accidents occurred near about Chainage 5600 – 6000, about one kilometre west of the Great Western Highway / Railway Parade intersection in Medlow Bath.

### ***Public transport***

There are a number of bus services that service the Great Western Highway within the proposal area. These services include:

- 690K – Springwood to Katoomba
- 698 – Katoomba to Blackheath (loop service)
- 698V – Katoomba to Blackheath (loop service)
- 8321 – Katoomba to Blackheath Station (school buses)
- 8705 – Springwood High School to Katoomba (school buses)
- 8710 – Wentworth Falls Public School to Blackheath (school buses).

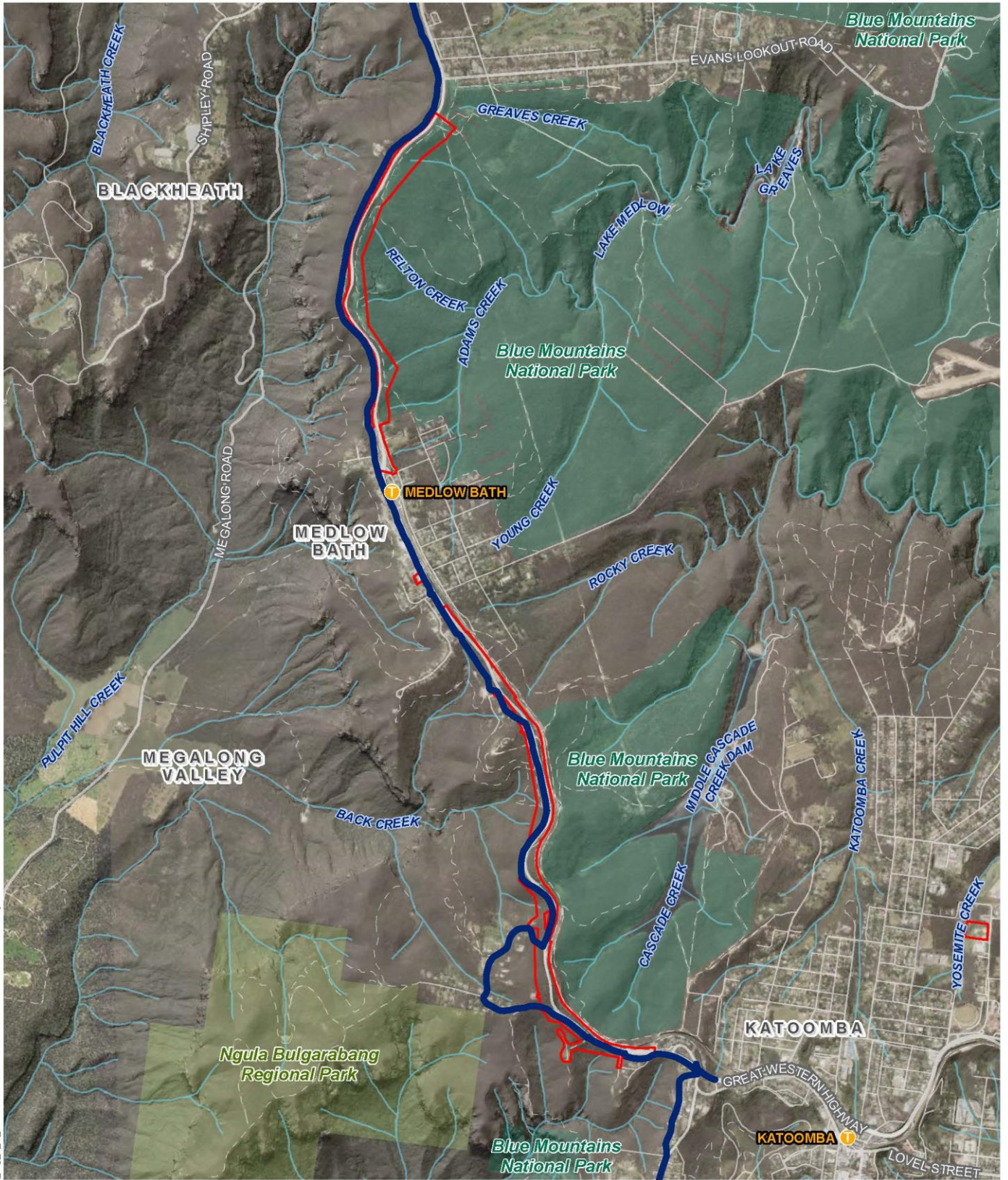
All bus services stop near Bonnie Doon Reserve and Foy Avenue, which are along the western side of the Great Western Highway between Katoomba and Medlow Bath. These bus stops are not sheltered and do not have signage or seating. There are no existing bus stops along the Medlow Bath to Blackheath section.

While the Main Western railway line runs parallel to the Great Western Highway throughout the proposal area, there are no rail stations within either section of the proposal, with the nearest stations located in Katoomba, Medlow Bath and Blackheath. Many of the identified bus routes connect with these train stations.

### ***Active transport***

No formal active transport infrastructure is associated with the Great Western Highway. However, the Great Blue Mountains Trail runs on the western side of the proposal, in some locations, following close to the Great Western Highway between Katoomba and Blackheath (refer to Figure 6-12). This includes a 245-metre concrete active transport trail immediately westbound of Rowan Lane.

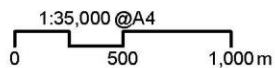
While marked as a regional on-road cycle route, no formal cycling facilities exist on the Great Western Highway. Shared paths which form part of the Great Blue Mountains Trail are identified on the Blue Mountains Cycling Map, including Explorers Road, which is marked as an on-road cycle route.



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- Proposal area
- Blue Mountains National Park
- Ngula Bulgarabang Regional Park
- Great Blue Mountains Trail
- Watercourses

Source: Aurecon, LPI, DPIE, BoM, Niche



Projection: GDA2020 MGA Zone 56

## 6.7.4 Potential impacts

### Construction

For the Katoomba to Medlow Bath section, the westbound carriageway would be constructed offline and result in little or no impact to the existing traffic between Katoomba and Medlow Bath. Once completed, the main highway traffic would be diverted onto the westbound carriageway in a contraflow operation, resulting in minimal impacts to traffic during the construction of the new eastbound carriageway. As some work may be undertaken immediately adjacent to the highway, there may be the need to drop the speed limit along the highway during work to assure the safety of workers. This could result in some short-term localised traffic delays.

However, at points where the proposal needs to pass over the existing highway or at the tie in points at the ends of the section, there may be some minor disruption to traffic.

For the Medlow Bath to Blackheath section, the eastbound carriageway would be constructed offline with limited impact to existing traffic between Medlow Bath and Blackheath. Once completed, the main highway traffic would be diverted onto the eastbound carriageway in a contraflow operation, resulting in minimal impacts to traffic during the construction of the new westbound carriageway. As all work may be undertaken immediately adjacent to the highway, there may be the need to drop the speed limit along the highway during work to assure the safety of workers. This could result in some short-term localised traffic delays.

Other traffic and transport impacts associated with the construction of the proposal are outlined in Table 6-50.

Table 6-50: Other traffic and transport impacts associated with the construction of the proposal

Impact	Description
<b>Local road impacts</b>	<p>Upgrades to local roads could result in disruption or delays to local road traffic. Impacts to local roads would occur in the Katoomba to Medlow Bath section:</p> <ul style="list-style-type: none"> <li>Nellies Glen Road would be temporarily closed to traffic as the intersection is reconstructed further south of the existing intersection. Access to residents on Pulpit Hill and for visitors to the Six Foot Track would be retained from Great Western Highway via Explorers Road.</li> <li>When work is occurring to the bridge structure over Explorers Road, disruptions to local traffic may occur including temporary closures of the road. Access to Explorers Road would be retained via the upgraded Nellies Glen Road intersection alignment. During construction of the eastbound carriageway, access to Foy Avenue would be maintained from the highway via a temporary side-track with controlled access.</li> </ul>
<b>Construction traffic</b>	<p>The vehicle movements expected during construction would be as follows (refer to Section 3.3.3):</p> <ul style="list-style-type: none"> <li><b>Katoomba to Medlow Bath section</b> – 275 average total vehicle movements per day and 550 vehicle movements per day at peak construction periods</li> <li><b>Medlow Bath to Blackheath section</b> – 255 average total vehicle movements per day and 450 vehicle movements per day at peak construction periods</li> </ul> <p>These traffic volumes are low compared with the existing traffic volumes on the Great Western Highway (refer to Section 6.7.3). As such, construction traffic is unlikely to affect the performance of the Great Western Highway during construction. However, a localised increase in traffic may be seen along the road corridor near access points and at intersections.</p>
<b>Active transport</b>	<p>During construction of the westbound carriageway, the active transport trail between Katoomba and Medlow Bath would be closed. This would be reconstructed and reopened upon completion of this carriageway. There would be no impacts to other active transport trails during construction of the proposal. Access to the Six Foot Track would still be possible via Explorers Road when Nellies Glen Road is closed for construction.</p>
<b>Public transport</b>	<p>During construction, the bus stops at Bonnie Doon Reserve and at Foy Avenue would be temporarily relocated. This may increase the distance required to travel to the bus stops for some commuters. Transport would endeavour to keep these bus stops operational in consultation with</p>



Impact	Description
	<p>local bus companies. As such, it is not expected that there would be any changes to any bus routes that run between Katoomba and Blackheath due to the proposal. Individual bus services may experience temporary localised delays due to construction work. Where feasible, the construction workforce would be encouraged to use public transport to access the proposal area, which could increase patronage at the two bus stops and along the public transport network.</p> <p>Any work required which would impact the operation of the rail corridor would be conducted during planned rail possessions when no trains would be running in consultation with Sydney Trains and NSW TrainLink. This would cause no additional impacts to rail services due to the proposal.</p> <p>Transport (Sydney Trains) is relocating the existing Medlow Bath West Sectioning Hut under a separate planning approval as it has reached its end of life.</p>
<b>Emergency services</b>	Emergency service access along the Great Western Highway would be maintained throughout construction. For the Medlow Bath to Blackheath section, at least one emergency service vehicle crossing would be provided where there is separated carriageways during construction.
<b>Parking</b>	<p>Access to the existing parking area on Nellies Glen Road would be removed during the reconstruction of Nellies Glen Road and the upgrades to the heritage interpretation area.</p> <p>As there is a lack of parking along Great Western Highway and nearby local roads, parking for construction workers would be provided at the identified ancillary facilities (refer to Section 3.4). There may be a need for construction vehicles to access the worksite and temporarily park on the worksite.</p>
<b>Property access</b>	<p>Property access would be maintained for residents and business owners on Nellies Glen Road, Explorers Road and Foy Avenue during construction. There may be temporary localised impacts experienced by some property owners. As previously noted, there would be temporary disruption to the Nellies Glen Road and Explorers Road intersections during construction of the proposal.</p> <p>Access to the rail corridor and Blue Mountains National Park for maintenance would be maintained during construction in consultation with the rail and national park authorities on an as-required basis.</p>

## Operation

The permanent changes to the Great Western Highway and the key intersections within the proposal area during operation of the proposal are detailed in Section 3.2.3. In addition, a new service road would be created alongside the new bridge structure that would provide alternative southbound access from the highway to connect with Explorers Road and the Pulpit Hill area.

Traffic modelling for the Great Western Highway Upgrade Program indicates that an increase in traffic volumes is expected between the existing scenario and 2036. Without the proposal, daily traffic volumes between Katoomba and Blackheath would increase from about 23,000 in 2021 to about 26,000 in 2036. With the proposal and the opening of other projects within the Great Western Highway Upgrade Program, daily traffic volumes would increase to about 28,000 in 2036 between Katoomba and Blackheath.

### Road network impacts

For the Katoomba to Medlow Bath section, the impact of the proposal on key intersection performance has been assessed (refer to Table 6-51 for the 2036 weekday scenarios and Table 6-52 for the 2036 weekend scenarios). The operation of the proposal would result in good operation (LOS A) at the three key intersections within the proposal area in 2026, 2031 and 2036, meaning that all intersections would operate at acceptable levels. The intersection upgrades would be successful in accommodating the expected increased traffic volumes in 2036. Specific impacts of the proposal on each intersection would be as follows:

- **Great Western Highway / Nellies Glen Road intersection** – while the LOS at the intersection would not change when comparing the with and without proposal in 2036, with the increased capacity of the proposal, the average delay would decrease by three to four seconds.
- **Great Western Highway / Explorers Road intersection** – the proposal would improve the LOS from LOS C during the 2036 weekday scenario and LOS B during the 2036 weekend scenario without the proposal to LOS A with the proposal during both the weekday and weekend scenario. In 2036, the

proposal would reduce the average delay from about 36 seconds to seven seconds at this intersection. This is mostly due to Explorers Road no longer connecting with the highway but rather connecting with the service road.

- **Great Western Highway / Foy Avenue intersection** – there would be no change in LOS due to the proposal compared with modelling results for without the proposal in 2036. At this intersection, the proposal would slightly increase average delay time by about three seconds due to the change from a give-way to stop signal control. Queue lengths would be reduced at this intersection, resulting in an improvement of existing conditions in 2036 during of the operation of the proposal.

Table 6-51: Modelled intersection performance – 2036 weekday scenarios

Intersection	Peak hour	2036 weekday scenario without the proposal			2036 weekday scenario with the proposal		
		Traffic volume (vehicles per hour)	Average vehicle delay (seconds)	LOS	Traffic volume (vehicles per hour)	Average vehicle delay (seconds)	LOS
Great Western Highway / Nellies Glen Road	AM (8.30 – 9.30am)	1545	11.5	A	1737	9.5	A
	PM (3.30 – 4.30pm)	1806	14.2	A	2048	10.4	A
Great Western Highway / Explorers Road	AM (8.30 – 9.30am)	1539	36.2	C	108	7.5	A
	PM (3.30 – 4.30pm)	1803	74.2	F	112	7.4	A
Great Western Highway / Foy Avenue	AM (8.30 – 9.30am)	1515	11.6	A	1707	13.9	A
	PM (3.30 – 4.30pm)	1793	9.5	A	2032	10.4	A

Table 6-52: Modelled intersection performance – 2036 weekend scenarios

Intersection	Peak hour	2036 weekend scenario without the proposal			2036 weekend scenario with the proposal		
		Traffic Volume (vehicles per hour)	Average Vehicle Delay (seconds)	LOS	Traffic Volume (vehicles per hour)	Average Vehicle Delay (seconds)	LOS
Great Western Highway / Nellies Glen Road	AM (11am – 12pm)	1575	13.7	A	1801	10.3	A
	PM (3 – 4pm)	1390	11.2	A	1590	9.4	A
Great Western Highway / Explorers Road	AM (11am – 12pm)	1581	25.1	B	88	7.3	A
	PM (3 – 4pm)	1380	16.8	B	86	7.3	A
Great Western Highway / Foy Avenue	AM (11am – 12pm)	1578	9.2	A	1806	10.3	A
	PM (3 – 4pm)	1393	7.5	A	1594	9.5	A

For the Medlow Bath to Blackheath section, the impact of the proposal on mid-block capacity has been assessed to determine the road network, as there are no intersections as part of this section. Refer to Table 6-53 for the weekday scenarios and Table 6-54 for the weekend scenarios.

With the proposal, the Medlow Bath to Blackheath section would operate acceptably at LOS B in 2031 and 2036 under both weekend and weekday scenarios. In 2026, the proposal would have good operation (LOS A) for the westbound AM peak (6 – 9am) weekday, eastbound weekday and PM peak (4 – 7pm) westbound weekend scenarios. Without the proposal, in 2036, the Medlow Bath to Blackheath section would:

- operate at LOS C or D on a weekday
- operate at LOS D in both directions on a weekend.

During operation of the proposal, the volume to capacity ratio, which measures the level of congestion, would increase slightly due to the higher traffic volumes compared to without the proposal. This indicates that the proposal would improve traffic flow along the Medlow Bath to Blackheath section while accommodating for the future estimated increases in traffic volumes.

Table 6-53: Modelled mid-block performance – weekday scenarios

		Eastbound weekday scenarios			Westbound weekday scenarios		
Scenario	Peak hour	Traffic Volume (vehicles per hour)	Density (passenger cars per kilometre per lane)	LOS	Traffic Volume (vehicles per hour)	Density (passenger cars per kilometre per lane)	LOS
<b>2036 without Proposal</b>	AM (6 – 9am)	1069	15.3	C	1219	17.4	D
	PM (4 – 7pm)	1168	16.7	D	1314	18.8	D
<b>2026 with Proposal</b>	AM (6 – 9am)	988	6.2	A	1085	6.8	A
	PM (4 – 7pm)	1075	6.7	A	1183	7.4	B
<b>2031 with Proposal</b>	AM (6 – 9am)	1142	7.1	B	1212	7.6	B
	PM (4 – 7pm)	1238	7.7	B	1335	8.3	B
<b>2036 with Proposal</b>	AM (6 – 9am)	1186	7.4	B	1281	8.0	B
	PM (4 – 7pm)	1288	8.0	B	1403	8.8	B

Table 6-54: Modelled mid-block performance – weekend scenarios

		Eastbound weekend scenarios			Westbound weekend scenarios		
Scenario	Peak hour	Traffic Volume (vehicles per hour)	Density (passenger cars per kilometre per lane)	LOS	Traffic Volume (vehicles per hour)	Density (passenger cars per kilometre per lane)	LOS
<b>2036 without Proposal</b>	AM (6 – 9am)	1239	17.7	D	1503	21.5	D
	PM (4 – 7pm)	1304	18.6	D	1214	17.3	D
<b>2026 with Proposal</b>	AM (6 – 9am)	1167	7.3	B	1399	8.7	B
	PM (4 – 7pm)	1214	7.6	B	1118	7.0	A
<b>2031 with Proposal</b>	AM (6 – 9am)	1372	8.6	B	1627	10.2	B
	PM (4 – 7pm)	1413	8.8	B	1288	8.1	B
<b>2036 with Proposal</b>	AM (6 – 9am)	1413	8.8	B	1684	10.5	B
	PM (4 – 7pm)	1340	8.4	B	1340	8.4	B

Overall, the proposal would improve the existing performance of the Great Western Highway, even with an increase in traffic volumes in 2036. It would also improve the safety and the performance of the Great Western Highway. These sections of the Great Western Highway would have sufficient capacity to accommodate the expected annual growth after 2036.

### Heavy vehicle impacts

The proposal would contribute to the broader upgrade of the Great Western Highway between Katoomba and Lithgow, improving freight efficiency for heavy vehicles as steeply graded sections and lane capacity would be upgraded. Heavy vehicle numbers, composition and vehicle types are not anticipated to change until completion of the entire Great Western Highway Upgrade Program and the heavy vehicle size

restrictions on Mount Victoria Pass is removed. Future performance of the corridor would be assessed by the cumulative impacts of the Blackheath to Little Hartley Upgrade.

The proposal is anticipated to provide a substantial improvement in heavy vehicle safety between Katoomba and Blackheath through improved road alignment and capacity. In addition, truck stopping areas would be provided to help drivers manage fatigue and comply with driving hours regulations and help the freight industry to support safe heavy vehicle operations. One would be located on the new service road eastbound, near Explorers Road, while the other would be provided westbound about one kilometre west of Medlow Bath. The provision of truck stopping areas along the proposal would improve safety for heavy vehicle drivers travelling along the Great Western Highway. This would discourage the current observed behaviour of heavy vehicles stopping in front of the Hydro Majestic and in other informal shoulder areas along the corridor.

### Other traffic and transport impacts

Other traffic and transport impacts associated with the operation of the proposal are outlined in Table 6-55.

Table 6-55: Other traffic and transport impacts associated with the operation of the proposal

Impact	Description
<b>Active transport</b>	<p>Within the Katoomba to Medlow Bath section, the proposal would upgrade and realign parts of the Great Blue Mountains Trail, including near the Pulpit Hill heritage interpretation area. This would reinstate the same level of pedestrian and cyclist access currently available, in consultation with relevant community interest groups.</p> <p>Within the Medlow Bath to Blackheath section, the proposal would establish a new active transport trail to the east of the Great Western Highway along the Blue Mountains National Park. This active transport trail would create a new active transport link between Medlow Bath and Blackheath which only exists to the western side of the rail corridor along Station Street. This would improve active transport connections in the area.</p>
<b>Public transport</b>	<p>The proposal would have a minimal impact on the two bus stops within the proposal area. The existing bus stop at Bonnie Doon Reserve on the Great Western Highway would be relocated to the left turn bay into Nellies Glen Road to improve safety for commuters. The existing bus stop at Foy Avenue would be adjusted and upgraded, with a dedicated bus bay constructed on the northern side of the intersection to suit the proposed road alignment.</p> <p>The proposal would have no impacts to bus or rail services.</p>
<b>Emergency services</b>	<p>By increasing the number of lanes from one to two lanes in each direction, the proposal would improve reliability of access for emergency services along the Great Western Highway. The four-lane configuration would provide more opportunities for emergency crossover at intersections. Variable speed limits and Variable Message Signs would improve the ability to manage traffic incidents and emergency events. The proposal would also maintain the ability for emergency services to stop where shoulder width permits along the road corridor in both directions.</p> <p>Access to the rail corridor would be maintained for emergency access.</p>
<b>Fire trails</b>	<p>Through the Medlow Bath to Blackheath section, the provision of the new active transport trail would also allow for maintenance access into the adjoining National Park.</p>
<b>Parking</b>	<p>Proposed changes to the Pulpit Hill heritage interpretation area would formalise parking at this location. This would improve safety and capacity of parking for light vehicles and tourist buses. This would reduce the disruption to residents of buses parking and obstructing property access on Nellies Glen Road and Explorers Road.</p> <p>The proposal would not affect current parking restrictions along the Great Western Highway.</p>
<b>Property access</b>	<p>Where existing rail corridor access would be disrupted by the proposal, alternative access arrangements and new gate locations would be established in consultation with Sydney Trains.</p> <p>There would be minimal impacts to the current access arrangements for the Blue Mountains National Park. However, an access from Coachhouse Lane onto the proposed active transport trail and maintenance access path would be provided.</p>

### 6.7.5 Safeguards and management measures

Safeguards and management measures for traffic and transport are outlined in Table 6-56.

Table 6-56: Safeguards and management measures – traffic and transport

Impact	Environmental safeguards	Responsibility	Timing	Reference
<b>Traffic and transport</b>	<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 <i>Traffic Control at Work Sites Manual</i> (Transport, 2020c) and QA <i>Specification G10 Control of Traffic</i> (Transport, 2020b). 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>• a provision for the monitoring of delays or queues forming at access points with a suitable response such as temporary detours or cessation of construction access movements to clear the queue</li> <li>• construction traffic control plans outlining site-specific traffic control measures (including signage) to manage and regulate traffic movement</li> <li>• measures to maintain pedestrian and cyclist access where possible</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>• monitoring, review and amendment mechanisms.</li> </ul>	Transport / Contractor	Detailed design / Pre-construction	Section 4.8 of QA G36 <i>Environment Protection</i>
<b>Construction site access</b>	<p>Construction site access will be designed and implemented in consideration of:</p> <ul style="list-style-type: none"> <li>• road design guidelines and turning paths for heavy vehicles</li> <li>• appropriate sight distances to allow traffic to safely enter and exit</li> <li>• visibility of compliant warning and way finding signs</li> <li>• use of accredited traffic controllers, where appropriate and/or other controls to separate, slow down or temporarily stop traffic for safe entry/exit</li> <li>• minimising use of local roads, where practical</li> <li>• provision of deceleration lanes at accesses next to highly trafficked roads.</li> </ul>	Contractor	Pre-construction/ construction	Additional safeguard
<b>Impact on bus stops or routes</b>	<p>For the Katoomba to Medlow Bath section, temporary and permanent bus stop relocation will be discussed with the relevant bus operator.</p> <p>Transport will discuss the temporary relocation of the Bonnie Doon Reserve and Foy Avenue bus stops.</p>	Transport / Contractor	Detailed design / Pre-construction	Additional safeguard

<b>Impact</b>	<b>Environmental safeguards</b>	<b>Responsibility</b>	<b>Timing</b>	<b>Reference</b>
	Transport will inform the community of the temporary relocation of the bus stops prior to the relocation.			
<b>Temporary access changes</b>	Detours during temporary access changes will be implemented with directional signage along alternate routes.	Contractor	Construction	Additional safeguard
<b>Traffic management measures</b>	Any temporary traffic diversions or road closures will be implemented in accordance with Transport Management Centre (TMC) and Blue Mountains City Council requirements and notified to emergency services.	Contractor	Construction	Additional safeguard
<b>Property access</b>	Property access will be maintained where feasible and reasonable and property owners will be consulted well in advance of work starting that may temporarily restrict or control access.	Contractor	Construction	Additional safeguard
<b>Local road or shared path closures</b>	Blue Mountains City Council will be consulted with prior to any local road or shared path closures to identify suitable mitigation measures such as detour routes.	Contractor	Construction	Additional safeguard
<b>Damage to local roads</b>	Any damage to the local road network identified to be caused by construction vehicles for the proposal will be remediated by the contractor to be similar to the existing road condition.	Contractor	Construction	Additional safeguard