

MEDLOW BATH - SOCIO-ECONOMIC IMPACT ASSESSMENT



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EXECUTIVE SUMMARY

Transport for NSW (TfNSW) proposes to upgrade approximately 1.2km of Medlow Bath between Railway Parade and approximately 330 metres south of Bellevue Crescent West (“the proposal”). The proposal will provide a safer and more efficient link between Central West NSW and the Sydney Motorway Network for freight, tourist, and general traffic and improve active transport links and public transport accessibility.

This socio-economic impact assessment report was prepared to support a Review of Environmental Factors (REF) of the proposal. It provides an overview of the broad objectives for the management of socio-economic impacts and mitigation measures for those impacts. The objectives of the proposal for managing potential socio-economic impacts during construction and operation are:

- Avoid or minimise impacts on amenity, health and well-being, and access and connectivity for local and regional communities
- Avoid or minimise impacts on social infrastructure, local businesses, and industry
- Ensure local communities, including residents, business owners and managers of community facilities are informed about the Proposal’s construction and operation.

The following positive socio-economic impacts are anticipated because of the proposed road upgrade within the study area:

- Improved accessibility to the area, resulting in time and operational cost savings for business and individuals
- Addition of pedestrian connections to the station from residential and recreational land
- Removal of the pedestrian crossing at the railway line and the addition of an overhead pedestrian bridge which will improve safety and amenity in the area
- New indented bus bays on both sides of the highway as well as shared pedestrian/cyclist paths adjacent to the westbound carriageway corridor
- Tree and vegetation planting along the road and on the median, which will enhance the overall amenity of the area
- Overall, the proposal will improve road, pedestrian and cycling infrastructure which will result in safety, access, and amenity benefits for the Medlow Baths area.

Additionally, the following negative socio-economic impacts are anticipated in the study area:

- Three full property acquisitions and two partial property acquisitions will be undertaken for the location of new infrastructure
- A temporary increase in noise for some receivers:
 - Architectural treatment will be implemented when required to minimise any potential negative noise impacts.
- Construction activities may temporarily reduce available parking and impact active transport connectivity impacting residents and businesses
 - Specifically, this could impact operations of the Hydro Majestic Hotel, which directly abuts the Great Western Highway (GWH)
 - These impacts can be minimised through consultation with the hotel and implementation of the traffic management plan
- Removal of established trees within construction areas will impact on visual amenity and rural nature of the local landscape:
 - Tree planting and roadside median planting will offset the removal of vegetation during construction

- Most of the above impacts will be temporary and given the rural nature of the works, the impact to community values and amenity will be minimal.
- An alternative design for Bellevue Crescent is being considered. The impacts of this alternative design would include noise and vibration, property acquisition (two full acquisitions and one partial acquisition) and slightly greater traffic movements for some residents than the preferred design. Overall, the impacts of the alternative design are similar to the impacts for the current preferred design for Bellevue Crescent.

1 INTRODUCTION

1.1 Background

The Great Western Highway (GWH) is a 201-kilometre highway crossing of the Great Dividing Range through the World Heritage listed Blue Mountains. It connects Bathurst and the surrounding Central West and Orana regions to Sydney.

The GWH crosses the Great Dividing Range and follows a narrow and difficult alignment, which is constrained by the Blue Mountains National Park, steep topography, a critical rail line that runs parallel to the highway, and proximity to existing towns for which that highway acts as a sort of main street.

The GWH crosses landscapes that have rich natural, cultural, scenic, and historical value. Urban developments along the Highway are located along the ridgeline above the highway, are discrete in nature, and separated by natural bushland.

Within Medlow Bath Village, the GWH acts as a major thoroughfare with several established existing businesses situated along the route, including, Blue Mountains Mazda dealership, the Hydro Majestic Hotel, the Boiler House Restaurant, and a United Petrol Station.

Within the Medlow Bath Village and to the east of the railway line, there is one public open space facility at Medlow Bath Park, adjacent to the Rural Fire Brigade station which provides public amenity in the form of a playground, picnic tables and landscaped gardens. Additionally, there are several popular bushwalking tracks that provide valuable recreational facilities for locals and tourists, as well as regional and local cycle routes that link to the Blue Mountains Trail and Mountain Bike Trails to Point Pilcher.

The highway's topography and constrained two lane carriageway design (which in places is almost 200 years old) results in the following constraints:

- Reduces freight efficiency by limiting access for safer and more sustainable high productivity vehicles
- Limits access during incidents and natural disasters
- Slows travel speeds with limited overtaking opportunities and steep gradients (more than double the recommended maximum level)
- Causes delays of up to 80 minutes in peak times
- Has higher than state average crash rates
- Impairs amenity for local communities with high through traffic volumes and congestion.

The proposal will help to alleviate several of these issues including:

- Improve ability to drive regional economic development and freight productivity
- Provide a dependable and adaptable transport network that enables continuity of transport and essential services
- Provide suitable capacity to reduce congestion during peak periods through Medlow Bath
- Reduce actual and perceived safety risks
- Maintain and enhance local amenity and character and protect environmental and cultural assets.

1.2 Description of the Proposal

Transport for NSW (TfNSW) proposes to upgrade approximately 1.2 kilometres of the Great Western Highway at Medlow Bath between Railway Parade and approximately 330 metres south of Bellevue Crescent ("the proposal"). This upgrade is part of the GWH Duplication project between Katoomba and Lithgow which to provide a safer and more efficient link between Central West NSW and the Sydney Motorway Network for freight, tourist, and general traffic. In addition the road modifications, the proposal will also improve active transport links and public transport accessibility.

Key features of the proposal would include:

- Upgrade of the existing highway to a four-lane divided carriageway allowing for two lanes of traffic in each direction, either side of a central median with planted trees
- Upgrade of the Bellevue Crescent intersection with new turning lanes, U-turn bay and traffic signals
- A new right turn lane providing access to the Hydro Majestic Hotel
- Improvements on Railway Parade to formalise parking provisions, U-turns and rail customer parking
- New indented bus bays on both sides of the highway close to Medlow Bath Station
- Construction of a new pedestrian bridge, stairs and lifts to provide an accessible path of travel between the bus bays, the Medlow Bath Station platforms and Railway Parade
- New shared path for pedestrians and cyclists on the western side of the highway
- Ancillary works such as the replacement of road surfaces, reconstruction works associated with local roads, driveways, footpaths, kerbs, gutters and retaining walls, drainage works and relocation of services.

Figure 1 provides an overview of the study area and key features of the proposal.

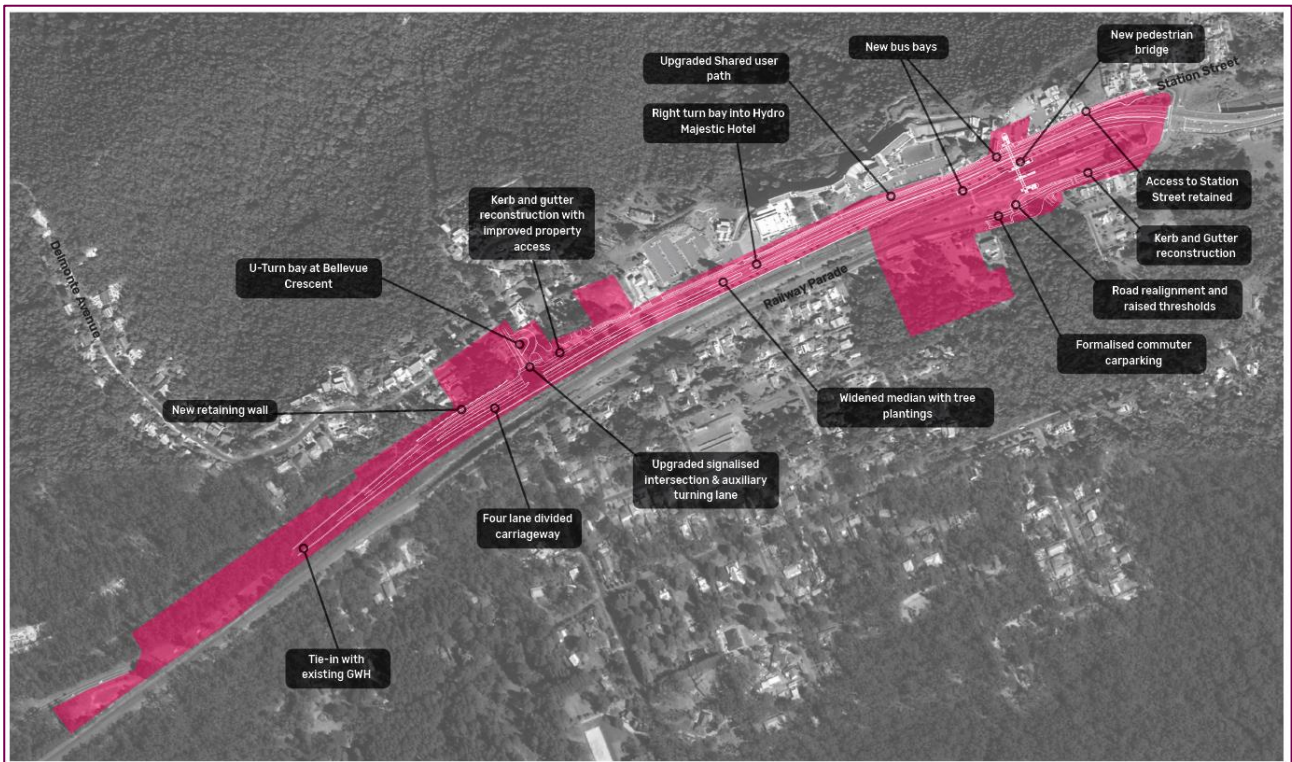


Figure 1: Key Features of the Proposal

Source: Spackman Mossop Michaels, 2021

1.2.1 Alternative Design for Bellevue Crescent

As part of the design for the proposal, a new alternative signalised intersection is being considered to the Great Western Highway with a new road through vacant Lots to connect to the existing Bellevue Crescent and approximately 25 metres south of the United Petrol Station (refer to Figure 2).

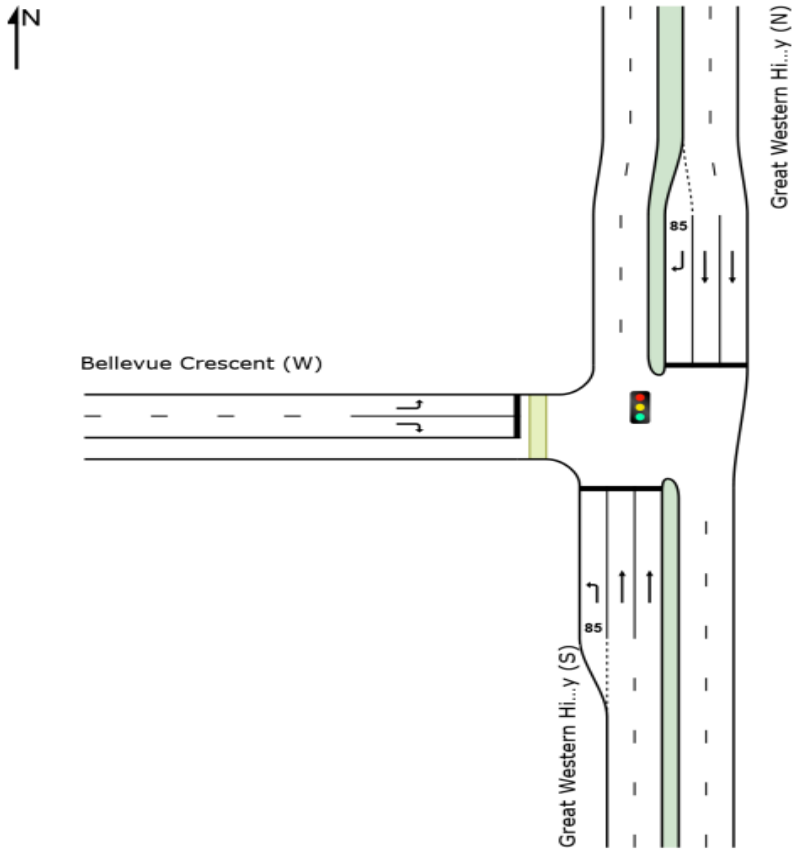


Figure 2: Proposed alternative intersection at Bellevue Crescent

Key features of this design are as follows:

- A signalised intersection will be built along the southern perimeter of the United Petrol Station in Medlow Bath utilising a corridor (anticipated to be 20 metres) through vacant Lots
- Closing the existing Bellevue Crescent and Great Western Highway intersection (indicated by the red line marking in Figure 3 below) but still maintaining a service road/shared zone for the properties fronting the highway
- Creating new access options from Bellevue Crescent to the petrol station and Hydro Majestic Pavilion
- Allows left and right turns out of Bellevue Crescent on to the Great Western Highway (enabling west and east bound movement) and left turn into new Bellevue Crescent from Great Western Highway westbound.

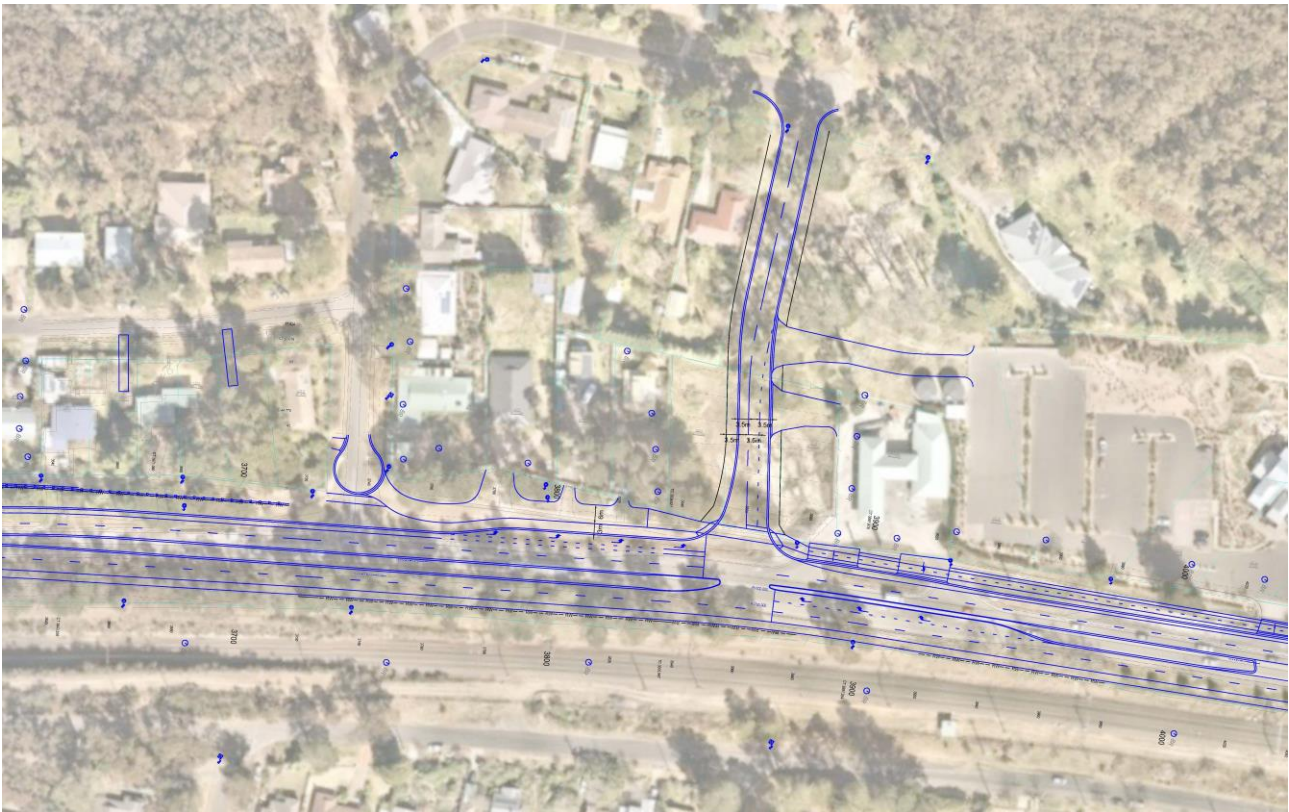


Figure 3: Alternative design for Bellevue Crescent

1.3 Purpose of this Document

This report has been prepared to support the Review of Environmental Factors (REF) for the proposal. It provides an assessment of potential socio-economic benefits and impacts of the proposal, including:

- An outline of the existing socio-economic characteristics, values, and conditions of local and regional communities near the proposal
- An assessment of potential impacts on local and regional communities from the construction and operation of the proposal
- Measures for managing or mitigating identified socio-economic impacts.

2 METHODOLOGY

2.1 Study Methodology

This assessment of socio-economic impacts was completed with reference to the *SEIA Practice Note Guidelines* (January 2020) and *Assessing significance: socio-economic impacts* (RMS January 2019). The proposal was assessed as requiring a 'Moderate' level of assessment.

Key steps in this assessment included:

- Determining the study area based on the likely geographical extent of the impacts during both construction and operation
- Reviewing the existing conditions including demographics, socio-economic status, income, employment, land use, business activity and social infrastructure using publicly available sources such as data from the Australian Bureau of Statistics (ABS), and relevant planning and policy documents
- Assessing the likely social and economic impacts during construction, which may include but not be limited to, property acquisition, amenity impacts and disruption to trade
- Assessing the level of significance of potential impacts by considering the sensitivity of receptors and the magnitude of the proposed work
- Consideration of cumulative social or economic impacts by considering other existing or planned proposals likely to interact with the proposal. For example, cumulative impacts related to nearby projects/proposals such as the Richmond Road Upgrade, Bandon Road Upgrade, etc.
- Identifying recommended mitigation measures to manage the extent of impacts.

An evaluation matrix was used to evaluate the significance of potential socio-economic impacts associated with the construction and operation of the proposal. This is based on the framework outlined in the *SEIA Practice Note Guidelines* (January 2020). The significance of identified impacts was determined with consideration of:

- The sensitivity of receptors, that is, environmental characteristics, communities, businesses, business clusters, social infrastructure, residences, and
- Magnitude of the proposed works.

2.2 Study Area and Proposal Corridor

The study area for the assessment is shown in Figure 4. It comprises the Katoomba – Leura Statistical Area Level 2 (SA2 #124011452, 2016). The study area was chosen because it comprises areas that are most likely to be directly impacted during both construction and operation of the proposal.

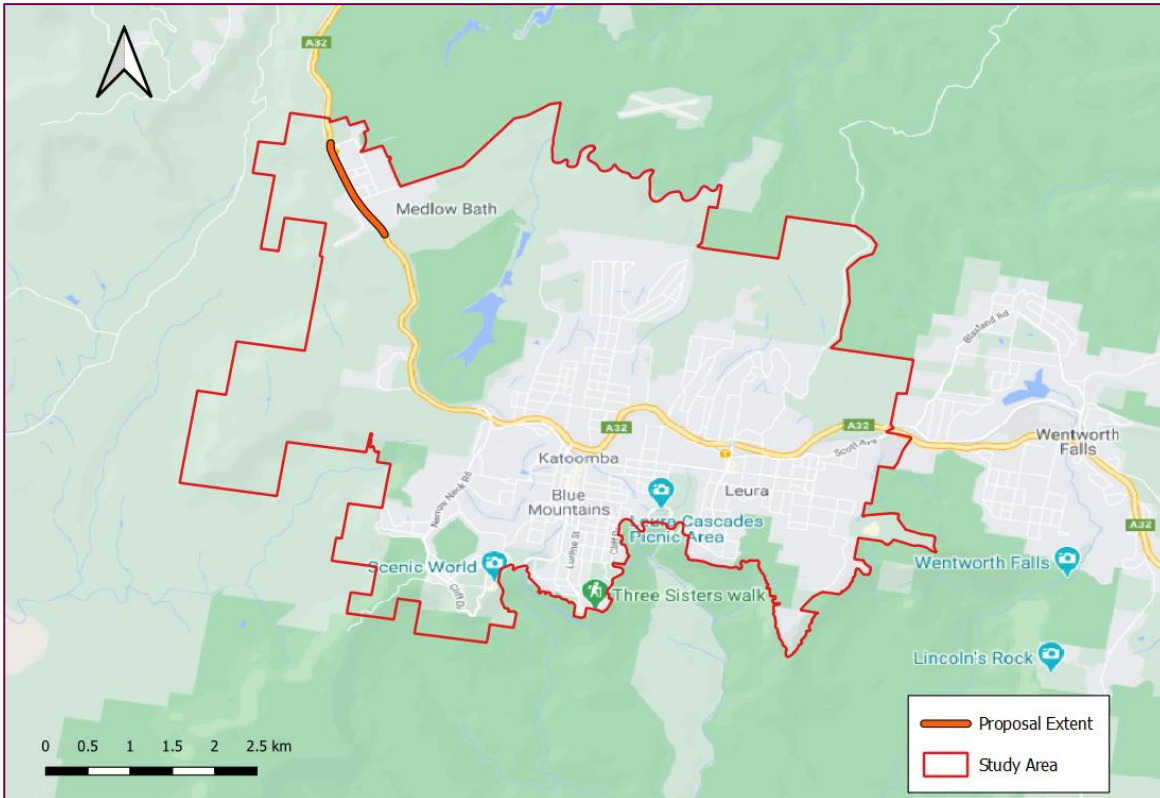


Figure 4: Study Area and Proposal Corridor Extent

Source: Google Maps, 2021

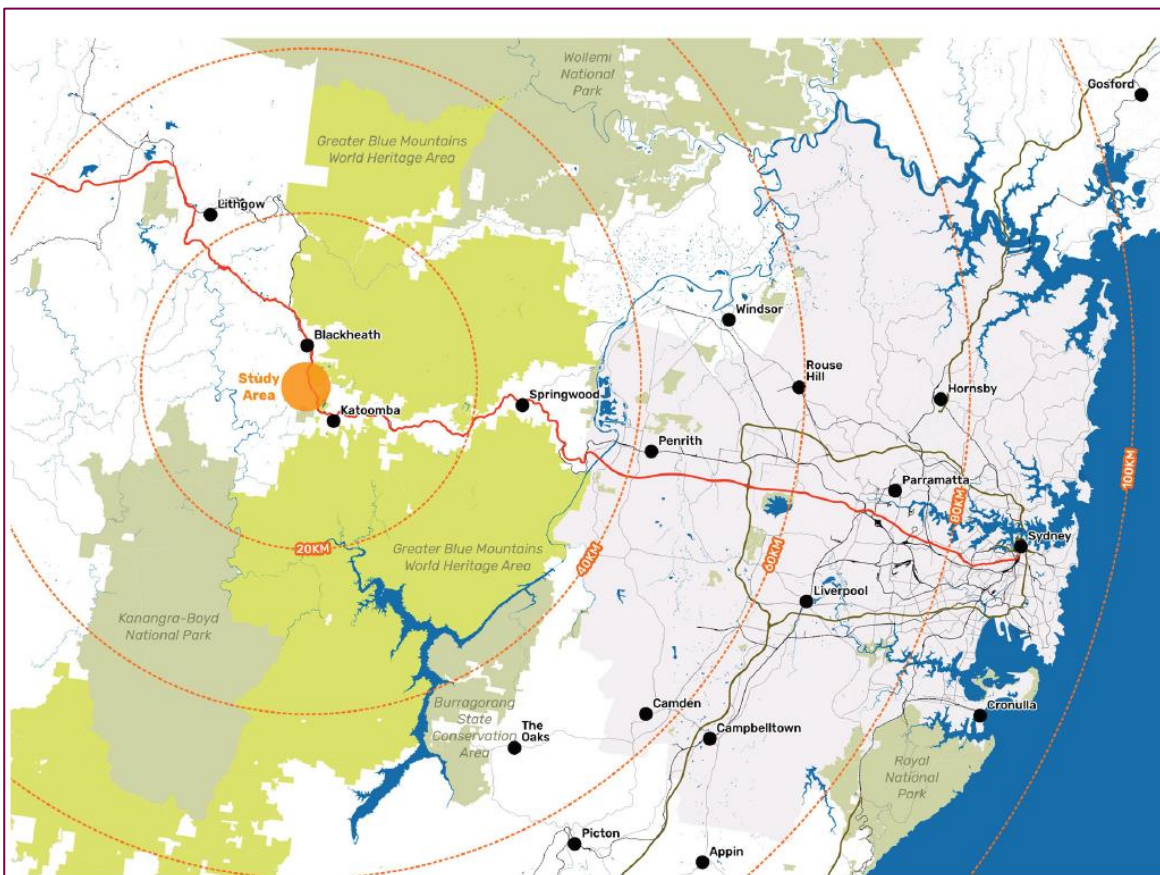


Figure 5: Study Area Regional Context

Source: Spackman Mossop Michaels, 2020

2.3 Data Sources

Socio-economic data presented in this assessment principally draws on information from the ABS Census of Population and Housing 2016. Data is presented for both the primary and secondary study area. This is supplemented with data and information from:

- Australian Bureau of Statistics (ABS)
- NSW Department of Planning, Industry and Environment (DPIE)
- Blue Mountains City Council (BMCC) publications, reports, guidelines, and websites
- Specialist reports commissioned in support of the proposal and associated Review of Environmental Factors (REF), and
- Other public websites and reports.

2.4 Consultation

TfNSW has encouraged community feedback to the proposal through a combination of notifications and consultations with government stakeholders including the NSW Department of Planning Industry and Environment, NSW Environment Protection Authority, utilities such as major telecommunications, power and water utilities in the area, residents and businesses impacted by the proposal, business chambers and groups, active transport users, road users, community, sporting, action and environmental groups. Further information on consultation undertaken for the proposal is outlined in Chapter 5 of the REF.

3 STRATEGIC CONTEXT

3.1 Western City District Plan

The proposal is in the Blue Mountains LGA, which is in the Western City District. The Western City District covers several additional LGAs including Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith, and Wollondilly.

The *Western City District Plan* (the Plan) is the long-term vision for a large central portion of Greater Sydney. The vision is to transform the Western City District into an area that has quicker and easier access to a wider range of jobs, housing types, and activities.

The Western City District is anticipated to grow substantially, capitalising on its location close to the geographic centre of Greater Sydney. Public and private investment is contributing to new transport and other infrastructure projects that will support major transformations.

The Plan informs planning statements, local environmental plans, the assessment of planning proposals, and community strategic plans and policies. It also emphasises the alignment of local environmental plans, transport programs, and other agency programs.

This Plan responds to major transport, health and education investments either committed or planned across the Western District, including the Western Sydney Airport and aligns with Future Transport 2056. The Western Sydney Deal will drive innovative planning for future infrastructure needs.

For the Western City District, this means the following Planning Priorities:

- W1. Planning for a city supported by infrastructure
- W2. Working through collaboration.

The proposal will support the growth of the study area by providing an east-west linkage between western Sydney, the Blue Mountains, and regional centres like Bathurst, Orange and Mudgee, thereby accommodating future growth and facilitating the flow of people and commerce.

3.2 Greater Sydney Services and Infrastructure Plan

Greater Sydney Services and Infrastructure Plan (GSSIP) is the NSW Government's 40-year plan for transport in Sydney. It builds on the state-wide transport outcomes identified in the Future Transport Strategy 2056 and establishes specific outcomes that transport customers can expect. It also identifies the policy, service, and infrastructure initiatives that will help achieve higher capacity public transport and improved road links.

Among the many initiatives outlined in the GSSIP, Connecting Greater Sydney and the Blue Mountains is cited as a specific area of focus. The GWH, in conjunction with the Main Western Rail Line, are two key infrastructure assets that connect the Western Parkland City and Western Sydney Airport to the Central West and Orana Region. This corridor also provides freight connections to Port Botany, Port Kembla, and Newcastle port, and will provide access to the new Western Sydney Airport and the Western Parkland City.

The GSSIP outlines several initiatives that are designed to work collectively to enhance transport infrastructure within the Study Area and the region more generally:

- Ongoing improvements to assets like Bells Line of Road and Great Western Highway
- Strategic examination of options to improve connectivity for freight from inland NSW to Sydney, including consideration of existing roads such as Great Western Highway and nearby Bells Line Road
- Ongoing improvements to Main Western Line (as a rail alternative to the GWH), and
- Potential electrification of the intercity network to Bathurst.

The proposal will thus not only resolve specific challenges within the Study Area at Medlow Bath, but it also indirectly support nearby transport assets and provides for future capacity and redundancy in the broader region.

3.3 Blue Mountains Community Strategic Plan 2035

The *Blue Mountains Community Strategic Plan 2035* (Plan 2035) outlines how Blue Mountains City Council (BMCC) will work with residents, ratepayers, businesses, and the NSW Government. Plan 2035 outlines that appropriate infrastructure enhances quality of life, supports population growth, and allows the development of a diverse economy.

Plan 2035 identifies several issues with respect to the GWH and the need to maintain the quality of urban amenity along the GWH given its role as a major regional route connecting to Sydney. Specifically, it notes several direct and supporting strategies that both BMCC and the NSW Government will jointly implement:

- Complete the upgrade and widening of the GWH west of Katoomba so that it delivers improved safety, accessibility, and amenity
- Develop transport links between towns and villages for vehicles (including emergency vehicles), cyclists and pedestrians other than the GWH, and
- Plan, provide, and advocate the development and implementation of a town centre, transport and public access infrastructure related projects.

The proposal is therefore an important State project that supports regional residents, businesses, and tourism at Medlow Bath. It is also an important interface with local road and transport assets that contribute to local amenity and wellbeing.

4 SOCIO-ECONOMIC CONTEXT

4.1 Regional Overview

The proposal is situated within the Blue Mountains LGA. The Blue Mountains are in the Western City District, approximately 60 kilometres to the west from the Sydney CBD and encompasses a total land area of about 1,430 square kilometres bounded by:

- Hawkesbury City in the north-east
- City of Lithgow in the north-west
- Penrith in the east
- Wollondilly Council area in the south
- Oberon Council area in the west.

Approximately 70% of the Blue Mountains area is World Heritage listed (*World Heritage Blue Mountains National Park*), and approximately 11% of total land area is privately owned. The Blue Mountains LGA is one of the top three tourist destinations in Australia, visited by approximately 4 million people each year.

4.2 Community Profile

Table 1 through Table 6 provide detailed information about the study area, Blue Mountains LGA, and the Western City District region. In general, the study area can be characterised by the following demographic features:

- A population of 13,222 residents
- A gender and age distribution that is broadly similar across the study area, Blue Mountains LGA, and Western City District (refer to Table 1 and Table 2)
- A greater number of Australian born and English-speaking households in the study area and Blue Mountains LGA than in Western City District (refer to Table 4)
- A greater proportion of separate detached dwellings than in the Blue Mountains LGA or Western City District, reflecting an older established community (refer to Table 5)
- A similar distribution of single families (characterised as couples with children) across the study area, Blue Mountains LGA, and Western City District (refer to Table 6), and
- Consistency in the top 5 key industries and occupations in the study area, Blue Mountains LGA, and the Western City District (refer to Table 8).

Table 1: Summary Population, by Sex

Population	Katoomba-Leura SA2 (#)	Blue Mountains LGA (#)	Western City District (#)	Katoomba-Leura SA2 (%)	Blue Mountains LGA (%)	Western City District (%)
Male	6,305	37,123	504,749	48%	48%	49%
Female	6,915	39,779	519,690	52%	52%	51%
Total	13,222	76,902	1,024,444	100%	100%	100%

Source: 2016 Census of Population and Housing

Table 2: Summary Population, by Age

Age	Katoomba-Leura SA2 (#)	Blue Mountains LGA (#)	Western City District (#)	Katoomba-Leura SA2 (%)	Blue Mountains LGA (%)	Western City District (%)
Total 0-14	1,888	14,072	169,405	14%	18%	21%
Total 15-64	8,260	47,812	542,893	62%	62%	66%
Total 65+	3,072	15,020	107,835	23%	20%	13%
Total	13,222	76,902	820,115	100%	100%	100%

Source: 2016 Census of Population and Housing

Table 3: Summary Population, by Education Attainment

Education	Katoomba-Leura SA2 (#)	Blue Mountains LGA (#)	Western City District (#)	Katoomba-Leura SA2 (%)	Blue Mountains LGA (%)	Western City District (%)
Postgraduate Degree Level	789	4,194	24,831	6%	5%	2%
Graduate Diploma and Graduate Certificate Level	331	2,035	89,72	3%	3%	1%
Bachelor's degree Level	1,918	11,043	87,391	15%	14%	9%
Advanced Diploma and Diploma Level	1,297	7,364	70,976	10%	10%	7%
Certificate III & IV Level	1,597	10,638	134,463	12%	14%	13%
Secondary Education - Years 10 and above	2,916	16,596	28,4743	22%	22%	28%
Certificate I & II Level	12	45	888	0%	0%	0%
Secondary Education - Years 9 and below	651	3,561	81,159	5%	5%	8%
Supplementary Codes	453	2,404	40,670	3%	3%	4%
Not Stated	1,377	4,944	74,643	10%	6%	7%
Not Applicable	1,886	14,071	215,705	14%	18%	21%
Total	13,222	76,902	1,024,444	100%	100%	100%

Source: 2016 Census of Population and Housing

Table 4: Summary Selected Cultural Attributes

Language	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
Born in Australia (%)	72%	78%	62%
English Primary Spoken at Home	84%	91%	60%
Speaks English Very Well / Well	90%	91%	79%
Does not Speak English Well / Not at All	10%	9%	21%

Source: 2016 Census of Population and Housing

Table 5: Summary Selected Dwelling Attributes

Dwellings	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
Total Dwellings	7,472	34,306	356,529
Occupied Private Dwellings	79%	87%	94%
Separate House	83%	91%	80%
Owned Outright / Mortgage	50%	66%	61%
Rented	21%	15%	24%

Source: 2016 Census of Population and Housing

Table 6: Summary Selected Household Composition Attributes

Household Composition	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
One Family, Couple No Children	30%	33%	26%
One Family, Couple with Children	23%	37%	51%
Lone Person Household	46%	31%	23%

Source: 2016 Census of Population and Housing

4.3 Economic Profile

Table 7 through Table 12 and Figure 6 provide detailed economic information about the study area, Blue Mountains LGA, and the Western Sydney District. In general, the study area can be characterised by the following economic features:

- A labour force of 10,551 persons as of the 2016 census (refer to Table 7)
- Labour force participation and unemployment rates broadly consistent across the study area, Blue Mountains LGA, and Western Sydney District, with the study area demonstrating marginally higher workforce participation and employment (refer to Table 7)
- Health Care and Social Assistance was the largest employer for the study area, Blue Mountains LGA and the Western City District (refer to Table 8).
- Accommodation and food services and retail trade are also some of the key industries contributing to employment in the study area, Blue Mountains LGA and Western City District. These sectors would contribute to local tourism which is the second largest industry overall for the area (refer to Figure 6)
- A median weekly income (and the proportion of low and high-income households) that is broadly consistent across the study area, Blue Mountains LGA, and Western Sydney District (refer to Table 10)
- An increase in international and domestic visitors to the Blue Mountains of approximately 10% between 2018 and 2019:
 - These comprise of both overnight stay and day trips largely due to increased international tourist visits and domestic day trips
 - Between 2018 and 2019, overnight tourism expenditure has increased by more than 10%, reflecting the significant contribution tourism has in the area (refer to Table 12).

Table 7: Summary Work Force Attributes

	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
Labour force	10,551	59,929	762,562
Participation rate (%)	56%	63%	64%
Unemployed persons	398	1,784	32,762
Unemployment rate (%)	7%	5%	7%

Source: 2016 Census of Population and Housing

Table 8: Summary Labour Force, Top 5 Key Industries

Industry	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
	Health Care and Social Assistance – 20%	Health Care and Social Assistance – 17%	Health Care and Social Assistance – 13%
	Accommodation and Food Services – 19%	Accommodation and Food Services – 14%	Retail Trade – 11%
Industry	Retail Trade – 13%	Education and Training – 12%	Education and Training – 10%
	Public Administration and Safety – 9%	Retail Trade – 11%	Manufacturing – 10%
	Education and Training – 6%	Public Administration and Safety – 7% Construction – 7%	Construction – 9%

Source: 2016 Census of Population and Housing

Table 9: Summary Labour Force, Top 5 Key Occupations

Occupation	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
	Professionals – 20%	Professionals – 23%	Professionals
	Community and Personal Service Workers – 18%	Community and Personal Service Workers – 17%	Technicians and Trades Workers
Occupation	Technicians and Trades Workers – 12%	Technicians and Trades Workers – 13%	Clerical and Administrative Workers
	Managers – 11%	Clerical and Administrative Workers – 12%	Community and Personal Service Workers
	Clerical and Administrative Workers – 11%	Managers – 11%	Managers – 11%

Source: 2016 Census of Population and Housing

Table 10: Summary Selected Income Attributes

Income	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
Median weekly household income (\$)	\$883.33	\$1,000.24	\$897.79
Low-income households (less than \$650 gross weekly income) (%)	51%	43%	45%
High income households (more than \$3,000 gross weekly income) (%)	3%	3%	2%

Source: 2016 Census of Population and Housing

Table 11: Summary Selected Travel Attributes

Travel	Katoomba-Leura SA2	Blue Mountains LGA	Western City District
Train (%)	13	14	13
Bus (%)	1	1	1
Car, as driver (%)	66	75	75
Car, as passenger (%)	5	4	6
Truck (%)	1	1	2
Motorbike / Scooter (%)	1	1	-
Bicycle (%)	-	-	-
Walking (%)	10	3	2
Other (%)	1	1	-

Source: 2016 Census of Population and Housing

4.3.1 Local Business and Industry

The Blue Mountains LGA is geographically located west of Sydney’s CBD. Health Care & Social Assistance is the largest sector in the Blue Mountains LGA, accounting for 3,442 jobs and 17.6% of total employment (refer to Figure 6). Tourism is the second largest sector in the Blue Mountains LGA, accounting for 2,430 jobs and 12.5% of total employment in the region. Comparatively, approximately 4.2% of jobs in Greater Western Sydney, 6.1% in NSW and 6.3% in Australia more broadly are supported by tourism, demonstrating the importance of this sector for the Blue Mountains LGA in supporting jobs. Other key industries for the Blue Mountains LGA include, education and training, retail trade and construction services.

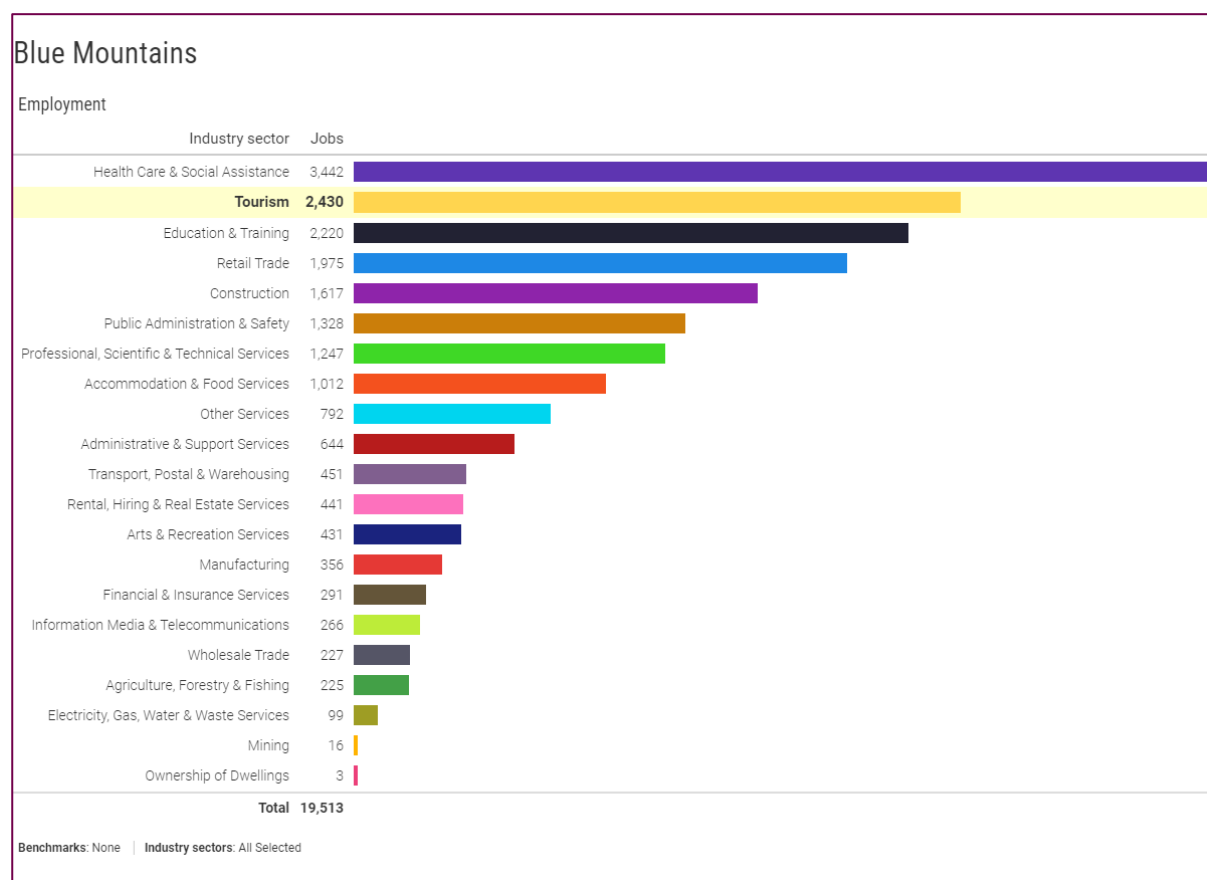


Figure 6: Summary of Employment, by Industry Sector

Source: Remplan website as referenced from ABS 2016 Census Place of Work Employment (Scaled), ABS 2017 / 2018 National Input Output Tables, ABS June 2019 Gross State Product, and ABS 2018 / 2019 Tourism Satellite Account

4.3.2 Tourism

The Blue Mountains is one of only two cities in the world that are classified as a World Heritage National Park. It is a region rich in natural flora and fauna, culture, and heritage. There are many tourist attractions and tourism related accommodation in the Blue Mountains LGA. There is a tourism information centre located in Echo Point. Key attractions for the Blue Mountains LGA include the Three Sisters, Jenolan Caves, Blackheath Gardens, Blue Mountains Explorer Bus, Blue Mountains Cultural Centre, Scenic World and various restaurants, waterfalls, scenic bushwalking tracks, museums, and wineries.

Table 12: Tourism Summary, International and Domestic Visitors

Tourism	YE Dec 2015	YE Dec 2016	YE Dec 2017	YE Dec 2018	YE Dec 2019	% change YE Dec19 vs. YE Dec18
Grant Total – overnight & daytrip						
Visitors ('000)	3,727	4,082	4,234	4,206	4,633	10.2%
Nights ('000)	2,603	2,868	3,155	3,167	3,515	11.0%
Expenditure (\$ million)	\$619	\$685	\$681	\$775	\$796	2.8%
Overnight – Int'l & domestic						
Visitors ('000)	985	1,073	1,210	1,276	1,434	12.3%
Nights ('000)	2,603	2,868	3,155	3,167	3,515	11.0%
Expenditure (\$ million)	\$422	\$433	\$449	\$456	\$503	10.4%
Domestic – Overnight & daytrip						
Visitors ('000)	3,629	3,977	4,109	4,085	4,518	10.6%
Nights ('000)	2,086	2,260	2,452	2,594	2,946	13.6%
Expenditure (\$ million)	\$558	\$632	\$622	\$729	\$737	1.1%

Source: NSW Government, Destination NSW Website as referenced from Tourism Research Australia, National and International Visitor Surveys

4.4 Site Context

The Great Western Highway and the Main Western Railway Line are two important transport infrastructure assets that pass-through Medlow Bath.¹ This road and rail corridor not only links the local and regional centres but provides access to Sydney and the Orana regions. As a result, it plays a critical role in supporting the livelihood of the community.

4.4.1 Roadways

The GWH Medlow Bath corridor extends 1.2 kilometres from Station Street and Railway Parade north to just south of the intersection with Bellevue Crescent. This section of the GWH is a two-lane single carriageway with a posted speed limits ranging from 60 km/h to 70 km/h.

On average, the proposal corridor experiences the following traffic volumes:

- Average weekday traffic volumes are around 20,000 vehicles in both directions with daily westbound flows very slightly higher than daily eastbound flows
- Average weekend traffic volumes are around 21,000 vehicles in both directions with eastbound flows very slightly higher than westbound flows
- Heavy vehicles make up around 24% of total traffic on an average weekday

¹ Spackman Mossop Michaels, "Great Western Highway: Medlow Bath Urban Design Concept, Landscape, Character, and Visual Impact Assessment Report", July 2021

- On a weekend, they make up around 12% of total traffic. Most of the traffic is light vehicles, although this does vary between weekdays and weekends.²

The proposal corridor is accessible via two intersections: one at Bellevue Crescent and another at Railway Parade westbound. The corridor provides access to a service station, Hydro Majestic Pavilion and Hotel, a Mazda Dealership, and Medlow Bath Station. Figure 7 illustrates the eastbound approaches to both intersections noted above.



Figure 7: GWH and Bellevue Crescent (Left) – GWH and Station Street (Right)

Source: Google Street View, 2020

As outlined in the Traffic and Transport Assessment Report, traffic volumes, delays, and level of service vary between both sections of the proposal corridor. While the conditions at the intersection at Station Street and GWH are generally good, the intersection at Bellevue Crescent is moderate owing to the lack of a controlled intersection. The Blue Mountains and the Medlow Bath area attracts significant weekend traffic. It is a popular tourism destination for weekend travellers attracting 20% more on weekends than on weekdays.

Table 13: Existing 2020 Intersection Performance

Intersection	Existing Control	Peak Hour	Traffic Volume (veh/h)	Average Vehicle Delay (secs)	Level of Service (LOS) ³	Degree of Saturation (DOS) ⁴	95 Percentile Queue Lengths (m)
Great Western Highway & Railway Parade	Signalised	AM	1,441	6	A	0.3	54 (West Approach)
		PM	1,482	6	A	0.3	54 (West Approach)
Great Western Highway & Bellevue Crescent	Stop (unsignalised)	AM	1,434	26 (North Approach)	B (North Approach)	0.49	2 (North Approach)
		PM	1,476	31 (North Approach)	C (North Approach)	0.48	2 (North Approach)

² Mott McDonald, “Traffic and Transport Report: Great Western Highway Upgrade Program - Medlow Bath Preferred Concept Design, Detailed Design and REF”, May 2021.

³ Level of Service ranking criteria factors in average vehicle delay, traffic signal, roundabout, give-way and stop signs and how this contributes to vehicle movements and safety. Refer to the *Traffic and Transport Report* for the detailed criteria matrix.

⁴ Degree of Saturation is the ratio of traffic volumes and road capacity of a particular road segment. Refer to the *Traffic and Transport Report* for further details.

Going forward, traffic modelling suggests the traffic is anticipated to grow as follows:⁵

- Light Vehicles – 0.53%
- Rigid Vehicles – 1.84%
- Articulated – 1.26%.

Figure 8 demonstrates the total daily traffic volume on the GWH, applying a linear growth rate through to 2036.

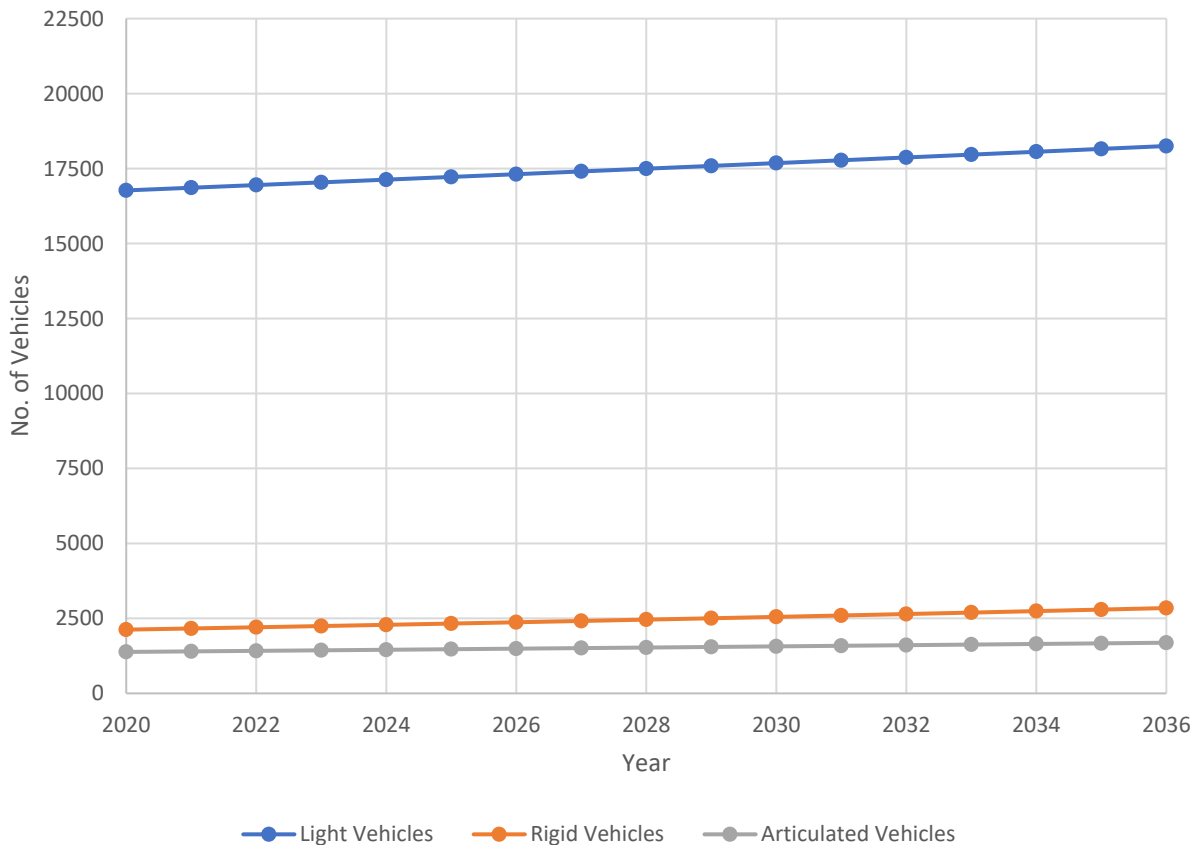


Figure 8: Estimated Daily Traffic Volume on the GWH (Without Proposal)

A review of crash data within the Medlow Bath alignment over a five-year period ending in 2019⁶:

- Nine crashes recorded along the Medlow Bath corridor
- Nil fatality crashes
- One serious injury crash, at the dividing road westbound
- Five moderate injury crashes
- Three non-casualty towaway crashes.

⁵ Mott MacDonald, "Traffic and Transport Report: Great Western Highway Upgrade Program - Medlow Bath Preferred Concept Design, Detailed Design and REF", May 2021, Chapter 4.

⁶ Mott MacDonald, "Traffic and Transport Report: Great Western Highway Upgrade Program - Medlow Bath Preferred Concept Design, Detailed Design and REF", May 2021, Chapter 2.6 (page 20).

Spatial grouping of crashes illustrates that there is a safety concern at the Bellevue Crescent intersection where 44% of total vehicle crashes occurred at this location.

4.4.2 Public Transport

The Medlow Bath is served by a rail station located at the northern extent of the study area at the intersection of Station Street, Railway Avenue, and the Great Western Highway. The station is serviced by The Blue Mountains Line (BMT), running dual directions between Central Station and Bathurst. Table 14 summarises the train service times and frequencies.

Table 14: Train Frequencies at Medlow Bath Station

Direction	Time	Monday to Friday	Weekends and Public Holidays
Central to Bathurst	6am-7pm	13	16
Bathurst to Central	6am-7pm	13	18

The station is accessed by two entrances: a refuge crossing to the south (leading north to an existing pedestrian bridge) and a level crossing at the intersection of Station Street, Great Western Highway, and Railway Avenue. The northern entry is accessed by two routes. One route is the level crossing connecting to the intersection north west of the station. The second point is an existing pedestrian bridge that links the station to a footpath that runs parallel to the Great Western Highway and the south western side of the highway via a refuge crossing.

The southern entry exits to a level crossing that provides a non-compliant accessible route to the rail platform but also provides links to Medlow Bath Park, Public Parking along Railway Parade, existing school Bus drop offs, an informal 'kiss and ride', and the residences toward the south-east of Medlow Bath.

Additionally, the proposal corridor is served by bus routes that connect the Blue Mountains villages along the GWH. Currently there is one westbound and eastbound bus stop location in Medlow Bath in proximity to the school bus facilities located on Railway Parade. The Medlow Bath corridor is serviced by the following bus routes:

- 698 – Katoomba to Blackheath (Loop Service) runs across the entire length of the proposal
- 698V – Katoomba to Mt Victoria (Loop Service) runs across the entire length of the proposal
- 8718 – Blue Mountains Christian School to Hazelbrook Station. This is a school bus that only runs eastbound.

4.4.3 Active Transport

The existing pedestrian connections with the proposal corridor are minimal. The footpaths along the GWH are visually exposed with little to no shade or protection from noise and high levels of traffic along the highway.

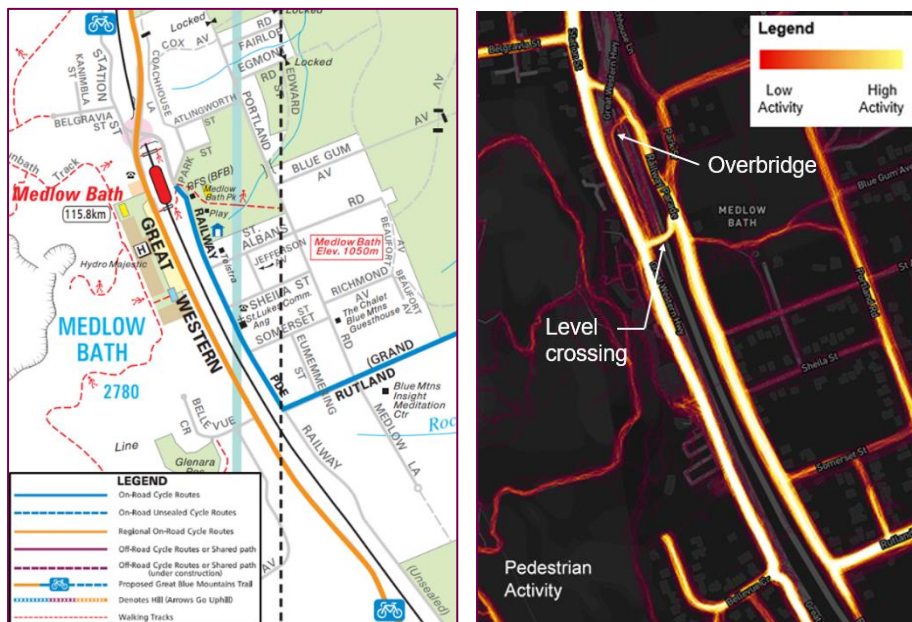
Pedestrian access to the existing commuter car park, bus stop and kiss and ride is via Railway Parade, however, there are non-compliant footpaths onto the station platform and no footpaths between the northern access and the accessible entry in the south along Railway Parade.

Existing cycling and pedestrian links are located along the corridor in the form of the Blue Mountains Trail, which provides recreational links to the Greater Mountains Area. Although pedestrian access is well patronised in the form of bushwalkers and recreational walkers, safe pedestrian amenity is lacking around Railway Parade and local roads to the east; with accessible links to the existing Medlow Bath Train platform only exist via a level crossing at the southern end of the platform. Some of the key active transport features include:

- A push button activated pedestrian crossing on the westbound approach of the GWH / Railway Parade intersection

- A zebra crossing across the left turn slip lane from Railway Parade to GWH that connects to a footpath from a pedestrian overbridge north of the station platform
- A pedestrian/railway level crossing south of the station platform that is accessed from the western side of the GWH via a refuge crossing, which can accommodate around three people at a time
- A paved pedestrian footpath on the west side of the GWH
- A paved pedestrian footpath along the east side of the GWH extending between the level crossing and the overbridge, and
- Within the vicinity of the station, pedestrian facilities in the form of footpaths and public furniture; however, cycling facilities (e.g., bicycle parking) is lacking.

Figure 9: Cycle Routes (Left) – STRAVA Heatmap of Pedestrian Activity (Right)



Source: Blue Mountains City Council, as referenced by MRB Technical Services, Traffic and Transport Report

Constructions works could potentially impact heritage structures within the study area.

4.4.4 Geology, hydrology, and contamination

As it is noted that the Medlow Bath Landscape is that of shallow soil, and with a topography leading to a rapid cliff-like drop, it is highly likely that the groundwater flow from the Medlow Bank Landscape discharges into the sands below the sandstone escarpment, flowing then on to the surface of the granite bedrock.⁷

The surrounding landscape generally slopes west towards the Warragamba landscape, which greatly influences the flow of groundwater in an area with very shallow soil depth. This landscape is that of low salinity, with a low salt load (export) and hence, a relatively high quality of fresh water.

There are no known presence or risk of acid sulphate soils occurring in the vicinity of the study area.

An online search for the NSW EPA contaminated land record database was undertaken on 8 December 2020 for records within the Blue Mountains City Council. The search yielded no records for contaminated land near or within the Study area (within 500 metres).

⁷ Mott MacDonald, “Great Western Highway Upgrade – Medlow Bath, Stage 1 – Preliminary Contamination Report”, December 2020 (pages 17 – 22).

REPORT

An online search of the NSW EPA POEO register database was undertaken on the 25 November 2020 for records that lie within or near (within 500 metres) the Study area. The search identified no records within this vicinity.

A site visit and desktop review confirmed that the address of 90-92 Great Western Highway (United Petroleum Station) contains petroleum on-site, including petroleum stored in underground tanks.

A site inspection walk-through of the study area identified in Figure 10 below was performed in November 2020 to identify potential or actual contamination from current land uses. The following was observed⁸:

- A petrol station at 90-92 Great Western Highway, Medlow Bath has been there more than 20 years and is a source of potential hydrocarbon contamination from uncontrolled spills, surface water run-off and underground petroleum storage (refer to Figure 10)
- Evidence of unknown fill material and unregulated waste dumping in the study area, along the Great Western High and Blue Mountains Rail Line (refer to Figure 10)
- Potential historic risk of soil and groundwater contamination due do hydrocarbon spills, chemical storage and battery storage at the car dealership located at 42 Great Western Highway
- No evidence identified of soil and groundwater contamination because of historic road crashes
- Asbestos utility conduits were located between Great Western Highway and Medlow Bath Station, identified in the map below (refer to Figure 10)
- Fill material from an unknown source of historical road construction was identified at several locations (refer to Figure 10)
- Ballast was observed at the southern end of the study area at 181-183 Greater Western Highway (refer to Figure 10).

⁸ Mott MacDonald, "Great Western Highway Upgrade – Medlow Bath, Stage 1 – Preliminary Contamination Report", December 2020 (pages 17 – 22).

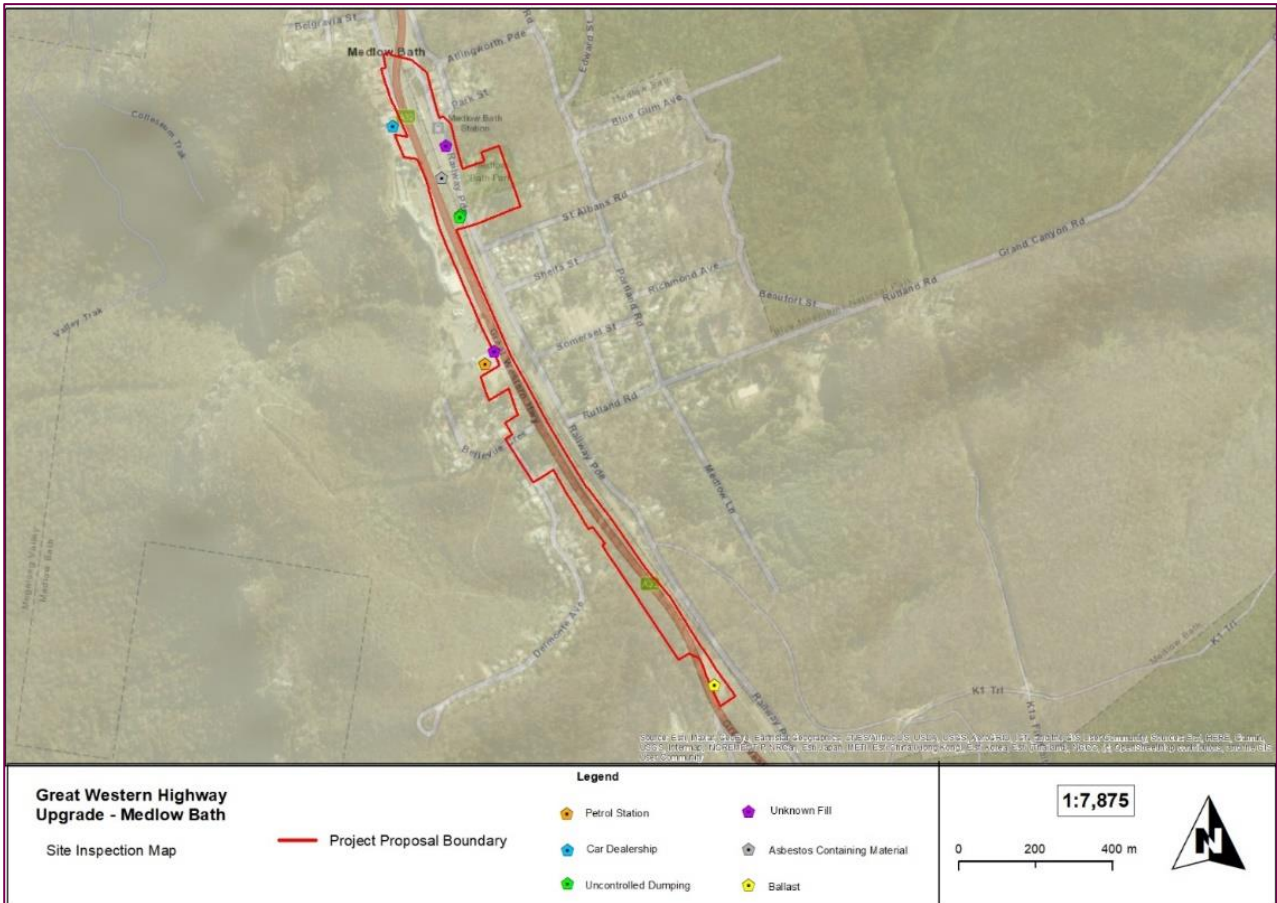


Figure 10: Site inspection areas of potential contamination risks

4.5 Social Infrastructure and Community Facilities

4.5.1 Shops and Services in the Study Area

Businesses near the proposal are summarised in the Table 15 below and include retail, hotels, a service station, and a car dealership. These include businesses that cater for the needs of the local community. For example, service stations and the Hydro Majestic hotel and other Bed and Breakfast accommodation providers.

Table 15: Businesses in the Study Area

Locality	Nature of businesses
Great Western Highway (Coachhouse Lane to where Railway Parade intersects with the K2 Trail)	<p>The Northern end of the Great Western Highway portion of the study area and adjacent streets contains the following mix of businesses:</p> <ul style="list-style-type: none"> • The Hydro Majestic and Bed and Breakfast accommodation including Delmonte, Holly Lodge, Glenbogle, The Gatehouse, The Whitebarn, Maple View, Murrarang, Cabin Retreat, The Beacon and The Chalet Guesthouse and Studio • Cafes and restaurants, such as Synonymous, Boiler House and Salon Du Bar • United Petroleum Service Station • Blue Mountains Mazda Dealership.

Source: Google Maps; various community and business websites

4.5.2 Social Infrastructure within in the Project Corridor

There are parks, reserves, trails, and creeks near the study area that provide key recreation, cultural and other public services to support the local community and tourism. Table 16 and Table 17 summarises the key infrastructure and assets near the study area that could be subject to direct or indirect impacts.

Additionally, there are several shopping facilities, sports and recreation, education and health care social infrastructure that could be impacted directly or indirectly by the work. Travel and visitation of businesses within the project corridor will be influenced by persons passing through the area or visiting those facilities.

Table 16: Social Infrastructure, Nature and Recreation Facilities

Name	Location	Description
Medlow Bath Park	Railway Parade	Medlow Bath Park can be viewed and accessed from Railway Parade, Portland Road or Atlingworth Parade. It is a park that can be accessed by community members.
Blackheath Glen Reserve	Megalong Road	The Blackheath Glen Reserve can be accessed from Megalong Road and borders on the Pulpit Hill Creek, which is due West of the Great Western Highway. It is a free camping ground amongst native bushland which can be accessed by community members.
Coachwood Glen Nature Trail	Megalong Road	The Coachwood Glen Nature Trail can be accessed from Megalong Road and borders on the Pulpit Hill Creek and is north-east of the Medlow Baths portion of the Great Western Highway. It can be accessed by members of the community for bushwalking and contains a small carpark. The trail forms a loop which takes less than half an hour to walk and is approximately 600m.
Pulpit Hill Creek	Megalong Road	The Pulpit Hill Creek flows south from Blackheath and through the Coachwood Glen Trail and Blackheath Glen Reserve for about 13kms before it joins the Coxs River.
Lake Medlow Dam / Adams Creek	Portland Road	Previously known as the Adams Creek Dam, the Lake Medlow Dam was built in 1907, and supplies water to the middle and upper Blue Mountains area.

Source: Google Maps; community and business websites

Table 17: Public Services

Name	Location	Description
Medlow Bath Station	Intersection of Station Street and Railway Parade	The Medlow Bath Train Station is heritage listed and is located on the Main Western Line. The two key routes from this stop include the Bathurst to Central and Central to Bathurst routes. It can be accessed from Station Street or Railway Parade.
Bus Stops	Medlow Bath Station	There are three bus routes which pass through the Medlow Bath Station. These being, the 698 Katoomba to Blackheath (loop service), 698V Katoomba to Mt Victoria (loop service) and 8718 Blue Mountains Christian School to Hazelbrook Station service.
Commuter Car Park	Railway Parade	There is a commuter car park which can be accessed by the public from Railway Parade.

Source: Google Maps; State and local government websites

4.5.3 Shops and Services Near the Proposal

There are relatively few shops and services within the project corridor. As a result, residents must travel elsewhere in the Blue Mountains LGA for shops, services, and facilities that support the day-to-day needs of the wider communities, in particular the Katoomba-Leura and Blackheath and Wentworth Falls townships, which are closest to the study area. These include education facilities, health and medical services, sports, recreation and leisure facilities, and community and cultural facilities. Table 18 summarises shops and services near the proposal.

Table 18: Summary Key Shops and Services Near the Proposal

Type	Nature of businesses
Shopping facilities	Bunnings Katoomba, Coles Katoomba, Woolworths Katoomba, Caltex Woolworths and BP Service Stations, Terry White Chemmart
Sports and recreation	Leura Cascades Picnic area, Katoomba Falls Tourist Park, Scenic World, various lookouts, Three Sisters, Leuralla Toy and Railway Museum, Blackheath Gardens, Blackheath Memorial Park, Campbell Rhododendron Garden, Blue Mountains Heritage Centre, Blackheath Golf and Community Club, Blackheath Mitre 10, Blackheath Friendly Grocer, Blackheath Area Neighbourhood Centre, Blackheath Oval, Blackheath Fitness Centre, Jubilee Park, Wild Valley Art Park, Wentworth Falls Tracks and Lookout, Leura Golf Club
Religious centres, Education and health care	St Aidan's Anglican Church, Saint Francis Xavier's Catholic Church, Saint Bonaventure's Church, Mountains Christian College, TAFE NSW, Blue Mountains Grammar School, Wentworth Falls Public School, Wentworth Falls School of Arts

Source: Google Maps; Blue Mountains community websites

As a result, negative impacts for access to shops and services are unlikely, and over the longer-term residents could potentially benefit from better access and reduced travel times.

4.6 Community Values

Community values relate to aspects of a community that are important to residents for quality of life and well-being. They include physical elements such as parks, landscapes and connectivity, and intangible quality such as sense of place and community cohesion.

4.6.1 Landscape, Amenity, and Biodiversity

The character of the landscape and amenity is the product of the landform and vegetation, views and vistas, settlement patterns, land use and built structures. The landscape character also includes historical elements such as surviving features and the past interactions between people and places, which combine to shape the overall amenity.

Predominantly, Medlow Bath and the surrounding area has a land use that reflects its links to the environment. Much of Medlow Bath is currently zoned as Environmental Living (E4) and made up of low-density residential development that has a prominent rural character.

In addition to the Environmental living zones, Medlow Bath Park, along Railway Parade provides Medlow Bath with public amenity in the form of local outdoor space, with consideration required to ensure pedestrian linkages to the rail station and proposed pedestrian bridge across the Great Western Highway.

As outlined in Section 5.2 of the *Great Western Highway: Medlow Bath Urban Design Concept, Landscape, and Visual Impact Assessment*, the proposal corridor is composed of three distinct landscape types:

- Zone 1 Enclosed Bushland: High quality plant communities, heavily vegetated enclosed bushland with prominent rock cuttings, edged by roadside vegetation
- Zone 2 Medlow Bath Western Plateau: Plateau adjacent to the Megalong Valley escarpment, Rich in high visual and scenic qualities
- Zone 3 Medlow Bath East Village: Flat to gently undulating topography, predominantly low-density housing surrounded by remnant stands of woodland vegetation and mature planted exotics.

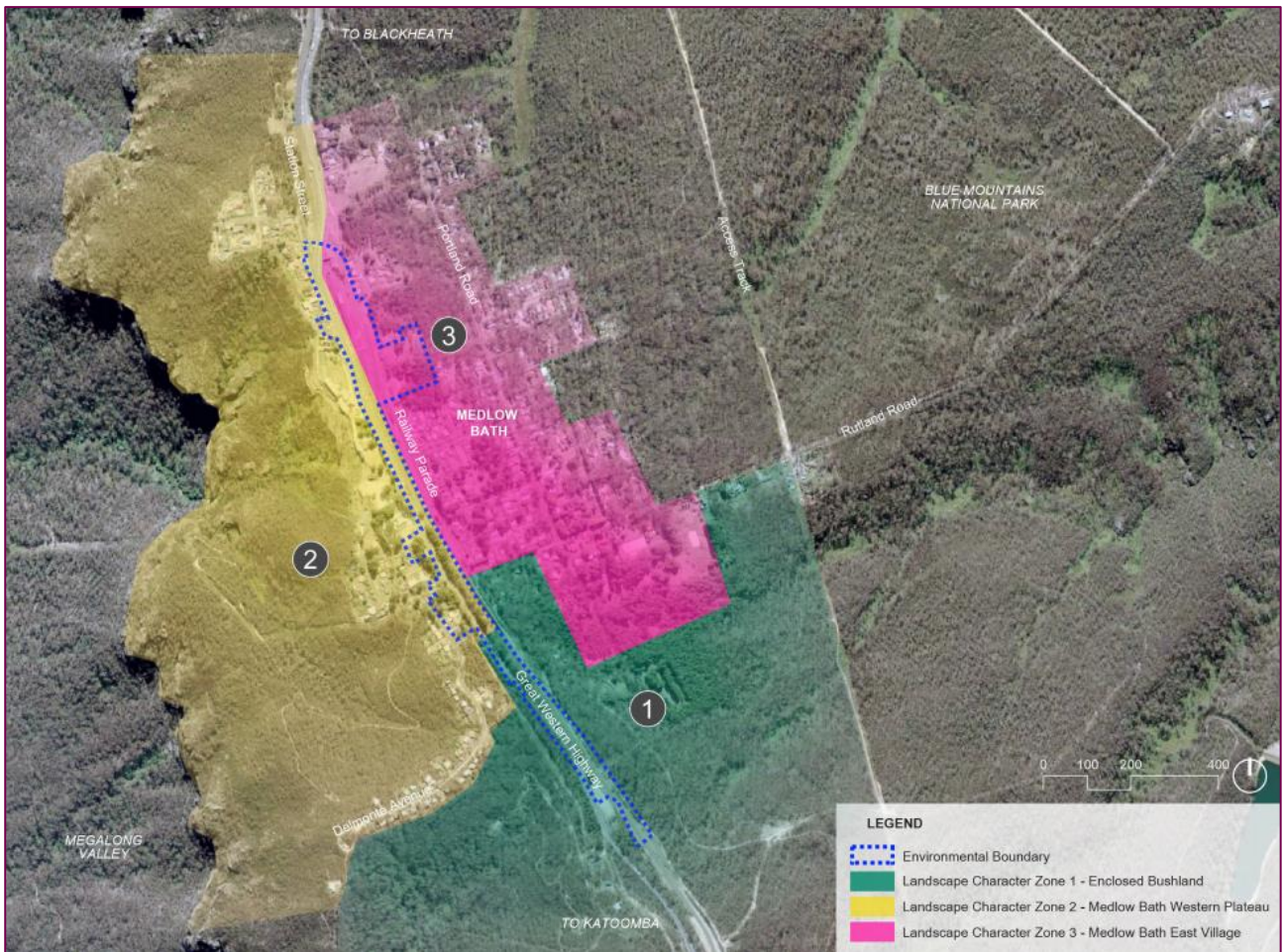


Figure 11: Proposal Corridor Landscape Overview

Source: Spackman Mossop Michaels, 2021

Zone 1 Enclosed Bushland sits adjacent to the road and rail corridor and is predominantly native vegetation, open-forest, and open-woodland. The buildings within this zone are low density environmental living that are surrounded by dense vegetation. Given the enclosed nature of the zone, there are minimal views or vistas; however, there are several elevated areas to the west that have filtered views to bushland in the east.

There are few public domain facilities in this zone. Mount Mark (just prior to entering Medlow Bath) provides recreational bushwalking tracks that link pedestrians to the Greater Blue Mountains Trail. Additional key activity areas include a mix of recreational tracks in heavily vegetated bushland and cycling along the GWH shoulder that provide cyclists access connecting to surrounding destinations.

Figure 12: Enclosed Bushland Landscape and Amenity



Source: Spackman Mossop Michaels, 2021

Zone 2 Medlow Bath Western Plateau can be characterised as a relatively flat ridgeline that sits atop the Megalong Valley. The landform is generally flat overlooking the valley via a steep escarpment to the west. To the west of the built elements the vegetation comprises of undisturbed native vegetation, open-forest, and open-woodland communities.

The streetscapes of the GWH and secondary roads are lined with mature deciduous trees including an avenue of Radiata Pines adjacent to the rail station, which creates a unique layering of vegetation, allowing for autumn colour and winter light for road users and pedestrians.⁹

The built form is a mix of low-density environmental living development with commercial elements. The Hydro Majestic Hotel, visible from the highway, is the most dominant structure in this zone. It is surrounded by other forms of commercial buildings such as the Blue Mountains Mazda dealership and a service station. The GWH and rail corridor define the eastern edge of this zone and contrast against the surrounding bushland.

There are minimal public amenities within the zone. They are generally limited to walking trails in vegetated bushland along Sunbath Track and are publicly accessible adjacent to the Hydro Majestic Pavilion. Additional activities in this area include bushwalking along the recreational tracks in bushland, recreational walkers along the existing footpath adjacent to the highway, as well as cycling along the GWH shoulder.

Figure 13: Medlow Bath Plateau Landscapes and Amenity



Source: Spackman Mossop Michaels, 2021

Zone 3 Medlow Bath East Village is characterised by flat to gently undulating landscape with a varied vegetation including woodlands and other mature planted exotic trees. There is a highpoint at the existing main entry into the Medlow Bath station at Railway Parade/Station Street, which allows for clear sight lines and identification of access points.¹⁰

There are extensive areas of bushland which exist along the eastern edge of this zone and is predominantly native vegetation open-forest and open-woodland communities within the edge along the Blue Mountains National Park. The zone contains a range of deciduous exotic tree species with some native vegetation.

The built form can be characterised as rural residential properties and small businesses, including a cafe and various retreats and accommodation. The buildings are low density environmental living development, surrounded by dense vegetation and backing onto the Blue Mountains National Park on the north-east and eastern edge.

The public amenity to residents and tourists includes bushwalking tracks to the east into the World Heritage listed Blue mountains national Park, as well as off road cycling routes that link to Point Pilcher. Additional public domain facilities include Medlow Bath Park, which provides picnic seating and a playground, seating areas, and somewhat shaded walking tracks.¹¹

⁹ Spackman Mossop Michaels, "Great Western Highway: Medlow Bath Urban Design Concept, Landscape, and Visual Impact Assessment", July 2021.

¹⁰ Spackman Mossop Michaels, "Great Western Highway: Medlow Bath Urban Design Concept, Landscape, and Visual Impact Assessment", July 2021.

¹¹ Spackman Mossop Michaels, "Great Western Highway: Medlow Bath Urban Design Concept, Landscape, and Visual Impact Assessment", July 2021.

Figure 14: Medlow Bath East Village



Source: Spackman Mossop Michaels, 2021

With respect to the proposal corridor’s biodiversity, and as outlined in *Medlow Bath Biodiversity Assessment*, the corridor field studies provided an inventory of terrestrial and aquatic flora and fauna, including a list of known and potential threatened communities.

The field study identified one plant community type (Sydney Peppermint - Silvertop Ash) that occurs in two condition classes (i.e., moderate and poor) but does not form part of a listed threatened ecological community (TEC). The remainder of the study area were classified as highly disturbed roadside areas comprising mostly exotic grasses, herbs, shrubs, and trees.¹²

Additionally, a background review and general surveys were conducted for threatened flora and fauna species that could potentially occur within the study area; however, no threatened flora or fauna species were identified. Further, the study area does not comprise any areas classed as key fish habitat and no aquatic species nor critical habitat were identified.

Six viewpoints were selected as part of the Visual Impact Assessment (refer to Figure 15).¹³ Visual receivers comprise of residents, tourists, recreational and park users, pedestrians, cyclists, and motorists. Viewable project elements include the pedestrian bridge, widened dual carriageway road, upgraded shared path, widened median and new trees and vegetation. It is expected that the pedestrian bridge and associated works are more likely to be seen from greater distances, due to the approximate height of this structure being 9.1 metres.

¹² RPS Australia East, “*Medlow Bath upgrade Great Western Highway Biodiversity Assessment*”, May 2021.

¹³ Spackman Mossop Michaels, “*Great Western Highway: Medlow Bath Urban Design Concept, Landscape, and Visual Impact Assessment*”, July 2021



Figure 15: Visual Impact Assessment viewpoint locations

4.6.2 Aboriginal and Natural Heritage

There are ten Aboriginal sites¹⁴ identified within 50 metres either side of the proposed construction centreline of the overall Great Western Highway Upgrade Program.¹⁵ These include, seven stone artefact sites, one stone artefact site with a scarred tree and two rock shelters with associated Potential Archaeological Deposits (PAD). One new Aboriginal rock shelter PAD site, one new Aboriginal scarred tree and one new open stone artefact site was identified during the present archaeological survey.

There are no Aboriginal heritage sites within the Medlow Bath Study area. All ten Aboriginal sites that have been identified are within other sections of the Great Western Highway corridor.

¹⁴ Jacobs, *Great Western Highway Duplication – Katoomba to Lithgow, Archaeological Survey Report*, September 2020, (page iii).

¹⁵ The Archaeological Survey Report pages 1 & 44 notes 11 sites; however, the description in the Executive Summary notes 10 sites. RPS have amended this to note 10 based on what was counted from the description in the Executive Summary.

4.6.3 Non-Aboriginal Heritage

As outlined in the *Great Western Highway Upgrade Medlow Bath Statement of Heritage Impact*, the proposal is home of several notable non-aboriginal heritage items described below.

Medlow Bath Railway Station
Medlow Bath Station Group is of historical significance as part of the early construction of railway line duplication to the upper Blue Mountains at the beginning of the 1900s. It was built in anticipation of a boom period in the mountains, particularly in connection with large holiday resorts such as the nearby Hydro-Majestic Hotel.



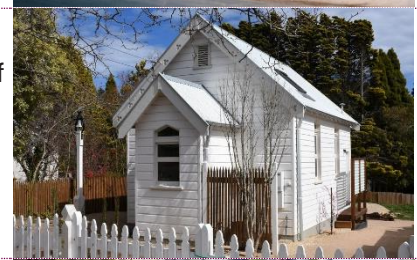
Hydro Majestic
The Hydro Majestic is a unique overlay of hotel building styles including the prefabricated Casino, federation free-style reception buildings, art deco main wings, and the federation free classical south wing. The hotel also includes several freestanding buildings like the north bunkhouse, toilet block and rear of the Road Bar. The art collection and the cuisine further enhance the social significance of the Hydro.



Former Post and Telegraph Store
The hall and store are associated with the Hydro Majestic and Mark Foy's touristic entrepreneurship. The former Post and Telegraph Office and Store is an unusual example of a Federation gothic shopfront. It had a high local profile as a centre for dances, films and, after World War II, a wide variety of Catholic and community functions, while the store and post-office played their usual key role.



St Luke's Anglican Church
St Luke's Church of England is a representative example of a Federation carpenter gothic church built for a small rural village. The church has had social significance for the Anglican community around Medlow Bath for over eighty years.



Horse Troughs
While they were erected when the days of the horse on the roads were almost over, the Annis and George Bills horse-troughs have local significance given the local philanthropy towards animals.



Avenue of Trees
The avenue is a part of the significance of the Hydro Majestic. Viewed as part of the whole, aesthetically, and historically, the avenue, like the hotel, has state significance.



'Urunga'
Cottage

Together with the railway, the historical growth in rail traffic, and the Hydro Majestic the cottage local historical significance.



Melbourne
House, Cosy
Cot, Sheleagh
Cottage

The group of four houses were all constructed in the first decade of the twentieth century and demonstrate the growth of Medlow Bath at the time. The group are an eclectic mix of houses representing the architectural styles of the period.



5 IMPACT ASSESSMENT

5.1 Access and Connectivity Impacts

5.1.1 Construction Impacts

Construction is expected to take around 20 months to complete. A Construction Traffic Management Plan (CTMP) would be developed specifying how through traffic would continue to flow and how access for residents would be maintained.¹⁶

- The main impact on residents and businesses will likely stem from traffic movements of light and heavy construction vehicles. The proposal will generate heavy vehicle movements associated with:
 - Delivery of construction materials
 - Spoil and waste removal
 - Delivery and removal of construction equipment and machinery
 - Movement of materials

As the proposal includes widening the road, construction will occasionally require altered traffic operations at times (e.g., temporary realignment of traffic). However, most high traffic activities will be encouraged to be held during off peak hours to minimise delays and congestion.

Additionally, as outlined in Section 2.7 (Figure 2.15) of the Traffic and Transport Report, 40 perpendicular parking spaces along the western side of the GWH would be temporarily removed during the construction phase.¹⁷ However, the railway commuter carpark will not be impacted during the construction phase.

Lastly, there are several properties with direct access to the road network within the proposal corridor which will experience some impacts with respect to ease of access. Access to affected properties will be maintained throughout, and temporary changes to property access will be provided where required. TfNSW will work with DPIE to ensure local road connectivity is maintained for users during construction.

5.1.2 Operational Impacts

At present the traffic flows are generally uncongested at the intersection of Station Street, Railway Parade, and the GWH. However, the level of service at Bellevue Crescent is currently moderate and will benefit from the proposed enhancements.

Table 19: Comparison of Intersection Performance (Without and With Proposal)

Performance		AM Peak Without	AM Peak With Proposal	PM Peak Without	PM Peak With Proposal
GWH/Railway Pde	Traffic Volume (veh/hr)	1,531	1,718	1,643	1,949
Intersection	Level of Service	Grade A	Grade A	Grade A	Grade A
Bellevue Crescent	Traffic Volume (veh/hr)	1,591	1,894	1,629	1,966
Intersection	Level of Service	Grade C (North Approach)	Grade A	Grade C (North Approach)	Grade A

¹⁶ RPS notes that the traffic assessment report did not contain analysis concerning the anticipated impacts to traffic volumes, queue times, and level of service during the construction period. We assume these have minimal impacts and are reasonably what could be managed in line with established practice.

¹⁷ Mott McDonald, "Traffic and Transport Report: Great Western Highway Upgrade Program - Medlow Bath Preferred Concept Design, Detailed Design and REF", May 2021, Chapter 2.6 (page 21).

Over the long term, as noted in Table 20 to Table 22, the proposal is expected to improve travel times, particularly at the intersection of GWH and Bellevue Crescent on both weekdays and weekends.¹⁸

Table 20: Modelled Intersection Performance (Weekday), 2036 Baseline Scenario (without Proposal)

Intersection	Control	Peak Hour	Traffic Volume (veh/h)	Average Vehicle Delay (secs)	Level of Service (LOS)	Degree of Saturation (DOS)	95 Percentile Queue Lengths (m)
Great Western Highway & Railway Parade	Signalised	AM	1,531	12	A	0.35	81 (West Approach)
		PM	1,643	12	A	0.39	94 (West Approach)
Great Western Highway & Bellevue Crescent	Stop (unsignalised)	AM	1,591	38 (North Approach)	C (North Approach)	0.56	4 (North Approach)
		PM	1,629	39 (North Approach)	C (North Approach)	0.55	4 (North Approach)

Table 21: Modelled Intersection Performance (Weekday), 2036 Project Scenario (with Proposal)

Intersection	Control	Peak Hour	Traffic Volume (veh/h)	Average Vehicle Delay (secs)	Level of Service (LOS)	Degree of Saturation (DOS)	95 Percentile Queue Lengths (m)
Great Western Highway & Railway Parade	Signalised	AM	1,718	12	A	0.38	89 (East Approach)
		PM	1,949	13	A	0.45	108 (West Approach)
Great Western Highway & Bellevue Crescent	Signalised	AM	1,894	6	A	0.35	66 (East Approach)
		PM	1,966	5	A	0.35	63 (East Approach)

¹⁸ Mott MacDonald, "Traffic and Transport Report: Great Western Highway Upgrade Program - Medlow Bath Preferred Concept Design, Detailed Design and REF", May 2021, (pages 37 - 41).

Table 22: Modelled Intersection Performance (Weekend), 2036 Project Scenario (with Proposal)¹⁹

Intersection	Control	Peak Hour	Traffic Volume (veh/h)	Average Vehicle Delay (secs)	Level of Service (LOS)	Degree of Saturation (DOS)	95 Percentile Queue Lengths (m)
Great Western Highway & Railway Parade	Signalised	2.30-3.30pm	2,409	13.7	A	0.56	149 (West Approach)
Great Western Highway & The Hydro Majestic	Stop (unsignalised)	2.30-3.30pm	2,372	4.4 (West Approach)	A (West Approach)	0.37	<1 (North Approach)
Great Western Highway & Bellevue Crescent	Stop (unsignalised)	2.30-3.30pm	2,363	4.2 (West Approach)	A (West and East Approach)	0.37	<1 (West and East Approach)
Great Western Highway & Bellevue Crescent	Signalised	2.30-3.30pm	2,427	5.3	A	0.43	85 (East Approach)

Most of the benefits for residents and business will be from the improved active transport elements of the proposal. The improvement of pedestrian connections around Medlow Bath Rail Station will allow for increased pedestrian permeability to the station and promote safer connections between residential and recreational land uses in the east, and the commercial and recreational land uses in the west.

Pedestrian upgrades also allow the opportunity for accessible transitions between modes of transport, safer 'kiss and ride' drop offs and safer road legibility through traffic calming measures incorporated into landscaping and pedestrian path design.

Summary of Key Findings

During the construction period, the access and connectivity impacts are likely to be:

- Light and heavy vehicle movements to and from proposal due to construction activities
- Constrained parking due to increased demand from construction workers and trades
- Occasional disruption to traffic and pedestrian flows to accommodate construction activities.

Given the relatively rural and low-density character of the area, negative impacts are expected to be temporary and minimal.

Over the long term, residents and businesses along the proposal corridor will benefit from improved access and connectivity, especially with respect to pedestrian and active transport safety and amenity.

¹⁹ The *Traffic and Transport Report* did not contain a weekend intersection performance baseline projection scenario for 2036.

Alternative Design for Bellevue Crescent

The alternative design for Bellevue Crescent will block existing access from Bellevue Crescent to the GWH for Residents. The alternative design will also mean that the U-turn bay will not be constructed on Bellevue Crescent.

Bellevue Crescent and Delmonte Avenue residents will no longer be able to access the Great Western Highway from the existing Bellevue Crescent and GWH intersection. The alternative design will result in the construction of a new corridor which borders the southern perimeter of the United Petrol Station and leads to Bellevue Crescent and Delmonte Avenue. It will replace the existing access point currently on Bellevue Crescent from the GWH. Residents fronting the Great Western Highway will not be affected as driveway access to a shared road/path will be provided for their properties. Residents living in this vicinity will not be significantly impacted by accessing their properties in a timely manner.

5.2 Social Infrastructure Impacts

Given the rural and bushland nature of Medlow Bath, impacts to amenity and biodiversity should be considered in parallel with social infrastructure assets.

Overall, the social infrastructure is expected to experience only negligible impacts. During construction, there will be temporary displacement of some footpaths and cycling infrastructure, which would obstruct access to some of the rural recreational and historic assets. However, over the long term the proposal will provide improved footpaths and pavement within the proposal corridor, a pedestrian bridge connecting Railway Parade, Medlow Bath Train Station, and new indented bus bays on both sides of the highway as well as shared pedestrian/cyclist paths adjacent to the westbound carriageway corridor.

In terms of visual amenity, viewable project elements include the pedestrian bridge, widened dual carriageway, Railway Parade road formalisation and new footpath, upgraded shared pathway, widened median and new trees and vegetation.

The addition of the viewable pedestrian platform (elevated above the highway and railway) will result in the removal of the pedestrian crossing along the railway line. Pedestrians will now be able to more safely cross over the railway line and GWH. Trains that cross through Medlow Bath Station are required to sound their horn to alert pedestrians. The removal of the railway pedestrian crossing will mean that trains no longer must sound their horn, and this will positively contribute to the noise environment and amenity in the area.

Of the of the six viewpoints that will be impacted, three of these will have a moderate visual impact, and three of these will have a moderate-low visual impact. Visual impacts are broadly consistent at each viewpoint during construction and includes the removal of some trees and vegetation during construction, increased construction vehicle movement and site related machinery and material stockpiles.

Summary of Key Findings

During the construction period, the community values and amenity impacts are likely to be:

- Removal of some established trees during construction
- Areas impacted by construction will be rehabilitated, including planting of new trees and vegetation alongside the road and on the median
- Visual impacts during construction would be minimal, and over time, the planting of new trees and vegetation would result visual impact and amenity benefits.

Over the long term the project is likely to result in improved safety, access, and connectivity within the area once complete. Replanting of trees and vegetation will have positive visual and amenity impact on the area.

5.3 Community Values and Amenity Impacts

5.3.1 Construction Impacts

Noise and vibration from construction activities have the potential to disrupt amenity for occupants of some residencies and businesses in proximity to the project corridor. It is likely that vibration generating equipment will be in use within 10 metres of buildings/structures and as such it is unlikely that there will be vibration with potential to cause damage to buildings/structures.

Impacts from vibration may also result in impacts to building structure (cosmetic damage). Of these considerations, the human comfort criteria are the more stringent and if compliance with human comfort criteria is achieved, it will follow that compliance is achieved for the building damage objectives.

The German Standard Structural Vibration, Part 3: Effects of Vibration on Structures (DIN 4150-3) identifies more stringent vibration levels for building damage and includes a category specifically for heritage buildings which would be applied for the proposal. Further consideration would be given to heritage structures throughout the detailed design stage to ensure adequate mitigation and management measures are included in the construction strategy.

Construction involving concrete saws, vibratory roller, or hydraulic hammers has the potential to generate vibration levels above the human comfort threshold criteria within 30, 60 and 80 metres of residential receivers, respectively. The works could potentially impact heritage structures in the area, indicated below in Table 23.²⁰ Consideration should be made during detailed design to ensure adequate mitigations are in place to mitigate the vibration impact on heritage structures.

Table 23: Heritage structures potentially affected by vibration

Location	Distance to works (m)
Medlow Bath Railway Station	18
Hydro Majestic	16
Hydro Majestic Hotel Heritage Wall	<5
Melbourne House, 2 Station Street, Medlow Bath	16

A range of heritage receivers have been identified which would require careful consideration with respect to vibration impact when planning works. Vibration monitoring and consideration of appropriate vibration generating equipment (such as vibratory rollers) would be required throughout the construction of the project.

It is likely that most work will be undertaken during standard day-time construction hours, although night work may be required at some locations to minimise disruption to the local traffic network. However, given the proposed alignment for the road and relatively small population within the study area, this is expected to be minimal.

Construction of the proposal will require the removal of established trees along either side of the road. The area is characterised by a rural landscape and lifestyle and the proposal will potentially impact this amenity. Additionally, there may be a need to lease land for construction staging purposes, which could have a disruptive impact depending on the location chosen.

Following construction, areas impacted by construction work that are not required for permanent infrastructure will be rehabilitated, including new trees and vegetation along the road and on the median.

²⁰ Mott MacDonald, "Great Western Highway Upgrade – Medlow Bath, Noise and Vibration Technical Paper", July 2021

5.3.2 Operational Impacts

As was outlined in Section 4.6.1, the Zone 1 Enclosed Bushland is heavily vegetated and has a strong relationship with the surrounding National Park and road/rail corridor. Given bushland in this zone is important as a backdrop to the GWH it is sensitive to change and would not be easily able to absorb significant changes to the existing mature vegetation.²¹

The proposal would increase the amount of the road-related infrastructure within the zone and would require some additional clearing of mature bushland vegetation. This would result in changes to the natural landform to accommodate the project's geometric requirements (see Figure 12 previously).

However, the proposal is located within an existing corridor meaning that it would result in minimal new negative impacts. Further, the proposal would have beneficial outcomes in terms of the reduction of congestion and improvements to connectivity, which help moderate the proposal's overall impact.

With respect to Zone 2 Medlow Bath Western Plateau, the Western Plateau is both a high visual amenity overlooking the Megalong Valley and it contributes to the neighbourhood feel of Medlow Bath. The proposal would result in an increase in nearby road infrastructure; however, the works are constrained to the existing road and rail corridor, which means there is minimal new negative impacts. Further, any new negative impacts would be somewhat moderated by new plantings provided as part of the project landscape design.

Additionally, the proposal supports a reduction of congestion and the enhancement of town centre amenity for residential, business, and community uses. The provision for pedestrians and cyclists along the proposal's adjacent shared path and a new pedestrian bridge would provide additional new active transport connectivity improvements to the train station, residential areas, and for future expansion of the cycle network.

Zone 3 Medlow Bath East Village predominantly consists of low-density residential housing, which has a reasonable ability to absorb the proposed change. This is due to existing mature planting that separates the proposal with the rail corridor. While the proposal would require localised vegetation removal to accommodate new pathways and a formalised parking area, the changes would only slightly impact the local character given the current conditions along Railway Parade are similar (see Figure 14 previously).

Further, any negative impacts would be somewhat reduced over time by new vegetation provided as part of the landscape design, which would help enhance placemaking amenity. Residents and commuters would experience some additional benefits from a reduction in traffic volumes on Railway Parade, improved connectivity and safety at Medlow Bath Station, and potential for future expansion of the cyclist network.

Overall, based on the current design and given that the project is in an established corridor, the loss of vegetation and habitat will not have a notable impact on threatened species, ecological communities, and their habitats in the local area.²²

Summary of Key Findings

During the construction period, the community values and amenity impacts are likely to be:

- Minimal noise and vibration impact for residents and businesses during construction hours
- Removal of some established trees during construction
- Areas impacted by construction will be rehabilitated, including planting of new trees and vegetation alongside the road and on the median
- Visual impacts during construction would be minimal, and over time, the planting of new trees and vegetation would result in visual and amenity benefits.

Over the long term the project is likely to result in improved safety, access, and connectivity within the area once complete. Replanting of trees and vegetation will have positive visual and amenity impact on the area.

²¹ Spackman Mossop Michaels, "Great Western Highway: Medlow Bath Urban Design Concept, Landscape, and Visual Impact Assessment", July 2021.

²² RPS Australia East, "Medlow Bath Upgrade Great Western Highway Biodiversity Assessment", May 2021.

5.4 Business Impacts

Given the relatively few businesses within the project corridor, the anticipated negative impacts from construction are expected to be minimal.

As noted in Section 5.1, there will be some disruption to parking access to parking spaces located at the Hydro Majestic hotel and along Railway Avenue. Construction activities on GWH will require removal of these spaces to facilitate construction. Additionally, the presence of construction vehicles and workers is expected to increase demand for parking. However, the overall impact is expected to be minimal given the low-density nature of the area and potential for alternative parking spots.

Over the long term, during the operational period the area is expected to marginally benefit in terms of improved access and connectivity. The area may also experience some indirect benefits from the project overall as the traffic improves generally and the area becomes a more attractive destination.

Summary of key findings

During the construction period, the business impacts are likely to be:

- Reductions in street front parking for the Hydro Majestic Hotel
- Increase demand for parking along Railway Parade.

Over the long term, the operation of the proposal is not expected to negatively impact business operations within the project corridor. Where property might be negatively impacted, mitigation measures have been outlined in the next section. Additionally, businesses would likely benefit indirectly as travel through the corridor becomes easier, making it a more attractive destination.

Alternative Design for Bellevue Crescent

The United Petrol Station is expected to be positively impacted by the development of a new access route which bypasses this business, attributed to the alternative design option for Bellevue Crescent. It will improve access to the petrol station for persons travelling along the Great Western Highway, as well as those residents which live along Delmonte Avenue and Bellevue Crescent. Increased vehicle movements past this business will result in more goods and services purchased from this business.

5.5 Property Impacts

5.5.1 Construction Impacts

The preferred design option for the proposal will result in the full acquisition of three properties and partial acquisition of one property as demonstrated in Table 24. The alternative design for the Bellevue Crescent alignment option would result in the full acquisition of one additional property and partial acquisition of two properties. The alternative option will also mean that the full acquisition of lot 9/DP701200 for the U-turn bay on Bellevue Crescent would not be required.

Table 24: Property Acquisition Summary

Address	Lot(s)	Type of acquisition (full/partial)	Purpose	Option (preferred/alternative)
46 Great Western Highway, Medlow Bath	Lot C/DP413431	Partial	Western footing of pedestrian bridge	Preferred
16 -18 Railway Parade, Medlow Bath	Lot 1/1/DP2590	Full	Drainage basin	Preferred
106 Great Western Highway, Medlow Bath	Lot 9/DP701200	Full	U-turn bay on Bellevue Crescent	Preferred
128W Great Western Highway Medlow Bath	Lots 219 and 220/DP1211208	Full	Provide additional space for road corridor	Preferred
90-98 Great Western Highway, Medlow Bath	Lots 3 and 4/DP25570	Full	New Bellevue Crescent alignment option	Alternative Bellevue Crescent Option
90-98 Great Western Highway, Medlow Bath	Lot 5/DP25570	Partial	New Bellevue Crescent alignment option	Alternative Bellevue Crescent Option
52-88 Great Western Highway, Medlow Bath	Lot 20/DP25570	Partial	New Bellevue Crescent alignment option	Alternative Bellevue Crescent Option

Properties significantly affected by the proposal will be acquired by TfNSW prior to construction. This will be undertaken in accordance with the provisions of the NSW *Property Acquisition (Just Terms Compensation) Act 1991*. Consultation will be conducted with property owners prior to the relocation of this infrastructure. TfNSW has commenced consultation with affected property owners and will continue to engage with them through the detailed design phase about specific property impacts, including the acquisition process.

The proposal will require partial acquisition of the land where the Mazda Dealership is located. Entering and exiting the Mazda dealership will not be affected as a result of the acquisition.

The proposal will require full acquisition of a residential property on Bellevue Crescent. The purpose of this acquisition is for the construction of a U-turning bay on Bellevue Crescent, close to where the road intersects with the GWH.

Some properties could experience flooding impacts resulting from vegetation clearing, demolition of existing pavements and in-ground structures, trenching and excavation, and earthworks to achieve the desired road grading and verge profiles.²³

There is also a risk of potential blockages in the waterways and drainage lines due to earthworks and other construction activities. These blockages or diversions of local drainage lines could result in localised flooding upstream of the safety works and may change the ultimate discharge location of overland flows into the receiving watercourses. Diversion of drainage lines may also create localised areas of flooding and scour. However, these temporary impacts are expected to be minor and would be managed through the implementation of standard construction techniques.

With respect to contamination, the site inspection identified the following potential contamination risks and impacts, which has also been highlighted in the aerial map in Section 4.4.4 (refer to Figure 10).²⁴ These include, uncontrolled fill and the operation of a service station include total recoverable hydrocarbons, benzene, toluene, ethylbenzene and xylene, polycyclic aromatic hydrocarbons, organochlorine pesticides, organophosphate pesticides, polychlorinated biphenyls, phenols, volatile organic compounds, and asbestos containing materials.

Site investigation has identified the following noise sensitive receivers:²⁵

- 13 Residential receivers to the east of the GWH

²³ Mott MacDonald, “GWH Medlow Bath REF Specialist Report – Hydrology and Hydraulics”, May 2021.

²⁴ Mott MacDonald, “Great Western Highway Upgrade – Medlow Bath, Stage 1 – Preliminary Contamination Report”, December 2020 (page 22).

²⁵ Mott MacDonald, “Great Western Highway Upgrade – Medlow Bath, Noise and Vibration Technical Paper”, July 2021 (page 5).

- A single commercial building (a café) towards the northern end of Railway Parade
- A small number of guest houses
- The Hydro Majestic Hotel on the western side of Medlow Bath
- Commercial premises to the south which include a restaurant and store
- The Mazda car dealership towards the north of the Hydro Majestic.

A total of 100 instances of highly affected receivers have been noted based on noise modelling undertaken for the construction phase and is indicated below in Table 25.²⁶ A high impact level is for noise levels greater than 75 dBA. These are summarised as follows:

- 12 highly affected receivers during site preparation
- 12 highly affected receivers during site establishment
- 47 highly affected receivers during vegetation clearing
- 18 highly affected receivers during roadworks
- 11 highly affected receivers during finishing works.

Table 25: Standard work hours construction noise impacts

Noise catchment area (NCA)	LAeq NML dB(A)	Maximum LAeq noise level dB(A)	NML exceedances 1-10 dB(A)	NML exceedances 11-20 dB(A)	NML exceedances >20 dB(A)	Highly noise affected
Site preparation						
NCA01	50	72	136	59	7	0
NCA02	51	90	49	31	16	12
Site establishment						
NCA01	50	71	127	56	2	0
NCA02	51	89	48	29	13	12
Vegetation clearing						
NCA01	50	79	81	115	47	23
NCA02	51	97	23	46	38	24
Roadworks						
NCA01	50	76	132	82	32	2
NCA02	51	94	41	37	28	16
Finishing works						
NCA01	50	66	76	32	0	0
NCA02	51	97	37	16	17	11

The noise levels presented in Table 25 is typical of road infrastructure projects and they do have the potential to adversely impact the community at times. The implementation of suitable noise mitigation measures will help manage and mitigate the impacts of noise on the community.

At the project’s peak period, it is anticipated that there may be up to 40 heavy vehicle movements and 150 light vehicle movements during the day.²⁷ The increase in noise related construction traffic is predicted to be less than 0.1dB, and this would have a negligible impact on the local traffic noise environment.

²⁶ Mott MacDonald, “Great Western Highway Upgrade – Medlow Bath, Noise and Vibration Technical Paper”, July 2021 (pages 18-19).

²⁷ Mott MacDonald, “Great Western Highway Upgrade – Medlow Bath, Noise and Vibration Technical Paper”, July 2021 (page 19).

5.5.2 Operational Impacts

The key negative operational impacts will result from road noise and some minor risk of flooding.

Noise impacts

Owners of properties that are adjacent to the new U-turn bay being built on Bellevue Crescent will not be significantly adversely affected by vehicle movements when it is operational. It is expected that vehicle movements will not be greater than 10km/h on average when using the bay. Noise levels are predicted to comply with daytime local road noise criteria of less than 55 dB(A) and night-time local road noise criteria of less than 50 dB(A). Consideration of noise mitigations is not required for the U-turn bay.

With respect to noise and vibration, site investigations results have been captured in Table 26 and Table 27. These were mainly influenced by road traffic noise and to a lesser extent, railway noise.²⁸ The assessment identified high existing noise impacts throughout the project area, which will continue in the future. It is predicted that average noise levels will decrease slightly over the long term.

Table 26: Ambient noise measurement results

Site	Rating background level, dB(A)			Ambient noise level LAeq, dB(A)		
	Daytime	Evening	Night-time	Daytime	Evening	Night-time
NL1	40	37	27	49	47	45
NL2	50	42	29	62	59	57
NL3	49	41	29	60	60	60
NL4	46	41	24	54	55	52

Table 27: Road traffic noise measurement results

Site	Daytime LAeq (16 hours), dB(A)	Night-time LAeq (9 hour), dB(A)
NL1	48	45
NL2	61	57
NL3	61	60
NL4	55	52

A total of 13 residential receivers have been identified in Table 28 below which exceed the applicable noise criteria during the day. Noise levels for these receivers have been modelled for the year 2036 (both with and without the proposal).²⁹

For four residential receivers, there is expected to be an increase in noise during the day, ranging from 0.9 to 2.6 dB(A), as a result of the project. For nine residential receivers, there is expected to be a reduction in noise during the day as a result of the project but noise levels are still expected to exceed the cumulative noise limit criteria. Overall, the modelling indicates that the impacts will be minimal and will decrease over time.

²⁸ Mott MacDonald, "Great Western Highway Upgrade – Medlow Bath, Noise and Vibration Technical Paper", July 2021 (page 7).

²⁹ Mott MacDonald, "Great Western Highway Upgrade – Medlow Bath, Noise and Vibration Technical Paper", July 2021 (pages 25-26).

Table 28: Noise levels for receivers exceeding the NSW Road Noise Policy (RNP) and Noise Criteria Guideline (NCG) – Modelled for year 2036

ID	Daytime LAeq (16 hour)				Night-time LAeq (8 hour)			
	Criteria	No Build	Build	Increase	Criteria	No Build	Build	Increase
NSR-240	60	66	66	-0.1	55	61	61	0.2
NSR-241	60	70	70	-0.2	55	65	65	0.1
NSR-242	60	73	73	-0.3	55	68	68	-0.1
NSR-243	60	70	69	-0.4	55	65	65	-0.2
NSR-259	60	68	68	-0.4	55	63	63	-0.2
NSR-260	60	66	66	-0.2	55	61	61	0.1
NSR-262	60	68	67	-0.4	55	62	62	0.0
NSR-308	60	68	68	-0.8	55	63	63	-0.6
NSR-309	60	67	65	-1.4	55	62	61	-1.0
NSR-310	60	68	68	0.9	55	63	64	1.2
NSR-311	60	65	68	2.5	55	61	63	2.6
NSR-312	60	59	62	2.6	55	55	57	2.7
NSR-313	60	66	67	1.1	55	62	63	1.2

It is expected that operational noise traffic would decrease because of the project, and consideration of mitigating impacts is not required.

Based on predictive noise modelling for operation, the following receivers (refer to Table 29) are likely to qualify for additional mitigation/architectural treatment which would be investigated further during detailed design.

Table 29: Properties nominated for architectural treatment

Receiver ID	Address	2036 Daytime LAeq, 16 hour	2036 Night-time LAeq, 8 hour	Greatest exceedance
NSR-240	4 Station Street	66	61	6
NSR-241	2 Station Street	70	65	10
NSR-242	40 Great Western Hwy	73	68	13
NSR-243	50 Great Western Hwy	69	65	10
NSR-259	106 Great Western Hwy	68	63	8
NSR-260	100 Great Western Hwy	66	61	6
NSR-262	104 Great Western Hwy	67	62	7
NSR-308	108 Great Western Hwy	68	63	8
NSR-309	110-114 Great Western Hwy	65	61	6
NSR-310	116-118 Great Western Hwy	68	64	9
NSR-311	14 Delmonte Avenue	68	63	8
NSR-312	122 Great Western Hwy	62	57	2
NSR-313	126 Great Western Hwy	64	60	5

Hydrology impacts

Properties could experience impacts due to changes to upstream flood levels or downstream peak flow rates. Specifically, properties could experience the following issues:

- Upstream flooding impacts: These impacts are generally considered minor, given the minimal vertical alignment changes, maintenance of flow discharge splits to downstream receivers, and general increase in available stormwater storage
- Downstream flooding impacts: These will likely be limited due to a new detention basin downstream of the existing sag rail cross drainage, and existing intermediate rail cross drainage locations
- Scour potential: Scour will likely increase resulting in higher velocities and larger flow rates than experienced under existing conditions. Mitigation for this has been proposed at the discharge location to manage potential increases in velocity and peak flow
- Water quality impacts: These are partly addressed by this assessment in terms of scour potential, erosion, and quantity management. A separate assessment of the water quality of discharge flows is detailed in the *Surface and Groundwater Assessment*
- Climate change: Climate change uplift in rainfall intensities has been incorporated into design infrastructure.³⁰

Summary of key findings

During the construction period, the property impacts are likely to be:

- Marginal changes to noise related to construction activities
- Some additional increased risk of hydrology related issues.

Over the long term, the operation of the proposal is not expected to marginally increase noise and vibration for businesses and residents significantly beyond what is currently experienced within the project corridor. Where property might be negatively impacted, mitigation measures have been outlined in the next section.

Alternative Design for Bellevue Crescent

The Alternative Design for Bellevue Crescent will mean that the property at 106 Great Western Highway, Medlow Bath will no longer be acquired. Full acquisition of two properties and partial acquisition of one property would need to be undertaken to facilitate construction of the left turning lane from the GWH to the new corridor connecting to Bellevue Crescent. It is noted that these are not residential properties but vacant land, and the impact to property owners whose land will be fully or partially acquired will be minimal. Construction will also result in the removal of some trees on these vacant lots, the impact of which will be minimal.

Operation of the new corridor connecting the GWH to Bellevue Crescent will result in noise impacts to three residential receivers on Bellevue Crescent (17, 18 & 22 Bellevue Crescent). These residents will be impacted by an increase in vehicle movements along their property as a result of the alternative design. It is noted that these vehicle movements will mainly be by other residents in that part of Medlow Baths, which has a very small population, and the overall impact will be minimal when operational. If the alternative design proposal were to proceed, these residents would need to be considered for additional noise mitigation measures, such as architectural treatment.

³⁰ Mott MacDonald, "GWH Medlow Bath REF Specialist Report – Hydrology and Hydraulics", May 2021.

6 MANAGEMENT AND MITIGATION STRATEGIES

6.1 Access and Connectivity Mitigations

As outlined previously in Section 5.1.1, most negative impacts for residents and businesses will likely occur during the construction period. Largely, this will relate to restrictions on vehicle movements, congestion, and increased demand for local parking spaces.

To mitigate these negative impacts, the proposal will include the following mitigations:

- Staff parking would be accommodated on-site and not on surrounding local streets.
 - Construction vehicles would only be permitted to access the site via the GWH and access to Station Street, Railway Parade and Bellevue Crescent would be restricted to construction vehicles.
 - Access to private residential properties and the Hydro Majestic Hotel would be maintained throughout the construction period.
 - Bus and rail services would continue to operate as scheduled.
 - Bus stops may need to be relocated during the construction phase in which case this will be identified in a detailed construction plan.
- Most works required for the proposal would be undertaken during standard NSW Environment Protection Authority (EPA) construction hours, as follows:
 - 7am to 6pm Monday to Friday
 - 8am to 1pm Saturdays
 - No work on Sundays or public holidays
- Where certain works may need to occur outside standard hours, approval from TfNSW would be required for any out of hours work and the affected community would be notified as outlined in TfNSW's *Construction Noise Strategy* (TfNSW, 2012c).
- Staging of traffic switches and utilities would be implemented to keep the highway open in both directions during construction.

6.2 Social Infrastructure Mitigations

Negative impacts to visual amenity are recommended to be mitigated during construction as follows:

- Detailed design documentation drawings to reflect all construction activity including temporary works to protect areas outside of the construction boundary
- Contain construction facilities to be contained within the works zone boundary and minimise the area occupied as much as possible
- Include barriers to screen views from adjacent areas during construction
- Return sites to at least their pre-construction state once construction is complete
- Monitor pollution and dust emissions throughout the project and keep these to a minimum
- Divert or re-route pedestrian pathways during construction
- Existing trees to be retained within construction areas to be identified, protected, and maintained
- Divert or screen temporary lighting during construction to prevent light spill
- Protect all heritage items identified in the non-Aboriginal Heritage Report
- Remove all equipment used for temporary land reclamation once construction work is complete.

6.3 Landscape, Amenity, and Biodiversity Mitigations

Negative impacts to biodiversity will be minimised and mitigated with:

- Appropriate detailed proposal design features
- Pre-clearing surveys
- Implementation of measures outlined in established guidelines including:
 - *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*
 - *Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*
 - *Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*
 - *Guide 6: Weed management of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*
 - *Guide 9: Fauna handling of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*
 - *Guide 10: Aquatic habitats and riparian zones of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*
 - *Standard precautions and mitigation measures of the Policy and guidelines for fish habitat conservation and management Update 2013*
 - *Wildlife Connectivity Guidelines for Road Projects*

The following measures are recommended to mitigate the impacts of the potential contamination risks and issues identified in Section 5:

- A targeted investigation of the proposed alignment and areas of potential contamination (including areas where fill may be encountered during construction and hydrocarbon migration from the service station)
- Investigation to consider the potential risk that fill material could pose to construction workers and future users of the site. The assessment is to be carried out in accordance with guidance made or endorsed by the NSW Environmental Protection Authority
- Contaminated Land Management plan to be developed in accordance with the Guideline for the Management of Contamination (Roads and Maritime Services, 2013) and implemented as part of the CEMP
- In the event that contaminated areas are encountered during construction, appropriate control measures should be implemented to manage the immediate risks of contamination to all personnel, the community, and the environment.

6.4 Property Mitigations

TfNSW and the construction contractor will conduct ongoing consultation to update local property owners, road users, and councils as to the status of the proposal. Consultation activities will include:

- Providing information through the proposal website.
- Ongoing engagement with council, the NSW Traffic Management Centre, NSW Emergency Services, the freight industry, and local bus companies to manage staging plans, traffic management, and temporary road shutdowns.
- Engaging impacted property owners as to property acquisition and adjustments to project requirements as follows:
 - All property acquisition will be carried out in accordance with the *Land Acquisition Information Guide* (Roads and Maritime, 2012) and the *Land Acquisition (Just Terms Compensation) Act 1991*

- TfNSW would continue to consult directly with affected property owners throughout the detailed design phase
- TfNSW would continue to consult with DPIE throughout the detailed design phase to minimise and optimise the required acquisition
- Acquisition of Crown land will be carried out in accordance with the *Crown Land Management Act 2016*.

TfNSW will provide notification concerning the commencement of construction out via letter box drop to residents around the proposal at a minimum of five days prior to the commencement of construction. Similar notifications will be provided to the local council and emergency services.

TfNSW will also place notifications in local print media before the start of work detailing the likely timing of the proposal, potential changes to traffic conditions, project management contact details, and suggested communication channels.

Lastly, variable message signs (VMS) will be placed along the local road network in proximity to the proposal to inform motorists using this road of the work and potential disruption to the road. The VMSs will be deployed a minimum of five days prior to the commencement of construction.

Additionally, given the issues noted in Section 5.5, proposed flooding mitigations during the construction period include:

- Sediment basins
- Flow diversion bunds and sediment fencing
- Exclusion zones for fill placement
- Stabilised construction entry

To mitigate flooding risks during the operational period, the proposed mitigation measures include new cross drainage culverts, new detention basins, and new 450mm diameter connections to existing drainage systems.³¹

Noise and vibration mitigation measures include:³²

- Architectural treatment may be required for those properties identified in Table 29 that will be considered for further noise mitigation during detailed design
- Works that will occur within minimum working distances should be undertaken with concurrent vibration measurements to ensure cosmetic damage criteria does not pass the thresholds at sensitive receiver locations
- Stakeholder engagement and community consultation activities, in particular engaging with key stakeholders such as the Hydro Majestic Hotel
- Adequate mitigation measures need to be considered during detailed design for heritage structures which could be affected by construction works vibration
- Preparation of a Construction Noise and Vibration Management Plan (CNVMP) prepared by the contractor which captures procedures and mitigation measures, such as construction work scheduling, respite and other additional mitigation measures that may be required
- Vibration monitoring will be required during construction and consideration of appropriate vibration generating equipment

³¹ See Section 5 of the *GWH Medlow Bath REF Specialist Report – Hydrology and Hydraulics* report covering CD3370, CX3770, CX3960, and CD4220 Discharge Mitigations.

³² Commitments have been made to the community that noise walls would not be provided on this project, and that architectural treatment could be an alternative option when required.

- If the alternative design for Bellevue Crescent were to proceed, there are three residential receivers that would need to be considered for additional noise mitigation measures, such as architectural treatment.

7 CONCLUSIONS

7.1 Key Impact Summary

The following positive socio-economic impacts are anticipated because of a road upgrade within the study area:

- Improved accessibility to the area, resulting in time and operational cost savings for business and individuals
- Addition of pedestrian connections to the station from residential and recreational land
- Removal of the pedestrian crossing at the railway line and the addition of an overhead pedestrian bridge which will improve safety and amenity in the area
- New indented bus bays on both sides of the highway as well as shared pedestrian/cyclist paths adjacent to westbound carriageway corridor
- Tree and vegetation planting along the road and on the median, which will enhance the overall amenity of the area
- Overall, the proposal will improve road, pedestrian and cycling infrastructure which will result in safety, access, and amenity benefits for the Medlow Baths area.

Additionally, the following negative socio-economic impacts are anticipated in the study area:

- Three full property acquisitions and two partial property acquisitions will be undertaken for the location of new infrastructure:
 - Over the longer-term, these property acquisitions will help pedestrian and vehicle traffic flows, safety and amenity in the area.
 - TfNSW will continue to consult directly with affected property owners throughout the detailed design phase.
- A temporary increase in noise for some receivers:
 - Architectural treatment will be implemented if needed to minimise any potential negative noise impacts to sensitive receivers.
- Construction activities may temporarily reduce available parking and impact active transport connectivity impacting residents and businesses:
 - Specifically, this could impact operations of the Hydro Majestic Hotel, which directly abuts the GWH
 - These impacts can be minimised through consultation with the hotel and implementation of the traffic management plan.
- Removal of established trees within construction areas will impact on visual amenity and rural nature of the local landscape:
 - Tree planting and roadside median planting will offset the removal of vegetation during construction.
- The impacts of the alternative design for Bellevue Crescent are minimal and comprise noise and vibration, property acquisition (two full property acquisitions and one partial property acquisition), and greater traffic movements experienced for some residents. These impacts are similar to the current preferred design for Bellevue Crescent.

Most of the above impacts will be temporary and given the rural nature of the works, the impact to community values and amenity will be minimal.

7.2 Negative Impact and Mitigation Assessment Summary

Table 30: Summary Main Proposal Impacts, No Mitigation

Element	Summary of Impact	Sensitivity	Magnitude	Significance
Property Impacts & Business and Social Infrastructure Impacts	<ul style="list-style-type: none"> Temporary increase in noise for some receivers 	Low	Low	Mod-Low
Access and Connectivity	<ul style="list-style-type: none"> Construction activities may temporarily reduce available parking and impact active transport connectivity 	Low	Mod	Mod
Community Values Impacts	<ul style="list-style-type: none"> Removal of established trees within construction areas 	Low	Low	Mod-Low

Table 31: Summary of Proposal Impacts, Incorporating Mitigation Measures

Element	Summary of Impact	Sensitivity	Magnitude	Significance
Property Impacts & Business and Social Infrastructure Impacts	<ul style="list-style-type: none"> Temporary increase in noise for some receivers 	Low	Low	Low
Access and Connectivity	<ul style="list-style-type: none"> Construction activities may temporarily reduce available parking and impact active transport connectivity 	Low	Mod-Low	Mod-Low
Community Values Impacts	<ul style="list-style-type: none"> Removal of established trees within construction areas 	Low	Low	Low

Appendix A: References

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- Greater Sydney Commission, “*Our Greater Sydney 2056: Western City District Plan – Connecting Communities*”, March 2018, retrieved from: <https://www.greater.sydney/western-city-district-plan/infrastructure-and-collaboration>
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- Mott MacDonald, *Great Western Highway Upgrade – Medlow Bath, Hydrology and Hydraulic Impact Assessments*, May 2021
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- Spackman Mossop Michaels, *Great Western Highway Upgrade: Medlow Bath, Urban Design Concept, Landscape Character and Visual Impact Assessment Report*, July 2021.
- Transport for NSW, “*Greater Sydney Services and Infrastructure Plan*”, March 2018, retrieved from: https://future.transport.nsw.gov.au/sites/default/files/media/documents/2018/Greater_Sydney_Services_and_Infrastructure_Plan_0.pdf