

6.9 Landscape character and visual impact

This section provides an assessment of the potential impacts of the proposal on landscape character and visual amenity and identifies safeguards and management measures to avoid or minimise these impacts. A detailed assessment of landscape character and visual impacts is presented in the technical working paper - urban design, landscape character and visual impact assessment (Appendix L).

6.9.1 Methodology

The methodology used to carry out the landscape character and visual impact assessment followed the 'Environment impact assessment practice note: Guideline for landscape character and visual impact assessment' (EIA-N04) (Transport for NSW, 2020), and included:

- Initial site visit and field investigation, review of relevant literature, and analysis of aerial photographs and topographic maps
- Review of the concept design and supporting material to gain an appreciation of the proposal
- Definition of landscape character through a site investigation area analysis
- Identification and description of landscape character zones
- Assessment of the impact of the proposal on these landscape character in terms of the sensitivity of the affected areas and the magnitude of the change created by the proposal, to provide an overall impact rating as indicated by the Impact Assessment Grading Matrix (Table 6-91)
- Identification of the visual catchment of the proposal
- Selection of viewpoints within the visual catchment representing a range of different land uses
- Assessment of the visual impact of the proposal through comparison of the sensitivity of viewpoints and the magnitude of the change created by the proposal, to provide an overall impact rating as indicated by the Impact Assessment Grading Matrix (Table 6-91)
- Identification of urban design and landscape safeguards and management measures to mitigate any adverse visual impacts to assist the ongoing development of the concept design and for consideration in the detail design phase of the proposal.

Table 6-91 Landscape character and visual impact rating matrix (Transport for NSW, 2020a)

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High	High-moderate	Moderate	Negligible
	Moderate	High-moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

6.9.2 Existing environment

The proposal is located about 135 kilometres west of Sydney in the Great Dividing Range. The proposal is predominantly located adjacent to the existing Great Western Highway, with the Newnes Plateau to the north and the Blue Mountains National Park to the east. The majority of the proposal lies within the highly

picturesque Hartley Valley. Bordered by dramatic sandstone escarpments to the north and east, and undulating hills to the west, the valley has a distinctive form and cultural identity that is highly valued by both residents and visitors.

The exposed sandstone escarpments such as Hassan Walls and Mount York are key landscape features when viewed from within the Hartley Valley. The densely vegetated ridges and hill slopes provide a predominantly natural character that contrasts strongly with the more open cultural landscape of the valley, which has been cleared for farming and settlement purposes. Additionally, the adjacent world heritage listed Blue Mountains National Park and numerous public reserves add to the Hartley Valley's natural and cultural value.

The terrain is incised by a series of watercourses that feed into the River Lett, which flows from the north east to the south west transecting through the centre of the construction footprint towards Coxs River. River Lett Hill rises steeply to the west of the river, forming a predominant landform.

The combination of the natural and cultural scenic qualities with the abundant local heritage values establishes a unique identity to the area. These values provide a strong sense of place for the local inhabitants, as well as visitors and through traffic approaching and leaving the Blue Mountains National Park and beyond.

Landscape character zones

Within and surrounding the construction footprint, five Landscape Character Zones (LCZs) have been identified, as shown Figure 6-31 and described below.

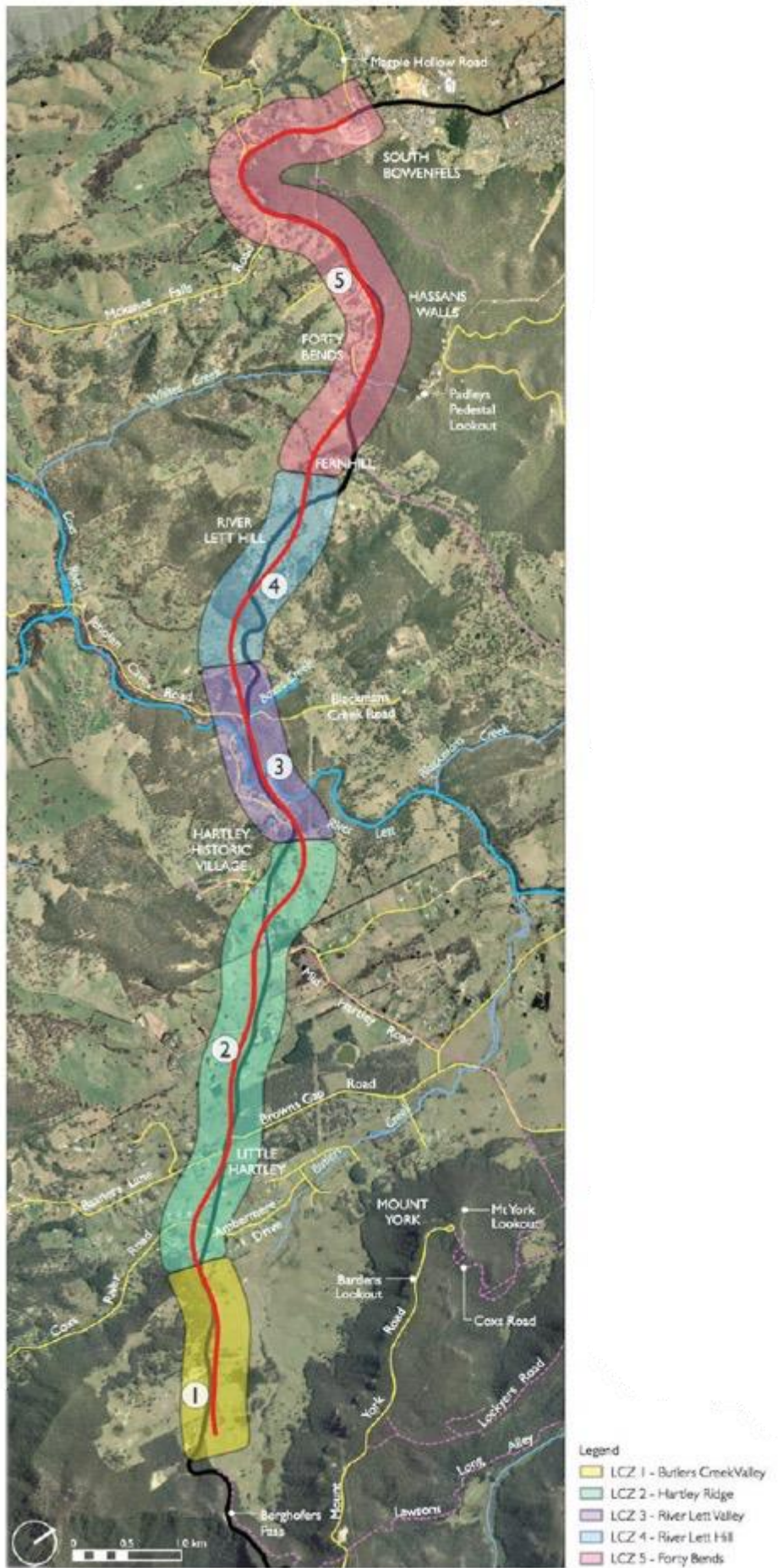


Figure 6-31 Landscape character zones

LCZ 1 – Butlers Creek Valley

Butlers Creek Valley (Figure 6-32) is a small cleared undulating alluvial valley, closely surrounded by the vegetated escarpments of Victoria Pass and Mount York. It is a sparsely populated area of rural pasture land that is highly visible from along the Mount York ridgeline, Great Western Highway, Coxs River Road, Little Hartley and the adjoining rural residential areas.

Butlers Creek is an intermittent stream that flows north west into the River Lett. A series of large farm dams provide water for livestock and contribute to the attractive visual character of the area. Additionally this precinct provides views east towards the Mount York ridgeline, Mitchells Ridge and a distant view north-west to Hassans Walls.



Figure 6-32 View of LCZ 1 facing east towards Victoria Pass

LCZ 2 – Hartley Ridge

Hartley Ridge (Figure 6-33) is an area characterised by flat to gently undulating topography with a varied vegetation pattern of grazing land and scattered remnant stands of woodland vegetation. The land uses are characterised by rural residential properties and small businesses spread along the existing highway.

There are a number of heritage listed properties of state and local significance which contribute significantly to its character. A large escarpment exists on the southern side of the existing highway at Historic Hartley Village. Cultural plantings in association with these historic properties and the remnant road side vegetation are an important feature of the precinct. There is also areas of vegetation that are considered to hold high biodiversity value and is listed as Endangered under the *Biodiversity Conservation Act 2016* and *Environmental Protection and Biodiversity Conservation Act 1999*.

Many of the residences are located very close to the existing highway, in some cases within fifteen metres. In the areas north and south of the highway there have been a substantial number of rural residential subdivisions along local roads such as Ambermere Drive and Coxs River Road.



Figure 6-33 View of LCZ 2 at the Coxs River Road facing west

LCZ 3 – River Lett Valley

The River Lett Valley comprises a steeply undulating landform with a deep river channel. Dense areas of vegetation along the river valley are ecologically important and contribute significantly to the precinct's landscape character.

On the eastern valley slopes of the River Lett the 19th century Hartley Historic Village, a historic site under the administration of the National Parks and Wildlife Service, is set amongst pastures, orchards, native vegetation and the remnants of 19th and 20th century cottage gardens. It comprises seventeen buildings of historical significance (two of which are privately owned).

The existing highway crosses the River Lett and is joined by the local and regional road network including Blackmans Creek Road and Jenolan Caves Road which connect to the existing highway on the western embankment of the river. Jenolan Caves Road provides for local, regional, tourist and freight traffic.



Figure 6-34 View of LCZ 3 at Hartley Historic Village facing east

LCZ 4 – River Lett Hill

This LCZ comprises the majority of the western Hartley Valley whose steeply undulating topography creates significant limitations for traffic on the existing highway. The undulating hills are overshadowed by Hassans Walls to the north which offers panoramic views of the valleys to the south and west. This area is highly visible from Hassans Walls and partially visible from Mount York.

The rolling hills and valleys provide privacy for residents from one another while still living in relative proximity. The majority of dwellings are located on hills sloping down to creeks, and hills adjacent to the highway, but sloping away from the highway.

A sandstone heritage property is located near the top of River Lett Hill close to the existing highway.



Figure 6-35 View over the eastern slopes of LCZ 4

LCZ 5 – Forty Bends

The topography of this LCZ comprises undulating hills that are overshadowed by Hassans Walls to the north and overlooks the valley of Whites Creek to the south. The shadowing effect of Hassans Walls on the highway means that black ice is often a problem during the winter months. The footslopes of Hassans Walls are incised by numerous gullies which are steep and broad as they flow south into Whites Creek.

Similar to LCZ 4, residents are located on hills adjacent to the highway and have privacy from one another due to the rolling hills and valleys.

Several historic heritage properties are located within the vicinity of Forty Bends Road and Old Bowenfels.

This area is highly visible from Hassans Walls and Mount York with extensive views to Hassans Walls, Mount Clarence, Darling Causeway and Mount York, providing rich scenic value.



Figure 6-36 View of LCZ 5 looking north east

6.9.3 Potential impacts

Construction

During construction, there would be temporary landscape character and visual impacts. These impacts would include views of large earthmoving and construction equipment, construction activities, stored materials and stockpiles, activities in and around ancillary facilities, vegetation clearing and excavation.

Construction, particularly out of hours work (as identified in Section 3.3.3 construction hours and duration) would require lighting at ancillary facilities and work areas. These locations could result in light spill impact on adjoining properties. This may result in a temporary visual impact at night, particularly near residences. Safeguards and management measures have been identified for temporary construction works to manage landscape character and visual impacts.

Operation

Landscape character impacts

The proposal would have a high-moderate impact on four of the LCZs due to the vegetation clearing, the introduction of new infrastructure and associated earthworks. The proposal would have a moderate impact on one LCZ where only minor changes to the existing environment are proposed.

An assessment of the magnitude of change as a result of the proposal, the sensitivity of the landscape character zones and the overall landscape character impact the proposal is provided in Table 6-92.

Safeguards and management measures (as identified in Section 6.9.4) would be implemented to minimise potential landscape character impacts.

Table 6-92 Landscape character impacts

Sensitivity of LCZ	Magnitude of change	Landscape character impact
LCZ 1 – Butlers Creek Valley		
<p>Moderate</p> <p>Despite being a modified landscape, the zone has an attractive rural scenic character, and the gently winding highway is predominately lined with exotic trees and woodland species, heightening the country/rural driving experience.</p>	<p>High</p> <p>The scale of the proposal within this rural area would be substantial, with changes including the new dual carriageway, service road, a bridge over the Great Western Highway, new property access roads, permanent water quality basins, moderate vegetation clearing and revegetation works.</p>	<p>High-moderate</p>
LCZ 2 – Hartley Ridge		
<p>Moderate</p> <p>This zone typifies the experience of travelling through the Hartley Valley with its extensive views over rolling pastures dotted with properties and glistening dams, to dramatic escarpments. These views are broken up by roadside planting and stands of native woodland.</p>	<p>High</p> <p>The scale of the proposal within this rural area, and in particular to Little Hartley, would be substantial, with changes including the new dual carriageway, service roads, multiple bridges and intersection upgrades, retaining walls, eastbound and westbound rest areas, permanent water quality basins, moderate vegetation clearing and revegetation works.</p>	<p>High-moderate</p>
LCZ 3 – River Lett Valley		
<p>Moderate</p> <p>The existing road corridor is generally well vegetated with native woodland which has a high sensitivity. Historic Hartley Village is also a highly valued heritage site.</p>	<p>High</p> <p>The scale of the proposal, in particular the twin bridges over Jenolan Caves Road (about 370 metres long), and the extensive vegetation removal would be substantial, with changes including the new dual carriageway, service roads, multiple bridges and intersection upgrades, retaining walls, new property access roads, permanent water quality basins, moderate vegetation clearing and revegetation works.</p>	<p>High-moderate</p>
LCZ 4 – River Lett Hill		
<p>Moderate</p> <p>There are good mid to long distance views to the east over the surrounding landscape from the four lane highway as it winds up River Lett Hill. At the crest, the highway becomes two lanes</p>	<p>High</p> <p>The scale of the new highway alignment and the extensive vegetation removal would be substantial, with changes including the new dual carriageway, service roads, new property access</p>	<p>High-moderate</p>

Sensitivity of LCZ	Magnitude of change	Landscape character impact
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and is predominately lined with exotic trees and woodland species, heightening the country/rural driving experience.

roads, permanent water quality basins, vegetation clearing and revegetation works.

LCZ 5 – Forty Bends

Moderate

The existing road corridor is generally well vegetated with dry sclerophyll forest along the southern slopes of Hassans Walls which has a high sensitivity, though the area outside the immediate road corridor to the south has an open rural character dotted with residences that reduces the sensitivity.

Moderate

The proposal generally occurs within the existing Great Western Highway alignment, with upgrades to the existing highway, service roads, intersection upgrades, new property access roads, permanent water quality basins, and revegetation works.

Moderate

Visual impacts

There would be varied visual impacts as a result of the proposal. Twenty seven viewpoints have been selected for the purpose of this assessment that represent a range of directions, distances and sensitive receivers within proximity to the proposal, as shown in Figure 6-37.

A summary of the assessment of the magnitude of the proposal, the sensitivity of the viewpoints and the overall visual impact the proposal is provided in Table 6-93.

Safeguards and management measures (as identified in Section 6.9.4) would be implemented to minimise potential visual impacts. Some of the impacts of the proposal would lessen overtime as vegetation matures.

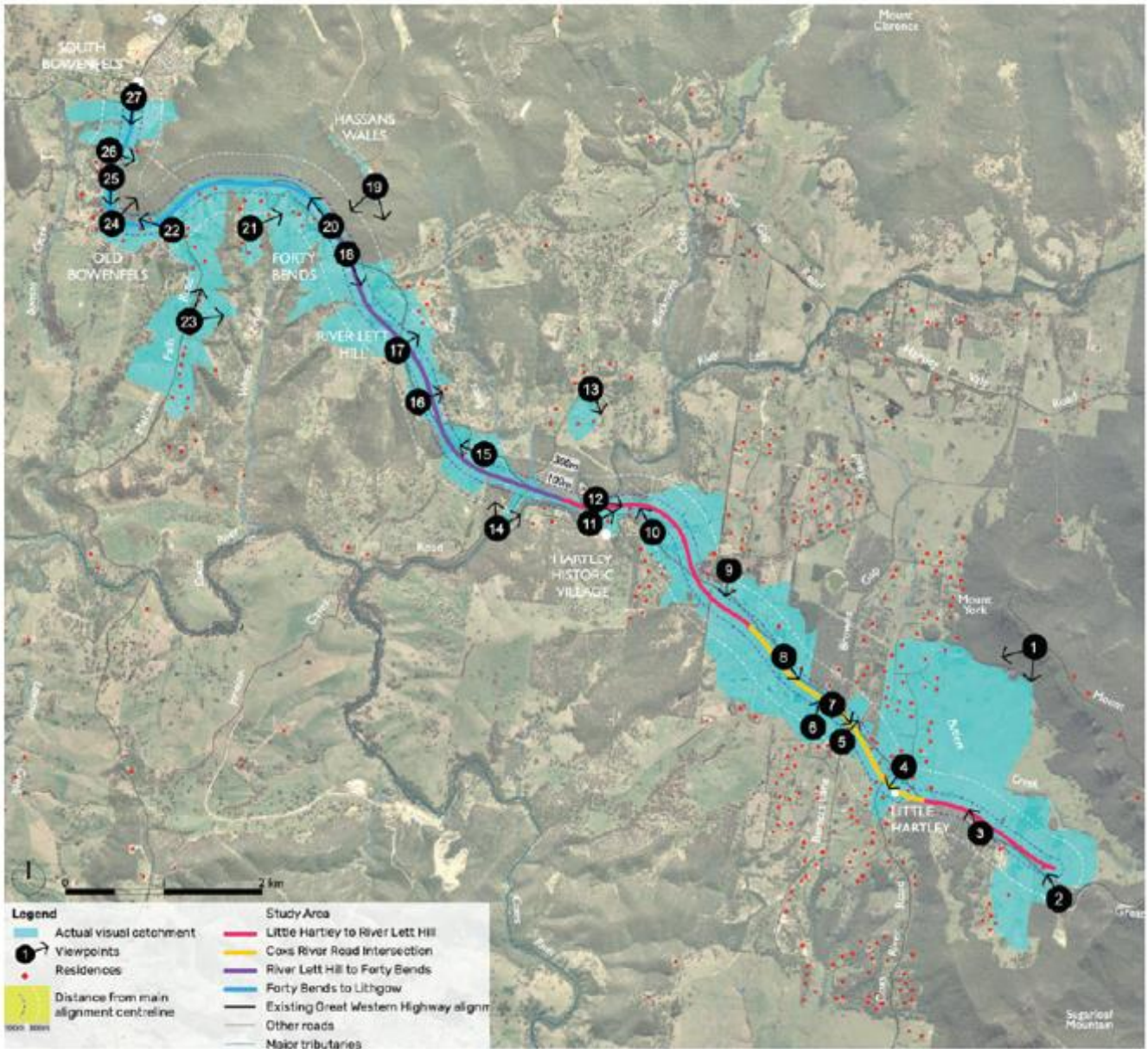


Figure 6-37 Visual catchment and assessment viewpoints

Artist's impressions have been prepared to provide a visualisation of how the proposal may appear during operation, as shown in Figure 6-38 to Figure 6-53.



Figure 6-38 Viewpoint 3 (existing) from Great Western Highway at the entrance of Hartley Valley Holiday Farm, looking north-west.



Figure 6-39 Viewpoint 3 (visualisation of proposal) from Great Western Highway at the entrance of Hartley Valley Holiday Farm, looking north-west.



Figure 6-40 Viewpoint 7 (existing) from Great Western Highway, east of Baaners Lane, looking south-east.



Figure 6-41 Viewpoint 7 (visualisation of proposal) from Great Western Highway, east of Baaners Lane, looking south-east.



Figure 6-42 Viewpoint 11 (existing) from Old Bathurst Road, Hartley Historic Village, adjacent to the Hartley Courthouse Building, looking north-east.



Figure 6-43 Viewpoint 11 (visualisation of proposal) from Old Bathurst Road, Hartley Historic Village, adjacent to the Hartley Courthouse Building, looking north-east.



Figure 6-44 Viewpoint 13 (existing) from Blackmans Creek Road, about 1.1 kilometres from the Great Western Highway, looking south-east.



Figure 6-45 Viewpoint 13 (visualisation of proposal) from Blackmans Creek Road, about 1.1 kilometres from the Great Western Highway, looking south-east.



Figure 6-46 Viewpoint 14 (existing) from Jenolan Caves Road, about 230 metres from the Great Western Highway, looking north-east.



Figure 6-47 Viewpoint 14 (visualisation of proposal) from Jenolan Caves Road, about 230 metres from the Great Western Highway, looking north-east.



Figure 6-48 Viewpoint 16 (existing) from Great Western Highway, near the entrance to 2987 Great Western Highway, looking south-east.



Figure 6-49 Viewpoint 16 (visualisation of proposal) from Great Western Highway, near the entrance to 2987 Great Western Highway, looking south-east.



Figure 6-50 Viewpoint 22 (existing) from McKanes Falls Road at intersection with the Great Western Highway, looking west.



Figure 6-51 Viewpoint 22 (visualisation of proposal) from McKanes Falls Road at intersection with the Great Western Highway, looking west.



Figure 6-52 Viewpoint 25 (existing) from Great Western Highway, near the intersection of Old Bathurst Road, looking south.



Figure 6-53 Viewpoint 25 (visualisation of proposal) from Great Western Highway, near the intersection of Old Bathurst Road, looking south.

A summary of the assessment of the magnitude of the proposal is provided in Table 6-93, along with the sensitivity of the viewpoints and the overall visual impact the proposal. The proposal would result in Moderate-Low impacts for eight viewpoints. Four viewpoints would have High impacts and four viewpoints would have Moderate impacts. Three viewpoints would have a High-Moderate impacts, two viewpoints would have Low impacts and two viewpoints would have negligible impacts.

Table 6-93 Summary of visual impacts from selected viewpoints

Viewpoint	Sensitivity of viewpoint	Magnitude of change	Rationale	Visual impact
1 Bardens Lookout facing south west	Moderate	Moderate	<ul style="list-style-type: none"> • Public lookout • Wide visibility at a distance • Removal of existing vegetation • Time before landscape mitigation can be effective 	Moderate
2 Great Western Highway at the base of Victoria Pass facing north west	Moderate	Low	<ul style="list-style-type: none"> • Transient viewers • Distance from proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Moderate-low
3 Great Western Highway at the entry of Hartley Valley Holiday Farm facing west	Moderate	Low	<ul style="list-style-type: none"> • Residential and transient viewers • Minimal vegetation removal • Proposed vegetation would provide screening 	Moderate-low
4 Bus stop next to the eastbound lane of the Great Western Highway, west of Ambermere Drive, facing south west	Low	Moderate	<ul style="list-style-type: none"> • Transient viewers • Distance from proposal • Minor increase in hardstand • Visibility of proposed bridge in the mid-distance • Removal of existing vegetation • Potential for landscape mitigation over time 	Moderate-low
5 Baaners Lanes, about 200 metres from the Great Western Highway intersection	High	High	<ul style="list-style-type: none"> • Residential viewers • Increased hardstand across proposal extents • Removal of existing vegetation • Potential for landscape mitigation over time 	High
6 Cul-de-sac of Apple Tree Lane about 260 metres south of	High	High	<ul style="list-style-type: none"> • Residential viewers • Increased hardstand across proposal extents 	High

Viewpoint	Sensitivity of viewpoint	Magnitude of change	Rationale	Visual impact	
			<ul style="list-style-type: none"> • Removal of existing vegetation • Potential for landscape mitigation over time 		
7	Great Western Highway at Browns Gap Road intersection facing south east	Moderate	High	<ul style="list-style-type: none"> • Transient viewers • Proximity of proposal • Increased hardstand across proposal extents • Removal of existing vegetation • Potential for landscape mitigation over time 	High-moderate
8	Great Western Highway at Hartley Cemetery entry facing south east	Moderate	Low	<ul style="list-style-type: none"> • Visitors to cemetery and transient viewers • Distance from proposal • Localised vegetation removal • Potential for landscape mitigation over time 	Moderate-low
9	Mid Hartley Road next to the Hartley Community Hall facing south	Moderate	Negligible	<ul style="list-style-type: none"> • Proposal not visible 	Negligible
10	Great Western Highway about 350 metres west of Carroll Drive facing north west	Low	Low	<ul style="list-style-type: none"> • Transient viewers • Distance from proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Low
11	Old Bathurst Road, Hartley Historic Village, next to the Royal Hotel facing west	High	High	<ul style="list-style-type: none"> • Visitors to Hartley Historic Village • Proximity of proposal • Increased hardstand across proposal extents • Removal of existing vegetation • Limited opportunity for landscape mitigation 	High
12	Walker Street, 50 metres north of the Great Western Highway facing east	High	High	<ul style="list-style-type: none"> • View covered by proposal 	High

Viewpoint	Sensitivity of viewpoint	Magnitude of change	Rationale	Visual impact	
13	Blackmans Creek Road about 1.2 kilometres from the Great Western Highway facing south east	Moderate	Moderate	<ul style="list-style-type: none"> Residential viewers Wide visibility at a distance Increased hardstand across proposal extents Removal of existing vegetation Limited opportunity for landscape mitigation as seen from this view 	Moderate
14	Jenolan Caves Road about 150 metre from the Great Western Highway intersection facing north	Moderate	High	<ul style="list-style-type: none"> Transient viewers including tourists Proximity of proposal Minor increase in hardstand Visibility of proposed twin bridges in the mid-distance Removal of existing vegetation Limited opportunity for landscape mitigation 	High-moderate
15	Great Western Highway approaching River Lett Hill facing west	Moderate	Negligible	<ul style="list-style-type: none"> Residential and transient viewers Proposal not visible 	Negligible
16	Driveway of 2987 Great Western Highway, Hartley, facing west	Moderate	Moderate	<ul style="list-style-type: none"> Residential and transient viewers Minor increase in hardstand visible Localised vegetation removal Potential for landscape mitigation over time 	Moderate
17	Driveway of 3033 Great Western Highway, Hartley, facing north east	Moderate	High	<ul style="list-style-type: none"> Residential and transient viewers Proximity of proposal Increased hardstand across proposal extents Removal of existing vegetation Potential for landscape mitigation over time 	High-moderate
18	Great Western Highway about 200 metres south east of Forty Bends	Low	Moderate	<ul style="list-style-type: none"> Transient viewers Proximity of proposal Minor increase in hardstand Localised vegetation removal 	Moderate-low

Viewpoint	Sensitivity of viewpoint	Magnitude of change	Rationale	Visual impact
Road facing south east			<ul style="list-style-type: none"> • Potential for landscape mitigation over time 	
19 Edge of Hassans Walls on Padleys Pedestal lookout facing south east	Moderate	Moderate	<ul style="list-style-type: none"> • Public lookout • Wide visibility at a distance • Removal of existing vegetation • Time before landscape mitigation can be effective 	Moderate
20 Great Western Highway at Forty Bends Road intersection facing north west	Low	Low	<ul style="list-style-type: none"> • Transient viewers • Proximity of proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Low
21 Southern end of Daintree Close facing east	Moderate	Low	<ul style="list-style-type: none"> • Residential viewers • Distance from proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Moderate-low
22 Great Western Highway at McKanes Falls Road intersection facing west	Low	Moderate	<ul style="list-style-type: none"> • Transient viewers • Proximity of proposal • Increased hardstand across proposal extents • Visibility of proposed retaining wall • Removal of existing vegetation • Limited opportunity for landscape mitigation 	Moderate-low
23 Driveway of 67 McKanes Falls Road of north east	Moderate	Low	<ul style="list-style-type: none"> • Residential viewers • Distance from proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Moderate-low
24 Mudgee Street in from of 'Umera', 3449 Great	Moderate	Moderate	<ul style="list-style-type: none"> • Residential viewers • Proximity to heritage buildings • Proximity of proposal • Minor increase in hardstand 	Moderate

Viewpoint	Sensitivity of viewpoint	Magnitude of change	Rationale	Visual impact
Western Highway facing north east			<ul style="list-style-type: none"> • Visibility of proposed retaining wall • Removal of existing vegetation • Potential for landscape mitigation over time 	
25 Great Western Highway near Somerset House facing south	Low	High	<ul style="list-style-type: none"> • Transient viewers • Proximity of proposal • Increased hardstand across proposal extents • Visibility of proposed retaining wall • Removal of existing vegetation • Limited opportunity for landscape mitigation 	Moderate
26 Mudgee Street in front of Bowenfels Presbyterian Church facing east	Moderate	Moderate	<ul style="list-style-type: none"> • Residential viewers • Proximity to heritage buildings • Proximity of proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Moderate
27 Great Western Highway at Magpie Hollow Road intersection facing south	Low	Low	<ul style="list-style-type: none"> • Transient viewers • Proximity of proposal • Minor increase in hardstand • Localised vegetation removal • Potential for landscape mitigation over time 	Low

An integrated design approach has been adopted for the proposal in order to ensure that the best possible outcomes are achieved. A number of urban design and landscape strategies have been incorporated into the proposal to minimise impacts and improve the project for residents and motorists. These include:

- Roadside drainage channels or median channels would be vegetated or rock-lined to visually integrate with the surroundings as much as possible
- The rounding of cut and fill batters to help integrate into the existing landform and create a more naturalised appearance
- Minimising the removal of existing vegetation and maximising revegetation and planting opportunities with appropriate species
- Refinement of bridge design and the design of peripheral elements to reduce visual impact
- Providing tree planting to mitigate the scale of the proposed infrastructure, reinstating the vegetation character of the area, framing views and providing amenity along the road corridor

- Designing new retaining walls to have a finish that relates to the character of the surrounding landscape.

Landscape concept drawings that take into account these strategies have been developed and are provided in Appendix L.

Safeguards and management measures (as identified in Section 6.9.4) would be implemented to minimise potential visual impacts. Some of the impacts of the proposal would lessen overtime as vegetation matures.

6.9.4 Safeguards and management measures

Table 6-94 Safeguards and management measures – Landscape character and visual impacts

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Section
LV01	Landscape character and visual impact	<p>An Urban Design Plan will be prepared to support the final detailed proposal design and implemented as part of the CEMP.</p> <p>The Urban Design Plan will present an integrated urban design for the proposal, providing practical detail on the application of design principles and objectives identified in the environmental assessment. The Plan will include design treatments for:</p> <ul style="list-style-type: none"> • location and identification of existing vegetation and proposed landscaped areas, including species to be used • built elements including retaining walls and bridges • fixtures such as seating, lighting, fencing and signs • details of the staging of landscape works taking account of related environmental controls such as erosion and sedimentation controls and drainage • procedures for monitoring and maintaining landscaped or rehabilitated areas. <p>The Urban Design Plan will be prepared in accordance with relevant guidelines, including:</p> <ul style="list-style-type: none"> • Beyond the Pavement (Transport for NSW, 2020b) 	Transport / Contactor	<p>Detailed design</p> <p>Prior to construction</p>	Appendix L	All

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Section
		<ul style="list-style-type: none"> • Landscape and design guideline (Roads and Maritime Services, 2018) • Bridge Aesthetics (Transport for NSW, 2019). 				
LV02	Landscape character and visual impact	<p>Detailed design of the proposal will consider, where feasible and reasonable:</p> <ul style="list-style-type: none"> • Opportunities to reduce the construction footprint • Minimising the number of ancillary facilities required • Using visually recessive materials to minimise the visual dominance of the road • Investigating opportunities to reduce the bulk of structures • Minimising vegetation clearing and maximising revegetation and planting opportunities, particularly in high sensitivity areas where screening is required • Ensuring residual land is developed to complement the existing landform • Opportunities to incorporate pedestrian and cycle connections. 	Transport/ Contractor	Detailed design	Appendix L	All
LV03	Landscape character and visual impact	Landscape planting and maintenance will be in accordance with the Lithgow City Council Weed List and include indigenous species endemic to the area. Locally collected seeds or bioregionally-sourced indigenous seeds and plants will be used where feasible.	Transport/ Contractor	Detailed design Construction	Appendix L	All
LV04	Lighting	The design of temporary and permanent lighting will be carried out in accordance with AS 1158.1-1986 and will avoid unnecessary light spill on adjacent residents or sensitive receivers.	Transport/ Contractor	Detailed design Construction	Appendix L	All

No	Impact	Environmental safeguards	Responsibility	Timing	Reference	Section
LV05	Landscape character and visual impact	<p>During construction, the following measures will be implemented:</p> <ul style="list-style-type: none"> • Provide suitable barriers to screen views from adjacent areas during construction • Return temporary works areas, such as ancillary facilities, to at least their pre-construction condition progressively throughout the works, where feasible, or once construction is complete • Identify, protect and retain existing trees located within the ancillary facility areas • Temporary lighting should be screened or diverted to reduce unnecessary light spill. 	Transport/ Contractor	Construction	Appendix L	All

Other safeguards and management measures that would address landscape impacts are identified in sections 6.4 Aboriginal heritage and 6.5 non-Aboriginal heritage