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**MOTT
MACDONALD**

Great Western Highway Upgrade East: Katoomba to Blackheath

Extension of scope near Blackheath

Revision B: Additional REF Scope Memo
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spackman mossop michaels

Prepared for:



Prepared by:

spackman mossop michaelis

On behalf of:



SPACKMAN MOSSOP MICHAELS
15 Foster Street
Surry Hills New South Wales 2010 Australia
Telephone. 61 2 9361 4549
Fax. 61 2 9361 4569
Email info@sm2group.com.au
www.spackmanmossopmichaels.com

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CONTENTS

CONTENTS.....	III
LIST OF FIGURES:	V
LIST OF TABLES:	V
1. INTRODUCTION	1
1.1 INTRODUCTION.....	1
1.2 PROPOSAL BACKGROUND.....	1
1.3 PROPOSAL OVERVIEW	3
1.4 SCOPE OF THIS MEMO.....	3
1.5 PURPOSE OF THE MEMO	3
2. URBAN DESIGN & LANDSCAPE STRATEGY	5
2.1 OVERALL PROPOSAL OBJECTIVES	5
2.2 MEDLOW BATH TO BLACKHEATH (M2B) URBAN DESIGN AND LANDSCAPE CONCEPT PLAN - ADDITIONAL SCOPE	6
3. LANDSCAPE CHARACTER ASSESSMENT.....	9
3.1 LANDSCAPE CHARACTER OVERVIEW.....	9
3.2 LANDSCAPE CHARACTER ZONES.....	9
3.3 LANDSCAPE CHARACTER IMPACT SUMMARY.....	15
4. VISUAL IMPACT ASSESSMENT	17
4.1 OVERVIEW.....	17
4.2 VISUAL IMPACTS	19
4.3 VIEWPOINT 9.....	19
5. CONCLUSION	21
5.1 CONCLUSION.....	21

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LIST OF FIGURES:

Figure 1-1	Design Departures from the REF: Medlow Bath to Blackheath	2
Figure 2-1	View along Valley View Road looking south east toward the National Park	5
Figure 2-2	View along Valley View Road looking north towards Evans Lookout Road.....	5
Figure 2-3	Urban Design and Landscape Plan Additional Scope 1.....	6
Figure 2-4	Urban Design and Landscape Plan Additional Scope 2	7
Figure 3-1	View along the Great Western Highway looking south toward the rail corridor upon exit of Blackheath.....	9
Figure 3-2	Landscape Character Zones.....	10
Figure 3-3	Landscape Character Zone 5	11
Figure 3-4	View northbound along the Great Western Highway within this LCZ	12
Figure 3-5	Existing character for motorists within this LCZ is enclosed by vegetation and rail infrastructure.....	12
Figure 3-6	Landscape Character Zone 6	13
Figure 3-7	View of the winding Great Western Highway looking north on approach to Blackheath.....	14
Figure 3-8	View south of Blackheath from Valley View Road	14
Figure 4-1	Existing structure/shopfront on approach into the heart of Blackheath	17
Figure 4-2	Viewpoint 9.....	19
Figure 4-3	Viewpoint 9 location	19

LIST OF TABLES:

Table 3-1	Summary of existing landscape character	9
Table 3-2	Summary of Landscape character impact changes	15

Existing view of the Great Western Highway looking north from Rowan Lane



Distances	
Blackheath	10
Mt Wicksford	15
Lithgow	26
Bathurst	35
Janelan Caves	72

70

Chapter 1

INTRODUCTION

1.1 INTRODUCTION

Transport for NSW (Transport) is proposing to widen the Great Western Highway, between Rowan Lane, Katoomba and Tennyson Road, Blackheath from one to two lanes in each direction (the proposal). The proposal is part of the Great Western Highway Upgrade Program which aims to provide a safer, more efficient connection between the Central West region of New South Wales (NSW), the Blue Mountains and Sydney.

The proposal consists of two sections:

- Katoomba to Medlow Bath – about 3.5 kilometres of highway between Rowan Lane at Katoomba and Bellevue Crescent at Medlow Bath
- Medlow Bath to Blackheath – about 1.8 kilometres of highway between Station Street, Medlow Bath and Tennyson Road, Blackheath.

Transport prepared a review of environmental factors (REF) to assess the potential environmental impacts of the proposal.

Following exhibition of the REF, the proposal design has been refined (referred to as 'the revised design') in response to stakeholder feedback and further design development to either realise social benefits earlier or to allow construction efficiencies.

Figure 1-1 indicates the locations where design changes are proposed in the revised design compared to the design outlined in the REF.

1.2 DESIGN CHANGES

The design changes in the revised design include:

- Extending the new separate eastbound carriageway and the upgrade of the westbound carriageway to connect back to the existing Great Western Highway just to the east of Tennyson Road.
- Continuing the active transport trail in the Medlow Bath to Blackheath section to Valley View Road, Blackheath. The active transport trail would also serve as maintenance access to utilities, water quality basins and the national park (for approved access only).
- High voltage electricity, optical fibre and water main relocations between Medlow Bath and Blackheath have been extended and connected back to existing utility networks at Blackheath.

The revised design would require an extension to the REF proposal area at the western end of the Medlow Bath to Blackheath section only. The revised proposal area has been developed as the footprint required for the construction of the revised design.

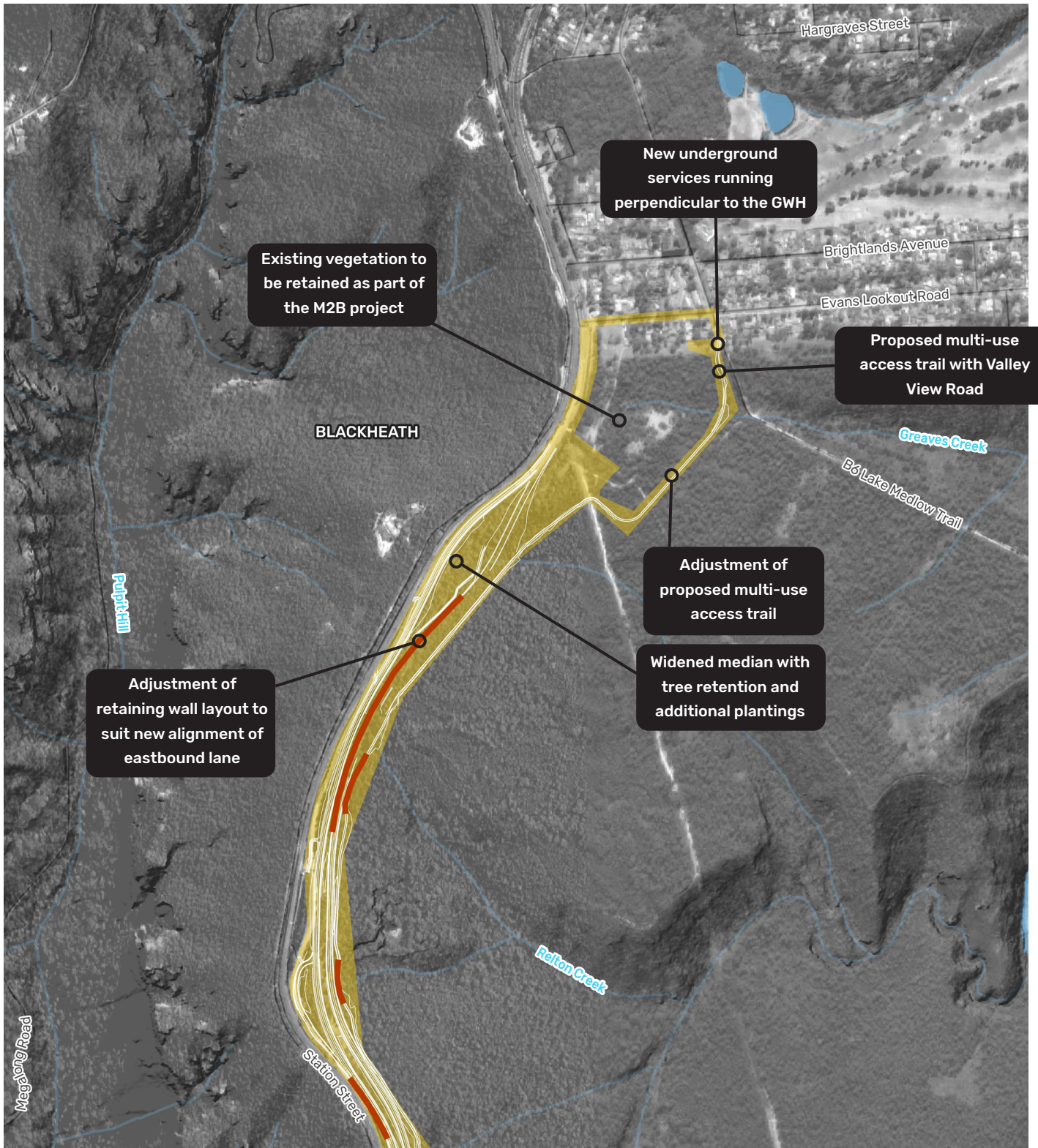


Figure 1-1 Revised design changes: Medlow Bath to Blackheath
 Source: Adapted from Google Maps, 2021

1.3 SCOPE OF THIS MEMO

The following memo will assess changes to the revised design within the Landscape Character and Visual Impact Assessment and includes changes to the following scope of works:

- Urban Design Assessment
- Landscape Concept Design
- Landscape Character Assessment
- Visual Impact Assessment

1.4 PURPOSE OF THE MEMO

This Landscape Character and Visual Impact Assessment memo supports changes to the revised design for the Medlow Bath to Blackheath portion of the Great Western Highway Upgrade.

It documents the Urban Design and Landscape concept, landscape character and visual impacts of changes to the revised design outlined in Figure 1-1 and includes the following:

- The existing natural landscape including landform, soil, water and biodiversity
- The existing cultural landscape including heritage values, land uses, and places of interest
- Urban Design and Landscape Strategy
- The landscape character and character zones
- The sensitivity of the setting
- The magnitude of change as a result of the proposed elements
- The visual impact of all proposed surface elements.

The scope of assessment will also discuss:

- Measures to mitigate visual impacts of proposed elements.

Please refer to the REF submission of the Landscape Character and Visual Impact Assessment for the reference documents and assessment methodology for this assessment.

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Chapter 2

URBAN DESIGN & LANDSCAPE STRATEGY

2.1 OVERALL PROPOSAL OBJECTIVES

2.1.1 INTRODUCTION

The urban design vision, objectives and principles have been developed to guide the assessment process and the concept design for the Proposal

There have been no changes to the urban design vision, objectives or principles. Please refer to the REF submission for the overall vision, objectives and principles for the Proposal between Medlow Bath and Blackheath.

The following section highlights changes to the urban design and landscape concept design within the revised design.



Figure 2-1 View along Valley View Road looking south east toward the Great Western Highway



Figure 2-2 View along Valley View Road looking north towards Evans Lookout Road

2.2 MEDLOW BATH TO BLACKHEATH (M2B) URBAN DESIGN AND LANDSCAPE CONCEPT PLAN - ADDITIONAL SCOPE

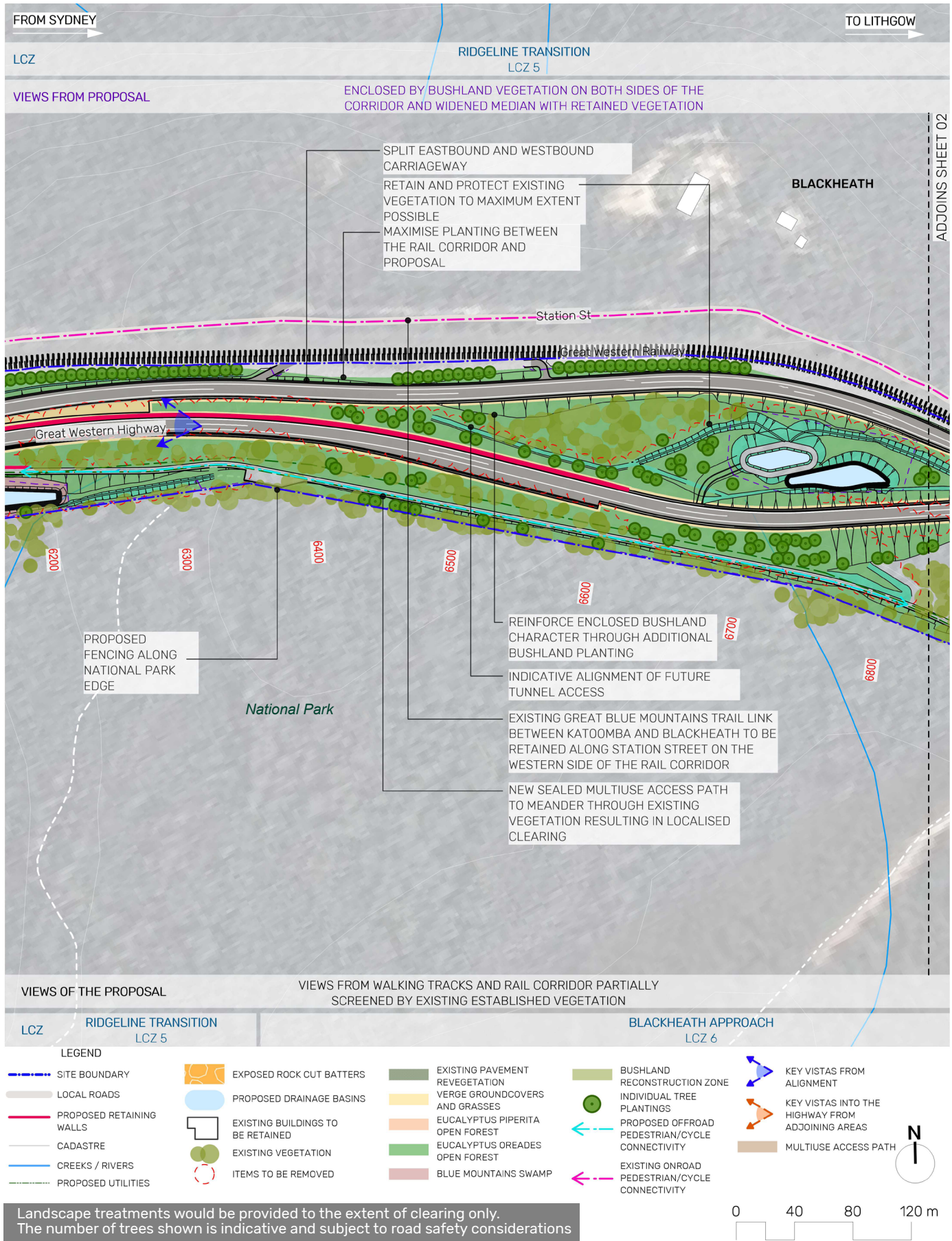
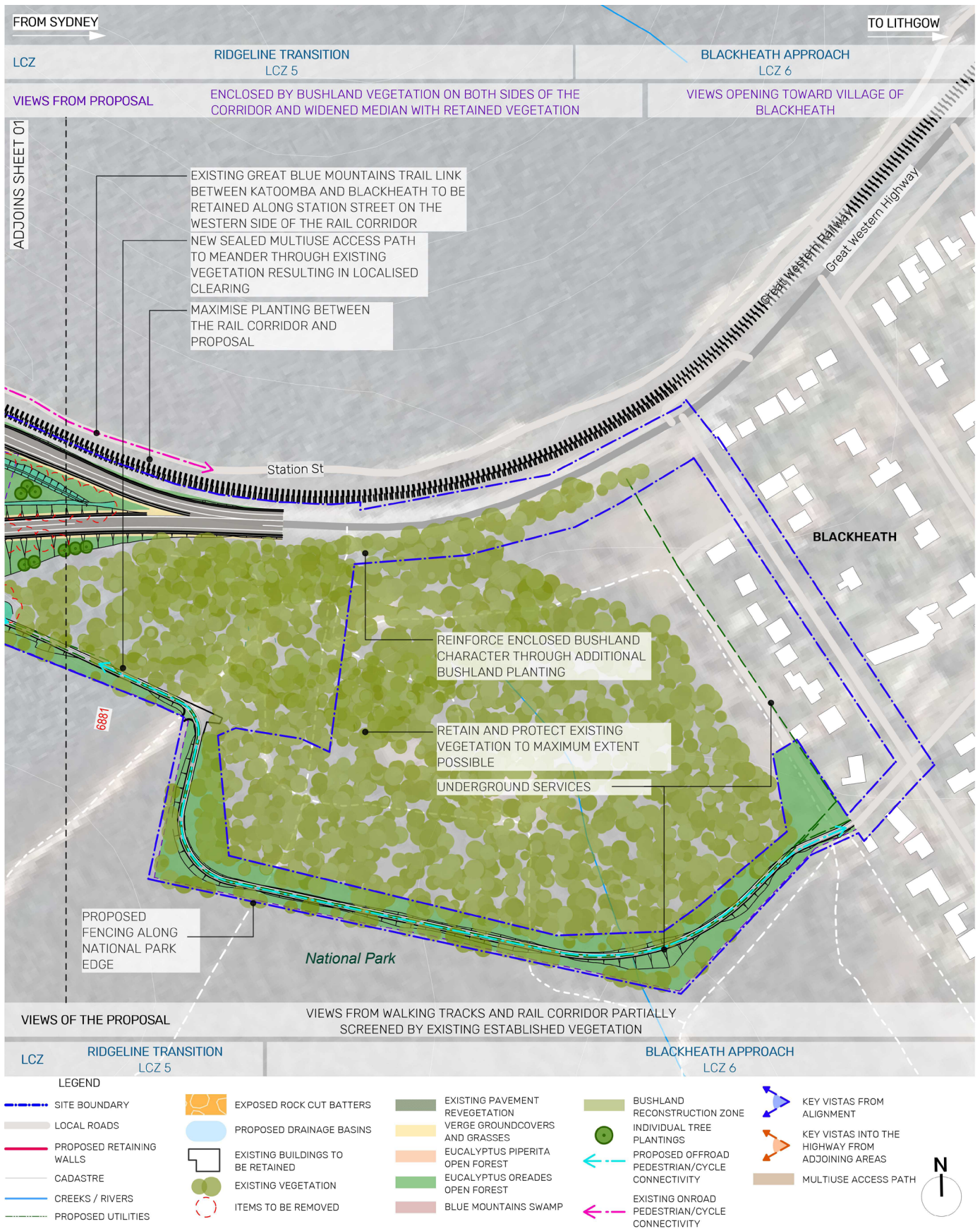


Figure 2-3 Urban Design and Landscape Plan Additional Scope 1



Landscape treatments would be provided to the extent of clearing only.
 The number of trees shown is indicative and subject to road safety considerations

Figure 2-4 Urban Design and Landscape Plan Additional Scope 2

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Chapter 3

LANDSCAPE CHARACTER ASSESSMENT

3.1 LANDSCAPE CHARACTER OVERVIEW

The landscape character of the study area is the product of the natural and cultural elements that have shaped it. Landform and vegetation, views and vistas, settlement patterns, landuse and built structures within and adjacent to the study area contribute to the landscape character. Additionally, the landscape character considers historical layering or 'time depth' in the form of remnant materials which impact the setting and reflect on the past interactions between people and places, which combine to present a visual record of the historical uses of the zones.

The following section will identify changes to the landscape character zones following the REF submission. Please refer to the REF submission for the analysis of the existing landscape character zones for the Proposal.



Figure 3-1 View along the Great Western Highway looking south toward the rail corridor upon exit of Blackheath

3.2 LANDSCAPE CHARACTER ZONES

Within the study area there are six distinct landscape types that have been identified (Figure 3-2) as Landscape Character Zones (LCZs), outlined within the RED submission.

Each LCZ reflects broadly homogeneous visual characteristics, particularly in terms of vegetation, landuse and landform.

The following provides a summary description and attributes associated with each Landscape Character Zone within the areas affected by proposed post REF submission design changes.

LCZ 5	Ridgeline Transition	Native forest, natural bushland sitting high atop the ridgeline. Man made elements including powerlines detract from the natural landscape in the east, whilst open views over the Megalong Valley exist in the west
LCZ 6	Blackheath Approach	A mix of natural bushland to the west with steep slopes toward the Megalong Valley and single storey dwellings in the east with planted exotics

Table 3-1 Summary of existing landscape character

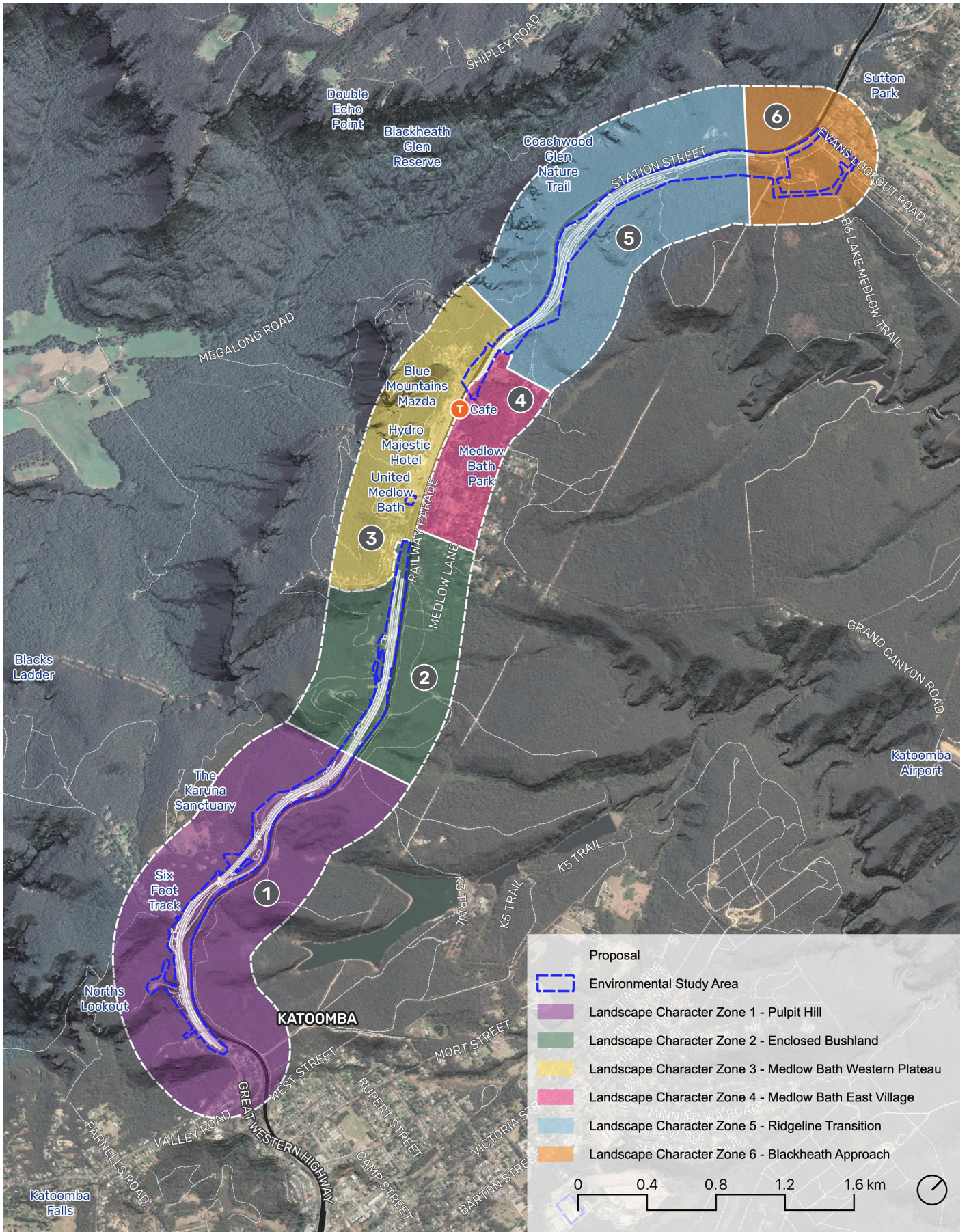


Figure 3-2 Landscape Character Zones

3.2.1 LCZ 5 – RIDGELINE TRANSITION

EXISTING LANDSCAPE CHARACTER SUMMARY

The landscape character of LCZ 5, illustrated in Figure 3-3, is characterised by natural bushland that sits high atop the ridgeline. The LCZ overlooks the Megalong escarpment in the west with the natural bushland dissected by the transport corridor.

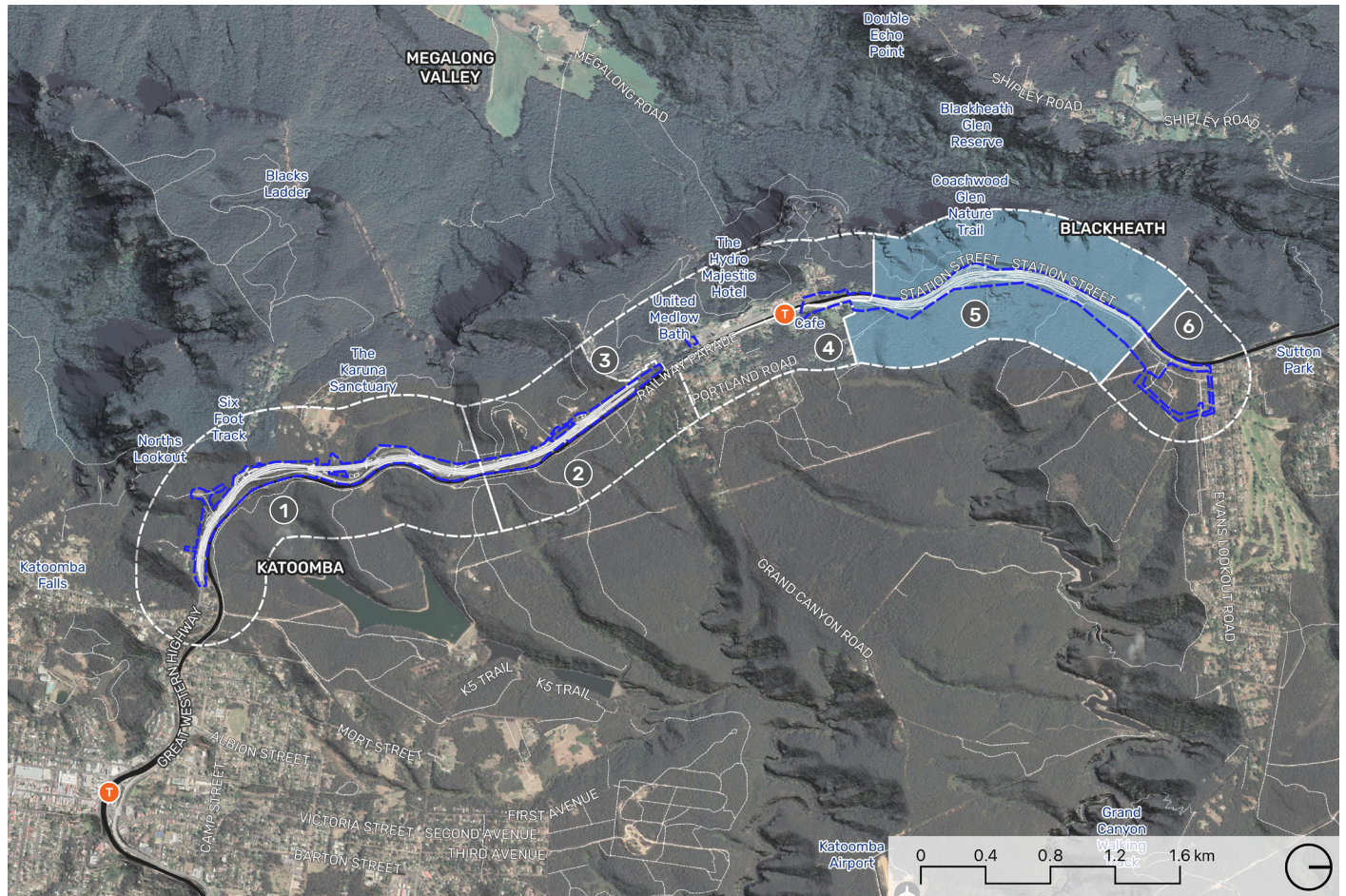


Figure 3-3 Landscape Character Zone 5

THE PROPOSAL

Proposal elements in LCZ 5 during operation include:

- Main alignment upgrade, associated earthworks, roadside furniture and elements such as retaining walls along the southbound carriageway, safety barriers, fences and signs
- Multi-use access trail
- Truck emergency rest area
- Road drainage and water quality control measures
- Removal of bushland vegetation
- New tree, shrub and groundcover vegetation.

PROPOSED LANDSCAPE CHARACTER

Landform

- The proposal would involve both cut and fill batters along both sides of the proposed carriageway widening
- The proposal would also involve split carriageways in this LCZ, with a sealed access way along the eastern side of the road corridor impacting landform in this location

Vegetation cover

- Removal of bushland vegetation within the operational footprint would result in significant clearing in locations where the proposed upgrade does not follow the existing road alignment, revegetation as part of Proposal landscaping plan would partly reduce this change over time.
- In areas of widened median within this LCZ, vegetation is proposed to be retained where possible, supplemented with new endemic plantings

Built Form and heritage

- Proposed retaining walls to be used in locations to minimise construction footprint
- The proposal would not impact on any non-Aboriginal heritage items

Spatial quality

The overall spatial qualities would be retained with some localised changes including:

- The widening of the existing roadway from single to dual carriageway
- Increase in hardstand in localised areas where the road deviates from the existing footprint.

Public domain

- The proposal would not result in any changes to public domain areas within this LCZ.

Key activity areas

- The proposal would not result in any changes to key activity areas within this LCZ.

Connectivity and access

- Improved regional and national transport connectivity and travel times along Great Western Highway
- Introduction of a multiuse access track that connects Medlow Bath and Blackheath via Coachhouse Lane at Medlow Bath and Valley View Road at Blackheath.



Figure 3-4 View northbound along the Great Western Highway within this LCZ



Figure 3-5 Existing character for motorists within this LCZ is enclosed by vegetation and rail infrastructure

LANDSCAPE CHARACTER ASSESSMENT POST REF SUBMISSION

Sensitivity

This LCZ consists of well established natural bushland that provides an enclosed character through a combination of mature bushland to the east and the rail corridor and associated infrastructure to the west.

The extents of the Proposal have changed from the REF submission with the Proposal now impacting a larger area of bushland to the east. Existing built elements, including the overhead wiring along the eastern verge and the rail corridor to the west when coupled with the retention of planting within the median, provides an opportunity for this LCZ to absorb greater change. As a result, the sensitivity of the Ridgeline Transition LCZ to change remains **MODERATE**.

Magnitude

The proposal would increase the hard surface to the east of the existing Great Western Highway, requiring existing vegetation removal for the expansion of the roadway, retaining wall, multi use access path and associated earthworks. The changes would impact the spatial character inherent within this LCZ and change the user experience by introducing a retaining wall adjacent to the southbound carriageway. However, changes would be reduced over time by vegetation provided as part of the Proposal landscape design. Vegetation within widened medians will be retained to the maximum width possible, with areas between the rail and road corridor vegetated as part of the landscape design strategy, reducing the impact over time.

Overall, given the Proposal changes, the assessment indicates the magnitude of impact of the proposal in this zone would be **MODERATE**.

Landscape Character Impact

The assessment indicates that the landscape character impact of the design changes in this zone is likely to be **MODERATE**.

Landscape Character Impact Assessment LCZ 5 - Operation	
Sensitivity	MODERATE
Magnitude	MODERATE
LANDSCAPE CHARACTER IMPACT	MODERATE

3.2.2 LCZ 6 - BLACKHEATH APPROACH

EXISTING LANDSCAPE CHARACTER SUMMARY

The landscape character of LCZ 6, illustrated in Figure 4-32, is characterised by a mix of natural bushland to the west with steep slopes along the Megalong escarpment and single storey dwellings in the east with planted mature exotics.

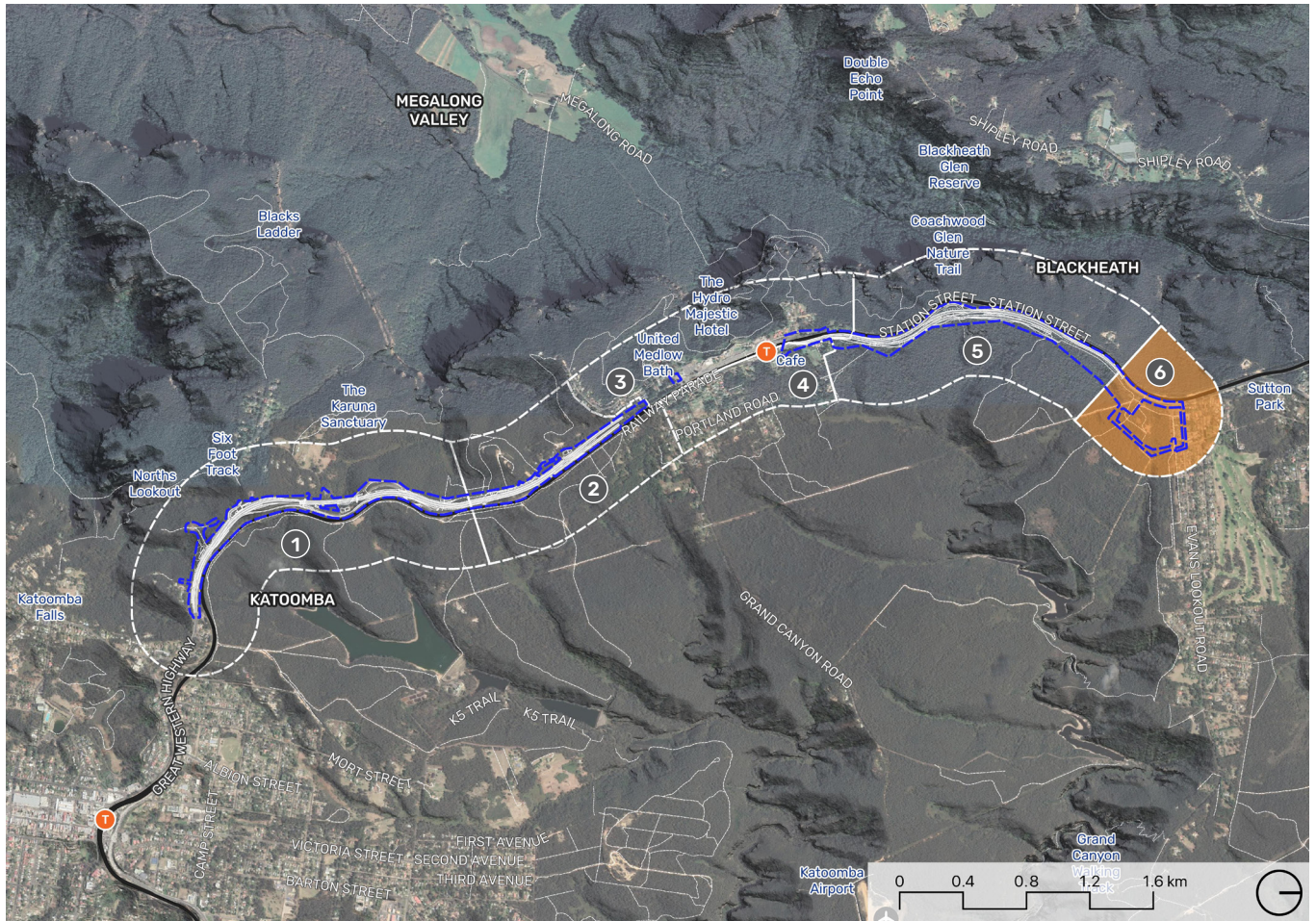


Figure 3-6 Landscape Character Zone 6

THE PROPOSAL

Proposal elements in LCZ 6 during operation include:

- Stub-Tie in modifications for future Great Western Highway Upgrade Central Project
- Removal of bushland vegetation
- Sealed Multiuse Access Path
- Associated earthworks for under grounding of utilities
- New tree, shrub and groundcover vegetation.

PROPOSED LANDSCAPE CHARACTER

Landform

- The proposal would involve both cut and fill batters along both sides of the proposed carriageway widening and localised landform adjustments adjacent to the multi-use access trail.

Vegetation cover

- Removal of bushland vegetation within the operational footprint would result in significant clearing in locations where the proposed upgrade does not follow the existing road alignment, revegetation as part of Proposal landscaping plan would partly reduce this change over time.
- In areas of widened median within this LCZ, vegetation is proposed to be retained where possible, supplemented with new endemic plantings.

Built Form and heritage

- The proposal would not impact on any non-Aboriginal heritage items

Spatial quality

The overall spatial qualities would be retained with some localised changes including:

- The widening of the existing roadway from single to dual carriageway
- Increase in hardstand in localised areas where the road deviates from the existing footprint.

Public domain

- The proposal would not result in any changes to public domain areas within this LCZ.

Key activity areas

- The proposal would not result in any changes to key activity areas within this LCZ.

Connectivity and access

- Improved regional and national transport connectivity and travel times along Great Western Highway
- Introduction of a sealed access way between Coachhouse Lane, adjacent to the Great Western Highway between Blackheath and Medlow Bath.



Figure 3-7 View of the winding Great Western Highway looking north on approach to Blackheath



Figure 3-8 View south of Blackheath from Valley View Road

LANDSCAPE CHARACTER ASSESSMENT POST REF SUBMISSION

Sensitivity

This LCZ consists of a mix of natural bushland with steep slopes away from the transport corridor in the west and single story dwellings to the east. Given the strong borders to the east and west, spatial quality in this LCZ has a relatively enclosed character. Given the removal of existing vegetation adjacent to the roadway, in particular at the proposed future tie in with the Great Western Highway Upgrade Central project and proximity to residences further north within this LCZ it would be difficult to absorb changes. However, due to the proximity of existing built elements adjacent to the road corridor, including the overhead wiring along the eastern verge and the rail corridor, the sensitivity of the Blackheath Approach LCZ to change is considered to remain as **MODERATE**.

Magnitude

The proposal would significantly increase the hard surface to the east of the existing Great Western Highway, requiring localised existing vegetation removal to accommodate the expansion of the roadway and adjacent multi use access path. Additionally, the proposed service relocation and introduction of underground wires perpendicular to residences along Evans Lookout Road provides additional impact to the existing LCZ character. Although existing conditions along the Great Western Highway are similar in nature, the expansion of the construction zone, bushland removal and new hardstand would result in a high magnitude impact to the existing LCZ character. These changes would be reduced slightly over time through the combination of median vegetation retention which is supplemented with new vegetation provided as part of the proposal landscape design.

Overall, the assessment indicates the magnitude of impact of the proposal in this zone would be **MODERATE**.

Landscape Character Impact

The assessment indicates that the landscape character impact of the design changes in this zone is likely to be **MODERATE**.

Landscape Character Impact Assessment LCZ 6 - Operation	
Sensitivity	MODERATE
Magnitude	MODERATE
LANDSCAPE CHARACTER IMPACT	MODERATE

3.3 LANDSCAPE CHARACTER IMPACT SUMMARY

The original and updated landscape character impact assessment of the Great Western Highway Upgrade East from the REF assessment is summarised in Table 2-1 below, which confirms no change in the landscape character impact assessment.

LCZ	Sensitivity	Magnitude	Impact
ORIGINAL REF ASSESSMENT			
LCZ 5 Ridgeline Transition	MODERATE	MODERATE	MODERATE
LCZ 6 Blackheath Approach	MODERATE	MODERATE	MODERATE
UPDATED ASSESSMENT			
LCZ 5 Ridgeline Transition	MODERATE	MODERATE	MODERATE
LCZ 6 Blackheath Approach	MODERATE	MODERATE	MODERATE

Table 3-2 Summary of Landscape character impact changes

Existing view of the rail corridor and Great Western Highway looking south from the Gatekeepers Cottage



Chapter 4

VISUAL IMPACT ASSESSMENT

4.1 OVERVIEW

The method used to undertake this study follows the 'Guideline for Landscape Character and Visual Impact Assessment' (Transport for NSW, 2020).

The extent from which the proposal would be visible from adjoining areas varies along the length of the Great Western Highway Upgrade, influenced by topography, vegetation and associated buildings. A detailed field and desktop assessment was undertaken in conjunction with a viewshed analysis of the site digital surface model (DSM) to determine the area from where the proposal would be visible, defined as the Visual Envelope Map (VEM), as illustrated in Figure 4-1.

The visual receivers of the proposal from the additional viewpoint include residents, tourists, recreational and national park users, pedestrians, cyclists and motorists; with views of proposal elements generally constrained by existing mature established vegetation and existing topography. The additional viewpoint selected for the Proposal is illustrated in Figure 4-1 and assessed within this chapter.

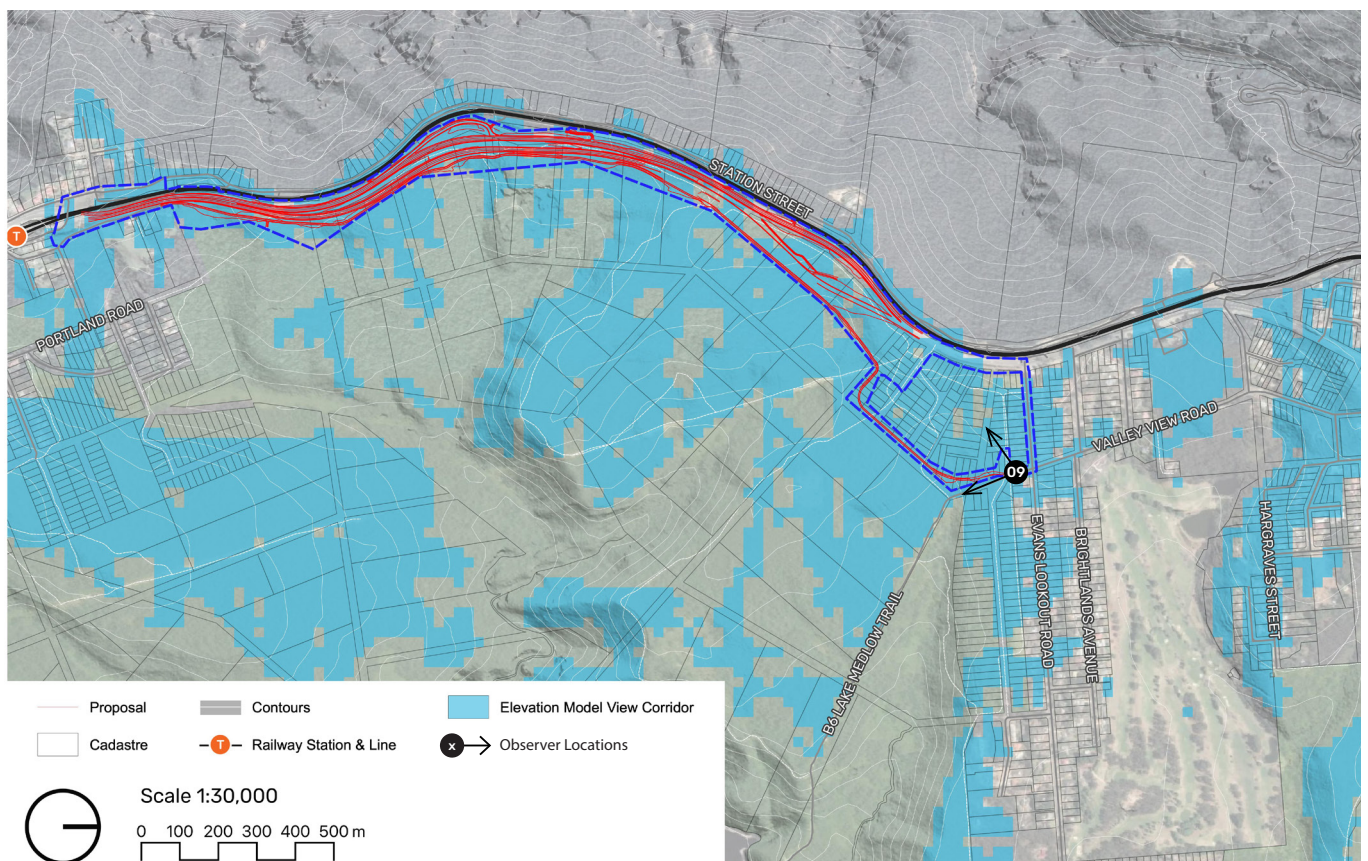


Figure 4-1 Viewpoint locations

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4.2 VISUAL IMPACTS



Figure 4-2 Viewpoint 9

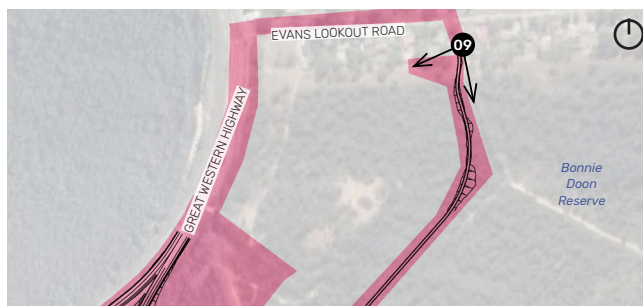


Figure 4-3 Viewpoint 9 location

4.3 VIEWPOINT 9

Location:

Valley View Road looking south west toward the Proposal

Primary viewers

- Residents along Valley View Road and Evans Lookout Road
- Recreational walkers and cyclists along the Great Blue Mountains Trail/Lake Medlow Trail

Visible Proposal elements

- Multiuse access trail in foreground
- Cut batter and vegetation clearing along the access rail and service relocation
- New shrub and tree revegetation

Sensitivity

The view from viewpoint 9 is illustrated above. The view is comprised predominantly of bushland with scattered tree plantings providing relatively thick screening for the existing highway. The view offers a pleasant outlook into the National Park, but also contains existing overhead wires, electrical poles and fencing which is seen in the foreground of the view. The sensitivity of this view to change is **MODERATE**, given that residential viewers generally have a high sensitivity and due to the limited distance of the viewers from minor works.

Magnitude

The proposal would introduce a new sealed multi-use accessway to the foreground and mid-distance of the view. Some of the existing trees in the mid-distance would be removed to accommodate the path, earthworks and utility under grounding. The landscape design would consist of endemic bushland planting which would revegetate the areas that have had vegetation removed for the works. Overtime this would reduce impact and maintain the bushland character of this view. Given there are existing overhead utilities that exist within this view, the new sealed accessway, along with the removal of existing mature vegetation would have a reduced visual impact over time through the proposed revegetation of the affected national Park. As a result, the magnitude of change within this view would be considered **MODERATE**.

Visual Impact Summary

Sensitivity	Magnitude	Impact
MODERATE	MODERATE	MODERATE

Existing view of the bushland looking south east from Valley View Road



Chapter 5

CONCLUSION

5.1 CONCLUSION

Following exhibition of the REF, the proposal design has been refined (referred to as 'the revised design') in response to stakeholder feedback and further design development to either realise social benefits earlier or to allow construction efficiencies.

This memo outlines changes to the REF submission, in particular the landscape concept design, landscape character assessment and visual impact assessment as a result of the revised design.

There have been no changes to the urban design vision, objectives or principles that were produced as part of the original REF.

Throughout the concept stage, where possible, the revised design has been located within or near to existing road corridors, with existing pavements removed and revegetated. Whilst the continuation of the sealed multiuse access trail provides vegetation removal and additional hardstand, the location of existing infrastructure minimises this impact, with the additional of new vegetation, the residual impact will be minimised overtime. Additionally, the revised design allows for additional buffer planting between the road and rail corridor, to maintain the bushland character between the Blue Mountains villages, Medlow Bath and Blackheath whilst implementing planting strategies including bushland reconstruction to further assist in integrating the proposal within the landscape setting and minimise impacts on views as vegetation matures.

Transport would continue to develop the design in accordance with the urban design objectives and principles during the detailed design phase of the Proposal.

**Great Western Highway
Upgrade East:**
Katoomba to Blackheath

Additional REF Scope

Prepared for



Prepared by

spackman
mossop
michaels

On behalf of:

aurecon

**MOTT
MACDONALD**