Appendix E

Visual impact assessment

BOUNDARY STREET UPGRADE

VISUAL IMPACT ASSESSMENT

S13-0057
ISSUE C

Cover Image: Heavy traffic on Boundary Street, looking towards the railway bridge

BOUNDARY STREET UPGRADE
VISUAL IMPACT ASSESSMENT

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EXECUTIVE SUMMARY

INTRODUCTION

This Visual Impact Assessment (VIA) report identifies and evaluates the visual impacts of the proposed Boundary Street upgrade (the Proposal). This assessment addresses both construction and operational phase impacts of the Proposal, including an analysis of views from key vantage points and proposed mitigation measures to address these impacts.

THE PROPOSAL

The Boundary Street upgrade extends from Pacific Highway to Melnotte Avenue, Roseville. The road will be widened to ease traffic congestion with the provision of two dedicated left turn and two dedicated right turn lanes from Boundary Street onto the Pacfic Highway.

THE SITE

The study area is located 500 metres south of Roseville Station and one kilometer north of Chatswood Station. The site is composed of mostly residential land uses, with a rail corridor crossing over Boundary Street adjacent to Hill Street. The site straddles Willoughby City Council to the south and Ku-ring-gai Council to the north. There is a high density of street tree planting and other vegetation along the road corridor.

VISUAL IMPACT ASSESSMENT

Overall, the Boundary Street upgrade proposal can be said to be in keeping with the scale and bulk of existing road infrastructure in the area. The changes affect a limited number of properties and the upgrade is not expected to have a major impact on visual amenity once construction is complete.

Of the eleven receptors identified within this report, four recorded an impact rating of 'High' or 'Moderate/High' during the operational phase. These receptors have the greatest potential to be visually impacted by some aspect of the proposal.

- Viewpoint 3 - Road users and pedestrians on Boundary Street (near Archer Street).
- Viewpoint 4 - Five residential properties along the southern edge of Boundary Street (west of Archer Street).
- Viewpoint 5 - Six residential properties on the northern side of Boundary Street (west of Archer Street).
- Viewpoint 6 - Five residential properties along the northern edge of Boundary Street (east of Archer Street).

The residential scale and character of the Boundary Street road corridor is likely to change in the short to mid term as development along the road becomes more dense due to changes in planning controls. This will further reduce the sensitivity of the road corridor to change, leading to a reduction in the visual impacts associated with the proposal. Mitigation measures are crucial to ensure that the existing pleasant streetscape of the road corridor is preserved.

EXECUTIVE SUMMARY

MITIGATION

The principal forms of mitigation appropriate for the Proposal include the following reduction and alleviation measures:

Reduction

- Locating storage areas and associated works in cleared or otherwise disturbed areas away from Boundary Street.
- Restricting vegetation clearing to those areas where it is absolutely necessary. Opportunities to minimise clearing should be part of the detailed design.
- Trimming rather than removal of trees to be undertaken where possible and to be conducted by a qualified arborist.
- Retaining the existing kerb on the southern side of Boundary Street to minimise the loss of the existing Brush Box tree avenue.

Alleviation

- Providing replacement vegetation for the northern side of Boundary Street to maintain a pleasant character for the streetscape and soften the edge of the road .
- Assisting any replacement tree canopy with suitable growing conditions such as a continuous deep soil zone for tree planting and establishment in the public/ private domain.
- Providing an appropriate retaining wall solution, stepping with the grades on the northern side of the road, to maintain existing character and maximise planting opportunities and provide for replacement tree planting.
- Fencing and retaining walls should be residential in scale and consistent with the site's character.
- Utilising a simple fencing alignment. Walls should have level tops and step down the slope, utilising piers at corners and step changes.
- Considering piered design for retaining wall footings so as to maximise opportunities for the planting trench.
- Integrating access ways with walling and fencing. Integrating lighting with any wall design.
- Utilising a small palette of complimentary materials for all surface treatments.
- Providing hedge planting or climbers to retaining walls such as Ficus pumila to improve amenity and reduce surface area that can be impacted by graffiti.
- Introduced tree species should reflect key existing vegetation found within the site and local area. Recommended species include *Jacaranda mimosifolia* and *Lophostemon confertus.*

INTRODUCTION

PURPOSE OF THE REPORT

The purpose of this report and the overall Review of Environmental Factors (REF) is to seek planning approval for the Boundary Street Upgrade, in accordance with Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

This assessment is an independent report and is based on a professional analysis of the landscape and the proposal at the time of writing. The current and potential future viewers (visual receptors) themselves have not been consulted about their perceptions; the analysis and conclusions are therefore based solely on a professional assessment of the anticipated impacts, based on a best practice methodology.

Visual Impact Assessment (VIA) operates within the overall framework of an REF. It aims to ensure that all possible effects of change and development in the landscape, views and visual amenity are taken into account. Visual effects assessment is concerned with how the surroundings of individuals or groups of people may be specifically affected by change in the landscape, both quantitatively and qualitatively.

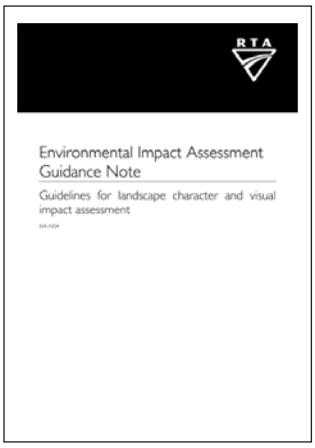
Judgement as to the significance of the effects is arrived at by a process of reasoning, based upon analysis of the baseline conditions, identification of receptors and assessment of their sensitivity, and the magnitude and nature of the changes that may result from the Proposal.

INTRODUCTION

TERMS USED IN THE REPORT

The following provides a brief explanation of the terms and abbreviations commonly used in VIA reports and which appear in this report:

Duration: The length of time the visual receptor is exposed to the view.
Magnitude: The scale, form and character of a development proposal or change in the landscape. In the case of visual assessment, also how far the proposal is from the receptor. Combined with sensitivity provides a measurement of impact.
Magnitude of change: A quantitative assessment of the change in compositional elements of the view.
Overall Visual Impact Rating: Determined by cross referencing sensitivity with magnitude.
Quantum of view: The openness of the view and the angle of the view to the visual receptor.
Sensitivity: The relative ability of a visual receptor to respond to and, where appropriate, accommodate change of a particular type. Combined with magnitude provides a measurement of impact for the visual receptor.
View: The sight or prospect of some landscape or scene.
Viewshed: The area which the proposal is visible to the human eye from a fixed vantage point.
Visual Amenity: The measure of the visual quality of a site or area experienced by residents, workers or visitors. It is the collective impact of the visual components which make a site or an area pleasant to be in.
Visual Impact: The impacts on the views from residences and other public places.
Visual Receptor: The public or community at large who would have views of the proposal site either by virtue of where they live and/or work or from transport routes, paths, lookouts and the like.
Visual Catchment: The area from which a particular point is visible, taking into account topography, vegetation and built form.


RTA

Environmental Impact Assessment Guidance Note

Guidelines for landscape character and visual impact assessment

METHODOLOGY

This report has adopted the Guidelines for Landscape Character and Visual Impact Assessment as published by the Roads and Maritime Service, RMS. These provide the only documented guidelines for VIA by an Australian Government Agency and are considered the most appropriate for this study.

Key components of the VIA methodology include:

- Site analysis - Based on desk top and field analysis, the natural environment is identified and described as well as the human intervention and shaping of that environment, including settlements and the interaction between place and community.
- Assessment of the visibility of the Proposal - Based on desk top and site analysis, the extent of the development that is visible is defined.
- **Identification of key viewpoints -** Based on desktop and field analysis, a schedule of key viewpoints is developed.
- Assessment of visual impacts - The unmitigated impact of the development on each representative viewpoint is assessed. Impacts are based on a composite of the sensitivity of the view and magnitude of the development in that view, before any mitigation strategy has been put in place.
- Cumulative Impact Analysis - The visual impact of any other similar nearby developments and potential developments is assessed.
- Development of mitigation strategy - Principles and strategies are developed to mitigate landscape character and visual impacts in the ongoing development of the design.

METHODOLOGY

REPORT STRUCTURE

Following an introduction section that describes the existing site and the proposal, the VIA is structured in two parts:

Part A - Visual Impact Assessment

Identification and analysis of impacts of the proposal on key viewpoints.

Part B - Mitigation Recommendations

Discussion of the means by which the visual impacts identified can be precluded, reduced or offset.

SUPPORTING DOCUMENTS

The *Boundary Street Intersection Improvements Concept Design Report March 2012 GHD* has assisted in the compilation of this report.

THE SITE

Boundary Street is a two-way carriageway consisting of three traffic lanes under the North Shore Line railway bridge. For commuters in suburbs east of Middle Harbour such as Killarney Heights, Forestville, Frenchs Forest, Belrose and Davidson, Boundary Street provides the most direct link to the Pacific Highway.

Middle Harbour and the associated valley form a significant natural barrier to the east extending north to St Ives. Roseville bridge provides a strategic connection delivering traffic from these suburbs via Warringah Road to Boundary street (refer Figure 1A and 1B).

Crossing the study area at its western end is the North Shore Rail Line linking the Sydney CBD with Hornsby and the Central Coast. The road has a restricted vertical clearance of 4.2 metres under the existing rail bridge.

The study area is located 500 metres south of Roseville Station and one kilometre north of Chatswood Station (refer Figure 1C).

Land use

Residential is the dominant land use in the immediate vicinity of Boundary Street between the Pacific Highway and Archer Street. The other significant land use is the rail corridor, which crosses over Boundary Street adjacent to Hill Street.

Statutory and Planning Context

The site straddles the local government boundaries of Willoughby City Council to the south and Ku-ring-gai Council to the north. Given the site's strategic proximity to Chatswood and Roseville Stations, both councils have made special zoning provisions for this area with substantially increased building densities. The housing type is currently dominated by single storey detached housing in Federation or Interwar bungalow styles. The long term character impacts of introducing higher density buildings on Boundary Street and its surrounds are discussed further in this report.

Topography

Topography within the study area is generally flat with a gentle slope to the east of Boundary Street.

Vegetation

Street trees and other vegetation in the area are made up of a variety of species of varying ages and heights, including, *Lophostemon confertus, Jacarandas* and *Melaleucas*, as well as weed species such as *Privet* and *Camphor Laurel.*

THE SITE

Figure 1A - Site context (not to scale)

Figure 1B - Site context (not to scale)

Figure 1C - Site context (not to scale)

THE PROPOSAL

The proposal involves the upgrade of Boundary Street between the Pacific Highway and Melnotte Avenue, Roseville. The total length of the upgrade would be 0.38 kilometres, with associated works to be carried out at Hill Street and the Pacific Highway (refer Figure 2A and B).

- The general features of the proposal include the provision of:
- Two dedicated left turn and two dedicated right turn lanes from Boundary Street into the Pacific Highway.
- Two dedicated through lanes from Pacific Highway to Archer Street.
- A dedicated right turn lane from Boundary Street into Archer Street.
- Hill Street converted to left in/left out access.
- A shared pedestrian and cycle pathway on the northern side of Boundary Street between Hill Street and Archer Street.
- Upgrades to the existing signalised intersections at Boundary Street/Pacific Highway and Boundary Street/Archer Street.
- A retaining wall on the northern side of Boundary Street.
- Landscaping and urban design in consultation with Willoughby Council and Ku-ring-gai Council.
- Property adjustments.
- Drainage and utility relocations.

Figure 2A - Boundary Street Road Widening - Design Intent (source RMS)

THE PROPOSAL

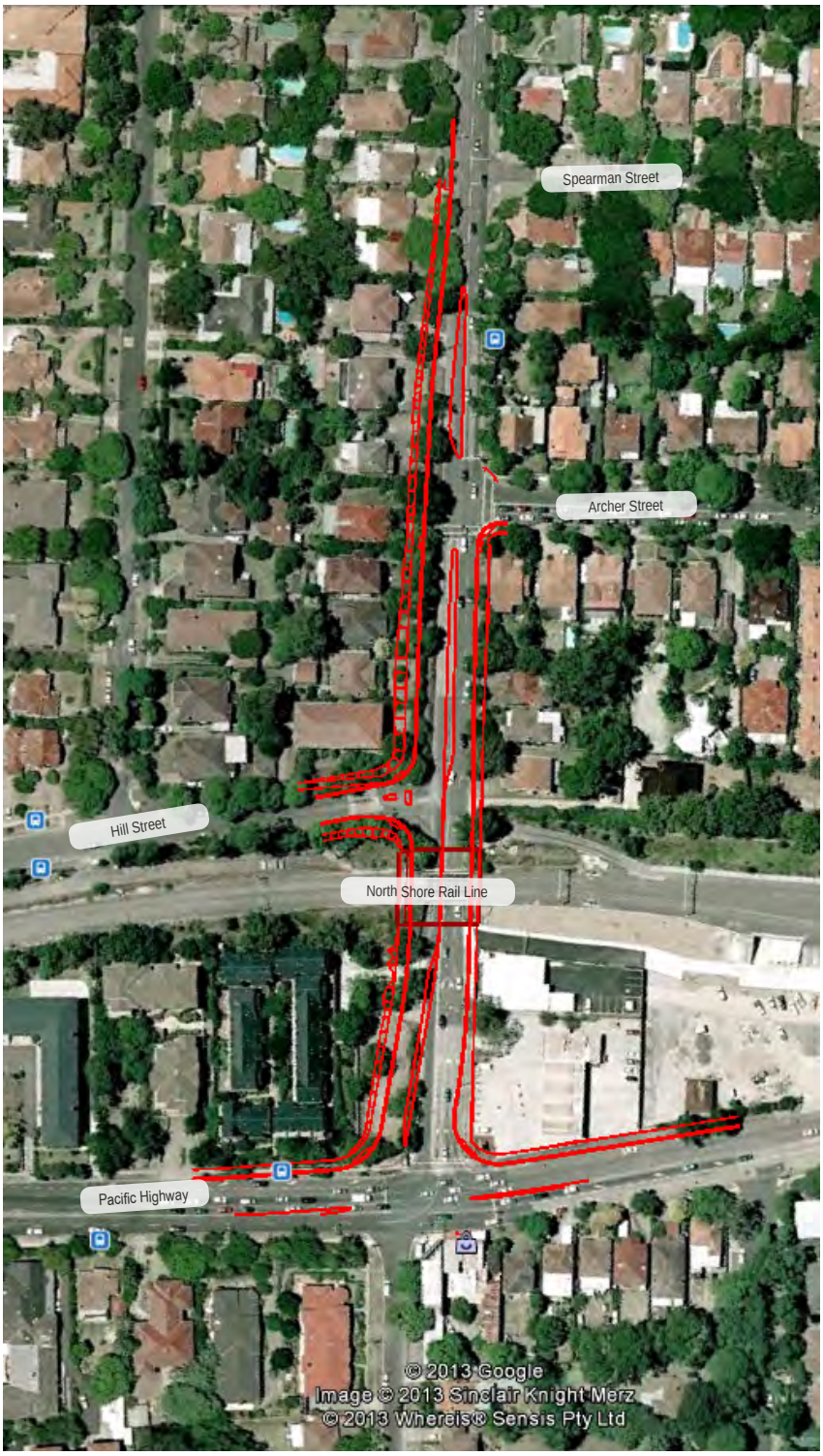


Figure 2B - Boundary Street Road Widening - Extent of Works (source Google Earth and RMS)

Heavy traffic on Boundary Street, looking west

PART A: VISUAL IMPACT ASSESSMENT

EXISTING VISUAL ENVIRONMENT

STUDY AREA

The study area specific to the Visual Impact Assessment comprises that covered by the proposal as shown in Figure 2A and 2B. This includes the surrounding streets likely to be visually impacted by the Proposal.

The extent of the study area includes the Pacific Highway 100 metres north and south of Boundary Street, along Boundary Street from the Pacific Highway through to Spearman Street and the initial 100 metres of Corona, Hill and Archer Streets.

The visual environment of the study area is that of a typical developed urban setting, and is now described from a public and private realm perspective.

PUBLIC DOMAIN

View corridors to the site exist along roads including the Pacific Highway, Boundary Street, Hill Street and Archer Street. The most distinctive visual feature of Boundary Street is the green planted edge to the northern and southern sides of the road (refer Figure 3A and 3B).

The vegetation on the northern edge is particularly dense and is made up of a variety of tree species of varying ages and heights including *Jacarandas* and *Melaleucas*, as well as weed species such as *Privet* and *Camphor Laurel.* Whilst the vegetation is not considered ecologically significant, the mass of vegetation provides a visually important edge to the street and screens the residential properties behind.

Similarly, street tree planting of *Lophostemon confertus* (Brush Box) form a consistent planted edge to the southern side of Boundary Street, partially screening properties behind. These trees while not large or significant individual specimens, are mature and as a group they provide valuable visual amenity.

PRIVATE DOMAIN

Residential properties alongside the road currently have filtered views to the road corridor, and in some cases are almost completely screened by the surrounding vegetation (refer Figure 3A and 3B). The existing local housing character is predominantly from the period 1920 – 1945 and comprises examples of Inter-War housing. Due to changes in density controls, the residential character is anticipated to change to become high density on the Willoughby and Ku-ring-gai sides.

EXISTING VISUAL ENVIRONMENT

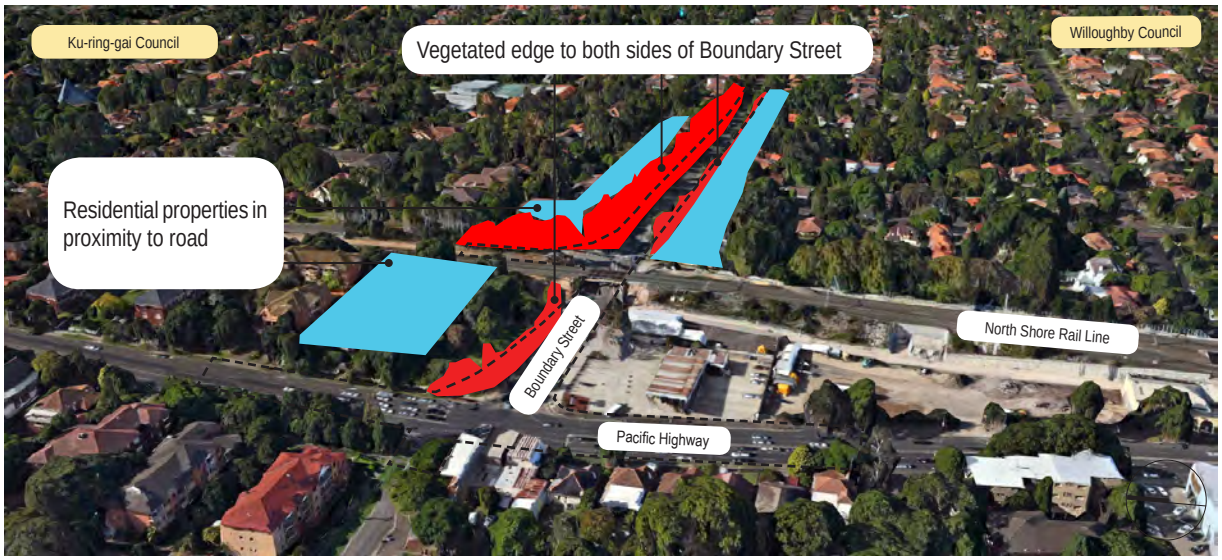


Figure 3A - Key visual components within study area - looking east (source Nokia Maps)

Figure 3B - Key visual components within study area - looking west (source Nokia Maps)

Extent of works

Residential properties

Visually prominent vegetation

VISUAL CATCHMENT ANALYSIS

Prior to the preparation of the detailed visual receptor analysis, a potential visual catchment for the Boundary Street upgrade works was identified through aerial mapping. Figure 4 indicates this approximate catchment as defined and created by topography, road layout, existing built form and vegetation.

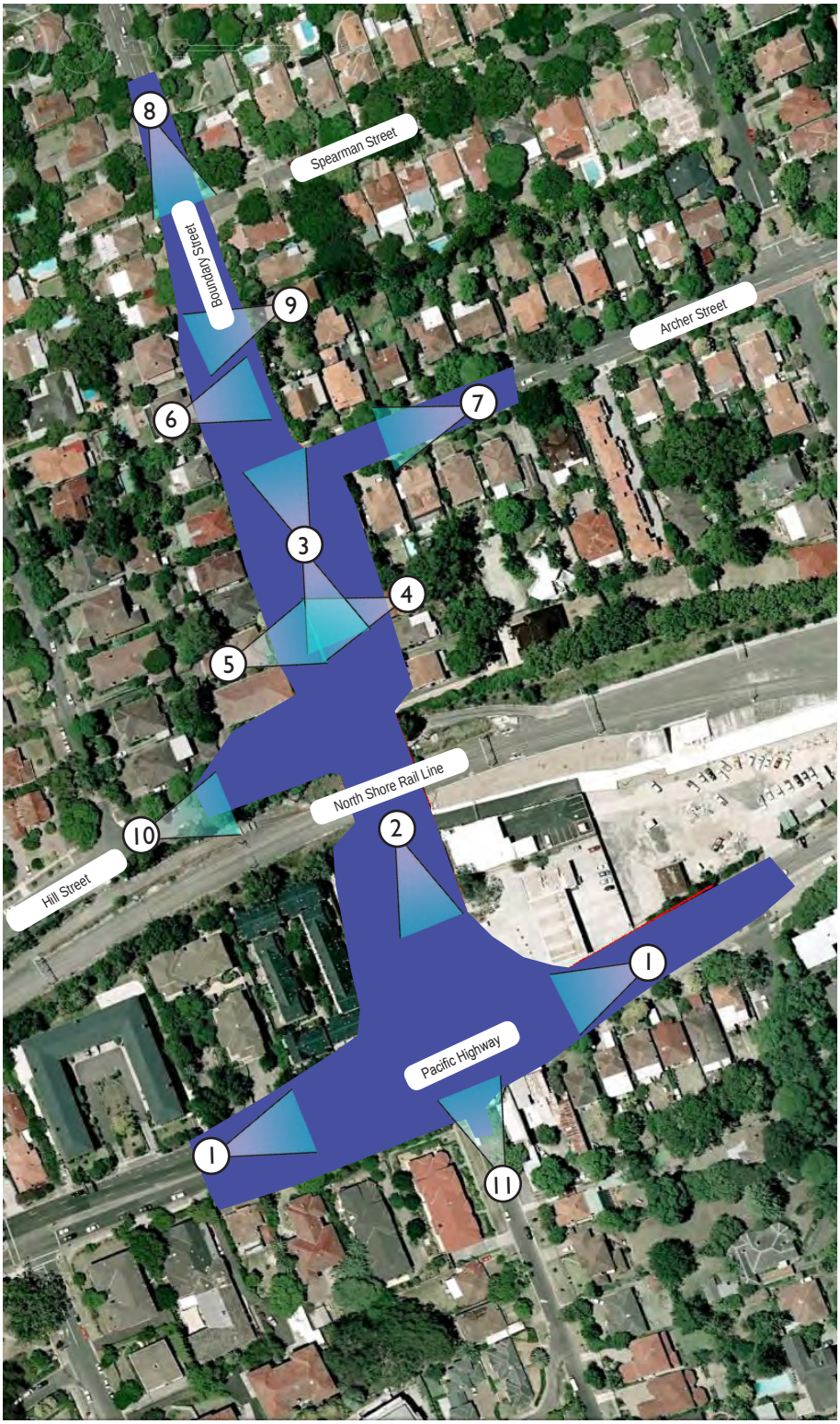
KEY VISUAL RECEPTORS

During a visit to the site, eleven key receptors with the potential to be visually impacted by some element of the proposal were selected (refer Figure 4). These include groups of residential properties along Boundary Street as well as road users and pedestrians.

The locations identified are:

1. Major Road - Pacific Highway - near Boundary Street intersection (looking north and south).
2. Major Road - Boundary Street - near railway bridge (looking west).
3. Major Road - Boundary Street - near Archer Street junction (looking east and west).
4. Private Property - Five residential properties on southern side of Boundary Street, west of Archer Street (looking north).
5. Private Property - Six residential properties on northern side of Boundary Street, west of Archer Street (looking south).
6. Private Property - Five residential properties on northern side of Boundary Street, east of Archer St (looking south).
7. Minor Road - Archer Street - looking north towards Boundary Street junction.
8. Major Road - Boundary Street - near Spearman Street (looking west).
9. Private Property - four properties on southern side of Boundary Street, east of Archer Street (looking north).
10. Minor Road - Hill Street (looking south).
11. Minor Road - Corona Avenue (looking east).

VISUAL CATCHMENT ANALYSIS



Potential visual catchment of proposed upgrade

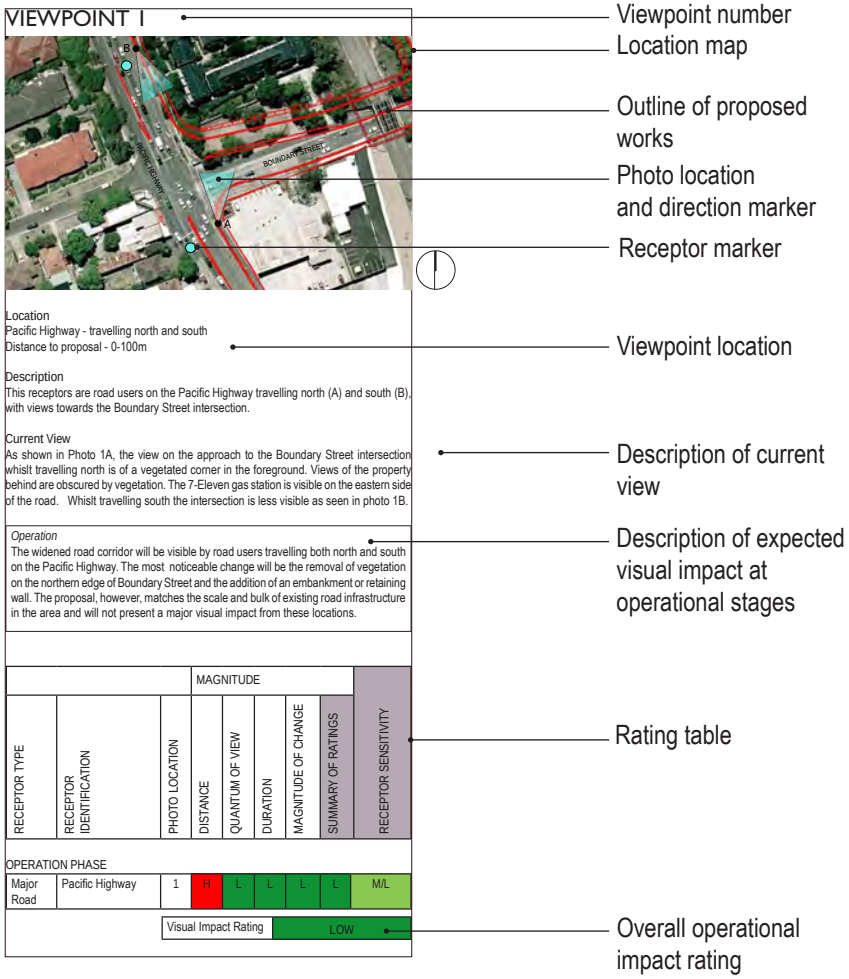
Figure 4 - Viewpoint Location Map

VIEWPOINT ANALYSIS

The following section assesses the visual impact of the proposal on each of the selected viewpoints shown in Figure 4. This includes a description of the current view from each viewpoint followed by a discussion of the potential visual impacts of the proposal on that view at the operational phase.

Each viewpoint is accompanied by a photograph of the current view. For residential receptors, access was not possible to the property itself. A photo was taken at the closest publicly accessible point - often the end of the properties themselves. The description of visual impact is therefore estimated from the property's main dwelling area.

For a detailed description of the assessment criteria and impact ratings used see Appendix A.



VISUAL IMPACT ASSESSMENT

METHODOLOGY

The overall impact rating of the proposal on any given receptor is based on factors of magnitude and sensitivity.

Sensitivity - each visual receptor type has an inherent and varied sensitivity to change in the visual scene based on their personal context in which the view is being experienced. This will have a direct bearing on the perception of visual impact experienced by the receptor and qualifies the quantitative impacts. Appendix A describes the levels of sensitivity for each receptor type.

Magnitude - the magnitude of the visual effects of the development within the landscape. A series of quantitative assessments are studied, including distance from development, quantum of view, duration of view and magnitude of change. Appendix A describes the ratings assigned to these quantitative assessments.

Overall impact rating

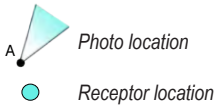
The severity of these impacts is calculated using matrix Table 01 - based on a combination of magnitude and sensitivity.

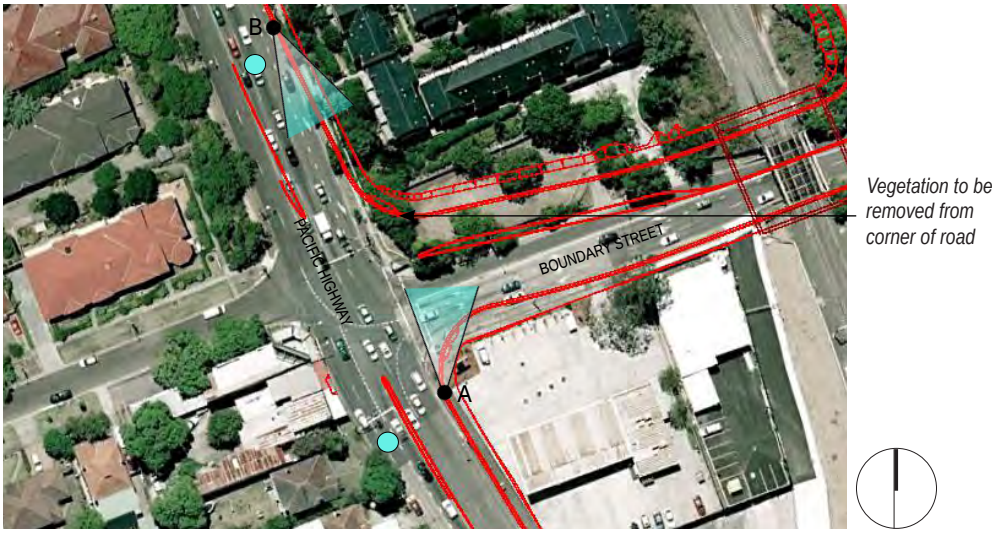
SENSITIVITY	MAGNITUDE: High	High/ Moderate	Moderate	Moderate/ Low	Low	Negligible
High	*High*	*High*	*Moderate-High*	*Moderate-High*	*Moderate*	*Negligible*
High/ Moderate	*High*	*Moderate-High*	*Moderate-High*	*Moderate*	*Moderate*	*Negligible*
Moderate	*Moderate-High*	*Moderate-High*	*Moderate*	*Moderate*	*Moderate-Low*	*Negligible*
Moderate/ Low	*Moderate-High*	*Moderate*	*Moderate*	*Moderate-Low*	*Moderate-Low*	*Negligible*
Low	*Moderate*	*Moderate*	*Moderate-Low*	*Moderate-Low*	*Low*	*Negligible*
Negligible	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*

Table 01: Overall impact rating as a combination of Sensitivity and Magnitude.

Source: RTA (2009) Guideline for Landscape Character + Visual Assessment

VIEWPOINT 1





Location

Pacific Highway - travelling north and south
Distance to proposal - 0-100 metres

Description

These receptors are road users on the Pacific Highway travelling north (A) and south (B), with views towards the Boundary Street intersection.

Current View

As shown in Photo 1A, the view on the approach to the Boundary Street intersection whilst travelling north is of a vegetated corner in the foreground. Views of the property behind are obscured by vegetation. The 7-Eleven service station is visible on the eastern side of the road. Whilst travelling south, the intersection is less visible as seen in photo 1B, with the view dominated by the Pacific Highway road corridor extending into the distance.

VISUAL IMPACT
Operation The widened road corridor will be visible by road users travelling both north and south on the Pacific Highway. The most noticeable change will be the removal of vegetation on the northern edge of Boundary Street and the addition of an embankment or retaining wall. The proposal, however, matches the scale and bulk of existing road infrastructure in the area and is not expected to present a major visual impact or change to the composition of the scene from these locations.

VISUAL IMPACT ASSESSMENT

1A - Existing view north along Pacific Highway towards Boundary Street

1B - Existing view along Pacific Highway towards Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Major Road	Pacific Highway	1	H	L	L	L	L	M/L

Visual Impact Rating	MODERATE/LOW

From Table 01, using a combination of sensitivity and magnitude ratings.

VIEWPOINT 2

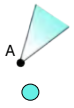
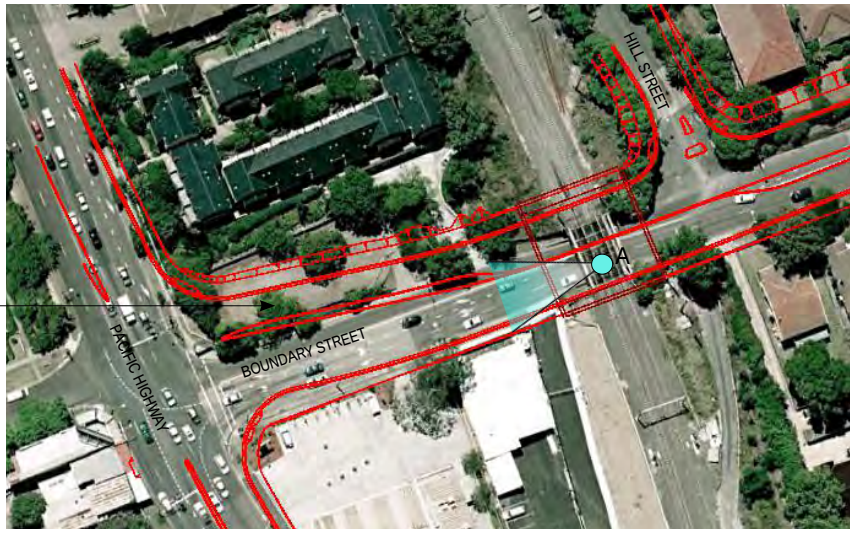


Photo location

Receptor location

Vegetation to be removed from northern edge of road



Location

Boundary Street - travelling west near rail bridge
Distance to proposal - 0 metres

Description

This receptor comprises road users and pedestrians on Boundary Street, travelling west.

Current View

As shown in Photo 2A, the view from this location is along Boundary Street to the intersection with the Pacific Highway. The 7-Eleven service station is visible on the southern side of the road, with a group of large trees visible on the northern edge of the road.

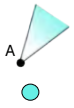
VISUAL IMPACT
Operation The widened road corridor will be visible by road users travelling both west and east along Boundary Street from this location. The most noticeable change will be the removal of vegetation on the northern edge of Boundary Street and the addition of an embankment or retaining wall. The buildings behind the existing vegetation will be exposed, creating a harder and more urban edge to the street. The proposal, however, matches the scale and bulk of existing road infrastructure in the area and is only expected to have a moderate/low visual impact on road users and pedestrians at this location.

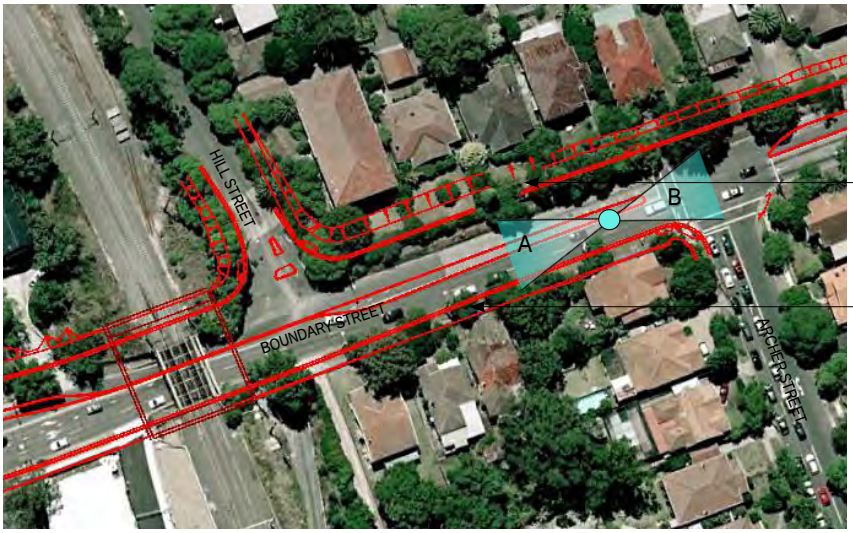
2A - Existing view along Boundary Street from below rail bridge, looking west

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Major Road	Boundary Street	2	H	M/L	L	M/L	L	M/L
		Visual Impact Rating	MODERATE/LOW					

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 3





Vegetation to be removed on northern and southern side of road

Location

Boundary Street, near Archer St looking west (A) and east (B)
Distance to proposal - 0 metres

Description

This receptor comprises road users and pedestrians on Boundary Street, travelling east and west.

Current View

As shown in Photo 3A, the view from this location is west along the Boundary Street road corridor. The railway bridge is visible in the middle distance with street tree planting visible on the southern edge of the road and a dense vegetated edge to the northern side. The view is similar looking east (Photo 3B), with a planted edge visible on both sides of the road, screening the residential properties behind.

VISUAL IMPACT
Operation The widened road corridor will be visible by road users and pedestrians travelling both west and east along Boundary Street from this location. The most noticeable change will be the removal of the dense vegetation on the northern edge of Boundary Street, the addition of an embankment/retaining wall and the removal of street trees on the southern edge. The existing/proposed buildings behind the vegetation on the northern side of the road will be exposed, creating a harder and more urban edge to the street.

VISUAL IMPACT ASSESSMENT

3A - Existing view along Boundary Street looking west

3B - Existing view along Boundary Street looking east

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Major Road	Boundary Street	3	H	M/L	L	M/H	M/H	M
		Visual Impact Rating	MODERATE/HIGH					

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 4

Vegetation to be removed from northern and southern side of road

A *Photo location*

Receptor location

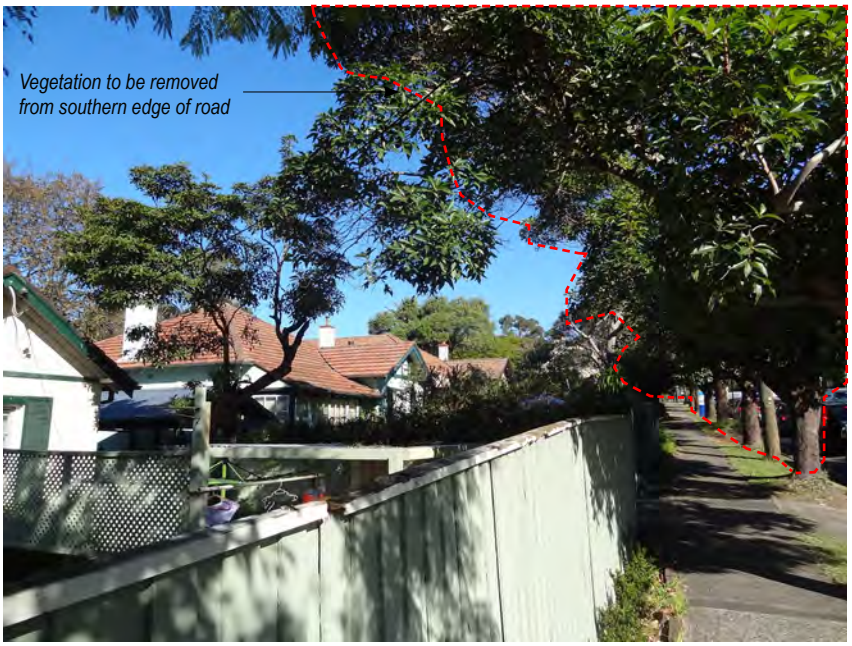
Location
Five Residential properties to the southern side of Boundary Street.
Distance to proposal - 3 metres.

Description
The photo is taken from the street end of the driveway of property A.

Current View
As shown in Photo 4A and 4B, the outlook from these properties is north towards the road. Views towards Boundary Street are partially screened by vegetation within the properties garden, a 1.5 metres high boundary fence and street trees next to the footpath.

VISUAL IMPACT
Operation Removal of vegetation on the southern and northern side of Boundary Street will be the most visible element of change from these properties. The buildings are single storey and the fence and existing garden planting will partially screen views of the widened road corridor and removed vegetation. The removal of all vegetation within the road corridor, however, will noticeably alter the character of the area and leave these residents with a greater exposer to the road environment.

4A - Existing view from driveway of residential property looking north to Boundary Street



4B - Resedential properties on southern side of Boundary Street

VISUAL IMPACT ASSESSMENT

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Private Property	Boundary Street	4	H	M	M/H	M/H	M/H	M/H

Visual Impact Rating	MODERATE/HIGH

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 5

Photo location

Receptor location

Five properties subject to DA and likely to be demolished

Vegetation to be removed from northern edge of road

Location

Six residential properties located on northern side of Boundary Street, west of Archer Street
Distance to proposal - 6 metres

Description

The photo is taken from the elevated footpath that runs along the street front of these properties.

Current View

As shown in Photo 5, the current view from these residents is towards the road, heavily screened by a green wall of vegetation. The vegetation consist of trees and shrubs planted along the verge, to the front of property boundaries and within front gardens.

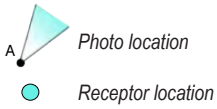
VISUAL IMPACT
Operation The widened road will be at a much closer proximity to the front of these properties and the road, pedestrians and traffic on Boundary Street will be fully visible. There will be a noticable loss of vegetation infront of the properties and along the southern edge of the road. Of the six properties assessed, five have been purchased by a developer and may be demolished (as indicated by the dashed line above). A Development Application has been approved to develop the land into a block of multistorey apartments. This assessment considers the properties as they currently stand, although the impact rating will reduce if the land is developed and apartments constructed. Any new apartment development will have a lower visual sensitivity and the magnitude of change will be reduced as the vegetation will likely be removed before the apartments are occupied. Planting within the new development may assist in partially screening views of the road.

5 - Existing view from footpath along northern side of Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
OPERATION PHASE								
Private Property	Boundary Street	5	H	H	M/H	H	H	M/H
		Visual Impact Rating	HIGH					

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 6



Location

Five residential properties to north side of Boundary Street, east of Archer Street
Distance to proposal - 6 metres

Description

The photo is taken from the driveway of property A.

Current View

As shown in Photo 6A, the viewpoint from the receptor's driveway looks south towards Boundary Street. The view is partially blocked by a large hedge planted within the property's garden. The road and southern side of Boundary Street are visible from the driveway.

VISUAL IMPACT
Operation The widened road will be at a much closer proximity to the front of these properties and the road, pedestrians and traffic on Boundary Street will be fully visible. There will be a noticeable loss of vegetation in front of the properties and along the southern edge of the road. It should be noted that a Development Application has been submitted for these five properties and they are ultimately likely to be demolished and developed into multistorey apartments. This assessment considers the properties as they currently stand, although the impact rating will reduce if the land is developed and apartments constructed. Any new apartment development will have a lower visual sensitivity and the magnitude of change will be reduced as the vegetation will likely be removed before the apartments are occupied. Planting within the new development may assist in partially screening views of the road.

6A - Existing view looking south to Boundary Street

6B - Garden of property on northern edge of Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Private Property	Boundary Street	6	H	H	M/H	H	H	M/H
		Visual Impact Rating	HIGH					

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 7

Vegetation to be removed on northern edge of Boundary Street

Location

Archer Street, looking north
Distance to proposal - 100 metres

Description

This receptor comprises road users on Archer Street, looking north towards the Boundary Street junction.

Current View

As shown in Photo 7A, the view from this location is of an urban residential setting along a tree lined road towards the junction. Vegetation on the northern side of Boundary Street is clearly visible at the end of the road corridor.

VISUAL IMPACT
Operation There will be a noticeable removal of vegetation at the end of the road corridor although this compromises only a small part of the total view. As road users and pedestrians travel closer to the Boundary Street intersection, the loss of vegetation will become increasingly apparent, although a major reduction in visual amenity is unlikely.

7A - Existing view along Archer Street looking north towards Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Local Road	Archer Street	7	M	M/L	L	M/L	M/L	M/L

Visual Impact Rating	MODERATE/LOW

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 8

Location
Boundary Street near Spearman Street, looking west
Distance to proposal - 90 metres

Description
This receptor comprises road users on Boundary Street, near Spearman Street, looking west.

Current View
As shown in Photo 8, the view from this location is of a residential setting along the Boundary Street road corridor towards the rail bridge. On the northern side, vegetation has been cleared and a multistorey apartment building erected. On the southern side, a row of street trees is visible, extending to the top of the hill in the middle distance.

VISUAL IMPACT
Operation There will be a noticeable removal of vegetation at the end of the road corridor, compromising a small part of the total view. The widened road will be hard to distinguish from this location and will match the scale and bulk of the existing road infrastructure. The apartment building seen in this view is representative of the type of character that will likely exist along the road once future development takes place. It is noticeable that there are no street trees to the front of this apartment and the building is not screened from the road, resulting to a hard urban edge to Boundary Street in this location.

8A - Existing view along Boundary Street, looking west

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Local Road	Boundary Street	8	M	M/L	L	M/L	M/L	M/L

Visual Impact Rating	MODERATE/LOW

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 9

Location
Boundary Street east of Archer Street, looking north
Distance to proposal - 20 metres

Description
Four properties on Boundary Street to the east of Archer Street.

Current View
As shown in Photo 9A, the outlook from these properties is north towards the road. Views are heavily screened by vegetation within the properties garden, a 1.5 metres high boundary fence/wall and street trees next to the footpath.

Operation The buildings are single storey and the fence/wall and existing garden planting will heavily screen views of the widened road corridor and removed vegetation on the northern side of the road. The retention of the street trees on the southern side of Boundary Street will assist in reducing the visual impact of the proposal on these properties.

9A - Existing view of properties along southern edge of Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Private Property	Boundary Street	9	H	L	L	L	L	M

Visual Impact Rating	MODERATE/LOW

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 10

Vegetation to be removed on both sides of Hill Street

A *Photo location*

Receptor location

Location
Hill Street, looking south
Distance to proposal - 95 metres

Description
Minor road leading off Boundary Street

Current View
As shown in Photo 10A, the current view is down Hill Street towards the Boundary Street intersection. The road is flanked by dense vegetation on the eastern side and some low vegetation on the western side. Both sides have an elevated footpath.

Operation There will be a noticeable removal of vegetation to the eastern and western sides of Hill Street near the intersection with Boundary Street, although this compromises only a small part of the total view. There is likely to be a steepening of the embankments on both sides of the road near the intersection. As road users travel closer to the Boundary Street intersection, the loss of vegetation will become increasingly apparent, although a large reduction in visual amenity is not expected.

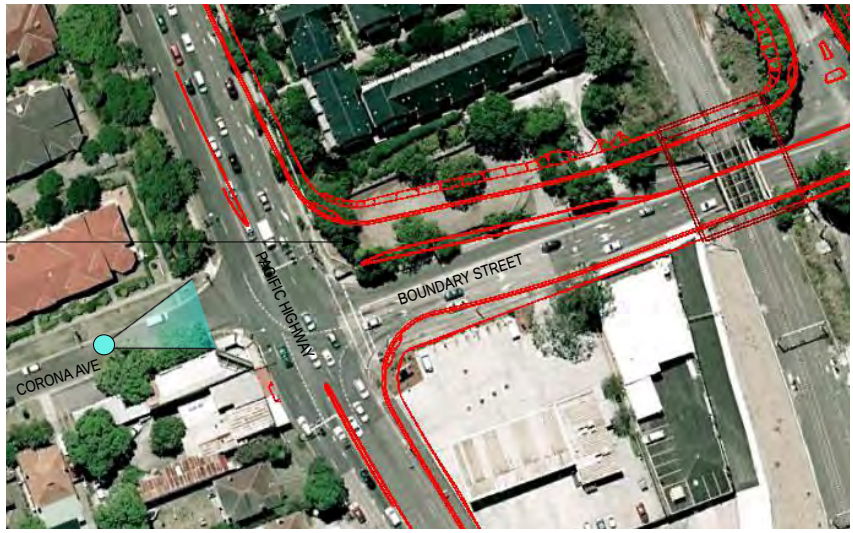
10A - Existing view south along Hill Street - looking towards Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Minor Road	Hill Street	10	M	M	L	M/L	M/L	M/L

Visual Impact Rating	MODERATE/LOW

From Table 01, using a combination of sensitivity and magnitude

VIEWPOINT 11



Location
Corona Avenue, looking east.
Distance to proposal - 50 metres.

Description
Minor road leading off Pacific Highway.

Current View
As shown in Photo 11A, the current view extends down Corona Ave towards the Pacific Highway and Boundary Street intersection. Mature vegetation found on the northern corner of the intersection is clearly visible in the middle of the view.

Operation
There will be a noticeable removal of vegetation at the northern corner of the intersection and a reduction in the green edge visible in the middle distance from Corona Avenue. This will open up views of buildings and the railway bridge behind. A major reduction in visual amenity is not expected as the proposal matches the scale and bulk of road infrastructure currently visible from this viewpoint.

11A - Existing view east along Corona Avenue - looking towards Pacific Highway and Boundary Street

			MAGNITUDE					
RECEPTOR TYPE	RECEPTOR IDENTIFICATION	PHOTO LOCATION	DISTANCE	QUANTUM OF VIEW	DURATION	MAGNITUDE OF CHANGE	SUMMARY OF RATINGS	RECEPTOR SENSITIVITY
OPERATION PHASE								
Minor Road	Corona Ave	11	H	M	L	M	M	M/L

Visual Impact Rating	MODERATE

From Table 01, using a combination of sensitivity and magnitude

VISUAL IMPACT SUMMARY

SUMMARY OF VISUAL IMPACTS

From the analysis of visual receptors in the foregoing section, the summary of qualitative and quantitative visual impacts of the proposal are:

OPERATION PHASE

Negligible Impacts	• None
Low Impacts	• None
Moderate to Low Impacts	• Viewpoint 1 • Viewpoint 2 • Viewpoint 7 • Viewpoint 8 • Viewpoint 9 • Viewpoint 10 •
Moderate Impacts	• Viewpoint 11
Moderate to High Impacts	• Viewpoint 3 • Viewpoint 4 •
High Impacts	• Viewpoint 5 • Viewpoint 6

OPERATION PHASE

Once Boundary Street has been upgraded, the most visible elements of the scheme will be the new slope or retaining wall to the northern edge of the road, new infrastructure (such as raised medians, signage and signals) and the removal of vegetation alongside the northern and southern edge of the road.

This removal of vegetation will be the most visible element of the proposal, altering the character of the western end of Boundary Street where a dense green, vegetated edge currently defines the northern side of the road.

Post-construction, four viewpoints have recorded an impact rating of 'Moderate/High' to 'High', whilst the rest are 'Moderate' (viewpoint 10) or 'Moderate/Low'. The properties on the southern edge of Boundary Street (viewpoint 3) will be affected by a noticeable reduction in the level of visual screening between their frontages and the road. This may be mitigated if street tree planting is included within the detailed design.

Five of the properties covered in viewpoint 6 are likely to be re-developed as apartments, decreasing their sensitivity to change and potentially reducing their impact rating from 'High' in the future. Road users at the western end of Boundary Street (viewpoint 4) will experience a noticeable change in the character of the road as the green edge is lost on both sides. This has led to a 'Moderate/High' impact rating for road users post-construction (refer Figure 05).

CONCLUSION

Overall, the Boundary Street upgrade proposal can be said to be in keeping with the scale and bulk of existing road infrastructure in the area. The changes affect a limited number of properties within the study area.

The future residential character and scale of the area is set to change in the short to mid-term future with density controls permitting a significantly higher density of development on Boundary Street. Single storey properties are likely to be converted to multistory apartment blocks. The street will take on a more urban character, with new residents moving into an already modified visual environment.

The loss of vegetation will be the most noticeable change for road users and the residents that remain. All opportunities should be taken to replace street trees where possible as discussed within the Mitigation section of this report.

VISUAL IMPACT SUMMARY

Figure 5 Operation Phase Visual Impacts

Recent apartment development on Boundary Street, looking west

PART B: MITIGATION

MITIGATION RECOMMENDATIONS

FORMS OF MITIGATION

Effective mitigation measures for any form of potential visual impact are those that entail:

- Avoidance.
- Reduction.
- Alleviation.

Avoidance

The proposal has been subject to significant analysis and is based on improving the current infrastructure to improve operational capacity. Given the importance of improving road capacity, avoidance measures have not been considered appropriate in this instance.

Reduction

The principal forms of reduction are associated with refinements and modifications that address the siting and scale of built form. Recommendations for detailed design include:

- Locating storage areas and associated works in cleared or otherwise disturbed areas away from Boundary Street.
- Restricting vegetation clearing to those areas where it is absolutely necessary. Opportunities to minimise clearing should be part of the detailed design.
- Trimming rather than removal of trees to be undertaken where possible to be conducted by a qualified arborist.
- Retaining the existing kerb on the southern side of Boundary Street to minimise the loss of the existing Brush Box avenue.

Alleviation

Options to alleviate impacts are usually associated with detailed design features such as materials, finishes, reflectivity, planting character and the like. The principal forms of mitigation applicable to this proposal at detailed design stage include:

- Providing replacement vegetation for the northern side of Boundary Street to maintain a pleasant character for the streetscape and soften the edge of the road (refer Figure 6).
- Assisting any replacement tree canopy with suitable growing conditions such as a continuous deep soil zone for tree planting and establishment in the public/ private domain.
- Providing an appropriate retaining wall solution, stepping with the grades on the northern side of the road, to maintain existing character and maximise planting opportunities and provide for replacement tree planting.
- Retaining walls and fencing should be residential in scale and consistent with the site's character.
- Utilising a simple fencing alignment. Walls should have level tops and step down

the slope, utilising piers at corners and step changes.

- Considering piered design for retaining wall footings so as to maximise opportunities for the planting trench.
- Integrating driveways with walling and fencing.
- Integrating lighting with the wall design.
- Utilising a small palette of complimentary materials for all surface treatments.
- Providing hedge planting or climbers to retaining walls to improve amenity and reduce surface area that can be impacted by graffiti.
- Reflecting existing vegetation found within the site and local area. Locally prevalent tree species include *Jacaranda mimosifolia* and *Lophostemon confertus*.

Lophostemon confertus

Jacaranda mimosifolia

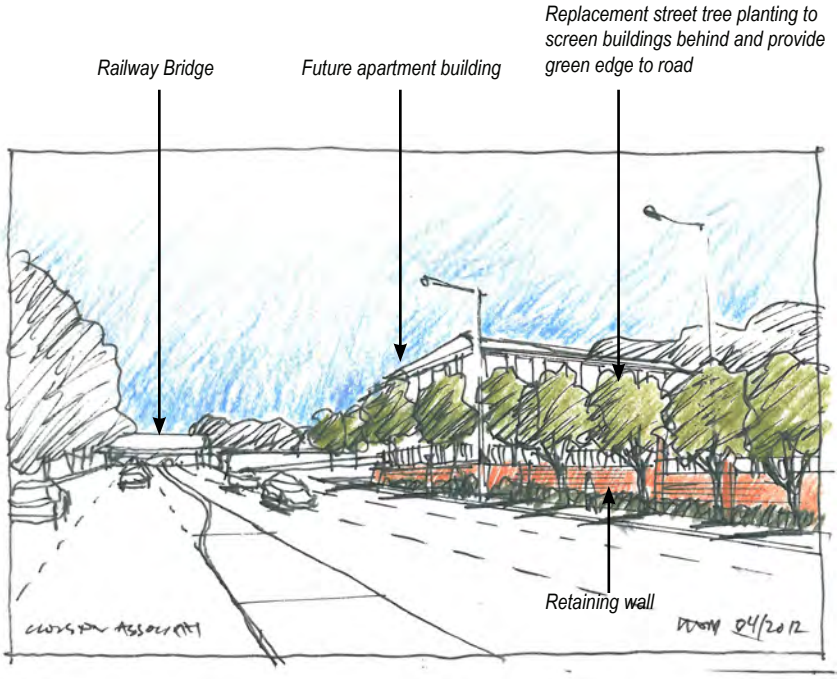


Figure 6 Sketch of potential future development on northern side of Boundary Street

APPENDIX A - VISUAL IMPACT RATING TABLE

An explanation of the rating categories used to determine the level of visual impact on each viewpoint. These have been developed by CLOUSTON Associates, based on RMS guidance.

SENSITIVITY **Qualitative Assessment Definitions**		
Receptor sensitivity	H M/H M M/L L	Each visual receptor type has an inherent and varied sensitivity to change in the visual scene based on their personal context in which the view is being experienced. This will have a direct bearing on the perception of visual impact experienced by the receptor and qualifies the quantitative impacts: **Public Reserve (PD) Parks, Reserves, Public walkways:** the purpose of visiting and using reserves largely relates to an enhanced sense of wellbeing. Receptor is more sensitive to both positive and negative visual experiences, especially where the reserve is the destination for leisure and relaxation. Residential (R): view from dwelling or garden may be experienced regularly over extended periods of time; residents may have chosen the location specifically for the view and/or develop a strong familiarity and association with the view and have high sensitivity to change. Public Roads/Transport (T): the view experienced can be important to the driver/passenger but is sometimes a brief experience and the driver is usually focused on the road. **Commercial Property (C) - Work:** view can enhance the work or education experience but focus of activity is not principally on the view. **Semi-Private property (P) - Work/Education/Service provider:** view can enhance the work or education experience but focus of activity is not principally on the view.

MAGNITUDE **Quantitative assessment definitions**		
Distance		The effect the development has on the view relating to the distance between the development and the visual receptor. The distances are from the approximate centre of the site and categorised as:
	H	Within 0 - 90 metres- high impact.
	M	90 to 500 metres - high to moderate impact.
	L	Further than 500 metres - low impact.
Quantum of view		The Quantum of view relates to the openness of the view and the angle of the view to the visual receptor. A development located in the direct line of sight has a higher impact than if it were located obliquely at the edge of the view. Whether the view of the development is filtered by vegetation etc. also affects the impact, as does the nature of the view (panoramic, restricted etc.). A small element within a panoramic view has less impact than the same element within a restricted or narrow view. The effects can be categorised as:
	H	A direct view of the development or its presence (sometimes in a very narrow or highly framed view), where the development occupies the greater proportion of the view cone.
	M/H	A direct view of the development within a panoramic view where the development occupies a large proportion of the view cone.
	M	A direct view of the development or its presence in a broader view where the development occupies a moderate proportion of the view cone.
	M/L	A direct or slightly oblique view of the development within a broad or panoramic view cone
	L	An oblique, highly filtered or largely obscured view of the development.
	N	No view of the development site from this location.
Duration		The length of time the visual receptor is exposed to the view. The duration of view affects the impact of the development on the viewer - the longer the exposure the more detailed the impression of the proposed change in terms of visual impact:
	H	Significant part of the day - high impact: usually residential property.
	M/H	5 minutes to several hours - high to moderate impact: often from a garden or park or commercial property and work places.
	M	10 seconds to 1 minute - moderate impact: usually from a road/driveway entrance, walking past or entrance to commercial property.
	M/L	5 to 10 seconds - moderate to low impact: often from a road or walking past.
	L	1 to 5 seconds - low impact: usually from a road or railway

APPENDIX A - VISUAL IMPACT RATING TABLE

Magnitude of change		Magnitude of change is a quantitative assessment of the change in compositional elements of the view. If the proposed development is largely similar in nature and scale to that of existing elements in the vicinity, the magnitude of change is low. If the development radically changes the nature or composition of the elements in the view, the magnitude of change is high. Distance from the development will accentuate or moderate the scale and variety of visible elements in the overall view and hence influence this rating:
	H	Elements within the view will be greatly at odds with existing features in the landscape
	M/H	Elements within the view will be largely at odds with existing features in the landscape
	M	Elements within the view will be at odds with existing features in the landscape
	M/L	Elements within the view will be partly at odds with existing features in the landscape
	L	Elements and composition of the view will remain largely unaltered .
	N	No view of the development from this location.
Summary of Magnitude Ratings	From H to N	A summary rating that combines all of the quantitative ratings. This is rated either high, moderate to high, moderate, moderate to low, low or none, where none implies no visible change based on the above criteria and high implies significant visible change in terms of the combined quantitative criteria

SUMMARY		
Combined Rating		The nature of the visual impact may be **beneficial** or adverse, based on a transparent professional assessment of the combined totals of qualitative and quantitative ratings and comments as outlined above. The final rating is derived using the RMS matrix table - 01:
	H	Highly adverse.
	M/H	Moderately to Highly adverse.
	M	Moderately adverse.
	M/L	Slightly adverse.
	L	Minorly adverse
	N	Negligible

Footpath along northern edge of Boundary Street

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