

Panania Station Upgrade

Visual Impact Assessment



Panania Station Upgrade

Visual Impact Assessment

Client: Transport for New South Wales

ABN: 18 804 239 602

Prepared by

AECOM Australia Pty Ltd

Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8934 0000 F +61 2 8934 0001 www.aecom.com

ABN 20 093 846 925

31-May-2016

Job Number: 60488497

AECOM in Australia and New Zealand is certified to the latest version of ISO9001, ISO14001, AS/NZ S4801 and OHSAS18001.

© AECOM Australia Pty Ltd (AECOM). All rights reserved.

AECOM has prepared this document for the sole use of the Client and for a specific purpose, each as expressly stated in the document. No other party should rely on this document without the prior written consent of AECOM. AECOM undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document. This document has been prepared based on the Client's description of its requirements and AECOM's experience, having regard to assumptions that AECOM can reasonably be expected to make in accordance with sound professional principles. AECOM may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified. Subject to the above conditions, this document may be transmitted, reproduced or disseminated only in its entirety.

Quality Information

Document Panania Station Upgrade

Ref 60488497

Date 31-May-2016

Prepared by Adam Jeffery

Reviewed by Mark Blanche

Revision History

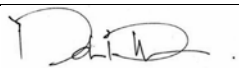
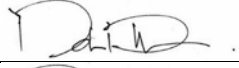
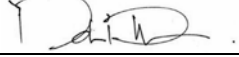
Revision	Revision Date	Details	Authorised Name/Position	Signature
A	19-Apr-2016	Draft	Mark Blanche Associate Director	
B	24-May-2016	Revision to incorporate TfNSW comments	Mark Blanche Associate Director	
C	31-May-2016	Final	Mark Blanche Associate Director	

Table of Contents

1.0	Introduction	6
1.1	Background information	6
1.2	Scope	6
1.3	Proposed works	6
2.0	Methodology	8
2.1	Sensitivity and magnitude	8
2.1.1	Sensitivity	8
2.1.2	Magnitude	8
2.2	Visual envelope mapping	9
2.3	Photography	9
3.0	Contextual analysis	10
3.1	Existing environment	10
3.2	Existing station description	10
3.3	Landscape character zones	10
4.0	Landscape character impact assessment	13
4.1	Residential landscape character zone	13
4.1.1	Existing situation	13
4.1.2	Landscape character impacts	13
4.1.3	Impact assessment	15
4.2	Infrastructure corridor landscape character zone	16
4.2.1	Existing situation	16
4.2.2	Landscape character impacts	16
4.2.3	Impact assessment	18
4.3	Local centre landscape character zone	19
4.3.1	Existing situation	19
4.3.2	Landscape character impacts	19
4.3.3	Impact assessment	21
5.0	Visual impact assessment	22
5.1	Visual envelope mapping	22
5.2	Visual impact assessment	24
5.2.1	Construction visual impacts	26
5.2.2	Operational visual impacts	27
6.0	Mitigation measures	33
6.1	Design development	33
6.2	Construction	33
6.3	Operation	34

List of Figures

Figure 1	Artist's impression of the Proposal – view of northern entrance from Anderson Avenue (north)	7
Figure 2	Panania Station site location and local context	11
Figure 3	Panania Station landscape character zones	12
Figure 4	Typical low density housing located along Weston Street	14
Figure 5	View looking south from Braesmere Street towards Edwards Reserve and Panania Station	14
Figure 6	View looking south from Anderson Avenue (north) toward the existing footbridge and ramp	17
Figure 7	View looking south-west towards the 1931 Platform Building and recent canopies	17
Figure 8	Typical example of local centre landscape character, view along Anderson Avenue (north)	20
Figure 9	Typical shop fronts located along Anderson Avenue (south) that form part of the local centre	20
Figure 10	Visual envelope map showing potential visually affected area	23
Figure 11	Visual impact assessment receiver locations	25
Figure 12	Receiver Location 2 – existing view looking south-west along Anderson Avenue (north) to Panania Station	30
Figure 13	Receiver location 2 - Photomontage 1 – proposed view looking south-west along Anderson Avenue (north) to Panania Station	30
Figure 14	Receiver location 7 – existing view looking from eastern side of Anderson Avenue (south) north-west towards Panania Station	31
Figure 15	Receiver location 7 - Photomontage 2 – proposed view looking from eastern side of Anderson Avenue (south) north-west towards Panania Station	31
Figure 16	Receiver location 8 – existing view from southern side of Weston Street looking north-west to Panania Station	32
Figure 17	Receiver location 8 - Photomontage 3 – proposed view from southern side of Weston Street looking north-west to Panania Station	32

List of Tables

Table 1	Landscape character and visual impact grading matrix	9
Table 2	Impact grading matrix for the residential landscape character zone	15
Table 3	Impact grading matrix for the infrastructure corridor landscape character zone	18
Table 4	Impact grading matrix for the local centre landscape character zone	21
Table 5	Visual impact assessment	27

1.0 Introduction

1.1 Background information

AECOM Australia Pty Ltd (AECOM) has been commissioned by Transport for New South Wales (TfNSW) to undertake a Visual Impact Assessment for the construction and operation phases of the proposed Panania Station Upgrade ('the Proposal'). Construction of the Panania Station Upgrade is expected to commence in 2016, taking up to 18 months to complete.

1.2 Scope

The scope of this visual impact assessment is to:

- describe the existing landscape character of the Proposal study area and the visibility of Panania Station
- identify key existing receivers/viewpoints and their sensitivity to the proposed change
- assess landscape character impacts
- assess visual impacts of the Proposal
- recommend management and mitigation strategies to minimise any impacts from the Proposal.

1.3 Proposed works

The Proposal involves an easy access upgrade of Panania Station as part of the Transport Access Program which would improve accessibility and amenities for customers. The Proposal would provide a number of improved features to provide an accessible station and improved interchange facilities. The Proposal would include the following key elements:

- installation of three new lifts and stairs to provide access to the island platform
- replacement of the existing footbridge with a new pedestrian bridge
- installation of new canopies at both station entrances and along the new pedestrian bridge, stairs, lift landings and sections of the platform
- refurbishment of the Platform Building with a new family accessible toilet, an accessible Customer Information Window and staff facilities to replace existing facilities
- new undercover bicycle rack on the southern side of the station and an upgrade to the existing bicycle rack on the northern side of the station
- provision of two new accessible parking spaces on both sides of the station
- upgrades to the existing kiss and ride and taxi rank facilities on Anderson Avenue (south) and installation of two additional kiss and ride spaces on Weston Street
- installation of a new raised pedestrian crossing on Weston Street, a new pedestrian refuge on Anderson Avenue (north) and new line marking on Braesmere Road
- new kerb ramps to provide an accessible path of travel to new and existing interchange facilities
- relocation of High Voltage electrical cables below ground at the station and surrounds
- ancillary works including platform regrading (as necessary), services diversion and/or relocation, station power supply upgrade, minor drainage works, adjustments to lighting, upgrades to fencing and landscaping, new ticketing facilities including additional Opal card readers, improvement to station communication systems (including CCTV cameras) and wayfinding signage.

Figure 1 shows an indicative artist impression of the Proposal (subject to detailed design). Subject to approval, construction is expected to commence in 2016 and take around 18 months to complete.

A detailed description of the Proposal and its associated works are provided in Section 3 of the Panania Station Upgrade Review of Environmental Factors (AECOM 2016).



Figure 1 Artist's impression of the Proposal – view of northern entrance from Anderson Avenue (north)

Indicative only, subject to detailed design - prepared by Jacobs

2.0 Methodology

This visual impact assessment has been undertaken in accordance with the Roads and Maritime Services (RMS) *Environmental Impact Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment* (Reference number EIA-N04, 2013). This method is widely accepted by NSW Government agencies and is relevant to this Proposal in that it addresses changes to corridor infrastructure within the urban setting.

In accordance with these guidelines, the following assessments have been carried out:

- assessment of existing landscape character and visual environment
- assessment of landscape character and visual impacts
- recommendation of mitigation measures.

2.1 Sensitivity and magnitude

An impact grading matrix (refer to Table 1) is used to assess both landscape and visual impact, and examines sensitivity and magnitude to give a combined impact rating of between negligible and high.

2.1.1 Sensitivity

The sensitivity of the landscape is assessed based upon the extent to which it can accept change of a particular type and scale without adverse impacts on its character. Sensitivity varies according to the type of development and nature of the landscape, including:

- inherent landscape value, e.g. its condition, perceptual qualities and cultural importance
- the likely congruency of the proposed changes, i.e. the extent to which the proposal may fit or be 'visually absorbed' into the landscape, e.g. in relation to line, colour, form, texture, scale, etc.

The sensitivity of visual receptors and views would also be dependent on the:

- location and context of the viewpoint
- expectations and activity of the receptor
- number of the receptors
- importance of the view
- sensitivity of the receptors, which may include:
 - users participating in outdoor passive recreational pursuits
 - communities where the development results in changes in the landscape setting or valued views enjoyed by the community
 - occupiers of residences with views affected by the Proposal.

2.1.2 Magnitude

The magnitude of change affecting a landscape or visual receptor depends on factors such as nature, scale and duration of the particular change that is expected to occur. In the landscape, the magnitude of change would depend on factors such as the extent of the loss, change or addition of a feature, or changes in the backdrop, or outlook from a landscape that affect its character. The impact on a view would depend on factors such as the extent of visibility, degree of obstruction of existing features, degree of contrast with the existing view, angle of view, duration of view and distance from the Proposal.

Table 1 Landscape character and visual impact grading matrix

		MAGNITUDE			
		HIGH CHANGE	MODERATE CHANGE	LOW CHANGE	NEGLIGIBLE CHANGE
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

2.2 Visual envelope mapping

The likely visibility of the Proposal, once operational, from surrounding areas has been broadly mapped to define a visual envelope. This provides an indication of which parts of the Proposal are likely to be viewed from surrounding land uses. The mapping typically shows 'worst case', i.e. some receivers may only see the roofline of the new pedestrian bridge, while other receivers may view a more substantial part of the Proposal.

2.3 Photography

A photograph of Panania Station from each of the nominated receiver locations has been used to assist in the analysis process. These photos were taken using a single-lens reflex digital camera using a 28 millimetre full frame lens with no parallax error.

Photomontages were then prepared to illustrate the likely visual changes from a number of key viewpoints and are included in Section 5.0. These images focus on viewing the Proposal in its wider setting, at a pedestrian view level. The materials and finishes used are indicative only and would be further investigated during detailed design.

To prepare photomontages, a 3D model of the Proposal was developed and confirmed against the elevations and sections from 2D concept design drawings. Viewpoint locations were selected and photographs taken during a site visit on 23 March 2016. Photographs were corrected for distortion using specific camera and lens profiles and camera coordinates were then merged with the 3D model to allow 'virtual camera' to be setup using these coordinates. Camera matching was undertaken using reference points common to the 3D model and physical features in the photographs. The model was then rendered with the photograph and edits to the foreground elements made as necessary.

3.0 Contextual analysis

3.1 Existing environment

Panania Station is located on the T2 Airport, Inner West and South Line in the southern Sydney suburb of Panania. The station is located in the south western portion of the City of Canterbury-Bankstown Council. The station is positioned along an east to west alignment and bound by Anderson Avenue (north) to the north and the corner of Weston Street and Anderson Avenue (south) to the south. Figure 2 shows the site location and local context of the Proposal.

The immediate existing environment consists of a gently rolling landscape with a residential landscape and small local centre. Residential areas consist of low density housing; comprising predominantly single and double storey dwellings built in close proximity to Panania Station and the small local centre. Figure 4 displays an example of the typical low density housing in the area. There is an area of public space (Edwards Reserve) located immediately to the north of the station. The local centre is bisected by the railway line and consists of shops, cafes and small businesses. Panania Hotel is located towards the north east of the station.

3.2 Existing station description

The existing Panania Station and surrounds include several key elements, including:

- Panania Station is heritage listed on RailCorp's Section 170 Heritage and Conservation Register (No. 4801926). In particular the Platform Building and platform (including brick edgings) are of high significance and the Location Hut is of moderate significance
- north and south station entrances via the existing footbridge and ramps elevated approximately seven metres above the existing street level
- the island platform is elevated approximately two and half metres above existing street level and only partially visible from Anderson Avenue to the south
- a modern platform canopy that extends either side of the heritage Platform Building
- east-west bound rail lines, steel gantries and associated electrical overhead wires
- existing bus stop and shelter located on Weston Street and Braesmere Road
- security and safety fencing
- wayfinding signage.

Mature native trees are scattered throughout the adjoining open space and road corridors, many along residential streets and within garden areas. Landscaping, including large mature trees, is located along the southern boundary of Edwards Reserve, adjacent to the rail corridor which provides filtered views and screening to and from Panania Station.

Aboveground High Voltage electrical cables are located on the northern side of the station and run partially above the existing footbridge in the rail property.

3.3 Landscape character zones

Landscape character zones were determined primarily by land use, as these were considered to be the strongest defining landscape character elements of the area. Three dominant landscape character zones have been identified surrounding the Proposal, comprising:

- residential landscape character zone
- infrastructure corridor landscape character zone
- local centre landscape character zone.

Figure 3 presents the extents of the three dominant landscape character zones.

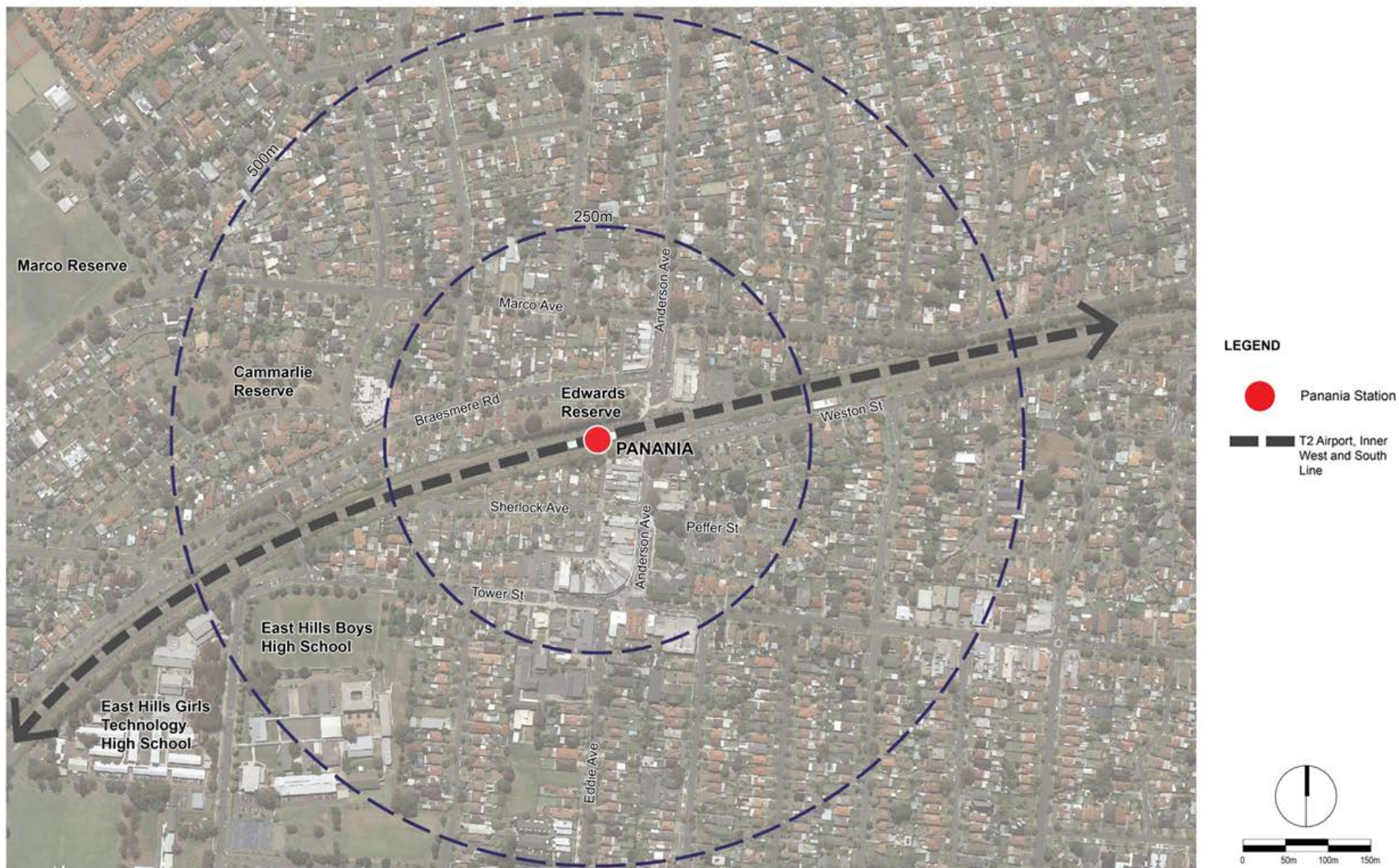


Figure 2 Panania Station site location and local context



Figure 3 Panania Station landscape character zones

4.0 Landscape character impact assessment

An assessment of the landscape character impacts from the construction and operation of the Proposal on the three dominant landscape character zones has been undertaken to determine the potential changes to the character of the landscape.

4.1 Residential landscape character zone

4.1.1 Existing situation

The residential landscape character zone is defined by a gently rolling landscape overlaid with a loose grid of roads throughout a predominantly residential landscape (refer to Figure 3 for the extents of this zone).

Low density housing (consisting of single and double storey dwellings) is punctuated by occasional small local parks and high schools. A typical example of the low density housing on Weston Street is showing in Figure 4. Edwards Reserve is an example of a local park created where the railway line (infrastructure corridor landscape character zone) converges with the residential landscape character zone.

The landscape character zone as a whole is bisected by the railway line (infrastructure corridor landscape character zone), which forms a visual barrier between the two residential areas on either side. The station platform is elevated above adjacent development and the existing ramps and footbridge form a prominent part of the existing character of the station setting, particularly when viewed from the north. To the south, views toward the station are partially screened by the existing commercial buildings.

The residential landscape character zone contains two commuter car parks associated with Panania Station and has other street parking spaces along residential streets.

Mature trees consisting of predominantly of large native and small exotics are scattered throughout the landscape, many comprising trees along residential streets and garden areas. Edwards Reserve contains a number of mature trees mostly located along the southern edge of the park where the residential character zone meets the infrastructure character zone, screening views from the north. Figure 5 shows the view looking south from Braesmere Street towards Edwards Reserve and Panania Station.

4.1.2 Landscape character impacts

The Proposal would have a series of impacts on the residential landscape character zone, including:

- during construction, temporary construction compounds are required to accommodate a site office, amenities, laydown and storage area for materials. One compound would be located to the west of the existing northern ramp within the rail corridor, adjacent to Edwards Reserve and another compound would be located to the west of the southern station entrance within the rail corridor. Temporary storage/laydown areas may also be required on the station platform
- typical visual impacts would include temporary fencing and hoarding, road barriers, signage, scaffolding, temporary site office and amenities
- the change would be limited to the edge between the three landscape character zones where they meet, generally characterised by the installation of the new pedestrian bridge, stairs and lifts. To achieve clearances for safety and rail operational requirements, the top height of the new infrastructure would be around seven metres above the height of the existing footbridge and would be visible above the nearby buildings to the south
- the undergrounding of the High Voltage electrical cables would marginally improve the character setting by reducing the visibility and number of overhead cabling associated with the infrastructure character zone
- the removal of seven trees inside the rail corridor could potentially open up views of the station changing the setting for residences directly to the north of the station, however screening would still be provided by the mature trees in Edwards Reserve where tree removal is to be avoided. Any tree removal in Edwards Reserve (which would be subject to further assessment and approval from TfNSW) would also impact landscape character and views from the north and as such these trees should be retained where possible. Generally mature street tree vegetation within the streetscapes limit views within this landscape character zone

- road works and interchange works (including installation of new kiss and ride areas, accessible parking spaces, taxi rank and associated kerb ramps) would be visible in the residential landscape character zone.



Figure 4 Typical low density housing located along Weston Street



Figure 5 View looking south from Braesmere Street towards Edwards Reserve and Panania Station

4.1.3 Impact assessment

The sensitivity of the landscape is rated as low as the land use, pattern and scale have the capacity to accommodate the type of change envisaged and the height would be similar to surrounding buildings and consistent with local zoning requirements. The magnitude of change is rated as low, as this is considered a minor change within the context of the broader landscape setting. The upgrade is a minor change to a small area of an existing infrastructure element adjoining this landscape character zone.

Although the new pedestrian bridge and lifts (and associated canopies) would be visible above nearby buildings, the change would in most cases be only visible in the area immediately adjacent to the Proposal site, and the change is in keeping with the existing landscape character and use. To the north the existing mature trees in Edwards Reserve would continue to screen views.

The overall rating for this landscape character zone is low (refer to Table 2). The upgrade work is relatively minimal and would be most noticeable as a landscape character impact in the short term (i.e. during construction), and a minor change in landscape character in the operation phase. During operation, the Proposal would represent a minor change to this landscape character zone given the distance to receivers and presence of screening from existing trees and buildings.

Table 2 Impact grading matrix for the residential landscape character zone

		MAGNITUDE			
		HIGH CHANGE	MODERATE CHANGE	LOW CHANGE	NEGLIGIBLE CHANGE
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

4.2 Infrastructure corridor landscape character zone

4.2.1 Existing situation

The railway line is a highly contained, linear landscape character zone between approximately 30 and 40 metres wide. Refer to Figure 3 for the extents of the infrastructure corridor landscape character zone. The corridor comprises a distinct unit which traverses the landscape, with the railway line and platform sitting elevated above the surrounding ground plane. Panania Station, including the 1931 Platform Building, footbridge and concrete location hut are listed on RailCorp's Section 170 Heritage and Conservation Register (No. 4801926).

Prominent visual elements in the landscape include steel gantries, associated electrical overhead wires, Platform Building, existing footbridge and ramps and platform canopies.

From outside the corridor, this landscape character zone is experienced as an impenetrable barrier, consisting of a series of security fences, screening vegetation and commercial shop fronts. These elements tend to limit visual access across the railway line. Figure 6 and Figure 7 show photographs of this zone.

4.2.2 Landscape character impacts

The Proposal would have a series of impacts on the character of the landscape, as follows:

- temporary changes to the character during construction, e.g. the temporary access stairs (if required), site compounds, temporary facilities, hoardings and crane
- impacts would generally comprise relatively minor changes to a small section of a larger railway corridor
- the upgrade includes new infrastructure elements comprising a new higher and wider pedestrian bridge located west of the existing footbridge. The new pedestrian bridge and canopy would be approximately seven metres higher than the existing to achieve clearances for safety and operational rail requirements. Platform canopies, three new lifts and switchback stairs at each of the station entrances/island platform would exhibit bulk and scale over the existing.
- while the existing bulky and visually obtrusive canopy to the east of the Platform Building would be replaced, the current concept design of the replacement canopy appears obtrusive and is likely to continue to overwhelm the Platform Building
- the undergrounding of the High Voltage electrical cables would marginally improve the character setting by reducing the visibility and number of overhead cabling associated with the infrastructure character zone
- new infrastructure would be a prominent modern architectural element of the character zone through the use of modern materials such as steel, glazing and concrete.



Figure 6 View looking south from Anderson Avenue (north) toward the existing footbridge and ramp



Figure 7 View looking south-west towards the 1931 Platform Building and recent canopies

4.2.3 Impact assessment

The sensitivity of the landscape is rated as low, as the land use, pattern and scale have the capacity to accommodate the type of change envisaged. The contained nature of the railway line limits the impact of the changes to this landscape character zone on the broader surrounding landscape.

The magnitude of change is rated as moderate, as the Proposal involves replacing the existing footbridge and ramps with a new pedestrian bridge, stairs and lifts in a similar location although the height of the new pedestrian bridge (and canopy) would extend seven metres higher than the existing, in order to meet safety and rail operational standards.

This change would in most cases be only visible in the area immediately adjacent to the site of the upgrade and the change is in keeping with the existing landscape character and use. During detailed design, consideration should be given to reducing the slab depth of the concrete slab for the new pedestrian footbridge to minimise visual bulk.

The proposed concept design for the replacement eastern canopy appears bulky, visually obtrusive and is likely to continue to overwhelm the Platform Building and the detailed design should aim to further refine the canopy design, and increase the visual separation between these structures (such as providing a glass interface) to improve the heritage setting by minimising connections to heritage fabric and so as not to detract from the Platform Building. Consideration would also be given to the following aspects to further refine the canopy design to ensure the Platform Building is the dominant feature on the platform and that the canopies compliment the Platform Building:

- canopy column sizes should be reduced and located directly on the platform without raised concrete bases
- the proposed outer cornice edge should be streamlined to further reduce bulk
- the colours, materials and finishes for the Proposal (such as glass cladding for the lifts) would be selected so they complement the visual surrounds and are visually recessive (where possible).

The overall rating for this landscape character zone is moderate to low (refer to Table 3). The upgrade works are relatively minimal and would be most noticeable as a landscape impact in the short term (i.e. during construction) creating a greater level of impact during construction due to the use of construction hoardings, temporary access stairs and crane, and a minor change in landscape character in the operation phase.

Table 3 Impact grading matrix for the infrastructure corridor landscape character zone

		MAGNITUDE			
		HIGH CHANGE	MODERATE CHANGE	LOW CHANGE	NEGLIGIBLE CHANGE
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

4.3 Local centre landscape character zone

4.3.1 Existing situation

The Proposal is located within a small local centre landscape character zone containing a mix of shops, small businesses and cafes. Refer to Figure 3 for extents of the local centre landscape character zone. The local centre is generally located in one or two storey premises with ground floor shops and residential above. Figure 8 and Figure 9 show photographs of this zone. Panania Hotel is located to the north east of the station providing a significant landmark in the area surrounding the station.

Panania Station forms an important feature element of the Anderson Avenue (north) view and acts as a means of wayfinding for users of the local centre. In contrast, the station entrance as viewed from Anderson Avenue (south) is not highly visible due to the adjoining commercial buildings.

4.3.2 Landscape character impacts

The Proposal would have a series of impacts on the character of the landscape, as follows:

- temporary visual impacts including the potential use of temporary access stairs, crane and associated elements such as hoardings, barriers, temporary site offices and amenities, etc. during construction
- the change is limited to the edge between the three landscape character zones where they meet, generally characterised by the installation of the new pedestrian bridge, stairs and lifts. The top height of the new infrastructure would be around seven metres above the height of the existing footbridge to achieve clearances for safety and operational rail requirements. The new infrastructure would be visible above the nearby buildings to the south, however would be of similar scale and bulk
- the removal of seven trees inside the rail corridor could potentially open up views of the station, changing the setting for commercial neighbours directly to the north of the station however the mature trees in Edwards Reserve would still provide screening and would be retained, where possible, and would minimise the impacts of the tree removal within the rail corridor. Generally these mature trees within the streetscape limit views within this landscape character zone
- the undergrounding of the High Voltage electrical cables would marginally improve the character setting by reducing the visibility and number of overhead cabling associated with the infrastructure character zone
- road works and interchange works (including installation of new kiss and ride areas, accessible parking spaces, taxi rank and associated kerb ramps) would be visible in the local centre landscape character zone
- well considered new architecture provides positive new elements within the local centre landscape character zones, for example, the station entrance as viewed from Anderson Avenue (south) will be visible and provide a means of wayfinding
- new infrastructure would be a prominent modern architectural element of the character zone through the use of modern materials such as steel, glazing and concrete.



Figure 8 Typical example of local centre landscape character, view along Anderson Avenue (north)



Figure 9 Typical shop fronts located along Anderson Avenue (south) that form part of the local centre

4.3.3 Impact assessment

The sensitivity of the landscape is rated as moderate. This landscape character zone comprises a highly visited area and is activated by the nearby station during peak commute times, which puts emphasis on this area as a gateway to the surrounding residential areas and beyond.

The magnitude of change is rated as low, as this comprises a relatively minor change in landscape character. The change would in most cases be visible only in the area immediately adjacent to the site of the Proposal and the change is in keeping with the existing landscape character and use, notwithstanding the addition of relatively few contemporary architectural elements.

The overall rating for this landscape character zone is moderate to low (refer to Table 4). Works associated with the Proposal would be relatively minimal and would be most noticeable as a landscape impact in the short term (i.e. during construction), and a minor change in landscape character in the operation phase.

Table 4 Impact grading matrix for the local centre landscape character zone

		MAGNITUDE			
		HIGH CHANGE	MODERATE CHANGE	LOW CHANGE	NEGLIGIBLE CHANGE
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

5.0 Visual impact assessment

5.1 Visual envelope mapping

The Proposal includes the removal of the existing footbridge, ramps and stairs with the construction of a new pedestrian bridge, three lifts, stairs and associated canopies. The Proposal would introduce well considered architectural elements which are complementary to the scale and form of the commercial precinct. The new infrastructure would be located in a similar location to the existing, with the new pedestrian bridge located to the west of the location of the existing footbridge to better accommodate pedestrian desire lines. The top height of the new infrastructure would be around seven metres above the height of the existing footbridge to achieve clearances for safety and operational rail requirements. The new infrastructure would be visible above the nearby buildings to the south, however would be similar in scale and bulk.

The potential visibility of the Proposal from the surrounding area is shown in Figure 10. The primary viewshed extends perpendicular to the railway line in a north-south orientation following the main view corridor of Anderson Avenue. The primary viewshed also extends in an east west orientation following the main parallel view corridor of the railway line and Weston Street.

The proposed installation of associated road works (including a new raised pedestrian crossing, new island refuge and line marking) and new or upgraded interchange facilities (including new kiss and ride areas, accessible parking spaces, new taxi rank and the installation of kerb ramps) would only be visible in the immediate vicinity of these works which would be undertaken on:

- Anderson Avenue (north)
- Braesmere Road
- Anderson Avenue (south)
- Weston Street
- Sherlock Avenue.

The road works and interchange facility upgrades would be minimal in nature and would be in keeping with the existing land uses.

The viewshed beyond the Proposal is responsive to both mature tree planting and low density residential development to the north and south, and results in a generally restricted extent of visibility from many areas. The residential interface to the railway line is setback and visually separated by commercial buildings and mature tree planting along streets.

Sensitive receiver locations within the viewshed comprise:

- residential (one to two storeys high)
- commercial premises
- open space.

Sensitive receivers comprise:

- residents
- rail customers
- motorists
- pedestrians.



Figure 10 Visual envelope map showing potential visually affected area

5.2 Visual impact assessment

Ten visual receiver locations have been identified to represent key viewpoints for assessment of potential impacts on views as a result of the Proposal. These are:

1. intersection of Anderson Avenue (north) and Marco Avenue - this receiver location assesses the impact of changes on residential neighbours at the corner of Anderson Avenue (north) and Marco Avenue
2. Anderson Avenue (north) - this receiver assesses the visual impact on commercial neighbours and pedestrians on the eastern side of Anderson Avenue (north)
3. Anderson Avenue (north) - this receiver assesses the impact of the changes on commercial neighbours and their customers on the eastern side of Anderson Avenue (north) located closer to the station than visual receiver location 2
4. Braesmere Road - this receiver location assesses the impact of changes on residential neighbours on the northern side of Braesmere Road
5. Edwards Reserve - this receiver assesses the visual impact on passive recreational park users of Edwards Reserve
6. intersection of Pepper Street and Anderson Avenue (south) - this receiver location assesses the impact of changes on commercial neighbours and pedestrians at the corner of Pepper Street and Anderson Avenue (south)
7. Anderson Avenue (south) - this receiver location assesses the visual impact on commercial neighbours and pedestrians on the eastern side of Anderson Avenue (south) located closer to the station than visual receiver location 6
8. Weston Street (southern side) - this receiver assesses the visual impact of changes on residential neighbours on the southern side of Weston Street
9. Weston Street (northern side) - this receiver assesses the impact of changes on road users and rail customers on the northern side of Weston Street
10. 50A Anderson Avenue (south) – this receiver assesses the visual impact from the windows and balcony of the first floor residential neighbour located at the end of Anderson Avenue (south), directly adjoining the Proposal.

The locations of these visual receivers are shown in Figure 11.

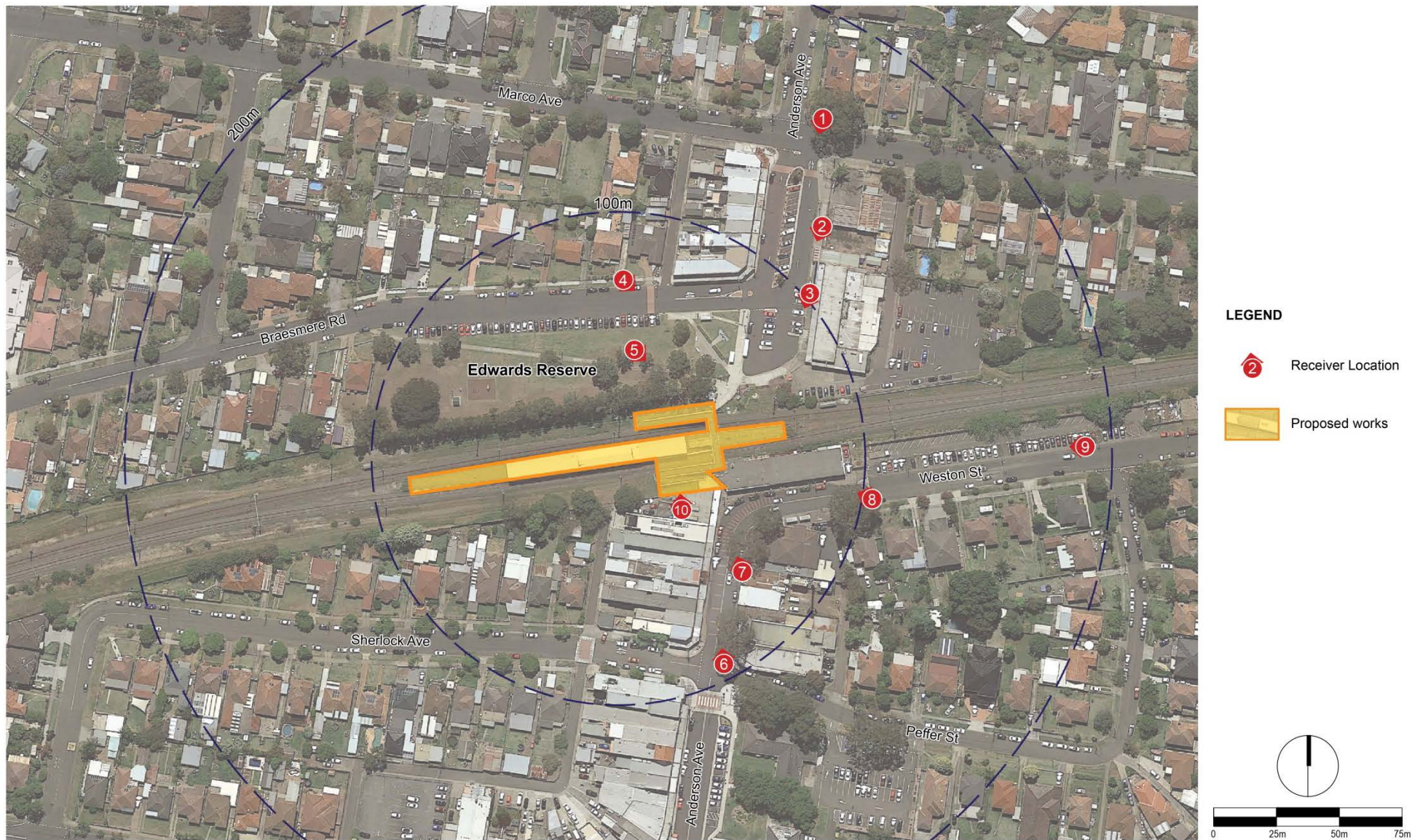


Figure 11 Visual impact assessment receiver locations

5.2.1 Construction visual impacts

The construction of the Proposal would include the following activities:

- establishment of site compound (erect fencing, tree protection zones, site offices, amenities and plant/material storage areas)
- establishment of temporary facilities as required (e.g. temporary access stairs to station, temporary toilets)
- demolition and removal of existing structures (e.g. existing footbridge) to allow for new lifts and stairs
- relocation of High Voltage electrical cables, services and signals, including overhead wiring stanchion
- platform modifications including piling and foundations for lift shafts
- construction of lift shafts, stairs, fencing, new canopies and new overhead wiring structures and re-profiling overhead wiring
- installation of lifts and associated fixtures, lighting, signage and CCTV cameras
- platform regrading
- reconfiguration of heritage Platform Building to allow for communications room, staff facilities and toilets
- refurbish heritage Platform Building including painting works
- upgrade of existing pedestrian crossing at Weston Street, kerbs and gutters, resurfacing, painting and lighting
- provision of accessible parking spaces, kiss and ride, taxi ranks and sheltered bicycle racks
- installation of wayfinding signage
- electrical and power supply upgrade works
- landscaping, fencing adjustments and bollards
- activities to test and commission power supply, lifts, lighting, new/modifications to station services, ticketing systems, communication and security systems.

Subject to approval, construction is expected to commence in 2016 and take around 18 months to complete. The construction methodology would be further developed during the detailed design of the Proposal in consultation with TfNSW.

An alternative construction option is being considered which would use an extended (six week) temporary station closure to allow for an accelerated construction completion and reduce the overall program by up to six months. The benefits of this alternative construction option include:

- reduced construction period (by up to six months) which would allow the upgraded station to be opened to the community sooner
- reduced temporary visual and amenity impacts due to a reduced construction period
- reduced safety risk to customers from the construction/pedestrian interface
- improve construction staging efficiency with potential cost benefits.

However for the purposes of this assessment, both options have been considered.

Construction activities would be temporary and transient in nature. Views towards construction activities would be partially screened by existing tree cover in Edwards Reserve to the north of Panania Station. Views from the south would be partially blocked by commercial buildings to the south of Panania Station. The overall visual impact of the construction for the Proposal is considered to be moderate, given the scale but that construction activities would be temporary in nature.

5.2.2 Operational visual impacts

Table 5 provides an assessment of the visual sensitivity and magnitude of each receiver location (as identified in Figure 11) during the operation of the Proposal. Photomontages showing the changes in views as a result of the Proposal are provided for three key viewpoints, as follows:

- receiver Location 2. Anderson Avenue (north), refer to Figure 12 and Figure 13
- receiver Location 7. Anderson Avenue (south), refer to Figure 14 and Figure 15
- receiver Location 8. Weston Street (southern side), refer to Figure 16 and Figure 17.

Overall, the Proposal would broadly have a moderate-low visual impact on the majority of people living, working in or travelling through the urban landscape surrounding Panania Station during operation.

Table 5 Visual impact assessment

Receiver Location	Sensitivity	Magnitude	Rating
1. Intersection of Anderson Avenue (north) and Marco Avenue (refer to Figure 12 and Figure 13)	The sensitivity would be low within the context of a low number of residents with direct views to the Proposal	The magnitude of change would be low. Views towards the Proposal would be substantially screened and filtered by existing vegetation in Edwards Reserve.	Low
2. Anderson Avenue (north)	The sensitivity would be low, comprising commercial neighbours and pedestrians views along the eastern side of Anderson Avenue.	The magnitude of change would be moderate. Visible portions of the Proposal would largely be restricted to the eastern end. The Proposal would introduce well considered architectural elements which are complementary to the scale and form of the commercial precinct.	Moderate – low
3. Anderson Avenue (north)	The sensitivity would be moderate. Commercial neighbours and their customers would have direct and immediate views towards Panania Station.	The magnitude of change would be moderate. The Proposal would form visually prominent elements within the southern portion of Anderson Avenue (north). The Proposal would introduce new architectural elements (i.e. new pedestrian bridge, stairs and lifts) which complement the scale and form of some of the commercial buildings adjoining the station and would comprise well considered architectural elements which provide new, contemporary amenity benefit to the streetscape.	Moderate
4. Braesmere Road	The sensitivity would be low within the context of a low number of residents with direct views to the Proposal and extent of screening from existing trees in Edwards Reserve.	The magnitude of change would be low. Views towards the Proposal would be substantially screened and filtered by vegetation in Edwards Reserve.	Low

Receiver Location	Sensitivity	Magnitude	Rating
5. Edwards Reserve	The sensitivity would be moderate, given the use of the park by passive recreational users.	The magnitude of change would be low. Street level views toward Panania Station from Edwards Reserve are partially screened by existing tree planting along the rail corridor boundary. The Proposal would generally have low levels of visibility from this location.	Moderate – low
6. Intersection of Pepper Street and Anderson Avenue (south)	The sensitivity would be low. Pedestrian and commercial neighbour views would be indirect and framed within the Anderson Avenue (south) streetscape view corridor. Visible portions of the Proposal would be restricted to the top of the new pedestrian bridge and lifts.	The magnitude of change would be low. The Proposal would form a visually prominent element with views toward the Proposal framed within and terminating the streetscape corridor view. The Proposal would introduce constructed elements (i.e. new pedestrian bridge, stairs and lifts) which complement the scale and form of some of the existing commercial buildings adjoining the station, and would comprise well considered architectural elements.	Low
7. Anderson Avenue (south) (refer to Figure 14 and Figure 15)	The sensitivity would be low, assuming pedestrian and commercial neighbour views are towards Panania Station from this receiver location.	The magnitude of change would be moderate. Views from this location would be detailed and include key built elements including the top of the new pedestrian bridge, stairs and lifts. The visual prominence of the Proposal elements would be accentuated being silhouetted against the sky due to the elevated railway line. Receiver numbers would be high, however, the sensitivity of these receivers to the Proposal is considered to be low because views would be transitory. The Proposal would introduce constructed elements which complement the scale and form of the existing commercial and residential buildings adjoining the station.	Moderate – Low
8. Weston Street (southern side) (Figure 16 and Figure 17)	The sensitivity would be low within the context of a low number of residents which would comprise highly oblique views towards the Proposal.	The magnitude of change would be low. Views toward Panania Station are partially screened by existing commercial buildings at the corner of Anderson Avenue (south) and Weston Street. The Proposal would generally be expected to have low levels of visibility from this location, with only the top of the new pedestrian bridge, stairs and lifts visible.	Low
9. Weston Street (northern side)	The sensitivity would be low. Road users and commuter views would be indirect and seen from a distance.	The magnitude of change would be low. Views toward Panania Station are partially screened by existing commercial buildings at the corner of Anderson Avenue (south) and Weston Street. The Proposal would generally be expected to have low levels of visibility from this location, with only the top of the new pedestrian bridge, stairs and lifts visible.	Low

Receiver Location	Sensitivity	Magnitude	Rating
10. 50A Anderson Avenue (South)	The sensitivity would be high due to the close proximity of the property to the Proposal. Views would be direct and from an elevated position, where receivers would look down and across the Proposal. Views are also from the primary place of residence, a view in which the receiver would have a proprietary interest.	The magnitude of change to the view seen from this receiver location would be moderate. Views from this location would be detailed and include key built elements such as new canopies, pedestrian bridge, stairs and lifts. However, the Proposal would introduce constructed elements which complement the scale and form of the existing infrastructure adjoining the station, and would comprise well considered architectural elements through the use of modern materials such as steel, glazing and concrete.	High - Moderate



Figure 12 Receiver Location 2 – existing view looking south-west along Anderson Avenue (north) to Panania Station



Figure 13 Receiver location 2 - Photomontage 1 – proposed view looking south-west along Anderson Avenue (north) to Panania Station



Figure 14 Receiver location 7 – existing view looking from eastern side of Anderson Avenue (south) north-west towards Panania Station



Figure 15 Receiver location 7 - Photomontage 2 – proposed view looking from eastern side of Anderson Avenue (south) north-west towards Panania Station



Figure 16 Receiver location 8 – existing view from southern side of Weston Street looking north-west to Panania Station



Figure 17 Receiver location 8 - Photomontage 3 – proposed view from southern side of Weston Street looking north-west to Panania Station

6.0 Mitigation measures

Mitigation measure would be implemented to minimise the level of visual impact during the design development, construction and operation phases of the Proposal.

6.1 Design development

The following mitigation measures are recommended to minimise visual impacts during the design development process:

- during detailed design, the design of the proposed platform canopies, other canopies, columns and fascia edge is to be further refined to articulate and form profiles which may assist in minimising of bulk and height. Canopy design would be undertaken in accordance with the Sydney Trains / Asset Standard Authority (ASA) guide on canopy design currently being developed
- the detailed design of the replacement platform canopy adjoining the heritage Platform Building should be developed to respond to and enhance the heritage values of the Platform Building so that it does not dominate or overshadow the Platform Building
- select materials and colour finishes for new elements with the aim of minimising the visual bulk of the structures (e.g. new pedestrian bridge and lifts) and incorporate transparent materials to maximise natural light into the structures, and use non-reflective materials for façades and finishes
- reduce the concrete slab depth of the new pedestrian bridge to minimise visual bulk
- design lighting to minimise upward spread of light near to and above the pedestrian bridge. Care should be taken when selecting luminaries to ensure that light spill and glare are kept to a minimum
- consideration in selection and location of new tree planting along the Anderson Avenue (north) frontages that may provide partial screening of constructed elements from surrounding receivers, and facilitate improved amenity, such as the landscape setting of the station and shade
- design of street furniture to consider the City of Canterbury-Bankstown Council guidelines as relevant
- disturbance of vegetation would be limited to the minimum amount necessary to construct the Proposal to maintain the screening of views.

6.2 Construction

The following mitigation measures are recommended to minimise visual impacts as a result of construction:

- Tree Protection Zones (TPZs) would be established around trees to be retained. Tree protection would be undertaken in line with *AS 4970-2009 Protection of Trees on Development Sites* and would include exclusion fencing of TPZs
- mature trees within Edwards Reserve which act as visual screening for the station as far as practical should not be removed, where feasible. Any proposed tree removal in Edwards Reserve would be subject to further assessment and approval by TfNSW
- provide well-presented and maintained construction hoarding and site fencing with shade cloth (or similar material) (where necessary) to minimise visual impacts on key viewpoints during construction. Hoardings and site fencing would be removed following construction completion
- provide cut-off or directed lighting to be used within and outside of construction site, with lighting location and direction considered to ensure glare and light spill is minimised.

6.3 Operation

The following mitigation measures are recommended to minimise visual impacts at operation:

- ongoing maintenance and repair of constructed elements
- graffiti would be removed in accordance with TfNSW's standard requirements
- long term maintenance and replacement of tree planting and landscaping to maintain visual filtering and the framing of views to the station, and maintenance of adjoining streetscape amenity.